

**United States Court of Appeals
for the District of Columbia Circuit**

Nos. 22-1337, (Consolidated with 23-1001)

THE INTERNATIONAL DARK-SKY ASSOCIATION, INC.,

Appellant,

v.

FEDERAL COMMUNICATIONS COMMISSION,

Appellee,

SPACE EXPLORATION HOLDINGS, LLC,

Intervenor for Respondent.

*On Appeal from the Federal Communications Commission
in Nos. SAT-LOA-20200526-00055 and SAT-AMD-20210818.*

REPLY BRIEF FOR APPELLANT

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TABLE OF CONTENTS

	Page
TABLE OF AUTHORITIES	ii
GLOSSARY OF TERMS	iv
INTRODUCTION AND SUMMARY OF ARGUMENT	1
ARGUMENT	4
I. IDA HAS DEFINITIVE ARTICLE III STANDING	4
II. NEPA APPLIES TO THE COMMISSION’S ACTION	6
A. Congress has jurisdiction and control over the objects and people it sends to outer space.....	9
B. The Commission already presumed NEPA applies to the present case	10
C. NEPA applies to the night sky because the night sky is part of the human environment.....	11
III. AN ENVIRONMENTAL IMPACT ASSESSMENT UNDER NEPA WAS REQUIRED IN THIS CASE BECAUSE THE ACTION MET THE STANDARD OF “MAY” HAVE SIGNIFICANT EFFECTS	11
A. The Commission and SpaceX’ reliance on mitigating factors confirms that significant environmental impact “may” result	11
B. The launch and reentry of the SpaceX Satellites “may” result in multiple significant environmental impacts.....	13
C. The Commission ignores the environmental impacts which have already occurred from authorized satellites.....	16
CONCLUSION.....	16

TABLE OF AUTHORITIES

	Page(s)
Cases:	
<i>Am. Bird Conservancy, Inc. v. FCC</i> , 516 F.3d 1027 (D.C. Cir. 2008).....	3, 12, 13, 14, 15
<i>Backcountry Against Dumps v. Chu</i> , 215 F. Supp. 3d 966 (S.D. Cal. 2015).....	8, 9
<i>Backcountry Against Dumps v. United States DOE</i> , 2017 U.S. Dist. LEXIS 114496 (S.D. Cal. 2017).....	8
<i>Border Power Plant Working Group v. Doe</i> , 260 F. Supp. 2d 997 (S.D. Cal. 2003).....	7
<i>Center for Biological Diversity v. NHTSA</i> , 538 F.3d 1172 (9th Cir. 2008)	7
<i>Consejo de Desarrollo Economico de Mexicali, AC v. United States</i> , 438 F. Supp. 2d 1207 (D. Nev. 2006).....	7, 8
<i>Grace v. Barr</i> , 965 F.3d 883 (D.C. Cir. 2020).....	11
<i>Greenpeace USA v. Stone</i> , 748 F. Supp. 749 (D. Haw. 1990).....	8, 9
<i>Hughes Aircraft Co. v. United States</i> , 29 Fed. Cl. 197 (1993).....	10
<i>Humane Soc’y of United States v. Hodel</i> , 268 U.S. App. D.C. 165, 840 F.2d 45 (1988).....	1, 4
<i>Mid States Coalition for Progress v. Surface Transportation Board</i> , 345 F.3d 520 (8th Cir. 2003)	7
<i>Natural Resources Defense Council, Inc. v. Nuclear Regulatory Comm’n</i> , 647 F.2d 1345 (D.C. Cir. 1981).....	8, 9
<i>RJR Nabisco, Inc v. European Cmty.</i> , 579 U.S. 325 (2016).....	7
<i>Sorenson Commc’ns, LLC v. FCC</i> , 897 F.3d 214 (D.C. Cir. 2018).....	1, 5, 6

<i>United States v. Vasquez</i> , 899 F.3d 363 (2018).....	6, 7
---	------

Statutes & Other Authorities:

U.S. Const., Art. III.....	1, 4
26 U.S.C. § 501(c)(3).....	5, 6
42 U.S.C. § 4321.....	7
42 U.S.C. § 4332(2)(C).....	8
42 U.S.C. § 4332(2)(F).....	7, 8
47 C.F.R. § 1.1307(c).....	12, 13
<i>Memorandum to Heads of Agencies on Applying the EIS Requirement to Env't Impacts Abroad</i> , UNITED STATES: COUNCIL ON ENV'T QUALITY, INT'L LEGAL MATERIALS, Vol. 15, No. 6 (November 1975).....	2
<i>Treaty on Principles Governing the Activities of States in the Exploration and Use of OuterSpace, Including the Moon and Other Celestial Bodies</i> , 18 U.S.T. 2410, art. VIII (Jan. 27, 1967).....	10

GLOSSARY OF TERMS

APA	Administrative Procedure Act
Application	Application for Orbital Deployment and Operating Authority for the SpaceX Gen2 NGSO Satellite System, IBFS File No. SAT-LOA-20200526-00055 (filed May 26, 2020) (SpaceX Gen2 Application); Space Exploration Holdings, LLC, Amendment to Pending Application for the SpaceX Gen2 NGSO Satellite System, IBFS File No. SAT-AMD-20210818-00105 (dated Aug. 18, 2021) (SpaceX Gen2 Amendment)
CEQ	Council on Environmental Quality
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	European Space Agency
FAA	Federal Aviation Administration
FCC or Commission	Federal Communications Commission
IDA or Appellant	The International Dark-Sky Association, Inc.
NEPA	National Environmental Policy Act
Order	<i>In the Matter of Space Exploration Holdings, LLC Request for Orbital Deployment and Operating Authority for the SpaceX Gen2 NGSO Satellite System, Order and Authorization, IBFS File Nos. SAT-LOA-20200526-00055 and SAT-AMD-20210818, Call Sign S3069 (rel. Dec. 1, 2022)</i>
SpaceX	Space Exploration Holdings, LLC

INTRODUCTION AND SUMMARY OF ARGUMENT

Though the Commission does not dispute IDA's Article III standing to bring the instant appeal, SpaceX argues: (1) IDA lacks standing because it failed to show "indicia of membership;" and (2) that IDA's standing, if any, is limited to issues related to the impact on astronomy and the night sky. SpaceX Br. 29-30. The relevant caselaw does not support a requirement that IDA must show "indicia of membership" to the degree that SpaceX would have the Court believe. The indicia of membership the Court may consider are not limited to the narrow categories of whether the association members elect leadership or that the association is funded by its membership. *Sorenson Commc'ns, LLC v. FCC*, 897 F.3d 214, 225 (D.C. Cir. 2018). Rather, *Sorenson* gives those indicia as examples. *Id.* If there is such a requirement, IDA meets this requirement through the declarations of actual members.

Further, SpaceX concedes that IDA meets the requirements of organizational standing but argues that IDA does not have standing outside matters relating to astronomy and the night sky. SpaceX Br. 29-30. However, the germaneness requirement mandates only "mere pertinence between litigation subject and organizational purpose." *Humane Soc'y of United States v. Hodel*, 268 U.S. App. D.C. 165, 840 F.2d 45, 58 (1988). IDA's organizational interests are clearly pertinent to the impacts of launch and reentry and that is supported by the

declarations of its Executive Director and members. *See generally* Hartley Decl., Lowenthal Decl., and Umpierre Decl.

In its Amicus Curiae brief, TechFreedom argues NEPA: (1) does not apply in outer space; (2) does not overcome the presumption against extraterritorially; and (3) does not apply in the present case. *See generally* TechFreedom Br.

However, NEPA was established with the intent for federal agencies to “recognize the worldwide and long-range character of environmental problems,” and Congress has jurisdiction and control over the objects and people it sends to outer space.¹

Further, TechFreedom relies on caselaw whose facts are substantially different than those outlined in the present matter. *See generally* Tech Freedom Br.

Additionally, in its decision the Commission did not address the applicability of NEPA, but rather assumed its applicability and proceeded to analyze SpaceX’ application. FCC Br. 25; Order ¶ 109. It is clear NEPA applies in the present case.

In its brief, SpaceX argues that NEPA does not apply to the present case because Congress limited NEPA’s regulatory scope to the human “environment

¹ *Memorandum to Heads of Agencies on Applying the EIS Requirement to Env’t Impacts Abroad*, UNITED STATES: COUNCIL ON ENV’T QUALITY, INT’L LEGAL MATERIALS, Vol. 15, No. 6 (November 1975), <https://www.jstor.org/stable/20691673>.

and biosphere” and excludes extraterritorial activities or decisions. SpaceX Br. 32-35. IDA relies on its original brief regarding these assertions. IDA Br. 15-24.

Although the Commission argues that no EA was required, the Commission and SpaceX’ reliance on mitigating factors confirms that significant environmental impact “may” result. FCC Brief 65-68. The Commission cannot retroactively define where the line of “significance” is and instead is tied to its own “may” standard. Moreover, the Commission ignores the uncertainty about effects which is proscribed by caselaw.

It is clear that the launch and reentry of the SpaceX Satellites “may” result in multiple significant environmental impacts. However, SpaceX attempts to diminish the importance of the “may” standard by unsuccessfully distinguishing relevant caselaw. SpaceX Br. 37-39. Thus, if the Commission is uncertain about the extent of the environmental impact, an environmental assessment is warranted. Additionally, SpaceX’ arguments that IDA failed to address the Commission’s reasoning related to mitigation contradict the Commission’s own brief.

Again, given the effects that have been raised, and in the absence of any critical assessment of the Appellant’s arguments and cited authority, the Commission appears to have required “definitive evidence of significant effects,” a requirement that “plainly contravenes the ‘may’ standard.” *Am. Bird Conservancy, Inc, v. FCC*, 516 F.3d 1027, 1033 (D.C. Circuit 2008).

ARGUMENT

I. IDA HAS DEFINITIVE ARTICLE III STANDING.

As set forth in Appellant's Brief, IDA meets each of the necessary elements to bring this appeal on behalf of its members and for Article III standing. See IDA Brief 9-14. The Commission does not dispute that IDA has standing to bring this appeal. Yet, SpaceX argues that IDA's standing is solely limited to potential impacts on astronomy and the night sky. However, as IDA has met the elements for standing, it may raise related environmental concerns as well. SpaceX has cited no authority which would narrow IDA's standing to one particular issue. In fact, the caselaw supports IDA's standing to address both the impact of SpaceX' application on astronomy and the night sky as well as the impact of reentry and launch emissions. The germaneness requirement mandates only "mere pertinence between litigation subject and organizational purpose." *Humane Soc'y of United States v. Hodel*, 268 U.S. App. D.C. 165, 840 F.2d 45, 58 (1988). Clearly, all environmental concerns are pertinent to the organization's interests and in particular those of its members, which include the issue of launch and reentry emissions.² If that is an issue, IDA would request the opportunity to present further evidence regarding IDA's atmospheric concerns.

² *See* Hartley Decl. ¶4 ("IDA members will be harmed by the authorization of the proposed 30,000 satellites in a number of ways including: ...(3) increased deposition of soot and carbon in the atmosphere will contribute to catastrophic

Further, in addition to the elements required to show associational standing, SpaceX would have the Court place a burden on IDA to also prove that it is, in fact, an association. Specifically, SpaceX cites *Sorenson Commc 'ns, LLC v. FCC*, for the proposition that IDA must show that it exhibits “the indicia of a traditional membership association, such as a membership that finances the association’s activities or plays a role in selecting its leadership.” SpaceX Br. 29 (citing *Sorenson Commc 'ns, LLC v. FCC*, 897 F.3d 214, 225 (D.C. Cir. 2018)). However, in *Sorenson*, the appellant “failed to identify any of its members or the harm they suffered, failed to disclose that it is fully funded by [its director], and offered only conclusory and general assertions about the nature of the association, untethered from evidence.” *Sorenson Commc 'ns., LLC*, 897 F.3d at 225. Here, the record is replete with indicia of a membership association. Unlike the appellant in *Sorenson*, IDA submitted declarations from its membership and its Executive Director linking the interests of its members to the requirements for associational standing and testifying that they are, in fact, members of the IDA. *See generally* Hartley Decl., Lowenthal Decl., and Umpierre Decl. Further, the evidence on the record shows that IDA is a 501(c)(3) tax exempt organization. *See* Hartley Decl. ¶3.

Therefore, the IDA has met the standards set forth by the IRS to be classified as a

climate change and destructive heat waves, floods, hurricanes and wildfires; and (4) deposition of alumina from deorbiting satellites risk ozone depletion that will increase the risk of cancer and other negative health effects.”)

501(c)(3) organization including that its earnings do not inure to the benefit of any individual. 26 U.S.C. §501(c)(3). There is no indication from the record that the representations by IDA's members and Executive Director are false. Further, nothing in the caselaw cited by SpaceX limits the indicia of membership the Court may consider to the narrow categories of whether the association elects leadership or is funded by its membership. *See generally Sorenson Commc'ns., LLC*. Rather, *Sorenson* gives those indicia as examples.³ Though the IDA asserts that it has shown indicia of membership in the form of declarations from actual members, if the Court requires further proof of the examples of indicia set forth in *Sorenson*, IDA requests leave to supplement its Executive Director's declaration to include facts regarding its organizational structure and funding.

II. NEPA APPLIES TO THE COMMISSION'S ACTION.

In its Amicus Curiae brief, TechFreedom argues that the court is to “presume” that statutes do not apply extraterritorially “absent clearly expressed congressional intent to the contrary” and therefore, NEPA does not apply to outer space. TechFreedom Br. 6-7. However, “an express statement of extraterritoriality” “is not essential.” *United States v. Vasquez*, 899 F.3d 363, 375 (2018) (quoting

³ “[T]he indicia of a traditional membership association, **such as** a membership that finances the association's activities or plays a role in selecting its leadership.” *Sorenson Commc'ns, LLC v. FCC*, 897 F.3d 214, 225 (D.C. Cir. 2018) (emphasis added, internal quotation marks omitted).

RJR Nabisco, Inc v. European Cmty., 579 U.S. 325, 340 (2016)). Instead, “a court must look for a ‘clear indication,’ not a clear statement, ‘of extraterritorial effect.’” *Id.* NEPA was established with the intent to ensure “[f]ederal agencies consider the environmental impacts of their actions in the decision-making process.” 42 U.S.C. § 4321. Specifically, NEPA calls for federal agencies to “recognize the *worldwide* and *long-range* character of environmental problems.” 42 U.S.C §4332 (2) (F) (emphasis added). Thus, for example, federal courts have long recognized federal agencies’ responsibilities to address the effects of their actions on climate change⁴, even though the earth’s atmosphere is not exclusively within the control of the United States.⁵

Additionally, TechFreedom cites to *Consejo de Desarrollo Economico de Mexicali, AC v. United States*, 438 F. Supp. 2d 1207 (D. Nev. 2006) for the proposition that “nothing in NEPA’s language suggests Congress intended NEPA to apply outside United States territory.” *Id.* at 1234; TechFreedom Br. 18.

However, in *Consejo*, the court found, specific to those set of facts, that there was no “clear statutory intent” for an extraterritorial application of NEPA to effects in

⁴ See fn. 2 *infra* and IDA Br. 26-31 (regarding climate effects of FCC approved satellites).

⁵ See e.g., *Center for Biological Diversity v. NHTSA*, 538 F. 3d 1172 (9th Cir. 2008); *Mid States Coalition for Progress v. Surface Transportation Board*, 345 F.3d 520 (8th Cir. 2003); *Border Power Plant Working Group v. Doe*, 260 F. Supp. 2d 997 (S.D. Cal. 2003).

Mexico. *Consejo de Desarrollo Economico de Mexicali, AC*, 438 F. Supp. 2d at 1236. Although there is no clear statement that NEPA applies in all situations, the language states that agencies should consider the actions affecting the “human environment” and “worldwide and long-range character of environmental problems.” 42 U.S.C. § 4332(2)(C), (F).

Again, it is clear that “Congress intended for agencies, when possible, to consider environmental concerns outside of U.S. borders.” *Backcountry Against Dumps v. Chu*, 215 F. Supp. 3d 966, 981 (S.D. Cal. 2015).⁶ The court in *Backcountry* additionally stated:

[R]efusing to apply NEPA to actions with extraterritorial effects would create a situation where agencies are required to assiduously consider effects of a proposed action right up until the border fence, but effects a few yards away in [foreign territory] are immaterial.

Id. Thus, NEPA should apply in the present case.

TechFreedom relies on cases such as *Natural Resources Defense Council, Inc. v. Nuclear Regulatory Comm’n*, 647 F.2d 1345 (D.C. Cir. 1981) and *Greenpeace USA v. Stone*, 748 F. Supp. 749 (D. Haw. 1990) to show that NEPA is not to be applied extraterritorially because of foreign policy concerns.

⁶ In a subsequent related case, the Southern District of California found on summary judgment that the defendant did, in fact, violate NEPA. *Backcountry Against Dumps v. United States DOE*, 2017 U.S. Dist. LEXIS 114496 (S.D. Cal. 2017).

TechFreedom Br. 8, 14-17, 19-21, 27. However, these cases are substantially dissimilar from the present case.

In *NRDC*, the court held that the Nuclear Regulatory Commission did not need to analyze what effects the export of nuclear material could have on the recipient country. *NRDC*, 647 F.2d at 1348. But this is far different from the present case, where the effects of satellite lighting are significantly experienced within the United States. Further, in *Greenpeace*, the court held that the U.S. Army did not have to consider the effects of transporting munitions across West Germany. *Greenpeace*, 647 F.2d at 752-53. The U.S. Army transporting nerve gas across Europe during the twilight of the Cold War is a far cry from the situation at present. Specifically, in both these cases, the court found the factual circumstances in these cases to account for NEPA not being applied, rather than a presumption against extraterritoriality. *NRDC*, 647 F.2d at 1348; *Greenpeace USA*, 748 F. Supp. at 758-61; *see also Backcountry Against Dumps*, 215 F. Supp. 3d at 980. In the present case, the factual circumstances are substantially different; therefore, NEPA should apply.

A. Congress has jurisdiction and control over the objects and people it sends to outer space.

TechFreedom places great weight on the fact that Congress lacks control over outer space, citing the Outer Space Treaty. TechFreedom Br. 11-14. However, TechFreedom highlights that “under the Outer Space Treaty, nations ‘retain

jurisdiction and control’ over the objects and persons they send into space.” *Id.* 12 (citing *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*, 18 U.S.T. 2410, art. VIII (Jan. 27, 1967)). In the present case, NEPA applies because, as outlined by the Outer Space Treaty, Congress does not lack jurisdiction or control over the objects (including SpaceX satellites) and persons they send to space. *Hughes Aircraft Co. v. United States*, 29 Fed. Cl. 197, 229 (1993) (Article VIII provides an exception, under which a State “on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body.”) Thus, NEPA applies in the present case.

B. The Commission already presumed NEPA applies to the present case.

Finally, as noted in FCC’s brief:

[t]he Commission noted that the request for NEPA review raised “novel issue[s] of NEPA’s scope vis-à-vis space activities,” and that it was “not clear that all of the issues raised by the parties in the record were within the scope of NEPA.” *Id.* ¶¶ 103, 109 (JA____, ____). But the Commission “assume[d], without deciding, that NEPA applies” and proceeded to analyze SpaceX’s application under that assumption. *Id.* ¶ 103 (JA____).

FCC Br. 25. The Commission assumed that NEPA applied in space and proceeded to analyze SpaceX’ application. *Id.*; Order ¶ 109. Therefore, it is clear that NEPA applies both in space and in the present case.

C. NEPA applies to the night sky because the night sky is part of the human environment.

In their response brief, SpaceX argues that NEPA does not apply to the present matter, opining that Congress limited NEPA's regulatory scope to the human "environment and biosphere" and that "Major Federal action does not include [e]xtraterritorial activities or decisions." SpaceX Br. 32-35. IDA relies on its arguments presented in its original brief regarding these assertions. IDA Br. 15-24.

III. AN ENVIRONMENTAL IMPACT ASSESSMENT UNDER NEPA WAS REQUIRED IN THIS CASE BECAUSE THE ACTION MET THE STANDARD OF "MAY" HAVE SIGNIFICANT EFFECTS

A. The Commission and SpaceX' reliance on mitigating factors confirms that significant environmental impact "may" result.

The Commission argues that its reliance on SpaceX' mitigation plans necessitated that no EA was required. FCC Br. 65-65. In support, the Commission states that merely some effect on the environment would not be "significant" and therefore would not create a requirement for an EA. *Id.* 67-68. However, the Commission does not define what constitutes "significance" in its brief and likewise did not do so in its Order. *See id.* The Commission cannot now define that threshold of significance and argue that it was not met. *See Grace v. Barr*, 965 F.3d 883, 903 (D.C. Cir. 2020) (reasonableness of an agency action is based "only"

on “what the agency said at the time of the [action]—not ... its lawyers’ post-hoc rationalizations”) (citation omitted).

The lack of definition for “significance” is telling because ultimately, as the Commission cannot overcome its own “may” standard here, an EA should have been required. *Id.* at 1033-34 (2008) (stating when there is no real dispute that an action “may” have significant environmental impact, “the § 1.1307(c) threshold has been met.”) This likewise reinforces that the Commission focused only on effects that were known rather than acknowledging effects that were unknown. IDA Br. 35.

Moreover, the Commission argues that “given that NEPA review *precedes* a proposed action, there is nothing arbitrary about the Commission relying on yet-to-be-implemented mitigation.” FCC Br. 70 (emphasis in original). Following this logic, a NEPA review was not required because the Commission could not determine whether the impact would be significant enough until SpaceX’ satellites were already in the sky. *See id.* This backward logic further shows that the Commission’s decision was arbitrary.

The Commission's failure to require a NEPA review will result in known significant environmental impacts which may or may not be ameliorated by SpaceX' mitigation efforts. In this manner, the Commission ignores the unknown. This is specifically proscribed by *Am. Bird*: “A precondition of certainty before

initiating NEPA procedures would jeopardize NEPA's purpose to ensure that agencies consider environmental impacts before they act rather than wait until it is too late.” *Am. Bird Conservancy, Inc. v. FCC*, 516 F.3d 1027, 1033 (D.C. Circuit 2008).

B. The launch and reentry of the SpaceX Satellites “may” result in multiple significant environmental impacts.

As stated in the IDA brief, should the Commission “determine that the action may have a significant environmental impact,” it must require the preparation of an EA. 47 C.F.R. § 1.1307(c). This “may” standard was set out by the Commission itself. *See id.* Here, although the Commission stated that it would “assume, without deciding, that NEPA applies” to the satellite authorization sought by SpaceX may have an environmental impact under NEPA, as previously argued, the Commission did not follow its “may” standard to do so. IDA Br. 33-41 (citing Order ¶ 109).

SpaceX attempts to read out the importance of “may” from the regulation by attempting to distinguish *Am. Bird Conservancy, Inc. v. FCC*, 516 F.3d 1027 (D.C. Circuit 2008). SpaceX Br. 37-39. SpaceX claims that, unlike here, *Am. Bird* presented “no real dispute” over significant environmental effects. SpaceX Br. 38. This assertion is untrue. In fact, the basis for an environmental assessment is stronger here: neither the Commission nor SpaceX dispute that the satellites are

harmful in terms of light pollution obstructing the night sky, whereas in *Am. Bird*, there was a heated debate over whether the relevant communications towers killed birds at all. *Am. Bird Conservancy, Inc.*, 516 F.3d at 1030 (the environmental groups submitted evidence of between 4 and 50 million bird deaths; industry argued no study demonstrated any population decline). In fact, here, the mitigation plans show that both the Commission and SpaceX were aware of the potential harmful environmental effects of the launches.

However, if the Commission is uncertain about the *extent* to which the satellites will create light pollution and atmospheric effects, an environmental assessment is required. *See id.* at 1033 (“under NEPA,” the agency “is to predict the environmental effects of a proposed action before the action is taken and those effects fully known.”)

Moreover, SpaceX argues that IDA made a “fatal omission” and failed to address “the Commission’s reasoning with respect to mitigation.” SpaceX Br. 43. SpaceX states that IDA presented “no argument as to why the Commission acted unreasonably in determining that ‘SpaceX’s planned mitigation efforts[] are sufficient to avoid significant environmental effects.’” *Id.* 44 (citing JA___, Order ¶ 122). SpaceX further argues that IDA has not offered “any reason to doubt that fewer satellites will decrease the environmental impact.” *Id.* 47.

However, FCC’s own brief notes that it “reviewed the ‘detailed information in the record regarding [SpaceX] mitigation efforts,’ and concluded it was in the ‘public interest to continue to monitor SpaceX’s ongoing efforts to diminish the average brightness of its satellites to ensure that SpaceX does not unduly burden astronomy and other scientific endeavors.’” FCC Br. 22 (internal citations removed). The public interest standard is irrelevant to the Commission’s NEPA obligations. Furthermore, in authorizing only 7,500 of the SpaceX’ satellites, the Commission wished to “reduce the severity” while continuing to “monitor these issues and examine the impact.” *Id.* 24. Thus, the Commission itself notes that the true impact is unknown even with mitigations and the lower number of launches authorized, making the Commission’s action in conflict with NEPA’s purpose. *See Am. Bird Conservancy, Inc.*, 516 F.3d at 1033 (describing NEPA’s purpose as ensuring “that agencies consider environmental impacts before they act rather than wait until it is too late.”)

Again, given the effects that have been raised, and in the absence of any critical assessment of the Appellant’s arguments and cited authority, the Commission appears to have required “definitive evidence of significant effects,” a requirement that “plainly contravenes the ‘may’ standard.” *See id.* at 1033.

C. The Commission ignores the environmental impacts which have already occurred from authorized satellites.

IDA's 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. Decl. of Ruskin Hartley ("Hartley Decl.") (ADD109-112) ¶ 3. As previously noted, these protections are now at risk from the authorized satellites. *Id.* This risk is not speculative but present and imminent. Members have already viewed and photographed the impact of the satellites previously launched by SpaceX and their impact on the viewable night sky from International Dark Sky Places. *See id.*; *see also* Umpierre Decl. ¶¶ 8-13.

CONCLUSION

This Court should hold that the Commission's Order violates the APA with respect to the environmental issues raised by Appellant by being (a) arbitrary and capricious and (b) not in accordance with law, particularly NEPA, the CEQ Regulations, and the Commission's rules implementing them; further hold that NEPA requires at least an environmental assessment with respect to SpaceX' Application; vacate the Commission's Order and approval of SpaceX' Application; and, remand to the Commission for proceedings compliant with NEPA, the CEQ Regulations, the Commission's rules, and this Court's ruling.

Dated: July 26, 2023

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

This brief complies with the type-volume limitation of Federal Rule of Appellate Procedure 32(a)(7) and this Court's February 2, 2023 Order as it contains 3640 words, excluding the parts of the brief exempted by Federal Rule of Appellate Procedure 32(f) and D.C. Circuit Rule 32(e)(1). This brief complies with the typeface requirements of Federal Rule of Appellate Procedure 32(a)(5) and the type style requirements of Federal Rule of Appellate Procedure 32(a)(6), as it has been prepared in a proportionally spaced typeface, 14-point Times New Roman font, using Microsoft Word for Mac.

Dated: July 26, 2023

Respectfully submitted,

/s/Charles Lee Mudd Jr.
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CERTIFICATE OF SERVICE

I hereby certify I have electronically filed this REPLY BRIEF OF APPELLANT INTERNATIONAL DARK-SKY ASSOCIATION, INC. with the United States Court of Appeals for the D.C. Circuit on July 26, 2023 using its Electronic Case Filing (“ECF”) system. Consequently, service shall be automatically accomplished through the ECF system as to ECF Users on the 26th day of July 2023. Additionally, copies of the REPLY BRIEF OF APPELLANT INTERNATIONAL DARK-SKY ASSOCIATION, INC. shall be sent by First Class Mail to any non-ECF parties having filed appearances listed in the Service List below (if any).

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SERVICE LIST

All parties in this matter are represented by counsel who are ECF users.