Before the
DEPARTMENT OF HEALTH AND HUMAN SERVICES
Washington, D.C. 20201

In the Matter of	)	
	)	
Request for Information on	)	Docket HHS-OASH-2026-0397
Electromagnetic Fields (EMFs),	)	
Radiofrequency (RF) Radiation, and	)	
Wireless Radiation Exposure	)	

COMMENTS OF THE WIRELESS INFRASTRUCTURE ASSOCIATION AND THE TELECOMMUNICATIONS INDUSTRY ASSOCIATION

Melissa Newman
Senior Vice President

Telecommunications Industry Association
1201 Wilson Boulevard, Floor 9
Arlington, VA 22209

Michael Saperstein
SVP, Government Affairs and
Chief Strategy Officer

WIA – The Wireless Infrastructure Association
2111 Wilson Blvd., Suite 210
Arlington, VA 22201

October 21, 2026

TABLE OF CONTENTS

I. INTRODUCTION AND PERSPECTIVES (QUESTION 2) 1

A. About WIA and TIA 1

B. HHS's Review of RF Exposure Must be Grounded in "Gold Standard" Science, Which Present RF Exposure Limits Meet, and HHS Should Consider the Health and Safety Benefits of Wireless Network Resiliency 2

II. HHS SHOULD ENDORSE THE FCC'S RF EXPOSURE LIMITS AND THE INTERNATIONAL SCIENTIFIC CONSENSUS ON RF SAFETY (QUESTION 5) 4

III. GOLD STANDARD SCIENCE CONFIRMS THAT RF EXPOSURE BELOW THE FCC'S LIMITS DOES NOT ADVERSELY IMPACT HUMAN HEALTH (QUESTION 12) 7

IV. THE FCC'S EXISTING RF EXPOSURE LIMITS ARE SUFFICIENT TO ACCOUNT FOR "CUMULATIVE" EXPOSURE (QUESTION 13) 11

V. HHS'S REVIEW SHOULD REFLECT AN UNDERSTANDING OF MODERN WIRELESS TECHNOLOGY AND ACCOUNT FOR WIRELESS BENEFITS TO PUBLIC HEALTH AND SAFETY (QUESTION 15) 13

A. The Current RF Exposure Framework is Sufficient to Account for Exposure from Modern Wireless Infrastructure 13

B. The Ubiquitous Availability of Wireless Connectivity Enables and Supports Life-Saving Technologies 15

VI. HHS SHOULD COLLABORATE WITH ALL ITS FEDERAL AGENCY PARTNERS TO CONTRIBUTE TO A COORDINATED, WHOLE-OF-GOVERNMENT APPROACH TO RF SAFETY (QUESTION 17) 18

VII. CONCLUSION 18

Before the
DEPARTMENT OF HEALTH AND HUMAN SERVICES
Washington, D.C. 20201

In the Matter of	)	
	)	
Request for Information on	)	Docket HHS-OASH-2026-0397
Electromagnetic Fields (EMFs),	)	
Radiofrequency (RF) Radiation, and	)	
Wireless Radiation Exposure	)	

COMMENTS OF THE WIRELESS INFRASTRUCTURE ASSOCIATION AND THE TELECOMMUNICATIONS INDUSTRY ASSOCIATION

The Wireless Infrastructure Association ("WIA") and the Telecommunications Industry Association ("TIA," and collectively with WIA, the "Associations") respectfully submit these comments in response to the Department of Health and Human Service's ("HHS's") Request for Information ("RFI") seeking information on electromagnetic field ("EMF") emissions and exposure, particularly radiofrequency ("RF") exposure and wireless, and human health.[1]

I. INTRODUCTION AND PERSPECTIVES (QUESTION 2)

A. About WIA and TIA

WIA is the principal association representing the companies that design, build, own, and operate the infrastructure that powers America's mobile and fixed wireless networks. WIA members include infrastructure providers, wireless carriers, and professional services firms that are responsible for telecommunications facilities around the globe. WIA advocates for the widespread, responsible deployment of wireless infrastructure to enable connectivity everywhere

[1] Request for Information on Electromagnetic Fields (EMFs), Radiofrequency (RF) Radiation, and Wireless Radiation Exposure, 91 Fed. Reg. 59792 (Sept. 21, 2026) ("RFI").

to enhance communication, drive economic growth, empower education and healthcare, and facilitate American innovation.[2]

TIA is the leading trade association for the information and communications technology ("ICT") industry, representing more than 400 companies that manufacture or supply the products and services used in global communications across all technology platforms. TIA represents its members on the full range of policy issues affecting the ICT industry and forges consensus on voluntary, industry-based standards. TIA is also a standards-developing organization with a more than 80-year history of developing thousands of technical standards that encourage the secure and resilient deployment and operation of ICT equipment and networks. The devices that TIA's members design and manufacture, which incorporate 5G, Wi-Fi, and small cell technologies, must meet the Federal Communications Commission's ("FCC's") RF emission exposure regulations.

B. HHS's Review of RF Exposure Must be Grounded in "Gold Standard" Science, Which Present RF Exposure Limits Meet, and HHS Should Consider the Health and Safety Benefits of Wireless Network Resiliency

The Associations have long prioritized the use of wireless networks and devices to promote the health and well-being of the American public and support HHS's objectives: to "clearly distinguish established evidence from emerging findings and areas of uncertainty," and the agency's request for "clear, balanced, and evidence-informed information."[3] Through these comments, which respond to several questions posed in the RFI, WIA and TIA encourage HHS

[2] *See Wireless Benefits, Health and Safety*, WIA, https://wia.org/wireless-benefits-health-and-safety/ (last visited Oct. 20, 2026).

[3] RFI, 91 Fed. Reg. at 59792.

to collaborate with other federal agencies working on these issues. As it does so, HHS should consider three key points when evaluating the record in this proceeding:

First, HHS should ensure that its review and any recommendations are grounded in "gold standard" science. As emphasized in the May 2025 Executive Order on "Restoring Gold Standard Science," the Trump Administration "is committed to restoring a gold standard for science" and ensuring that "Federal decisions are informed by the most credible, reliable, and impartial scientific evidence available."[4] Gold standard science is, among other things, reproducible, transparent, and subject to unbiased peer review.[5] Evidence HHS relies on for its review must meet that standard. The health and safety of the American people warrant nothing less.

Second, the current RF human exposure limits set by the FCC are grounded in precisely the gold standard science described above. These limits, and the device testing and certification process that enforces them, rest on a mature, consensus-based, internationally harmonized scientific basis. Multiple authorities have concluded that emissions within the FCC's RF exposure limits do not cause adverse health effects.[6]

Third, HHS's review and recommendations should account for the benefits of wireless networks and devices to the health and safety of the American public, especially given the absence of scientific evidence that current RF standards present adverse health effects. Wireless networks are now basic infrastructure for the American economy and daily life, from commerce and work to healthcare and education. As HHS Secretary Robert F. Kennedy, Jr. has recognized,

---

[4] Exec. Order No. 14303, 90 Fed. Reg. 22601 (May 23, 2025).

[5] *Id.*

[6] *See infra* Section III.

for example, wireless wearable devices are "key to the MAHA agenda."[7] Wireless networks and devices are also critical components of public-safety infrastructure that enable the public to connect with first responders and law enforcement—and allow first responders and law enforcement to protect the public. Any HHS action that leads to unduly restrictive RF exposure limits risks undermining the resilient wireless networks that Americans and the economy rely on, while adding no health or safety protection beyond what the FCC's limits already provide.

II. HHS SHOULD ENDORSE THE FCC'S RF EXPOSURE LIMITS AND THE INTERNATIONAL SCIENTIFIC CONSENSUS ON RF SAFETY (QUESTION 5)

HHS asks about existing national and international exposure standards, guidelines, and regulatory frameworks that federal health agencies should consider when evaluating the potential adverse health effects of human exposure to RF.[8] HHS should look to the FCC's well-established, science-based regulatory framework for human exposure to RF radiation (sometimes referred to as "RFR") and maintain the current harmonization of U.S. and international RF exposure standards.

Congress charged the FCC with the "responsibility to set standards for RF emissions."[9] For decades, the FCC has faithfully executed that responsibility by relying on "gold standard" science and expertise from internationally recognized organizations. The FCC's limits for RF exposure, first promulgated in 1996, include limits for specific absorption rate ("SAR")—a

---

[7] Alexa Mikhail, *RFK Jr. wants more people wearing health wearables in the name of 'MAHA'*, FORTUNE (July 3, 2025), https://fortune.com/2025/07/03/rfk-jr-health-wearables/.

[8] RFI, 91 Fed. Reg. at 59793 (Question 5).

[9] *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, 11688 ¶ 1 n.1, 11689 ¶ 6 n.5 (2019) ("*2019 RF Order*") (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).

"measure of the rate of energy absorption by the [human] body"[10] from the source being measured that is used to measure exposure within the frequency ranges typically used by wireless networks and devices[11]—and maximum permissible exposure. The use of these metrics, taken together, "addresses limits for partial-body and whole-body exposures."[12] 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."[13] 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."[14] Notwithstanding this margin, the FCC 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.[15]

The FCC's exposure limits apply both to deployments of wireless infrastructure and to wireless devices through a combination of human exposure evaluations and the FCC's device

---

[10] *Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, Report and Order, 11 FCC Rcd 15123, 15127 ¶ 9 n.12 (1996) ("*1996 RF Order*").

[11] *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).

[12] *2019 RF Order*, 34 FCC Rcd at 11689-90 ¶ 6.

[13] *Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies*, First Report and Order, Further Notice of Proposed Rulemaking, and Notice of Inquiry, 28 FCC Rcd 3498, 3582 ¶ 236 (2013) ("*2013 RF Order, FNPRM, and NOI*").

[14] Comments of the Telecommunications Industry Association, ET Docket No. 13-84, 03-137, at 7-8 (Sept. 3, 2013) ("TIA 2013 FCC Comments").

[15] *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 RF Order*, 34 FCC Rcd at 11696 ¶ 14. While the D.C. Circuit in 2021 remanded the *2019 RF Order* to the FCC for further explanation on a limited set of issues, it upheld the agency's finding that RF exposure within the limits is not linked to cancer and its determination to maintain its RF exposure limits. *See Env't Health Trust v. FCC*, 9 F.4th 893, 911-13 (D.C. Cir. 2021).

certification process. Of critical importance, these 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").[16] The FCC'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 Administration ("FDA"), the National Institute for Occupational Safety and Health, and the Occupational Safety and Health Administration.[17] And as discussed in more detail below, the limits continue to be supported by findings from respected national and international authorities.[18]

The FCC's standards are also generally aligned with—and in at least some instances, more conservative than—international limits. For example, as the FCC noted in 2013, its SAR limit (1.6 Watts per kilogram averaged over 1 gram) is stricter than the standard of 2.0 W/kg averaged over 10 grams adopted by the International Commission on Non-Ionizing Radiation Protection ("ICNIRP"),[19] the standard underpinning the majority of international RF exposure device limits.[20] As such, any recommendation to make RF standards even more conservative would mean a further departure from international standards and the global scientific consensus.

This would have significant consequences for American competitiveness. The International Telecommunication Union ("ITU"), which oversees the allocation of radio

[16] *1996 RF Order*, 11 FCC Rcd at 15128-36 ¶¶ 12-34 (1996).

[17] *Id.* at 15130-31 ¶¶ 17-20, 49, 62.

[18] *See infra* Section III.

[19] *See 2013 RF Order, FNPRM, and NOI*, 28 FCC Rcd at 3404-05 ¶ 13.

[20] *See EMF Policy*, GSMA, https://www.gsma.com/solutions-and-impact/connectivity-for-good/public-policy/regulatory-environment/emf-and-health/emf-policy/ (last visited Oct. 20, 2026) (showing most countries using ICNIRP's guidance for their exposure limits).

spectrum internationally, has documented how limits stricter than ICNIRP or IEEE constrain 4G and 5G capacity.[21] The ITU explains that this occurs because strict limits "negatively affect all potential levers to enhance the wireless infrastructure and deployment of 5G: spectrum, technology (determining the spectral efficiency) and network topology (number of sites and sectors)."[22] Globally harmonized standards thus not only meet internationally-recognized health and safety protections, but also allow American companies to increase investment in the wireless ecosystem without having to comply with multiple sets of rules in a global marketplace.[23]

III. GOLD STANDARD SCIENCE CONFIRMS THAT RF EXPOSURE BELOW THE FCC'S LIMITS DOES NOT ADVERSELY IMPACT HUMAN HEALTH (QUESTION 12)

HHS asks what scientific evidence exists regarding potential adverse health effects associated with RF radiation exposure at levels below current federal exposure limits.[24] Over the past decades, numerous well-respected scientific organizations, public and private, have evaluated the risk of RF exposure at or below the FCC's limits, the standards on which they are based, and international standards and limits. Time and again, the outcome is the same: the current limits protect public health.

Recent examples can be found from HHS's own operating divisions and agencies. For example, the National Institutes of Health's ("NIH's") National Cancer Institute ("NCI") concluded in 2022 that there is "no known mechanism by which non-ionizing EMFs could damage DNA and cause cancer," and, across "[n]umerous epidemiologic studies and

---

[21] ITU-T, Series K, Supplement 14, *The Impact of RF-EMF Exposure Limits Stricter than the ICNIRP or IEEE Guidelines on 4G and 5G Mobile Network Deployment* at 7 (May 2018).

[22] *Id.* at 3.

[23] TIA 2013 FCC Comments at 4.

[24] RFI, 91 Fed. Reg. at 59793 (Question 12).

comprehensive reviews of the scientific literature [that] have evaluated possible associations between exposure to non-ionizing EMFs and risk of cancer in children," "[n]o consistent evidence for an association between any source of non-ionizing EMF and cancer has been found."[25] In 2026, the Centers for Disease Control and Prevention ("CDC") wrote: "At this time we do not have the science to link health problems to cell phone use."[26] And in 2020, 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."[27]

The FDA's finding, and the conclusions of the CDC and NCI, are reinforced by similar findings from other government, public health, and technical authorities. In its comments on the FCC's 2013 inquiry into the enduring sufficiency of its RF limits, TIA 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 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");

[25] *Electromagnetic Fields and Cancer*, NIH, NATIONAL CANCER INSTITUTE (May 30, 2022), https:// www.cancer.gov/about-cancer/causes-prevention/risk/radiation/electromagnetic-fields-fact-sheet.

[26] *Facts About Cell Phones and Your Health (Should people stop using cell phones?)*, CDC (July 16, 2026), https://www.cdc.gov/radiation-health/data-research/facts-stats/cell-phones.html.

[27] FDA, *Review of Published Literature between 2008 and 2018 of Relevance to Radiofrequency Radiation and Cancer* at 87 (Feb. 2020), https://www.fda.gov/media/135043/download.

- 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.[28]

Informed by years of efforts by the IEEE International Committee on Electromagnetic Safety, the IEEE provided the FCC with notice of its newly published standard in 2019, which offered "science-based exposure criteria to protect against established adverse health effects in humans associated with exposure to electric, magnetic, and electromagnetic fields." 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."[29] IEEE 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 exposures below levels specified in this standard to adverse health effects."[30]

In this proceeding, HHS should hold all of the information submitted into the record to the same gold standard of science, *i.e.*, that such evidence is transparent, replicable, controlled, and subject to peer review. Keeping that framing in mind, HHS should treat anecdotal reports of symptoms of harmful RF exposure with caution and a recognition that there remains an ongoing need for adequate tools to scientifically measure and evaluate such claims.

[28] TIA 2013 FCC Comments at 4-6.

[29] IEEE Std C95.1-2019 at Section 1.3.1.

[30] *Id.*

HHS's review and recommendations should not rest on studies that do not meet that gold standard. For example, HHS should be especially skeptical of the National Toxicology Program's ("NTP's") 2018 study on the effects of high exposure to RF radiation in rats and mice. In Attachment A to this filing, Dr. Eric Swanson of the University of Pittsburgh[31] offers his analysis of the NTP's study and finds that it "provides no basis to conclude that there are harmful health effects from RFR."[32] Dr. Swanson finds that the NTP study suffers from "two main flaws."[33] First, it examines "many possible outcomes, … which leads to false positives."[34] Dr. Swanson explains that, because the animals were examined for many types of cancer at multiple levels of exposure, the study suffers from the acknowledged "problem of multiple outcomes" that results in a lack of statistical power.[35] Second, Dr. Swanson's analysis shows that the small sample size associated with the rarity of glioma (a type of cancer) leads to "statistical evidence that RFR exposure actually *reduces* the incidence of glioma," an "implausible result [that] is yet another indication of the unreliable statistical significance of the NTP study conclusions."[36]

---

[31] 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.

[32] *See* Attachment A at 3.

[33] *Id.* at 2.

[34] *Id.* at 2. Dr. Swanson's report also discusses how the "lack of statistical power … is reflected in other statistical anomalies in the study," such as that "rats that were exposed to RFR actually *lived longer* than the control group," *id.* at 3, or that "[w]hen one examines all schwannomas [a type of cancer], not just the cardiac schwannomas, there is no established relationship to RFR." *Id.* at 3.

[35] *Id.* at 3.

[36] *Id.* at 4. Additionally, in November 2018, the director of the FDA's Center for Devices and Radiological Health put out a news release on final NTP report on its RF exposure research underscoring that "we only begin to observe effects to animal tissue at exposures that are 50 times higher than the current whole body safety limits set by the FCC for radiofrequency energy exposure," agreeing that the findings "should not be applied to human cell phone usage," and

IV. THE FCC'S EXISTING RF EXPOSURE LIMITS ARE SUFFICIENT TO ACCOUNT FOR "CUMULATIVE" EXPOSURE (QUESTION 13)

HHS queries how various wireless technologies (and standards), such as 5G, 6G, wearables, and others, affect "cumulative" exposure patterns.[37] As a threshold matter, the FCC already regulates cumulative RF exposure, not the number of wireless providers at a site. The FCC's RF exposure limits explicitly recognize, and account for, multiple RF sources at a single location.[38] As the FCC explained with respect to exposure from fixed RF sources in its 2019 order maintaining its RF exposure limits:

> Exposure from fixed RF sources will vary considerably in different environments that contain a portable or mobile device, depending on location relative to that fixed RF source. Additionally, since exposure diminishes exponentially with increasing distance, signal losses occur due to non-line-of-sight conditions from distant sources, and separation from fixed sources is typically large, exposure from fixed RF sources is normally much less than the limit and contributes negligible exposure virtually all the time[.][39]

---

concluding that "[b]ased on our ongoing evaluation of this issue, the totality of the available scientific evidence continues to not support adverse health effects in humans caused by exposures at or under the current radiofrequency energy exposure limits." FDA, Statement from Jeffrey Shuren, M.D., J.D., Director of the FDA's Center for Devices and Radiological Health on the National Toxicology Program's report on radiofrequency energy exposure (Nov. 1, 2018), https://www.prnewswire.com/news-releases/statement-from-jeffrey-shuren-md-jd-director-of-the-fdas-center-for-devices-and-radiological-health-on-the-national-toxicology-programs-report-on-radiofrequency-energy-exposure-300742322.html. A recent study conducted in Japan sought to reproduce the results of the NTP study and found "no reproducible evidence of carcinogenic or genotoxic effects. The findings support the overall weight of evidence from previous RF safety evaluations, suggesting no reproducible carcinogenic potential of mobile phone–type RF exposure in rats." Katsumi Imaida et al., *The International Collaborative Animal Study of Mobile Phone Radiofrequency Radiation Carcinogenicity and Genotoxicity: The Japanese Study*, 209 Toxicology Scis., no. 3, 2026, at 12.

[37] RFI, 91 Fed. Reg. at 59793 (Question 13).

[38] *See* 47 C.F.R. § 1.1307 (b)(3)(ii) (exempting multiple RF sources if the sum of the fractional contributions is below FCC requirements).

[39] *2019 RF Order*, 34 FCC Rcd at 11720-21 ¶ 67.

In other words, the directionality of most RF signals—whether from devices or infrastructure—coupled with the significant signal drop-off over distance and from environmental obstructions, including water vapor in the air, means that overlapping signals from fixed sources that would lead to "cumulative" exposure are statistically unlikely.

With respect to RF sources proximate to the body, the FCC explained that:

> [W]e expect that the locations of maximum SAR in the body from different RF sources that are proximate to the body are highly unlikely to overlap, precisely because when the RF sources are close to the body they will be exposing smaller areas of the body and separated sources will accordingly expose different areas of the body without overlap. … [T]he exposure from each portable or mobile device near a person will generally involve low total power absorption while being highly localized and will not result in significant contributions to whole-body average SAR.[40]

For example, the localized hotspots created by a phone carried in a shirt pocket and a wrist-worn smartwatch would expose different parts of the body—for the phone, the torso under the shirt pocket, and for the smartwatch, the wrist under the watch. The exposures from these two devices are not cumulative because they do not overlap within the same parts of the body, and the averaged whole-body exposure of each transmitter is significantly less than the level at the localized area. Furthermore, the low transmit power and intermittent duty cycles of wireless devices, such as cell phones, wearables, IoT devices, and smart home devices, means that those devices lend themselves to small total, time-averaged whole-body averaged SAR values in comparison to the FCC's limits.

[40] *Id.* at 11720 ¶¶ 67-68.

V. HHS'S REVIEW SHOULD REFLECT AN UNDERSTANDING OF MODERN WIRELESS TECHNOLOGY AND ACCOUNT FOR WIRELESS BENEFITS TO PUBLIC HEALTH AND SAFETY (QUESTION 15)

HHS seeks input on the types of scientific evidence that should be considered when evaluating RF exposure associated with wireless infrastructure.[41] As discussed previously, the FCC's RF exposure limits are already designed to account for exposure from wireless infrastructure in addition to handheld devices and wearables,[42] and consensus scientific evidence continues to support the adequacy of these limits to protect human health.[43]

A. The Current RF Exposure Framework is Sufficient to Account for Exposure from Modern Wireless Infrastructure

Drilling deeper, Question 15 specifically seeks comment on the scientific evidence that should be considered when evaluating RF exposure from wireless infrastructure in various settings. As a threshold matter, Dr. Swanson points out that the "very mild" thermal effects of RF radiation "have been thoroughly studied and inform FCC regulations."[44] Dr. Swanson also discusses a meta-study from the World Health Organization, which found "no evidence for increased risk for a wide variety of conditions (among them are glioma, meningioma, acoustic neuroma, pituitary or salivary tumors, brain tumors; rarer conditions also show no increased risk) due to cell phone use" and that "[e]xposure from towers was not associated with increased childhood leukemia or brain tumors."[45] Therefore, the answer as to the safety of wireless

---

[41] RFI, 91 Fed. Reg. at 59794 (Question 15).

[42] *See supra* Section II.

[43] *See supra* Section III.

[44] Attachment A at 1.

[45] *Id.* at 2 (citing Ken Karipidis et al., *The effect of exposure to radiofrequency fields on cancer risk in the general and working population: A systematic review of human observational studies - Part I: Most researched outcomes*, 191 ENV'T INT'L (Sept. 2024), https://www.sciencedirect.com/science/article/pii/-S0160412024005695.).

infrastructure remains the same regardless of its proximity to schools, healthcare facilities or other locations. This similarly is true as to all types of infrastructure, as the FCC's exposure limits do not distinguish between small wireless facilities or macro deployments.[46]

Question 15 also seeks comment on antenna density, but that variable does not create additional exposure and is already captured by existing regulations. As noted above, the FCC's rules explicitly account for multiple RF sources at a single location.[47] Further, the FCC has specified responsibilities for new and existing deployments at a single site to ensure that total RF emissions from a single site remain within its exposure standards.[48] When a new or modified facility would cause an otherwise compliant site to exceed RF exposure limits, the FCC places responsibility on the licensee that proposes the facility to ensure its deployment does not create a non-compliant condition.[49] This is important because as a nation, we have sought to further colocation on infrastructure to minimize the environmental impacts of duplicative sites and make use of existing infrastructure. Indeed, Congress explicitly promoted colocation as a national policy via Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012, while state local governments across the country have encouraged and incorporated colocation into their own siting frameworks.[50]

---

[46] *See Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment,* Declaratory Ruling and Third Report and Order, 33 FCC Rcd 9088, 9101 ¶ 33 n.72 (2018).

[47] *See supra* Section IV.

[48] *See Human Exposure to Radiofrequency and Electromagnetic Fields*, Small Entity Compliance Guide, DA 21-574, at 2 (rel. May 14, 2021).

[49] *Id.*

[50] *See, e.g.*, Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. 112-96 at Sec. 6409, codified at 47 U.S.C. § 1455(a) (providing that a state or locality "shall approve and may not deny" certain applications to colocate wireless infrastructure on existing infrastructure); Dearborn County, Indiana, Zoning Ordinance, Article 15, § 1500(4), Wireless Telecommunications Facilities (stating as an express purpose: "To promote and encourage shared

Finally, factors including antenna density and proximity to certain structures is often a misleading framework within which to view potential RF effects due to the rapid dropoff of signal strength as the observer moves away from the structure.[51] The American Cancer Society makes this point clearly: "[a]t ground level near typical cell towers, the energy from RF waves is hundreds to thousands of times less than the limits for safe exposure set by the FCC and other regulatory authorities."[52] This demonstrates that the FCC's power density limits do not present a risk to public health and safety in the surrounding area.

B. The Ubiquitous Availability of Wireless Connectivity Enables and Supports Life-Saving Technologies

Wireless networks and infrastructure form the backbone of modern communications, enabling seamless connectivity across the nation. HHS's review and recommendations should consider the affirmative benefits of wireless networks as essential infrastructure for public safety, first responders, healthcare, commerce, education, and daily life. Any recommendation for unduly restrictive limits that weakens wireless resiliency puts public health and safety at risk, without a countervailing benefit.

---

use and co-location of Wireless and Cellular Telecommunication Facilities as a primary option rather than encouraging the construction of additional single-use towers").

[51] *See, e.g.*, James C. Maxwell, A Treatise on Electricity and Magnetism (Vols. 1–2) 69 (Clarendon Press 1873) (describing the inverse square law for calculating effective energy levels of electromagnetic radiation, providing that the doubling of the distance from the transmitter results in one-quarter of the energy reaching the observer). *See also supra* Section IV.

[52] *Cell Tower Radiation and Cancer*, AM. CANCER SOC. (June 26, 2026), https://www.cancer.org/cancer/risk-prevention/radiation-exposure/cellular-phone-towers.html; *see also Human Exposure to Radio Frequency Fields: Guidelines for Cellular Antenna Sites*, FCC (Oct. 15, 2019), https://www.fcc.gov/consumers/guides/human-exposure-radio-frequency-fields-guidelines-cellular-and-pcs-sites (providing that an Effective Radiated Power of 100 watts corresponds to an actual radiated power of 5-10 watts and because power density from transmitters rapidly decreases with distance, normal ground-level exposure is much less than exposure directly within the transmitted beam).

Wireless networks are critical to public health and safety in multiple ways. In healthcare, wireless networks support telemedicine, allowing patients to consult with doctors remotely, access medical information, and receive timely care—especially in underserved areas. CTIA has highlighted how Americans now use wearable devices to "help monitor health and wellness, like smartwatches, glucose monitors, and more—and this continuous, real-time data helps to improve the management of chronic conditions and drive better outcomes."[53] Wireless networks also 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. In fact, today more than 80 percent of nearly 240 million annual 911 calls are placed from wireless devices.[54]

Wireless devices and networks also enable Americans' access to the nation's 988 Suicide and Crisis Lifeline by calling or texting 988.[55] The 988 Lifeline connects people struggling with mental health or suicidal thoughts to the help and resources they need to prevent tragic outcomes. Since its July 2022 launch, the "988 Lifeline has answered over 13M calls, texts, and chats from people in need of support."[56] Reliable wireless networks are essential for people in crisis to reach the 988 Lifeline.

---

[53] *2026 Annual Survey Highlights*, CTIA, at 5 (2026), https://api.ctia.org/wp-content/uploads/2026/09/2026-Annual-Survey-Highlights.pdf ("CTIA 2026 Annual Survey Highlights").

[54] *9-1-1 Statistics*, NENA: THE 9-1-1 ASSOCIATION, https://www.nena.org/page/911statistics (last visited Oct. 20, 2026).

[55] *About 988*, 988 LIFELINE, https://988lifeline.org/about/ (last visited Oct. 20, 2026) ("Georouting of voice calls … allows cellular phone calls to 988 to be routed to a local crisis center based on the caller's approximate location rather than area code. This provides help seekers with faster, more localized support, ensuring they receive care when, where, and how they need it most.").

[56] *Id.*

And, of course, wireless devices are critical for law enforcement and first responders to do their work. "Many current and potential applications for public-safety officials are powered by wireless broadband."[57] These applications include mobile handsets, wearables, sensors, and even drones, which serve an essential role not just in emergencies (such as disaster response or search and rescue) but also for day-to-day interactions with the public.

Unnecessarily restrictive RF limits could impair network coverage, capacity, and reliability and increase the cost and difficulty of deploying infrastructure, with no corresponding benefit because the current science-based limits already protect public health.[58] Deployed networks, device ecosystems, and state and local siting frameworks are calibrated to the current limits, so a change would have ripple effects on the nation's wireless infrastructure networks, Americans' use of wireless services, and on wireless network reliability, including in emergency situations.[59] This consequence is particularly significant given that WIA estimates that overall investments in wireless infrastructure in 2025 amounted to nearly $65 billion and an estimated 342,350 full-time workers were engaged in building, maintaining, and operating the nation's cellular networks.[60] Any such disruption would thus be detrimental both as a matter of public

---

[57] *See Public Safety, First Responders Rely on Mobile Wireless Networks*, WIA BLOG (Mar. 21, 2022), https://wia.org/public-safety-first-responders-rely-on-mobile-wireless-networks/.

[58] *See supra* Section II (discussing how the ITU how found that overly restrictive limits "negatively affect all potential levers to enhance the wireless infrastructure and deployment of 5G: spectrum, technology … and network topology").

[59] *See, e.g.*, *Resilient Networks et al.*, Report and Order and Further Notice of Proposed Rulemaking, 37 FCC Rcd 8059, 8075 ¶ 45 (2022) (explaining that "the benefits attributable to improving facilities-based mobile wireless network resiliency in the context of emergency situations is substantial and will promote the health and safety of residents during times of natural disaster or other unanticipated events that impair telecommunications infrastructure").

[60] 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 2026 Annual Survey Highlights at 4 ("Over the life of the industry, total wireless investment in our nation's infrastructure now exceeds $763 billion.").

health and safety and as a matter of the economy—all without any commensurate benefit, as existing RF exposure limits are already adequate to prevent any possible adverse health effects.

VI. HHS SHOULD COLLABORATE WITH ALL ITS FEDERAL AGENCY PARTNERS TO CONTRIBUTE TO A COORDINATED, WHOLE-OF-GOVERNMENT APPROACH TO RF SAFETY (QUESTION 17)

HHS asks how federal health agencies can improve coordination of EMF and RF radiation research, highlighting the FDA, NIH, and the CDC.[61] It is indeed essential for HHS to leverage the expertise of other federal health agencies when evaluating issues related to RF exposure. But it is also of paramount importance that HHS collaborate with the broader set of federal agencies with expertise on the topic and whose stakeholders (both federal and private) would feel the impact of any recommendations that HHS adopts as a result of this proceeding. These agencies include, among others, the White House Office of Science and Technology Policy, the FCC—the regulatory authority with jurisdiction over all non-Federal transmitting services in the U.S.—and the National Telecommunications and Information Administration, which manages federal spectrum users, such as the Department of War and the Federal Aviation Administration, that rely on consistent, unified treatment of RF emissions.

VII. CONCLUSION

As HHS considers the developing record in this proceeding, WIA and TIA urge the agency to be mindful of the key considerations outlined above. Whatever action HHS takes should be grounded in "gold standard" science that informs this Administration's decisions, recognize that the FCC's current RF human exposure limits meet that standard, and account for the benefits of wireless networks and devices to the health and safety of the American public. The Associations stand ready to engage in a meaningful collaboration with HHS, including

[61] RFI, 91 Fed. Reg. at 59794 (Question 17).

through technical briefings, as it pursues its mission to enhance the health and well-being of all Americans by providing for effective health and human services and by fostering sound, sustained advances in the sciences underlying medicine, public health, and social services.

Sincerely,

/s/ Melissa Newman

Melissa Newman
Senior Vice President

Telecommunications Industry Association
1201 Wilson Boulevard, Floor 9
Arlington, VA 22209

/s/ Michael Saperstein

Michael Saperstein
SVP, Government Affairs and Chief Strategy Officer

WIA – The Wireless Infrastructure Association
2111 Wilson Blvd., Suite 210
Arlington, VA 22201

October 21, 2026

Attachment A: Statement of Dr. Eric Swanson, PhD

Statement of Dr. Eric Swanson, PhD

Prepared for Submission in Response to Request for Information on Electromagnetic Fields (EMFs), Radiofrequency (RF) Radiation, and Wireless Radiation Exposure

(Docket HHS-OASH-2026-0397)

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. Evaluation of Evidence of RF Exposure

Possible types of scientific evidence include epidemiological studies and laboratory studies. The global scientific and regulatory communities have made a thorough evaluation of possible health risks due to cell phone infrastructure. Current FCC regulations rely on that body of work and provide adequate protection for all persons and animals. None of the evidentiary approaches demonstrates harmful effects.

Cell phone radiation does cause very mild heating in material close enough to the source. These thermal effects have been thoroughly studied and inform FCC regulations. These regulations are adequate for protecting any persons or collections of persons or animals because they apply equally to any animal tissue. The Institute of Electrical and Electronics Engineers (IEEE) periodically conducts an extensive safety review of cell phone infrastructure. A review that began in 2003 saw working groups informing a subcommittee that reported to two other committees, and accepted input from the public and the American National Standards Institute. The subcommittee consisted of 125 experts from industry, the military, government, and academia. The working groups examined more than 2,000 publications before making their recommendations to the subcommittee. Similarly, thorough work is done by the World Health Organization, the FDA, the National Cancer Institute, and national bodies around the world.

Approximately 500 epidemiological studies, 4,000 laboratory studies, and 600 exposure assessment studies have been conducted as of 2022.[1]

The majority of these studies report no adverse effects. Lab studies examine things such as the response of neurons to EMF and therefore apply to every animal that has neurons. Large-scale

[1] K. Forster, M. Ziskin, Q. Balzano, Int J Environ Res Public Health, 19, 2067 (2022).

epidemiological studies have been conducted and report no evidence of adverse effects due to cell phone use. Among these are:

- UK Million Woman Study. No increased risk of brain tumors was found; no elevated risk was found for long-term or heavy users.[2]
- MOBI-Kids examined 2800 young people across 14 countries, finding no evidence for a link between brain tumors and cell phone use.[3]
- Danish Cohort Study followed the health of hundreds of thousands of cell phone users over 17 years and found no elevated risk of brain tumors.[4]
- Interphone study, IARC found decreases in brain tumors among all users, except the highest use group, where risks consistent with no increase were found.[5]
- COSMOS Study. This was a massive study of persons over a 30 year period, which found no adverse effects.[6]

A large WHO-sponsored metastudy of the effects of RF was published in 2024. This study collected information from 147 studies conducted in 22 countries from 1994 to 2022.[7] The findings indicate no evidence for increased risk for a wide variety of conditions (among them are glioma, meningioma, acoustic neuroma, pituitary or salivary tumors, brain tumors; rarer conditions also show no increased risk) due to cell phone use. The authors also report no increased risk for brain tumors in children, adolescents, and young adults. Exposure from towers was not associated with increased childhood leukemia or brain tumors. Furthermore, no increased risk was detected due to cumulative exposure levels.

III. Review of National Toxicology Program RFR Study

The National Toxicology Program study of carcinogenic effects in rats[8] and mice[9] has raised concerns about the safety of cellphone radiofrequency radiation (RFR). Although much effort was put into this study, it suffers from two main flaws: (i) many possible outcomes were examined, which leads to false positives, (ii) glioma (a type of brain cancer) is rare, hence studies such as this one with limited sample sizes can lead to false conclusions. These points are

---

[2] J. Schüz et al., Journal of the National Cancer Institute, (2022).

[3] G. Castaño-Vinyals et al, Env. Int., 160**,** 107069 (2022).

[4] P. Frei et al., British Medical Journal, 343, d6387 (2011).

[5] Interphone Study Group, Int J. Epidemiology, 39, 675 (2010).

[6] M. Feychting et al., Env. Int., 185, 108553 (2024).

[7] K. Karapidis et al., Env. Int., 191, 108983 (2024).

[8] Effect of cell phone radiofrequency radiation on body temperature in rodents: Pilot studies of the National Toxicology Program's reverberation chamber exposure system, M.E. Wyde et al., Bioelectromagnetics. 2018 Apr;39(3):190-199. doi: 10.1002/bem.22116. (Ref. 1)

[9] Report of Partial Findings from the National Toxicology Program Carcinogenesis Studies of Cell Phone Radiofrequency Radiation in Hsd: Sprague Dawley® SD rats (Whole Body Exposures), M.E. Wyde *et al.,* bioRxiv 055699; doi: https://doi.org/10.1101/055699. (Ref. 2)

elaborated below. In my opinion the study provides no basis to conclude that there are harmful health effects from RFR.

The NTP study exposed four different groups of animals to two types of RFR signal modulation (CDMA and GSM) at three different levels of exposure. Furthermore, the animals were examined for many types of cancer. Statistically, the resulting multitude of subclasses *must* lead to false positives (these are incorrect assertions of an effect, such as cancer). For example, if an experiment has a 5% false positive rate, doing two experiments has a 9.8% chance of finding a false positive. Things rapidly get worse as more experiments are done—performing 20 experiments yields a 64% chance of finding a false positive. This is called the "problem of multiple outcomes" in statistics and well-established methods (such as the Bonferonni method) can be used to overcome it. *This was not done by the NTP study authors*. Indeed, this problem was noted by an external referee (Dr. Michael S Lauer), who commented, "The low power implies that there is a high risk of false positive findings, especially since the epidemiological literature questions the purported association between cell phone exposure and cancer." (pg 36, Ref. 1). The lack of statistical power (which refers to the ability to reject the hypothesis that RFR does not cause cancer) is reflected in other statistical anomalies in the study.

- Only three female rats were observed with gliomas compared to eleven male rats. It is very difficult to find a plausible biological explanation for a sexual difference in the incidence of brain cancer.
- The NTP study reports that rats that were exposed to RFR actually *lived longer* than the control group (which was not exposed to RFR). This bizarre outcome is an indication of statistical fluctuation. Furthermore, as the authors themselves note, since cancer is associated with aging, it is actually a possible explanation for the excess gliomas seen in the male rats: "If malignant gliomas or schwannomas are late-developing tumors, the absence of these lesions in control males in the current study could conceivably be related to the shorter longevity of control rats in this study." (pg 15, Ref. 1).
- The study also found difficulty in consistently evaluating whether the test animals actually had diseases of a given type. Dr. A.M. Michalowski, the study's external referee (a neutral commentator whose concerns typically must addressed before research can be published), raised serious methodological issues that the authors did not address: "Working list of limitations potentially impacting NTP study interpretations. Difficulty in achieving diagnostic consensus in lesions classifications of rare, unusual, and incompletely understood lesion association. Document appears to indicate that the second Pathology Working Group (PWG) empaneled to review and obtain lesion classification consensus, following the inability of the initial PWG to do so, may have reviewed different lesions sets." (pg 62, Ref. 1). "PWG" refers to a panel of doctors tasked with examining the experimental animals to determine if they had diseases of interest. Dr. Michalowski is noting that different panels may have employed different criteria in their evaluations.
- Rats had their whole bodies irradiated with RFR, and it is not immediately obvious why schwannomas would preferentially appear in the heart. When one examines all schwannomas, not just the cardiac schwannomas, there is no established relationship to RFR. Therefore, for the schwannoma analysis to be positive one must ignore the whole-body results and focus only on the cardiac findings.

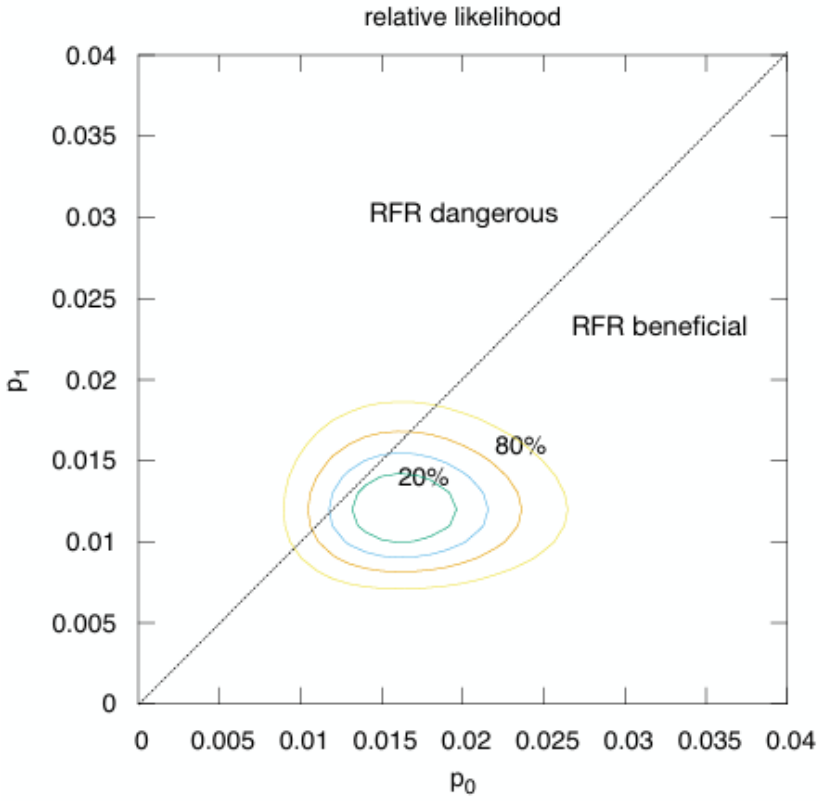
- Whole-body exposure levels were *far above* the whole-body exposure limits for humans (although they were comparable to exposure limits set for very small regions of the body). The animals were also exposed to approximately nine hours of RFR per day. Thus, neither the dose nor the exposure time were consistent with typical and FCC-permitted human use.
- As far as I am aware, the report concerning cancer rate in rats (Ref. 1) was never published. Although I cannot be certain as to the cause, this is typically an indication that the report failed to pass peer review. Ref. 2 was published but is concerned with well-known thermal effects from RFR exposure.
- A study[10] examining cancer rates in Sprague-Dawley rats (the type used in the NTP study) found that tumor incidence varied greatly depending on the commercial source. The authors "stressed the need for extreme caution in evaluation of carcinogenicity studies conducted at different laboratories and/or on rats from different sources." Furthermore, Sprague-Dawley rats are known to produce tumors at a high and very variable rate.[11]

Finally, glioma is rare (the incidence rate in the USA is approximately 3 per 100,000 persons[12]), and it is expensive and difficult to perform experiments on a sufficient number of rats to obtain statistically reliable results. To test this, I have computed the relative likelihood for obtaining the experimental results observed by the NTP researchers. I agree that an unusually large number of gliomas were observed in the male rats compared to the control group. However, if one examines the incidence of glioma in *all* NTP experiments (using data presented in Appendix D of Ref. 1) one finds a *lower incidence of glioma among rats exposed to RFR*. This is illustrated in the figure below, which shows the statistical relative likelihood for the incidence rate of glioma in the control groups of all NTP studies (labelled p_0 in the figure) versus the incidence rate in the RFR-exposed groups of Ref. 1 (labelled p_1). The likelihood is centered below the line, which is strong statistical evidence that RFR exposure actually *reduces* the incidence of glioma. This implausible result is yet another indication of the unreliable statistical significance of the NTP study conclusions.

[10] Comparison of Neoplasms in Six Sources of Rats, W.F. MacKenzie and F.M. Garner, JNCI, 50 (5) (1973), 1243-1257.

[11] "Editor in Chief of Food and Chemical Toxicology answers questions on retraction", A. Wallace Hayes, Food and Toxicology, 65 (2014) 394-395.

[12] The incidence for Sprague-Dawley rats is estimated to be 1.5%.


relative likelihood
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
p1
RFR dangerous
RFR beneficial
80%
20%
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
p0