

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies)	ET Docket No. 13-84
)	ET Docket No. 03-137
Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields)	

REPLY COMMENTS OF CTIA – THE WIRELESS ASSOCIATION®

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TABLE OF CONTENTS

I. INTRODUCTION AND SUMMARY1

II. THE RECORD DOES NOT SUPPORT A MORE RESTRICTIVE EXPOSURE STANDARD.....4

 A. The Commission’s RF Exposure Standards Are More Than Adequate To Protect The Public.....4

 B. Although The Record Fully Supports the Current Standard, It Also Suggests That The IEEE and ICNIRP 2.0 W/Kg Standard Reflects The Latest Science.10

 C. The Scientific Consensus Does Not Support A More Restrictive Exposure Standard.13

III. THE RECORD OFFERS NO SUPORT FOR STRINGENT, MANDATORY CONSUMER DISCLOSURES OR EXPOSURE REDUCTION POLICIES, AND SHOWS THAT THESE WOULD LIKELY BE COUNTER-PRODUCTIVE.20

 A. The Record Demonstrates That Stringent, Mandatory Consumer Disclosures In This Context Are Unnecessary and Impractical.21

 B. The Record Shows That Formal Adoption or Endorsement of Exposure Reduction Policies Would Be Inconsistent With the Commission’s Regulatory Mandate.....26

IV. THE RECORD DOES NOT SUPPORT A CHANGE IN CURRENT TESTING PROTOCOLS.29

V. THE FURTHER NOTICE’S PROPOSED EXEMPTION CRITERIA COULD UNNECESSARILY ELIMINATE THE CATEGORICAL EXEMPTION FOR MANY SMALL CELL SITES.33

VI. CONCLUSION.....35

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I. INTRODUCTION AND SUMMARY

CTIA – The Wireless Association® (“CTIA”) respectfully submits these reply comments in response to the Commission’s *Further Notice of Proposed Rulemaking and Notice of Inquiry* in the above-captioned proceedings.¹ The record indicates that the Commission’s current radiofrequency (“RF”) standards are more than adequate to protect public safety. Moreover, the Commission should continue its science-based approach to RF emission standards and testing methodologies because the FCC’s regime is grounded in the scientific consensus.² The Commission also should refrain from either requiring RF safety disclosures or encouraging methods to limit exposure to RF emissions from mobile devices, and it should continue to rely on approved testing mechanisms and existing proximity restrictions for mobile device usage.³

¹ *Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies*, First Report and Order, *Further Notice of Proposed Rulemaking and Notice of Inquiry*, ET Docket Nos. 13-84, 03-137 (rel. Mar. 29, 2013) (“*NOI*” or “*FNPRM*”).

² Comments of CTIA – The Wireless Association®, ET Docket Nos. 13-84, 03-137, at 2 (Sept. 3, 2013) (“CTIA Comments”).

³ *See id.* at 2-3.

The record supports CTIA's recommendations and demonstrates that confidence in the RF exposure regime is well-founded.⁴ First, the scientific consensus supports the Commission's current RF exposure standards as more than adequate to protect the public, based on years of research and the fifty-fold safety margin incorporated into the general population exposure standard. If anything, the record shows that the Commission's standard may be more conservative than necessary. The latest recommendations by the International Committee on Non-Ionizing Radiation Protection (ICNIRP) and the Institute for Electrical and Electronics Engineers (IEEE), which reflect the current scientific consensus, are that the safety standard for mobile devices should be set at 2.0 W/kg, averaged over 10 grams of tissue. The GAO recently suggested that harmonization of the FCC's standard with either one of those internationally-adopted standards would be sensible policy and could benefit the public. In contrast, calls in the record to adopt more restrictive exposure standards flatly contradict the scientific consensus and would have the Commission radically depart from the science-based inquiry that has previously guided it.

Second, the record does not support stringent, mandatory consumer disclosures, and the conservative nature of the FCC's existing standard means there is no basis for encouraging additional exposure reduction. A wide variety of information about mobile phone use and RF exposure is available to consumers, and any attempt to adopt a mandatory RF "safety" disclosure would raise significant policy and legal issues. Calls for the Commission to endorse formally the precautionary principle in the name of exposure reduction are similarly inconsistent with the Commission's regulatory mandate.

⁴ See *NOI*, ¶ 216.

Third, because there is no reliable evidence proving that current testing protocols fail to ensure compliance with RF standards, the record does not support a change in existing testing guidelines. The conservative nature of the FCC's RF standards and testing protocols is more than adequate to account for variation in consumer usage. Moreover, a zero-measuring requirement would not accurately mimic real usage or increase safety. Were the Commission to attempt to accurately model "typical" consumer usage, as some commenters urge it to do, the task would be exponentially more complicated than the simple recommendation to adopt a "zero-spacing" testing distance. For example, current testing protocols also test the device at its maximum power level output (*i.e.* all applications and functions running simultaneously), but "typical" consumer usage involves nothing of the sort; actual power levels during consumer use of the device are typically far lower. Any move to revise the testing guidelines must be carefully weighed against the Commission's mandate to balance safety with an efficient deployment of wireless service. Revising testing protocols in an attempt to replicate potential real world conditions will require more complex and onerous testing, without any clear improvement in the results. Because the record does not show that a revision is necessary to assure consumer safety, further changes to the testing protocols would simply impose additional complexity and costs without any corresponding benefit, and are thus not warranted.

Finally, in response to proposals advanced in the *Further Notice*, CTIA comments on the Commission's proposal to revise the criteria that exempt certain transmitter sites from routine environmental evaluation. The Commission should ensure that its proposed exemption criteria do not have the unintended effect of eliminating categorical exemptions for transmitters that pose little risk to public safety. The Commission's proposed exemption criteria for single transmitters may jeopardize the categorical exemption that currently applies to small cell sites. As the record

does not reflect a public safety need for routine environmental evaluation of small cell sites, the Commission should ensure that any revisions of the exemption criteria do not unwittingly subject small cell sites to unwarranted, new roadblocks.

II. THE RECORD DOES NOT SUPPORT A MORE RESTRICTIVE EXPOSURE STANDARD.

The *Notice of Inquiry* sought to “open a discussion” about the FCC’s current RF exposure limits and policies in order to “establish whether the present limits are insufficiently protective, appropriately protective, or overly restrictive.”⁵ The record demonstrates that the consensus among international standards-setting organizations, international scientific groups, and federal health and safety agencies is that the current FCC standards are more than “appropriately protective” of consumers. Indeed, to the extent the record suggests any change in exposure standards, it demonstrates that the less restrictive international standard of 2.0 W/kg averaged over 10 g of tissue reflects the best available science. Calls in the record for a more restrictive standard contradict the scientific consensus and therefore cannot provide the basis for agency action in a science-driven proceeding like this one.⁶

A. The Commission’s RF Exposure Standards Are More Than Adequate To Protect The Public.

The Commission’s inquiry into its RF exposure standards⁷ has yielded a record showing broad agreement that the current exposure standards are more than adequately protective of

⁵ *Id.*, ¶¶ 216, 218.

⁶ *Id.*, ¶ 210 (“The purpose of this *Inquiry* is to open a science-based examination of the efficacy, currency, and adequacy of the Commission’s exposure limits for RF electromagnetic fields.”); *see also* CTIA Comments at 18 (encouraging the Commission to continue its science-based approach to regulation concerning RF exposure standards).

⁷ *See supra*, note 6.

human health.⁸ The Commission adopted exposure standards backed by federal health and safety agencies and international standards-setting bodies,⁹ whose position is that the standards were safe when established and remain safe today. As shown by CTIA and others, the Commission, federal health and safety agencies, and international standards-setting bodies agree that cell phone use is not associated with adverse health effects:

- **Federal Communications Commission (FCC):** “There is no scientific evidence that proves that wireless phone usage can lead to cancer.”¹⁰
- **Federal Drug Administration (FDA):** “The scientific evidence does not show a danger to any users of cell phones from RF exposure.”¹¹
- **U.S. Government Accountability Office (GAO):** “In 2001, we reported that FDA and others had concluded that research had not shown RF energy emissions from mobile phones to have adverse health effects, but that insufficient information was available to conclude mobile phones posed no risk. Following another decade of scientific research and hundreds of studies . . . , FDA maintains this conclusion.”¹²

⁸ See, e.g., CTIA Comments at 18; Comments of GSMA, ET Docket Nos. 13-84, 03-137, at 1 (Aug. 30, 2013) (“GSMA Comments”) (noting the Commission’s expressed confidence in the current exposure limits “is consistent with the conclusions of many other expert reviews”).

⁹ See CTIA Comments at 18-20; see also Comments of Telecommunications Industry Association, ET Docket Nos. 13-84, 03-137, at 3 (Sept. 3, 2013) (“TIA Comments”); Comments of Nokia, ET Docket Nos. 13-84, 03-137, at 8 (Sept. 3, 2013) (“Nokia Comments”).

¹⁰ FCC, *FAQs: Wireless Phones*, available at <http://www.fcc.gov/encyclopedia/faqs-wireless-phones#evidence> (last visited Aug. 6, 2013); see also CTIA Comments at 20 n.94 (citing amicus briefs in *Murray v. Motorola* and *Farina v. Nokia* stating that wireless phones in compliance with the FCC’s RF standards are safe for use by the public).

¹¹ FDA, *Radiation-Emitting Products, Children and Cell Phones* (Mar. 10, 2009), available at <http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/ucm116331.htm> (last visited Aug. 3, 2013); see also CTIA Comments at 19 (citing FDA).

¹² United States Government Accountability Office, Report to Congressional Requesters, *TELECOMMUNICATIONS: Exposure and Testing for Mobile Phones Should be Reassessed*, GAO-12-771, at 6 (July 2012) (“GAO Report”); see also CTIA Comments at 20 (citing GAO).

- **National Cancer Institute (NCI):** “A new analysis by NCI researchers has turned up no evidence to support a link between cell phone use and brain cancer in the United States.”¹³
- **National Council on Radiation Protection and Measurements (NCRP):** “[A]vailable evidence indicates that exposure to RF fields at levels in compliance with FCC guidelines does not lead to additional risk for cancer or adverse effects on potentially sensitive tissues”¹⁴
- **World Health Organization (WHO):** “A large number of studies have been performed over the last two decades to assess whether mobile phones pose a potential health risk. To date, no adverse health effects have been established as being caused by mobile phone use.”¹⁵
- **International Commission for Non-Ionizing Radiation Protection (ICNIRP):** “[E]xtensive research has not established any biological mechanism by which radiofrequency fields . . . could cause cancer.”¹⁶
- **IEEE:** “A lack of credible scientific and medical reports showing adverse health effects for RF exposures at or below similar exposure limits in past standards supports the protective nature of the exposure limits.”¹⁷

Foreign regulators assessing the scientific literature have come to the same conclusion.

The Mobile Manufacturers Forum (“MMF”) compiled statements by Sweden’s Radiation Safety

¹³ National Cancer Institute, *Cancer Research Highlights* (July 2010), available at <http://www.cancer.gov/ncicancerbulletin/072710/page3#d>; see also CTIA Comments at 22 (citing National Cancer Institute).

¹⁴ National Council on Radiation Protection and Measurements (NCRP), *Letter Report on Wireless Telecommunications Radiofrequency Safety Issues for Building Owners and Managers*, Scientific Committee 89-6 (Dec. 20, 2002); see also CTIA Comments at 17 n.83 (citing NCRP).

¹⁵ WHO, *Electromagnetic fields and public health: Mobile Phones*, (June 2011), available at <http://www.who.int/mediacentre/factsheets/fs193/en/index.html> (“WHO EMF Fact Sheet”); see also CTIA Comments at 17 n.83 (citing WHO EMF Fact Sheet); TIA Comments at 4 (citing same).

¹⁶ International Commission for Non-Ionizing Radiation Protection (ICNIRP), Standing Committee on Epidemiology, *Mobile Phones, Brain Tumours and the Interphone Study: Where Are We Now?* (2011), available at <http://www.icnirp.de/documents/SCIreview2011.pdf>; see also Comments of Mobile Manufacturers Forum, ET Docket Nos. 13-84, 03-137 Annex A, at 79 (Sept. 3, 2013) (“MMF Comments”) (citing ICNIRP).

¹⁷ Institute of Electrical and Electronics Engineers, Inc. (IEEE), *IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz*, IEEE Std. C95.1-2005, at 2 (2006) (“IEEE Std C95.1-2005”).

Authority, the Health Council of the Netherlands, the European Union’s Health Risk Assessment Network on Electromagnetic Fields Exposure, the United Kingdom’s Health Protection Agency, Norway’s Institute for Public Health, Germany’s Radiation Protection Commission, Spain’s Scientific Advisory Committee on Radio Frequencies and Health, and South Africa’s Department of Health, all concluding that RF exposure from mobile phone use was not causally linked to brain tumors or other adverse health effects.¹⁸ The Telecommunications Industry Association (“TIA”) also provided support from the Latin American Experts Committee on High Frequency Electromagnetic Fields and Human Health, the European Commission’s Scientific Committee on Emerging and Newly Identified Health Risks, and the Swedish Counsel for Working Life and Social Research.¹⁹

Furthermore, studies conducted by researchers in the United States have found no association between mobile phone use and brain cancer.²⁰ In fact, the National Cancer Institute (NCI) has stated that “there is no evidence from studies of cells, animals, or humans that radiofrequency can cause cancer.”²¹ As the NCI explains, “[i]t is generally accepted that damage to DNA is necessary for cancer to develop. However, radiofrequency energy . . . does not cause DNA damage in cells,” nor has it been found to cause cancer in animals or enhance the effects of known chemical carcinogens.²² The NCI’s Surveillance, Epidemiology and End Results (SEER)

¹⁸ See MMF Comments, Annex A at 75-80.

¹⁹ See TIA Comments at 4-6.

²⁰ See P.D. Inskip, et al., *Cellular-Telephone Use and Brain Tumors*, 344 *New Eng. J. Med.* Vol. 79 (2001) (finding no increased risk of brain cancer associated with mobile phone use); J.E. Muscat, et al., *Handheld Cellular Telephone Use and Risk of Brain Cancer*, 284 *J. Am. Med. Ass’n* 3001 (2000) (same).

²¹ National Cancer Institute, Fact Sheet, *Cell Phones & Cancer Risk* (Jun. 2013), available at <http://www.cancer.gov/cancertopics/factsheet/Risk/cellphones>.

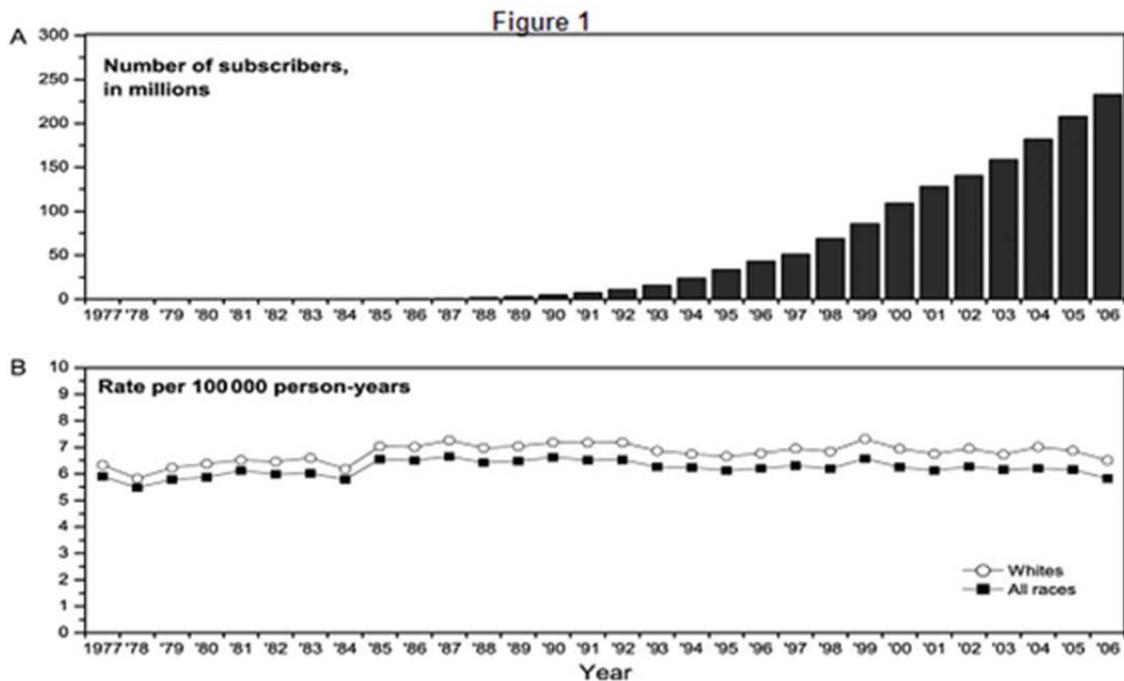
²² *Id.*

Program, which tracks cancer incidence in the United States, found “no increase in the incidence of brain or other central nervous systems cancers between 1987 and 2007, despite the dramatic increase in cell phone use in this country during that time.”²³ A study published by the National Institute of Health (NIH) also found no increase in the incidence of brain or other central nervous system cancers between 1996 and 2006, during which time the use of mobile phones skyrocketed.²⁴ As illustrated in the chart below, brain tumor rates have remained flat or even fallen slightly here in the United States, contrary to the predictions of outlier scientists who previously forecast ruinous incidence rates.²⁵

²³ *Id.* (emphasis added) (citing Little MP, Rajaraman P, Curtis RE, et al., *Mobile phone use and glioma risk: comparison of epidemiological study results with incidence trends in the United States*, *British Med. J.* 2012; 344:e1147). Studies in Denmark, Finland, Norway and Sweden from 1974 through 2008 also reveal no increase in age-adjusted incidence of brain tumors. *Id.* (citing Deltour I, Auvinen A, Feychting M, et al., *Mobile phone use and incidence of glioma in the Nordic countries 1979–2008: consistency check*, *Epidemiology* 2012; 23(2):301–307).

²⁴ See CTIA Comments at 21-22 (citing P.D. Inskip, Hoover RN, Devesa SS. *Brain cancer incidence trends in relation to cellular telephone use in the United States*, *Neuro-Oncology* (2010); 12(11):1147–1151).

²⁵ See CTIA Comments at 22 (citing Little).



Indeed, a study comparing actual incidence with rates predicted by those who believe RF emissions can cause brain cancer concluded that actual incidence rates are at least 40 percent lower than such predictions.²⁶

If anything, the record indicates that the current standards are conservative. As the *Notice of Inquiry* recognizes, the general population exposure standard includes a fifty-fold safety factor, just as IEEE Standard C95.1-1991 does.²⁷ As MMF also pointed out, the current standard of 1.6 W/kg averaged over 1 g of tissue is set “well below the threshold for adverse health effects.”²⁸

²⁶ Little MP, Rajaraman P, Curtis RE, et al., *Mobile phone use and glioma risk: comparison of epidemiological study results with incidence trends in the United States*, *British Med. J.* 2012; 344:e1147.

²⁷ See *NOI*, ¶ 236; see also Comments of International Committee on Electromagnetic Safety to the Institute of Electrical and Electronic Engineering, Inc., ET Docket Nos. 13-84, 03-137, at 4 (Aug. 30, 2013) (“ICES Comments”) (explaining the total safety factor of 50 in IEEE C95.1-1991).

²⁸ MMF Comments at 17.

Consequently, the record reflects a broad and wide-ranging consensus among federal regulatory bodies, their international counterparts, and independent standards-setting organizations.²⁹ Commenters echoed the Commission’s confidence in the current standards.³⁰ The GSM Association noted that the FCC’s confidence in the current exposure limits is “consistent with the conclusions of many other expert reviews.”³¹ Motorola Solutions stated that the “regime in place since 1996 has facilitated the rapid expansion and development of wireless technology in a manner that experience has demonstrated is *fundamentally safe*.”³² The Commission’s confidence in its current exposure standards is thus supported by the record.³³

B. Although The Record Fully Supports The Current Standard, It Also Suggests That The IEEE and ICNIRP 2.0 W/Kg Standard Reflects The Latest Science

To the extent the record contains support for any change in the exposure standards, it suggests that the international standard of 2.0 W/kg averaged over 10 g of tissue reflects the best available scientific evidence.³⁴ As the record shows, both ICNIRP and IEEE recommend a

²⁹ ANSES, France’s regulatory agency for food, environmental and occupational health and safety, recently reviewed studies published since 2009 and was “unable to establish any causal link” between mobile phone use and adverse health effects. *See* ANSES, *ANSES issues recommendations for limiting exposure to radiofrequencies* (Oct. 15, 2013), available at <http://www.anses.fr/en/content/anses-issues-recommendations-limiting-exposure-radiofrequencies>.

³⁰ *See* Comments of Dr. Mark Douglas, ET Docket Nos. 13-84, 03-137, at 3 (Sept. 3, 2013) (“IT’IS Comments”); Comments on Behalf of Cohen, Dippell & Everist P.C., ET Docket Nos. 13-84, 03-137, at 3 (Sept. 3, 2013) (“Cohen, Dippell & Everist Comments”).

³¹ GSMA Comments at 1 (citing to GSMA index of reports and statements on the science concerning RF exposure).

³² Comments of Motorola Solutions, ET Docket Nos. 13-84, 03-137, at 10 (Sept. 3, 2013) (“Motorola Solutions Comments”) (emphasis added).

³³ *See* CTIA Comments at 18.

³⁴ IEEE Standard C95.1-2005 and the 1998 ICNIRP standard (reaffirmed in 2009) both recommend a general population exposure standard of 2.0 W/kg averaged over 10 g of tissue.

general population exposure standard of 2.0 W/kg averaged over 10 g of tissue.³⁵ International trends show adoption of this standard: more than 115 countries and territories have implemented a general population exposure standard based on it.³⁶

The record shows that the international 2.0 standard reflects more recent research than the FCC's current standard of 1.6 W/kg over 1 g of tissue. The FCC adopted its current general population exposure standard in 1996, basing it on 1986 guidelines from the National Council on Radiation Protection and Measurements ("NCRP") and the 1992 ANSI/IEEE C95.1 standard.³⁷ ICNIRP issued its recommendation on 2.0 in 1998 and the IEEE followed suit in 2005.³⁸ Consistent with the GAO's conclusion that the FCC's current RF emission standard "may not reflect the latest evidence on the thermal effects of RF energy exposure,"³⁹ the latest IEEE and

See ICES Comments at 3 (explaining that the 2005 IEEE standard is consistent with ICNIRP's 1998 recommendation).

³⁵ See *id.* at 3 (explaining that the 2005 IEEE standard is consistent with ICNIRP's 1998 recommendation); CTIA Comments at 30 (stating IEEE's adoption of 2.0 W/kg in 2005 brought it into harmony with ICNIRP's 1998 recommendation of 2.0). The Commission recognizes that the IEEE and ICNIRP standards are not identical in that they differ in how they model the 10 grams of tissue. See *NOI*, ¶ 220. For ease of reference in these Reply Comments, CTIA will refer to both standards as the "international standard."

³⁶ See MMF Comments at 16; CTIA Comments at 30; ICES Comments at 7; see also TIA Comments at 4. As MMF notes, only nine countries, including the United States, follow the 1.6 W/kg standard for mobile devices. MMF Comments at 5. Thus, while other countries may look to the United States as a leader in telecommunications and technology, it is behind the international trend on this specific issue.

³⁷ CTIA Comments at 5.

³⁸ *Id.* at 30.

³⁹ GAO Report at 27. Several commenters, including the City of San Francisco, have pointed to this GAO statement to argue for the adoption of stricter exposure limits. See Reply Comments of the City of San Francisco, ET Docket Nos. 13-84, 03-137, at 3-4 (Nov. 1, 2013) ("San Francisco Reply Comments"); see also Comments of National Association of Telecommunications Officers and Advisors, ET Docket Nos. 13-84, 03-137, at 2 (Sept. 3, 2013) ("NATOA Comments"). This misstates the findings of the GAO Report. The Report does not advocate making the current federal standards stricter. Rather, the GAO Report concludes that

ICNIRP standards are based on improved and updated research.⁴⁰ ICES explained that the IEEE adopted the 2.0 standard following an “extensive review of the latest scientific literature”⁴¹ by a broad-ranging committee of experts that included representatives of the federal RF Interagency Working Group.⁴² MMF further noted the 2.0 standard is based on a “significantly improved understanding of RF and thermal dosimetry.”⁴³ Thus, while the scientific consensus continues to support the FCC’s current exposure standards as adequately protective of consumers, the prevalent international standard incorporates more recent available scientific evidence.⁴⁴

The 2.0 standard incorporates its own fifty-fold safety factor, as does the current Commission standard, resulting in a conservative framework that appropriately protects the general public. Industry stakeholders also asserted that harmonization with the international standard might benefit the public.⁴⁵ MMF gave several reasons why. First, harmonization is consistent with federal policy, as both Congress and the Office of Management and Budget have

“significantly improved RF research” led to the adoption of the *less restrictive* international 2.0 standard, and may support harmonization of U.S. regulations with that standard. *See* GAO Report at 19; *see also id.* at 17-18 (discussing the IEEE’s updated 2.0 recommendation).

⁴⁰ *See* GAO Report at 27.

⁴¹ ICES Comments at 3.

⁴² *Id.* at 2 n.8; *see also* Motorola Solutions Comments at 10-11 (stating that IEEE C95.1-2005 “was developed in a multi-stakeholder approach, with the active participation of” the FCC, the FDA, OSHA, and NIOSH); Comments of Joe A. Elder, ET Docket Nos. 13-84, 03-137, at 2 (Aug. 31, 2013) (“Elder Comments”) (noting participation of federal officials in the development of the 2005 IEEE RF standard).

⁴³ MMF Comments at 27.

⁴⁴ *See* CTIA Comments at 29; Motorola Solutions Comments at 12 (“IEEE C95.1-2005 contains the most current, research-based findings”).

⁴⁵ *See, e.g.,* Comments of CEA Association, ET Docket No. 13-84, 03-137, at 6 (Sept. 3, 2013) (“CEA Comments”) (supporting harmonization); Comments of Wi-Fi Alliance, ET Docket Nos. 13-84, 03-137, at 4 (Sept. 3, 2013) (“Wi-Fi Alliance Comments”) (supporting harmonization).

directed federal agencies to use standards developed by voluntary consensus organizations.⁴⁶ Second, harmonization with the international standard would improve coverage and quality of service for customers in rural areas and regions with limited coverage.⁴⁷ Third, improved coverage and greater network capacity resulting from harmonization will translate to a better wireless experience for consumers.⁴⁸ Harmonization with the international standard could lead to streamlined device manufacturing, promoting market efficiencies.

The record thus confirms the current standards as adequately protective of consumers and suggests that harmonization to the international standard is also consistent with the latest scientific evidence and the public interest.

C. The Scientific Consensus Does Not Support A More Restrictive Exposure Standard.

Notwithstanding the global scientific consensus, some commenters urge the Commission to adopt a more restrictive standard for general population exposure.⁴⁹ As shown by the record supporting the current FCC standard and the international 2.0 standard, such arguments contradict the prevailing scientific wisdom. Adopting a more restrictive standard would be bad policy. Calls for a more restrictive exposure standard are largely based on the so-called “precautionary principle”⁵⁰ and outlier studies criticized by government agencies and other

⁴⁶ MMF Comments at 35.

⁴⁷ *Id.* at 38.

⁴⁸ *Id.* at 41.

⁴⁹ *See, e.g.*, Comments of Cindy Sage and David Carpenter, ET Docket Nos. 13-84, 03-137 (Aug. 27, 2013) (“Sage and Carpenter Comments”); Comments of Blake Levitt and Henry Lai, ET Docket No. 13-84, 03-137 (Aug. 26, 2013) (“Lai and Levitt Comments”); Comments of Environmental Working Group, Docket Nos. 13-84, 03-137, at 2-7 (Sept. 3, 2013) (“EWG Comments”).

⁵⁰ *See, e.g.*, Sage and Carpenter Comments at 6 (calling on FCC to regulate based on the precautionary principle); Comments of Paul Dart, ET Docket No. 13-84, 03-137, at 1 (Sept. 1,

reputable entities.⁵¹ These proposals rely on theories that the Commission has previously considered and rightly rejected, and on which the scientific consensus has not changed since the Commission first adopted its exposure standards. Supporters of a more restrictive standard thus have failed to present new or credible theories that could justify a reversal of the Commission’s past approach to RF exposure regulation.

Proposals for Commission adoption of a more restrictive standard rely on theories of harm that the FCC and federal health and safety agencies have long deemed not credible. For example, some commenters called on the FCC to adopt a more restrictive standard due to alleged “non-thermal” effects of RF emissions.⁵² However, the organizations that promulgated the two standards upon which the current FCC standard is based, the ANSI/IEEE and the NCRP, both considered “non-thermal effects” before releasing their original recommendations and found no reliable, scientific evidence of such effects.⁵³ When crafting the current exposure standards, the Commission independently examined this issue and determined that the scientific literature did

2013) (“Dart Comments”) (same). See Section III, *infra*, for further discussion of the precautionary principle.

⁵¹ See CTIA Comments at 23.

⁵² See, e.g., Sage and Carpenter Comments at 3; Comments of Ellen K. Marks, ET Docket Nos. 13-84, 03-137 at 2-3 (Sept. 2, 2013) (“Marks Comments”); Kelley Comments at 3, 5; Comments of EMRadiation Policy Institute, ET Docket Nos. 13-84, 03-137, at 18-22 (Aug. 30, 2013) (“EMPRI Comments”). Proponents of “non-thermal” effects generally believe that RF emissions cause adverse health effects below the threshold at which tissue heating from RF exposure is observed. See EMPRI Comments, ¶¶ 66-69.

⁵³ See CTIA Comments at 13-14 (citing *Cellular Phone Taskforce v. FCC*, 205 F.3d 82, 91 (2d Cir. 2000)).

not support the existence of “non-thermal” effects.⁵⁴ Two federal Courts of Appeals upheld the Commission’s judgment on this issue.⁵⁵

Nor has the scientific consensus on “non-thermal” effects changed in the intervening years. Though proponents of the BioInitiative Report call on the FCC to reject the “thermal” model upon which the 1.6 W/kg and 2.0 W/kg standards are based,⁵⁶ Motorola Solutions pointed out that the thermal model adequately protects against thermal effects, which are the only known potential adverse health effects of RF emissions.⁵⁷ Leading reviews of the recent scientific literature agree, despite some commenters’ assertions otherwise.⁵⁸ In its 2012 review of available scientific research, the GAO noted scientists’ failure to replicate studies that purportedly establish DNA breakage from RF energy exposure below the threshold for tissue-heating.⁵⁹ Furthermore, as Ellen Marks notes in her comments, GAO specifically considered the theory of “non-thermal” effects and still concluded that scientific research to date does not demonstrate adverse health effects from mobile phone emissions.⁶⁰ The recently published IARC Monograph also reviewed the entire body of scientific literature on health effects of RF

⁵⁴ See CTIA Comments at 12 (citing *In re Procedures for Reviewing Requests for Relief from State and Local Regulations*, 12 FCC Rcd. 13494, ¶¶ 26-28, 31 (1997) (“*RF Order II*”).

⁵⁵ See *EMR Network v. FCC*, 391 F.3d 269 (D.C. Cir. 2004) (upholding Commission’s dismissal of petition for review of RF guidelines based on purported need to address non-thermal effects from mobile phone emissions); *Cellular Phone Taskforce*, 205 F.3d at 82 (upholding Commission’s decision against tightening its RF exposure limits to account for non-thermal effects).

⁵⁶ See, e.g., Sage and Carpenter Comments at 5-6.

⁵⁷ See Motorola Solutions Comments at 11.

⁵⁸ See Sage and Carpenter Comments at 3 (asserting that “[t]he scientific evidence for health harm in 2012 is stronger and more consistent than in 2007[.]”).

⁵⁹ GAO Report at 10-11.

⁶⁰ See Marks Comments at 3 (noting Marks met with the GAO to discuss non-thermal effects); GAO Report at 8.

emissions and concluded that tissue-heating remains the “best established mechanism for RF radiation-induced effects in biological systems.”⁶¹ Nor did IARC’s classification of RF as a 2B agent change the scientific consensus with respect to non-thermal effects or the overall assessment of RF emissions.⁶² After IARC released its classification, the FDA reiterated its conclusion that “the weight of scientific evidence does not show an association between exposure to radiofrequency from cell phones and adverse health outcomes.”⁶³

Another discredited theory put forth by proponents of a more restrictive standard is the notion that the current standard is not adequate to protect children or “hypersensitive” individuals.⁶⁴ As CTIA previously noted, the Commission previously considered and rejected

⁶¹ See International Agency for Research on Cancer, Monograph, Non-Ionizing Radiation, Part 2: Radiofrequency Electromagnetic Fields, Vol. 102 at 104 (2013) (“IARC Monograph”) (acknowledging that the 2B classification was based on weak mechanistic evidence); *see also id.* at 360 (finding studies reporting alterations in gene/protein expression under non-thermal exposure conditions were “typically in single, usually unreplicated experiments, or under experimental conditions with methodological shortcomings”); *id.* at 369 (noting the Working Group concluded that “despite consistent results from one laboratory, the experimental evidence did not support the notion that non-thermal RF radiation affects the permeability of the blood–brain barrier”).

⁶² CTIA Comments at 25 (noting IARC classification did not represent a sea change). Contrary to Dr. Sage and Dr. Carpenter’s assertion, the FCC has not “ignored” the IARC’s classification of RF emissions as a 2B agent. See Sage and Carpenter Comments at 6. The FCC is aware of the IARC classification, *see NOI*, ¶ 219, and makes information available about it on its website, *see FCC, Radio Frequency Safety, available at <http://transition.fcc.gov/oet/rfsafety/highlights.html>*.

⁶³ FDA, Current Research Results, *available at <http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CeIIPhones/ucm116335.htm>*.

⁶⁴ *See, e.g.*, Comments of American Academy of Pediatrics, ET Docket Nos. 13-84, 03-137 (Aug. 29, 2013) (“AAP Comments”); Comments of American Association for Justice, ET Docket Nos. 13-84, 03-137, at 4 (Sept. 3, 2013) (“AAJ Comments”); EWG Comments at 2-7; Comments of Pong Research Corp., ET Docket Nos. 13-84, 03-137, at 6, 8-10 (Sept. 1, 2013) (“Pong Comments”); Dart Comments at 1; San Francisco Reply Comments at 5.

claims that its RF emission standards do not adequately protect such individuals.⁶⁵ And as MMF, CTIA and TIA pointed out in their comments, the scientific consensus on this issue, particularly with respect to children, has not changed.⁶⁶ GAO's review found that studies by the UK Health Protection Agency and CEFALO, which both included children, did not find a relationship between mobile phone use and brain tumor risk.⁶⁷ The IEEE states that its exposure standards are "intended to apply to all people,"⁶⁸ including children and sensitive members of the public. And the FCC, the FDA and the WHO all continue to maintain that the scientific evidence does not demonstrate a causal link between wireless device use and cancer.⁶⁹

In contrast to supporters of a separate exposure standard for children and hypersensitive individuals, who cited few studies, MMF identified several studies specific to children's RF exposure that conclude that children are not at heightened risk.⁷⁰ The IARC Monograph also reviewed studies finding that SAR values assessed with SAM provide a "conservative measure of exposure of both adults and children," providing assurance that phones in compliance with

⁶⁵ CTIA Comments at 27 (citing *RF Order II*, ¶ 26).

⁶⁶ See MMF Comments at 20 (citing FDA); TIA at 8 (citing FDA); CTIA Comments at 26-28.

⁶⁷ See GAO Report at 7, 9. The Environmental Working Group ("EWG") suggested that the CEFALO study suggests "that increases in brain cancer risk may correspond to duration of cell phone use," EWG Comments at 7, but this "assessment" is at odds with the study's overall conclusion, which found "no relationship between mobile phone use and risk for brain tumors." See GAO Report at 9 (citing Aydin 2011).

⁶⁸ TIA Comments at 8 (citing IEEE 2005 Standard at 20).

⁶⁹ See CTIA Comments at 28 (citing FCC Wireless Devices and Health Concerns factsheet; FDA Children and Cell Phones factsheet); TIA Comments at 8 (citing to the FDA and WHO).

⁷⁰ Compare MMF Comments at 20-26 (citing numerous studies and reviews by international regulatory agencies) with American Academy of Pediatrics Comments (no studies cited) and American Association for Justice Comments at 4 (citing just two studies).

existing exposure standards adequately protect children.⁷¹ While noting that “hypersensitive” individuals are concerned about their health, the WHO has termed hypersensitivity to RF a “perceived” phenomenon, noting that “a number of well-conducted laboratory studies show no relation between the health symptoms experienced by some individuals and RF EMF exposure.”⁷²

Proponents of a more restrictive standard not only flout the scientific consensus and the conclusions of federal health and safety agencies,⁷³ but also ignore the conservative nature of the current FCC exposure standards.⁷⁴ The record shows that the current general population exposure standard’s fifty-fold safety factor “accommodates a variety of variables such as different physical characteristics,” thus accounting for both adults and children.⁷⁵ Moreover, the

⁷¹ IARC Monograph at 74 (citing Christ & Kuster; Martens; Wiart).

⁷² WHO, Research Agenda on Radiofrequency Fields at 25.

⁷³ *See, e.g.*, CTIA Comments at 10-13.

⁷⁴ CTIA also notes that any move to a more restrictive exposure standard would adversely impact the emerging market for medical devices by stunting innovation. The current regulatory environment has led to innovative developments in medical technology, and any change in the exposure standards would negatively impact the public health benefits in bringing such devices to market. *See* Comments of Medtronic, Inc., ET Docket Nos. 13-84, 03-137, at 7-8 (Sept. 3, 2013) (“Medtronic Comments”); *see also* CTIA, *mHealth Solutions*, available at http://www.ctia.org/advocacy/policy_topics/topic.cfm/TID/59 (explaining that mobile health technologies and applications have “vast potential to improve the delivery of healthcare in America and around the world by strengthening personalized care for patients, lowering costs and reducing errors and removing geographic and economic disparities.”).

⁷⁵ *See* CTIA Comments at 28 (citing *NOI*, ¶ 236); *see also* TIA Comments at 7 (noting fifty-fold safety factor protects all users, including children). The City of San Francisco ignores the conservative nature of the Commission’s RF regime, claiming without either support or citation that current exposure standards “leave[] very little safety margin to account for the extra sensitivity of children.” San Francisco Reply Comments at 5. This is a proposition that the Commission itself has rejected in the past. Similarly, EWG quarrels with the Commission’s failure to include an additional safety factor in the exposure standards for children, *see* EWG Comments at 5, but such a measure is unjustified given the current safety margin’s applicability to children.

record shows that both the FCC and FDA view the specific anthropomorphic model (SAM) for mobile phone testing as conservative for both children and adults.⁷⁶ As TIA explains, these built-in precautions to the exposure standard and testing protocols obviate the need to adopt additional precautionary measures.⁷⁷ Any further revision of the standard to accommodate theories of harm based on “non-thermal effects” or the supposedly unique vulnerability of children or hypersensitive individuals simply would not be supported by the scientific consensus.⁷⁸

Indeed, though proponents of a more restrictive RF exposure standard have offered studies they claim support their theories of harm, they cherry-pick studies and ignore the hundreds of other available studies.⁷⁹ For example, some commenters rely on the BioInitiative Report, which has been widely criticized for its misplaced reliance on only a select group of

⁷⁶ See *NOI*, ¶ 219; CTIA Comments at 29 (citing Beard et al., *Comparison of Computed Mobile Phone Induced SAR in the SAM Phantom to that in Anatomically Correct Models of the Head*, 48 IEEE Trans. Electromagn. Compat. 397 (May 2006)).

⁷⁷ See TIA Comments at 9 (arguing against invocation of the precautionary principle).

⁷⁸ For these same reasons, separate smart meter exposure restrictions are not supported by the scientific consensus and are unnecessary. See Joint Testimony of William H. Bailey, Ph.D. & Yakov Shkolnikov, Ph.D., Docket No. 2011-00262, at 51 (Maine PUC Sept. 19, 2012) (reviewing the scientific literature regarding smart meters and concluding that the exposure limits in the FCC standard “are protective of public health.”). Indeed, the President, Congress, and the FCC have identified smart grids and smart meters as a promising way to advance energy independence and efficiency. See CTIA, *Wireless Industry Sustainability*, at 1, available at http://www.ctia.org/advocacy/position_papers/index.cfm/AID/12063. Imposing separate smart meter restrictions would only hinder these important advancements.

⁷⁹ The BioInitiative Report has been firmly discredited by the scientific community as “an egregiously slanted review.” Kenneth R. Foster & Lorne Trottier, *Picking Cherries in Science: The BioInitiative Report* (Feb. 15, 2013), available at <http://www.sciencebasedmedicine.org/picking-cherries-in-science-the-bio-initiative-report/>; see also Committee on Man and Radiation, *Expert Reviews on Potential Effects of Radiofrequency Electromagnetic Fields and Comments on the BioInitiative Report*, 97 Health Physics 348-356 (Oct. 2009); Indian Council of Medical Research, Study on Radiation from Mobile Towers and Cell Phones, available at <http://inbministry.blogspot.com.au/2013/02/study-on-radiation-from-mobile-towers.html>.

studies that indicated adverse health effects.⁸⁰ In contrast, the leading international standards-setting organizations and federal health and safety organizations have assessed the entire body of scientific research and are in general agreement that there is no link between cell phones and adverse health effects.⁸¹ Several commenters also cited studies that have not been independently replicated or whose methods have been criticized.⁸² The record also shows that proponents of a more restrictive RF exposure standard repeatedly cite to one another, precisely because their views are not generally accepted in the scientific community, and—as long-standing outliers, their theories have not shifted the scientific consensus.⁸³

III. THE RECORD OFFERS NO SUPPORT FOR STRINGENT, MANDATORY CONSUMER DISCLOSURES OR EXPOSURE REDUCTION POLICIES, AND SHOWS THAT THESE WOULD LIKELY BE COUNTER-PRODUCTIVE.

Because the scientific consensus establishes that RF emissions from mobile phone use do not cause adverse health effects and because the current regulations incorporate a fifty-fold safety factor, there is no basis for the Commission to mandate a consumer warning on RF safety or adopt measures aimed at encouraging consumers to limit their exposure to RF emissions. Among other responsibilities in this field of RF safety regulation, the Commission performs “an

⁸⁰ See Bailey and Shkolnikov Testimony, *supra* note 78, at 40.

⁸¹ See generally *id.*

⁸² See CTIA Comments at 22-23 (explaining criticism of the Hardell studies); EWG Comments at 6 (citing Hardell); Dart Comments (citing Hardell). Drs. Levitt and Lai also cite to Dr. Panagopolous, whose methods were criticized by the IARC Working Group. See IARC Monograph at 291 (noting “several shortcomings related to the methods” used by Dr. Panagopolous).

⁸³ For example, Drs. Sage and Carpenter submitted comments urging the Commission to adopt a more restrictive exposure standard, basing their comments on the BioInitiative Report. See Sage and Carpenter Comments. Drs. Sage and Carpenters are the editors of the 2012 BioInitiative Report and also participated in the 2007 Report. They worked with Dr. Lai, who also submitted comments in the opening round. See Levitt and Lai Comments. The comments by Drs. Levitt and Lai cite to other members of the BioInitiative Report working group: Drs. Belyaev, Liboff and Panagopolous.

education role,” ensuring that the general public can access information about RF safety.⁸⁴ By making information available to consumers, the Commission promotes consumer awareness without provoking consumer alarm. Indeed, the record developed in response to the *Notice of Inquiry*’s call for comment on these issues demonstrates that the Commission’s current efforts with respect to consumer disclosures and exposure reduction are not only consistent with the science, but prudent with respect to public policy and the state of the law.

A. The Record Demonstrates That Stringent, Mandatory Consumer Disclosures In This Context Are Unnecessary and Impractical.

The *Notice of Inquiry*’s request for comment on additional consumer information about RF exposure and the potential required disclosure of SAR information⁸⁵ has resulted in a record that shows why imposing stringent, mandatory disclosures is both unnecessary and impractical. First, the record shows that because federal authorities believe that FCC-compliant devices do not pose a health risk, any adoption of a mandatory RF “warning” is unnecessary. Second, the record shows that a mandatory RF disclosure would raise practical problems and legal concerns. Proposals supporting such a disclosure are either vague or inconsistent with each other, showing the difficulty of crafting a warning that would satisfy those who disagree with the scientific consensus. Furthermore, against this backdrop, mandatory warnings, whether promulgated by the Commission or state and local entities, would implicate important First Amendment issues.

The record shows that a wide variety of information on the issue of mobile phone use and RF emissions is available to consumers.⁸⁶ The FCC, the FDA and other federal authorities

⁸⁴ CEA Comments at 6.

⁸⁵ *NOI*, ¶¶ 231, 234.

⁸⁶ *See* CEA Comments at 6-7 (noting the FCC provides a wide variety of information and acts in an educational role); IT’IS Comments at 4 (stating FCC provides “balanced and scientifically sound information”); Nokia Comments at 14-15 (explaining SAR Tick); MMF

provide information via their websites. Industry stakeholders voluntarily provide information from the FCC, FDA and other RF resources in their own voices, through device manuals, websites and even device software. Despite the diversity of information available, the underlying message is the same: federal authorities believe the scientific evidence does not demonstrate that wireless phone use causes cancer or other health problems.⁸⁷

In light of the reigning scientific consensus, several commenters agreed with CTIA that mandatory disclosures are not necessary.⁸⁸ And as the record shows, the Commission's voluntary approach to consumer disclosures avoids inciting unnecessary and unjustified consumer alarm.⁸⁹ Indeed, given the public's sensitivity to warnings about cancer, a departure from the status quo would likely cause consumer alarm disproportionate to any "risk" that RF emissions pose to consumers.⁹⁰

Comments at 48 (noting information available from the FCC, the FDA, manufacturer websites, user manuals, and trade associations like MMF, GSMA and CTIA).

⁸⁷ See also MMF Comments at 43-45 (discussing SAR Tick); Nokia Comments at 14-15.

⁸⁸ See also CEA Comments at 7-8 (stating that mandatory SAR disclosure would likely cause consumer confusion); Motorola Solutions Comments at 15 ("[t]he Commission should not adopt new disclosure requirements that would provide no new useful information to consumers"); TIA Comments at 13 (stating there is no scientific justification for mandating consumer information on RF exposure).

⁸⁹ See TIA Comments at 19 (noting "precautionary information is uncalled for and runs counter to the confidence" consumers should have in FCC-approved technology); Motorola Solutions Comments at 14 (noting new precautionary measures could confuse consumers and raise unwarranted concern); CTIA Comments at 41-43 (recognizing the dangers of over-warnings and that, in light of the public's sensitivity to cancer warnings, such warnings must be reserved for known dangers).

⁹⁰ See TIA Comments at 16 (noting an FCC recommendation on reducing RF exposure runs the risk of consumers developing the unfounded belief that they should be concerned about RF emissions and that they need to reduce their exposure to be safe); Testimony of the Maine Center for Disease Control & Prevention, Maine Dep't of Health & Human Servs. in Opposition to LD 1706, *An Act to Create the Children's Wireless Protection Act* (Mar. 2, 2010) (explaining that it is inappropriate to warn consumers about an ill-defined risk when there is no consensus on what to do with the warning).

The record shows not only that there is there no need for mandatory disclosures, but also that adopting such a disclosure would raise significant practical and legal issues for the Commission. First, many proposals supporting the FCC’s adoption of a mandatory RF disclosure are vague and do not explain how they would better serve consumers than the Commission’s current information offerings. For example, Drs. Sage and Carpenter called on the Commission to adopt specific language endorsing the precautionary principle,⁹¹ but as CTIA explained in its opening comments and as further discussed below, the precautionary principle itself is vague and amorphous, and thus unlikely to help consumers.⁹² It is not clear what these commenters would have the Commission adopt. The American Academy of Pediatricians called on the Commission to develop “standards that provide consumers with the information they need to make informed choices,”⁹³ but did not explain how the information already available to consumers on RF emissions hinders consumers from doing so. Similarly, Dr. Paul Dart urged the Commission to adopt “appropriate precautionary warning language” by a hypothetical EPA Working Group,⁹⁴ neglecting to explain how the Commission’s current information offerings, which are consistent with the scientific consensus, are not appropriate for consumers.⁹⁵

⁹¹ Sage and Carpenter Comments at 6.

⁹² See Section III.B, *infra*.

⁹³ AAP Comments at 2.

⁹⁴ Dart Comments at 1.

⁹⁵ Pong Research called on the FCC to actively inform consumers that the science is “inconclusive,” Pong Research Comments at 35, a conclusion that implies greater uncertainty in the scientific literature than currently exists. While the FCC notes that “studies are ongoing,” it can and has confidently concluded that “there is no scientific evidence to date that proves that wireless phone usage can lead to cancer[.]” See OET, *RF Safety FAQs*, available at <http://transition.fcc.gov/oet/rfsafety/rf-faqs.html>. In a similar vein to Pong Research, the Environmental Working Group calls on the FCC to acknowledge adverse health effects associated with mobile phone use, which would directly contradict the scientific consensus. See

Second, many of the proposals offered are inconsistent with one another, demonstrating the near impossibility of creating a single, uniform RF “safety” disclosure that would satisfy those who disagree with the scientific consensus. While a number of commenters agreed with the Commission’s assessment of SAR as a metric of limited utility,⁹⁶ other commenters called on the Commission to promulgate SAR-based disclosures.⁹⁷ Some even called on the Commission to discard SAR values and formulate new metrics.⁹⁸ Others expressed support for a labeling requirement with more general information about separation distance and usage.⁹⁹ The cacophony in the record shows the absence of an immediate, identified concern.

Third, as CTIA explained in its opening comments, government-mandated advisories or warnings on RF emissions would implicate important First Amendment issues.¹⁰⁰ Given the

EWG Comments at 15. The FCC should reject suggestions that it promote alarmist or confusing characterizations of the state of the science.

⁹⁶ See, e.g., EWG Comments at 11-12; San Francisco Reply Comments at 9; CEA Comments at 7-8; CTIA Comments at 43-44; MMF Comments at 49 (noting SAR cannot be viewed as a relative safety indicator). Consumers for Safe Cell Phones went so far as to say that “SAR is a meaningless value for consumers to be made aware of the potential risks of exposure to microwave radiating devices.” CSCP Comments, ¶ 234.

⁹⁷ See, e.g., EMF Comments at 9 (advocating for SAR values to be posted on the FCC website and at the point of sale); EMRPI Comments at 37 (recommending that SAR be posted on an FDA website and on labels for devices); City of Portland Comments at 6 (calling for a standardized SAR-based disclosure to be widely disseminated and publicized through manuals, point-of-sale and website postings); Comments of Grassroots Environmental Education o/b/o Dr. Gandhi, ET Docket No. 13-84, 03-137, at ¶ 2 (Sept. 3, 2013) (“Grassroots Comments”) (calling for SAR disclosure at point of sale or on the cell phone itself); Comments of Devra Lee Davis, ET Docket Nos. 13-84, 03-137, at ¶ 8 (Sept. 3, 2013) (“Davis Comments”).

⁹⁸ EWG Comments at 14; Pong Research Comments at 33-34; San Francisco Reply Comments at 9.

⁹⁹ See, e.g., CSCP Comments, ¶ 233; Comments of Green Swan, ET Docket No. 13-84, 03-137, at 2 (Sept. 3, 2013) (“Green Swan Comments”).

¹⁰⁰ The City of San Francisco’s discussion of First Amendment issues that it litigated and lost before the Ninth Circuit confirms the complexity of the issues that the Commission would face in developing a meaningful consumer disclosure, particularly where, as here, there is simply

scientific consensus and the fifty-fold safety factor, the Commission cannot demonstrate that the “harms” of mobile phone use are real and that an RF warning would “alleviate them to a material degree.”¹⁰¹ Here, the alleged harms that supporters urge the Commission to address through a warning are illusory,¹⁰² and based on opinion instead of fact.¹⁰³ TIA agreed that a mandatory warning would be difficult to reconcile with the First Amendment, stating that in the absence of scientific harm to consumers, the Commission has no basis for compelling companies to provide precautionary information.¹⁰⁴

Thus, the record confirms the prudence of the Commission’s current approach toward consumer disclosures. The Commission’s accurate portrayal of the scientific consensus, coupled with voluntary disclosures by industry stakeholders, advances consumer awareness without inciting unnecessary alarm. This approach also avoids the practical and constitutional concerns that a mandatory warning would surely raise.

no evidence of harm that would be remedied by a mandatory warning. *See* San Francisco Reply Comments at 10-12. San Francisco implicitly acknowledges that any disclosure requirement would have to be backed by scientific evidence. *See id.* at 11, 12. However, its reply comments rely solely on EWG for its claims about “the current scientific research,” and do not attempt to address the scientific evidence submitted in this proceeding by CTIA, MMF, the IEEE and other parties.

¹⁰¹ *See Edenfield v. Fane*, 507 U.S. 761, 770-71 (1993). To do so, as even proponents of a disclosure admit, the Commission would first have to identify some actual alleged “harms” that a warning would address. *See* San Francisco Reply Comments at 10-12. To do so would constitute a direct reversal of the Commission’s expressed confidence in its current RF regime, and such a reversal is clearly not supported by the evidence in this record.

¹⁰² *See* CTIA Comments at 45; *see also* Lars Noah, *The Imperative to Warn: Disentangling the “Right to Know” From the “Need to Know” about Consumer Product Hazards*, 11 Yale J. on Reg. 293, 296 (1994) (explaining that the overuse of warnings can cause consumers to ignore them altogether).

¹⁰³ *See CTIA – The Wireless Ass’n v. The City and Cnty. Of San Fransisco*, 827 F. Supp. 2d 1054, 1060 (N.D. Cal. 2011), *aff’d* 494 F. App’x 752, 753 (9th Cir. 2012).

¹⁰⁴ *See* TIA Comments at 20; *see also* CTIA, 494 F. App’x at 753 (9th Cir. 2012) (affirming preliminary injunction against City ordinance and factsheet mandating warnings about RF).

B. The Record Shows That Formal Adoption or Endorsement of Exposure Reduction Policies Would Be Inconsistent With the Commission’s Regulatory Mandate.

In addition to counseling against adoption of mandatory RF disclosures, the record also counsels against the Commission’s formal adoption or endorsement of exposure reduction policies. The record shows that it would be improper for the Commission to pursue such measures, “hortatory” or otherwise,¹⁰⁵ to limit risks that are at best unknown or only possible.¹⁰⁶

The *Notice of Inquiry* itself expressed uncertainty about whether adoption or endorsement of further exposure reduction policies was necessary,¹⁰⁷ and the record confirms the Commission’s instinct. As the *Notice of Inquiry* makes plain (and as commenters also noted), consumers already have access to information about exposure reduction measures—time and distance—that address thermal effects from RF emissions.¹⁰⁸ Furthermore, the fifty-fold safety factor provides a “substantial margin between the exposure limits and the level where any health effects have been observed.”¹⁰⁹ And as the record shows, the evolution of wireless devices has resulted in a natural downward progression of RF emissions.¹¹⁰ Thus, the Commission’s current position and policies with respect to exposure reduction continue to be appropriate.¹¹¹

Nevertheless, the *Notice of Inquiry* sought comment on the possibility that other “precautionary measures” unrelated to reducing SAR “could possibly reduce potential risk,

¹⁰⁵ *NOI*, ¶ 242.

¹⁰⁶ *Id.*, ¶ 237 (noting that “risks have not been established by scientific research”); ¶ 240 (noting that “extra precautions” may be “fundamentally qualitative” in the absence of “any known, underlying mechanism for harm”).

¹⁰⁷ *Id.*, ¶ 243 (indicating that the Commission might not pursue “further action” in this area).

¹⁰⁸ *Id.*, ¶ 233; *see also* CTIA Comments at 46; TIA Comments at 16.

¹⁰⁹ TIA Comments at 9; *see also* *NOI*, ¶ 236.

¹¹⁰ TIA Comments at 20-22; *see also* IARC Monograph at 406.

¹¹¹ *NOI*, ¶ 242.

*without necessarily assuming that such risks are known.*¹¹² Federal agencies do not regulate in response to assumed or unknown risks.¹¹³ The inherent difficulty in crafting exposure reduction measures to address unknown risks is readily apparent. The wide-ranging proposals in the record confirm the flaws in this approach. Proposals run the gamut: proposals to adopt “precautionary measures,”¹¹⁴ recommendations for children and pregnant women to avoid exposure to wireless devices entirely,¹¹⁵ and the proposed removal of wireless devices and equipment from all public buildings,¹¹⁶ to name a few. These vague proposals do not provide a basis for the Commission to take regulatory action.¹¹⁷

Moreover, such proposals are predicated on fundamental dissatisfaction with the existing RF standards and the scientific consensus.¹¹⁸ Thus, through exposure reduction policies, proponents seek a “back-door” revision of the Commission’s exposure standards. Accordingly, there is no limiting principle on the potential precautionary measures that proponents would have the Commission adopt. But the Commission’s regulatory mandate in this arena imposes its own

¹¹² *Id.*, ¶ 241 (emphasis added).

¹¹³ Indeed, the Commission’s statutory mandate compels striking a balance between the “need to protect the public and workers” and “the requirement that industry be allowed to provide telecommunications services to the public in the most efficient and practical manner possible.” *Cellular Phone Task Force v. FCC*, 205 F.3d 82, 90-92 (2d Cir. 2000).

¹¹⁴ For example, Drs. Sage and Carpenter argue that “new precautionary measures” are needed, but do not specify what form such measures would take. *See* Sage and Carpenter Comments at 4, 6. Weaver calls on the FCC to “‘endorse’ common sense precautionary measures.” Comments of Kit Weaver, ET Docket Nos. 13-84, 03-137, at 20 (Sept. 3, 2013) (“Weaver Comments”).

¹¹⁵ Comments of Dianne Wilkins, ET Docket Nos. 13-84, 03-137, at 15 (Sept. 3, 2013) (“Wilkins Comments”).

¹¹⁶ *Id.* at 15.

¹¹⁷ *See NOI*, ¶¶ 240-41.

¹¹⁸ *See, e.g.*, Sage and Carpenter Comments at 4, 6 (suggesting “new precautionary measures are needed in the interim while new safety standards are developed”).

limit: the Commission must balance public safety with the goal of fostering wireless deployment.¹¹⁹ Or, in other words, it must adequately protect the public without unduly limiting the public's ability to use and enjoy mobile devices.¹²⁰ As CTIA noted, the Commission's adoption of precautionary measures addressing unknown risks would imperil this balance and constitute the height of arbitrary and capricious agency action.¹²¹

Some commenters argue that the Commission should adopt exposure reduction policies on the basis of the "precautionary principle."¹²² Yet such calls ignore the precautionary principle's infirmities.¹²³ Commenters have not offered a coherent vision of how the precautionary principle would be implemented, an ambiguity that is likely traceable to the fact that there is no one definition of the concept.¹²⁴ Furthermore, there is increasing recognition of the precautionary principle's political nature and, consequently, its arbitrary application.¹²⁵

¹¹⁹ *RF Order II*, ¶ 29.

¹²⁰ *NOI*, ¶ 209.

¹²¹ CTIA Comments at 49-50.

¹²² See Sage and Carpenter Comments at 6.

¹²³ See, e.g., Cass R. Sunstein, *Safe and Sorry*, Forbes (Jul. 5, 2004), available at <http://www.forbes.com/forbes/2004/0705/048.html> ("The Precautionary Principle has a lot of intuitive appeal . . . But the problem is that while promising safety, it can be both dangerous and incoherent. Risks are on all sides of social situations, and regulation itself creates risks. Because risks are everywhere, the Precautionary Principle forbids action, inaction and everything in between. It is therefore paralyzing; it bans the very steps that it mandates.").

¹²⁴ See CTIA Comments at 49 n.226 (citing Cass R. Sunstein, *Beyond the Precautionary Principle*, 151 U. Pa. L. Rev. 1003, 1004 (2003) (identifying four primary types of the precautionary principle)).

¹²⁵ See CTIA Comments at 48; CAST, *Impact of the Precautionary Principle on Feeding Current and Future Generations*, Vol. 52, at 6 (Jun. 2013) ("CAST Issue Paper").

Governments abroad are actually distancing themselves from the concept due to its arbitrary nature and uneven implementation.¹²⁶

Furthermore, policymakers are increasingly aware of the precautionary principle's adverse impacts. Because the precautionary principle boils down to the concept of "better safe than sorry" even where there is no reliable science supporting a need for precautionary measures, it suppresses innovation,¹²⁷ an integral characteristic of the wireless industry's meteoric growth and success.¹²⁸ Here, introducing the precautionary principle to justify further exposure reduction measures would wreak the same havoc and then some. Innovation in the wireless industry has actually reduced RF emissions;¹²⁹ thus, the Commission's endorsement of exposure reduction in the name of the precautionary principle could paradoxically stunt this natural evolution. Should the Commission adopt some of the more extreme proposals advanced in the record, it would actively discourage use of wireless phones for large sectors of the population, thereby threatening its own public safety initiatives.¹³⁰

IV. THE RECORD DOES NOT SUPPORT A CHANGE IN CURRENT TESTING PROTOCOLS.

The record compiled in response to the *Notice of Inquiry's* request for comment on compliance evaluation, proximity restrictions and disclosure requirements regarding mobile

¹²⁶ See *id.* at 4 (noting the EU has moderated its application of the precautionary principle); *id.* at 5 (noting France and Italy's attempt to regulate genetically-modified food products on the basis of the precautionary principle were rejected by the European Court of Justice in 2012).

¹²⁷ See CAST Issue Paper at 7-8; (noting the precautionary principle may suppress innovation and "do more harm than good by placing an impossible or highly burdensome impediment in the pathway of the development of new technologies").

¹²⁸ See CTIA Comments at 7-8.

¹²⁹ TIA Comments at 20-22; IARC Monograph at 406.

¹³⁰ See CTIA Comments at 50.

device testing shows that no change in existing testing protocols is warranted.¹³¹ A number of commenters agreed that the Commission’s current testing guidelines are sufficient to assure consumer safety, pointing to the safety margin built in to the existing exposure standards and the conservative nature of the specific anthropomorphic model (“SAM”).¹³² Nokia noted that the Commission’s compliance framework is very conservative, due to the conservative nature of SAM and the fact that devices are tested at maximum power, a reality that is rarely experienced by consumers due to adaptive power control.¹³³ TIA pointed out that the safety margin renders the testing guidelines into a “compliance threshold and not a safety level beyond that which a consumer is at risk.”¹³⁴ Indeed, SAM is the only scientifically defensible and time-tested evaluation method. Treating SAM as a safe harbor for compliance has provided predictability to industry, and the scientific consensus establishing FCC-compliant devices as adequately protective of consumers demonstrates that the industry’s reliance on SAM has not threatened consumer safety in any way. Accordingly, the Commission should continue to treat SAM as a safe harbor.¹³⁵

¹³¹ See *NOI*, ¶¶ 245, 248-52. Some commenters take issue with the Commission’s treatment of the pinna as an extremity, but such calls are misplaced. See *Sage and Carpenter Comments* at 5-6; *Grassroots/Gandhi* at 2; *Davis Comments* at 4-5; *Levitt and Lai Comments* at 12-13. The FCC determined in its Order that the pinna would be subject to the same RF exposure standard applicable to hands, wrists, feet and ankles. *RF Order II*, ¶ 44. Challenges to that determination are properly raised in petitions for reconsideration, but the period to file such petitions ended in July 2013.

¹³² *CEA Comments* at 12; *TIA Comments* at 25; *Nokia Comments* at 11-13; *MMF Comments* at 7.

¹³³ *Nokia Comments* at 11-13.

¹³⁴ *TIA Comments* at 25.

¹³⁵ *CTIA Comments* at 53.

Some commenters argue for a “zero-spacing” testing protocol,¹³⁶ which the Commission cannot adopt in isolation. CEA highlighted the Commission’s own observation that “there is no evidence that body-worn devices without enforced separation from the body ‘pose[] any significant health risk.’”¹³⁷ Given the lack of evidence, CTIA agrees with CEA that “there is no apparent need for testing to be conducted at reduced separation distances.”¹³⁸ Furthermore, as noted above, the conservative nature of the exposure standards and the testing protocols makes a “zero-spacing” testing protocol unnecessary, as there are sufficient precautions already built in to applicable regulations.¹³⁹

More to the point, however, is the fact that proponents of revising the testing protocol in the name of “typical” consumer usage¹⁴⁰ advance a simplistic view of what “typical” use entails. These commenters ignore the fact that while some aspects of the current testing model seemingly bear little resemblance to “real world” use, such features are designed to compensate for the vagaries of individual use. As the record shows, phones are consistently tested at maximum power but are not consistently operated at maximum power.¹⁴¹ Furthermore, the Commission

¹³⁶ See, e.g., Sage and Carpenter Comments at 6; Levitt and Lai Comments at 12; CSCP Comments at 5; Pong Research Comments at 15-16.

¹³⁷ CEA Comments at 11 (citing *NOI*, ¶ 251).

¹³⁸ *Id.*

¹³⁹ Some commenters suggest that zero-spacing protocols are necessary because industry’s disclosures on separation distance are inadequate and confusing. But they fundamentally misunderstand the purpose of such disclosures, which are not a safety instruction to consumers, but a testing compliance standard followed by manufacturers. As noted above, there is no evidence that use within the minimum separation distance poses a safety risk to consumers. Elevating separation distance disclosures thus risks unnecessary consumer confusion and alarm.

¹⁴⁰ See, e.g., Marks Comments at 2 (“Currently your standards do not protect consumers from normal use”); San Francisco Reply Comments at 6-7 (calling on the FCC to update standards and testing guidelines to reflect “actual use patterns”).

¹⁴¹ See MMF Comments at 7, Nokia Comments at 17; EWG Comments at 14.

currently tests mobile phones with all wireless radios operating at full capacity even though often only 1-2 radios operate at a given time during “normal” use. Finally, as several commenters recognized, today’s consumers often use their mobile devices with accessories and cases sold by third parties, not manufacturers.¹⁴² To test devices with such third-party accessories would be impractical and inefficient. As MMF noted, current testing protocols in the U.S. already lead to market delays.¹⁴³ To burden manufacturers with the responsibility of testing devices with third-party accessories would only exacerbate the problem.

As CEA recognized, no testing regime can account for every facet of “typical” usage.¹⁴⁴ It is seemingly impossible for the FCC to design a testing protocol that polices the whole universe of “typical” consumer usage. Any revision of the testing protocols must therefore be carefully weighed against the FCC’s mandate to balance safety with an efficient deployment of wireless service. But given the absence of scientific evidence calling for a change in the testing protocols and the conservative nature of the existing regime, the record shows that any modification of the testing protocols may hinder efficiency and competition without any corresponding benefit to consumer safety.

Any attempt to replicate consumer usage more accurately would require an extensive, fact-intensive record that could prove administratively burdensome—if not impossible—to develop. The blunt instrument of a Commission rulemaking would be ill-suited to the nuance that such an endeavor would require. At minimum, the myriad issues raised by the current

¹⁴² Motorola Solutions Comments at 16; EWG Comments at 9.

¹⁴³ MMF Comments at 68.

¹⁴⁴ CEA Comments at 12.

record on testing demonstrates that OET is best equipped to implement any adjustment of RF testing protocols, as its capacity for flexibility is better suited to such a task.

V. THE FURTHER NOTICE’S PROPOSED EXEMPTION CRITERIA COULD UNNECESSARILY ELIMINATE THE CATEGORICAL EXEMPTION FOR MANY SMALL CELL SITES.

CTIA wishes to comment on one aspect of the *Further Notice*, in which the FCC proposes to streamline “the determination of whether preparation of a routine RF evaluation is necessary,”¹⁴⁵ and to do so in a way that “appropriately protect[s] the public without imposing an undue burden on industry.”¹⁴⁶ These proposals reflect the Commission’s long-standing goal in this proceeding of balancing public safety with an efficient deployment of wireless service.¹⁴⁷ Any changes the Commission makes to its rules and guidance for site evaluation at transmitter sites thus should be practical to implement and designed to actually result in a more safe and effective environment.

Here, however, the *Further Notice* proposes to revise the exemption criteria for single transmitters in a way that could eliminate categorical exclusions for an important type of network infrastructure: small cell sites.¹⁴⁸ CTIA agrees with observations in the record that the Commission’s proposed formula for exempting single transmitters is too strict and will subject a number of small cell and distributed antenna system (DAS) transmitters to routine environmental evaluation.¹⁴⁹ As CTIA wrote in its opening comments, demand for wireless services has

¹⁴⁵ *FNPRM*, ¶ 108.

¹⁴⁶ *Id.*, ¶ 109.

¹⁴⁷ *See, e.g., RF Order II*, ¶ 2.

¹⁴⁸ *See FNPRM*, ¶¶ 128-38; Appendix C to FNPRM.

¹⁴⁹ *See* Comments of Verizon and Verizon Wireless, ET Docket Nos. 13-84, 03-137, at 3-5 (Sept. 3, 2013) (“Verizon Comments”); *see also* Comments of PCIA, ET Docket Nos. 13-84, 03-

increased exponentially and will only continue to grow.¹⁵⁰ To meet consumer demand for increased network and throughput, small cells will become increasingly critical to service providers' wireless network infrastructure, especially in densely populated areas. Under the *Further Notice's* proposed exemption criteria, however, many more small cell sites could be required to undergo burdensome environmental assessments.¹⁵¹

Such an effect is incongruous both with the record and the Commission's broader policy goal of reducing the regulatory burden that environmental assessments pose. Commenters did not raise any public safety issues with respect to small cell sites, thus demonstrating that continued exemption for small cell sites would not be averse to public safety. As Motorola Solutions astutely recognized, it is sensible to adopt evaluation exemptions for "cases that obviously present little to no risk" as such exemptions are "an effective way to conserve time and other resources for both the Commission and industry."¹⁵² Small cell sites clearly qualify as a case that presents little to no risk. Furthermore, the Commission's *Notice of Proposed Rulemaking* on wireless siting evinces a policy goal of moving away from broad, time-consuming environmental assessments for many transmitter sites, particularly small cell sites.¹⁵³ Yet by eliminating the categorical exclusion for many small cell sites, the *Further Notice's*

137 at 4 (Sept. 3, 2013) ("PCIA Comments") ("the proposed exemption criteria are needlessly restrictive and will require routine evaluations for more sites").

¹⁵⁰ See CTIA Comments at 7-8.

¹⁵¹ See Verizon Comments at 3.

¹⁵² Motorola Solutions Comments at 4.

¹⁵³ *In the Matter of Acceleration of Broadband Deployment by Improving Wireless Facilities Siting Policies*, Notice of Proposed Rulemaking, WT Docket No. 13-238, ¶¶ 7, 31-67 (Sept. 26, 2013).

proposed single transmitter exemption criteria would contradict the Commission’s broader policy goal of reducing these types of assessments.

Changes to FCC transmitter site rules should not unnecessarily burden the deployment of small cells where no public safety benefit is gained.¹⁵⁴ The Commission should amend its proposal for single transmitter MPE-based exemption thresholds to ensure that small cell sites continue to be exempt under the rules.¹⁵⁵

VI. CONCLUSION

The record shows that the scientific consensus supports the Commission’s current exposure standards and testing policies. Furthermore, the Commission’s current stance toward consumer disclosures and exposure reduction is justified. Accordingly, the record confirms the Commission’s confidence in its existing RF exposure regime.

To ensure that future efforts do not imperil the Commission’s balancing of public safety and undue burdens on industry, the Commission should revise its proposed exemption criteria to ensure that small cell sites are not categorically subjected to routine environmental evaluation.

Respectfully submitted,

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¹⁵⁴ See *FNPRM*, ¶ 108 (noting rules should “appropriately protect the public without imposing an undue burden on industry.”).

¹⁵⁵ See Verizon Comments at 3.

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