United States General Accounting Office

GAO

Report to Representative James L. Oberstar, Ranking Democratic Member, Committee on Transportation and Infrastructure, House of Representatives

August 2000

AVIATION AND THE ENVIRONMENT

Results From a Survey of the Nation's 50 Busiest Commercial Service Airports

GAO/RCED-00-222

Contents

Abbreviations

EPA	Enviornmental Protection Agency
FAA	Federal Aviation Administration
NEPA	National Environmental Policy Act

GAO
Accountability * Integrity * Reliability

United States General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

B-285637

August 30, 2000

The Honorable James L. Oberstar
Ranking Democratic Member
Committee on Transportation and Infrastructure
House of Representatives

Dear Mr. Oberstar:

This report is designed to complement and enhance the information contained in our report *Aviation and the Environment: Airport Operations and Growth Present Environmental Challenges* (GAO/RCED-00-153), also being issued today. That report responded to your request that we review the key environmental concerns and challenges associated with airports' current operations and future growth and the efforts of major airports and federal agencies to address those challenges. This report provides a detailed, question-by-question analysis of the responses to our survey we received from officials at each of the nation's 50 busiest commercial service airports. (See app. 3.)

The survey responses indicated that noise, water, and air quality issues are the primary environmental concerns and challenges facing airports now and for the foreseeable future. Other issues of concern cited by some airport officials were wetlands, endangered species, environmental justice, and historical preservation. Noise was the greatest concern reported by airport officials for both current and future operations. Water pollution was the next greatest current concern, followed by air quality, which is expected to be a greater concern in the future. These issues present challenges for airport officials as they attempt to expand their airports' operations to meet the growing demand for air traffic services. Airport officials have undertaken a range of activities to more effectively balance airports' current operations and future growth with the environmental impact of these activities. For example, officials from 33 of the 50 busiest commercial service airports reported that they monitor aircraft noise at least daily, and 47 reported that they monitor noise at least occasionally.

The survey also provided insights into the federal effort to help airports address their impact on the environment. For example, airport officials said that the Federal Aviation Administration (FAA) effectively assists them in a number of environmental areas and coordinates activities well among

its offices. The federal environmental review process required under the National Environmental Policy Act of 1969 received mixed reviews from airport officials. However, the majority expressed satisfaction with two of the three levels of environmental review.

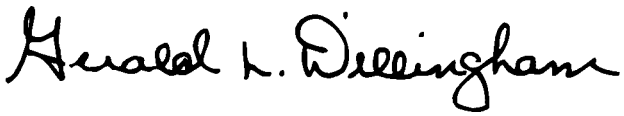
We conducted our mail survey of the 50 busiest commercial service airports in the United States from October 1999 through February 2000. In selecting the airports for our survey, we used the number of air carrier operations for 1998 as reported by FAA. The top 50 airports accounted for 80 percent of all air carrier operations in 1998. To design our survey, we conducted in-person pretests at four airports. We received completed surveys from all 50 airports. In addition, we conducted on-site interviews at seven other airports covering topics in the survey. These visits assured us that the key environmental issues—noise, water, and air—that we identified in our interviews with industry representatives, federal officials, and citizen groups were also the key issues for airport management. To gain a historical perspective, we asked a number of questions covering previous time periods, including the 10-year period from 1989 through 1999. We also interviewed airport officials and obtained supporting documentation from them to supplement the survey as necessary. Our review was conducted from July 1999 through August 2000 in accordance with generally accepted government auditing standards.

We provided the Department of Transportation, the Environmental Protection Agency, the National Aeronautics and Space Administration, and the Department of Defense with a copy of our draft report for their review and comment. Each agency concurred with the information included in the report, and Department of Transportation officials provided technical and clarifying comments that we incorporated as appropriate.

As agreed with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 14 days after the date of this letter. At that time, we will send copies of this report to interested Members of Congress; the Honorable Rodney Slater, Secretary of Transportation; the Honorable William S. Cohen, Secretary of Defense; the Honorable Jane Garvey, Administrator, Federal Aviation Administration; the Honorable Carol M. Browner, Administrator, Environmental Protection Agency; and the Honorable Daniel Goldin, Administrator, National Aeronautics and Space Administration.

Should you or your staff need further information, please contact me at (202) 512-2834. Major contributors to this report are listed in appendix V.

Sincerely yours,



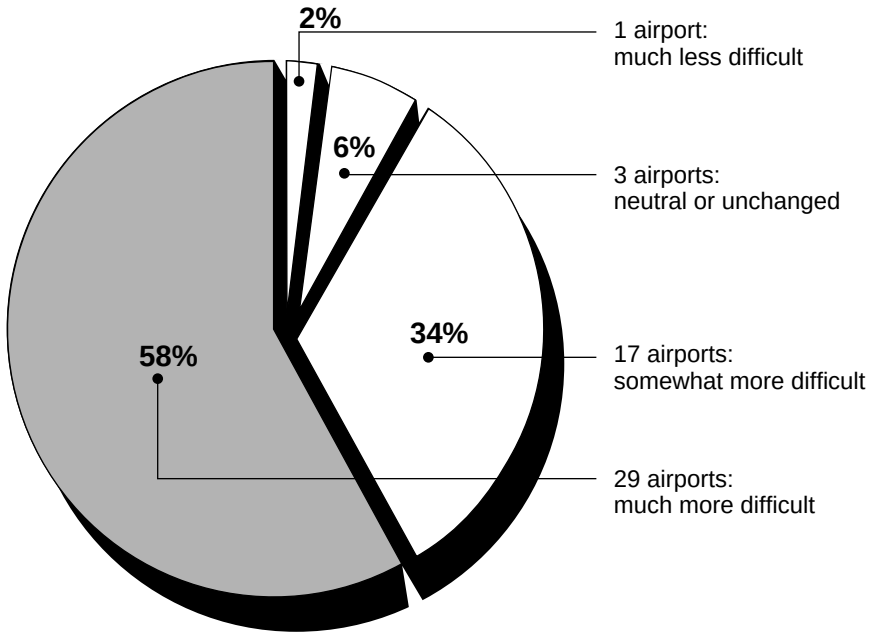
Gerald L. Dillingham, Ph.D.
Associate Director, Transportation Issues

Views of Airport Officials

1. Compared with 1989, how difficult is it now for your airport to balance environmental concerns with its operations?

Officials at more than half of the airports we surveyed indicated that currently it is much more difficult to balance environmental concerns with their airport's operations. Specifically, officials from 29 airports described balancing environmental concerns with their airport's operations as much more difficult, and officials from an additional 17 airports described it as somewhat more difficult. (See fig. 1.)

Figure 1: Difficulty in Balancing Environmental Concerns With Airport Operations Compared With 1989

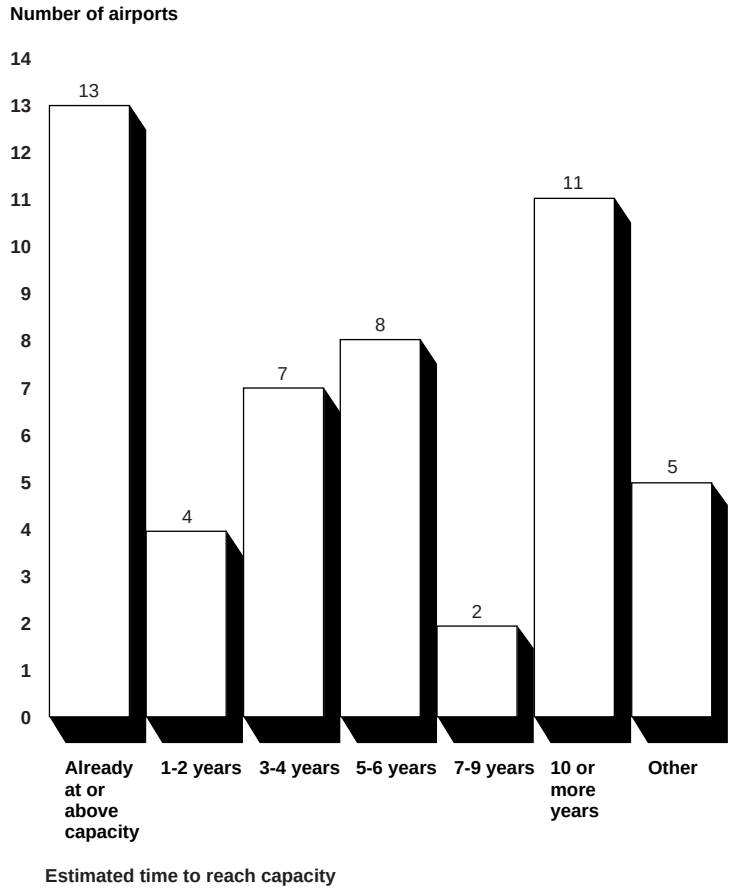


Source: GAO's survey of the nation's 50 busiest commercial service airports.

2. Given your current infrastructure—without considering future expansion projects—how long will it take for your airport to reach capacity?

Many of the nation's 50 busiest commercial service airports are already at or above capacity, and 11 will reach capacity in the next 4 years. (See fig. 2.)

Figure 2: Anticipated Date for Airports to Reach Capacity



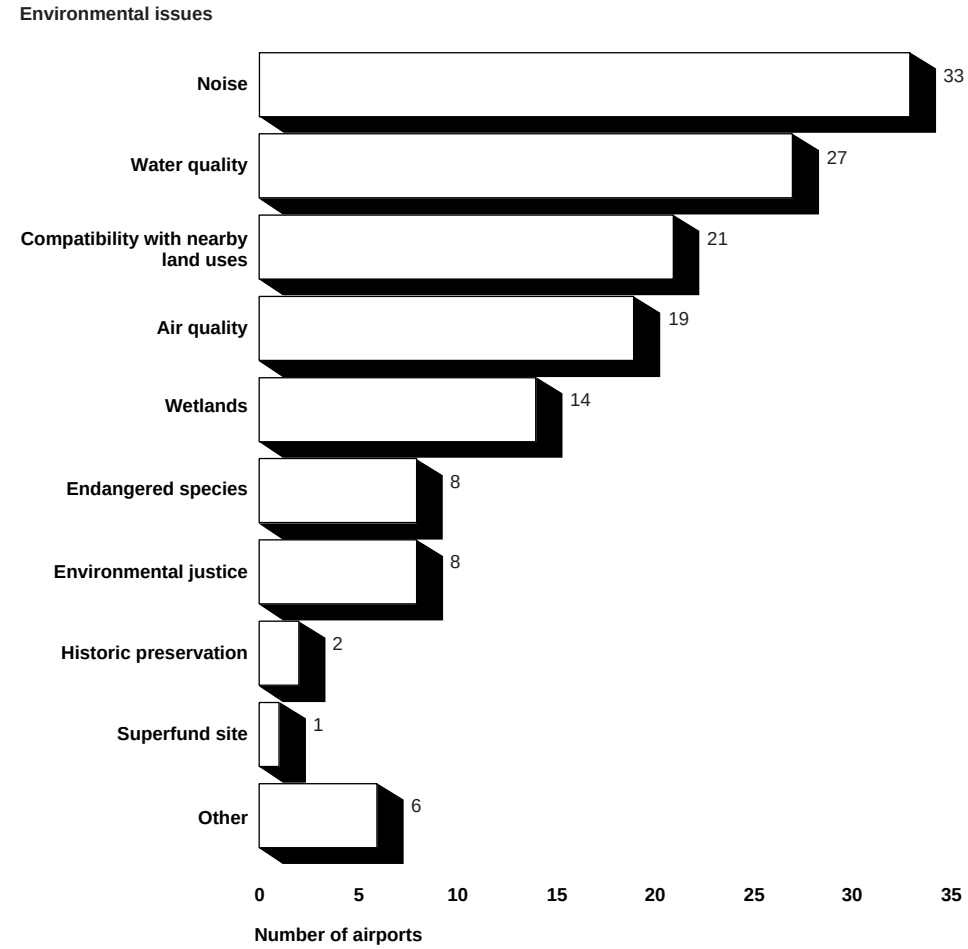
Source: GAO's survey of the nation's 50 busiest commercial service airports.

3. To what extent do the following environmental issues pose concerns when making decisions about your airport's current operations?

Noise issues are the most serious concern for airport officials: 33 of the airports we surveyed described it as a "major concern". Compatibility with nearby land uses—the third most serious concern—is also linked to the noise issue because federal guidelines consider noise over a certain level incompatible with homes and schools. Officials from almost all of the airports were concerned about noise issues to some degree. Officials from 49 of the 50 airports listed noise as a major, moderate, or minor concern. In addition, water quality issues, often including deicing runoff, were

described as a "major concern" by officials from over half of the 50 busiest commercial service airports. Most airport officials listed at least one issue as a major concern, and on average airport officials listed three issues as major concerns. (See fig. 3.)

Figure 3: Environmental Issues That Are a Major Concern for Airports When Making Decisions About Current Operations

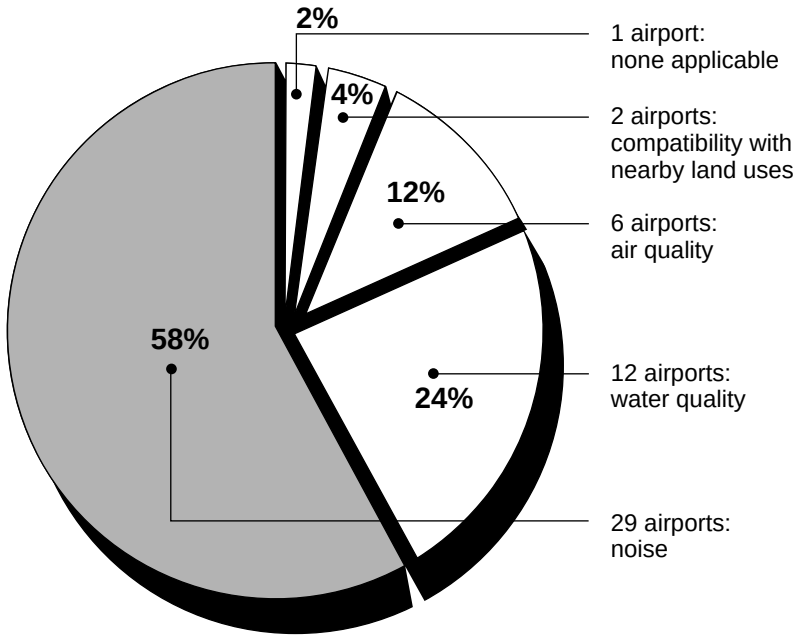


Source: GAO's survey of the nation's 50 busiest commercial service airports.

4. Which issue concerns your airport most when making decisions about your airport's current operations?

When asked to rank their current concerns, officials from over half of the airports listed noise issues as their greatest concern. Although airports had listed a number of environmental issues as major concerns in responding to the previous question, noise was the most serious concern for over half the respondents. Officials from 12 airports listed water quality issues as their greatest concern. (See fig. 4.)

Figure 4: Environmental Issues That Currently Most Concern Airports

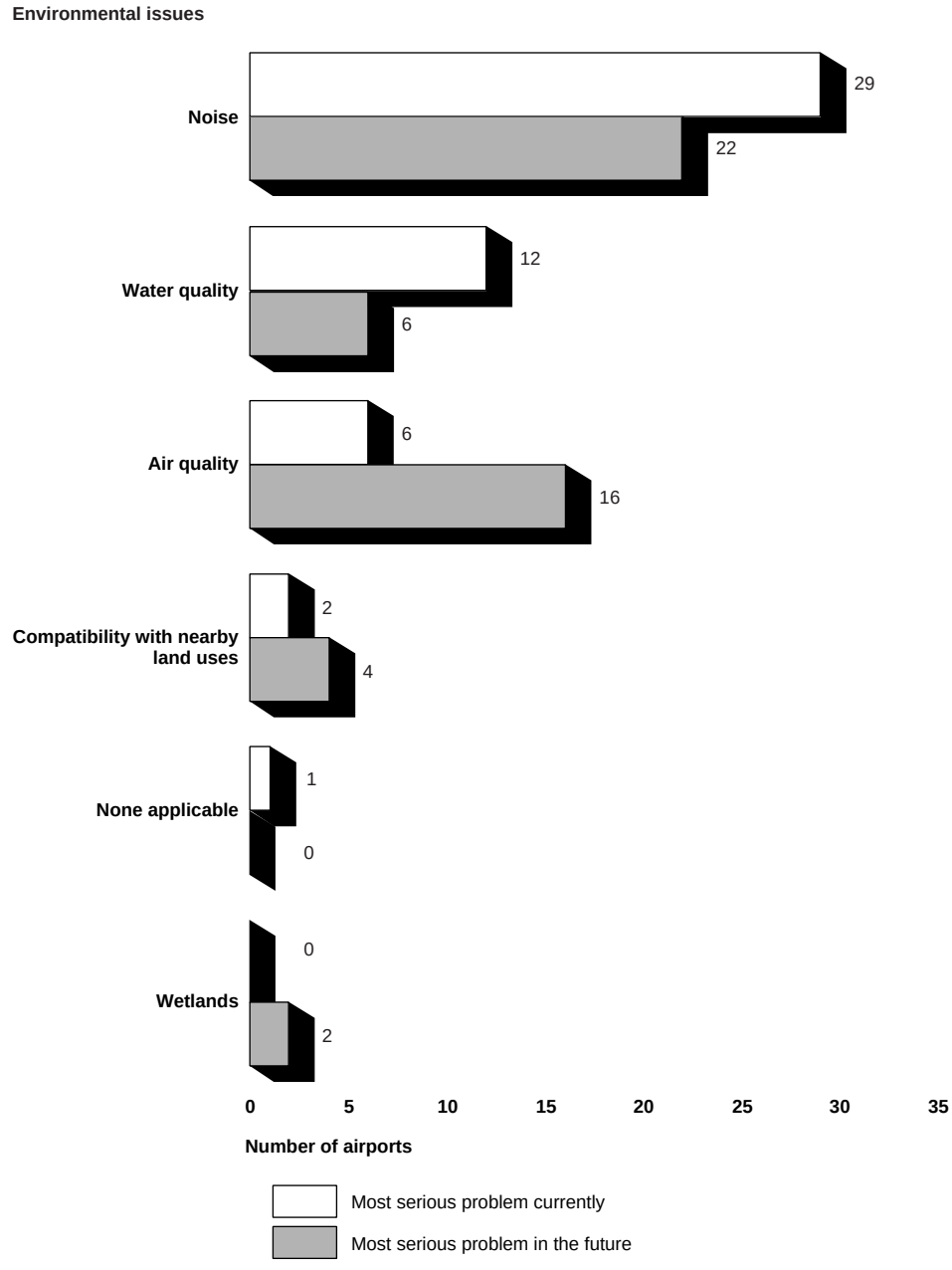


Source: GAO's survey of the nation's 50 busiest commercial service airports.

5. Which issue concerns your airport most when making decisions about your airport's future operations?

Although noise will continue to be the most serious environmental issue in the future, fewer airport officials ranked it as their greatest concern for the future than listed it as their most serious current concern. Air quality is expected to become the most serious issue for more airport officials in the future. Officials from 16 airports ranked air quality as the issue that most concerns them when making decisions about future operations—more than double the number of airport officials that ranked it as the most serious current issue. (See fig. 5.)

Figure 5: Environmental Issues That Most Concern Airports Currently and in the Future



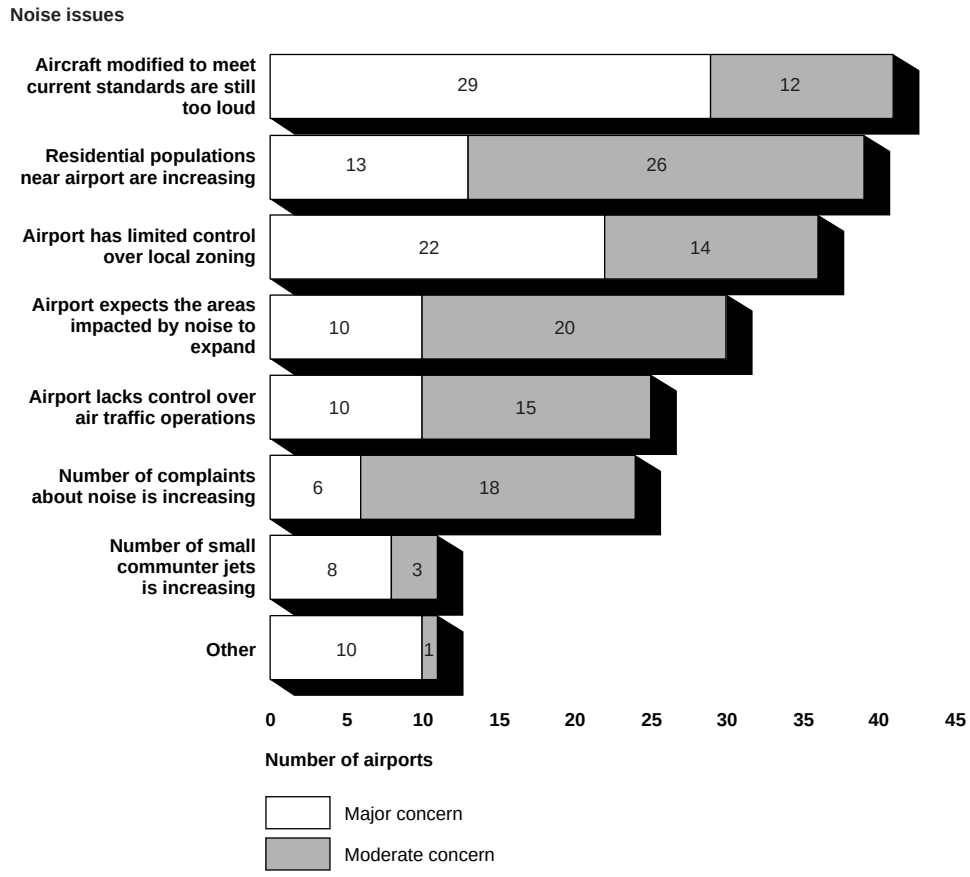
Source: GAO's survey of the nation's 50 busiest commercial service airports.

Noise Issues

6. How much do the following issues related to noise concern your airport?

Among various noise issues, airport officials are most concerned about the noise created by jet engines with hushkits that, despite national standards designed to reduce their noisiness, are still louder than airport officials would like. Officials from a majority of the airports listed engine noise as a major concern. Over half of the airports also listed growing residential populations near the airport, limited control over zoning, and increasing noise as either a major or a moderate concern. (See fig. 6.)

Figure 6: Noise Issues That Are a Major or Moderate Concern for Airports

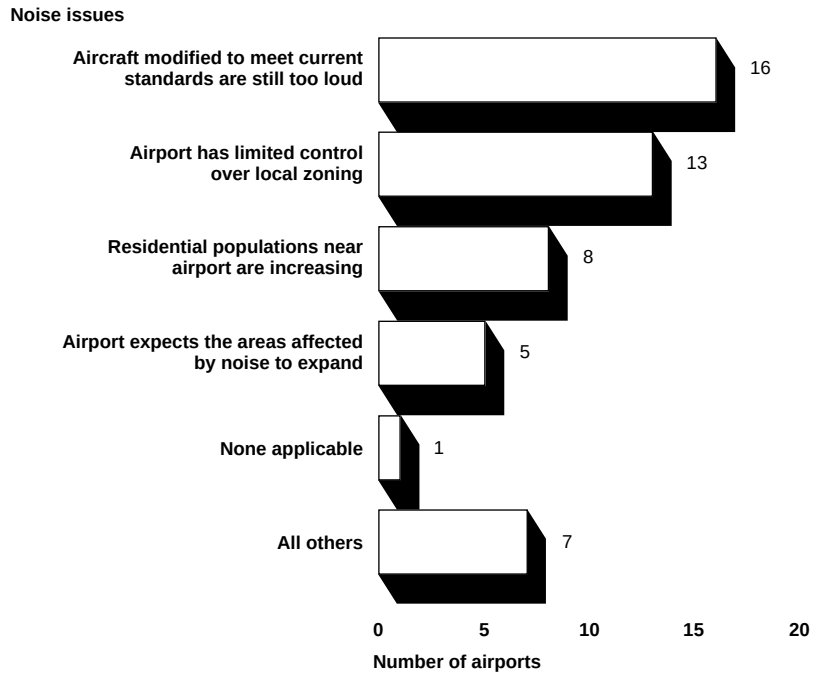


Source: GAO's survey of the nation's 50 busiest commercial service airports.

7. Which two noise issues concern your airport most?

Aircraft engine noise was most often ranked as the most serious noise issue by the airport officials we surveyed. However, officials from nearly as many airports considered limited control over local zoning as their most serious noise issue. Together, these two issues represent the most serious noise concerns for 58 percent of the airport officials. (See fig. 7.)

Figure 7: Noise Issues That Most Concern Airports



Source: GAO's survey of the nation's 50 busiest commercial service airports.

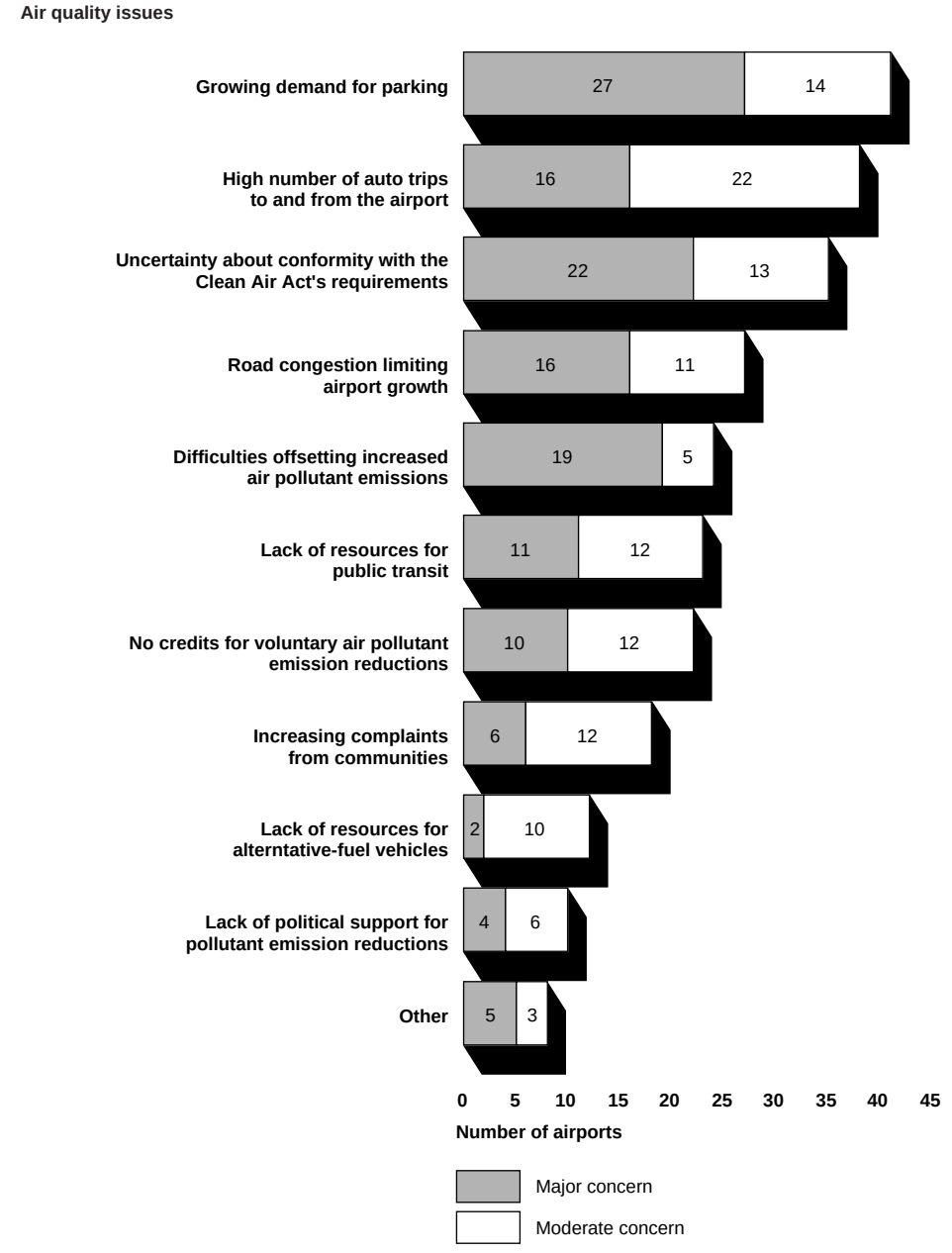
Air Quality

8. What issues related to air quality concern your airport?

Many airports ranked automobile-related issues—an increasing demand for parking and high levels of auto trips to and from the airport—as a major or a moderate concern. Uncertainties about the Clean Air Act's requirements and how to meet those requirements represented the airport officials' other most serious air quality concern. Difficulties offsetting increased emissions

to comply with the Clean Air Act's requirements was also listed as a major or moderate concern by officials from almost half of the airports surveyed—second only to the growing demand for parking. (See fig. 8.)

Figure 8: Air Quality Issues that are a Major or Moderate Concern for Airports

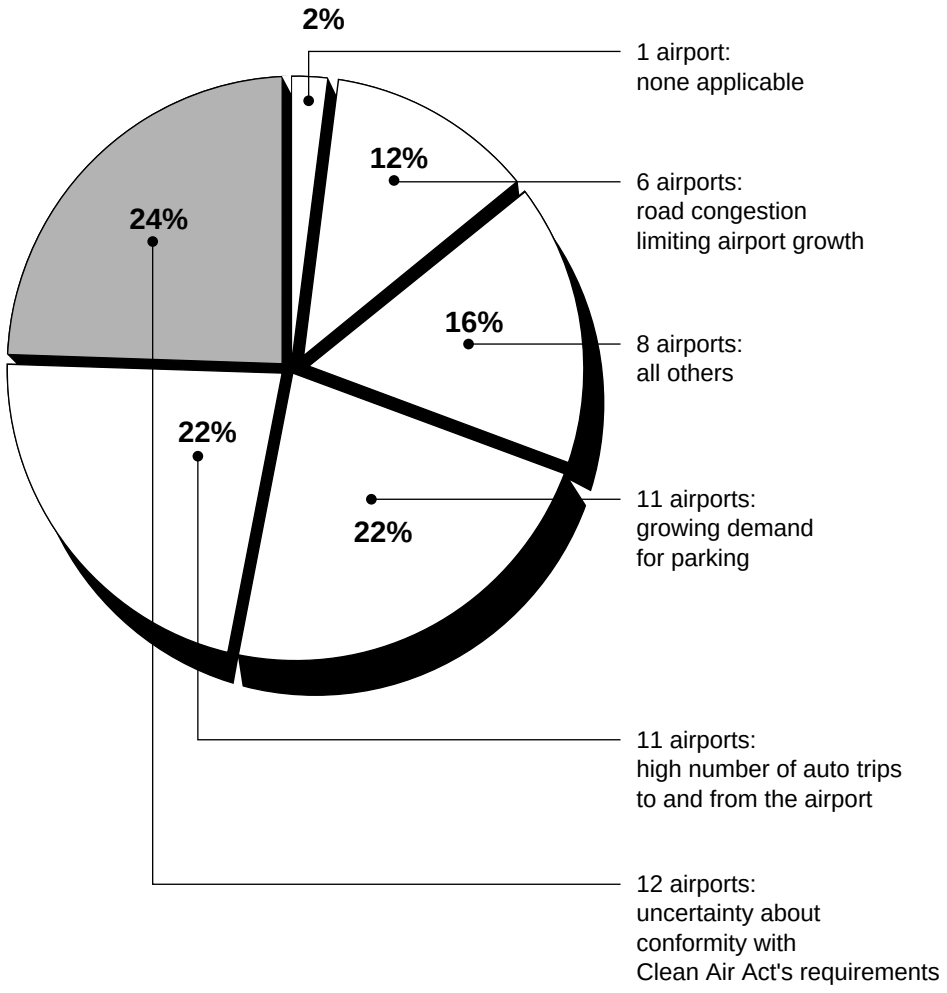


Source: GAO's survey of the nation's 50 busiest commercial service airports.

9. Which air quality issue concerns your airport most?

When airport officials were asked to rank their air quality concerns, uncertainty about how to conform with the Clean Air Act's requirements ranked slightly higher than other issues. Officials at 12 of the airports listed such uncertainty as their most serious air quality concern. The growing demand for parking and the high number of auto trips to and from the airport were close behind, with 11 airport officials ranking each of these issues as their most serious air quality concern. (See fig. 9.)

Figure 9: Air Quality Issues That Most Concern Airports



Source: GAO's survey of the nation's 50 busiest commercial service airports.

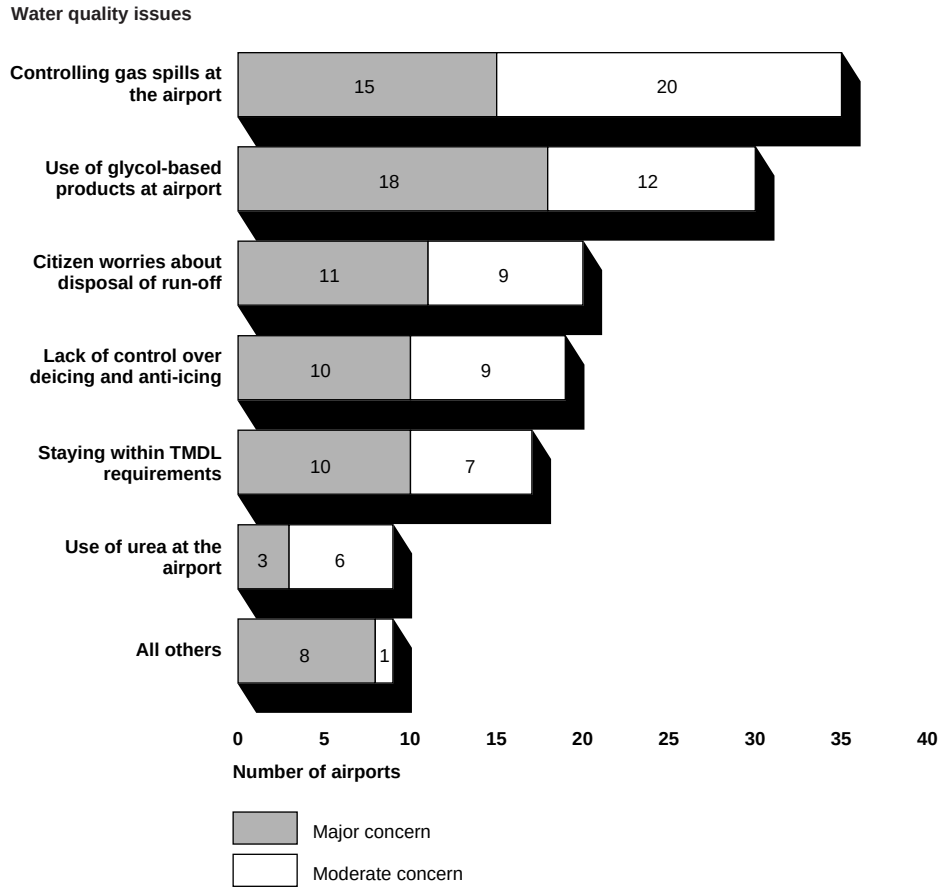
Water Quality

10. How much do the following issues related to water quality concern your airport?

When airport officials' major and moderate concerns are combined, their greatest water quality concern is the need to control gas spills at the airport, but more airport officials ranked the use of glycol-based products—for deicing and anti-icing operations[1]—as a major concern. (See fig. 10.)

[1]Deicing involves the removal of frost, snow, or ice from aircraft surfaces or from paved areas, including runways, taxiways, and gate areas. Anti-icing prevents the accumulation of frost, snow, or ice on these surfaces. Deicing and can be performed mechanically and/or by applying chemical agents. Anti-icing can only be accomplished through the application of chemicals.

Figure 10: Water Quality Issues That Are a Major or Moderate Concern for Airports



Note: The total maximum daily load (TMDL) represents the maximum amount of a pollutant that a water body can receive and still meet water quality standards.

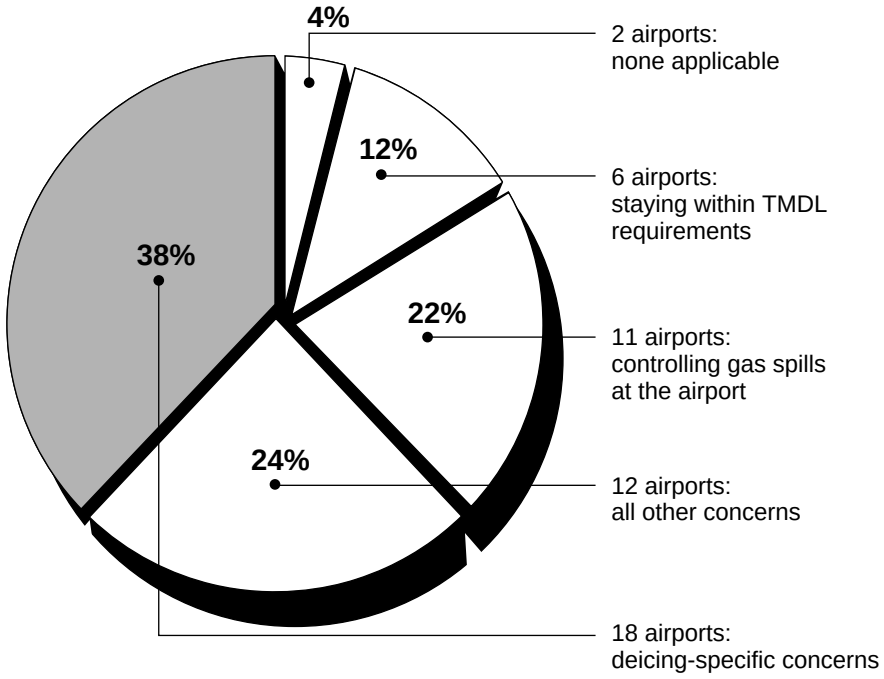
Source: GAO's survey of the nation's 50 busiest commercial service airports.

11. Of the items listed in the previous question, which two most affect your airport's operations?

Deicing and anti-icing issues represent the water quality issues that most affect airports' operations. When combined into one category, these issues—lack of control/oversight over airlines' use of deicing/anti-icing materials, the use of urea at the airport, and the use of glycol-based products at the airport—become the category of concern. (See fig. 11.) Officials at 11 airports were most concerned about glycol use at their airport, and officials at 6 airports were most concerned about their lack of

control over deicing operations, and the officials at one airport were most concerned about the use of urea at their airport.

Figure 11: Water Quality Issues That Most Affect Airports' Operations



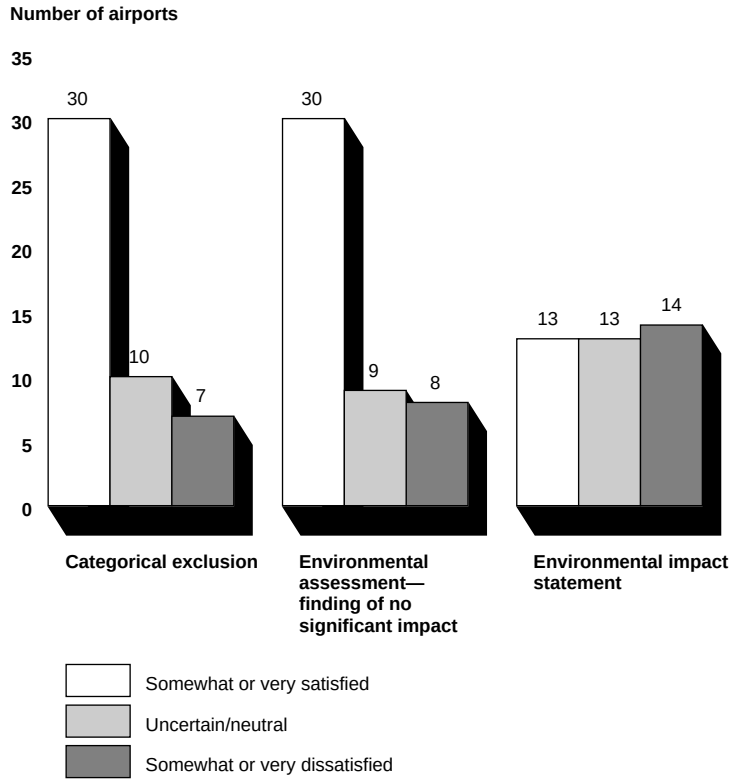
Source: GAO's survey of the nation's 50 busiest commercial service airports.

National Environmental Policy Act (NEPA) Process

12. Considering both completed and ongoing capacity projects, what is your general level of satisfaction with each of the following NEPA environmental review processes?

Officials at 30 of the 49 airports that have recently undergone NEPA environmental reviews were satisfied with the categorical exclusion and the environmental assessment—finding of no significant impact processes. However, the level of satisfaction was lower for the review of environmental impact statements. (See fig. 12.)

Figure 12: Airports' Satisfaction With NEPA Review Process



Note: The figure represents the statistics for those officials with experience in these levels of NEPA review. Officials from three airports did not have experience with the categorical exclusion process. Officials from two airports did not have experience with the environmental assessment—finding of no significant impact process, and an official from an one airport did not answer this part of the question. Officials from 10 airports did not have experience with the environmental impact statement process.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

13. If you would like to provide examples for your answers to the previous question (#12), please provide them here.

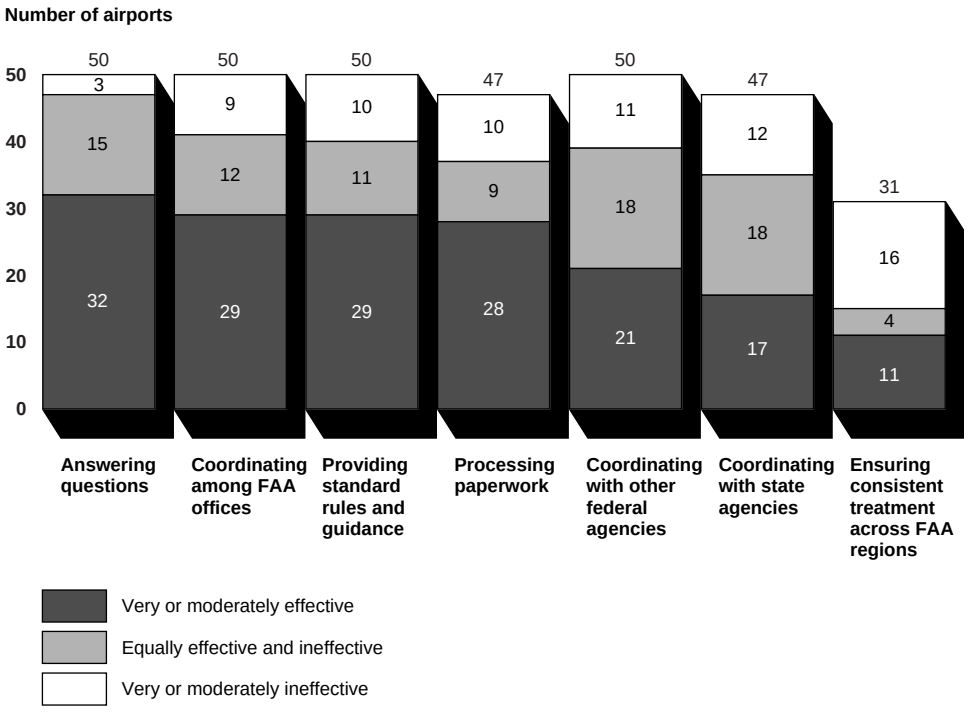
Officials from 16 airports provided some written examples of their experiences with the NEPA process. Officials from nine airports noted that the NEPA process took too long or was otherwise burdensome. According to officials from a number of airports, multiple legal reviews and FAA's slow processing of NEPA documents were also at least partially responsible for the delays.

Assistance From the Federal Aviation Administration (FAA)

14. How effective is FAA when helping your airport with environmental activities?

Officials from 32 airports reported that FAA was very or moderately effective in answering their questions and addressing their concerns. Officials from over half of the airports also reported that FAA was very or moderately effective in coordinating activities within FAA, providing standard rules and guidance, and processing paperwork. Airport officials believed that FAA was less effective at coordinating with state agencies and ensuring consistent treatment across FAA regions. (See fig. 13.)

Figure 13: Airports' Opinions of FAA's Effectiveness in Selected Environmental Areas



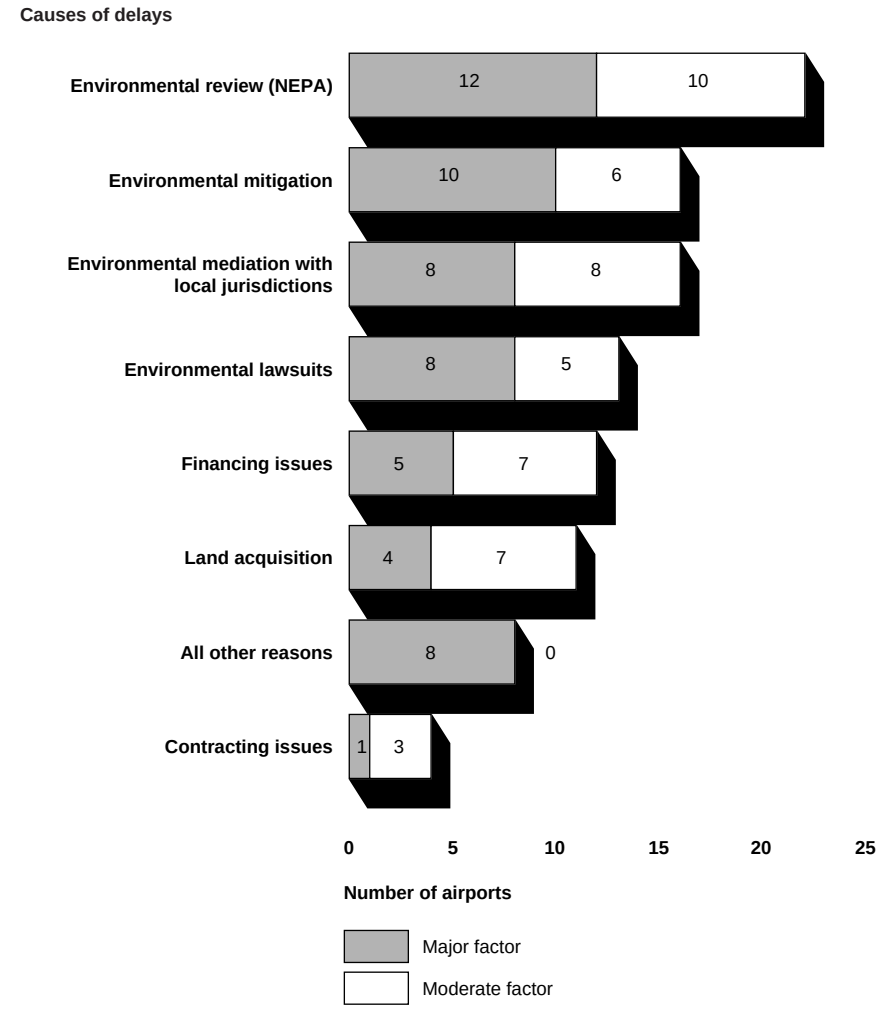
Note: The responses of officials reporting that they were unsure about FAA's effectiveness or that the issue did not apply to them were not included in this figure. In addition, officials from five airports identified additional issues in the "other" category.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

15. If any of your capacity projects were delayed over the last 5 years, how much did the following factors contribute to the delay?

Officials at two-thirds of the nation's 50 busiest commercial service airports reported that over the last 5 years, at least one airport capacity project was delayed. Environmental issues of some type were the most common cause of such delays. Environmental review, mitigation, mediation, and lawsuits represent the top four causes of the delays. Officials from 17 airports indicated that no airport capacity projects were delayed over the last 5 years. (See fig. 14.)

Figure 14: Causes of Delays in Airport Capacity Expansion Projects

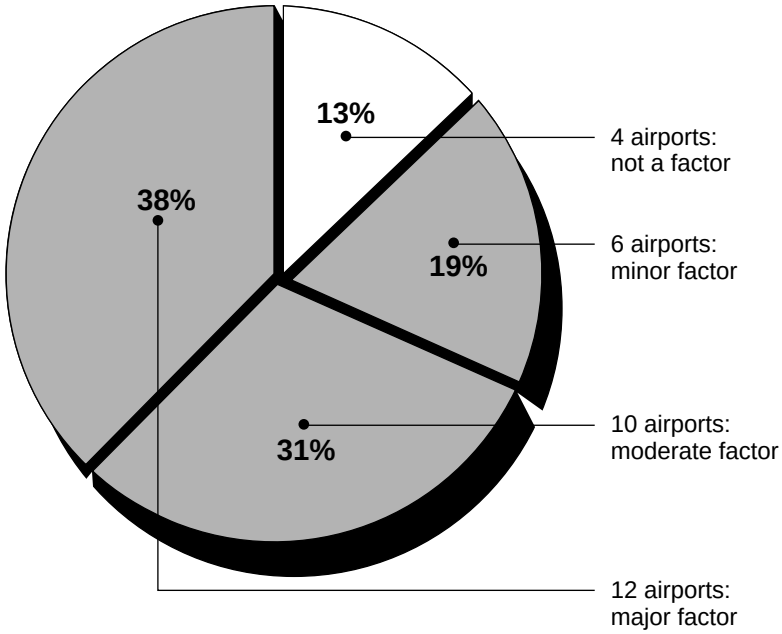


Note: Figure includes the responses of officials from the 33 airports that experienced delays in capacity projects over the last 5 years.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

(Question 15 continued) Officials from 28 of the 33 airports that experienced delays indicated that the environmental review process was a major, moderate, or minor factor delaying airport expansion projects. The NEPA environmental review process was a major factor, for 12 of the 33 airports experiencing delays and was at least a minor factor for 28 of these airports. (See fig. 15.)

Figure 15: Degree to Which the Environmental Review Process (NEPA) Contributed to Delays in Airport Expansion Projects



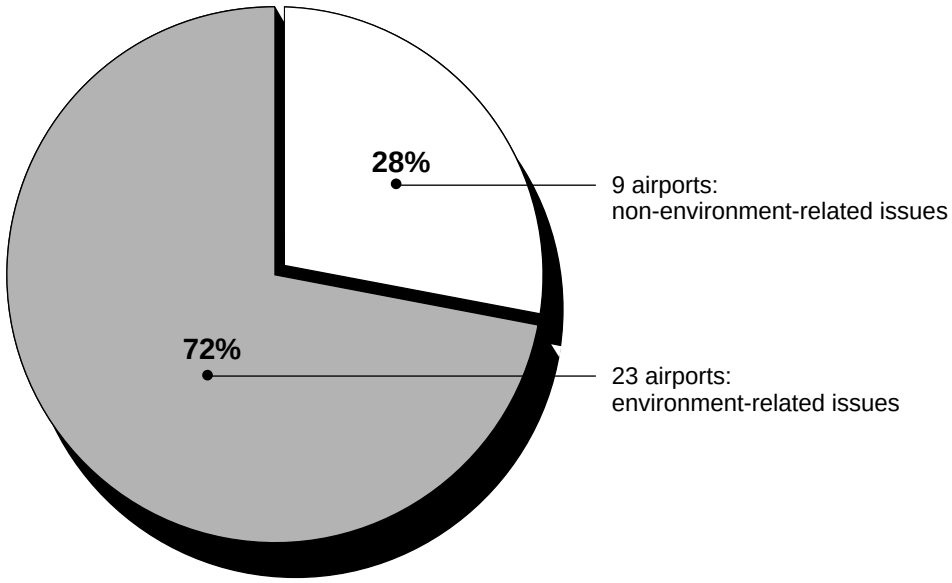
Notes: This figure includes the responses of officials from all but 1 of the 33 airports where capacity projects were delayed in the last 5 years: An official from one such airport did not provide information on how the NEPA process contributed to the delays. Percentages do not add to 100 because of rounding.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

16. Which item most delayed your airport's capacity projects?

Officials from 23 of the 33 airports that experienced delays in capacity projects cited one of the four environmental-related issues as the number one delaying factor. (See fig. 16.)

Figure 16: Share of Airports' Capacity Expansion Projects That Were Delayed Primarily Because of Environmental Issues



Note: This figure includes the responses from officials at all but 1 of the 33 airports where capacity projects were delayed in the last 5 years (because the official at 1 such airport did not answer this question).

Source: GAO's survey of the nation's 50 busiest commercial service airports.

Survey Responses on Airport Information

17. Is this airport currently located within a metropolitan statistical area?

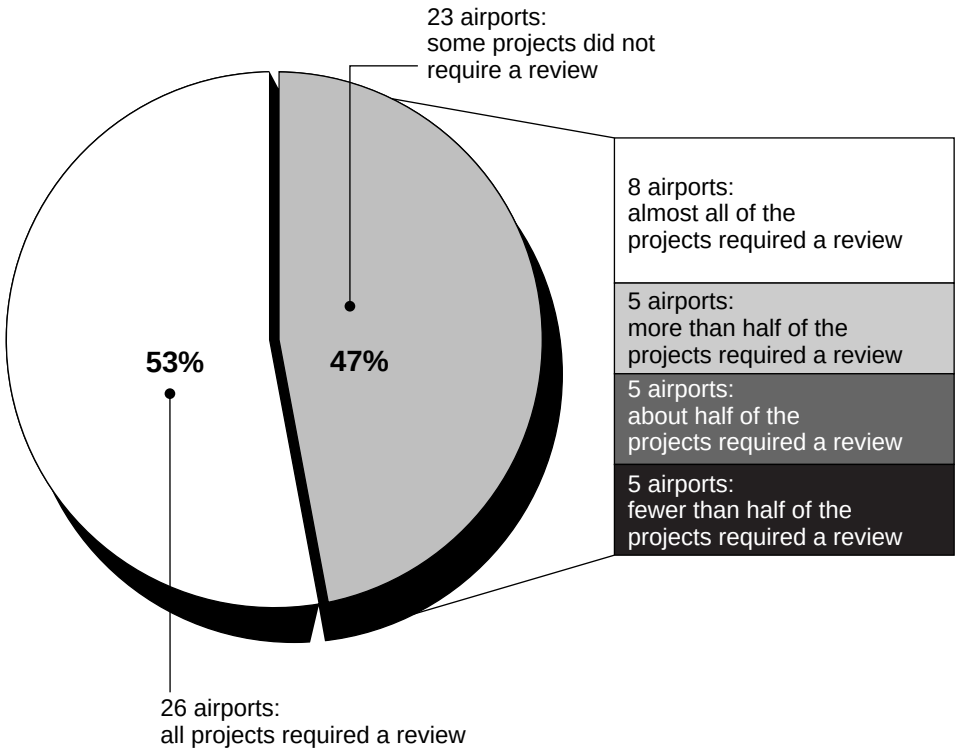
Officials from all 50 of the nation's busiest commercial service airports noted that their airport is located in a metropolitan statistical area. That means that all of the airports are located in cities or urbanized areas with at least 50,000 people and in metropolitan areas with at least 100,000 people.

18. In the last 10 years, how many, if any, of your capacity expansion projects (e.g., runway, taxiway or terminal expansions) required a categorical exclusion, environmental assessment, or environmental impact statement?

Officials from 10 airports reported that half or fewer of their capacity expansion projects required any environmental review as defined in the question. Overall, 23 airports reported that at least some of their airport capacity expansion projects did not require an environmental review. (See fig. 17.)

Figure 17: Share of Airports With Expansion Projects Whose Projects Required Environmental Reviews

Figure includes the 49 airports with expansion projects in the last 10 years

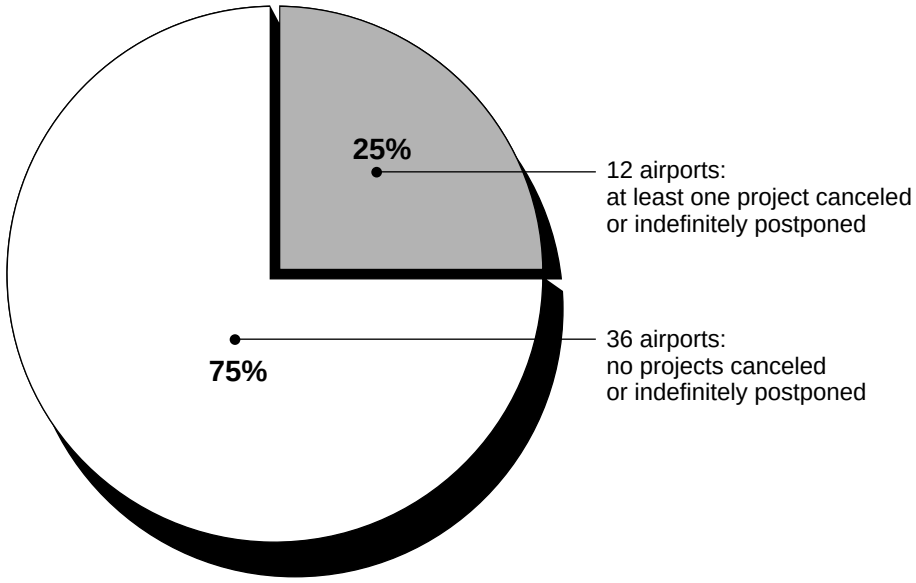


Source: GAO's survey of the nation's 50 busiest commercial service airports.

19. Over the last 10 years, were any capacity expansion projects canceled or indefinitely postponed as a result of environmental issues?

Environmental issues caused airport officials to cancel or indefinitely postpone expansion projects at 12 of the 50 busiest commercial service airports in the last 10 years. (See fig. 18.)

Figure 18: Airports Canceling or Indefinitely Postponing Expansion Projects Because of Environmental Issues



Note: Two airports were not included in this figure. One official indicated that the airport did not have any capacity expansion projects in the last 10 years, and another official wrote that two environmental processes caused lengthy delays.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

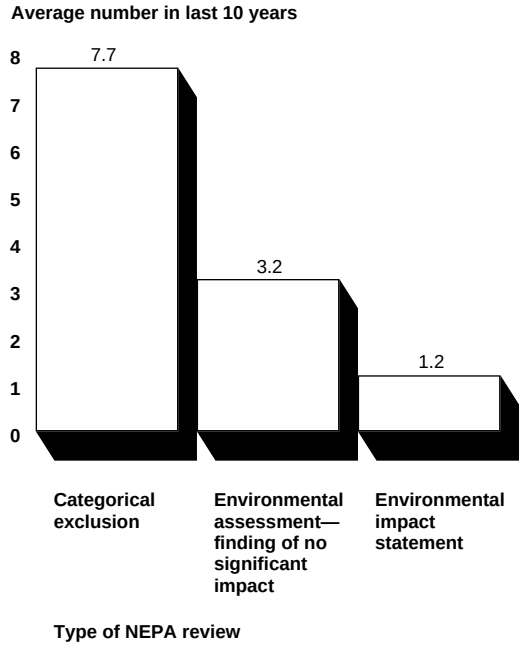
20. How many of your airport's capacity expansion projects were granted a categorical exclusion (CE) in the last 10 years?

21. How many environmental assessments in the last 10 years resulted in a finding of no significant impact?

22. How many environmental impact statements did your airport complete in the last 10 years?

Airport officials reported that the majority of airport expansion projects received categorical exclusions. Based on their responses, the number of airport capacity expansion projects approved through categorical exclusions was six times greater than the number approved through environmental impact statements and more than two times greater than the number approved through environmental assessments that resulted in findings of no significant impact on average over the last 10 years. (See fig. 19.)

Figure 19: Average Number of NEPA Environmental Reviews Conducted by the 50 Busiest Commercial Service Airports in the Last 10 Years



Note: This estimate used the midpoints of the ranges provided by airport officials in the survey to estimate the average. To simplify, the two airports with more than 75 categorical exclusions were estimated to have 75, and the one airport with more than 10 environmental impact statements was estimated to have 10.

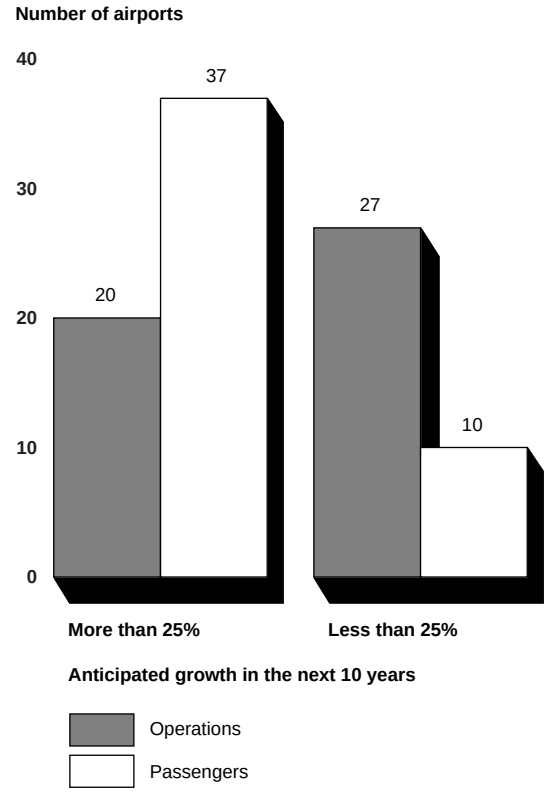
Source: GAO's survey of the nation's 50 busiest commercial service airports.

Airport Operations

23. What is your airport's projected growth for (a) operations and (b) passengers over the next 10 years?

Passengers are projected to increase at a faster rate than operations. Officials at 37 airports expected the rate of growth in passengers to exceed 25 percent over the next 10 years, while officials at only 20 airports expected the same level of growth in operations. (See fig. 20.)

Figure 20: Anticipated Growth Rate in Passengers and Operations over the Next 10 Years



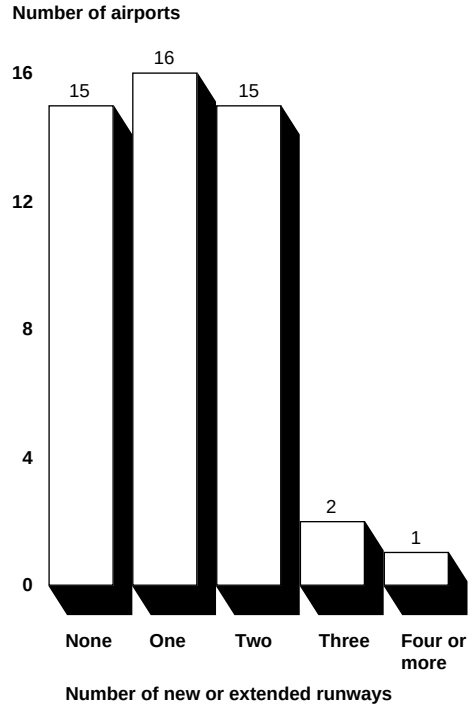
Note: One airport was uncertain of its expected growth rate for operations and passengers, and officials from two airports did not answer this question.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

24. How many capacity projects does your airport plan to complete between now and 2010?

Of the 50 airports surveyed, officials at 34 are planning to build or at least extend 56 runways in the next 10 years. A majority of the airports will build or extend at least one runway over that period. (See fig. 21.)

Figure 21: Number of Runways to Be Built or Extended by 2010



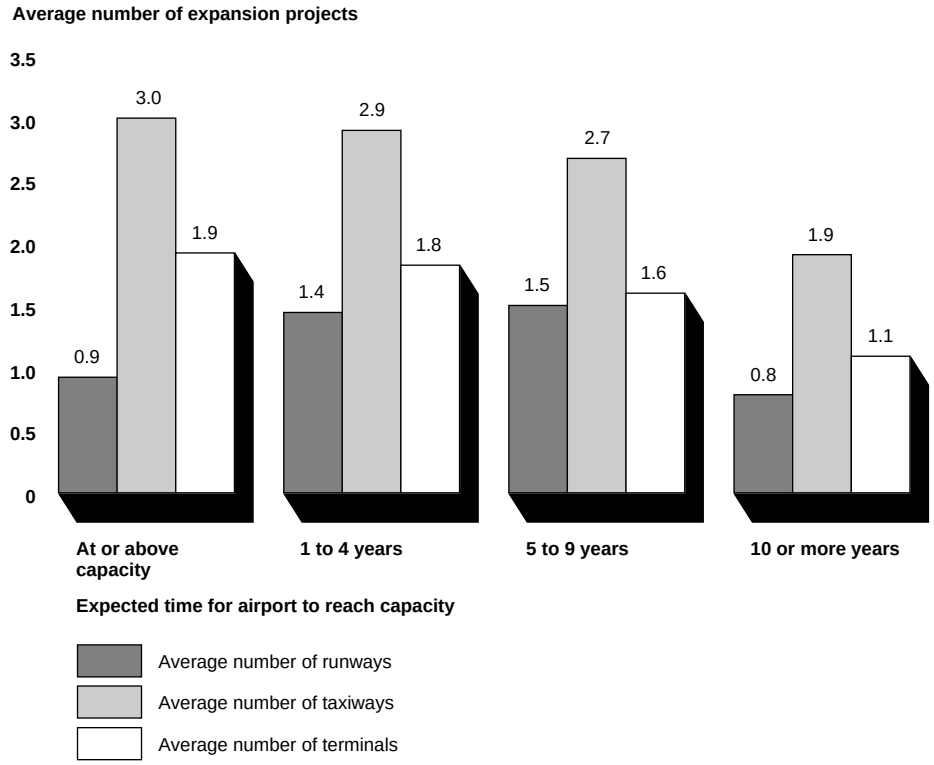
Note: One airport indicated that it was uncertain about the number of runways it planned to complete from now through 2010.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

(Question 24 continued)

The average number of capacity projects airport officials expected to complete by 2010 is not strongly associated with the time when they expected to reach capacity. For example, airports that are already at or above capacity are planning to complete fewer runways, on average, than airports that expect to reach capacity in 1 to 9 years. However, airports at or above capacity are planning to complete slightly more taxiways and terminals than airports expecting to reach capacity in 1 to 9 years. (See fig. 22.) In addition, airport officials are planning to complete at least 10 capacity projects per airport (runways, taxiways, terminals, gates, and ground access projects), on average, by 2010. Officials from 23 of the 24 airports that are already operating at or above capacity or will reach capacity in the next 4 years are planning to complete at least one passenger terminal project by 2010.

Figure 22: Average Number of Runways, Taxiways, or Terminals to Be Built or Expanded by 2010



Note: One airport indicated that it was uncertain about the number of runways, taxiways, or terminals it planned to complete from now through 2010. To simplify, we counted the airports with four or more capacity projects as having four.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

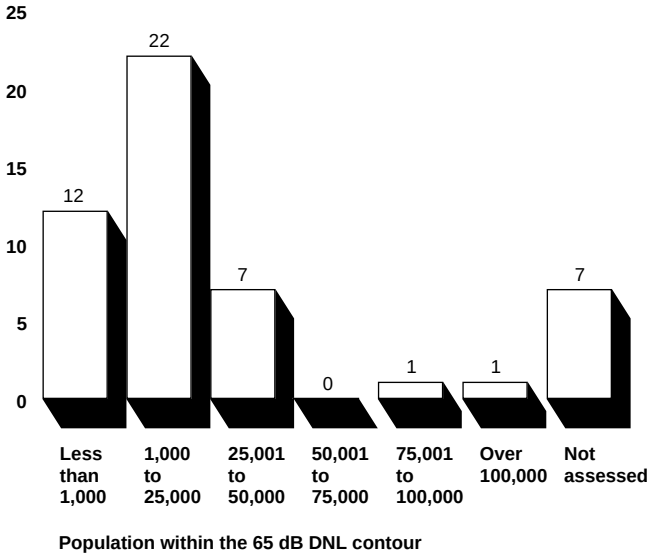
Noise Information

25. What is the approximate population within the 65 dB DNL (or Ldn) contour[1] around your airport?

[1]Under federal land use guides incorporated into FAA regulations, the noise boundary within which some land uses, such as residences and schools, are considered incompatible with airport operations.

Twenty-two airports have between 1,000 and 25,000 people living within areas where sound levels reach 65 dB DNL or more. (See fig. 23.) We conservatively estimated that the total population living within such areas at 48 of the 50 busiest commercial service airports is 675,000 people.[2] Our estimate is based on data provided by the airports.

Figure 23: Approximate Population Within the 65 dB DNL Contour



Source: GAO's survey of the nation's 50 busiest commercial service airports.

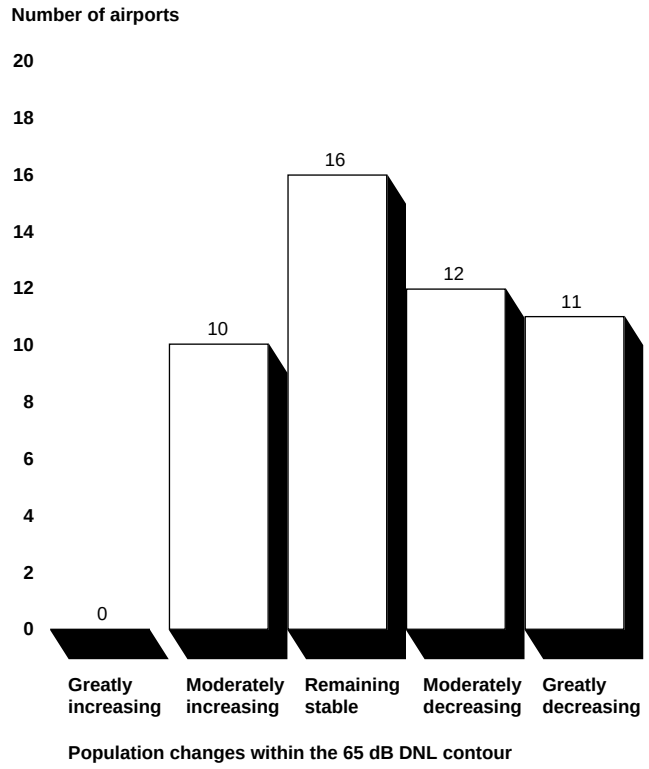
26. Please describe the change, if any, over the past 5 years in the population level within your airport's 65 dB DNL contour.

Officials from 23 airports reported that the population within their airport's 65 dB DNL contour was moderately or greatly decreasing. Officials from 16

[2] To calculate the number of people affected by noise at 45 airports, we took the minimum possible value in the ranges for the estimates for the 43 airports that answered the question. We included a more specific estimate for the airport that reported that its population within the 65 dB DNL was over 100,000—adding 125,000 people to the estimate. For two airports that provided only the number of households that are located within the 65 dB DNL contour, we used FAA's approved methodology to approximate the number of affected residents at 75,600 and 102,600, respectively.

airports described their populations as stable, and officials from 10 airports reported that the populations affected by noise near their airport was moderately increasing. (See fig. 24.)

Figure 24: Population Changes Within the 65 dB DNL Contour Over the Past 5 Years



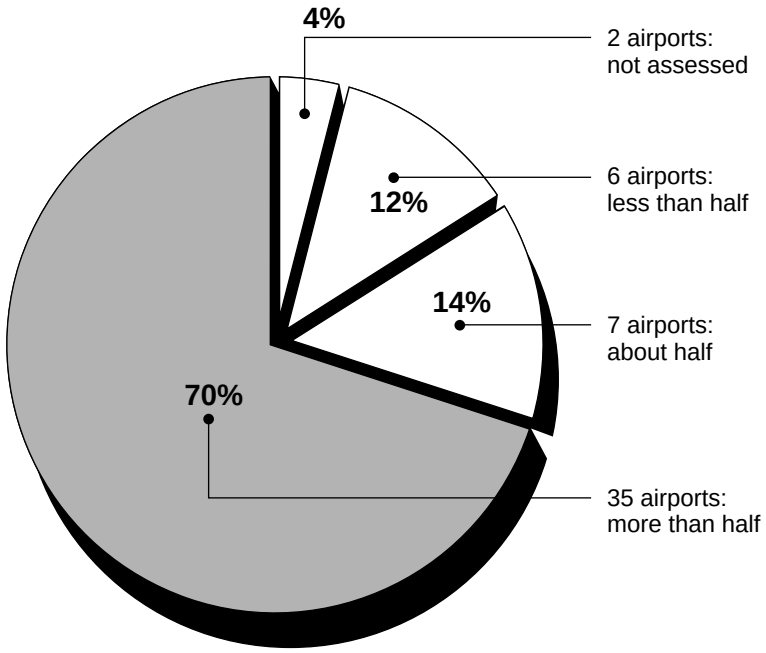
Note: One airport was unable to estimate the change in the population living inside the 65 dB DNL contour.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

27. What portion of noise complaints received over the last 12 months came from areas outside the 65 dB DNL contour?

Many noise complaints airports receive come from areas that federal criteria do not consider significantly noise-impacted (areas with noise levels below 65 dB DNL). Officials from 35 airports reported that more than half of their noise complaints came from areas that FAA has designated as compatible with airport operations in terms of noise. (See fig. 25.)

Figure 25: Portion of Airports' Noise Complaints That Come From Areas Outside the 65 dB DNL Contour



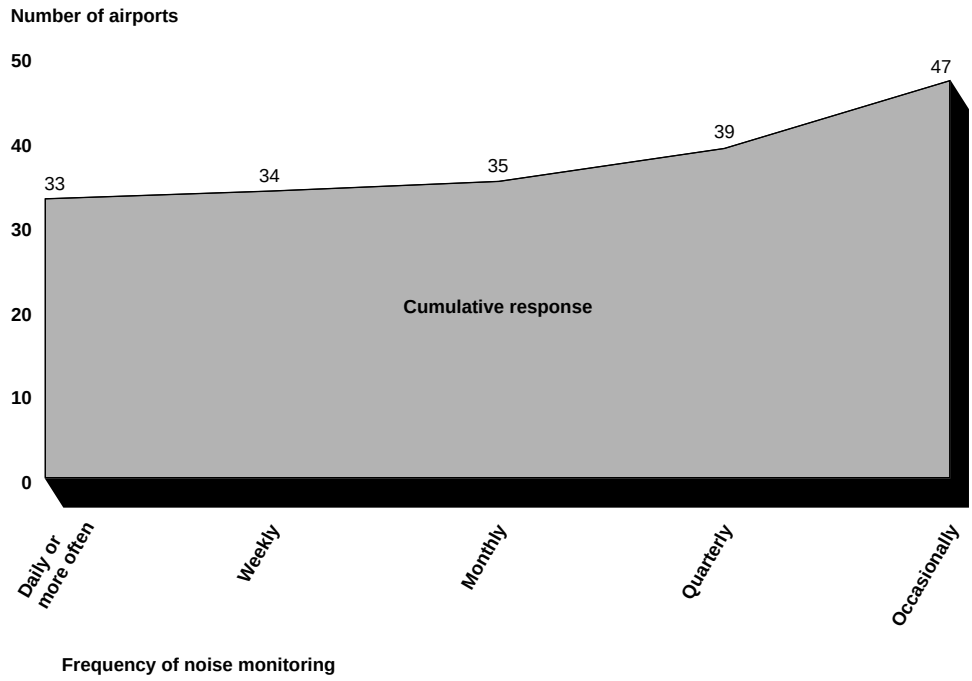
Note: Two airports have not calculated the portion of noise complaints that came from areas outside the 65 dB DNL contour.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

28. Approximately how often does your airport monitor noise levels?

Officials at over half of the airports monitor noise daily or more often, and officials at almost all airports monitor noise at least periodically. (See fig. 26.) An official from one airport reported that the airport does not monitor noise.

Figure 26: Cumulative Totals for the Frequency of Airport Noise Monitoring



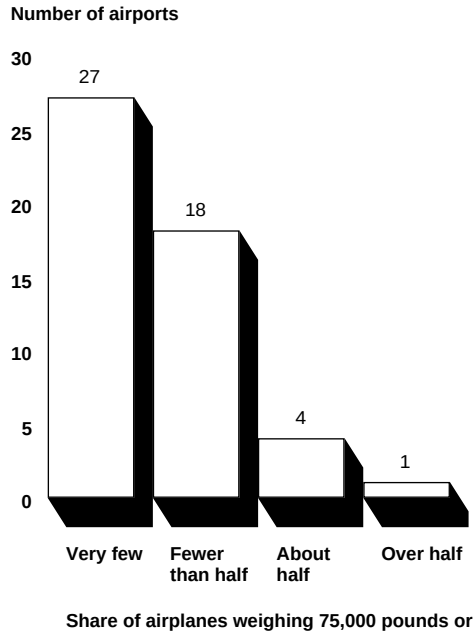
Note: Officials from two airports reported that they are currently installing new noise-monitoring systems, and an official from one airport reported that the airport does not monitor noise.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

29. As you know, aircraft over 75,000 pounds are required to be Stage 3 compliant by December 31, 1999, but aircraft below 75,000 pounds are not. What portion of the jets that currently take off and land at your airport are below 75,000 pounds?

Officials at over half of the airports reported that very few of the airplanes using their airports weigh less than 75,000 pounds. Officials at only five airports reported that half or more of the airplanes operating at their airport weigh less than 75,000 pounds. This suggests that most of the airplanes that currently take off and land at the 50 busiest airports are Stage 3 compliant because only airplanes weighing 75,000 pounds or less are exempt. (See fig. 27.)

Figure 27: Share of Airplanes Under 75,000 Pounds Operating at the Airports



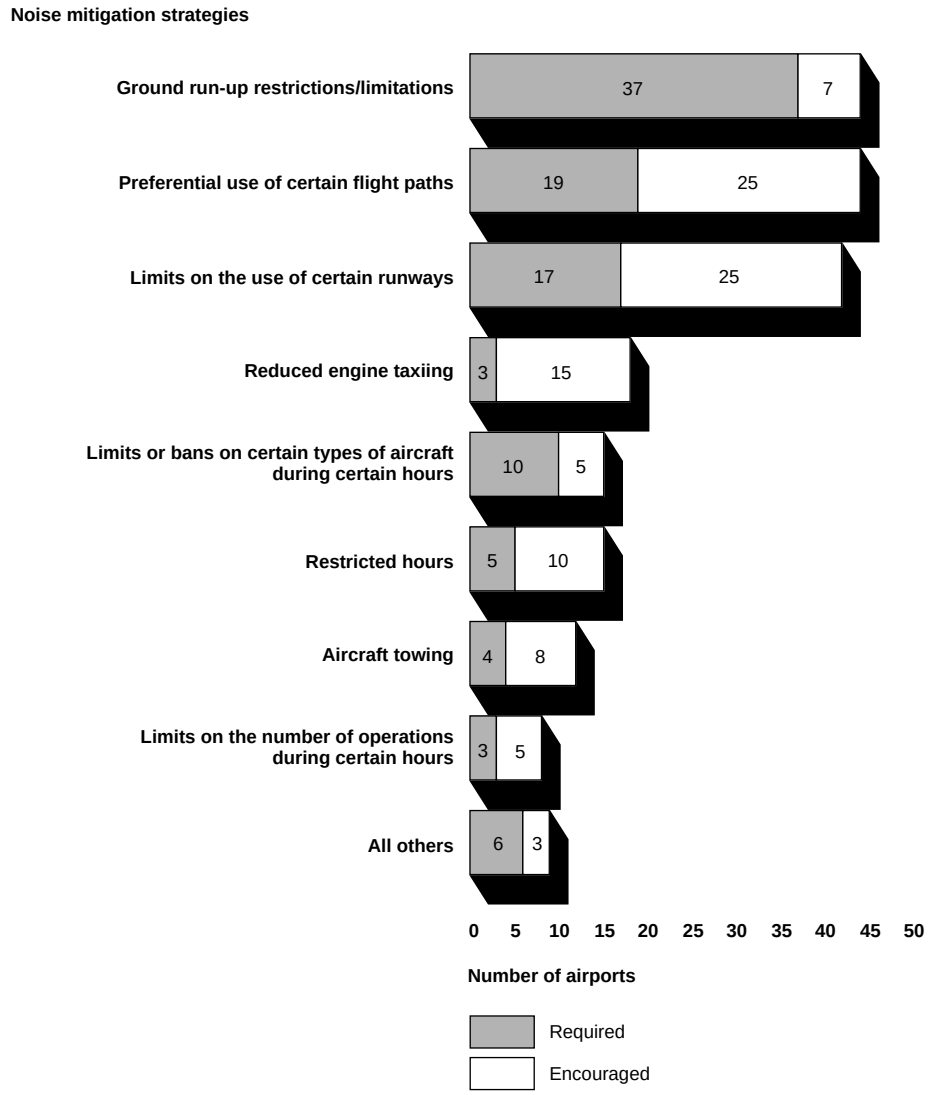
Source: GAO's survey of the nation's 50 busiest commercial service airports.

30. Please indicate the activities that are required or encouraged at your airport to reduce the impact of aircraft noise.

Officials from the majority of airports noted that their airports either require or encourage three noise mitigation strategies—ground run-up (engine testing) restrictions or limitations, preferential use of certain flight paths, and limits on the use of certain runways.[3] All other strategies are required or encouraged by fewer than half of the airports. (See fig. 28.) Officials from 48 of the airports require or encourage at least one of these noise mitigation strategies.

[3] The use of "restrictions" and "limitations" was based on the wording of GAO's survey of airports and is not intended to reflect the special meaning under FAA Aviation Regulation part 161.

Figure 28: Noise Mitigation Strategies Required or Encouraged by Airports



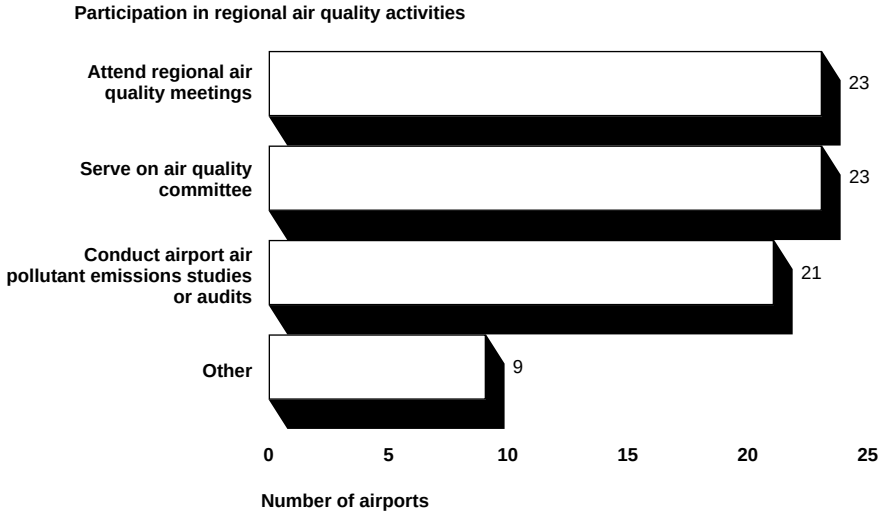
Source: GAO's survey of the nation's 50 busiest commercial service airports.

Air Quality Information

31. Please indicate your airport's current participation, if any, in these activities relating to regional air quality.

Almost half of the nation's 50 busiest airports are represented on a committee that addresses air quality issues, and an equal number of airports are represented at regional air quality meetings. Twenty-one airports also conducted airport-specific emissions studies or audits. (See fig. 29.)

Figure 29: Airports' Participation in Regional Air Quality Activities



Source: GAO's survey of the nation's 50 busiest commercial service airports.

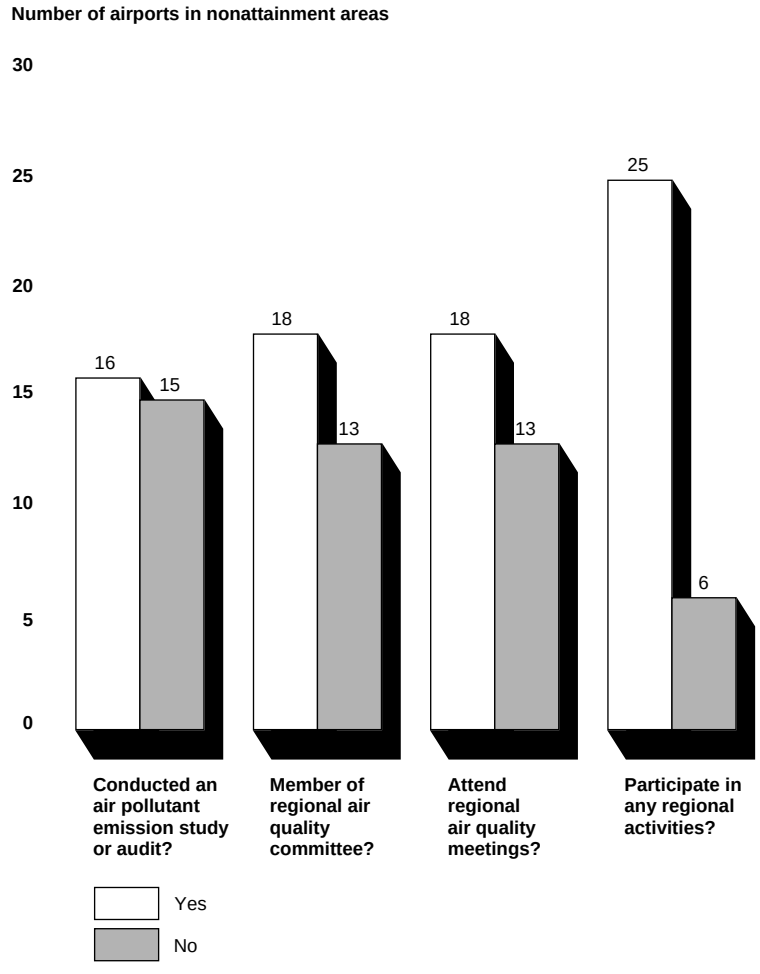
(Question 31 continued)

The level of participation in activities relating to regional air quality is high among airports located in nonattainment areas.[4] Officials from 25 of the 31 airports located in nonattainment areas participate in at least one activity related to regional air quality. (See fig. 30.) However, officials from 6 airports in nonattainment areas do not participate in regional air quality

[4]Nonattainment areas are geographic areas in which the levels of common air pollutants regulated by the Environmental Protection Agency are higher than the levels allowed by federal standards.

activities despite their area's poor air quality. In addition, officials from 13 airports in nonattainment areas are not members of a committee that addresses air quality and do not attend air quality meetings; and officials from 15 airports in nonattainment areas have not conducted an airport air emission study or audit. This level of nonparticipation is important because an EPA study found that aircraft emissions are a potentially significant, increasing source of pollution in 10 cities with local air quality problems.

Figure 30: Participation in Regional Air Quality Activities by Airports in Nonattainment Areas



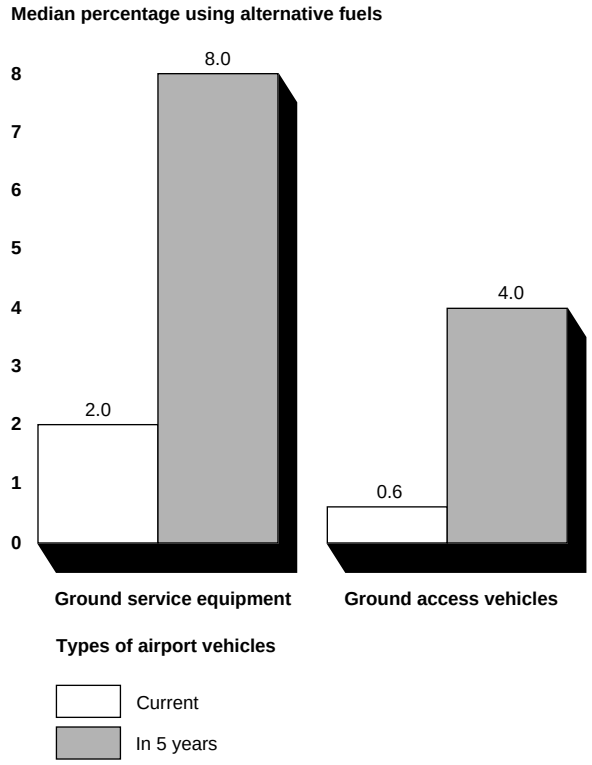
Source: GAO's survey of the nation's 50 busiest commercial service airports.

32. Of the ground service equipment operated by your airport and its tenants (e.g., maintenance vehicles, baggage carts), approximately what percentage (a) use alternative fuels now and (b) are expected to use alternative fuels within the next 5 years?

33. Of the ground access vehicles operated by your airport and its tenants (e.g., taxis, shuttles, public transit), approximately what percentage (a) use alternative fuels now and (b) are expected to use alternative fuels within the next 5 years?

The use of alternative fuels at airports is currently limited. Approximately 2 percent of the ground service vehicles and 0.6 percent of the ground access vehicles currently operating at the 50 busiest commercial service airports use alternative fuels. However, at least some alternative-fuel ground service vehicles are currently being used at 29 of the 50 airports. In addition, airport officials expect the share of alternative-fuel vehicles to quadruple in the next 5 years. (See fig. 31.)

Figure 31: Current and Projected Percentage of Alternative-Fuel Vehicles at the Airports



Notes: We estimated the percentages of vehicles by interpolating the median, an average statistic representing the point dividing the upper half of the responses from the lower half. In addition, four airports were not included in the figure. One airport indicated that it is unsure about the current or projected share of alternative-fuel ground service equipment and ground access vehicles. One airport indicated that a few airlines are voluntarily considering the use of alternative-fuel ground service equipment and that the airport uses electricity to power remote terminals and the parking garage. One airport indicated that 100 percent of its buses use alternative fuels. One airport indicated that a significant number of passengers use public transportation to get to the airport.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

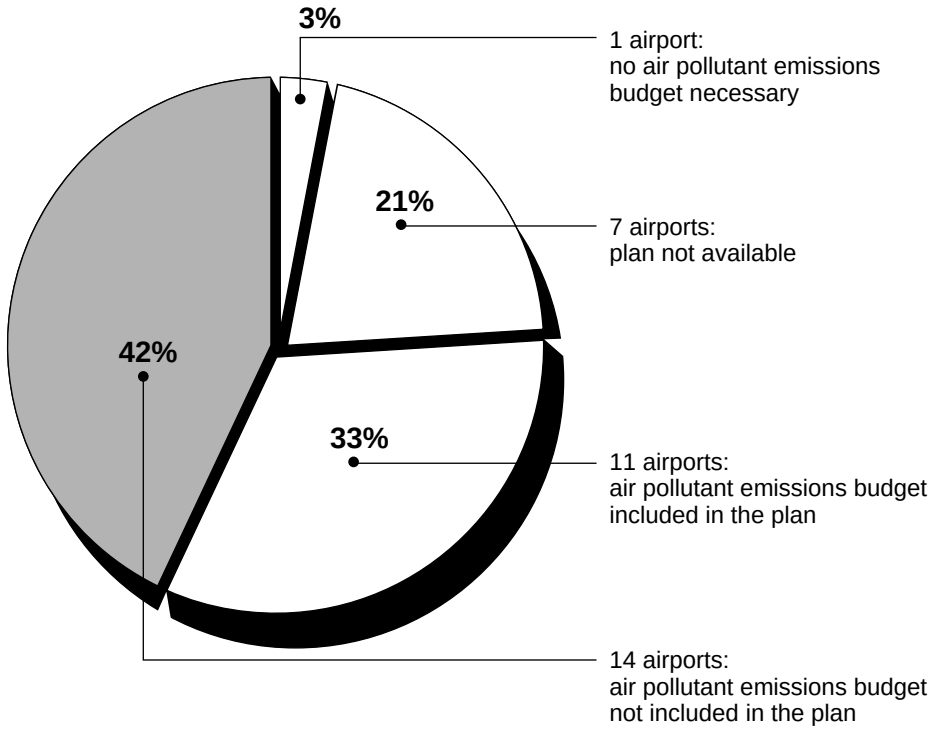
34. If your airport is located in a nonattainment area, does the state implementation plan include an air emissions budget for airports?

The Environmental Protection Agency recently reported that aircraft have the potential to contribute significantly to air pollution. However, as figure 32 shows, officials from 14 airports, or 42 percent of those in nonattainment areas,[5] reported that emissions from their airport are not included in their state's plan for improving regional air quality—known as the state implementation plan. In addition, officials from several airports who noted that their airport was included in their state implementation plan believed their emissions budget—or emissions limitation—was insufficient to accommodate their operations and growth.

[5]Nonattainment areas are geographic areas in which the levels of common air pollutants regulated by the Environmental Protection Agency are higher than the levels allowed by federal standards.

Figure 32: Status of Airports in Their State Implementation Plan's Emissions Budget

Figure includes the 33 airports that reported they were in nonattainment areas



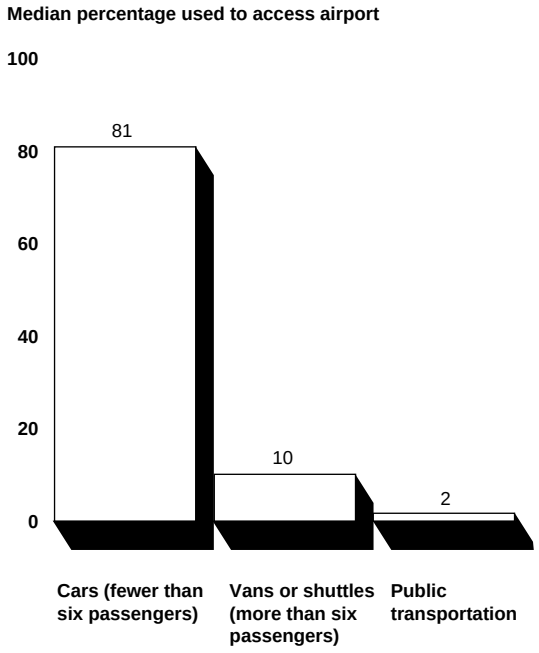
Source: GAO's survey of the nation's 50 busiest commercial service airports.

Notes: Percentages do not add to 100 due to rounding. These statistics represent the answers provided by airport officials. Data from the Environmental Protection Agency conflict with some of these data. According to the agency's data, officials from three airports that reported they were in attainment areas are located in nonattainment areas, and officials from three airports that reported they were in nonattainment areas are located in attainment areas.

35. What percentage of all passengers, tenants, and employees use the following modes of transportation to get to and from your airport?

The large majority of people still drive cars to the nation's 50 busiest commercial service airports. We estimate that 40 times more people drive or ride in cars to these airports than take public transportation. (See fig. 33.) This may help explain why cars, traffic, and parking represent three of the airport officials' four top air quality concerns (see question 8).

Figure 33: Passengers', Tenants', and Employees' Modes of Transportation to the Airport



Notes: We estimated the percentages of vehicles by interpolating the median, an average statistic representing the point dividing the upper half of the responses from the lower half. In addition, the percentages do not add to 100 because airports estimated the percentage using provided ranges and rounding. Furthermore, the following were not included in the calculations: Six airports wrote in additional modes of transportation. Two airports did not indicate what percentage of passengers, tenants, and employees use cars or vans/shuttles to get to and from the airport. Five airports were uncertain about the percentage of people that use vans/shuttles, and four airports were unsure about the percentage that use public transportation.

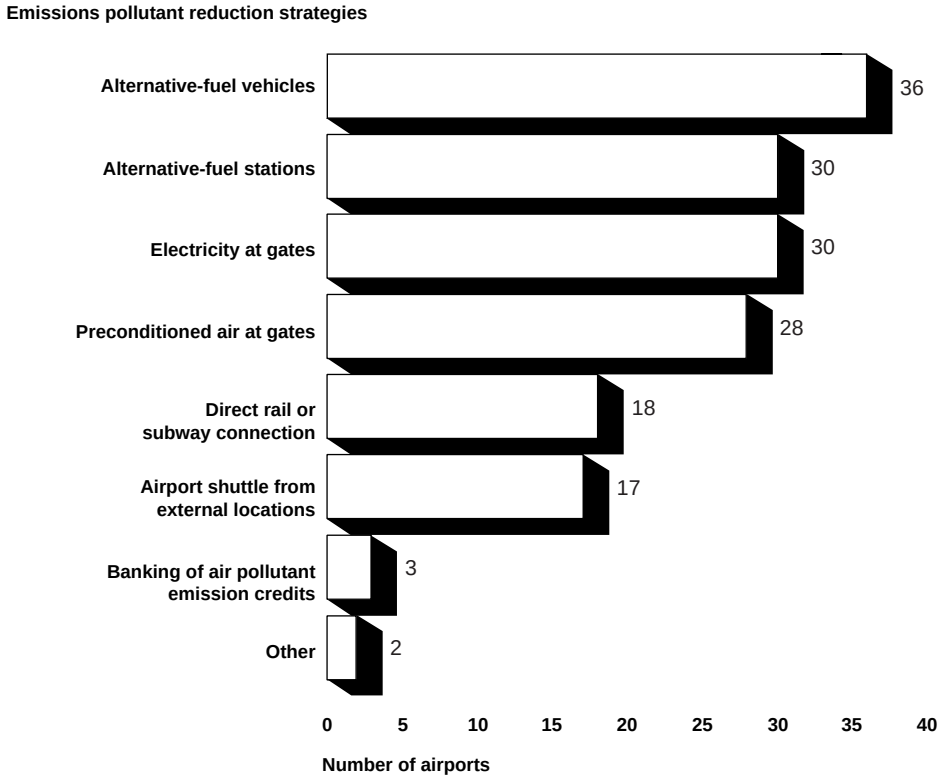
Source: GAO's survey of the nation's 50 busiest commercial service airports.

36. Has your airport contributed funding to any of the following strategies for improving air quality over the last 5 years?

The majority of the nation's 50 busiest commercial service airports fund a variety of air pollutant emission reduction strategies. Most of the airports provide funds for alternative-fuel vehicles and stations and provide electricity and preconditioned air at gates so airplanes can save fuel and reduce pollution by not running their own or stand-alone generators while

at the gate. (See fig. 34.) Forty-five of the 50 airports fund at least one of these air emission reduction strategies.

Figure 34: Air Pollutant Emissions Reduction Strategies Funded by Airports



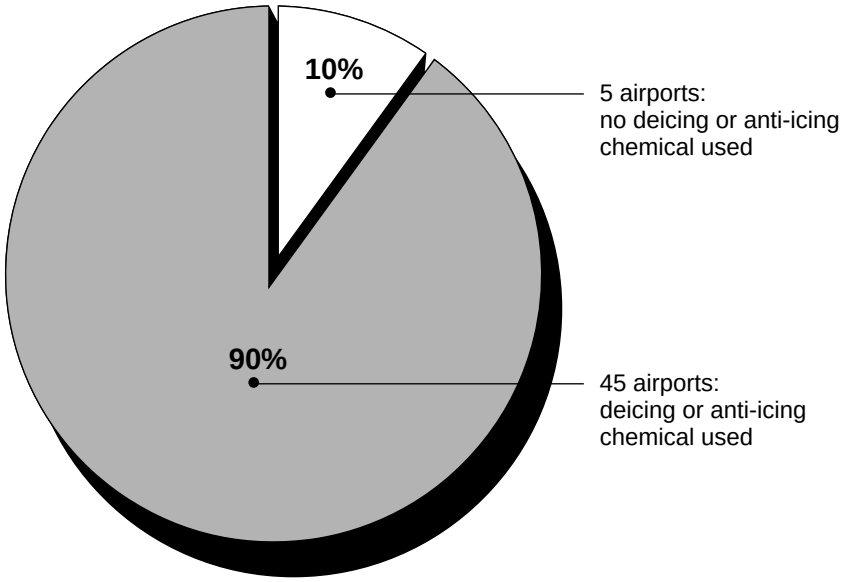
Source: GAO's survey of the nation's 50 busiest commercial service airports.

Water Quality Information

37. Are either deicing or anti–icing chemicals used at your airport?

Some deicing operations occur at most of the airports we surveyed, even those that are located in a warm climate. (See fig. 35.)

Figure 35: Use of Deicing or Anti-Icing Chemicals at Airports



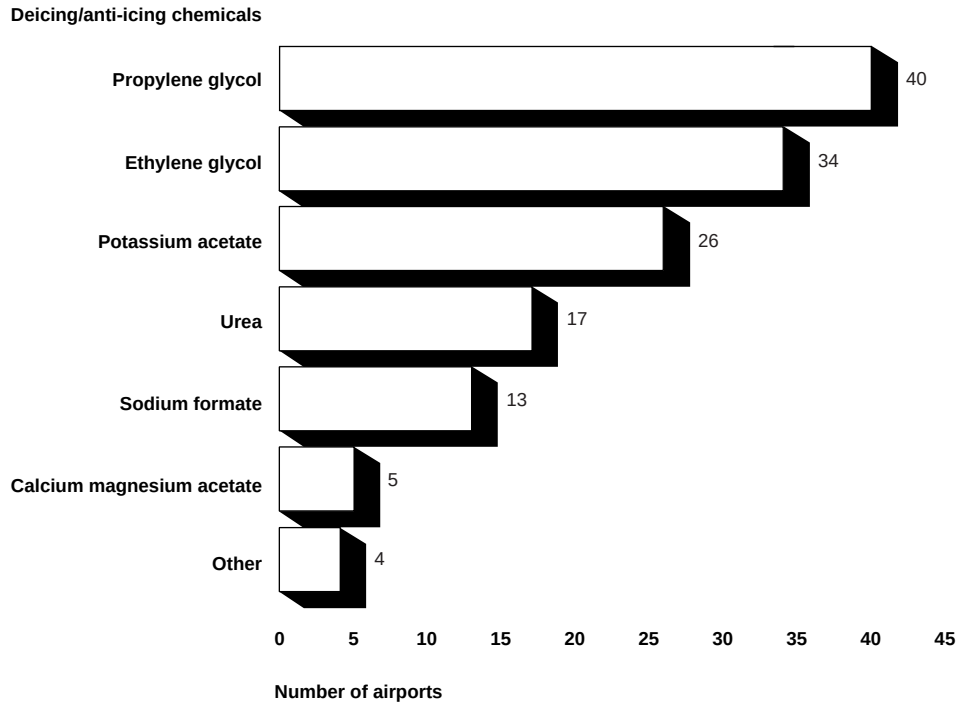
Source: GAO's survey of the nation's 50 busiest commercial service airports.

38. What types of aircraft and runway deicing/anti–icing fluids are normally used at your airport?

Propylene glycol is the most commonly used aircraft deicing or anti-icing chemical. It is used at 40 of the 45 airports where deicing or anti-icing chemicals are used. Ethylene glycol is the second most commonly used chemical. (See fig. 36.) Although glycol products can be also be used on runways, its use is declining, making potassium acetate the most commonly used runway deicing or anti-icing chemical, according to a study by the Environmental Protection Agency. Potassium acetate is used at 26 of the 45 airports that support deicing or anti-icing efforts. Typically, airlines or contractors are responsible for deicing and anti-icing for aircraft, and airports are responsible the same activities for the airfield pavement.

However, overall chemical use at airports varies. Officials from 45 airports reported 19 different combinations of chemical use.

Figure 36: Deicing and Anti-Icing Chemicals Used at Airports



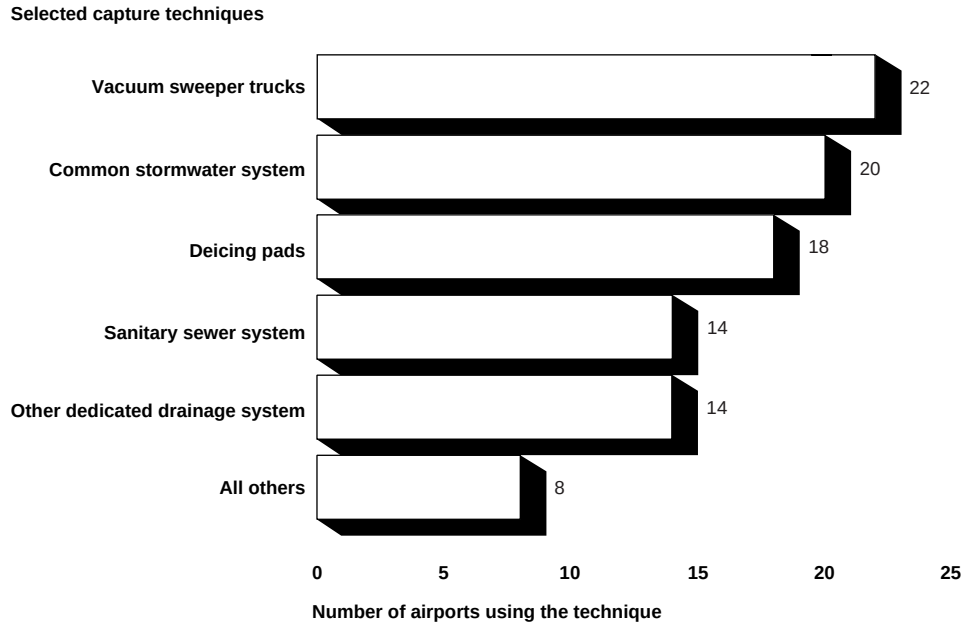
Note: Statistics include the 45 airports at which deicing or anti-icing chemicals are used.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

39. How does your airport currently handle runoff from deicing or anti–icing operations?

Vacuum sweeper trucks are the most common deicing or anti–icing chemical capture technique used by the nation's busiest commercial service airports. These trucks are used at 22 of the 45 airports where such chemicals are used. (See fig. 37.) There does not appear to be a preferred mix of capture strategies. The 45 airports with deicing or anti–icing operations used 25 different combinations of chemical capture strategies.

Figure 37: Airports' Use of Selected Deicing and Anti-Icing Chemical Capture Techniques



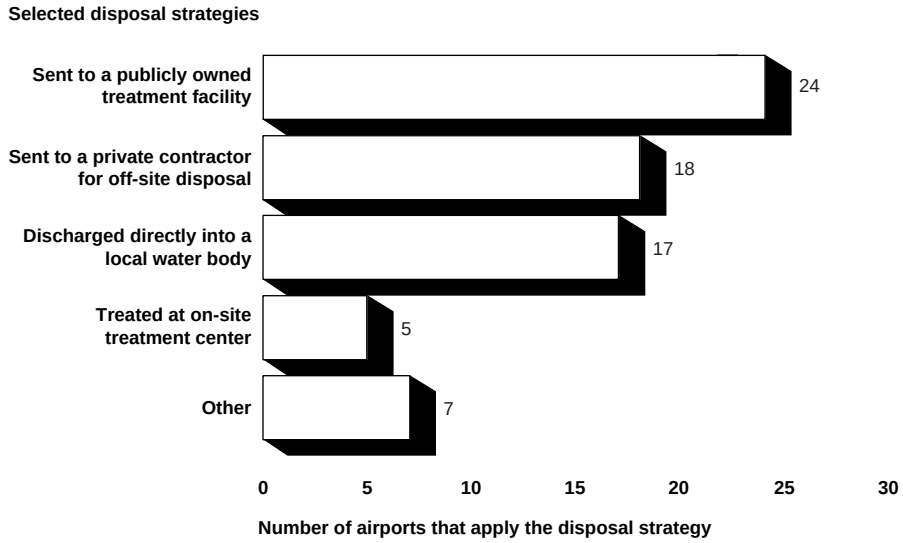
Note: Statistics include the 45 airports at which deicing or anti-icing chemicals are used.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

40. Currently, how does your airport dispose of deicing or anti–icing fluids?

Over half of the 45 airports where deicing or anti–icing fluids are used send at least some of the spent fluids to a publicly owned treatment facility. (See fig. 38.) The airports reported using 18 different combinations of approaches to dispose of deicing or anti–icing fluid.

Figure 38: Airports' use of Selected Deicing or Anti–Icing Fluid Disposal Strategies



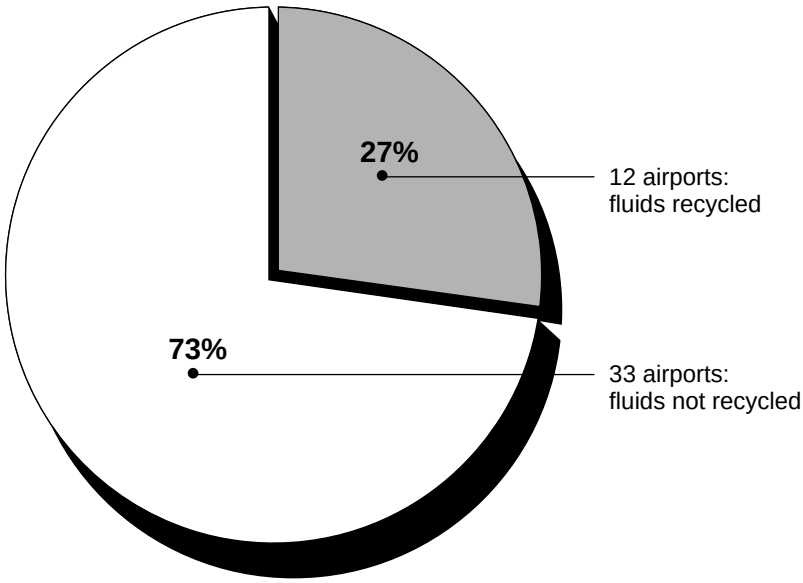
Note: Statistics include the 45 airports at which deicing or anti-icing chemicals are used.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

41. Does your airport recycle any of its reclaimed deicing or anti–icing fluids?

Figure 39 shows that 12 of the 45 airports with deicing or anti-icing operations recycle at least some of the reclaimed chemicals.

Figure 39: Recycling of Deicing/Anti-Icing Fluids



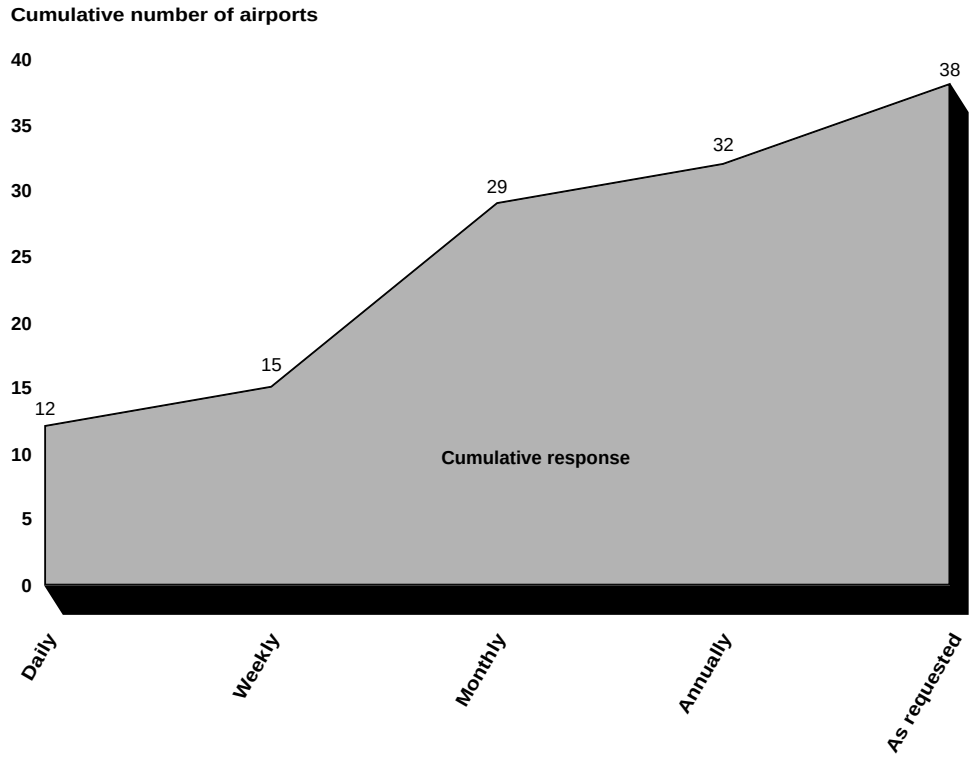
Note: Statistics include the 45 airports at which deicing or anti-icing chemicals are used.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

42. During the deicing season, how often do airlines report their use of deicing/anti–icing chemicals to the airport authority?

It is common for airlines to report their use of deicing/anti–icing fluids to airports. As figure 40 indicates, 29 airports receive reports on chemical usage at least once a month, and 38 receive some kind of reporting from airlines.

Figure 40: Frequency of Airlines' Reporting of Deicing or Anti-Icing Chemical Use During Deicing Season



Notes: Statistics include the 45 airports at which deicing or anti-icing chemicals are used. In addition, two airports did not answer this question, one airport indicated that it has no deicing season, and one airport indicated that deicing occurs infrequently.

Source: GAO's survey of the nation's 50 busiest commercial service airports.

43. Please add any comments you wish on the issues in this survey.

Officials from 11 airports provided additional written comments on specific environmental issues that concern them. As we requested, these comments focused, in particular, on the airports' difficulties in balancing growth and environmental impacts. A number of airport officials also provided details about the environmental issues that threaten to impede their airports' development. For example, officials from two airports cited their lack of control over environmental impacts, noting that FAA controls some aspects of airline activities yet the resulting impacts on noise and air quality pose a concern for airports. Other issues raised included (1) difficulties in managing wetlands and stormwater processes because of overlapping

state, county, and federal permitting requirements and (2) a lack of accountability and communication within FAA on environmental impact statements that impedes airport expansion projects.

GAO's Survey of the Nation's 50 Busiest Commercial Service Airports

United States General Accounting Office

GAO

Survey on Airports and the Environment

Introduction

The U.S. General Accounting Office (GAO) is an agency of the legislative branch that reviews federal programs for the U.S. Congress. We are currently surveying the nation's 50 busiest airports as part of a congressional study that will broadly review efforts by airports to balance their operations and future growth with environmental concerns—mainly noise, air, and water pollution.

This survey is divided into two parts—executive opinions and airport–specific information. Your answers are vital to the accuracy of our review. Without your response, we will not be able to accurately report to the Congress which environmental issues are significantly affecting operations at the nation's busiest airports.

Responding to some of the questions may require more than one person's input. We anticipate that it will take about 30 minutes for a knowledgeable person or persons to complete the questionnaire.

If you have any questions about this survey, please call Beverly Dulaney of our Washington, D.C., office at (202) 512–6512.

Thank you for contributing to our study.

Please identify someone at your airport that we can contact about the answers to this survey.

Name: _____

Title: _____

Phone: _____

E–mail: _____

Airport: _____

Part I: Executive Opinions

1. Compared with 1989, how difficult is it now for your airport to balance environmental concerns with its operations? *(Check one.)*

   1. [ ] Much more difficult
   2. [ ] Somewhat more difficult
   3. [ ] Neutral/Unchanged
   4. [ ] Somewhat less difficult
   5. [ ] Much less difficult
   6. [ ] Does not apply
   7. [ ] Other *(Please describe.)*

2. Given your current infrastructure—without considering future expansion projects—how long will it take for your airport to reach capacity? *(Check one.)*

   1. [ ] Already operating at or above capacity
   2. [ ] Less than 1 year
   3. [ ] 1–2 years
   4. [ ] 3–4 years
   5. [ ] 5–6 years
   6. [ ] 7–9 years
   7. [ ] 10 or more years
   8. [ ] Other *(Please describe.)*

1

3. To what extent do the following environmental issues pose concerns when making decisions about your airport's **current operations**? *(Check one for each row.)*

	Major concern (1)	Moderate concern (2)	Minor concern (3)	Not a concern/ Does not apply (4)	Uncertain (5)
a. Noise issues					
b. Air quality issues					
c. Runoff from deicing/anti–icing					
d. Other water quality issues					
e. Compatibility of nearby land use with airport activity					
f. Wetlands					
g. Environmental justice					
h. Historic preservation					
i. Superfund site (federal or state)					
j. Endangered species/habitat					
k. Other *(Please describe.)*					

4. Of the issues listed in the table above, which two concern your airport most when making decisions about your airport's **current** operations? (*Write the letters of the items in the boxes below. Use "X" if you think no items are applicable.*)

1st choice	2nd choice

5. Of the issues listed in the table above, which three concern your airport most when making decisions about your airport's **future** operations? (*Write the letters of the items in the boxes below. Use "X" if you think no items are applicable.*)

1st choice	2nd choice	3rd choice

Noise Issues

6. How much do the following issues related to noise concern your airport? *(Check one for each row.)*

	Major concern (1)	Moderate concern (2)	Minor concern (3)	Not a concern/ Does not apply (4)	Uncertain (5)
a. Residential populations near the airport are increasing.					
b. We expect the 65 DNL noise contour to expand as operations increase.					
c. We have only limited control over local zoning or land use.					
d. The number of noise complaints from nearby communities is increasing.					
e. The number of small commuter jets is increasing.					
f. We lack control over air traffic operations (e.g., flight patterns, runway use configurations).					
g. The noise level for Stage 2 engines with hushkits (or other modifications) is too high.					
h. Other *(Please describe.)*					

7. Of the items listed in the table above, which two concern your airport most? *(Write the letters of the items in the boxes below. Use "X" if you think no items are applicable.)*

1st choice	2nd choice

Air Quality

8. How much do the following issues related to air quality concern your airport? *(Check one for each row.)*

	Major concern (1)	Moderate concern (2)	Minor concern (3)	Not a concern/ Does not apply (4)	Uncertain (5)
a. Automobile trips to and from the airport remain high.					
b. Road congestion limits our airport's ability to grow.					
c. Demand for short–term parking is growing.					
d. Demand for long–term parking is growing.					
e. Complaints from neighboring communities are increasing.					
f. We are uncertain about what we will have to do to meet the conformity requirements of the Clean Air Act.					
g. It will be difficult for us to offset the air emissions required in the State Implementation Plan (SIP).					
h. We lack resources to invest in public transit connections.					
i. We lack resources for alternative fuel vehicles for our airport.					
j. We lack political support for emission reduction projects.					
k. We do not receive credits for voluntary air emission reductions.					
l. Other *(Please describe.)*					

9. Of the items listed in the table above, which two concern your airport most? (*Write the letters of the items in the boxes below. Use "X" if you think no items are applicable.*)

1st choice	2nd choice

4

Water Quality

10. How much do the following issues related to water quality concern your airport? *(Check one for each row.)*

	Major concern (1)	Moderate concern (2)	Minor concern (3)	Not a concern/ Does not apply (4)	Uncertain (5)
a. We lack control/oversight over the airlines' use of deicing and anti–icing materials.					
b. Urea is used at this airport.					
c. Glycol–based products are used at this airport.					
d. We must control gas spills at this airport.					
e. We must stay within the total maximum daily load (TMDL) requirements for surrounding bodies of water.					
f. Citizens worry about run-off disposal.					
g. Other *(Please describe.)*					

11. Of the items listed in the table above, which two **most** affect your airport's operations? (*Write the letters of the items in the boxes below. Use "X" if you think no items are applicable.*)

1st choice	2nd choice

National Environmental Protection Act (NEPA) Process

12. Considering both completed and ongoing capacity projects, what is your general level of satisfaction with each of the following NEPA environmental review processes? *(Check one for each row.)*

	Very satisfied (1)	Somewhat satisfied (2)	Uncertain/ Neutral (3)	Somewhat dissatisfied (4)	Very dissatisfied (5)	No experience (6)
a. Categorical Exclusion (CE)						
b. Finding of No Significant Impact (FONSI)						
c. Environmental Impact Statement (EIS)						
d. Record of Decision (ROD)						

13. If you would like to provide examples for your answers to the previous question, please use the space below.

6

Assistance From the Federal Aviation Administration (FAA)

14. How effective is FAA when helping your airport with environmental activities? *(Check one for each row.)*

	Very effective (1)	Moderately effective (2)	Equally effective and ineffective (3)	Moderately ineffective (4)	Very ineffective (5)	Uncertain/ Does not apply (6)
a. Processing your airport's paperwork (EIS, Part 150, etc.)						
b. Answering/addressing your airport's questions and concerns						
c. Providing standard rules and guidance on issues that affect your airport						
d. Coordinating among FAA offices when assisting your airport						
e. Coordinating FAA activities with other federal agencies						
f. Coordinating FAA activities with state environmental offices						
g. Assuring consistent treatment from FAA across every region						
h. Other *(Please describe.)*						

15. If any of your capacity projects were **delayed over the last 5 years,** how much did the following factors contribute to the delay? *(Check one for each row.)*

    If no capacity projects were delayed, please check this box and go to the next page. [ ]

	Major factor (1)	Moderate factor (2)	Minor factor (3)	Not a factor/ Does not apply (4)	Uncertain (5)
a. Environmental mediation with local jurisdictions					
b. Environmental mitigation					
c. Environmental lawsuit					
d. Environmental review (NEPA)					
e. Contracting issues					
f. Financing issues					
g. Land acquisition					
h. Other *(Please describe.)*					

16. Of the items listed in the table above, which two most delayed your airport's capacity projects? (*Write the letters of the items in the boxes below. Use "X" if you think no items are applicable.*)

1st choice	2nd choice

Part II: Information About Your Airport

17. Is this airport currently located within a metropolitan statistical area (MSA)? *(Check one.)*

    1. [ ] Yes
    2. [ ] No
    3. [ ] Other *(Please describe.)*

18. In the last 10 years, how many, if any, of your capacity expansion projects (e.g., runway, taxiway or terminal expansions) required a Categorical Exclusion (CE), Environmental Assessment (EA), or Environmental Impact Statement (EIS)? *(Check one.)*

    1. [ ] All
    2. [ ] Almost all
    3. [ ] More than half
    4. [ ] About half
    5. [ ] Less than half
    6. [ ] None
    7. [ ] Did not have any expansion projects in the last 10 years
    8. [ ] Other *(Please describe.)*

19. Over the last 10 years, were any capacity expansion projects canceled or indefinitely postponed as a result of environmental issues? *(Check one.)*

    1. [ ] Yes
    2. [ ] No
    3. [ ] Other *(Please describe.)*

20. How many of your airport's capacity expansion projects were granted a Categorical Exclusion (CE) in the last 10 years? *(Check one.)*

    1. [ ] None
    2. [ ] 1–10
    3. [ ] 11–25
    4. [ ] 26–75
    5. [ ] Over 75
    6. [ ] Other *(Please describe.)*

21. How many Environmental Assessments (EA) in the last 10 years resulted in a Finding of No Significant Impact (FONSI)? *(Check one.)*

    1. [ ] None
    2. [ ] 1–5
    3. [ ] 6–10
    4. [ ] 11–25
    5. [ ] Over 25
    6. [ ] Other *(Please describe.)*

22. How many Environmental Impact Statements (EIS) did your airport complete in the last 10 years? *(Check one.)*

    1. [ ] None
    2. [ ] 1–2
    3. [ ] 3–5
    4. [ ] 6–10
    5. [ ] Over 10
    6. [ ] Other *(Please describe.)*

Airport Operations

23. What is your airport's projected growth for (a) operations and (b) passengers over the next 10 years? *(Check one for each column.)*

	(a) Operations *(Check one.)*	(b) Passengers *(Check one.)*
1. More than 50% growth		
2. 26–50% growth		
3. 11–25% growth		
4. 5–10% growth		
5. Less than 5% growth		
6. No projected growth		
7. Decrease 5% or more		
8. Uncertain		

24. How many of the capacity projects listed below does your airport plan to complete between now and 2010? *(Check one for each row.)*

	None (1)	One project (2)	Two projects (3)	Three projects (4)	4 or more projects (5)	Uncertain (6)
a. Runway (new or extended)						
b. Taxiway (new or extended)						
c. Terminal (new or expanded)						
d. Gate (new or expanded)						
e. Ground access (new or expanded)						
f. Other *(Please describe.)*						

10

Noise Information

25. What is the approximate population within the 65–dB DNL (or Ldn) contour around your airport? *(Check one.)*

    1. [ ] Less than 1,000
    2. [ ] 1,000–25,000
    3. [ ] 25,001–50,000
    4. [ ] 50,001–75,000
    5. [ ] 75,001–100,000
    6. [ ] Over 100,000
    7. [ ] Not assessed
    8. [ ] Other *(Please describe.)*

26. Please describe the change, if any, over the past 5 years in the population level within your airport's 65–dB DNL contour. *(Check one.)*

    1. [ ] Greatly increasing
    2. [ ] Moderately increasing
    3. [ ] Remaining somewhat stable
    4. [ ] Moderately decreasing
    5. [ ] Greatly decreasing
    6. [ ] Other *(Please describe.)*

27. What portion of noise complaints received over the last 12 months came from areas outside the 65–dB DNL level? *(Check one.)*

    1. [ ] All/almost all
    2. [ ] More than half
    3. [ ] About half
    4. [ ] Less than half
    5. [ ] Few/none
    6. [ ] Other *(Please describe.)*

28. Approximately how often does your airport monitor noise levels? *(Check one.)*

    1. [ ] Daily
    2. [ ] Weekly
    3. [ ] Monthly
    4. [ ] Annually
    5. [ ] Never
    6. [ ] Other *(Please describe.)*

29. As you know, aircraft over 75,000 pounds are required to be Stage 3 compliant by December 31, 1999, but aircraft below 75,000 pounds are not. What portion of the **jets** that currently take off and land at your airport are below 75,000 pounds? *(Check one.)*

    1. [ ] None
    2. [ ] Very few
    3. [ ] Less than half
    4. [ ] About half
    5. [ ] Over half
    6. [ ] All or almost all
    7. [ ] Other *(Please describe.)*

30. Please indicate whether the following activities are required or encouraged at your airport to reduce the impact of **aircraft noise**. *(Check one for each row.)*

	Required (1)	Encouraged (2)	Not used (3)	Uncertain (4)
a. Restricted hours for airport operations (take–offs or landings)				
b. Limits on the *number* of aircraft during certain hours of the airport's operation				
c. Limits/bans on the *type* of aircraft during certain hours of the airport's operation				
d. Limits on the use of certain runway(s)				
e. Preferential use of certain flight paths				
f. Ground run–up restrictions/limitations				
g. Aircraft towing				
h. Reduced engine taxiing				
i. Other *(Please describe.)*				

Air Quality

31. Please indicate your airport's current participation, if any, in these activities relating to regional air quality. *(Check all that apply.)*

    1. [ ] *Do not participate in activities related to regional air quality*
    2. [ ] Member of a committee that addresses air quality issues
    3. [ ] Attend regional air quality meetings
    4. [ ] Conduct airport air emission studies/audits
    5. [ ] Other *(Please describe.)*

32. Of the **ground service equipment** operated by your airport and its tenants (e.g., maintenance vehicles, baggage carts), approximately what percentage (a) use alternative fuels now and (b) are expected to use alternative fuels within the next 5 years? *(Check one for each column.)*

	(a) Use alternative fuels now (*Check one.*)	(b) Will use within 5 years (*Check one.*)
1. None		
2. 1 to 5 percent		
3. 6 to 10 percent		
4. 11 to 20 percent		
5. 21 to 30 percent		
6. Over 30 percent		
7. Other *(Please describe.)*		

33. Of the **ground access vehicles** (e.g., taxis, shuttles, public transit), approximately what percentage (a) use alternative fuels now and (b) are expected to use alternative fuels within the next 5 years? *(Check one for each column.)*

	(a) Use alternative fuels now (*Check one.*)	(b) Will use within 5 years (*Check one.*)
1. None		
2. Less than 1 percent		
3. 1 to 5 percent		
4. 6 to 10 percent		
5. 11 to 20 percent		
6. 21 to 30 percent		
7. Over 30 percent		
8. Other *(Please describe.)*		

34. ***If your airport is located in a non–attainment area,*** does the State Implementation Plan include an air emissions budget for airports? *(Check one.)*

    1. [ ] *Our airport is **not** located in a non–attainment area*
    2. [ ] Yes
    3. [ ] No
    4. [ ] Plan not available yet
    5. [ ] Other *(Please describe.)*

35. Considering all passengers, tenants, and employees, what percentage of these individuals use the following modes of transportation to get to and from your airport? *(Check one for each row.)*

	Less than 1% (1)	1–5% (2)	6–10% (3)	11–30% (4)	31–75% (5)	Over 75% (6)	Uncertain (7)
a. Private cars and taxis (5 or fewer passengers)							
b. Commercial vans and shuttles (6 or more passengers)							
c. Public transit (bus, train, subway, light rail)							
d. Other *(Please describe.)*							

36. Has your airport contributed funding to any of the following strategies for air quality improvement over the last five years? *(Check one for each row.)*

	Yes (1)	No (2)	No, but plan to (3)	Uncertain (4)
a. Alternative fuel vehicles				
b. Alternative fuel stations				
c. Airport shuttle from external locations				
d. Preconditioned air at gate				
e. Gate electrification				
f. Direct rail or subway connection				
g. Air emission credits banked for future reinvestment				
h. Other *(Please describe.)*				

Water Quality

37. Are either deicing or anti–icing chemicals used at your airport? *(Check one.)*

    1. [ ] Yes → Go to next question.
    2. [ ] No → Skip to question 43.

38. What types of aircraft and runway deicing/anti–icing fluids are **normally** used at your airport? *(Check all that apply.)*

    1. [ ] Ethylene glycol
    2. [ ] Propylene glycol
    3. [ ] Urea
    4. [ ] Calcium magnesium acetate
    5. [ ] Sodium formate
    6. [ ] Potassium acetate
    7. [ ] Other *(Please describe.)*

39. How does your airport currently handle runoff from deicing or anti–icing operations? *(Check all that apply.)*

    1. [ ] Vacuum sweeper trucks
    2. [ ] Deicing pads
    3. [ ] Drainage system (other than deicing pads) dedicated to deicing chemicals
    4. [ ] Common stormwater system
    5. [ ] Sanitary sewer system
    6. [ ] Other *(Please describe.)*

40. Currently, how does your airport **dispose** of deicing or anti–icing fluids? *(Check all that apply.)*

    1. [ ] Discharged directly into a local water body
    2. [ ] Treated at an on–site treatment center
    3. [ ] Distributed to a publicly owned treatment works facility
    4. [ ] Distributed to a private contractor for off–site disposal
    5. [ ] Other *(Please describe.)*

41. Does your airport recycle any of its reclaimed deicing or anti–icing fluids? *(Check one.)*

    1. [ ] Yes
    2. [ ] No
    3. [ ] Other *(Please describe.)*

42. During the deicing season, how often do airlines report their use of deicing/anti–icing chemicals to the airport authority? *(Check one.)*

    1. [ ] Daily
    2. [ ] Weekly
    3. [ ] Monthly
    4. [ ] Quarterly
    5. [ ] Annually
    6. [ ] Airlines do not report use
    7. [ ] Other *(Please describe.)*

43. Please add any comments you wish on the issues in this survey.

Thank you for participating in our survey.

16

List of the 50 Busiest Commercial Service Airports, Based on 1998 Data From FAA

Officials from each of the following airports responded to the survey in appendix III.

- Anchorage International
- Atlanta International
- Austin/Bergstrom International
- Baltimore-Washington International
- Boston/Logan International
- Charlotte/Douglas International
- Chicago/Midway
- Chicago/O'Hare International
- Cleveland Hopkins International
- Covington/Cincinnati International
- Dallas Love Field
- Dallas/Fort Worth International
- Denver International
- Detroit Metro Wayne County
- Fort Lauderdale/Hollywood
- Honolulu International
- Houston Hobby
- Houston/George Bush Intercontinental
- Indianapolis International
- John F. Kennedy International
- Kansas City International
- La Guardia
- Lambert/St. Louis International
- Las Vegas/McCarran International
- Los Angeles International
- Memphis International
- Metropolitan Oakland International
- Miami International
- Milwaukee/General Mitchell International
- Minneapolis/St. Paul International
- Nashville International
- New Orleans International/Moisant
- Newark International
- Ontario International
- Orlando International
- Philadelphia International
- Phoenix Sky Harbor International
- Pittsburgh International
- Port Columbus International

- Portland International
- Raleigh-Durham International
- Reno/Tahoe International
- Ronald Reagan Washington National
- Salt Lake City International
- San Diego International/Lindbergh
- San Francisco International
- San Jose International
- Seattle Tacoma International
- Tampa International
- Washington Dulles International

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