

**Before The
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

<i>In the Matter of</i>	)	
	)	
FCC Seeks Comment on RF Exposure	)	ET Docket No. 13-84
Issues Subject to D.C. Circuit Remand	)	
in <i>Environmental Health Trust v. FCC</i>	)	

**COMMENTS OF THE WIRELESS INFRASTRUCTURE ASSOCIATION
AND THE TELECOMMUNICATIONS INDUSTRY ASSOCIATION**

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TABLE OF CONTENTS

I.	INTRODUCTION AND SUMMARY.....	1
II.	THE REMAND REQUIRES FURTHER EXPLANATION, NOT A FRESH EXAMINATION OF THE COMMISSION’S RF RULES AND POLICIES.....	3
III.	THE MATERIALS THE COURT IDENTIFIED DO NOT UNDERMINE THE COMMISSION’S EXISTING CONCLUSIONS.....	6
IV.	THE WEIGHT OF TECHNICAL AND SCIENTIFIC EVIDENCE IN THE RECORD SUPPORTED THE COMMISSION’S ORDER.....	12
V.	THE COMMISSION SHOULD REAFFIRM ITS CONCLUSIONS ON THE REMANDED ISSUES.....	14
A.	The Commission’s Decision to Retain Its Device Testing Procedures Remains Sound.....	14
B.	There Is No Basis to Modify the Rules Based on Claims of Non-Human Environmental Effects.....	16
VI.	THE PUBLIC INTEREST BENEFITS OF WIRELESS SHOULD NOT BE OVERLOOKED.....	19
VII.	CONCLUSION.....	20

Attachment A: Statement of Eric Swanson, PhD

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I. INTRODUCTION AND SUMMARY.

The Wireless Infrastructure Association (“WIA”)¹ and the Telecommunications Industry Association (“TIA,”² and collectively with WIA, the “Associations”) respectfully submit these comments in response to the Federal Communications Commission’s (“Commission’s”) Public Notice³ concerning the issues remanded to the agency in *Environmental Health Trust v. FCC*.⁴

The D.C. Circuit did not vacate the Commission’s radiofrequency (“RF”) exposure limits, identify any defect in those limits, or direct the Commission to reopen its RF policies

¹ The Wireless Infrastructure Association represents the businesses that build, develop, own, and operate the nation’s wireless infrastructure. Members include infrastructure providers, wireless carriers, and professional services firms that are responsible for telecommunications facilities around the globe.

² TIA is a U.S.-based trade association representing more than 400 trusted global manufacturers and vendors of telecommunications equipment. TIA members design, manufacture, and manage the world’s digital infrastructure and information communications technology (“ICT”) devices. TIA is also a standards-developing organization with a more than 80-year history of developing thousands of technical standards that allow ICT equipment and networks to operate efficiently and effectively.

³ *FCC Seeks Comment on RF Exposure Issues Subject to D.C. Circuit Remand in Environmental Health Trust v. FCC*, Public Notice, DA 26-997 (rel. Sept. 17, 2026) (“Public Notice”).

⁴ *Env’t Health Trust v. FCC*, 9 F.4th 893 (D.C. Cir. 2021) (“*EHT v. FCC*”).

wholesale. Rather, the court required the Commission to provide a fuller explanation of its conclusions in its 2019 Order⁵ that resolved its 2013 Notice of Inquiry⁶ as to whether to reevaluate its RF exposure rules. The remand calls for a reasoned explanation addressing three discrete issues on the existing record for the 2019 Order, not a wholesale reconsideration of the Commission's scientifically grounded RF framework.

The Commission can satisfy that limited mandate. Its RF exposure framework rests on decades of scientific research, substantial safety margins, internationally recognized standards, and the informed judgments of federal health and technical agencies. Neither the studies identified by the court nor the broader record demonstrate adverse effects from RF exposure at or below the Commission's limits. There is no sound basis for revisiting the Commission's decision to terminate its Notice of Inquiry.

In Attachment A to this filing, Dr. Eric Swanson offers his assessment of the studies and agency materials at the center of the remand.⁷ As he explains, these materials suffer numerous infirmities that ultimately undermine their probative value.

The Commission should therefore address the remanded issues directly, explain why the cited materials do not undermine its prior conclusions, and reaffirm that its RF exposure limits

⁵ *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields et al.*, Resolution of Notice of Inquiry, Second Report and Order, Notice of Proposed Rulemaking, and Memorandum Opinion and Order, 34 FCC Rcd 11687 (2019) ("2019 Order").

⁶ *Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies; Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields*, First Report and Order, Further Notice of Proposed Rulemaking, and Notice of Inquiry, 28 FCC Rcd 3498 (2013) ("2013 NOI").

⁷ Dr. Eric Swanson is a professor of physics at the University of Pittsburgh and a Fellow of the American Physical Society. He has over 100 publications on nuclear and biological physics, has more than 14,000 citations to his work, and is the author of a textbook on the societal impact of science and a textbook on advanced computational methods.

continue to protect the public. That focused, evidence-based resolution would fulfill the court’s mandate to provide a rationale for the Commission’s 2019 decision to preserve its scientifically grounded RF framework that supports both public health and wireless network resilience.

II. THE REMAND REQUIRES FURTHER EXPLANATION, NOT A FRESH EXAMINATION OF THE COMMISSION’S RF RULES AND POLICIES.

Congress charged the Commission with the “responsibility to set standards for RF emissions.”⁸ As a result, the Commission is the preeminent regulatory authority on those standards because it has jurisdiction over all transmitting services in the U.S. except those operated by the Federal government. For decades, the Commission has faithfully executed its responsibility by relying on “gold-standard” science⁹ and expertise from internationally recognized organizations. The Commission’s RF exposure limits are based generally on criteria established by expert entities specializing in RF science—specifically, the Congressionally-chartered National Council on Radiation Protection, the American National Standards Institute, and the Institute of Electrical and Electronics Engineers (“IEEE”).¹⁰ The Commission’s incorporation of one or more of these standards into its RF exposure limits was supported by multiple Federal agencies, including the Environmental Protection Agency, the Food and Drug

⁸ 2019 Order, 34 FCC Rcd at 11688 ¶ 1 n.1, 11689 ¶ 6 n.5 (citing authority under the National Environmental Policy Act of 1969, as amended, the Communications Act of 1934, as amended, and the Telecommunications Act of 1996).

⁹ Executive Order 14303 on “Restoring Gold Standard Science” mandates that Federal agency decisions be driven by “the most credible, reliable, and impartial scientific evidence available.” Exec. Order No. 14303, 90 Fed. Reg. 22601 (May 23, 2025).

¹⁰ *Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, Report and Order, 11 FCC Rcd 15123, 15128-36 ¶¶ 12-34 (1996).

Administration (“FDA”), the National Institute for Occupational Safety and Health, and the Occupational Safety and Health Administration.¹¹

The Commission’s limits for RF exposure, first promulgated in 1996, include limits for specific absorption rate (“SAR”)—a “measure of the rate of energy absorption by the [human] body”¹² from the source being measured that is used to measure exposure within the frequency ranges typically used by wireless networks and devices¹³—and maximum permissible exposure (“MPE”) that, taken together, “addresses limits for partial-body and whole-body exposures.”¹⁴ These “conservative” limits are “on the order of 50 times below the level at which adverse biological effects have been observed in laboratory animals as a result of tissue heating resulting from RF exposure.”¹⁵ As TIA explained in 2013, “this existing margin constitutes a highly conservative operating precaution” that exists “to provide protection for all users, whether young, old or infirm.”¹⁶ Notwithstanding this margin, the Commission has periodically re-evaluated its RF exposure limits, accounting for new findings and research, and has found the existing limits sufficient to protect public health.¹⁷

¹¹ *Id.* at 15130-31 ¶¶ 17-20.

¹² *Id.* at 15127 ¶ 9 n.12.

¹³ See 47 C.F.R. § 1.1310(a) (stating that SAR is used to evaluate human exposure between the frequencies 100 kHz to 6 GHz, the range within which most wireless networks operate).

¹⁴ 2019 Order, 34 FCC Rcd at 11689-90 ¶ 6.

¹⁵ 2013 NOI, 28 FCC Rcd at 3582 ¶ 236.

¹⁶ Comments of The Telecommunications Industry Association, ET Docket Nos. 13-84, 03-137, at 7-8 (Sept. 3, 2013) (“TIA 2013 FCC Comments”).

¹⁷ See *Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation et al.*, Second Memorandum Opinion and Order, and Notice of Proposed Rulemaking, 12 FCC Rcd 13494, 13496 ¶ 2 (1997) (affirming the 1996 limits); 2019 Order, 34 FCC Rcd at 11696 ¶ 14. While the D.C. Circuit in 2021 remanded the 2019 Order to the FCC for further explanation on a limited set of issues, it upheld the agency’s determination to maintain its RF exposure limits.

The Commission’s exposure limits have been repeatedly upheld by the courts,¹⁸ and those limits, and the device testing and certification process that enforces them, rest on a mature, internationally harmonized scientific basis.¹⁹ Measured by gold standard science, the evidence does not show harm from exposures below the current limits. As WIA urged in its prior comments, the Commission should “remain guided by scientific consensus [and] reject proposals that are not needed to protect the public.”²⁰

In *EHT v. FCC*, the court upheld the Commission’s 2019 Order but asked the FCC to further explain three discrete issues. The Commission’s charge is targeted: to respond to the remanded issues based on the record before it in 2019. Specifically, the court directed the Commission to address (1) “its decision to retain its testing procedures for determining whether cell phones and other portable electronic devices comply with its guidelines”; (2) “the impacts of RF radiation on children, the health implications of long-term exposure to RF radiation, the ubiquity of wireless devices, and other technological developments that have occurred since the Commission last updated its guidelines”; and (3) “the impacts of RF radiation on the environment.”²¹

¹⁸ See *EMR Network v. FCC*, 391 F.3d 269, 273 (D.C. Cir. 2004), *cert. denied*, 545 U.S. 1116 (2005); *Cellular Phone Taskforce v. FCC*, 205 F.3d 82, 90 (2d Cir. 2000), *cert. denied*, 531 U.S. 1070 (2001).

¹⁹ If anything, the Commission’s exposure guidelines are conservative. See *RF Safety FAQ*, FCC, <https://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/radio-frequency-safety/faq/rf-safety> (last visited Oct. 19, 2026) (“Somewhat less restrictive limits, e.g., 2 w/kg averaged over 10 grams of tissue, are specified by the ICNIRP guidelines used in Europe and most other countries.”).

²⁰ Reply Comments of PCIA – The Wireless Infrastructure Association and the HetNet Forum, ET Docket No. 13-84, at 1 (filed Nov. 18, 2013).

²¹ *EHT v. FCC*, 9 F.4th at 914.

The D.C. Circuit was clear that it “take[s] no position in the scientific debate regarding the health and environmental effects of RF radiation.”²² Further, as the D.C. Circuit explained, the Commission is entitled to significant deference under the Administrative Procedure Act, but it must properly explain its decision based on the record before it.²³ As such, the Public Notice properly focuses on discharging the Commission’s obligations. The Associations agree with the Commission that “in light of the limited scope of the court’s remand,” it would be inappropriate to revisit other aspects of the D.C. Circuit’s decision or the proceeding more broadly.

III. THE MATERIALS THE COURT IDENTIFIED DO NOT UNDERMINE THE COMMISSION’S EXISTING CONCLUSIONS.

The D.C. Circuit faulted the Commission for its “failure to respond to record evidence that exposure to RF radiation at levels below the Commission’s current limits may cause negative health effects unrelated to cancer.”²⁴ In particular, the D.C. Circuit pointed to a handful of studies proffered by the *EHT v. FCC* petitioners, and the Public Notice now seeks additional comment on those articles. The court acknowledged that “there may be good reasons why the various studies in the record ... do not warrant changes to the Commission’s guidelines,” but concluded that “we cannot supply reasoning in the agency’s stead.”²⁵

The Commission now has the opportunity to supply that reasoning and, as explained below, can and should explain why the petitioners’ record evidence does not warrant reconsideration of the Commission’s decision to terminate the inquiry.

²² *Id.*

²³ *Id.* at 903.

²⁴ *Id.*

²⁵ *Id.* at 914.

First, the Public Notice seeks comment on an article from Milena Foerster *et al.*, which examined adolescents' memory performance using an RF-EMF dose model.²⁶ This study suffers from significant flaws according to Dr. Swanson, as he explains in the attached technical statement. For Dr. Swanson, this study "is beset with bias and confounds" for reasons including that cell phone usage rates were self-reported.²⁷ Further, Dr. Swanson notes that "a lot of things can happen to an adolescent over a year, and causal claims about cell phones (or anything) become nearly impossible to judge."²⁸

Moreover, from the outset, the Foerster article itself concedes that "the health effects of RF-EMFs are still unknown" and that "studies addressing this topic have produced inconsistent results."²⁹ Indeed, in her dissent in *EHT v. FCC*, Judge LeCraft Henderson seized on this inconsistency by highlighting that Foerster article acknowledges that "some experimental and epidemiological studies on RF-EMF found improvements in working memory performance."³⁰

More critically, the article concludes that "[o]ur findings do not provide conclusive evidence of causal effects and should be interpreted with caution."³¹ That the authors themselves urged caution while also disclaiming causation is especially significant. For Judge LeCraft Henderson, this illustrates how the studies the majority relies on "are nothing if not tentative."³²

²⁶ Milena Foerster et al., *A Prospective Cohort Study of Adolescents' Memory Performance and Individual Brain Dose of Microwave Radiation from Wireless Communication*, 126 ENV'T HEALTH PERSPS. 077007 (July 2018), <https://pubs.acs.org/evhpaz/article-pdf/doi/10.1289/EHP2427/66406634/ehp2427.pdf> ("Foerster Article").

²⁷ See Attachment A at 2.

²⁸ *Id.*

²⁹ Foerster Article at 077007-1.

³⁰ *Id.* at 077007-11; *EHT v. FCC*, 9 F.4th at 915 n.2 (LeCraft Henderson, K., dissenting in part).

³¹ Foerster Article at 077077-12.

³² *EHT v. FCC*, 9 F.4th at 915.

The Commission should conclude the same because such disclaimers demonstrate that there is no sound basis in this study that could reasonably justify a change in Commission policy.

Second, the Public Notice seeks comment on the Henry Lai summary of literature from 2007 to 2017 on the neurological effects of RF radiation.³³ As Dr. Swanson highlights, the Lai article acknowledges that “in some of the studies details of the exposure setup and dosimetry are not provided,” “information on how the cell phone was activated, in many instances, was not provided,” and that “[m]ost of the studies were carried out with relatively high levels of RFR compared to environmental level.”³⁴ For Dr. Swanson, “[a]ll of these are serious methodological shortcomings, and point to a generally low-quality body of work.”³⁵

Furthermore, as Judge LeCraft Henderson highlighted in dissent, “[t]he Lai article provides a ... murky picture of the current science.” That is because “the Lai article lists 31 studies that showed *no significant* behavioral effects compared to 20 studies that showed behavioral effects. Moreover, of the 20 studies that showed a behavioral effect, at least four found behavioral *improvements*, not negative health effects.”³⁶

Third, the Public Notice seeks comment on an article from Igor Yakymenko *et al.* that examined the literature on oxidative effects of low-intensity radiofrequency radiation.³⁷ Dr. Swanson notes that the Yakymenko article’s uncritical reliance on implausible claims and reports

³³ Henry Lai, *A Summary of Recent Literature (2007-2017) on Neurobiological Effects of Radio Frequency Radiation*, in MOBILE COMM’NS & PUB. HEALTH 187-222 (Marko Markov ed., 2018).

³⁴ See Attachment A at 3.

³⁵ *Id.*

³⁶ *EHT v. FCC*, 9 F4th at 915.

³⁷ Igor Yakymenko et al., *Oxidative Mechanisms of Biological Activity of Low-intensity Radiofrequency Radiation*, 35 ELECTROMAGNETIC BIOLOGY & MED. 186-202 (2015).

undermines its scientific weight. For example, it cites a claim that cell-phone magnetic fields cause an “overproduction of free radicals,” even though the Earth’s magnetic field is “many times stronger than the field that is produced by a cell phone,” and it credulously reports increases in electrohypersensitivity and headaches among young people without rigorous supporting evidence.³⁸

Judge LeCraft Henderson observed that the “Yakymenko article discusses the International Commission on Non-Ionizing Radiation Protection’s [(“ICNIRP’s”)] recommended RF Exposure limit,” but that limit “is significantly higher than the Commission’s current limit,” and that this difference is decisive because “it is uncertain how many, if any, of the referenced peer-reviewed studies were conducted at RF radiation levels below the Commission’s current limits.”³⁹ For the Commission to make policy based on data that does not conform to its standard would be textbook arbitrary and capricious action. In addition, the IEEE examined oxidative stress as a potential mechanism for RF effects but found “this has not been adequately demonstrated in experimental studies.”⁴⁰ The Commission had no basis to consider revisions to its RF rules based on this article.

Fourth, the D.C. Circuit cited an article from Henrietta Nittby *et al.* that studied the effect of electromagnetic fields upon the blood-brain barrier in rats.⁴¹ To begin with, a study regarding rats hardly dictates a change in Commission policy relating to human safety. The IEEE investigated the blood-brain barrier as part of its update in 2019 and concluded that “the function

³⁸ See Attachment A at 2-3.

³⁹ *EHT v. FCC*, 9 F.4th at 916.

⁴⁰ IEEE Std C95.1-2019 at Section 7.2.14

⁴¹ Henrietta Nittby et al., *Increased Blood-brain Barrier Permeability in Mammalian Brain 7 Days After Exposure to the Radiation from a GSM-900 Mobile Phone*, 16 PATHOPHYSIOLOGY 103 (2009).

of the [blood-brain barrier] to allow passage of molecules necessary for metabolism but to protect the brain from foreign toxic substances should not be affected within the limits of internationally accepted standards.”⁴² Moreover, as Dr. Swanson explains, the Nittby article’s sweeping claims rest on studies with serious methodological weaknesses, including unavailable underlying data. Its reported effects also raise substantial questions—for example, neuronal damage in rats allegedly appearing only 28 or 50 days after exposure, but not after 14 days—making it difficult to attribute the findings to RF exposure. These limitations substantially diminish the article’s probative value.⁴³

Finally, the D.C. Circuit cites to the BioInitiative Report, which was prepared by over two dozen authors and touts its strength as being “done independent of governments, existing bodies and industry professional societies that have clung to old standards.”⁴⁴ In the Commission’s record, the Mobile Manufacturers Forum urged the Commission to reject the BioInitiative Report’s recommendations as “scientifically and practically flawed,” while also highlighting critical commentary about prior iterations of the BioInitiative Report, including from the Health Council of the Netherlands.⁴⁵

For Judge LeCraft Henderson, the BioInitiative Report “is hardly worth discussing because the self-published report has been widely discredited as a biased review of the

⁴² IEEE Std C95.1-2019 at 150.

⁴³ See Attachment A at 1-2.

⁴⁴ See *A Rationale for a Biologically-based Exposure Standards for Low-Intensity Electromagnetic Radiation*, BIOINITIATIVE WORKING GROUP 2012 (Cindy Sage & Carpenter David O. Carpenter eds., 2012), <http://www.bioinitiative.org/table-of-contents/>.

⁴⁵ Mobile Manufacturers Forum Reply Comments, ET Docket Nos. 13-84, 03-137, at 6 (filed Nov. 18, 2013).

science.”⁴⁶ Indeed, it is unclear what, if any, process or methodological controls guided this self-published report—which is not peer-reviewed. It also bears mention that the Commission did not entirely fail to address the BioInitiative Report. The Commission’s 2019 Order noted that while some commenters referred to the BioInitiative Report, there was “no scientific evidence in the record that such restrictive limits would produce any tangible benefit to human health, or provide any improvement over current protections.”⁴⁷ There is no reason for the Commission to disturb its conclusion.

In sum, there is no basis in any of these reports to conclude that revisiting the Commission’s RF standards is warranted or justified. The Commission can and should respond to the court by addressing how each study cited by the D.C. Circuit lacks probative value or is methodologically flawed. In doing so, the Commission is right not to afford “scientific weight to meta-analyses that simply compile studies marked by wide ranges in scientific rigor and differing and sometimes contradictory conclusions.”⁴⁸ That approach appropriately distinguishes evidence capable of supporting reasoned regulatory action from compilations that merely aggregate findings without resolving differences in methodology, exposure conditions, or evidentiary reliability.

Finally, while the Commission must address significant comments, the agency is not obliged to address every submission in the record, including anecdotal accounts or comments that lack evidentiary rigor.⁴⁹ Thus, the Commission retains discretion when it comes to

⁴⁶ *EHT v. FCC*, 9 F. 4th at 916 n.3.

⁴⁷ 2019 Order, 34 FCC Rcd at 11694-95 ¶ 12.

⁴⁸ Public Notice at 5.

⁴⁹ See *Vermont Yankee Nuclear Power Corp. v. Nat. Res. Def. Council, Inc.*, 435 U.S. 519, 553, (1978) (“[C]omments must be significant enough to step over a threshold requirement of materiality before any lack of agency response or consideration becomes of concern.”) (internal

responding to the 200 individual comments referenced by the D.C. Circuit and the relevant probative value to afford those filings.

IV. THE WEIGHT OF TECHNICAL AND SCIENTIFIC EVIDENCE IN THE RECORD SUPPORTED THE COMMISSION’S ORDER.

The Public Notice asks parties to clearly identify the factual basis for supporting or challenging the Commission’s prior conclusion that “the totality of the available scientific evidence” does not warrant changes to its existing RF exposure limits.⁵⁰ As described above, the Commission has relied on gold-standard science to develop its RF standards. The record in response to the 2013 Notice of Inquiry confirms the validity of the agency’s approach to terminate its inquiry in 2019.

In its comments, TIA described how “FCC, IEEE, and ICNIRP standards all have been determined by the expert groups that developed them and by independent expert panels to provide a substantial margin of safety—up to fifty-fold—for users of consumer RF devices. One reason for this substantial margin is to provide protection for all users, whether young, old or infirm.”⁵¹ TIA discussed how both the FDA and World Health Organization have expressed confidence in the FCC and ICNIRP standards including as they relate to children.⁵²

TIA also highlighted findings from the international community that there is no credible evidence of health effects from RF radiation within ICNIRP guidelines. For example:

- UK Independent Advisory Group on Non-Ionizing Radiation (“although a substantial amount of research has been conducted in this area, there is no convincing evidence

citations and quotations omitted); *Covad Commc’ns Co. v. FCC*, 450 F.3d 528, 550 (D.C. Cir. 2006) (“The FCC need not address every comment, but it must respond in a reasoned manner to those that raise significant problems.”) (internal citations and quotations omitted).

⁵⁰ Public Notice at 6.

⁵¹ TIA 2013 FCC Comments at 7 (footnote omitted).

⁵² *Id.* at 8.

that RF field exposure below guideline levels causes health effects in adults or children”);

- Health Council for the Netherlands (“Based on the available epidemiological evidence ... the final conclusion from this systematic analysis is then, that there is no clear and consistent evidence for an increased risk of tumours in the brain and other regions in the head in association with up to approximately 13 years use of a mobile telephone”);
- Swedish Counsel for Working Life and Social Research (“Extensive research for more than a decade has not detected anything new regarding interaction mechanisms between radiofrequency fields and the human body and has found no evidence for health risks below current exposure guidelines.”);
- Norwegian Institute for Public Health (“The large total number of studies provides no evidence that exposure to weak RF fields causes adverse health effects”); and more.⁵³

Informed by years of efforts by the IEEE International Committee on Electromagnetic Safety, the IEEE provided the Commission with notice of its newly published standard in 2019, which offers “science-based exposure criteria to protect against established adverse health effects in humans associated with exposure to electric, magnetic, and electromagnetic fields.”⁵⁴ As part of its review, the IEEE examined non-thermal effects of RF and concluded that “[e]xamination of the [RF] exposure literature revealed no reproducible low level (nonthermal) adverse health effects.”⁵⁵ The IEEE review also concluded that “[t]he weight-of-evidence provides no credible indication of adverse effects caused by chronic exposures below levels specified in this standard” and that “[n]o biophysical mechanisms have been scientifically validated that would link chronic

⁵³ *Id.* at 4-6.

⁵⁴ See IEEE Std C95.1-2019 at Section 1.2. The Chairman of the IEEE International Committee on Electromagnetic Safety (“IEEE-ICES”) provided to the FCC notice of the new standard in a letter dated October 17, 2019. See Letter from Jafar Keshvari, Chairman, IEEE-ICES, to Marlene H. Dortch, Secretary, FCC, Docket No. 13-84 (Oct. 17, 2019).

⁵⁵ IEEE Std C95.1-2019 at Section 1.3.1.

exposures below levels specified in this standard to adverse health effects.”⁵⁶ Other organizations, including CTIA, have explained how the record supports confidence in the Commission’s current standards,⁵⁷ and introduced an Opinion of the European Commission’s Scientific Committee on Emerging and Newly Identified Health Risks, which found that “there is a lack of evidence that mobile phone RF EMF affects cognitive functions in humans.”⁵⁸

As the Public Notice highlights, subsequent to the issuance of the Commission’s 2019 decision, the FDA published a review of over one hundred peer reviewed studies on RF exposure and cancer and found that “there is no quantifiable causal link between RFR exposure and tumor formation.”⁵⁹ The FDA’s finding is reinforced by similar findings from other government, public health, and technical authorities.⁶⁰

V. THE COMMISSION SHOULD REAFFIRM ITS CONCLUSIONS ON THE REMANDED ISSUES.

A. The Commission’s Decision to Retain Its Device Testing Procedures Remains Sound.

As the Commission explained in the Public Notice,⁶¹ the D.C. Circuit’s remand concerning both the Commission’s retention of its existing device-testing procedures and its

⁵⁶ *Id.*

⁵⁷ Reply Comments of CTIA, ET Docket No. 13-84, at 4-20 (filed Nov. 18, 2013).

⁵⁸ Letter from Thomas C. Power, Senior Vice President and General Counsel, CTIA, to Marlene H. Dortch, FCC, ET Docket Nos. 13-84, 03-137 (filed Mar. 13, 2015).

⁵⁹ Public Notice at 6 n.35.

⁶⁰ See, e.g., *Cell Phones and Cancer Risk*, NATIONAL CANCER INSTITUTE (Apr. 24, 2024), <https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet> (“[T]he evidence to date suggests that cell phone use does not cause brain or other kinds of cancer in humans. ... There are no other clearly established dangerous health effects on the human body from radiofrequency radiation.”).

⁶¹ Public Notice at 4.

determination that its RF exposure limits adequately protect children rested on the same perceived deficiency: the Commission had not sufficiently explained its conclusion that exposure below the current limits causes no adverse non-cancer health effects. The numerous studies that TIA, CTIA, and other parties placed in the record demonstrated that petitioners' evidence of such effects lacks probative value. The Commission can point to that record to reaffirm its conclusions on the remaining remanded issues with the reasoned explanation the court required.

In the 2019 Order, the Commission “decline[d] to revisit [its] RF exposure evaluation procedures for consumer portable devices, especially phones.”⁶² It explained that “[c]urrent evaluation procedures require consumer portable devices to be tested at maximum power under normal use conditions,” which is more extreme than a user would normally encounter.⁶³ The Commission therefore concluded that “even if certified or otherwise authorized devices produce RF exposure levels in excess of Commission limits under normal use, such exposure would still be well below levels considered to be dangerous, and therefore phones legally sold in the United States pose no health risks.”⁶⁴

On review, the D.C. Circuit did not question the “large safety margin” built into the Commission’s existing RF exposure limits or identify any defect in the testing procedures themselves. Instead, it found that the Commission had not adequately explained the premise underlying its analysis: “that RF radiation does not cause harmful effects at levels below its current limits.”⁶⁵

⁶² 2019 Order, 34 FCC Rcd at 11695-96 ¶ 14.

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ *EHT v. FCC*, 9 F.4th at 908.

The Commission can now supply that explanation. As discussed above, the record evidence, evaluated according to established scientific standards, does not demonstrate adverse health effects at exposure levels below the Commission’s limits. The Commission therefore has a reasoned basis to reaffirm its device-testing procedures.

B. There Is No Basis to Modify the Rules Based on Claims of Non-Human Environmental Effects.

The Court faulted the Commission because it “failed even to acknowledge, let alone respond to, comments concerning the impact of RF radiation on the environment.”⁶⁶ It cited a letter from the Department of the Interior (“DOI”) raising concern as to the impact of RF exposure on migratory birds, which the Commission had not addressed in its 2019 Order.⁶⁷

To begin with, there was no reason for the Commission to address the DOI Letter because it was outside the scope of the 2013 NOI. While the letter concerned migratory birds, the Commission’s RF exposure rules address RF exposure to humans—and so too did the NOI. The Administrative Procedure Act does not require an agency to address comments that are outside the scope of its proceeding.⁶⁸

The Commission’s 1996 RF exposure rules were based on the Commission’s best assessment—based on an extensive scientific record—as to the impact of RF radiation on human health. Those 1996 rules did not address the impact of RF radiation on birds, animals, or the environment apart from human health. So, too, the 2013 NOI’s purpose was to review the

⁶⁶ *Id.* at 909.

⁶⁷ *See id.*; *see also* Letter from Willie R. Taylor, Director, Office of Environmental Policy and Compliance, U.S. Department of the Interior, to Eli Veenendall, National Telecommunications and Industry Association (Feb. 7, 2014) (“DOI Letter”).

⁶⁸ *Am. Fuel & Petrochemical Mfrs. v. Env’t Prot. Agency*, 937 F.3d 559, 585 (D.C. Cir. 2019) (holding EPA “correctly dismissed” comments as “outside the scope” of a rulemaking where the proposed rule expressly limited the subjects on which comment was solicited).

current state of the science on human exposure to RF to ensure that the rules continue to safeguard human health.⁶⁹ The NOI did not ask whether the Commission should consider additional rules to limit RF levels in order to protect flora and fauna and did not discuss setting standards for birds or other animals. The 2019 Order, consistent with the NOI's scope, reviewed the current state of the science studies on the effect of RF radiation on humans.⁷⁰

The DOI Letter, however, did not refer to the Commission's RF radiation rules or address human exposure to RF radiation. Nor did DOI send its letter to the Commission—even though the 2013 NOI had been adopted ten months earlier and was still pending. The DOI also did not file comments in the RF exposure proceeding. Instead, DOI wrote to the National Telecommunications and Information Administration (“NTIA”) because NTIA planned to address potential environmental impacts of a new public safety communications network. In short, the DOI Letter was outside the scope of the proceeding and not relevant to the Commission's consideration as to whether it should revise its human RF exposure standards.

Even if effects on birds or other species *had been* within the NOI's scope, there are several reasons why the DOI Letter did not provide a factual basis for the Commission to take up the effects of RF radiation on the non-human environment or otherwise disturb its 2019 decision. First, as the dissenting opinion noted, the DOI “itself concedes that ‘[t]o date, no independent third-party studies have been conducted in North America on impacts of tower electromagnetic

⁶⁹ See 2013 NOI, 28 FCC Rcd at 3503-04 ¶¶ 10-11 (1996 RF exposure rules address “human exposure to RF energy” and limit “whole-body and partial-body exposures”).

⁷⁰ 2019 Order 34 FCC Rcd at 11694-95 ¶ 12 (“[T]here is no scientific evidence in the record that such restrictive limits would produce any tangible benefit to *human health*, or provide any improvement over current protections against established risks. Moreover, as noted by the FDA, there is no evidence to support that adverse *health effects in humans* are caused by exposure at, under, or even in some cases, above the current limits.”) (emphasis added) (footnotes omitted).

radiation on migratory birds.”⁷¹ DOI conducted no factual analysis or study that would support reconsidering the RF exposure limits; it merely referred the issue to NTIA, not the Commission.

Second, the Court pointed to DOI’s view that the “problem” as to migratory birds “appears to focus on very low-level, non-thermal electromagnetic radiation.”⁷² The Commission, however, rejected taking action based on the effects of non-thermal radiation: “In terminating our Inquiry, we have rigorously analyzed our existing RF exposure framework and have dismissed the notion that the existing framework should be altered on account of any ‘non-thermal’ effects.”⁷³ Expert reviews have similarly concluded that no adverse results have been determined from non-thermal effects.⁷⁴

The Court did not find that the DOI Letter provided a factual basis to adopt new rules, but noted only that the Commission “should have said something about its sister agency’s view rather than ignore it altogether” and “the Commission could conclude that the link between RF radiation and environmental harms is too weak to warrant an amendment to its RF radiation limits.”⁷⁵ The Commission can fully address the DOI Letter’s deficiencies to comply with the Court’s direction.

⁷¹ *EHT v. FCC*, 9 F.4th at 916-17 (citation omitted).

⁷² *Id.* at 909-10.

⁷³ 2019 Order, 34 FCC Rcd at 11758 ¶ 152.

⁷⁴ See IEEE Std C95.1-2019 at 1.3.1 (“Examination of the radio frequency (RF) exposure literature revealed no reproducible low-level (nonthermal) adverse health effects. Moreover, the scientific consensus is that there are no accepted theoretical mechanisms that would explain the existence of low-level adverse health effects.”); *id.* at C.2.3 (“A review of numerous supportive studies addressing cancer and basic cellular interactions show no consistent evidence for a reproducible biological effect of low-level (nonthermal) RF exposure.”).

⁷⁵ *Id.*

VI. THE PUBLIC INTEREST BENEFITS OF WIRELESS SHOULD NOT BE OVERLOOKED.

Finally, the Commission should remain mindful of the public interest benefits that wireless networks bring to Americans every day. Wireless networks are essential infrastructure for public safety, healthcare, commerce, education, and daily life. They enable the public to reach 911, receive emergency alerts, access telehealth services, and communicate during disasters, while providing first responders with critical communications and location capabilities. More than 80 percent of 911 calls are placed from wireless devices.⁷⁶ WIA estimates that overall investments in wireless infrastructure in 2025 amounted to nearly \$65 billion and an estimated 342,350 full-time workers or equivalents were engaged in building, maintaining, and operating the nation's cellular networks.⁷⁷ These findings are reinforced by the Commission's own conclusions that spectrum based connectivity has brought billions for the U.S. Treasury and is a key driver in job creation, U.S. tech innovation, and global leadership.⁷⁸ Any unnecessary restrictions could impair network coverage, capacity, and reliability and increase the cost and difficulty of deploying infrastructure—without any countervailing benefits given the record evidence that existing RF exposure limits remain adequate to prevent any possible adverse health effects. The public interest therefore favors a focused response to the remand that reaffirms the existing limits consistent with the public health and scientific consensus evidenced in the record.

⁷⁶ See *9-1-1 Statistics*, NENA: THE 9-1-1 ASSOCIATION, <https://www.nena.org/page/911statistics> (last visited Oct. 20, 2026).

⁷⁷ See WIA, *Wireless Infrastructure By The Numbers: 2025 Key Industry Statistics* at 2, 4 (2026), <https://wia.org/wireless-infrastructure-by-the-numbers-2025-key-statistics/>; see also CTIA, *CTIA 2026 Annual Survey Highlights* at 4 (Sept. 2026), <https://api.ctia.org/wp-content/uploads/2026/09/2026-Annual-Survey-Highlights.pdf> (“Over the life of the industry, total wireless investment in our nation's infrastructure now exceeds \$763 billion.”).

⁷⁸ Public Notice at 1.

VII. CONCLUSION.

The Commission can fully satisfy the D.C. Circuit’s limited remand. The materials identified by the court do not demonstrate adverse effects at or below the Commission’s existing limits; instead, they are methodologically limited, internally qualified, or inconsistent with the weight of the scientific record. That broader record, including the judgments of federal health agencies, internationally recognized standards-setting bodies, and other expert authorities, continues to support the Commission’s 2019 conclusion that its limits incorporate substantial safety margins and protect the public.

The Associations respectfully request that the Commission address the remanded issues with the reasoned explanation required by the court.

Respectfully submitted,

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October 22, 2026

Attachment A: Statement of Eric Swanson, PhD

ATTACHMENT A

Statement of Dr. Eric Swanson, PhD

Prepared for Submission in Response to FCC Public Notice Seeking Comment on RF Exposure Issues Subject to D.C. Circuit Remand in *Environmental Health Trust v. FCC* ET Docket No. 13-84

I. Author Credentials

Eric Swanson is a professor of physics at the University of Pittsburgh and a Fellow of the American Physical Society. He has over 100 publications on nuclear and biological physics, has more than 14,000 citations to his work, and is the author of a textbook on the societal impact of science and a textbook on advanced computational methods. He has consulted for the wireless industry since 2018.

II. Review of Studies Referenced in the FCC Public Notice

H. Nittby et al, Pathophysiology (2009)

The paper reviews a large number of studies claiming a vast array of effects due to cell phone radiation. The number of claimed causal effects is an immediate red flag as it is rare that a single thing can cause a great variety of outcomes. What this points to is the *look-elsewhere effect*, where experiments run at the limits of detection often find some effect. The totality of such poor-quality experiments then points at a huge array of phenomena, none of which has been independently confirmed.

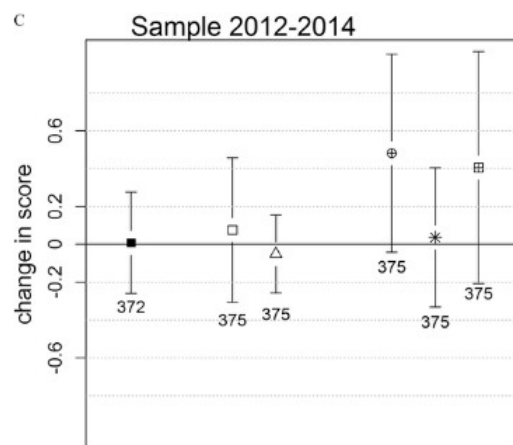
As an example, one study states: “[exposure of rats to cell phone radiation shows that] significant neuronal damage is present 28 days and 50 days after exposure, but not after 14 days.” The authors show images of tissue and claim that dark regions represent neuronal damage. How is this assessed in a way that does not introduce bias? The authors state it is “judged semi-quantitatively,” which is a serious design flaw. Is it reasonable to expect tissue to take a month to show damage from radiation? Could other effects have occurred in the intervening month? Doing animal experiments is not easy, and confounds (factors which interfere with the interpretation of test results) exist at every turn. The search for an effect can lead researchers to neglect confounds, which immediately yields false positives.

The authors then go on to examine the effect of EMF on rat brains after 7 days of exposure. The data are not shown, but it is claimed that there is “a low, but significant correlation between

exposure level and the occurrence of albumin foci.” Given the semi-quantitative method for judging damage and the low number of study animals (48 rats were used), it is no surprise that the statistical significance of the outcome is low. The flaws in this study cast doubt on the usefulness of the Nittby paper in demonstrating the need to reassess existing radiofrequency radiation (“RFR”) exposure standards.

M. Foerster et al. Environ Health Perspective (2018)

The authors seek to assess the effect of cell phone usage on changes in memory function over one year in adolescents. This is an ambitious study that is beset with bias and confounds. For example, cell phone usage rates were self-reported, which is a notorious source of error in the field. More problematic is that a lot of things can happen to an adolescent over a year, and causal claims about cell phones (or anything) become nearly impossible to judge. For example, children with high cell phone usage may be less attentive in school in general, and this might be shown in their cognitive function. The authors are aware of the issue and state that they dealt with age, gender, school class, school level, weight, and other confounds by “imputation,” which is little more than guessing. Needless to say, this is far from desirable when attempting to detect weak signals. If one nevertheless presses on, one finds that the data itself are equivocal. One of the study’s figures is reproduced below. This figure shows the change in verbal memory scores over one year on the y-axis versus six groups of adolescents on the x-axis. All the data lie near the no-change line, with large errors. It is difficult to make claims about effects with this data. Many other figures are shown and all look qualitatively the same. Drawing firm conclusions from such data is perilous. Based on the study’s methodology and the data it reported, the study does not raise concerns as to the validity of the existing RFR exposure standards in protecting human health.



M. Yakymenko et al., Elect Bio Med (2015)

This is a review article that refers to many publications and is therefore difficult to critique. However, one can get a feel for the quality of the review by the claims made. For example, the authors refer to a study that claims that the magnetic field of cell phones can cause the “overproduction of free radicals.” When assessing the plausibility of this remarkable claim one

should remember that the Earth's magnetic field is many times stronger than the field that is produced by a cell phone.¹ The authors also report that electrohypersensitivity is on the rise and that young people are experiencing increases in headaches after cell phone use. Such credulous and uncritical reporting of anecdotal evidence does not rise to the level of serious science.

H. Lai, *A Summary of Recent Literature (2007-2017) on Neurological Effects of Radiofrequency Radiation*, ch 8, Mobile Communications and Public Health (CRC, 2018)

This is a review article covering many publications. The authors claim that “The nervous system is an electrical organ. Thus, it should not be surprising that exposure to electromagnetic fields could lead to neurological changes.” But one does not follow from the other. While it is partially true that the brain is an electric organ (neuromodulators and hormones also play large roles), the scale of effects must be accounted for. Thus, for example, the brain operates at body temperature, and therefore the electrons in the brain fluctuate randomly. This fluctuation leads to *thermal noise electric fields* whose strengths range from 10,000,000 V/m near an ion channel to 10,000 V/m over an entire cell. This is to be compared to the field from a cell phone of about 1 V/m -- a figure that literally disappears in the noise. Thus the author's claim is irrelevant to biological function. Simply put, the fact that the nervous system “is an electrical organ” does not support the assertion that RFR exposure “could lead to neurological change.” In addition, the authors' use of the term “could” is so conditional as to provide no basis to reexamine the existing wealth of scientific literature concluding that RFR exposure has not been demonstrated to have any harmful effects.

The author kindly summarizes aspects of the studies listed in the report, noting, “A major concern is that in some of the studies details of the exposure setup and dosimetry are not provided,” “information on how the cell phone was activated, in many instances, was not provided,” and that “Most of the studies were carried out with relatively high levels of RFR compared to environmental level.” All of these are serious methodological shortcomings, and point to a generally low-quality body of work.

¹ Calderón C, Addison D, Mee T, Findlay R, Maslanyj M, Conil E, Kromhout H, Lee AK, Sim MR, Taki M, Varsier N, Wiart J, Cardis E. Assessment of extremely low frequency magnetic field exposure from GSM mobile phones. *Bioelectromagnetics*. 2014;35(3):210–221.