United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

Argued May 9, 2002 Decided August 16, 2002

No. 00-1201

United States Air Tour Association, et al.,
Petitioners

v.

Federal Aviation Administration, et al.,
Respondents

Grand Canyon Trust, et al.,
Intervenors

Consolidated with
00-1212

On Petitions for Review of an Order of the
Federal Aviation Administration

William Davis Thode and Joseph F. Becker argued the cause for petitioners United States Air Tour Association, et

al. With them on the briefs was William Perry Pendley. Lorraine B. Halloway and Timothy M. Biddle entered appearances.

Alexander E. Dreier argued the cause for petitioners Grand Canyon Trust, et al. With him on the briefs were Michael L. Kidney, Catherine S. Stetson, Jeffrey C. Nelson, and Robert Wiygul.

Ronald M. Spritzer, Attorney, U.S. Department of Justice, argued the cause for respondents. With him on the brief was Ellen J. Durkee, Attorney.

Michael L. Kidney, Catherine E. Stetson, Alexander E. Dreier, Jeffrey C. Nelson, and Robert Wiygul were on the brief of intervenors Grand Canyon Trust, et al.

Glenn M. Feldman argued the cause and filed the brief for intervenor Hualapai Indian Tribe.

Before: Edwards, Henderson, and Garland, Circuit Judges.

Opinion for the Court filed by Circuit Judge Garland.

Garland, Circuit Judge: As part of an ongoing effort to reduce aircraft noise in Grand Canyon National Park, the Federal Aviation Administration (FAA) promulgated a rule limiting the number of air tours permitted to fly over the Park. Two groups of petitioners, one led by the United States Air Tour Association and the other by the Grand Canyon Trust, challenge that rule. We reject the challenges brought by the Air Tour Association, but conclude that the challenges brought by the Trust raise issues that require further consideration by the FAA.

I

The history of regulation of aircraft overflights at Grand Canyon National Park is set out in Grand Canyon Air Tour Coalition v. FAA, 154 F.3d 455, 460-64 (D.C. Cir. 1998) [hereinafter Grand Canyon I]. We recount some of that story here and explain subsequent developments to the extent necessary to give context to the present controversy.

A

In 1987, Congress enacted the National Parks Overflights Act, Pub. L. No. 100-91, 101 Stat. 674 (set out at 16 U.S.C.A. s 1a-1 note). Section 3 of the Act declared that "[n]oise associated with aircraft overflights at the Grand Canyon National Park is causing a significant adverse effect on the natural quiet and experience of the park." Overflights Act s 3(a). To address this problem, Congress required the Secretary of the Interior to submit to the Administrator of the FAA:

> recommendations regarding actions necessary for the protection of resources in the Grand Canyon from adverse impacts associated with aircraft overflights. The recommendations shall provide for substantial restora-

> tion of the natural quiet and experience of the park and protection of public health and safety from adverse effects associated with aircraft overflights.

Id. s 3(b)(1) (emphasis added). Congress also required the FAA to "prepare and issue a final plan for the management of air traffic in the air space above the Grand Canyon." Id. s 3(b)(2). That plan, the Act declared, "shall ... implement the recommendations of the Secretary without change unless the [FAA] determines that implementing the recommendations would adversely affect aviation safety." Id. Finally, Congress directed the Secretary to submit, within two years of the effective date of the plan, "a report discussing (A) whether the plan has succeeded in substantially restoring the natural quiet in the park; and (B) such other matters, including possible revisions in the plan, as may be of interest." Id. s 3(b)(3).

In response to the Overflights Act, the Secretary of the Interior submitted recommendations to the FAA in December 1987. In May 1988, the FAA implemented those recommendations in the form of Special Federal Aviation Regulation (SFAR) 50-2. See Special Flight Rules in the Vicinity of the Grand Canyon National Park, 53 Fed. Reg. 20,264 (June 2, 1988). The regulation applied to aircraft flying below 14,500 feet and established, inter alia, flight free zones (areas

into which aircraft may not fly), minimum altitudes, and other rules constraining flight paths within the Park. It remained in effect through 1997.

On September 12, 1994, the National Park Service (the Park Service or NPS), on behalf of the Secretary of the Interior, submitted the report to Congress required by section 3 of the Overflights Act. See NPS, U.S. Dep't of the Interior, Report on the Effects of Aircraft Overflights on the National Park System (published in 1995) [hereinafter 1994 NPS Report]. In that report, the Park Service made several foundational determinations. First, it decided that the appropriate measure for quantifying aircraft noise was the percentage of time that aircraft are audible. See id. at 60. Second, the Park Service concluded that the key statutory phrase, "substantial restoration of the natural quiet," required that "50% or more of the park achieve 'natural quiet' (i.e., no aircraft audible) for 75-100 percent of the day." Id. at 182. Subsequently, the agencies determined that an aircraft was audible at three decibels above the average natural ambient sound level. See FAA, U.S. Dep't of Transp., Environmental Assessment: Special Flight Rules in the Vicinity of Grand Canyon National Park 4-4 to 4-5 (1996) [hereinafter 1996 Environmental Assessment].

Applying these principles, the agencies concluded that, under SFAR 50-2, only 31% of the Park enjoyed "a substantial restoration of natural quiet"--by which they meant that only 31% of the Park experienced natural quiet for at least 75% of the day. Special Flight Rules in the Vicinity of Grand Canyon National Park, 61 Fed. Reg. 69,302, 69,317 (Dec. 31, 1996) [hereinafter 1996 Final Rule].1 Moreover, the agencies

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1 When the agencies discuss their current progress toward "a substantial restoration of natural quiet," they refer to the percentage of the Park experiencing natural quiet for at least 75% of the day. When they discuss the overall statutory goal of "substantial restoration of the natural quiet," however, they refer to a situation in which at least 50% of the Park achieves natural quiet for at least 75% of the day. Depending upon the context, we will use the phrase in the same two ways in this opinion.

predicted that without revisions to the existing regulations, projected growth in the number of air tours would cause the percentage of the Park enjoying substantial restoration of natural quiet to drop to less than 10% by the year 2010. Id.

On December 31, 1996, the FAA issued a final rule that adopted the definitions contained in the 1994 NPS Report, including the definition of substantial restoration of the natural quiet. See 1996 Final Rule, 61 Fed. Reg. at 69,305-10. Among other things, the 1996 Final Rule also established new flight free zones, instituted flight curfews, and set a cap on the number of aircraft that could fly over the park--although not on the number of flights. See id. at 69,317, 69,332. In addition to the 1996 Final Rule, the FAA proposed two further rules: one to modify flight paths in the Park; the other to require operators to use quieter aircraft. See Proposed Air Tour Routes for the Grand Canyon National Park, 61 Fed. Reg. 69,356 (Dec. 31, 1996); Noise Limitations for Aircraft Operations in the Vicinity of Grand Canyon National Park, 61 Fed. Reg. 69,334 (proposed Dec. 31, 1996). The FAA predicted that the 1996 Final Rule, in conjunction with the two proposed rules, would meet the statutory goal of substantial restoration of the natural quiet by the year 2008. See Noise Limitations for Aircraft Operations, 61 Fed. Reg. at 69,329.

In October 1997, the FAA discovered that it had significantly underestimated the number of tour aircraft operating in the Park, and that as a consequence the 1996 Final Rule would be less effective than it had thought. See Special Flight Rules in the Vicinity of Grand Canyon National Park, 62 Fed. Reg. 58,898, 58,899 (Oct. 31, 1997). After oral argument in Grand Canyon I, the FAA informed the court that it was considering placing a cap on the number of flights, in addition to the 1996 Final Rule's cap on the number of aircraft. See Grand Canyon I, 154 F.3d at 464.

B

In Grand Canyon I, several groups of petitioners challenged provisions of the 1996 Final Rule. The principal

challenges came, as they do here, from a group of air tour operators (the Air Tour Coalition) that included members of petitioner Air Tour Association, and from a group of environmental organizations led by petitioner Grand Canyon Trust. The air tour operators argued that the rule did "too much, too soon," while the Trust argued that it did "too little, too late." Grand Canyon I, 154 F.3d at 459-60. We upheld the rule against both challenges.

In the course of our decision, we affirmed--against challenges from both the Coalition and the Trust--the Park Service's definition of "substantial restoration of the natural quiet" as "50% or more of the park achiev[ing] 'natural quiet' (i.e., no aircraft audible) for 75-100 percent of the day." That definition, we said, was a reasonable construction of an ambiguous statutory phrase. Id. at 466-67 (citing Chevron U.S.A. Inc. v. Natural Res. Def. Council, 467 U.S. 837, 841-43 (1984)). We also upheld as reasonable the agencies' three-decibels-above-ambient measure of audibility, and we rejected the Air Tour Coalition's contention that the agencies had ignored their statutory obligation to consider the actual experience of Park visitors. Id. at 465-67, 469. We did not need to decide whether there was such a statutory obligation, because it was clear that the agencies' definition and audibility measure were specifically developed to address and to enhance the experience of Park visitors. Id. Grand Canyon I also observed that the Overflights Act "clearly divides the institutional responsibilities between" the FAA and the Park Service. Id. at 468. Because the Act directs the FAA to "implement the recommendations of the Secretary without change" unless they would adversely affect aviation safety, we held that the FAA "had no choice but to adopt the Park Service's recommendations" regarding substantial restoration of the natural quiet. Id.

Finally, we noted the Trust's complaint that, using the Park Service's definition and the FAA's recent reevaluation of its data, neither the 1996 Final Rule nor the two additional proposed rules would achieve Congress' goal of substantially restoring natural quiet in the Park. We agreed that it would be arbitrary and capricious for the government not to intend

to achieve the congressional goal on any timetable at all. Id. at 477. We accepted, however, the FAA's assurance that it still "anticipates meeting the goal of substantial restoration by 2008" through implementation of the two proposed rules and consideration of a cap on the total number of overflights. Id. at 478. In so doing, we emphasized that the Trust could raise its claim again if "the FAA does not issue additional regulations reasonably promptly, or if those regulations do not appear likely to achieve the statutory goal on a reasonable timetable." Id.

C

On April 4, 2000, the FAA published two additional rules governing flights over the Grand Canyon. One of those rules (the Airspace Rule), not at issue here, modifies air flight paths in the Park.2 The second rule, the Limitations Rule, is the subject of the petitions for review filed in this case. That rule imposes a cap on the total number of commercial air tours that operators may run in the Park. See Commercial Air Tour Limitation in the Grand Canyon National Park Special Flight Rules Area, 65 Fed. Reg. 17,708 (April 4, 2000) (codified at 14 C.F.R. ss 93.303-.325) [hereinafter Limitations Rule]. Under the Limitations Rule, an air tour operator may not conduct more flights in the Park than it conducted during the base year of May 1, 1997 through April 30, 1998. 14 C.F.R. s 93.319(a), (b).

In developing the Limitations Rule, the FAA and the Park Service issued three associated documents that detailed the

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2 See Modification of the Dimensions of the Grand Canyon National Park Special Flight Rules Area and Flight Free Zones, 65 Fed. Reg. 17,736 (April 4, 2000). On October 17, 2001, this court severed challenges to the Airspace Rule from those to the Limitations Rule at issue here, and held the former challenges in abeyance pending ongoing FAA administrative proceedings.

methodology they used to quantify noise levels in the Park and to measure progress toward the goal of substantial restoration of the natural quiet. First, the Park Service announced in July 1999 that it was changing the threshold at which it would regard aircraft noise as audible in part of the Park. See Change in Noise Evaluation Methodology for Air Tour Operations Over Grand Canyon National Park, 64 Fed. Reg. 38,006 (July 14, 1999) [hereinafter Change in Noise Evaluation Methodology]. As discussed above, the agencies had previously adopted a threshold of three decibels above the average natural ambient sound level, a measure of audibility we affirmed in Grand Canyon I. In the Change in Noise Evaluation Methodology, the Park Service divided the Park into two zones: Zone One, encompassing about one-third of the Park, includes the more developed areas; Zone Two, encompassing two-thirds, contains the backcountry. The Park Service announced that in Zone One it will continue to consider aircraft audible at three decibels above the average natural ambient level. 64 Fed. Reg. at 38,006-08. For Zone Two, however, the Park Service determined that aircraft noise is audible if it is eight decibels below the average natural ambient level. Id.

Second, in January 2000, the Park Service issued a review of its Change in Noise Evaluation Methodology. NPS, Dep't of the Interior, Review of Scientific Basis for Change in Noise Impact Assessment Method Used at Grand Canyon National Park (2000) [hereinafter 2000 NPS Review]. The review explained in detail the acoustic model used in assessing noise impacts in the Park. It also reaffirmed the Park Service's 1994 definition of "substantial restoration of the natural quiet" as: "Fifty percent or more of the Park achieving 'natural quiet' (i.e., no aircraft audible) for 75-100 percent of the day." Id. at 16. And it stated that "[t]his definition is a threshold not to be exceeded on any given day ... and refers to ... the 12 hour daylight period ... during which air tours occur." Id.; accord id. at 4-5.

Third, in February 2000, the FAA issued a Final Supplemental Environmental Assessment in which it analyzed the effects that it expected the Limitations Rule to have on noise

in the Park. See FAA, U.S. Dep't of Transp., Final Supplemental Environmental Assessment: Special Flight Rules in the Vicinity of Grand Canyon National Park (2000) [hereinafter FSEA]. Of particular importance here, the FSEA stated that the FAA intended to use an "average annual day" standard when determining the percentage of "the day" that is restored to natural quiet at a given location. See id. at 4-12, 4-18, F-4. The assessment also made clear that the FAA's noise model only accounts for noise from tour aircraft, and does not consider noise from other aircraft that fly over the Grand Canyon, including commercial jets, general aviation, and military flights. Id. app. G, at 40.

Applying these standards, the FAA concluded that the Limitations Rule would make "significant steps towards substantially restoring natural quiet," Limitations Rule, 65 Fed. Reg. at 17,713, although the combined effect of all of the agency's rulemakings would still not achieve the goal of having 50% of the Park experience natural quiet for at least 75% of the day, id. at 17,711. The FAA estimated that only 32% of the Park currently achieved that mark, and that if no further action were taken, future air tour growth would reduce that to 25% of the Park in nine to ten years. Id. at 17,724. Adding the new 2000 rules, the FAA predicted, would increase the percentage of the Park experiencing the substantial restoration of natural quiet to above 41% and maintain that level in the future. Id.; see FSEA at 4-18 (predicting substantial restoration of 43.6% of the Park through 2003 and 43.5% in 2008). But the agency recognized that additional steps, including implementation of the still-pending quiet technology rule, would be necessary to achieve Congress' goal in the Overflights Act. Limitations Rule, 65 Fed. Reg. at 17,714.

D

As noted above, two groups of petitioners have filed challenges to the Limitations Rule. The first is led by the United States Air Tour Association, a trade organization whose mem-

bers fly air tours over the Park. The second, led by the Grand Canyon Trust, is a group of six environmental organizations. Petitioners level a number of challenges at the rule, raising questions of statutory construction, regulatory interpretation, and the rationality of the agencies' methodologies and policy choices.

As to questions of statutory construction, where legislation is "silent or ambiguous with respect to [a] specific issue," we are obligated to defer to an agency's interpretation as long as it is "based on a permissible construction of the statute." Chevron, 467 U.S. at 843. Similarly, we defer to an agency's reading of its own regulation, unless that reading is "plainly erroneous or inconsistent with the regulation." Auer v. Robbins, 519 U.S. 452, 461 (1997) (internal quotation marks omitted). We also examine agency regulations to determine whether they are "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." Administrative Procedure Act, 5 U.S.C. s 706(2)(A). In that regard, the question for the court is whether the agency has considered the relevant factors and articulated a " 'rational connection between the facts found and the choice made.' " Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983) (quoting Burlington Truck Lines, Inc. v. United States, 371 U.S. 156, 168 (1962)). Finally, by statute the FAA's findings of fact "are conclusive" if they are "supported by substantial evidence." 49 U.S.C. s 46110(c).

We apply these principles to our analysis of the Air Tour Association's challenges to the Limitations Rule in Part II below, and to those of the Grand Canyon Trust in Part III.

II

The Air Tour Association asks this court to hold the Limitations Rule unlawful for five principal reasons: (i) it was prompted by an improper change in the definition of "natural quiet"; (ii) the acoustic methodology that justifies the rule is scientifically flawed; (iii) the FAA arbitrarily and capriciously

issued the rule without first promulgating a quiet technology rule; (iv) in promulgating the rule, the FAA violated the Regulatory Flexibility Act, 5 U.S.C. s 601 et seq.; and (v) the rule arbitrarily and capriciously ignores the needs of the elderly and disabled. These five contentions are considered in the following sections.

A

In determining the need for the Limitations Rule, as well as its predicted impact on noise in the Park, the FAA employed the standards announced in the Park Service's 1999 Change in Noise Evaluation Methodology. Although the new methodology continues to use the three-decibels-above-ambient threshold for measuring audibility in the more-developed areas of the Park, it substitutes an eight-decibels-below-ambient threshold for use in backcountry areas. The Air Tour Association contends that this reflects a new interpretation of the statutory term "natural quiet." It argues that while the previous interpretation was based on "noticeability," measuring sounds that a person not engaged in active contemplation of the Park likely would notice, the new interpretation substitutes a "detectability" standard, measuring any sound that is detectable to a vigilant observer.

The Air Tour Association further asserts that this change is unlawful because it is inconsistent with our opinion in Grand Canyon I, which upheld the three-decibels-above-ambient threshold. The new threshold for Zone Two is contrary to Grand Canyon I, the tour operators argue, because it is unrelated to how visitors actually experience aircraft noise in the Park. According to the Air Tour Association, visitors to the Grand Canyon do not attentively listen for such sounds, and would not notice below-ambient-level noise. Because the new standard is inconsistent with Grand Canyon I, and because it represents a change from the prior standard, the Air Tour Association urges us to accord it less deference than we would ordinarily extend to an agency determination.

We must begin with the last point, because it misperceives the scope of our review. The Supreme Court "has rejected

the argument that an agency's interpretation 'is not entitled to deference because it represents a sharp break with prior interpretations' of the statute in question." Rust v. Sullivan, 500 U.S. 173, 186 (1991) (quoting Chevron, 467 U.S. at 862). An agency is not required to establish "rules of conduct to last forever," but rather "must be given ample latitude to adapt [its] rules and policies to the demands of changing circumstances." State Farm, 463 U.S. at 42 (internal quotation marks omitted). Nor does the fact that we previously affirmed an agency interpretation fix that interpretation in stone. In Grand Canyon I we held that the standards employed in the 1996 Final Rule reflected a reasonable construction of the Overflights Act. 154 F.3d at 469. That does not preclude a new standard, promulgated pursuant to notice and comment as this one was, from being reasonable as well. What the Park Service must do to sustain its decision is justify the change in course with a "reasoned analysis." State Farm, 463 U.S. at 57 (quoting Greater Boston Television Corp. v. FCC, 444 F.2d 841, 852 (D.C. Cir. 1970)); see Rust, 500 U.S. at 186-87.

The Park Service has provided that reasoned analysis. First, it contends that it has not changed the underlying definition of natural quiet. See Change in Noise Evaluation Methodology, 64 Fed. Reg. at 38,006. The original 1994 NPS definition, applied in the 1996 rule, was "no aircraft audible," 1994 NPS Report at 182; 1996 Environmental Assessment at 4-2, which is the same definition we upheld as reasonable in Grand Canyon I, see 154 F.3d at 461-62. According to the agency, it continued to employ that definition during the Limitations Rule rulemaking. See Change in Noise Evaluation Methodology, 64 Fed. Reg. at 38,007 ("[A]udibility is the basis for assessing progress toward the legislatively mandated goal of substantially restoring natural quiet."); id. at 38,011 ("Natural quiet remains the same as 'no aircraft audible.' ").

What has changed, the Park Service says, is the threshold it uses to measure audibility in Zone Two. The agency agrees with the tour operators that the 1996 rule used a noticeability threshold for determining when sounds become

audible, based on "the level at which visitors engaged in activities other than contemplation of the national park are likely to hear aircraft noise." Change in Noise Evaluation Methodology for Air Tour Operations Over Grand Canyon National Park, 64 Fed. Reg. 3969, 3971 (proposed Jan. 26, 1999) [hereinafter Proposed Change in Noise Evaluation Methodology]; see also Change in Noise Evaluation Methodology, 64 Fed. Reg. at 38,007. That, it says, is what led to the original three-decibels-above-ambient standard. But the Park Service contends that since 1996 it has gathered more data and performed additional research. Id. That data, collected in Grand Canyon National Park, shows that "an active listener could hear aircraft when their sound levels were between 8 and 11 [decibels] below the A-weighted ambient." FSEA at 4-5; see Change in Noise Evaluation Methodology, 64 Fed. Reg. at 38,007; Proposed Change in Noise Evaluation Methodology, 64 Fed. Reg. at 3971-72.3

The new studies resulted in the Park Service's decision to divide the Park into two zones, and to use different noise thresholds for each zone. The agency continued to apply the three-decibels-above-ambient threshold in the more-developed areas of the Park, where visitors were often engaged in activities other than contemplation. But it employed the new, eight-decibels-below-ambient standard in the remaining, mostly backcountry areas. In those areas, the Park Service was concerned about the experience of visitors "sitting quietly but actively seeking to experience the natural quiet and solitude of the park." Proposed Change in Noise Evaluation

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3 The A-weighted level of a sound is a single number determined by combining the sound levels in all frequencies. This combining de-emphasizes the low and high frequencies in a manner similar to the sensitivities of human hearing. The A-weighted level is widely accepted as one of the best over-all sound level metrics for analysis of transportation noise. It has been shown to correlate well with human assessment of the loudness or noisiness of a sound.

Change in Noise Evaluation Methodology, 64 Fed. Reg. at 38,001.

Methodology, 64 Fed. Reg. at 3971. The Park Service's evidence is that such visitors are able to perceive aircraft noise at the lower decibel level. Id. As the agency explains, "the threshold for Zone Two is set at 8 decibels below the average ambient sound levels" because it is "a threshold which reflects the point at which aviation noise can be heard (i.e., audible) by ground visitors seeking to experience the natural and cultural soundscapes of national parks." Id. at 3972. Thus, far from representing a lack of concern for visitors' experiences, the agency adopted the distinction between the two zones precisely because visitors experience sound differently in different areas.

Nor does the use of a threshold below the ambient indicate, as the Air Tour Association contends, that aircraft noise is banned even though it cannot be heard above the natural ambient sound. Rather, it reflects the Park Service's new understanding that audibility depends not just on volume (loudness), but also on frequency (pitch). Change in Noise Evaluation Methodology, 64 Fed. Reg. at 38,011. As the agencies explain, "studies conducted in the [Park] for the NPS ... have shown that individuals who are actively listening can hear aircraft at lower levels than the ambient A-weighted sound levels ... because aircraft sound often contains tones that are not present in the natural ambient sound." FSEA at 4-5 (emphasis in original); see Change in Noise Evaluation Methodology, 64 Fed. Reg. at 38,012.4 Hence, in order to preserve the definition of natural quiet as

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4 The Park Service offers this example:

> [D]uring a concert if we listen for a high note on the piccolo, only the portion of the background sound ... that is of nearly the same pitch can interfere with our ability to hear the piccolo. The base violins can play as loudly as they like without the piccolo becoming inaudible.... Hence, the relative overall "loudness" of the background and the target sounds is not the key factor in the detection process. For a target sound to be audible, it must ... be louder than ... background sounds in the same frequency band.

Change in Noise Evaluation Methodology, 64 Fed. Reg. at 38,011.

"no aircraft audible" in the backcountry, the Park Service concluded that it was necessary to change the threshold of audibility to below the ambient level.

We conclude that the Park Service's explanation for its change in methodology--as well as its explanation of why that change remains true to the agency's original principles--are reasonable, and that the change is neither arbitrary nor capricious.

B

We next consider the Air Tour Association's "scientific" challenges to the "noise model and related sound data" used by the FAA and the Park Service in crafting the Limitations Rule. Air Tour Ass'n Br. at 15. Again, our standard of review is important. As a general matter, we "defer to the agency's reasonable exercise of its judgment and technical expertise" in the area of "aircraft noise." Grand Canyon I, 154 F.3d at 460; see also Sierra Club v. Dep't of Transp., 753 F.2d 120, 129 (D.C. Cir. 1985). When an agency uses a computer model, it must "explain the assumptions and methodology used in preparing the model and, if the methodology is challenged, must provide a complete analytic defense." Small Refiner Lead Phase-Down Task Force v. EPA, 705 F.2d 506, 535 (D.C. Cir. 1983) (internal quotation marks omitted). Ultimately, however, the "scientific nature" of a model "does not easily lend itself to judicial review," and our review "proceeds with considerable deference to the agency's expertise." Appalachian Power Co. v. EPA, 135 F.3d 791, 802, 814 (D.C. Cir. 1998). The principal question for us is whether the agencies' explanation of the model's assumptions and methodology is reasonable. See generally Small Refiner, 705 F.2d at 535.5

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5 Any agency model that satisfied this standard would also satisfy the directive in the National Parks Air Tour Management Act of 2000, passed the day after the publication of the Limitations Rule, that the agencies employ "reasonable scientific methods" when assessing aircraft sound levels within the national parks. Pub. L.

The agencies used a noise model developed by the FAA, known as the Integrated Noise Model (INM), to assess noise impacts in the Park. The INM is "the most widely used civilian software program for analyzing noise effects relating to changes in airspace use." 2000 NPS Review at 9. The Air Tour Association does not challenge the use of the model itself, but rather the way in which it was applied to the noise problem in the Grand Canyon.

First, the Air Tour Association cites excerpts from the report of a Park Service consultant, to the effect that "a more complex metric is required to achieve satisfactory accuracy." Air Tour Ass'n Br. at 17 (quoting 2000 NPS Review app. F, at 23). But as the government points out, the "more complex metric" recommended by the consultant was the one ultimately used by the agencies, see 2000 NPS Review app. F, at 23, and the consultant's overall conclusion was that "the science being used by NPS for noise modeling is grounded on extensive and valid scientific data," id. at Executive Summary 4; see id. at 1, 8. The Air Tour Association also contends that the INM overestimates aircraft noise because the agencies disabled an algorithm that adjusts for "lateral attenuation"--sound absorption by the ground and the air near the ground. But the FAA reasonably responds that the algorithm was removed because it is used to account for the effect of "flat, acoustically soft terrain, such as grass, as would be found in the vicinity of most major airports." FSEA at 4-7. As the FAA explains, for visitors near the rim of the Canyon "there is effectively no ground surface between the source and receiver," and in the "vast majority of other locations ... the ground surface is made up of acoustically hard rock and packed dirt." Id.6

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No. 106-181, tit. VIII, s 808, 114 Stat. 185, 194 (set out at 49 U.S.C.A. s 40128 note).

6 The Air Tour Association further criticizes the Park Service for excluding from its analysis data recorded at a number of collection sites. The Service's experts explain, however, that this data was collected before the plan for measuring sound levels was finalized,

Finally, the Air Tour Association cites its own expert, John R. Alberti, for the proposition that the audibility threshold used by the Park Service in Zone Two, eight decibels below the ambient sound level, is scientifically unsupportable because aircraft noise at that level cannot be heard by a listener with normal hearing. Air Tour Ass'n Br. at 18 (citing Comments of JR Engineering to NPS at 3 (Mar. 20, 1999)). The 2000 NPS Review contains a detailed critique, based on analysis by the agency's own experts, of the Alberti study. 2000 NPS Review app. B, at 5-11. The most serious problem with that study, the Park Service explains, is that it used data "that cannot be characterized ... as representative of the park or its many levels of ambient sound." Id. at 5. In essence, Alberti began with a significantly lower ambient level than that actually measured in the Park's acoustic environments, making his calculation of eight decibels below that level considerably quieter than the actual audibility thresholds the agencies will employ in Zone Two. Id. at 5, 8. Moreover, whatever the theoretical argument, the Park Service reports as a fact that "technicians monitoring the sound environment" in the Park "identified aircraft noise at A-weighted levels of 8-12 decibels below the average A-weighted natural ambient sound levels." Proposed Change in Noise Evaluation Methodology, 64 Fed. Reg. at 3972.

We conclude that the agencies and their experts have presented a satisfactory analytic defense of their model, and therefore reject this challenge from the Air Tour Association. See Marsh v. Oregon Natural Res. Council, 490 U.S. 360, 378 (1989) ("When specialists express conflicting views, an agency must have discretion to rely on the reasonable opinions of its own qualified experts.").

C

The Air Tour Association also contends that the FAA acted arbitrarily and capriciously by issuing the Limitations Rule

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and that the excluded sites were not representative of the predominant acoustic environments in the Park. 2000 NPS Review app. C, at 8.

without first promulgating a quiet technology rule. As described by the Association, such a rule would establish standards for identifying "quiet aircraft technology" and would implement "incentive" flight paths for aircraft employing such technology. Air Tour Ass'n Br. at 20-21. According to the Association, Congress first ordered the FAA to establish quiet technology standards in the 1987 Overflights Act, and then did so again in the National Parks Air Tour Management Act of 2000, Pub. L. No. 106-181, tit. VIII, 114 Stat. 185 (set out at 49 U.S.C.A. s 40128 note). Nonetheless, the FAA's 1996 proposed rule on quiet technology is still not final.

The FAA notes that there is some irony in the air tour operators' new-found interest in a quiet technology rule, as they have previously opposed such a rule. Limitations Rule, 65 Fed. Reg. at 17,714. We also note that the operators have misread both the Overflights Act and the Air Tour Management Act. The Overflights Act does not contain a provision regarding quiet technology. The Air Tour Management Act does direct the FAA, by April 5, 2001, to "designate reasonably achievable requirements" for aircraft to be "considered as employing quiet aircraft technology" for purposes of relief from caps on flight operations. s 804(a), (c). However, the Act also provides that "if the Administrator [of the FAA] ... will not be able to make such designation" by that time, the FAA shall report to Congress "the reasons for not meeting such time period." s 804(a). The FAA submitted the required report. See FAA, U.S. Dep't of Transp., Quiet Aircraft Technology for Grand Canyon (2001).7

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7 Another statute, the Airport and Airway Safety, Capacity, Noise Improvement, and Intermodal Transportation Act of 1992, also mentioned "quiet aircraft technology." Pub. L. No. 102-581, s 134, 106 Stat. 4872, 4888 (set out at 16 U.S.C.A. s 1-1a note). Like the others, it did not direct the FAA to implement a quiet technology rule; it merely instructed the agency to submit a plan of action to Congress "to manage increased air traffic over Grand Canyon National Park ... to meet the requirements established by [the Overflights Act], including any measures to encourage or require the use of quiet aircraft technology by air tour operators." Id.

Moreover, the FAA has offered a reasonable explanation for why it has not yet issued a quiet technology rule. According to the agency, there continue to be unresolved technical issues regarding available technology and its noise effects within the Grand Canyon, including the most basic issue: "how to define quiet technology/noise efficiency." Limitations Rule, 65 Fed. Reg. at 17,714. The FAA's brief represents that the agency plans to issue a supplemental notice of proposed rulemaking to invite further comment on the proposed rule. Resp't's Br. at 32. In light of the technical difficulties the FAA is currently having in finalizing a quiet technology rule, its decision to go ahead with a cap on flights to ensure continuing progress toward restoring natural quiet is reasonable. As we explained in Grand Canyon I, "ordinarily, agencies have wide latitude to attack a regulatory problem in phases." 154 F.3d at 471.

D

The Regulatory Flexibility Act requires an agency promulgating a final rule to prepare a regulatory flexibility analysis that, inter alia, describes:

> the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected.

5 U.S.C. s 604(a). Although the FAA did prepare a regulatory flexibility analysis for the Limitations Rule, see 65 Fed. Reg. at 17,729-31, the Air Tour Association attacks that analysis as defective in two principal respects: (1) it underestimates the burden the Limitations Rule imposes on tour operators by using data regarding the number of tours from May 1997 to April 1998, a period they contend was nonrepresentative; and (2) it fails to consider significant alternatives

that would minimize the Rule's economic impact on small entities.

Neither attack is justified. As the FAA explains, it selected the 1997-98 base year because it was "the most accurate and current data available during the period that this rule was being drafted." Limitations Rule, 65 Fed. Reg. 17,718. Indeed, selection of that year actually favors the air tour operators, since subsequent data shows that in the following year the number of air tours declined. Id. Moreover, the agency plainly did consider alternatives to the rule, expressly listing nine and explaining its reasons for rejecting them. Id. at 17,729-30. The Air Tour Association does not point to any alternative that it believes was unreasonably rejected other than the quiet technology rule, which, as we have discussed above, the FAA has reasonably put off for the present. Because the FAA's analysis was reasonable, the Limitations Rule survives the Tour Association's challenge under the Regulatory Flexibility Act. See Allied Local & Reg'l Mfrs. Caucus v. EPA, 215 F.3d 61, 79-80 (D.C. Cir. 2000); Grand Canyon I, 154 F.3d at 470-71.

E

Finally, the Air Tour Association contends that the Limitations Rule is arbitrary and capricious because it ignores the needs of the elderly and disabled, who find it harder to visit the Park on the ground. The Association asserts that "nearly half of all Grand Canyon visitors never 'visit the Park on the ground,' " and that "[a]s many as half of these 'air only' visitors are elderly, disabled or mobility impaired and have no meaningful way to experience Grand Canyon except by recreational air tour." Air Tour Ass'n Br. at 22-23 (quoting Limitations Rule, 65 Fed. Reg. at 17,716). By "reducing the annual number of recreational air tours" that can be taken by the elderly and disabled, the Association contends that the Limitations Rule fails to accommodate their needs. Id.

Nearly every contention recounted in the preceding paragraph contains a factual error. It is not true, for example, that nearly half of Grand Canyon visitors never visit on the

ground. Rather, the authority cited by the Association actually states that over half of air tour visitors also visit the Park on the ground. Limitations Rule, 65 Fed. Reg. at 17,716. Indeed, in another part of its brief, the Air Tour Association states that of the more than 5 million people who visit the Grand Canyon annually, only 750,000 visit by air tour. Air Tour Ass'n Br. at 9. And the Association further concedes that there is no record support for its claim that as many as half of the "air only" visitors are elderly, disabled, or mobility impaired. As the Association notes, "the Administrative Record lacks any reference to the demographics of 'air only' Grand Canyon visitors." Id. at 23 n.5.

Finally, there is also no truth to the contention that the agencies have failed to consider the needs of the elderly and disabled. As the government explains, air tours are not the only means by which these groups may view the Canyon, as the Park has available such accommodations as handicapped-accessible trails, mule rides, and raft trips. See Resp't's Br. at 34. Nor does the Limitations Rule eliminate or even "reduc[e] the annual number of recreational air tours"; it merely caps the number of flights at current levels. Limiting the number of visitors at a given time in a national park is a standard measure used to protect park resources, see Limitations Rule, 65 Fed. Reg. at 17,716, and its application to the resource of "natural quiet" is not unreasonable. It is therefore not surprising that the Air Tour Association failed to return to this argument in its reply brief.8

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8 The Air Tour Association also argues that the Limitations Rule violates the equal protection component of the Fifth Amendment because it exempts flights to and from the Hualapai Indian Reservation from each tour operator's annual allocation. See 14 C.F.R. s 93.319(f). The Association's argument is founded upon Adarand Constructors, Inc. v. Pena, 515 U.S. 200, 227 (1995), in which the Supreme Court held that "all racial classifications ... must be analyzed by a reviewing court under strict scrutiny." In Morton v. Mancari, 417 U.S. 535 (1974), however, the Court upheld an employment preference for Indians in the face of an argument similar to that of the Air Tour Association, declaring that, "[a]s long as the special treatment can be tied rationally to the fulfillment of Con-

III

The Grand Canyon Trust raises two challenges of its own to the decisions of the FAA. First, the Trust contends that the agency unlawfully altered the Park Service's definition of substantial restoration of the natural quiet: from 50% of the Park experiencing natural quiet for 75% of "any given day," to 50% of the Park experiencing natural quiet for 75% of "the average annual day." Trust Br. at 12. Second, the Trust argues that the FAA's noise methodology is flawed because it only accounts for noise from commercial air tours, while ignoring noise from other types of aircraft. As a consequence of both errors, the Trust contends that the FAA has greatly overestimated the progress that the Limitations Rule makes toward restoring natural quiet.

We consider these two challenges in sections B and C below. Before doing so, we address the government's objections to our considering the Trust's arguments at all.

A

The Trust filed its petition for review pursuant to 49 U.S.C. s 46110(a), which authorizes review in this circuit of certain final "order[s] issued by the ... Administrator of the Federal

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gress' unique obligation toward the Indians," such treatment must be upheld. Id. at 555. And there is no dispute that the Hualapai exception is at least rationally related to "the government's interest in fulfilling its trust obligation" to the Tribe. Narragansett Indian Tribe v. National Indian Gaming Comm'n, 158 F.3d 1335, 1340 (D.C. Cir. 1998). Although the Air Tour Association contends that Adarand effectively overruled Mancari, the Supreme Court has made clear that the lower courts do not have the power to make that determination. See Agostini v. Felton, 521 U.S. 203, 237 (1997) ("[I]f a precedent of this Court has direct application in a case, yet appears to rest on reasons rejected in some other line of decisions, the Court of Appeals should follow the case which directly controls, leaving to this Court the prerogative of overruling its own decisions." (internal quotation marks omitted)). And this circuit has continued to apply Mancari post-Adarand. See Narragansett Tribe, 158 F.3d at 1340.

Aviation Administration."9 The FAA does not dispute that the Limitations Rule is a final order reviewable under that section. See Limitations Rule, 65 Fed. Reg. at 17,708 ("This final rule constitutes final agency action under 49 U.S.C. 46110."). The agency contends, however, that the Trust's challenges are not attacks on the FAA's order, that the decisions the Trust does attack are not final, and that the Trust's challenges are not ripe for judicial review.

The FAA's first argument is that the Trust's challenges are not to the Limitations Rule, but rather to its definition of "the substantial restoration of the natural quiet" and to its methodology for measuring aircraft noise. These, the agency contends, are neither reviewable orders themselves nor parts of the Limitations Rule. But whether the definition and methodology are independently "orders" is a question we need not decide, as there is no doubt that they are both part of the rulemaking record and integral to the agency's rationale for promulgating the Limitations Rule. The fact that they are contained in a separate document, the Final Supplemental Environmental Assessment, is of no moment; we similarly reviewed the Park Service's original definition of "substantial restoration of the natural quiet" in Grand Canyon I, even though that definition was contained in the 1994 NPS Report rather than in the 1996 Final Rule. The FSEA was issued concurrently with the Limitations Rule, and the rule's Federal Register notice repeatedly relies on it and incorporates it by reference. See, e.g., Limitations Rule, 65 Fed. Reg. at 17,714 (noting that the noise methodologies "used in support of this rule are explained further" in the FSEA); id. at 17,709-10 (noting that the FAA placed the draft Supplemental Environmental Assessment in the rulemaking docket for public comment, and that those comments are "addressed in the [FSEA] issued concurrently with this final rule"). Just as we may examine other record material that provides the underpinnings for the Limitations Rule, so

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9 See also Puget Sound Traffic Ass'n v. Civil Aeronautics Bd., 536 F.2d 437, 438-39 (D.C. Cir. 1976) (holding that review under the predecessor to s 46110(a) extended only to final orders).

also may we review analytic documents issued by the agency that elaborate upon the rule's rationale and assess its impact.10

The FAA's second argument is that the definition and methodology are not final because "the course the FAA may follow in future rulemakings" is "uncertain," and the Park Service "could revise" its recommendations. But as we have only recently reiterated, "if the possibility ... of future revision in fact could make agency action non-final as a matter of law, then it would be hard to imagine when any agency rule ... would ever be final as a matter of law." General Electric Co. v. EPA, 290 F.3d 377, 380 (D.C. Cir. 2002) (citing Appalachian Power Co. v. EPA, 208 F.3d 1015, 1022 (D.C. Cir. 2000)). Both decisions at issue here represent fully-crystallized determinations that the FAA used in promulgating the Limitations Rule, and that it has given every indication it will employ in future rulemakings. Because they represent the "consummation of the agency's decisionmaking process" and are determinations from which "legal consequences will flow," they are final for purposes of judicial review. Bennett v. Spear, 520 U.S. 154, 177-78 (1997).

Third, the FAA contends that the Trust's challenges are not ripe for review. To determine whether a challenge to final agency action is ripe, we consider "the fitness of the issues for judicial decision and the hardship to the parties of withholding court consideration." General Electric, 290 F.3d at 380 (quoting Abbott Labs. v. Gardner, 387 U.S. 136, 149

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10 Two circuit cases cited by the FAA to refute this proposition are inapposite. In Molycorp, Inc. v. EPA, 197 F.3d 543, 545 (D.C. Cir. 1999), we concluded that we were without jurisdiction to review an EPA Technical Background Document. Unlike the FSEA, that document was not issued as part of or in support of a rulemaking, and was "intended solely to provide information to the public and the regulated community." Id. at 545-46. In Florida Power & Light Co. v. EPA, 145 F.3d 1414, 1418-19 (D.C. Cir. 1998), we held that a statement in the preamble of a proposed rule was unreviewable, noting that--unlike the FAA in this case--the EPA had yet to take final action on the proposed rule to which the statement was relevant.

(1967)). "In determining the fitness of an issue for judicial review we look to see whether the issue is purely legal, whether consideration of the issue would benefit from a more concrete setting, and whether the agency's action is sufficiently final." Id. We have already determined that the FAA's definition and methodology are sufficiently final. The challenges to those decisions are fit for review in other respects as well.

Whether the FAA may use an average annual day as part of its definition of substantial restoration, and whether it may ignore the noise of non-tour aircraft, are purely legal issues. See Fox Television Stations, Inc. v. FCC, 280 F.3d 1027, 1039 (D.C. Cir. 2002) (finding an issue fit for review because whether an agency determination is arbitrary and capricious or contrary to law is a "purely legal" question). And they arise in the concrete setting of the Limitations Rule. Moreover, we see no reason to believe that our consideration of these issues would benefit from postponing review. As we have already noted, there is nothing "tentative or interlocutory" about the FAA's definition and methodology, Appalachian Power, 208 F.3d at 1022, and there is no prospect that they will change in the near future unless questioned by this court. At oral argument, the government suggested that the Trust should wait until the FAA claims natural quiet has been restored to 50% of the Park, and then appeal if it disagrees. But the Trust's argument is that "under FAA's interpretation of the [Overflights] Act it will never achieve that mandate." Trust Br. at 23-24 (citing our statement in Grand Canyon I, 154 F.3d at 477, that it would be arbitrary and capricious for the FAA to have no intention of achieving the Act's goal). If we assume as we must for purposes of this ripeness analysis that the Trust's challenges are valid,[11] then its argument is well-founded. For the FAA to substantially restore natural quiet to 50% of the Park on "any given day" (as the Trust contends is required), the agency would have to restore quiet to significantly more than 50% of the Park on the "average

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11 See, e.g., Better Gov't Ass'n v. Dep't of State, 780 F.2d 86, 94 (D.C. Cir. 1986).

annual day." See infra Part III.B. And the FAA has never indicated that it has any plans to achieve such a result.

Finally, again assuming the validity of the Trust's arguments, it will suffer hardship if we withhold consideration now.12 The Trust's members visit the Park and wish to experience its natural serenity. As the FAA stated in the Federal Register notice for the Limitations Rule, it promulgated that rule on the assumption that it would make "significant steps towards substantially restoring natural quiet." 65 Fed. Reg. at 17,713. Indeed, the FAA predicted that the Limitations Rule, together with the 2000 Airspace Rule and other existing regulations, would substantially restore natural quiet to more than 41% of the Park. Id. at 17,724. But the Trust contends that the flaws in the agency's definition and methodology cause it to significantly overestimate its progress toward the statutory goal (correctly understood)--so much so that the true percentage of the Park that will be substantially restored to natural quiet is below 19%.13

Crediting the government with a good-faith intent to achieve the goal of the Overflights Act, the Trust contends that if the FAA knew it was making as little progress toward achieving that goal as in fact it is, it would have "to impose more stringent regulation on air tours to make the progress it sought to make in the [Limitations] Rule." Trust Reply Br. at 3. The FAA might, for example, reduce rather than merely cap the number of authorized air tour flights. We cannot say that the prospects of the Trust achieving such benefits are speculative merely because they depend upon the

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12 See City of Houston v. HUD, 24 F.3d 1421, 1431 n.9 (D.C. Cir. 1994) ("[W]here there are no institutional interests favoring postponement of review, a petitioner need not satisfy the hardship prong.").

13 As we discuss in Part III.B below, the Trust points to evidence in the record that, using an "any given day" rather than an "average annual day" standard, only 19% of the Park will be substantially restored to natural quiet. Moreover, as we discuss in Part III.C, even that figure is based on a model that ignores noise from non-tour aircraft, and record evidence indicates that including that noise may well further reduce the percentage of the Park to which natural quiet will be substantially restored.

government's good faith. Cf. FEC v. Akins, 524 U.S. 11, 25 (1998) (holding that the plaintiff had standing even though the agency might have reached the same decision had it agreed with the plaintiff's view of the law); id. ("If a reviewing court agrees that the agency misinterpreted the law, it will set aside the agency's action and remand the case--even though the agency ... might later, in the exercise of its lawful discretion, reach the same result for a different reason."). We are therefore satisfied that the Trust's contentions are ripe for review and proceed to address them.

B

As we have discussed, section 3(b)(1) of the Overflights Act gives the Secretary of the Interior the responsibility to

develop a definition of "substantial restoration of the natural quiet," a responsibility that the National Park Service has performed on behalf of the Secretary. See Grand Canyon I, 154 F.3d at 468. In its 1994 report, the Park Service defined the term as requiring that 50% of the Park experience natural quiet at least 75% of "the day." See 1994 NPS Report at 182. In its 2000 Final Supplemental Environmental Assessment, the FAA stated that it interpreted the phrase "the day" in the Park Service's definition to mean the "average annual day." FSEA at 4-18 to 4-19; see id. at 4-12.

The Trust contends that the FAA's interpretation is unlawful because it substitutes a new FAA definition, "the average annual day," for what the Trust believes to be the Park Service's meaning, "any given day." The Trust further contends that the FAA's interpretation results in a definition of the statutory term, "substantial restoration of the natural quiet," that is arbitrary and unreasonable. The FAA replies that because the phrase "the day" is ambiguous, this court should defer to its interpretation.

In Grand Canyon I we held that the statutory term was ambiguous, and we therefore deferred to the Park Service's definition. 154 F.3d at 466-67 (citing Chevron, 467 U.S. at 841-43). There is no question that the phrase, "the day," in the Park Service's definition is also ambiguous, and that the

Park Service is entitled to deference for its interpretation of its own definition. See Auer, 519 U.S. at 461. The problem for the FAA, however, is that it is not the Park Service, and "deference is inappropriate when [an agency] interprets regulations promulgated by a different agency." Office of Pers. Mgm't v. FLRA, 864 F.2d 165, 171 (D.C. Cir. 1988); see Dep't of the Treasury v. FLRA, 837 F.2d 1163, 1167 (D.C. Cir. 1988). Nor is the FAA entitled to deference for its own interpretation of "substantial restoration of the natural quiet," as Congress expressly reserved for the Secretary of the Interior the authority to interpret that statutory term. Overflights Act s 3(b)(2); see Grand Canyon I, 154 F.3d at 468; see also Dep't of the Treasury, 837 F.2d at 1167 ("Under the law of this circuit, when an agency interprets a statute other than that which it has been entrusted to administer, its interpretation is not entitled to deference.").

As far as we can determine, the National Park Service has addressed the meaning of "the day" in its definition of substantial restoration on only one occasion: the January 2000 review of its Change in Noise Evaluation Methodology, issued just three months before the FAA issued the Limitations Rule.[14] In that review, the Park Service stated that it had defined the statutory term, "substantial restoration of the natural quiet," as:

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14 The FAA points us to the "inside cover page" of the FSEA as demonstrating Park Service approval of the FAA's average annual day interpretation. Resp't's Br. at 49 n.8. The FSEA, however, is a lengthy FAA document, the inside cover of which says nothing more than that the Department of the Interior is a "cooperating agency." The FAA also argues that the Park Service adopted an "average annual day" standard in the Change in Noise Evaluation Methodology, in which the Service declared that "the time period of interest is the day (i.e., the average 12 daylight hours)." 64 Fed. Reg. at 38,007. But that declaration merely states that substantial restoration of natural quiet must be achieved during daylight, which on average lasts 12 hours, and that quiet at night (when air tours do not fly) does not count in the calculation. See Grand Canyon I, 154 F.3d at 475 n.19. It says nothing about averaging noise over an entire year.

> Fifty percent or more of the Park achieving 'natural quiet' (i.e., no aircraft audible) for 75-100 percent of the day. This definition is a threshold not to be exceeded on any given day ... and refers to the 12 hour daylight period.... The NPS believes that it is a reasonable and rational definition.

2000 NPS Review at 16 (emphasis added); accord id. at 4-5. This statement clearly supports the Trust's contention that "the day" means "any given day," and contradicts the FAA's view that it means "the average annual day."15

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15 Although the government contends that the 2000 NPS Review is merely a "technical document" that cannot be taken to represent the views of the agency, Resp't's Br. at 51, the review gives every appearance of being authoritative. Indeed, the introduction states that "the National Park Service (NPS) has prepared the following report" in "response to language in [a] House Appropriations Bill." 2000 NPS Review at 4. In any event, whether or not the review is decisive affirmative evidence of the Secretary's view, it creates more than enough doubt to justify a remand.

At oral argument, government counsel also suggested that, because the Park Service is a co-respondent in this case, we should assume that the views expressed in the government's brief regarding the meaning of "the day" are those of the Park Service. Although deference to an agency's interpretation of its own regulation "is not to be withheld merely because the agency's reading of the regulation comes in form of a legal brief," that rule applies only where there is " 'no reason to suspect that the interpretation does not reflect the agency's fair and considered judgment on the matter in question.' " Drake v. FAA, 291 F.3d 59, 68 (D.C. Cir. 2002) (quoting Auer, 519 U.S. at 462). "In conducting this inquiry, we consider whether the agency has 'ever adopted a different interpretation of the regulation or contradicted its position on appeal.' " Id. at 69 (quoting National Wildlife Fed'n v. Browner, 127 F.3d 1126, 1129 (D.C. Cir. 1997)). Because the 2000 NPS Review did adopt a different interpretation that contradicts the government's position on appeal, deference to the interpretation contained in the government's brief is inappropriate.

The FAA's "average annual day" interpretation appears to be inconsistent not only with the 2000 NPS Review, but also with the premise of the Park Service's definition of substantial restoration, a premise that the FAA itself has repeatedly endorsed. That premise is that aircraft noise should be regulated to enhance the experience of Park visitors. As we said in Grand Canyon I, both the 1994 NPS Report and the notice announcing the 1996 Final Rule were replete with concern for the manner in which aircraft noise affected visitors' experiences. 154 F.3d at 465-66; see id. at 466 (noting that "in the Park Service's view, natural quiet is a resource because it is relevant to visitor enjoyment"). And as we made clear in Part II.A above, the same is true of the Park Service's explanation of the methodology underlying the Limitations Rule. Indeed, this premise derives in part from the Overflights Act itself, which directed the Secretary of the Interior to issue recommendations "that shall provide for substantial restoration of the natural quiet and experience of the park." Overflights Act s 3(b)(1) (emphasis added).

As the Trust points out, the use of an annual average does not correspond to the experience of the Park's actual visitors. People do not visit the Park on "average" days, nor do they stay long enough to benefit from averaging noise over an entire year. For the typical visitor, who visits the Grand Canyon for just a few days during the peak summer season, the fact that the Park is quiet "on average" is cold comfort. Indeed, the FAA acknowledges that, "[b]ecause many park visitors typically spend limited time in particular sound environments during specific park visits, the amount of aircraft noise present ... can have great implications for the visitor's opportunity to experience natural quiet in those particular times and spaces." Limitations Rule, 65 Fed. Reg. at 17,712. The problem with an annual average is that it gives equal weight to summer and winter days, notwithstanding that there are many more visitors during the former than the latter. Thus, theoretically the use of an annual average could permit the statutory standard to be met despite an incessantly noisy summer, assuming that the other seasons were

relatively quiet. On the FAA's view, it could then declare that it had achieved substantial restoration of natural quiet and cease any further efforts to restrict aircraft noise.

Nor are these consequences of using an annual average merely theoretical. The FAA's Final Supplemental Environmental Assessment projects that the 2000 Final Rules will restore natural quiet in 43.6% of the Park on the "average annual day." See FSEA at F-4. The same document, however, reveals that on the average summer day, natural quiet will be substantially restored in only 31.3% of the Park, and that on the day with the most air tour overflights the natural quiet will be substantially restored in only 19.0% of the Park. Id. This result appears inconsistent with the rationale that the Park Service offered for its 1994 definition of substantial restoration, and that we found reasonable in Grand Canyon I: "Protecting 50% of the Park for 75% of the day gives [backcountry visitors] at least a reasonable chance of seeing the less-traveled areas in peace." 154 F.3d at 467; see also 1994 NPS Report at 184.

The FAA's only response to the seeming unreasonableness of its definition is that its standard guidelines for evaluating the impact of aircraft noise employ an annual average, and that the courts have generally deferred to those guidelines. Resp't's Br. at 54-56 (citing, e.g., City of Bridgeton v. FAA, 212 F.3d 448, 459 (8th Cir. 2000); Morongo Band of Mission Indians v. FAA, 161 F.3d 569, 578-79 (9th Cir. 1998)). But those guidelines were developed to evaluate aircraft noise at airports, see 14 C.F.R. pt. 150; id. s 150.9(b), and it is in that context that the courts have deferred. See, e.g., Bridgeton, 212 F.3d at 459; Morongo Band, 161 F.3d at 578-79. None of the cited cases involved a statute that required the FAA to achieve substantial restoration of the natural quiet, or to employ a Park Service definition that demands quiet during 75% of "the day."

In sum, we conclude that the FAA's use of an annual average day for measuring "substantial restoration of the natural quiet" appears inconsistent with both the Park Service's definition of the term and with the premise upon which that definition was based. As noted in our discussion of ripeness above, this is not merely a technical dispute. It has a significant impact both on the FAA's estimate of the

progress its current and planned rules make, and on its determination of the end point at which it will have fulfilled the statutory objective. We must therefore remand this issue for further consideration.

We recognize that, on remand, the Park Service may declare that it did in fact choose what seems to us to be the FAA's less reasonable reading of the Service's definition of "substantial restoration." If it does, however, the Park Service must understand that "the Overflights Act ... did not relieve the government ... of its obligation not to promulgate a rule that is 'arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.' " Grand Canyon I, 154 F.3d at 469 (quoting 5 U.S.C. s 706(2)(A)). To survive review under that standard, the Service will have to explain why its definition is reasonable in light of the premise upon

which it was assertedly based. At this point, the government has offered no explanation at all.

C

The Trust's second challenge is to an aspect of the FAA's noise methodology. The Trust argues that, in projecting the amount of noise experienced by different parts of the Park, the FAA's noise model only considers noise emitted from air tour flights. By failing to account for noise from other aircraft that fly over the Grand Canyon--for example, from commercial jets, general aviation, and military flights--the model arbitrarily overstates how quiet the Park really is. The Trust asserts that if non-tour aircraft noise were included in the calculation, the percentage of the Park in which natural quiet would be substantially restored--even on the FAA's average annual day--would be significantly less than the projected 43.6%.

The FAA does not dispute that it excludes non-tour aircraft from its model, and the Trust's description is in accord with that of the Final Supplemental Environmental Assessment. FSEA app. G, at 40. Nor does the FAA dispute that, at least theoretically, the exclusion of non-tour aircraft could cause it to overestimate the periods when, and number of places where, Park visitors substantially experience natural quiet. The FAA's only response to the Trust's challenge is that

excluding non-tour aircraft is reasonable because they "contribute minimal noise compared to commercial air tour aircraft.... [The FAA] did not believe the minimal amount of noise they contribute would affect the accuracy of its estimates." Resp't's Br. at 59.

The agency cites no direct evidence that the noise from non-tour aircraft is minimal, basing that conclusion solely on the fact that general aviation flights account "for about 3 percent of all aircraft" in the Park. FSEA app. G, at 40. What is at issue here, however, is not the number of aircraft that fly over the Grand Canyon, but rather the percentage of time that they are audible. Although we might ordinarily defer to the FAA's expert assurance that the number of non-tour aircraft is too small to affect the accuracy of the latter calculation, we cannot defer when the government's own data suggests the contrary. Here, the record evidence indicates that the exclusion of non-tour aircraft from the calculation of the percentage of time that aircraft are audible may well have a significant impact on the results.

The 1994 NPS Report provides a chart, based on actual observations, that breaks down the percentage of time that different types of aircraft were audible at different points in the Park. 1994 NPS Report at 187. For example, it shows that at Lipan Point, total aircraft noise--including noise from air tours, commercial jets, general aviation, and military flights--was audible during 43% of the observation period. Air tours, however, could only be heard 30% of the time. Hence, at that location, excluding non-tour aircraft from the calculation would overestimate by 13 percentage points the amount of time during which natural quiet prevailed. Other locations reveal similarly significant differentials between the amount of time that some type of aircraft was audible and the amount of time that air tours could be heard: a 14% differential at Bright Angel Point, 10% at Toroweap Overlook, and 12% at Phantom Ranch Overlook. Id. When asked at oral argument, the government could offer no explanation for why these differentials were immaterial in calculating the areas or periods in which the Park substantially experiences natural quiet.

The FAA also seeks to defend the exclusion of non-tour aircraft from its noise model on the ground that "FAA's regulations were not required to address every conceivable type of aircraft." Resp't's Br. at 60. That is true, and the FAA can certainly choose to achieve the substantial restoration of natural quiet by regulating air tours alone. But the FAA cannot dispute that whether or not non-tour aircraft are regulated, natural quiet does not exist when the sound they make is audible.16 Nor does the Overflights Act provide any basis for ignoring noise caused by such aircraft.17 Hence, the fact that the FAA has chosen not to regulate certain categories of aircraft does not justify ignoring the sound those aircraft make when deciding how extensively to regulate other categories. And in the absence of any reasonable justification for excluding non-tour aircraft from its noise model, we must conclude that this aspect of the FAA's methodology is arbitrary and capricious and requires reconsideration by the agency.

IV

For the reasons discussed in Part II, the Air Tour Association's petition for review is denied. For the reasons discussed in Part III, we grant the Grand Canyon Trust's petition and remand the case to the FAA for further proceedings consistent with this opinion.

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16 See, e.g., 2000 NPS Review at 6 (defining "natural quiet" as "the sound levels associated with a given acoustic environment, absent any mechanical or manmade noise sources" (emphasis added)); 1994 NPS Report at 182 (defining "natural quiet" as "no aircraft audible").

17 See Overflights Act s 3(a) (declaring that "[n]oise associated with aircraft overflights at the Grand Canyon National Park is causing a significant adverse effect on the natural quiet and experience of the park").