



MEMORANDUM

March 13, 2019

To: Honorable Ed Case
Attention: Anthony Ching

From: CRS

Subject: Air Tour Operations and Helicopter Noise in Hawaii

This memorandum was prepared in response to your request regarding commercial air tour operations in the state of Hawaii.¹ Specifically, you requested a review and summary of current federal laws and regulations governing commercial air tours; the federal, state, and local roles in regulating these operations; specific laws and regulations pertaining to air tour operations in Hawaii; recent legal and regulatory action pertaining to air tour operations; available technologies to mitigate noise impacts of air tour operations; and legislative options to address concerns about perceived noise and disruption from these operations. You indicated that complaints about air tours, while longstanding throughout Hawaii, appear to have increased substantially in scope and extent in recent years. You noted that air tours routinely fly over residential communities, parks, recreational areas, cemeteries, shorelines, and other noise-sensitive locations. You noted that increased operations and growing numbers of complaints have prompted state legislative action urging action to address concerns over air tour operations in Hawaii. In a letter dated January 9, 2019, you requested that CRS provide responses to 21 specific questions to explore these issues in depth. These questions are summarized and answered below generally in the order in which they were asked.

Question Responses

(1) What federal laws and regulations currently govern the operation of tour helicopters and small aircraft, and (2) what federal laws and regulations currently govern the following characteristics of such operations: frequency of operation; hours of operation; area of operation; altitude; and noise?

14 C.F.R. §91.119 prescribes minimum safe altitudes for all aircraft. For fixed-wing aircraft, the Federal Aviation Administration (FAA) requires aircraft to maintain an altitude that allows for an emergency landing without undue hazard to persons or property in the event of an engine failure. It further specifies that fixed-wing aircraft are to maintain a distance of at least 500 feet from any person, structure, vehicle,

¹ Information in this memorandum may be used in other products for general distribution to Congress. Your confidentiality as a requester will be preserved in any case.

or vessel when operating over sparsely populated areas. Otherwise, fixed-wing aircraft must maintain an altitude of 500 feet above ground level (AGL), except over congested areas of a city, town, or settlement, or over an open-air assembly, in which case the aircraft must stay 1,000 feet above the highest obstacle within a radius of 2,000 feet. Helicopters may operate below these minimums, but must comply with any routes or altitudes specifically prescribed for helicopters by FAA. For example, FAA prescribes minimum flight altitudes in the vicinity of Grand Canyon National Park, AZ, that apply to both helicopter and fixed-wing aircraft (see 14 C.F.R. §93.307) as well as specific flight-free zones and flight corridors (see 14 C.F.R. §93.305). Similarly, FAA imposes a minimum flight altitude and specific procedures for flights in the vicinity of Niagara Falls, NY. Additionally, 14 C.F.R. Subpart H prescribes a mandatory route along the north shore of Long Island, NY, that is specific to helicopters.

Air tours may be conducted under 14 C.F.R. Part 91 (General Operating and Flight Rules) or 14 C.F.R. Part 135 (Commuter and On Demand Operations). Part 91 operators must engage strictly in nonstop flights that begin and end at the same airport and remain within a 25-statute-mile radius of that airport. Part 135 operators can exceed these limitations and may fly point-to-point between airports (see 14 C.F.R. §91.147). In general, Part 91 operators must receive a specific letter of authorization from FAA to conduct such operations, which includes requirements for drug and alcohol testing of pilots and implementation of an antidrug and alcohol misuse prevention program. Part 135 air tour operators would similarly be required to implement drug and alcohol testing and misuse prevention programs, and are subject to additional safety regulations regarding pilot qualifications and training, flight and duty times, weather reporting, aircraft equipment, and flight operations and aircraft maintenance procedures and records. There are no general restrictions regarding flight frequency, duration, or time of day for either Part 91 or Part 135 operations.

Part 135 imposes a number of safety requirements on commercial air tour operators nationally, including requirements for passenger briefings, and the requirement to complete and adhere to a helicopter performance plan for each air tour conducted using a helicopter. Additionally, for overwater flights, each occupant must have a life preserver, and single-engine helicopters or multiengine helicopters unable to climb at least 50 feet per minute after a failure of the critical engine must be equipped with either floats or an inflatable flotation system.

Appendix A to 14 C.F.R. Part 136 imposes special operating rules on air tour operators in the state of Hawaii. It requires a number of safety-related actions, including a requirement for floats and occupant flotation gear for offshore flight, passenger briefings, performance plans for each flight, and operating limitations to ensure safe emergency landings in the event of engine power loss. Additionally, the regulation imposes minimum altitude restrictions of 1,500 feet above the surface and 1,500 feet away from any person or property. This requirement was first implemented in the mid-1990s in response to a series of air tour helicopter accidents in the state of Hawaii and was previously codified at Special Federal Aviation Regulation (SFAR) 71 to 14 C.F.R. Part 91. In 2007, SFAR 71 was removed and the language incorporated as Appendix A to 14 C.F.R. Part 136.

While this regulation generally prohibits air tour flights in Hawaii from operating below 1,500 feet, operators of helicopters or airplanes conducting commercial air tours can receive authorization from FAA to deviate from this requirement. Air tour operators conducting flights below 1,500 feet in the state of Hawaii under Part 91 are required to have FAA-approved deviation authority as outlined in Letter of Authorization (LOA) B548. Operators conducting air tours under Part 135 in Hawaii are required to have approval under FAA Operating Specification (OPSPEC) B048. These approvals are coordinated through the Honolulu Flight Standards District Office (FSDO).

LOA B548 and OPSEC B048 provide the framework for granting deviation authority from SFAR 71 (now 14 C.F.R. Part 136 Appendix A)² to fly certain approved routes and in proximity to certain approved sites at altitudes below 1,500 feet. To obtain deviation authority, each air tour operator must implement an FAA-approved SFAR 71 procedures document that details the operator's specific sites, transition segments, overwater segments, and entry and egress plans for sites visited, as well as suitable emergency landing sites along planned routes. Air tour pilots operating under an operator's deviation authority must conduct or participate in a least one formal air tour safety meeting every 12 calendar months. FAA's Honolulu Flight Standards District Office (FSDO) must be given notice of each such meeting 10 days in advance and be given an opportunity to participate. Additionally, each operator must have an FAA-approved SFAR 71 training plan to provide initial training for pilots, including flight instruction by an authorized company instructor over all sites where the operator is authorized to conduct helicopter flights. Each pilot-in-command will complete a line-check by an FAA-approved company check pilot or an FAA inspector to determine that she or he satisfactorily performs the flight duties and responsibilities, including acceptable performance of a representative SFAR 71 transition segment and flight over an approved site. An overview of federal regulations governing commercial air tour operations in the state of Hawaii is provided in **Table 1**.

Table 1. Federal Regulations Governing Commercial Air Tour Operations in Hawaii

Operation	14 C.F.R. Part 91	14 C.F.R. Part 135
Within 25 nautical miles of based airport	Permissible	Permissible
Beyond 25 nautical miles from based airport	Not Permissible	Permissible
Above 1,500' above ground level	14 C.F.R. Part 136 Appendix A	14 C.F.R. Part 136 Appendix A
Below 1,500' above ground level	Letter of Authorization (LOA) B548	Operating Specification (OPSPEC) B048

Source: CRS analysis of cited FAA regulations and regulatory documents.

Notes: These regulations apply to air tour operations in both helicopters and airplanes.

- a. The contents of 14 C.F.R. Part 136 A were previously contained in Special Federal Aviation Regulation (SFAR) 71 to 14 C.F.R. Part 91, and some regulatory references still refer to SFAR 71.

(3) Are there specific federal laws and regulations that limit such operations as to specific areas such as national parks or military installations or specific jurisdictions such as identified municipalities?

In general, municipalities have no special standing in terms of flight limitations. As previously mentioned, minimum safe altitudes are set based on level of land development and population, but these generally do not apply to helicopters. There are no specific restrictions regarding flight frequency, duration, or time of day.

For military installations, flight restrictions may be imposed based on concerns over national security and safety. Airspace around certain military facilities may be strictly off limits based on national security concerns. Civilian flights in certain other military areas may be restricted on certain days or during certain times of day over safety concerns. For example, airspace around a military range may be restricted during times when the military is conducting training exercises. In Hawaii, there are restricted areas west of

² Note that while the text of the former SFAR 71 has been moved to 14 C.F.R. Part 136 Appendix A, OPSPEC B048 continues to reference SFAR 71.

Wheeler Army Airfield on Oahu that are off limits to civilian aircraft during certain hours. There is also a restricted area near Bradshaw Army Airfield on the island of Hawaii and a restricted area on the western shore of Kauai associated with the Pacific Missile Range Facility, Kauai, that are intermittently closed to civilian air traffic. Another restricted area encircles the tiny uninhabited island of Ka'ula and is intermittently closed to civilian aircraft. Additionally, military airfields may have control towers staffed by military controllers that may allow civilian aircraft to transit though airspace around the airfield at certain times depending on the volume of military air traffic in the area. This would apply to both Wheeler Army Airfield and Kaneohe Bay Marine Corp Air Station on the island of Oahu as well as Bradshaw Army Airfield on the island of Hawaii.

The FAA *Aeronautical Information Manual* notes that pilots are requested to maintain an altitude of 2,000 feet above ground level (AGL) or higher when overflying national parks and other areas administered by the National Park Service as well as wildlife refuges administered by the U.S. Fish and Wildlife Service and wilderness and primitive areas administered by the U.S. Forest Service.³ Federal laws and regulations limiting tour operations over national parks are discussed in the following section.

(4) Federal Laws and Regulations Pertaining to Air Tour Flights in Helicopters and Small Aircraft over National Parks

Air tour overflights of national parks have been regulated by a series of statutes. The National Parks Overflights Act of 1987⁴ required an NPS study of the effects of all aircraft overflights, which was submitted to Congress in 1994.⁵ The study informed provisions of a later law, the National Parks Air Tour Management Act of 2000 (Air Tour Act),⁶ which currently governs air tours over units of the National Park System other than Grand Canyon National Park.⁷ The requirements in the Air Tour Act apply to NPS units in Hawaii.

³ Federal Aviation Administration, *Aeronautical Information Manual*, October 12, 2017, through Change 2, September 13, 2018, https://www.faa.gov/air_traffic/publications/media/aim_basic_chgs1_2_9-13-18.pdf.

⁴ P.L. 100-91. The law established temporary provisions for flights over Haleakalā National Park and Yosemite National Park that applied only during the period in which the study was being conducted and a period in which FAA was reviewing NPS aircraft overflight rules and reporting on them to Congress. For Haleakalā, the temporary provisions forbade any fixed wing aircraft or helicopters flying under visual flight rules to fly at an altitude below 9,500 feet above mean sea level over certain areas of the park. The law also contained provisions related to Grand Canyon National Park, the Boundary Waters Canoe Area Wilderness, and National Forest System wilderness overflights.

⁵ U.S. Department of the Interior, National Park Service, *Report to Congress: Report on Effects of Aircraft Overflights on the National Park System*, listed under the topic heading “Documents” at http://www.nps.gov/grca/naturescience/airoverflights_documents.htm.

⁶ P.L. 106-181, Title VIII (49 U.S.C. §40128).

⁷ The National Parks Overflight Act of 1987 (P.L. 100-91) contained separate provisions specific to Grand Canyon National Park. Several actions have been taken to achieve the substantial restoration of natural quiet at Grand Canyon in furtherance of the 1987 law and subsequent statutes. First, an FAA limitations rule capped the annual number of commercial air tour overflights at Grand Canyon (65 *Federal Register* 17708). Second, an airspace rule expanded flight-free zones and restrictive routing over the canyon (71 *Fed. Reg.* 9439). Third, the FAA issued a final rule establishing a standard for quiet technology for certain aircraft in commercial air tour operations over Grand Canyon (70 *Fed. Reg.* 16084). The rule identifies which aircraft meet the standard. Fourth, data on natural ambient sound levels were collected by NPS and have been used, together with air tour reported flight operations data and radar tracking data, to model air tour traffic and aircraft noise at Grand Canyon. The model has been used to measure success in restoring natural quiet, and the noise impact of various alternatives. The 112th Congress enacted broad transportation legislation, P.L. 112-141, which contained provisions on air tour management at Grand Canyon. Some provisions set out standards to be used by NPS in restoring natural quiet at the park. Another provision stated that the “substantial restoration of natural quiet” would be considered achieved if 50% of the park is free of sound from commercial air tours for at least 75% of each day. The law required all commercial air tour aircraft operating in the park to convert to quiet aircraft technology within 15 years of enactment (by 2027).

The Air Tour Act requires FAA and the National Park Service (NPS) to create management plans for air tours at individual park units and within a half-mile of their boundaries. Each plan could prohibit or limit air tours, such as by route and altitude restrictions. The law and its implementing regulations⁸ require air tour operators to apply for authority to fly over national parks and abutting tribal lands. FAA has received applications for commercial air tours over more than 100 of the 418 park units, and has granted interim operating authority to all applicants. Under the law, the application is supposed to trigger development of an air tour management plan (ATMP) by FAA and NPS for each unit where none exists.⁹ The purpose of a plan is to mitigate or prevent any harm by commercial air tours to natural and cultural resources, visitor experiences, and tribal lands. Development of an ATMP requires an environmental review under the National Environmental Policy Act (NEPA).¹⁰

The FAA and NPS began developing ATMPs at about a dozen areas, including Haleakalā National Park and Hawai'i Volcanoes National Park in Hawaii. Development of ATMPs has proceeded much more slowly than had been expected at all park units, and to date no ATMPs have been completed.¹¹ The 112th Congress enacted broad aviation legislation (P.L. 112-95) with provisions amending the Air Tour Act to streamline agency actions, in part because of the slow progress in completing ATMPs. These provisions specify that, in lieu of an ATMP, the NPS Director and FAA Administrator may enter into a voluntary agreement with a commercial air tour operator that would govern commercial air tours over a park unit. Before implementing a voluntary agreement, the agencies must provide an opportunity for public review and consult with Indian tribes on affected tribal lands.¹² Voluntary agreements may contain provisions to establish conditions for the conduct of commercial air tours (e.g., routes, maximum or minimum altitudes, time-of-day restrictions), ensure compliance, provide for fees for commercial air tours, and provide incentives for the adoption of quiet aircraft technology by commercial tour operators, among other types of provisions. The agencies have completed or are pursuing voluntary agreements for a few areas in lieu of ATMPs, but have not reported work on voluntary agreements for the Hawaii parks.¹³

The law also allows agencies to modify interim operating authority for air tour operators, which could provide for additional authority because interim conditions have prevailed for longer than had been anticipated. It also establishes reporting requirements for commercial air tour operators on the number of air tours over each national park unit.

⁸ 67 *Federal Register* 65661 (October 25, 2002).

⁹ FAA provides information on the National Parks Air Tour Management Program at https://www.faa.gov/about/office_org/headquarters_offices/arc/programs/air_tour_management_plan/.

¹⁰ 42 U.S.C. §§4321 et seq.

¹¹ A January 2006 Government Accountability Office (GAO) report addressed the impact of the delay in implementation of the Air Tour Act. The report concluded that the delay has had little effect on park units, but has limited the ability of tour operators to make major business decisions. GAO identified four issues for Congress and the agencies to address to improve implementation, relating to the lack of flexibility for determining which parks need plans, an absence of NPS funding for plan development, limited ability to verify and enforce the number of air tours, and inadequate FAA guidance on the act's safety requirements. See U.S. Government Accountability Office, *National Parks Air Tour Management Act: More Flexibility and Better Enforcement Needed*, GAO-06-263 (Washington, DC: GPO, January 2006). The report, together with information on agency actions on GAO's recommendations, is available on the GAO website at <https://www.gao.gov/products/GAO-06-263>.

¹² P.L. 112-95, Title V, Sec. 501(c). Agreements may be implemented "without further administrative or environmental process" beyond that described in the law.

¹³ Voluntary agreements have been completed for Big Cypress National Preserve and Biscayne National Park in Florida, and agreements are in progress for Glen Canyon National Recreation Area in Arizona/Utah and Badlands National Park in South Dakota (FAA, "National Park Specific Air Tour Management Plans," https://www.faa.gov/about/office_org/headquarters_offices/arc/programs/air_tour_management_plan/park_specific_plans/).

Park units with 50 or fewer annual air tour flights are exempt from the requirement for an ATMP or voluntary agreement. However, the NPS Director can withdraw an exemption in order to protect park resources and values or visitor use and enjoyment. As of 2017, 52 park units were exempted from requirements to establish an ATMP or voluntary agreement because they had fewer than 50 annual air tour flights; 3 units had had their exemptions withdrawn; and 23 units with more than 50 tours—including Haleakalā National Park and Hawai‘i Volcanoes National Park—continued to require a plan or agreement under the law.

As discussed, NPS and FAA began a planning process for ATMPs at Haleakalā National Park and Hawai‘i Volcanoes National Park, including initiating the NEPA public scoping process, in the mid-2000s. In 2011, both parks announced open house meetings to share preliminary alternatives and seek public comments for their plans.¹⁴ The agencies stated that the planning processes for both parks had experienced delays “due to differences in FAA and NPS policy and deciding how to best integrate the environmental compliance guidance of both agencies into the air tour management planning (ATMP) process.”¹⁵ Since the 2011 scoping activities, the agencies have not reported further progress on the ATMPs for either park. This means that commercial air tours at both parks continue to take place under the interim operating authorities. For both parks, the preliminary alternatives proposed in 2011 included potential options for incentivizing quiet technology, setting a maximum activity cap on air tours, limiting air tours to certain locations in the park, and other actions to fulfill the purposes of the NPS Air Tour Act.

(5) Have there been federal legislative or regulatory proposals in the last four years to adopt such general or specific limitations?

CRS examined legislative information over roughly the past decade (111th Congress through 115th Congress) and recent regulatory proposals. We searched the Congress.gov website for legislation containing the term “helicopter” or “noise” and reviewed results to identify legislation relevant to this discussion.

As discussed above, in 2012, the FAA Modernization and Reform Act of 2012 (P.L. 112-95) modified the air tour management program to allow for exemptions at parks with fewer than 50 annual overflights and to allow FAA and NPS to enter into voluntary agreements with commercial air tour operators as an alternative to air tour management plans. The legislation also allows for fees to be paid by air tour operators to cover the costs of administering the air tour management program and voluntary agreements.

In the 115th Congress, H. Amdt. 559 to H.R. 4 sought an FAA review and revision of helicopter flight paths, including military helicopters, in the National Capital Region, with the intent of identifying and issuing new flight paths if FAA determined that helicopters are able to fly at higher altitudes. The measure failed by a voice vote on April 26, 2018.

In the 113th Congress, H.R. 456 / S. 208, the Los Angeles Residential Helicopter Noise Relief Act of 2013, sought to require FAA to develop regulations for helicopter flight paths and altitudes to reduce helicopter noise in residential areas, improve safety, and minimize commercial aircraft delays. The bill included instructions for FAA to consult with local communities and helicopter operators in developing these regulations. Similar legislation was introduced in the 112th Congress (H.R. 2677 / S. 2019). There were no hearings or votes on any of these proposals in either the House or the Senate.

¹⁴ NPS and FAA, *Haleakalā National Park Air Tour Management Plan: Environmental Impact Statement Newsletter, Preliminary Alternatives for Public Comments*, April 2011, at <https://www.nps.gov/hale/learn/management/loader.cfm?csModule=security/getfile&PageID=426140>; NPS and FAA, *Hawai‘i Volcanoes National Park Air Tour Management Plan: Environmental Impact Statement Newsletter, Preliminary Alternatives for Public Comments*, April 2011, at <https://parkplanning.nps.gov/document.cfm?parkID=307&projectID=36002&documentID=40060>.

¹⁵ *Ibid.* (statements in both newsletters).

In the 112th Congress, S. Amdt. 71 to S. 223 sought to require FAA to develop standards to measure helicopter noise and prescribe regulations to control helicopter noise in residential areas. With respect to helicopter noise in Nassau and Suffolk counties in New York, it sought to require FAA to promulgate regulations regarding flight paths and altitudes for helicopters operating over these Long Island counties. While the measure was passed by the Senate, it was not included in the enacted FAA reauthorization legislation (P.L. 112-95), since FAA had taken action to implement the Long Island North Shore Helicopter Route (14 C.F.R. Part 93 Subpart H).

(6) The New York north shore helicopter route and the process by which it was implemented

The FAA first began work on special procedures for helicopters along the north shore of Long Island in 2007, and in 2008 published a voluntary helicopter route chart for the area. In 2010, FAA proposed to make the route mandatory through standard rulemaking procedures.¹⁶ The rule was finalized on July 6, 2012, making the north shore route mandatory.¹⁷ Under the regulation, helicopters flying between New York City and eastern Long Island must follow an overwater route that keeps helicopter traffic about one mile offshore over the Long Island Sound. Pilots must maintain an altitude of at least 3,000 feet while overwater, and at least 2,500 feet while over land between their departure or destination point on the island and the eastern limit of the overwater corridor. The rule was originally set to expire after two years, but it has been extended several times and currently is effective through August 6, 2020.

Some residents, however, have complained that the routing has concentrated overflights and noise near the town of Southold, where flights typically exit and enter the overwater corridor. Section 182 of the FAA Reauthorization Act of 2018 (P. L. 115-254) required FAA to hold public meetings and solicit public comments on noise impacts, enforcement, and alternatives or supplemental routes, “including the institution of an all water route over the Atlantic Ocean.” On November 2, 2018, FAA published a notice¹⁸ seeking public comment on whether the existing route has had an impact on community helicopter noise, to what extent helicopters deviate from the route, and whether alternative or supplemental routes may alleviate noise impacts without jeopardizing flight safety. The comment period closed on January 2, 2019, and FAA has received over 300 responses.¹⁹ In November 2018, FAA held a series of public meetings to discuss the issue,²⁰ but indicated it would not hold a formal public hearing, something local community officials have urged.²¹

¹⁶ Federal Aviation Administration, “The New York North Shore Helicopter Route,” 75 *Federal Register* 29471-29474, May 26, 2010.

¹⁷ Federal Aviation Administration, “The New York North Shore Helicopter Route,” 77 *Federal Register* 39911-39921, May 26, 2010.

¹⁸ Federal Aviation Administration, “Request for Comments on Requirement for Helicopters To Use the New York North Shore Helicopter Route,” 83 *Federal Register* 55133-55134, November 2, 2018.

¹⁹ See <https://www.regulations.gov/searchResults?rpp=25&po=0&s=FAA-2018-0954&dct=PS>.

²⁰ Federal Aviation Administration, “Notification of Public Meetings on Requirement for Helicopters to Use the New York North Shore Helicopter Route,” 83 *Federal Register* 55134-55135, November 2, 2018.

²¹ Denise Civiletti, “East End Officials to FAA: Hold a Public Hearing on North Shore Helicopter Route,” *Riverhead Local*, November 29, 2018, <https://riverheadlocal.com/2018/11/29/east-end-officials-to-faa-hold-a-public-hearing-on-north-shore-helicopter-route/>.

(7) Does FAA Advisory Circular 91-36D and the Hawaii Department of Transportation Airport Division Flying Guide advise or require air tour helicopters and small aircraft to avoid flying over residential areas?

FAA notes that “[u]nless incorporated into a regulation by reference, the contents of an advisory circular are not binding on the public.” Rather, FAA issues advisory circulars to inform the aviation community and provide guidance and information on selected subjects or to document methods of acceptable compliance with regulations.²²

Advisory Circular 91-36D discusses visual flight in the vicinity of noise-sensitive areas. It encourages pilots to fly at altitudes higher than minimum prescribed altitudes when operating in these areas to reduce aircraft noise. It defines “noise-sensitive” areas as those locations where noise interferes with normal activities associated with the areas’ use, giving examples of residential, educational, health, and religious structures and sites, as well as parks and recreational lands, wildlife refuges, and cultural and historical sites where “a quiet setting is a generally recognized feature or attribute.”²³ It includes three specific recommendations for voluntary practices related to noise-sensitive areas:

- Avoidance of noise-sensitive areas, if practical, is preferred over low altitude overflights;
- Maintaining an altitude of 2,000 feet AGL or higher, weather permitting, over noise-sensitive sites; and
- Airport departures and arrivals, including initial climb and final descent, should be made so as to avoid prolonged flights at low altitudes over noise-sensitive areas.

The advisory notes that these practices are not applicable in cases where they would conflict with regulatory requirements or in instances where flight below 2,000 feet AGL is considered necessary for operational safety. In any case, since they are not incorporated into regulation by reference, they are non-binding and completely voluntary.

The Hawaii Department of Transportation Air Division produces a flying guide for Hawaii public airports and general flight safety.²⁴ Many state aviation departments publish similar products that provide general information about airports and aviation in the state. These documents are strictly advisory in nature, as FAA is the only authority to publish official information concerning the safety of flight operations. The Hawaii Airports and Flying Safety Guide depicts various voluntary noise abatement areas and recommended avoidance areas throughout the state in an effort to reduce noise impacts and noise complaints. It further advises that “flying at or above 1,500’ AGL reduces noise complaints.” The guide also includes informal recommended noise abatement procedures and guidance on runway utilization at selected airports to avoid or reduce impacts to noise-sensitive areas near these airports.

²² Federal Aviation Administration, Advisory Circular 00-2.13, *Advisory Circular Checklist*, June 15, 2000, https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_00.2-13.pdf.

²³ Federal Aviation Administration, Advisory Circular 91-36D, *Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas*, September 17, 2004, https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_91-36D.pdf.

²⁴ State of Hawaii, Department of Transportation, Airports Division, *Hawaii Airports and Flying Safety Guide*, <http://hidot.hawaii.gov/airports/files/2013/01/Airport-Safety-Guide-2012-2013-5rev1.2.pdf>.

(8) Hawaii Air Tour Common Procedures

In 2008, the Honolulu Flight Standards District Office (FSDO) released the *Hawaii Air Tour Common Procedures Manual*.²⁵ The manual details the requirements established for commercial air tour operators that are authorized to conduct operations below 1,500 feet AGL in the state of Hawaii. It notes that commercial air tour operators operating under 14 C.F.R. Part 135 may be so authorized by receiving OPSPEC B048 authorization, while commercial air tour operators operating under 14 C.F.R. Part 91 must individually apply for and receive deviation authority described in LOA B548 prior to conducting operations below 1,500 feet AGL.

In order to conduct operations below 1,500 feet AGL, pilots must complete training in mountain flying and high-density altitude operations, flight performance plans, island-specific weather, go/no-go decision procedures, route knowledge and altitude transition segments, deviation procedures, and past Hawaii air tour accidents, site-specific training for each site, including entry and egress to site locations and radio protocols and position reports, weather enhanced safety areas, and height velocity and terrain descriptions. Pilots must also complete recurrent training on some of these topics, and must include a recurrent flight check or recurrent flight training every 12 calendar months.

In general, the common procedures prohibit commercial air tour flights below 1,500 feet AGL at night and in poor visibility. For airplanes, any flights below 1,500 feet AGL must be conducted at an altitude of at least 500 feet above the minimum altitude specified for helicopters. In some instances, helicopters can operate as low as 200 AGL crossing razorback ridges. In designated areas, helicopters may operate as low as 500 feet AGL, and in certain other areas may operate as low as 1,000 feet AGL. At all times, helicopters must maintain a standoff distance of at least 300 feet from terrain features.

A Hawaii State Legislature Concurrent Resolution²⁶ adopted in 2018 urges FAA to update the *Hawaii Air Tour Common Procedures Manual*, noting that the document is a decade old and, since its writing, the population of the state and tourism have grown and commercial air tours have increased.

According to FAA, the Hawaii Air Tour Common Procedures Manual is currently in the process of being replaced and has been turned over to air operators as part of that process. FAA described the Hawaii Helicopter Association (HHA) as the custodian of the operator-owned version of the manual and noted that the document is considered an operators' safety manual. FAA further noted that the revision is in its final stages of coordination, and once completed will be included as an appendix to each approved air tour operator's required manual detailing how it is to conduct operations.²⁷

(9) Can state and local jurisdictions enact laws and regulations which provide limitations on such operations beyond those imposed by federal law and regulation?

While the issues surrounding federal preemption with respect to aviation law are complex, courts have generally upheld the supremacy of federal law in matters pertaining to air commerce and access to airspace. For example, in a protracted court battle between the airlines and the village of Cedarhurst, NY, in the early 1950s, the courts ruled that a village ordinance banning flights below 1,000 feet was unconstitutional and hence void. The U.S. District Court for the Eastern District of New York found that “[w]hile the exercise of the Congressional power to regulate commerce does not prevent the States from

²⁵ Federal Aviation Administration, Honolulu Flight Standards District Office, *Hawaii Air Tour Common Procedures Manual*, FAA Document Number AWP13-136A, Revision 1, August 15, 2008, https://www.faa.gov/about/office_org/field_offices/fsdo/hnl/local_more/media/hawaii_air_tour_common_proc.pdf.

²⁶ Hawaii State Legislature, House of Representatives, Twenty-Ninth Legislature, 2018, H.R. No. 148, H.D. 1, *Urging Various Government Entities to Develop, Update, and Introduce Policies Related to Helicopter Air Tours at the State and National Level*, https://www.capitol.hawaii.gov/Archives/measure_indiv_Archives.aspx?billtype=HR&billnumber=148&year=2018.

²⁷ See 14 C.F.R. §135.21 and §135.23.

exercising their inherent powers outside of the fields preempted by Congress, ... it does preclude the States from regulating those phases of national commerce ‘which, because of the need of national uniformity, demand that their regulation, if any, be prescribed by a single authority.’” It further noted that “the existence of the various state laws on the subject and the adoption of the Uniform Aeronautics Act by a number of them, prior to the enactment of the Civil Aeronautics Act in 1938, point toward an intent of Congress of preemption in the interest of uniformity as a prerequisite of safety,” and “... that Congress, by the enactment of the 1938 Aeronautics Act, adopted a comprehensive plan for the regulation of air traffic in the navigable airspace.”²⁸

Similarly, in a 1973 case, *City of Burbank v. Lockheed Air Terminal, Inc.*, the Supreme Court found that the regulatory powers of FAA and the Environmental Protection Agency preempted state and local control over airport operating hours and thus rendered a city ordinance imposing a nighttime curfew on jet flights at the local airport unconstitutional. The Court stated, “If we were to uphold the Burbank ordinance and a significant number of municipalities followed suit, it is obvious that fractionalized control of the timing of takeoffs and landings would severely limit the flexibility of the FAA in controlling air traffic flow.”²⁹

Case law may not completely preclude state and local governments from imposing zoning restrictions governing the use of land for aviation purposes. However, state and local actions affecting public airports that have received federal funding would generally be limited, as federal grants are conditioned on assurances that the airport be available for public use on reasonable conditions and without unjust economic discrimination against all types, kinds, and classes of aeronautical activities.³⁰ For example, a local ordinance banning air tour operations at a local public airport that has received federal grant funding or imposing a nighttime curfew on helicopter flights from that airport might violate these assurances.

In the late 1980s, the Hawaii state legislature directed the Hawaii Department of Transportation to develop a statewide helicopter system plan, including helicopter master plans for each state airport and a permitting system for helicopters and tour aircraft using state airports. Reportedly, FAA threatened to withhold airport funding for state airports if the plan was implemented, based on the argument that such action would violate federal airport grant assurances and would overstep the state’s authority to regulate air commerce, and the Hawaii Helicopter Operators Association sued the state in federal court to prevent implementation the plan.³¹ The plan was not implemented.

(10) What location-specific controls on the operations of tour helicopters and small aircraft exist for the islands of Hawaii?

As suggested from the discussion above, existing location-specific controls are set by federal action rather than state or local actions. This includes the requirements of 14 C.F.R. Part 136, particularly the special operating rules for air tour operators in Hawaii described in Appendix A. It also includes the *Hawaii Air Tour Common Procedures Manual* previously discussed.

(11) What is the source of noise from helicopter operations?

The acoustical properties of a helicopter are very complex. Noise sources include the engine, the disturbance of air caused by the turning rotor blades, the airframe, and moving mechanical parts, particularly mechanical linkages for the main rotor and the tail rotor. A number of design factors influence

²⁸ U.S. District Court for the Eastern District of New York, *Allegheny Airlines v. Village of Cedarhurst*, 132 F. Supp. 871 (E.D.N.Y. 1955), June 27, 1955, quoting U.S. Supreme Court, *Southern Pacific Co. v. Arizona*, 325 U.S. 671, June 18, 1945.

²⁹ *City of Burbank v. Lockheed Air Terminal, Inc.*, 411 U.S. 624, 1973.

³⁰ CRS Report R43327, *Financing Airport Improvements*, by Rachel Y. Tang.

³¹ “Restricting Helicopter Flights May Take an Act of Congress,” *Environment Hawaii*, 3(11), May 1993, <http://www.environment-hawaii.org/?p=3811>.

the noise characteristics of a helicopter, including the number of rotor blades and their shape. These factors and their influence on the noise signature of a helicopter also vary depending on the phase of flight and environmental factors, such as atmospheric conditions and terrain.

Unlike airplanes, whose predominant noise sources are the engine and the airframe, helicopter noise is largely influenced by movement of the rotors, which produce periodic noise that correlates with the speed of blade rotation and the number of blades. It also depends on the phase of flight, which influences the lift and drag forces acting on the rotor blades.³² As a result, helicopters often sound very different when operating in low speed hovering flight, maneuvering flight, in high speed cruise, and when transitioning between these different flight regimes.

In forward flight, particularly at high rotor rotational speeds, a phenomenon sometimes referred to as “blade slap” may occur.³³ During these high-speed phases of flight, the outer edges of the main rotor blades may be traveling at sufficient speeds to compress the air in front of the blade. This compression produces small shock waves that propagate and produce impulsive noises. The perception of this noise depends on the distance from the helicopter. At close distances, “blade slap” is usually perceived as repetitive sharp cracking sounds at closely spaced intervals. At longer distance, the phenomenon produces more of a repetitive dull thud, largely due to the fact that high frequency components of the noise are attenuated by the atmosphere while low frequency components can travel considerable distances. This is similar to the phenomenon where bass sounds from a subwoofer are what is predominantly perceived when a distant car passes by with a loud stereo blaring, since the higher frequency components are attenuated by the car body and the atmosphere as the sound travels.

In maneuvering flight, chopping sounds are often perceived as the result of interactions between the rotor blades and vortices of air that they produce. As each blade passes through the air, it produces a vortex that rolls off the tip of the blade, and typically begins to descend. In straight, level flight these vortices are rarely problematic because the next rotating blade typically remains above the vortex produced by the preceding blade. However, in a slight descent or a banking turn, the trailing rotor may hit the vortex of the preceding blade. The resulting sound is similar to the blade slap phenomenon, but the pattern may be more irregular as the helicopter maneuvers, resulting in complex blade-vortex interactions. Additional noise can sometimes result from the interaction of these sounds with surrounding terrain such as when a helicopter is maneuvering near buildings, in a canyon, through a mountain pass, or near a cliff wall. When helicopter noise is measured for certification purposes, these various complexities are typically not fully accounted for. Noise certification testing does capture some of the influence of blade vortex interactions, and as a result, the descending approach phase of flight for helicopters typically yields the loudest noise levels among noise certification tests for helicopters.

(12a) Are there differences in noise emissions among standard air tour helicopter makes and models?

14 C.F.R. Part 36, Subpart H, defines the noise measurement procedures and noise limits for helicopter certification. The specific test and measurement procedures and requirements are specified in Appendix H of Part 36 for helicopters with maximum takeoff weights greater than 7,000 pounds and in Appendix J of Part 36 for helicopters with maximum takeoff weights of 7,000 pounds or less. During certification, noise from a level flyover at an altitude of 150 meters (492 feet) above ground level is measured from a point on the ground directly under the flightpath while the helicopter maintains a reference airspeed maximum corresponding to maximum continuous power. The measurements must be collected in calm winds (less than 10 knots with less than 5 knots crosswind component) and in weather conditions that would not

³² <https://www.noisequest.psu.edu/sourcesofnoise-helicopternoise.html>.

³³ Ray Prouty, “From the Ray Prouty Archives: Helicopter Noise,” *Rotor and Wing*, September 8, 2017, <https://www.rotorandwing.com/2017/09/08/ray-prouty-archives-helicopter-noise/>.

produce excessive atmospheric noise attenuation (greater than 10 dB per 100 meters or 30.5 dB per 1,000 meters in the 1/3 octave band centered on 8,000 Hertz). At least six valid flyovers must be measured, with sufficient numbers to establish a 90% confidence band that does not exceed +/- 1.5 dB.

Helicopters weighing 3,125 pounds or less must not exceed 82 dB Sound Exposure Level (SEL) to meet certification standards. The SEL is a time-integrated value that represents the equivalent energy of the sound event normalized to a one second duration. Each sound event begins when the oncoming helicopter is 10dB quieter than peak noise level and ends when the sound levels drop back to 10dB below peak. The SEL noise measurement is based on A-weighted sound measurements that weight the energy from different acoustic frequencies in a manner similar to how humans perceive the loudness of sounds. For helicopters weighing more than 3,125 pounds, allowable noise levels increase by 3 dB for every doubling of maximum helicopter takeoff weight.

For helicopters weighing more than 6,000 pounds, additional measurement conditions are required: In addition to level flyover measurements, takeoff and approach conditions must also be evaluated. Additionally, noise must be measured from sideline positions offset 150 meters laterally on either side of the flight path as well as from a point directly beneath the flight path. Instead of criteria based on SEL, Effective Perceived Noise Level (EPNL) in decibels (EPNdB) is used to describe and evaluate the aircraft noise from these tests. Whereas SEL integrates the energy from the sound event over a one-second time period, EPNdB integrates the loudness of the event over a 10-second timeframe. Therefore, even though both SEL and EPNL are reported in decibels (dB), they are not directly comparable. For helicopters weighing less than 80,000 kg (176,370 pounds), the maximum permissible noise limits for takeoff range from 86 EPNdB up to 106 EPNdB, depending on aircraft weight. For flyover, the limits range from 84 EPNdB up to 104 EPNdB, and for approach the maximum noise levels range from 89 EPNdB up to 109 EPNdB.

(12b) Are there published decibel levels for these various models?

FAA requires all helicopter manufacturers to provide data from noise tests demonstrating compliance with certification standards. FAA incorporates that data into its Aviation Environmental Design Tool (AEDT)³⁴ that is used to perform modelling studies of noise exposure from aircraft operations. The tool and its data sets must be purchased from the FAA. Often, manufacturers provide this data in aircraft specification documents. Additionally, the European Union Aviation Safety Agency (EASA), whose certification standards are similar to FAA's, publishes a database of certification noise levels for all certified aircraft configurations.³⁵

CRS examined air tour operator websites and FAA registry data for information on makes and models of helicopters used in air tour operations in Hawaii. This information was confirmed by FAA as representing the helicopters currently in use for air tour operations in Hawaii. CRS obtained certification noise levels from the EASA database for these makes and models of helicopters (see **Table 2**).

³⁴ <https://aedt.faa.gov/>.

³⁵ <https://www.easa.europa.eu/easa-and-you/environment/easa-certification-noise-levels>.

Table 2. Noise Levels for Common Hawaii Air Tour Helicopters

Aircraft	Engine Type	Maximum Takeoff Weight (lbs.)	Flyover	Takeoff	Approach
Robinson R44	Single- Piston	2,400	81.9 SEL		
Robinson R44 II	Single- Piston	2,500	80.9 SEL		
Robinson R66	Single- Turbine	2,700	84.5 EPNdB	87.8 EPNdB	87.8 EPNdB
Bell 407	Single- Turbine	5,250	86.8 SEL		
Bell 430	Twin- Turbine	9,300	91.6 EPNdB	92.4 EPNdB	93.8 EPNdB
Eurocopter AS350 B2	Single- Turbine	4,960	87.6 EPNdB	89.8 EPNdB	91.4 EPNdB
Eurocopter AS350 BA	Single- Turbine	4,630	87.3 EPNdB	91.1 EPNdB	91.3 EPNdB
Eurocopter EC130 B4	Single- Turbine	5,350	84.2 EPNdB	85.5 EPNdB	90.5 EPNdB
Hughes/MD 500	Single- Turbine	3,350	85.4 EPNdB	81.2 EPNdB	87.7 EPNdB

Source: <https://www.easa.europa.eu/sites/default/files/dfu/MAdB%20HELICOPTERS%28181114%29.xlsx>.

(13) What tour helicopter/small aircraft noise suppression technologies are available?

Considerable research has been devoted to identifying quiet aircraft and helicopter technologies. One area of research that can help reduce noise signatures of both helicopters and small fixed-wing aircraft is composite materials that can reduce vehicle weight and thrust requirements. Another area of current research that could have a significant effects on light airplanes and rotorcraft is electric propulsion. The National Aeronautics and Space Administration (NASA) is currently exploring a number of aircraft concepts and technologies for electric-powered airplanes, and several electric-powered small airplanes are being developed.³⁶

Much of the research on electric propulsion for rotary wing designs is being driven by concepts for developing Urban Air Mobility (UAM) multi-copter rotorcraft that would be powered by electric motors.³⁷ While the primary target markets for UAM designs are urban markets where rotorcraft could provide time savings over ground-based transportation, it is possible that UAM designs could be adapted for air tour operations. It is believed that these electric-powered vehicles would be much quieter than current piston and turbine powered airplanes and helicopters, but may have different tonal characteristics that may contribute to perceived annoyance when they are audible.

Past efforts to reduce noise from small propeller-driven piston airplanes have focused on propeller design and sound insulation and acoustic liners for engine compartments. Efforts to reduce helicopter noise,

³⁶ See <https://www1.grc.nasa.gov/aeronautics/electrified-aircraft-propulsion-eap/>; Miguel Ros, “7 Electric Aircraft You Could Be Flying in Soon,” CNN, November 21, 2017, <https://www.cnn.com/travel/article/electric-aircraft/index.html>.

³⁷ See <https://www.nasa.gov/uamgc>.

particularly for turbine-powered helicopters, have primarily focused on developing quieter engines and addressing noise contributions from main rotor and tail rotor designs.³⁸

With respect to tail rotor design, some helicopters are designed with an encased fantail, called a fenestron, instead of an open tail rotor. This design reduces tail rotor vortex noise and also improves tail rotor efficiency and safety. In **Table 2**, the Eurocopter EC130 B4 is the only model equipped with this design. While this helicopter is the heaviest of single-engine turbine models surveyed, it produces the lowest noise levels of turbine models in the table, although the specific degree to which the fenestron contributes to noise reduction was not examined. Some helicopter designs have adopted no tail rotor (NOTAR) technology, which replaces the tail rotor with an internal fan that directs air through slots in the tail to counteract torque. Although none of the air tour helicopters being used in Hawaii appear to have this technology, a variant of the MD 500, the MD 520N, utilizes a NOTAR system.

Other means of reducing helicopter noise focus on the design of the main rotor blades. To reduce compressibility effects that contribute to the “blade slap” phenomenon, main rotor blades can incorporate a sweepback design that progressively sweeps the rotor blade near the tip of the blade. An undesirable side effect of this design is a shift in the aerodynamic balancing of the blades. This has been addressed by a notched rotor design developed under the British Experimental Rotor Program (BERP) and the blades are referred to as BERP blades. BERP blades applications have mainly been limited to larger and heavier helicopters than are typically used in commercial air tour applications.

In general, these noise reduction technologies are not simple retrofits to existing aircraft. Rather, they are incorporated into new aircraft models as noise regulations and design technologies evolve. For this reason, it is not possible to identify specific direct costs for implementing these technologies and design changes. It should also be noted that because aircraft technology is slow to evolve and to be adopted, largely due to the high acquisition cost of aircraft, the time horizon for fielding noise reduction technologies is quite long. The fenestron example above illustrates this, as few operational helicopters incorporate this design, even though it appears to clearly demonstrate noise reduction benefits as well as safety benefits. Incorporating such technology into existing helicopter type designs involves significant and costly engineering and certification work that, from an aircraft manufacturer’s perspective, may be difficult to justify.

(14) What tour helicopter/small aircraft ADS-B technologies are commercially available and what are their costs?

Automatic Dependent Surveillance – Broadcast (ADS-B) is a system for broadcasting and receiving aircraft identification, position, altitude, heading, and speed data derived from on-board navigation systems such as a Global Positioning System (GPS) receiver. “ADS-B Out” functionality refers to a basic level of aircraft equipage that transmits position data. “ADS-B In” incorporates aircraft reception of ADS-B signals from other aircraft and uplinks of traffic, weather, and flight information from ground stations. While the system is primarily intended to provide air traffic controllers and other pilots with air traffic data for aircraft separation and to improve situational awareness of air traffic, virtually anyone with a commercially available ADS-B receiver can monitor ADS-B equipped air traffic near their location. Consequently, ADS-B could provide a means to monitor air tour flights and other aircraft operations. There may, however, be limitations to this application since currently available ADS-B solutions, including FAA receivers and privately owned receivers, require line-of-sight transmissions between aircraft and ground receivers. Therefore, ADS-B tracking may not be available in all areas and may have

³⁸ International Civil Aviation Organization, *Helicopter Noise Reduction Technology: Status Report*, April 21, 2015, https://www.icao.int/environmental-protection/Documents/Helicopter_Noise_Reduction_Technology_Status_Report_April_2015.pdf.

particular limitations in mountainous areas, which may limit its effectiveness for tracking air tours in certain areas. This limitation may be mitigated to some degree in the future with the introduction of space-based ADS-B receivers available on a fee basis.³⁹

Under FAA requirements, aircraft flying in designated controlled airspace will be required to have "ADS-B Out" capability by 2020. In Hawaii, ADS-B equipment will generally be required next year under this requirement when operating within 30 nautical miles of Honolulu airport, which encompasses all of the island of Oahu. Additionally, ADS-B will be required in airspace around Kahului Airport on the island of Maui. Flights in other parts of the state will not specifically be required to have or use ADS-B, although many operators will likely choose to equip with ADS-B if they have occasion to fly in areas where ADS-B will be required.

ADS-B avionics generally start around \$2,000 for a basic ADS-B Out unit. Units that combine both ADS-B Out and ADS-B In capabilities typically range from roughly \$4,000 to \$8,000 depending on features. Costs depend to some degree on what avionics already exist on the aircraft, and aircraft that are not already equipped with compliant global positioning system (GPS) receivers may pay additional to integrate required GPS capabilities with ADS-B. Costs to install and test systems for FAA compliance are additional and typically range from roughly \$1,000 for a simple install to \$3,000 or more for units with more complex features and more difficult installations.⁴⁰

(15) What licenses are required for operation of a tour helicopter or small aircraft in Hawaii?

Air tours may be conducted under 14 C.F.R. Part 91 (General Operating and Flight Rules) or 14 C.F.R. Part 135 (Commuter and On Demand Operations). Part 91 operators must engage strictly in nonstop flights that begin and end at the same airport and remain within a 25-statute mile radius of that airport. Part 135 operators can exceed these limitations and may fly point-to-point between airports (see 14 C.F.R. §91.147). Operators governed by Part 135 rules must receive specific operating certification from FAA, and adhere to FAA-approved operating specifications. In general, the local flight standards district office, the Honolulu FSDO in Hawaii, conducts safety oversight of both Part 135 and Part 91 operations.

In addition to operator certification for Part 135 operations, all aircraft must be registered with both the FAA and the state of Hawaii. Aircraft must be maintained in accordance with all FAA directives and manufacturer requirements to maintain continued airworthiness. To operate for hire, pilots must have commercial pilot certifications and must be appropriately rated in the category (e.g., airplane or rotorcraft), class (single engine or multiengine), and type (e.g., AS350 B2) of aircraft flown.

(16) How many such licenses are issued and how does this compare to one year ago and five years ago?

The 2017 FAA aircraft registry database included 171 rotorcraft registered to entities in the state of Hawaii. The 2012 FAA aircraft registry database listed 144 rotorcraft registered in the state of Hawaii. In addition to air tours, registered helicopters may be engaged in flight training, air ambulance operations, heavy lift operations, and other activities. In some cases, helicopters may be used for multiple purposes, for example, for flight training and air tours. According to FAA, there are a total of 49 operators conducting air tours in the state of Hawaii, 28 conducting operations under 14 C.F.R. Part 135 certificates and 21 conducting operations under 14 C.F.R. Part 91. In addition to operating the helicopter models identified in **Table 2**, some air tours in Hawaii are also conducted in a number of small single-engine

³⁹ See <https://aireon.com/>.

⁴⁰ These estimates are based on CRS analysis of retail ADS-B units prices and installed costs listed on various avionics supplier websites.

piston airplane models such as a Cessna and Piper aircraft, a few twin engine Cessna airplanes, and a vintage Military trainer, the T-6 Texan.

(17) Logging and Reporting of Air Tour Operations in Hawaii

In general, FAA has no specific reporting requirements for individual flights. However, amendments to the NPS Air Tour Act in 2012 established reporting requirements for commercial air tour operators conducting overflights of National Park System units. Operators must report on the number of commercial air tour operations “and such other information as the [FAA] Administrator and [NPS] Director may request” as needed to facilitate administration of the act.⁴¹ Operators began making the reports under the amended law in 2013, including for Haleakalā National Park and Hawai‘i Volcanoes National Park.

(18) How many tours were reported in Hawaii for the last full annual reporting period and how does this compare to the prior year and to five years prior?

For 2017, the most recent year with full annual reporting data, operators at Hawai‘i Volcanoes National Park reported 16,520 air tours, and operators at Haleakalā National Park reported 4,839 air tours.⁴² In accordance with your request, comparisons with 2016 (the previous year) are provided in **Table 1**. Figures for five years prior (2012) are not available because the reporting began in 2013 (following amendments to the Air Tour Act), but the table shows the reported tours for 2013. As shown in the table, tour numbers over both parks rose between 2013 and 2017, by approximately 7% at Hawai‘i Volcanoes National Park and approximately 4% at Haleakalā National Park.

Table 3. Reported Commercial Air Tours Over Hawaii National Parks: 2017, 2016, and 2013

Year	Hawai‘i Volcanoes National Park	Haleakalā National Park
2017	16,520	4,839
2016	15,489	4,589
2013	15,410	4,631

Source: NPS Commercial Air Tour Operations reports for 2013-2017, available at https://www.faa.gov/about/office_org/headquarters_offices/arc/programs/air_tour_management_plan/program_information/ (see list under “ATMP Program Documentation”).

(19) Logging of complaints through PlaneNoise

The Hawaii Helicopter Association, a trade organization representing 10 helicopter air tour companies in the state, provides a mechanism to enter noise complaints using an online form.⁴³ Hawaii utilizes PlaneNoise to collect and analyze this noise complaint data. You asked whether this data is publicly available, and if so, how it can be obtained and reviewed. PlaneNoise is an independent aviation noise consultancy that focuses on airport and aircraft noise complaint management. According to PlaneNoise,

⁴¹ 49 U.S.C. §40128(d)(1).

⁴² NPS, *Reporting Information for Commercial Air Tour Operations over Units of the National Park System: 2017 Annual Report*, August 2018, at https://www.faa.gov/about/office_org/headquarters_offices/arc/programs/air_tour_management_plan/documents/2017-Annual-Report.pdf; NPS, *Update No. 1 to Natural Resource Report NPS/NRSS/NSNSD/NRR—2018/1694*, September 2018, at https://www.faa.gov/about/office_org/headquarters_offices/arc/programs/air_tour_management_plan/documents/2017-Annual-Report-Update.pdf. The report listed six operators that conducted tours over Hawai‘i Volcanoes National Park and five operators that conducted tours over Haleakalā National Park in 2017.

⁴³ See <https://hawaiihelicopterassociation.org/>.

the only public-facing element of the Hawaii Helicopter Association PlaneNoise interface is an online complaint log form. Complaints received from the online form or through its toll-free hotline service are logged and analyzed by PlaneNoise. PlaneNoise provides the Hawaii Helicopter Association with monthly complaint data, including summary data and raw data of individual complaints. The summary data includes information about trends and geographic characteristics of received complaints. PlaneNoise does not make any of this data available to the public because of privacy considerations and the proprietary rights to that data held by PlaneNoise and the Hawaii Helicopter Association.

(20) Are air tour helicopters and small aircraft operators required to report noise complaints and actions taken to FAA or any other federal entity?

In general, there are no federal requirements for air tour operators to report noise complaints to FAA or to take or report on any action they may take in response to complaints received. Alternatively, members of the public may log complaints with FAA regarding concerns about aircraft noise or safety of flight (e.g., low altitude overflights that may raise concerns that they pose an undue hazard). While doing so may prompt FAA inquiries to determine if there were any regulatory violations, FAA does not maintain any specific databases of aircraft or air tour noise complaints. Records of such complaints filed with FAA are generally not directly available to the public, but could be subject to Freedom of Information Act (FOIA) disclosure.

(21) Toward drafting of a bill to impose federal regulation substantially limiting the operation of tour helicopters and small aircraft in Hawaii, what are the key questions to address?

As the responses to other questions indicate, commercial air tour activities in Hawaii have been a topic of legislative and regulatory interest at both the federal and state level for about 30 years, and any legislative action would likely need to recognize and build upon existing requirements and past proposals.

One legislative option would be to establish a statutory mandate for FAA to update the *Hawaii Air Tour Common Procedures Manual*, as the Hawaii State Legislature has urged. Statutory language might direct FAA to consider changes in population and residential development and noise impacts on residential communities in assessing altitudes and flight paths specified in the document. According to FAA, the process for updating the manual currently involves helicopter operators, but does not specifically mention input from the public. Therefore, directing FAA to seek specific public input on the manual and related air tour procedures and routes might help to involve local communities in better defining noise sensitive areas and flight routes within the context of the manual.

From our research, it appears that, while past studies have focused on the impacts of air tours within national park boundaries in the state of Hawaii, there has not been systematic study of the impacts of air tour operations on other noise-sensitive areas, such as residential communities and state-owned recreational lands. Therefore, another legislative option could be to statutorily mandate initiatives to better document air tour operations and their impacts across the state of Hawaii. This might include requirements for Hawaii air tour operators to furnish to FAA, researchers, and possibly to the public, flight log data for commercial air tour operations. This data might include information about aircraft type, flight duration, altitudes, and flights tracks. ADS-B technology might help automate the collection of such data and improve its accuracy, as well as provide a capability to provide near real-time information regarding flight operations. However, imposing a mandate to provide ADS-B tracking capabilities in all air tour aircraft could impose a significant financial cost on air tour operators, many of which may not be directly subject to FAA's ADS-B Out mandate for controlled airspace. Also, as previously mentioned, ADS-B may not be able to provide complete flight tracking data for flights and may have specific limitations, especially at low altitudes in mountainous areas.

Another legislative option to improve understanding of the noise impacts of air tour operations in Hawaii might involve noise monitoring in certain noise-sensitive locations. This option might involve studies to determine sites where noise monitoring may be warranted based on population and land use characteristics and community input. Additionally, legislation might examine options for requiring the logging and reporting of noise complaints and analysis of aggregate complaint data to help identify noise sensitive areas and flight routes that might impact these locations.

Several airports currently provide flight tracking information on a voluntary basis, allowing members of the public to obtain this data in near real-time and to link noise events with specific flights.⁴⁴ Some airports using these tools also combine noise monitoring data with flight tracking to aid the public in identifying specific flights and flight paths that cause noise concerns. Linking information in this manner can help inform decisions about how to address community concerns. One potential difficulty with requiring such an approach for monitoring air tours, however, is that noise monitoring activities have typically been sponsored by airports voluntarily, whereas air tour noise is not directly associated with airport operations and flights in the vicinity of airports. This may have implications for funding flight tracking and monitoring efforts if these were mandated as this could impose additional costs on air tour operators.

Around national parks where air tour management programs are required, however, flight tracking or flight logging and noise monitoring could potentially be funded from air tour overflight fees. Flight tracking and noise monitoring could aid the National Park Service in documenting air tour activities and related impacts and serve as a tool for monitoring and enforcing air tour management requirements. In general, flight tracking and noise monitoring and analysis may provide an important first step in documenting and scoping noise impacts from commercial air tours. Data and analysis from these efforts could help better inform future courses of action to address and mitigate noise concerns.

With respect to the national parks, other legislative options could focus on expediting the development of air tour management plans or voluntary agreements under the Air Tour Act (as amended), either for the Hawaii national parks in particular or for national park units more generally. As discussed, issues identified by the agencies in the past as contributing to the planning delays have included differences in each agency's procedures for environmental compliance, as well as funding constraints. Congress could use oversight tools to obtain updated information on challenges to completing the plans and agreements, and could potentially address the ATMPs and voluntary agreements through further legislation. Another option would be to directly address overflights at the Hawaii national parks outside of the Air Tour Act framework, similar to the approach taken by Congress for Grand Canyon National Park.⁴⁵

⁴⁴ For example, see <https://webtrak.emsbk.com/> for a list of airports using the Brüel & Kjær Webtrak. A number of other airport operators use the Harris Corporation Symphony PublicVue system to provide flight tracking and noise monitor data to the public. For an example see Denver International Airport's flight tracking and noise monitoring public website at <https://secure.symphonycdm.com/publicvue/AirSceneFrames.asp?NoMenu=True&ContentFrame=https%3A%2F%2Fapp2%2Esymphonycdm%2Ecom%2FMobileVue%2F%3Facc%3Dden%26noLogo%3Dtrue>.

⁴⁵ See footnote 7 for a discussion of statutory and regulatory actions specific to Grand Canyon National Park.