



March 23, 2026

Federal Communications Commission
45 L Street, N.E.
Washington, D.C. 20554

RE: ICFS File No. SAT-LOA-2025108-00016
In the Matter of Space Exploration Holdings, LLC for Authority to
Launch and Operate the SpaceX Orbital Data Center System

Reply to Consolidated Opposition to Petitions and Response to comments
of Space Exploration Holdings, LLC

Dear Sir or Madam:

Our comments focus specifically on SpaceX's response to the issue of whether the FCC should exclude their application for launching and operating an orbital data center system in space (and similar proposals) from compliance with the National Environmental Policy Act (NEPA) and other applicable environmental law.

As an introductory matter and to correct the record, our comment letter did not demand "that the Commission deny the application after it wastes its limited resources on a review."¹ Our comment did not take any position whatsoever on whether the proposed action should ultimately be approved or denied. Contrary to SpaceX's assertion, our interest is in seeking an "actual review" of the impacts on the human environment within the jurisdiction of the United States. That review should be done in full compliance with NEPA.

SpaceX continues to assert that NEPA does not apply to its proposal. For that proposition, it cites Executive Order 14154 and the 2023 amendments to NEPA. But Executive Order 14154's direction to prioritize efficiency and certainty also includes the important direction that, "This order shall be implemented in a manner consistent with applicable law . . ." ² And the relevant law supports NEPA's applicability to this proposal. The statutory language excludes from NEPA's procedural requirements actions

¹ SpaceX response to comments, March 16, 2026, p. 17, text and fn. 28.

² Exec. Order 14152, 90 Fed. Reg. 8353, § 10 (b) (Jan. 29, 2025).

and effects located entirely outside of the jurisdiction of the United States.”³ The statutory language does not exclude actions that take place outside of the United States but that have cognizable effects within the jurisdiction of the United States.

Since it is clear that NEPA applies to the FCC’s decision process for SpaceX’s proposal, the issue becomes what level of NEPA analysis is required. SpaceX argues that even if NEPA were applicable, the effects of their unprecedented proposed action would not justify the FCC requiring even an environmental assessment (EA). As we explained in our initial comment letter, reliance on FCC’s overly broad categorical exclusion is inappropriate. SpaceX’s proposed action clearly has the potential for affecting wilderness areas and wildlife preserves,⁴ threatened and endangered species, critical habitat, and cultural and religious sites of significance, all factors included in the FCC’s list of effects that require at minimum, an environmental assessment.⁵

While we think the factors noted in the above paragraph clearly remove the proposed action from being treated under a categorical exclusion, we also note that the FCC’s regulations provide for interested persons to allege that a particular action, otherwise categorically excluded, will have a significant environmental effect that overwhelmingly justifies and necessitates environmental consideration in the decision-making process. We thus invoke the authority under 47 C.F.R. § 1.1307 (c) to petition the FCC to remove the action from a categorical exclusion and to require the preparation of, at minimum, an EA.

We further note that the FCC can, under its own authority, determine that the proposal may have a significant environmental impact and require the applicant to prepare an EA.⁶ Of course, any applicant-prepared NEPA analysis supporting either an EA or an EIS must be independently evaluated by the FCC.⁷ We would urge the FCC to work with other agencies with appropriate expertise, including the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration, in such an evaluation.

In its discussion opposing the applicability of NEPA, SpaceX identifies only four of the many issues which commentators raised (briefly, “skyglow”, byproducts, such as alumina in the atmosphere, potential collisions between spacecraft and rocket launches.) In doing so, they ignored many other concerns that our initial comment and other comments raised about the biological effects of artificial lighting on human health, plants and animals in the United States as well as concerns that we and others raised regarding effects on culture and quality of life, wilderness and Native American religious sites.

³ 42 U.S.C. §4335 (10)(B)(vii).

⁴ See, e.g., U.S. Fish and Wildlife Service, “Dark Skies Initiative,” <https://www.fws.gov/project/dark-skies-initiative>; National Park Service, Management Policies, Lightscape Management, Section 4:10 (2006), <https://www.nps.gov/orgs/1548/upload/ManagementPolicies2006.pdf>

⁵ 47 C.F.R. §1.1307(a)(1)-(5).

⁶ 47 C.F.R. §1.1307(d).

⁷ 42 U.S.C. 4336a (f).

SpaceX questions whether natural sunlight reflected from satellites can even be considered a cognizable effect under NEPA. They attribute that concern to the FCC, citing a 2021 FCC General Order related to a SpaceX application.⁸ But the FCC did assume (“out of an abundance of caution”) that NEPA applied in that Order and in a 2024 Order responding to a subsequent SpaceX application, the FCC addressed in some detail concerns about reflected sunlight from SpaceX satellites, discussed mitigation measures, imposed additional mitigation measures, including limiting the number of satellites, and noted their consideration of the potential effects of sky glow “on the human environment.”⁹ The FCC’s recognition of the effects of human-directed sunlight on the “human environment” – a key phrase in NEPA – underscores the necessity of including skyglow impacts in NEPA analysis.¹⁰

Additionally, there are other significant environmental effects that should compel analysis under NEPA of the proposed action’s impacts, independent of the enumerated effects identified in the FCC’s regulations but clearly within the scope of both NEPA and the FCC’s regulations.¹¹ SpaceX’s response ignores a number of these issues. For example, SpaceX completely ignores concerns about cultural and aesthetic impacts on the human environment within U.S. jurisdiction. But these potential impacts are directly referenced in NEPA:

In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs and resources to the end that the Nation may . . .

(2) assure for all Americans safe, healthful, productive, and **esthetically and culturally** pleasing surroundings.¹²

It is clear that 1 million moving points of light, set against a star field of 5,000 visible stars, would impact the view of the night sky "esthetically and culturally." To date, while SpaceX is striving to make them invisible, it has not consistently achieved this with Starlink. And while the effect of further lightening evening skies would be felt throughout the United States, such changes would be especially impactful to indigenous peoples¹³

⁸ SpaceX response to comments, fn. 36.

⁹ FCC Order and Authorization, GN Docket No. 23-135, Nov. 26, 2024, ¶¶ 78-81.

¹⁰ *Id.* at 81; 42 U.S.C. § 4332 (C).

¹¹ 47 C.F.R. § 13-8 (c) (d).

¹² 42 U.S.C. § 4331 (b)0 (2) (bolding added).

¹³ Northwest Indians Treaty Tribes, *State of Our Watersheds: Light pollution could be Hurting Salmon*, 2016, <https://nwtreatytribes.org/light-pollution-hurting-salmon/>; Noon, Karlie, *Thousands of satellites are threatening ancient Indigenous astronomy practices*, Astronomy, (2022, updated 2023), <https://www.astronomy.com/space->

Early case law recognized that aesthetic impacts were part of NEPA analysis, but struggled with appropriate analytics for analyzing them.¹⁴ Since those early days, many federal agencies have issued guidance on how to conduct analyses of such impacts.¹⁵ More recently, the D.C. Circuit found that an EIS was required in significant part because of visual impacts from a transmission line on the James River in an area that includes protections for designated historic resources with the goal of preserving views reflecting the River's role in American history.¹⁶

Astonishingly, SpaceX also ignores concerns about biological effects in the context of NEPA compliance, curiously referencing comments raising concerns about impacts on human health and wildlife only in one sentence in Section III of their comments, discussing mitigation.¹⁷ Contrasting concerns about the impacts of artificial lighting on astronomy which SpaceX says they take "very seriously," that one sentence broadly characterizes concerns about impacts on biological functions as secondary effects and dismisses the concerns, stating that their mitigation measures will address them anyway.

The response fails to explain the basis for labeling all such effects as secondary. In many instances, it appears that potentially significant environmental impacts would occur as a direct effect in real time as a result of the satellite operations, not because of a remote, intervening event.

Further, SpaceX's response fails to provide adequate information about the mitigation measures which it assures commentators will address all concerns about the biological functions of life within the United States. However, almost all of the discussion about mitigation references developing, evaluating, testing, coordinating, and refining mitigation measures. Good intentions for future action and broad generalizations do not substitute for specific plans and analysis. As the U.S. Supreme Court has said, "More generally, omission of a reasonably complete discussion of possible mitigation measures would undermine the 'action forcing' function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects"¹⁸

[exploration/thousands-of-satellites-are-threatening-ancient-indigenous-astronomy-practices/](#); see also, USGS, *Artificial Light at Night: Update from the Field*, (2024),

¹⁴ See, e.g., *Maryland-National Capital Park and Planning Comm'n v. U.S. Postal Serv.*, 487 F.2d 1029 (D.C. Cir. 1973).

¹⁵ Sullivan, R., Meyer, Mark, O'Rourke, Daniel J. (2018), *Comparison of Visual Impact Analysis Under the National Environmental Policy Act and Section 106 of the National Historic Preservation Act*, Gen. Tech. Rep. NRS-P-183, Newton Square, Pa: U.S. Dept. of Agriculture, Forest Service, Northern Research Station: 291-212. The article includes references and links to several federal agency visual guidelines.

¹⁶ *NPCA v. Semonite*, 916 F.3d 1075 (D.C. Cir. 2019).

¹⁷ SpaceX response at 13.

¹⁸ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989).

Another type of environmental impact that SpaceX has brushed aside in their response is the consideration of the huge pollution impact caused by the launches and reentry of tens of thousands of these satellites. These impacts are not well understood, but early indications are that they could be significant enough to alter stratospheric temperatures and ozone coverage. A big portion of that impact comes from the discharge of metals, such as aluminum, lithium, and copper, into the atmosphere due old satellites burning upon reentry into our atmosphere, with the projected five-year life of each satellite ensuring a heavy shower of metal particles steadily descending to Earth.¹⁹ The science demonstrates a likely serious impact on the geomagnetic field stretching many miles from the disintegrating (or ablating) satellites using the term "geomagnetic storms" at one point. Migratory birds use geo-magnetic signals to guide their flights along with the normal bodies in space or at least the light from them. If disoriented, birds may miss critical feeding and resting stops and prolong their journeys past the point at which they can sustain themselves.²⁰

SpaceX argues that the FCC need not concern itself with NEPA compliance for its application because the Federal Aviation Administration (FAA) complies with NEPA for launches. We agree that federal agencies need not and should not duplicate NEPA analysis for the same effects. But, of course, that is not the situation here. The FCC does not approve launches and the FAA does not concern itself with the effects of operations in space on the United States. It would be optimum if the agencies worked together as joint lead agencies or lead and cooperating agency, as appropriate, to assess the effects on the human environment of launching and operating satellites human environment within the jurisdiction of the United States. But in any event, the FCC cannot rely on FAA's NEPA analysis for a different segment of SpaceX's proposed action.²¹

¹⁹ Wing, R., Gerding, M., Plane, J.M.C. *et al.* Measurement of a lithium plume from the uncontrolled re-entry of a Falcon 9 rocket. *Commun Earth Environ* 7, 161 (2026). <https://doi.org/10.1038/s43247-025-03154-8>; Maloney, C.M., R.W. Portmann, M.N. Ross, and K.H. Rosenlof, [Investigating the potential atmospheric accumulation and radiative impact of the coming increase in satellite reentry frequency](#), *Journal of Geophysical Research*, doi:10.1029/2024JD042442, 2025. See https://csl.noaa.gov/news/2025/427_0428.html for a layman's summary.

²⁰ The science demonstrates a likely serious impact on the geomagnetic field stretching many miles from the disintegrating (or ablating) satellites using the term "geomagnetic storms" at one point. Migratory birds use geo-magnetic signals to guide their flights along with the normal bodies in space or at least the light from them. If disoriented, birds may miss critical feeding and resting stops and prolong their journeys past the point at which they can sustain themselves. For an explanation of these guidance mechanisms, *see*, Hore, Peter J., Mouritsen, Henrik, *How Migrating Birds Use Quantum Effects to Navigate*, *Scientific American*, (April 1, 2022), <https://www.scientificamerican.com/article/how-migrating-birds-use-quantum-effects-navigate/#:~:text=Recent%20research%20suggests%20that%20birds%20use%20quantum,radiation%20pairs%20formed%20photochemically%20in%20their%20eyes>.

²¹ Of course, to the extent there is relevant information in an FAA NEPA document, the FCC could incorporate that analysis by reference and provision of a publicly available link to it.

We also note that although SpaceX states that it is working with a number of federal agencies to discuss effects this action could have on those agencies' respective interests, there is no indication that the FCC has, is or is planning to consult with the U.S. Fish and Wildlife Service on effects on threatened and endangered species or on migratory birds, or the National Oceanic and Atmospheric Administration regarding effects on marine species under their jurisdiction under the Endangered Species Act and the Marine Mammal Protection Act.²² The FCC should commence consultation under the Endangered Species Act at once and the outcome of those consultations should be integrated into the FCC's NEPA analysis. Consideration should be given to inviting those agencies, as well as potentially others such as NASA, to be cooperating agencies for purposes of preparing an EA or preferably an environmental impact statement prior to a decision on SpaceX's application.

In summary, SpaceX's assertion that NEPA does not apply to the FCC's decisionmaking in this matter is flatly at odds with the statutory language now defining what is – and what is not – considered extraterritorial in the context of NEPA compliance. Further, its argument that even if NEPA applies, the FCC can appropriately utilize its broad and undefined default categorical exclusion is patently wrong. There is abundant evidence of potentially significant environmental effects on the human environment within the United States. Analysis of the range of potential environmental and related social and economic effects must be analyzed along with a reasonable range of alternatives that should be considered as part of the licensing process, along with a comparison of effects of the no action alternative. The FCC should and must proceed to a publicly transparent, comprehensive environmental impact statement.

Timothy Whitehouse, Esq.

Executive Director

Public Employees for Environmental Responsibility

www.peer.org

John Fitzgerald Esq.

John Fitzgerald, Esq.

John Fitzgerald is a member of the District of Columbia bar, and has served as Counsel to a house subcommittee, Counsel for Defenders of Wildlife, and Policy Director for the Society for Conservation Biology. He helped negotiate the convention on biological diversity and served on the board of the Endangered Species Coalition. He currently serves on the boards of other conservation groups.

Dinah Bear, Esq.

Dinah Bear, Esq.

Dinah Bear is a member of the District of Columbia bar and former Deputy General Counsel and General Counsel for the Council on Environmental Quality (1981-1993; 1995-2007).

²² Marangoni LFB, Davies T, Smyth T, Rodríguez A, Hamann M, Duarte C, Pendoley K, Berge J, Maggi E, Levy O. Impacts of artificial light at night in marine ecosystems-A review. *Glob Chang Biol.* 2022 Sep;28(18):5346-5367. doi: 10.1111/gcb.16264. Epub 2022 Jun 14. PMID: 35583661; PMCID: PMC9540822.

