

United States Court of Appeals
FOR THE DISTRICT OF COLUMBIA CIRCUIT

Argued December 11, 2023

Decided July 12, 2024

No. 22-1337

INTERNATIONAL DARK-SKY ASSOCIATION, INC.,
APPELLANT

v.

FEDERAL COMMUNICATIONS COMMISSION,
APPELLEE

SPACE EXPLORATION HOLDINGS, LLC,
INTERVENOR

Consolidated with 23-1001

On Appeals from an Order of the
Federal Communications Commission

Charles Lee Mudd Jr. argued the cause and filed the briefs
for appellant International Dark-Sky Association, Inc.

Pantelis Michalopoulos argued the cause for appellant
DISH Network Corporation. With him on the briefs were *Mark
C. Savignac* and *William Travis West*.

James M. Carr and *Rachel Proctor May*, Counsel, Federal Communications Commission, argued the causes for appellee. With them on the brief was *Jacob M. Lewis*, Deputy General Counsel.

Pratik A. Shah argued the cause for intervenor in support of appellee. With him on the brief were *Michael Weisbuch* and *Z.W. Julius Chen*.

Corbin K. Barthold and *James E. Dunstan* were on the brief for *amicus curiae* TechFreedom in support of appellee.

Before: RAO and CHILDS, *Circuit Judges*, and GINSBURG, *Senior Circuit Judge*.

Opinion for the Court filed by *Circuit Judge* RAO.

RAO, *Circuit Judge*: The Federal Communications Commission licensed a new satellite system owned by Space Exploration Holdings (“SpaceX”). DISH Network challenges the license on several grounds, including that the Commission did not adequately consider the risk of signal interference with other satellites. The International Dark-Sky Association also appeals the order, asserting that the Commission failed to conduct the environmental review required by the National Environmental Policy Act. Because the Commission’s order was lawful and reasonably explained, we affirm.

I.

A.

We begin with the statutory and regulatory framework. The Federal Communications Commission (“FCC” or “Commission”) may grant broadcast licenses, including for

satellites, when it would serve the “public convenience, interest, or necessity.” Communications Act of 1934, Pub. L. No. 73-416, ch. 652, § 307(a), 48 Stat. 1064, 1083 (codified as amended at 47 U.S.C. § 307(a)). The Commission must also regulate as “necessary to prevent interference between” satellite systems. 47 U.S.C. § 303(f).

As relevant here, there are two types of satellite systems. Geostationary orbit satellites “remain in fixed positions relative to the earth” and transmit direct broadcast services like those offered by DISH. *Northpoint Tech., Ltd. v. FCC*, 412 F.3d 145, 155 (D.C. Cir. 2005). Non-geostationary orbit satellites “continuously circle the earth” and include satellite constellations like SpaceX’s Starlink system. *Id.* When issuing a license, the FCC limits non-geostationary satellites to those that do not “cause unacceptable interference to” existing geostationary satellite systems. 47 C.F.R. § 25.289. Interference is measured in terms of “power flux-density,” which must remain below set limits. *Id.* §§ 25.103, 25.289.

In 2017, the Commission incorporated the power flux-density limits set by the International Telecommunications Union (“ITU”) in its 2016 Radio Regulations.¹ *See id.* § 25.289; *see also Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters (“2017 Order”)*, 32 FCC Rcd. 7809, 7843 (2017). Because the ITU has validation software to assess a satellite system’s compliance with the power limits, the FCC determined it was unnecessary to create a separate compliance

¹ The ITU Constitution and Convention, a multi-national treaty to which the United States is a signatory, established the International Telecommunications Union to address signal interference. *See* ITU Convention, Dec. 22, 1992, 1825 U.N.T.S. 390, 492; Constitution of the ITU art. 1, ¶ 2(b), Dec. 22, 1992, 1825 U.N.T.S. 331, 333, 376.

verification system and instead required applicants to use the ITU's software. *2017 Order*, 32 FCC Rcd. at 7822.

A license applicant must now follow a two-step process. First, it must certify that it will comply with the ITU's power limits. 47 C.F.R. § 25.146(a). Second, it must submit power flux-density data to the ITU and have the ITU confirm that the system in fact complies with the power limits. *Id.* § 25.146(c). If the ITU issues a favorable finding, the Commission may issue the license.

B.

This case involves SpaceX's second generation Starlink satellite system ("Gen2 Starlink"). SpaceX applied for a license to operate 29,988 low-altitude non-geostationary orbit satellites to deliver internet service. SpaceX first certified its satellites would satisfy the ITU's power limits. It then submitted its data to the ITU for verification. In order to avoid delay from the ITU's backlog of applications, SpaceX also requested the FCC grant the license while it waited for the ITU's finding.

The FCC conditionally approved SpaceX's license for 7,500 satellites, even though the ITU determination was still pending. The Commission explained that licensing Gen2 Starlink was in the public interest because the system would "improve[] broadband to unserved and underserved regions of the United States and worldwide." And it was also in the public interest to approve deployment "as soon as possible" instead of waiting for the ITU's finding. The Commission explicitly conditioned Gen2 Starlink's continued operations on receiving a favorable finding from the ITU, cautioning SpaceX that it would need to adjust its operations to comply with the power flux-density limits if it failed to obtain the requisite finding. After the license issued, SpaceX was required to make the data

it ran through the ITU software available to any party that requested it.

C.

The two appellants before us opposed SpaceX's Gen2 Starlink license application in the FCC proceedings.² First, DISH, a satellite owner and operator and SpaceX competitor, petitioned the Commission to deny the license because SpaceX would cause unacceptable interference to DISH's satellites. DISH also argued the Commission's reliance on the ITU standards and verification process amounted to an unlawful delegation of the Commission's licensing authority to an outside party. The FCC declined to consider the evidence of interference that DISH submitted to support its petition because SpaceX was required only to self-certify its compliance with the ITU limits. And it concluded that the ITU's role in reviewing power flux-density compliance was not an unlawful delegation.

Second, International Dark-Sky, an environmental group composed of amateur astronomers and dark-sky enthusiasts, objected to the FCC's decision not to perform an environmental review of the light pollution and atmospheric effects of Gen2 Starlink. International Dark-Sky maintained such a review was required under the National Environmental Policy Act ("NEPA"). *See* Pub. L. No. 91-190, 83 Stat. 852 (codified at 42 U.S.C. §§ 4321 *et seq.*). The FCC concluded its

² Licensing proceedings require public notice and an opportunity for comment. *See* 47 C.F.R. § 25.151(a), (d). Interested parties may submit informal objections to the license or formally petition to deny the license. *See id.* § 25.154. The FCC must examine these objections before deciding whether to grant the license. *See id.* § 25.156(a).

regulations did not require an environmental review and denied International Dark-Sky's request.

Both DISH and International Dark-Sky appealed the Commission's order granting SpaceX a license for its satellites. *See* 47 U.S.C. § 402(b)(6). We consolidated the cases and granted SpaceX's motion to intervene.

II.

We first address DISH's appeal. DISH argues the Commission acted arbitrarily and capriciously by disregarding evidence that Gen2 Starlink will exceed the power flux-density limits, by deferring the ITU favorable finding requirement, and by withholding SpaceX's data from public release until after the licensing proceeding concluded. DISH also argues the Commission unlawfully subdelegated its decisionmaking authority to the ITU.

The Administrative Procedure Act requires courts to set aside agency actions, including licensing decisions, that are arbitrary and capricious or not in accordance with law. 5 U.S.C. § 706(2)(A); *accord NRDC v. NRC*, 823 F.3d 641, 648–49 (D.C. Cir. 2016) (applying § 706 to licensing decisions). An action is arbitrary and capricious when the agency relies on inappropriate factors, fails to consider important aspects of the problem, or ignores relevant evidence. *See Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983). Within an agency's lawful authority, courts will uphold agency action that is "reasonable and reasonably explained." *FCC v. Prometheus Radio Project*, 141 S. Ct. 1150, 1158 (2021).

A.

DISH first argues the Commission acted arbitrarily and capriciously by disregarding evidence that Gen2 Starlink will exceed the power flux-density limits.

After running its data through the ITU software, SpaceX certified that its satellites complied with the ITU's power flux-density limits. DISH submitted its own analysis showing that Gen2 Starlink would exceed the limits. DISH attributes the different results to the chosen data input file. SpaceX divided the Gen2 Starlink power data into 18 separate files when it ran the ITU analysis. After self-certifying its compliance, and at the ITU's request, SpaceX submitted its data to the Commission in a "single combined filing" to "facilitate preparation for ITU coordination." DISH analyzed Gen2 Starlink's compliance based on the combined file rather than the 18 separate files. DISH maintains the Commission's refusal to consider its submission fails to respond meaningfully to objections.

The Commission was not required to consider DISH's analysis. At the first step of the licensing process, an applicant must self-certify compliance with the ITU's power limits. 47 C.F.R. § 25.146(a). Nothing in the regulation required the FCC to independently verify the certification. DISH does not dispute that agencies may employ reasonable methods of self-certification and need not second guess such certifications any time an objection is raised by a third party.

While it is true we have held an agency cannot reasonably ignore "smoking gun" evidence of a fraudulent self-certification, no such evidence was presented here. *See Animal Legal Def. Fund, Inc. v. Perdue*, 872 F.3d 602, 619 (D.C. Cir. 2017). DISH does not point to any evidence beyond its study that indicates Gen2 Starlink is violating the power flux-density

limits or that the FCC is aware of any violation. By contrast, in *Animal Legal Defense Fund*, the record included clear and egregious evidence contradicting the applicant’s self-certification. The Department of Agriculture “knew that the [license applicants] were grossly and consistently out of compliance” and that they had been repeatedly cited for regulatory violations. *Id.* at 618–19. We held that “[r]eliance on facts that an agency knows are false at the time it relies on them is the essence of arbitrary and capricious decisionmaking.” *Id.* at 619 (cleaned up).

In this case, DISH argues simply that SpaceX grouped its data for the analysis in a way that satisfied the ITU limits, while a different grouping would not. But the regulations do not specify how an applicant must group its data. SpaceX was required to certify only the results of running its data—grouped in whatever way—through the ITU software. SpaceX even “consulted ITU staff on how to present datafiles for purposes of [power flux-density] analysis.” SpaceX also later confirmed the “combined filing,” not just the separate files, “demonstrates compliance” with the ITU limits. DISH’s proffered evidence falls well short of a smoking gun that would require the FCC to disregard SpaceX’s self-certification.

Relying on its self-certification licensing framework, the Commission reasonably explained why it declined to consider DISH’s alternative analysis.

B.

Second, DISH argues the Commission acted arbitrarily and capriciously by allowing SpaceX to begin operations before receiving a favorable finding from the ITU. *See* 47 C.F.R. § 25.146(c). DISH also contends that it is internally incoherent, and thus unreasonable, for the Commission to rely on the ITU’s confirmation of SpaceX’s certification while

providing an interim waiver of that favorable finding requirement.³ We disagree.

The Commission’s decision to grant SpaceX’s license while waiting for the ITU’s determination was reasonable and reasonably explained. The Commission can waive its rules “for good cause shown,” *id.* § 1.3, including when “strict compliance” would be “inconsistent” with its statutory mandate to act in the public interest, *AT&T Wireless Servs. v. FCC*, 270 F.3d 959, 965 (D.C. Cir. 2001) (cleaned up). The FCC here found it was “in the public interest to ... allow [SpaceX] to begin deployment as soon as possible to bring next-generation [internet] service to unserved and underserved areas of the country and globally.” It relied on many of the same factors that justified granting an interim waiver to license SpaceX’s first generation satellite system. Reviewing that license, this court held the interim waiver was reasonable because the FCC sought to avoid the harm resulting from “long delays in the provision of internet service to Americans who remain totally unserved by other broadband solutions.” *Viasat, Inc. v. FCC*, 47 F.4th 769, 777 (D.C. Cir. 2022) (cleaned up). We reach the same conclusion here.

Moreover, the Commission’s interim waiver is not inconsistent with its reliance on the ITU providing a favorable finding. The waiver does not relieve SpaceX of its regulatory obligation. SpaceX must still obtain a favorable finding, and the Commission clearly stated that any deployment in the interim was “at SpaceX’s own risk.” If SpaceX ultimately fails to secure a favorable finding, it will need to “adjust its

³ The parties refer to this as a “partial waiver,” but it is merely an interim waiver. The FCC continued to require SpaceX to receive a favorable finding from the ITU; it just granted the license provisionally before the finding was made.

operations accordingly to come into compliance” with the power flux-density limits.

The Commission’s decision to grant SpaceX’s license before the ITU made its compliance determination was reasonable and consistent with previous decisions of this court.

C.

Third, DISH argues the Commission unreasonably and unlawfully withheld SpaceX’s data from public release until after the conclusion of the licensing proceeding. DISH maintains it had a due process right and a right under the Commission’s regulations to review SpaceX’s data. Because the data was not part of the administrative record, DISH argues it could not adequately participate in the licensing proceeding.

Ex parte communications between an agency and a license applicant are prohibited when the communications are “inconsisten[t] ... with the notion of a fair hearing and with the principles of fairness implicit in due process.” *U.S. Lines, Inc. v. Fed. Mar. Comm’n*, 584 F.2d 519, 539 (D.C. Cir. 1978). An ex parte communication must not “deprive the public of the right to participate meaningfully in the decisionmaking process.” *Id.* at 540.

Withholding SpaceX’s data did not deprive DISH of an opportunity to participate meaningfully in the licensing proceeding because the Commission did not evaluate SpaceX’s data at either stage of the licensing process.⁴ At the first step, SpaceX was required only to self-certify, which by definition did not involve agency analysis. And at the second step, the

⁴ Because DISH was able to fully participate in the proceeding, we need not decide whether DISH had a due process interest in SpaceX’s license.

ITU independently analyzed the data and made a finding, so there was no opportunity for DISH to participate. Neither step required the FCC to independently evaluate SpaceX's data, and so DISH's participation in the process was not impeded by the unavailability of that data.

DISH fares no better with its claim of a regulatory right to SpaceX's data. Commission rules require public disclosure of a "written *ex parte* presentation" that is "directed to the merits or outcome of a proceeding." 47 C.F.R. §§ 1.1206(a), (b)(2), 1.1202(a). But the regulation explicitly exempts records "prepared in connection with coordination" of satellite systems under the ITU Radio Regulations. *Id.* § 0.457(d)(1)(vii)(B). The Commission explained that the exemption applied because SpaceX's data submission was used only "to facilitate ITU coordination." DISH provides no reason to doubt the Commission's explanation of how it used (or did not use) SpaceX's data, nor does DISH offer any evidence to overcome the presumption of regularity we afford to agencies. *See LeBoeuf, Lamb, Greene & MacRae, L.L.P. v. Abraham*, 347 F.3d 315, 320 (D.C. Cir. 2003). We find the Commission reasonably explained why the data was exempt from public disclosure under its regulations.

DISH also contends that, if it is true the Commission did not rely on SpaceX's data, its decision to license SpaceX's satellites was unsupported. But as we have already explained, the FCC was not required to analyze the data because the regulations require only a license applicant's self-certification and the ITU's confirmation. Accordingly, failing to rely on SpaceX's data does not undermine the decision to grant the license.

The Commission did not violate due process or its regulations by declining to release SpaceX's data before the license approval.

D.

Finally, DISH argues the Commission has unlawfully subdelegated its statutory authority by incorporating the ITU's power limits and assigning the ITU responsibility for verifying compliance. We disagree.

When Congress confers regulatory authority on an agency, subdelegation of that authority "to outside parties [is] assumed to be improper absent an affirmative showing of congressional authorization." *U.S. Telecom Ass'n v. FCC*, 359 F.3d 554, 565 (D.C. Cir. 2004). Not all third-party involvement in the regulatory process is such a delegation, however. We have recognized "three specific types of legitimate outside party input into agency decision-making processes: (1) establishing a reasonable condition for granting federal approval; (2) fact gathering; and (3) advice giving." *Id.* at 566.

We need not consider whether Congress has authorized the FCC to subdelegate to the ITU because there has been no subdelegation of decisionmaking authority here.⁵ The Commission's use of the ITU power flux-density limits is a

⁵ The FCC has statutory authority to align its regulations with the ITU's power flux-density limits, a point DISH does not dispute. Congress directed the FCC to "[m]ake such rules and regulations ... as may be necessary to carry out the provisions of ... any international radio or wire communications treaty or convention." 47 U.S.C. § 303(r). The ITU's Radio Regulations, which set the power flux-density limits, are incorporated into the ITU Constitution and Convention and "binding on all Members." *See* Constitution of the ITU art. 4, ¶ 3, 1825 U.N.T.S. at 335.

type of legitimate outside party input. An agency may permit outside parties to perform “nondiscretionary activities such as compiling, hearing, and transmitting technical information.” *Id.* at 567 (cleaned up). The ITU limits are highly technical and based on the threshold at which conflicting radio waves begin to interfere with satellite performance. *Cf. Amerada Hess Pipeline Corp. v. FERC*, 117 F.3d 596, 601 (D.C. Cir. 1997) (holding an agency may adopt technical standards “promulgated by an independent organization” without “surrender[ing] its responsibility for adopting” standards).

An agency may “turn to an outside entity for advice and policy recommendations, provided the agency makes the final decisions itself.” *U.S. Telecom Ass’n*, 359 F.3d at 568. The FCC retains all decisionmaking authority to set the power limit. The Commission’s regulations are not indexed to the ITU’s determinations, but rather incorporate a particular set of limits—namely those in the ITU’s 2016 Radio Regulations. *See* 47 C.F.R. § 25.108(c)(2). The ITU therefore cannot unilaterally change the limits applicable in an FCC licensing proceeding. Any change to the ITU standards would be incorporated only if the FCC chose to revise its regulation. *See* ITU Convention, Dec. 22, 1992, 1825 U.N.T.S. 390, 492 (“Nor shall the United States of America be deemed to have consented to be bound by revisions of the Administrative Regulations ... adopted subsequent to the date of signature.”).

Furthermore, tasking the ITU with verifying an applicant’s compliance with the power limits is legitimate outside party input because it is nondiscretionary “fact gathering.” *U.S. Telecom Ass’n*, 359 F.3d at 566. DISH attempts to characterize the ITU’s role as more than fact gathering, suggesting that the ITU made the final determination as to “whether SpaceX may operate it[s] system.” But the ITU merely uses its software to calculate a satellite system’s power flux-density, compares that

value to the ITU limits, and reports to the Commission whether the value satisfies the limits. The ITU's fact gathering is not regulatory decisionmaking.

Importantly, a favorable finding by the ITU does not automatically yield a license. The Commission must consider a variety of factors, including satellite interference, to determine whether a license is in the public interest. After receiving the ITU's compliance finding, the Commission makes the final decision about whether to grant a license.

The Commission incorporates the ITU standards and relies on the ITU for fact finding, but the agency retains its decisionmaking authority. We therefore reject DISH's subdelegation challenge.

* * *

The Commission's decision to license SpaceX's Gen2 Starlink satellites was lawful and reasonable. We therefore reject DISH's appeal.

III.

We next address International Dark-Sky's appeal challenging the Commission's refusal to conduct an environmental review before approving SpaceX's license. International Dark-Sky has standing; however, it has failed to demonstrate the Commission's actions were arbitrary, capricious, or contrary to law.

A.

International Dark-Sky asserts both associational and organizational standing, which SpaceX contests. Because we conclude International Dark-Sky has associational standing,

we need not consider whether it would also have organizational standing.

At the outset, International Dark-Sky has demonstrated that it is a genuine membership organization. It submitted declarations from two members who alleged injury from the licensing of new SpaceX satellites and affirmed that International Dark-Sky represented their interests. One member, James Lowenthal, an astronomy professor, explained the negative effects of light pollution on his professional research and teaching, as well as on his personal interest in viewing the night sky. Another member, Diana Umpierre, explained the harm from light pollution and from not having the results of an environmental assessment to educate the public about the impact of SpaceX's satellites. When "an organization has identified members and represents them in good faith, our cases do not require further scrutiny into how the organization operates." *Students for Fair Admissions, Inc. v. President & Fellows of Harvard Coll.*, 143 S. Ct. 2141, 2158 (2023).

To establish associational standing, an organization must show that "(1) its members would otherwise have standing to sue in their own right; (2) the interests it seeks to protect are germane to the organization's purpose; and (3) neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit." *Ctr. for Sustainable Econ. v. Jewell*, 779 F.3d 588, 596 (D.C. Cir. 2015) (cleaned up).

International Dark-Sky has demonstrated its members would have standing to sue in their own right. For the procedural harm alleged here, there must be an injury in fact, but the standards for redressability and causation are relaxed. "[E]nvironmental plaintiffs adequately allege injury in fact

when they aver that they use the affected area and are persons ‘for whom the aesthetic and recreational values of the area will be lessened’ by the challenged activity.” *Friends of the Earth, Inc. v. Laidlaw Env’t Servs. (TOC), Inc.*, 528 U.S. 167, 183 (2000) (cleaned up). International Dark-Sky alleges its members are stargazers and astronomers who “use” the sky and whose aesthetic and recreational activities will be inhibited by light pollution from the satellites. And it submitted declarations from its members to that effect. This suffices to allege an injury in fact.

International Dark-Sky has also satisfied the causation and redressability requirements. For a procedural injury, an organization “need demonstrate only that the procedural step was connected to the substantive result, not that the agency would have reached a different substantive result but for the alleged procedural error.” *Sierra Club v. FERC*, 827 F.3d 59, 65 (D.C. Cir. 2016) (cleaned up). The alleged procedural harm here was linked to the approval of SpaceX’s satellite license. If the Commission switched course and performed an environmental review, “the Commission could change its position and deny” the license on remand, reducing the alleged harms. *Id.* at 67.

Second, this environmental challenge is germane to International Dark-Sky’s purpose. “The germaneness requirement mandates pertinence between litigation subject and organizational purpose.” *Ctr. for Sustainable Econ.*, 779 F.3d at 597 (cleaned up). International Dark-Sky exists primarily to provide information and education to the public. Its self-described mission is “to encourage communities, parks, and protected areas around the world to preserve and protect dark skies through responsible lighting practices and public education.” Environmental assessments produce the type of information relevant to an educational organization’s purpose.

Third, participation by International Dark-Sky's individual members is not necessary. The appeal turns on whether the FCC complied with its statutory obligations, and the relief sought is vacatur of the license and remand for an environmental review. Neither the legal claims nor the relief sought involve individualized grievances. *See id.*

We therefore hold that International Dark-Sky has satisfied this court's requirements for associational standing.

B.

International Dark-Sky maintains the Commission's decision to grant SpaceX a license without performing an environmental review was arbitrary and capricious and not in accordance with law. 5 U.S.C. § 706(2)(A).

NEPA requires federal agencies to consider the effects of their decisions on the human environment before acting. *See* 42 U.S.C. § 4332. When applicable, such review would require a license applicant to prepare an environmental assessment of its proposed action. 47 C.F.R. § 1.1308(b). But there are "categories of actions that normally do not have a significant effect on the human environment, ... and therefore do not require preparation of an environmental assessment." 40 C.F.R. § 1501.4(a). The FCC has determined in its NEPA regulations that, subject to a few exceptions not relevant here, all FCC actions (including granting licenses) "are deemed individually and cumulatively to have no significant effect on the quality of the human environment and are categorically excluded from environmental processing." 47 C.F.R. § 1.1306(a). The only way to overcome this categorical exemption is if the FCC "determines that the action may have a significant environmental impact." *Id.* § 1.1307(c).

SpaceX's license falls within the categorical exclusion, so an environmental assessment was required only if the FCC determined that the license may have a significant environmental impact. The FCC reasonably concluded that no such impact was present here, and International Dark-Sky's arguments to the contrary are unavailing.

1.

First, International Dark-Sky argues the FCC acted arbitrarily and capriciously because its determination that Gen2 Starlink would have no significant environmental impact was conclusory and lacked record support. In particular, International Dark-Sky maintains the FCC failed to respond adequately to a report showing that SpaceX's satellite system would cause significant atmospheric effects from rocket launches and reentry as well as light pollution from orbiting satellites.

Relying on two European Space Agency studies, the FCC reasonably concluded that the volume of atmospheric material emanating from satellite launch and reentry would not comprise a significant environmental impact. The FCC concluded the studies were "the most relevant evidence in the record" and "sufficiently persuasive ... to conclude that there would not be a significant environmental impact associated with a constellation of 7,500 Gen2 Starlink satellites." Moreover, the Commission explained it relied on these studies because they "focus[] specifically on atmospheric effects of reentering spacecrafts," while the report relied on by International Dark-Sky emphasized the limited scientific understanding of satellite constellation emissions. The FCC further discounted the alternative report because it considered the effects of all 29,988 satellites, but the Commission licensed only a fraction of that number.

We find the Commission adequately responded to International Dark-Sky's comments and reasonably explained its reliance on the European Space Agency studies.

2.

Second, International Dark-Sky argues the FCC cannot rely on SpaceX's mitigation efforts when assessing the significance of the satellites' environmental impact.

But an agency may consider mitigation when weighing the significance of potential environmental effects. 40 C.F.R. § 1501.4(b)(1); *see also Sierra Club v. Van Antwerp*, 661 F.3d 1147, 1156 (D.C. Cir. 2011) (“[A] project with a potentially significant impact will not require [environmental review] if changes or safeguards sufficiently reduce the impact.” (cleaned up)). The FCC reasonably concluded SpaceX's mitigation efforts would help minimize any environmental impact.

SpaceX demonstrated that it was changing its software and hardware between its first and second generation systems to decrease the satellites' brightness. It also confirmed it was collaborating with many of the groups that raised reflectivity concerns—including NASA and the National Science Foundation—to optimize its mitigation efforts. The FCC explained that Gen2 Starlink satellites orbit lower than previous satellites, which reduces reflectivity at night, and that SpaceX's satellite tracking system allows astronomers to account for and avoid the satellites when observing the night sky. While there may still be effects from the Gen2 Starlink satellites, the Commission concluded the conditions it imposed on SpaceX, “in addition to SpaceX's planned mitigation efforts, are sufficient to avoid significant environmental effects, and therefore environmental review under NEPA is not warranted.” The Commission's approach is well within its regulatory discretion. *See* 47 C.F.R. § 1.1307(c).

International Dark-Sky also suggests the Commission’s reliance on SpaceX’s mitigation efforts is evidence there would be significant environmental effects from the license. But recognizing the need for, and value of, mitigation cannot be the standard for finding a substantial environmental impact. Otherwise, as the Ninth Circuit noted in a similar NEPA challenge, if proposed mitigation strategies “trigger the need to prepare” an environmental assessment, agencies will be incentivized “to leave out important conditions on permits for fear that the presence of the conditions would preclude the availability of the categorical exclusion.” *Alaska Ctr. for the Env’t v. U.S. Forest Serv.*, 189 F.3d 851, 860 (9th Cir. 1999). Here, the Commission reasonably imposed mitigation measures and considered those measures when concluding there was no significant environmental impact from SpaceX’s satellites.

3.

Finally, International Dark-Sky maintains the FCC’s reliance on the Federal Aviation Administration’s (“FAA”) programmatic environmental assessment cannot be reconciled with 47 C.F.R. § 1.1311(e). An agency action based on a flawed interpretation of a statute or regulation is contrary to law. *See CREW v. FEC*, 993 F.3d 880, 892 (D.C. Cir. 2021).

An applicant “need not ... submit[]” an environmental assessment to the FCC “if another agency ... has assumed responsibility for determining whether [the action] ... will have a significant effect on the” environment. 47 C.F.R. § 1.1311(e). Following this regulatory directive, the FCC concluded that it “need not conduct an environmental review of the Gen2 Starlink satellite launch activity” because the FAA had already completed a review and concluded the launches “would not significantly affect the quality of the human

environment.” Moreover, SpaceX was involved in the FAA’s programmatic environmental assessment. The Commission expressed its “confidence the FAA ha[d] conducted, and will continue to conduct as necessary, thorough environmental reviews of SpaceX’s launch activities.”

International Dark-Sky argues the Commission could not rely on the FAA’s assessment because the FAA did not assume responsibility for the environmental review of SpaceX’s satellite license, the agency action at issue here, and the FAA was required to “assum[e] responsibility” as a precondition of the Commission’s reliance. We decline to adopt this overly literal reading of the NEPA regulations. The Commission relied on the FAA’s assessment only when considering the environmental impact of SpaceX’s rocket launches. And the FAA in fact conducted an environmental review of those launches, pursuant to its statutory authority. *See* 51 U.S.C. § 50901(b)(3). The Commission’s reliance on the FAA’s environmental review was therefore reasonable and consistent with its regulatory requirements.

In sum, we reject International Dark-Sky’s claims because the FCC’s determination that Gen2 Starlink would not have a significant environmental impact was reasonable, reasonably explained, and consistent with the Commission’s legal obligations.

* * *

For the foregoing reasons, we affirm the FCC’s order licensing SpaceX’s Gen2 Starlink satellites.

So ordered.