

20-1025 (Lead); 20-1138 (Consolidated)

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**UNITED STATES COURT OF APPEALS  
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

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ENVIRONMENTAL HEALTH TRUST; CONSUMERS FOR SAFE CELL  
PHONES; ELIZABETH BARRIS; THEODORA SCARATO

CHILDREN'S HEALTH DEFENSE; MICHELE HERTZ; PETRA BROKKEN;  
DR. DAVID O. CARPENTER; DR. PAUL DART; DR. TORIL H. JELTER; DR.  
ANN LEE; VIRGINIA FARVER, JENNIFER BARAN; PAUL STANLEY, M.Ed.

*Petitioners*

v.

FEDERAL COMMUNICATIONS COMMISSION;  
UNITED STATES OF AMERICA

*Respondents*

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Petition for Review of Order Issued by the  
Federal Communications Commission

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**PETITIONERS' JOINT OPENING BRIEF**

Edward B. Myers  
Law Office of Edward B. Myers  
14613 Dehaven Court  
North Potomac, MD 20878  
Phone: 717-752-2032  
[edwardmyers@yahoo.com](mailto:edwardmyers@yahoo.com)

W. Scott McCollough  
McCollough Law Firm, P.C.  
2290 Gatlin Creek Rd.  
Dripping Springs, TX 78620  
Phone: 512-888-1112  
[wsmc@dotlaw.biz](mailto:wsmc@dotlaw.biz)

*Counsel for Petitioners 20-1025*

*Counsel for Petitioners 20-1138*

**CERTIFICATE AS TO PARTIES, RULINGS, AND RELATED CASES**

Pursuant to Circuit Rule 28(a), Petitioners, through their undersigned counsel, submit this Certificate as to Parties, Rulings, and Related Cases.

**I. Parties, Amici, and Intervenors****A. Petitioners**

“EHT Petitioners” 20-1025 (lead)  
Environmental Health Trust  
Consumers for Safe Cell Phones  
Elizabeth Barris  
Theodora Scarato

“CHD Petitioners” 20-1138 (consolidated)  
Children’s Health Defense  
Michele Hertz  
Petra Brokken  
Dr. David O. Carpenter  
Dr. Paul Dart  
Dr. Toril H. Jelter  
Dr. Ann Lee  
Virginia Farver  
Jennifer Baran  
Paul Stanley, M.Ed.

**B. Respondents**

Federal Communications Commission  
United States of America

**II. Decision Under Review**

*FCC, Resolution of Notice of Inquiry, Second Report and Order and the Memorandum Opinion and Order, addressing Proposed Changes in the*

*Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields*, ET Docket No. 03-137, and *Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies*, ET Docket No. 13-84, in FCC 19-126; 85 Fed. Reg. 18131 (Apr. 1, 2020).

### **III. Related Cases**

None.

## **RULE 26.1 DISCLOSURE STATEMENT**

Pursuant to Circuit Rule 26.1, Petitioner associations respectfully submit this Corporate Disclosure Statement as follows:

1. Environmental Health Trust (“EHT”) is a non-profit 501(c)(3) scientific and educational organization whose mission is to safeguard human health and the environment by empowering people with state-of-the-art information and working directly with various constituencies to mitigate health and environmental risks. EHT has no parent corporation, and no publicly-held company has a 10% or greater ownership interest in the organization.

2. Consumers for Safe Cell Phones (“CSCP”) is a non-profit 501(c)(3) that promotes the safe use of cellular technology, including cell phones. CSCP has no parent corporation, and no publicly-held company has a 10% or greater ownership interest in the organization.

3. Children’s Health Defense (“CHD”) is a national non-profit 501(c)(3) organization whose mission is to end the epidemic of children’s chronic health conditions by working aggressively to eliminate harmful exposures to environmental toxins via education, obtaining justice for those already injured and ensure accountability.

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## **GLOSSARY**

AAEM-American Academy of Environmental Medicine

AAP- American Academy of Pediatrics

ADA-Americans with Disabilities Act

APA-Administrative Procedures Act

BBB- Blood-Brain-Barrier

BIR-BioInitiative Report

BIWG-BionInitiative Working Group

CDC-Centers for Disease Control and Prevention

CHD-Children Health Defense

CMA-California Medical Association

CMA-Clinical Modification

EA-Environmental Assessment

EHS- Electromagnetic Hypersensitivity

EHT-Environmental Health Trust

EIS-Environmental Impact Statement

EMF-Electromagnetic Field

EUROPAEM-European Academy of Environmental Medicine

EWG-Environmental Working Group

FDA-Food and Drug Administration

FHA-Federal Housing Act

FONSI-Finding of No Significant Impact

GAO-Government Accountability Office

IARC-International Agency for Research on Cancer

ICD-International Classification of Disease



IEEE-Institute of Electrical and Electronics Engineers

MMW-Millimeter Wave Lengths

MPE-Maximum Permitted Exposure

NEPA-National Environmental Policy Act

NIBS-National Institute of Building Sciences

NTP-National Toxicology Program Study

OS-Oxidative Stress

PCS-Procedural Classification System

RF-Radio Frequencies

RFR-Radio Frequency Radiation

SAM-Standardized Anthropomorphic Mannequin

SAR-Specific Absorption Rate

TCA-Telecommunications Act

## STATEMENT OF JURISDICTION

This Court has jurisdiction under 47 U.S.C. §402(a) and 28 U.S.C. §2342(1) to review the Federal Communication Commission’s (“FCC” or “Commission”) *Resolution of Notice of Inquiry (“Inquiry”), Second Report and Order* and the *Memorandum Opinion and Order*, addressing *Proposed Changes in the Commission’s Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields*, ET Docket No. 03-137, and *Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies*, ET Docket No. 13-84, in FCC 19-126 (“*Order*”).<sup>1</sup> The *Order*, released on December 4, 2019, was published in the Federal Register on April 1, 2020 at 85 Fed. Reg. 18131. The FCC’s claimed basis for the *Order*, and in particular the resolution of the *Inquiry*, include 47 U.S.C. §§154(i)-(j).

Petitioners in 20-1025 timely filed their Petition For Review in this Court on January 31, 2020 (Doc. #1827096), and a Protective Petition For Review on April 9, 2020 (Doc. #1837472). Petitioners in 20-1138 timely filed their Petition for Review in the United States Court of Appeals for the Ninth Circuit on February 3, 2020 (20-70297; ID #11582294), and a Supplemental Petition For Review on April

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<sup>1</sup> 34 FCC Rcd 11687.

2, 2020 (ID #11650275). The petitions in 20-70297 were transferred to this Court on April 24, 2020, with 20-1138 then consolidated with 20-1025 (lead case) on April 30, 2020 (Doc. #1840768).

### STATEMENT OF ISSUES

Petitioners and others submitted extensive research, peer-reviewed studies, and comments during the FCC's reassessment of its 1996 safety regulations which limit consumers' and the general public's exposure levels to radiofrequency and electromagnetic fields ("RF/EMF") emitted from wireless devices and equipment. Those submissions, largely containing research completed since 1996, focused on significant health and environmental risks of RF/EMF that the FCC's now outdated regulations, did not take into account. In the *Order*, the FCC decided not to amend the RF/EMF exposure regulations or related procedures it relies upon to test and certify cellphones for marketing and sale. This case raises the following issues:

1. Did the FCC violate the Administrative Procedure Act ("APA") when it failed to: (i) consider any evidence demonstrating that the 1996 RF/EMF regulations do not protect against numerous health and environmental risks; or (ii) explain why such evidence did not warrant amending the exposure regulations and cellphone testing procedures to better protect human health and the environment?

2. Did the FCC violate the National Environmental Policy Act (“NEPA”) when it failed to: (i) explain why NEPA does not apply to the *Order* and its reassessment of the 1996 RF/EMF exposure regulations and the cellphone testing protocols; or (ii) conduct an environmental analysis regarding its decision not to amend the exposure limits or testing procedures?

3. Did the FCC violate the APA when it failed to: (i) recognize and make some provision for those who have or will contract Radiation Sickness from RF/EMF exposure; (ii) resolve or establish some process to resolve case-by-case accommodations under the Americans With Disabilities Act (“ADA”) and/or Fair Housing Act (“FHA”); or (iii) resolve or establish some process to resolve case-by-case individual objections to nonconsensual RF/EMF exposure or uninvited RF/EMF property intrusion?

## STATEMENT OF THE CASE

### I. Background

This case involves the FCC’s health and safety regulations for existing and new telecommunications technologies. The petitioners submit that the FCC’s failure to update those regulations in the *Order* on appeal violates the

Telecommunications Act of 1996 (“TCA”),<sup>2</sup> the APA,<sup>3</sup> and NEPA.<sup>4</sup> There are also implications regarding the ADA<sup>5</sup> and FHA<sup>6</sup>, as well as constitutional issues.

### **A. Radiofrequency Basics**

Wireless technology uses electromagnetic waves to carry information.<sup>7</sup> A wave “frequency” is the number of wave cycles per second. Each cycle per second equals a “Hertz” (“Hz”).<sup>8</sup> The Radio-Frequencies (“RF”) signal is the “carrier wave.” But communications require carrier wave manipulation to “encode” the data on the carrier wave. Two main techniques are used: “pulsation” and “modulation.” Modulation places additional “mini”-waves on the RF carrier wave. Pulsation injects “bursts” or turns the signal on/off. Different technologies have

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<sup>2</sup> Pub. L. No. 104-104, 110 Stat. 56 (1996).

<sup>3</sup> 5 U.S.C. §701, *et seq.*

<sup>4</sup> 42 U.S.C. §4321, *et seq.*

<sup>5</sup> 42 U.S.C. §12101, *et seq.*

<sup>6</sup> 42 U.S.C. §3601, *et seq.*

<sup>7</sup> An electromagnetic field (“EMF”) is a field of force with electric and magnetic components. It carries energy that is propagated through “waves.” “Radio” frequencies (“RF”) have a wave-cycle between 30 hertz and 300 gigahertz. The FCC has direct statutory authority over RF, and indirect authority over other EMF emissions to the extent they impact authorized RF use.

<sup>8</sup> 1,000 Hz is a kilohertz (“KHz”). 1,000,000 Hz is a megahertz (“MHz”). 1,000,000,000 is a gigahertz (“GHz”). For example, the Wi-Fi frequency is 2,450,000,000 Hz, or 2.45 GHz.

their own protocols or “code.” Two devices using the same code can “communicate” and exchange information. These manipulations of the RF carrier wave result in complex and versatile signals that are biologically active.

RFs emit “non-ionizing” radiation (“RFR”) because they lack sufficient energy to pull electrons from atoms and molecules. Each RF wave, however, still radiates energy that is absorbed by biological tissue. The FCC’s safety regulation preclude emissions that are so high they create a heating or “thermal effect” because of “the body’s inability to cope with or dissipate the excessive heat.”<sup>9</sup> However, the Commission’s regulations do not recognize or prevent any potential biological responses to non-thermal pulsed and modulated RF/EMF emissions.<sup>10</sup> This failure to account for “non-thermal” impacts can lead or contribute to health problems and diseases.<sup>11</sup>

The FCC regulations use the Specific Absorption Rate (“SAR”) to measure thermal responses to devices located within 20 cm from the body, like cell phones (“near field”). SAR measures the absorption of RF energy in tissue (measured in

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<sup>9</sup> *Id.* at 6-7.

<sup>10</sup> *In the Matter of Proposed Changes in the Commission’s Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields*, NPRM, 318 FCC Rcd 13187 (June 26, 2003).

<sup>11</sup> *Id.* at 13190.

grams) over a specified duration (minutes). Exposure is averaged over 30 minutes. 47 C.F.R. §1.1310. The SAR limits for “general population,” are 0.08 W/kg, averaged over the whole body; a peak spatial SAR of 1.6 W/kg, averaged over any 1 gram of tissue and 4 W/kg for extremities. Maximum Permitted Exposure (“MPE”) is used for whole-body exposure from sources located further than 20 cm, like cell towers (“far field”). MPE is derived from SAR and measures power per area. It is frequency dependent and ranges between 200-1,000  $\mu\text{W}/\text{cm}^2$  (microwatts per square centimeter). 47 C.F.R. §1.1310(b).

The health regulations only prevent thermal effects from short term exposures to one source, and they use extensive averaging. They do not protect against the biological effects of long-term exposure or exposure from multiple sources. They do not protect against pulsation or modulation. They do not provide for sensitive or vulnerable populations.

## **B. Governing Statutes and Regulations**

### **1. Communications Act**

The United States controls “all the channels of radio transmission.” 47 U.S.C. §301. The FCC oversees spectral assignments, approves devices and facilities, and prevents interference. 47 U.S.C. §§302a, 303, 305, 306, 307, 321. The FCC is charged with “promoting safety of life and property” and the

environment, and these responsibilities stand on equal ground with utility. *See* §§151, 154(n), 254(c)(1)(A), 324, 332(a)(1), 336(h)(4)(B), 925(b)(2)(C), 1455(a)(3). Section 324 requires licensees to “use the minimum amount of power necessary to carry out the communication desired.” The Commission’s regulations must contain “adequate safeguards of the public health and safety.” *See* H.R. Report No. 104-204, p. 94. The FCC must serve the “public interest,” including consideration of utility and public health and safety. *KFKB Broad. Ass’n v. Fed. Radio Com.*, 47 F.2d 670, 671-672 (D.C. Cir. 1931); *see also Banzhaf v. FCC*, 405 F.2d 1082, 1096 (D.C. Cir. 1968) (public interest indisputably includes public health).

## 2. FCC’s Safety Regulations

The FCC initially adopted safety regulations in 1985 as part of the FCC’s efforts to fulfill its obligations under NEPA. Section 704(b) of the Telecommunications Act of 1996 (“TCA”) required the FCC to update the exposure limits to provide nationwide, uniform regulations, while protecting human health and the environment.<sup>12</sup> The regulations were to provide “adequate

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<sup>12</sup> Pub. L. No. 104-104, 110 Stat. 56, 152 (1996). The FCC had opened proceedings in 1993 to update those regulations. FCC, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, Report and Order, 11 FCC Rcd 15123, at \*15125-15127 (Aug. 1, 1996).



safeguards of the public health and safety”<sup>13</sup> *Farina v. Nokia, Inc.*, 625 F.3d 97, 130 (3d Cir. 2010) (*citing* TCA legislative history demonstrating that “[p]rotecting public safety is clearly within the [FCC’s] mandate”). Only then would the future provision of wireless services be “compatible with legitimate public health, safety and property protections.”<sup>14</sup>

The *Inquiry*<sup>15</sup> noted that the FCC’s “authority to adopt and enforce [RF/EMF] exposure limits beyond the prospective limitations of NEPA is well established” and cited various statutory bases for developing and updating the RF regulations. According to the FCC, these include TCA §704(b), its legislative history, and 47 U.S.C. §151.<sup>16</sup> The FCC applies the RF/EMF limits just like any other public health and safety regulation. *Farina*, 625 F.3d at 107.

The 1996 regulations,<sup>17</sup> promulgated in response to the congressional directive, protect against thermal effects. Even though non-thermal emissions have

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<sup>13</sup> See H.R. Report No. 104-204, pp. 94-95.

<sup>14</sup> *Id.* at 95.

<sup>15</sup> FCC, In the Matter of Reassessment of Federal Communications Commission Radiofrequency Exposure Limits, 28 FCC Rcd 3498, at \*3531 n.176 (March 29, 2013).

<sup>16</sup> *Id.*

<sup>17</sup> FCC, In the Matter of Guidelines for Evaluating the Environmental Effects of Radio Frequency Radiation, Report and Order, 11 FCC Rcd 15123 (1996).

biological effects, the FCC did not account for them.<sup>18</sup> Nor do the regulations consider effects from long-term and/or peak exposure. They ignore the effects of modulation and pulsation, as well as individual susceptibility and vulnerable populations.

## **C. Procedural History**

### **1. 2013 *Inquiry***

#### **a. Notice of Inquiry**

In 2013, the FCC opened the *Inquiry*:

[G]iven the fact that much time has passed since the Commission last sought comment on exposure limits, as a matter of good government, we wish to develop a current record by opening a new docket.<sup>19</sup>

The FCC noted that much had changed since 1996, both in terms of RF/EMF science and wireless technology:

We recognize that a great deal of scientific research has been completed in recent years and new research is currently underway, warranting a comprehensive examination of this and any other relevant information. Moreover, the ubiquity of device adoption as well as advancements in technology...warrant an inquiry to gather

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<sup>18</sup> FCC, OET Bulletin 56, at 8 (August 1999) (“OET 56”), <http://tinyurl.com/y26mog56>.

<sup>19</sup> 28 FCC Rcd 3498, at \*3570.

information to determine whether our general regulations and policies limiting human exposure to [RF/EMF] are still appropriately drawn.<sup>20</sup>

The FCC conceded that there were “considerable differences of opinion about the biological effects of low level (*i.e.*, non-thermal or athermal) and long-term (chronic) exposure to [RF/EMF].”<sup>21</sup> The FCC also noted a “lack of scientific consensus about the possibility of adverse health effects at exposure levels at or below our existing limits.”<sup>22</sup> Recognizing its “fundamental responsibility to provide for the appropriate protection of consumers, workers, and other members of the public,” the FCC stated that the *Inquiry* “open[ed] a science-based examination of the efficacy, currency, and adequacy of the” RF/EMF limits.<sup>23</sup> The FCC invited public comment on a host of issues.<sup>24</sup>

## **b. Overview of Administrative Record**

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<sup>20</sup> *Id.*; *see id.* at \*3574-3575 (seeking comment on currently available research and noting an “increase in numbers and usage of fixed transmitters and portable and mobile devices, as well as changes in usage and consequent exposure patterns”).

<sup>21</sup> *Id.* at \*3571.

<sup>22</sup> *Id.* at \*3502.

<sup>23</sup> *Id.* at \*\*255.

<sup>24</sup> *Id.* at \*3574, 3577-3578, 3585.

The Commission was deluged with submissions over the next six years. Hundreds of expert scientists, doctors, and public health experts submitted thousands of peer-reviewed studies and medical reviews indicating the 1996 regulations are based on obsolete assumptions, do not protect the public in general, and are particularly harmful to sensitive sub-populations. In addition, over one hundred reports of sickness from FCC-authorized RF/EMF levels. Some supplied documentary support, including medical diagnoses. These individuals detailed devastating personal and financial harm and disruption to their lives from RF/EMF and their inability to live or participate in today's society.

**c. Major Peer-Reviewed Scientific Studies, Reports and Appeals**

The comments submitted in the FCC proceeding identify several peer-reviewed scientific studies and reports bearing on the effects of RF/EMF:

1. The *Inquiry* invited comments on a Monograph by the International Agency for Research on Cancer (IARC), an intergovernmental agency within the World Health Organization (WHO).<sup>25</sup> The IARC Monograph, published in 2013,

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<sup>25</sup> *Id.* at 3575; IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, *Non-Ionizing Radiation, Part 2, Electromagnetic Fields*, Volume 102 (2013) [“the Monograph”]. [JA](#).

was prepared by a working group of 31 scientists from 14 countries.<sup>26</sup> The Monograph reviewed many scientific studies concerning the carcinogenicity of RFR.<sup>27</sup> It found that children are susceptible of significantly higher RFR exposure than adults<sup>28</sup> and that “[p]ositive associations have been observed between exposure to radiofrequency radiation from wireless phones and glioma, and acoustic neuroma.”<sup>29</sup> It reclassified RF/EMF as “possibly” carcinogenic to humans.<sup>30</sup> While IARC found sufficient epidemiological evidence, it did not at the time classify RF as “probable” or “known” carcinogen because not enough animals studies existed to do so at the time.<sup>31</sup> The *Inquiry* invited comments on the Monograph and several parties responded but the *Order* never reviewed the findings in the IARC Monograph or addressed those comments.<sup>32</sup>

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<sup>26</sup> [JA](#).

<sup>27</sup> [JA @33-34](#).

<sup>28</sup> *Id.* at 406.

<sup>29</sup> *Id.* at 419.

<sup>30</sup> *Id.*

<sup>31</sup> [JA](#).

<sup>32</sup> 28 FCC Rcd 3498, at \*3575.

2. A *National Toxicology Program (NTP) Study* from 2018 (“NTP Study”)<sup>33</sup> found evidence of malignant tumors in rats after years of exposure to RFR<sup>34</sup> and concluded that the type of brain cancer observed is similar to a type of brain tumor linked to heavy cellphone use in some human studies, specifically citing to the IARC Monograph.<sup>35</sup> Another animal study published by the Ramazzini Institute in 2018 further supports the NTP findings.<sup>36</sup> Thus, the NTP and Ramazzini studies provided the information IARC previously lacked. As numerous commentators have noted, if these and other results had been available in 2011, IARC would likely have classified RF/EMF as a probable or definite human carcinogen.<sup>37</sup> In rejecting the relevance of animal testing for humans, which constitutes the foundation for drug and chemical evaluation, the FDA discounted the relevance of the NTP experiments to humans.

3. *The BioInitiative Report* (“BIR”) is an extensive analysis of the scientific evidence of RF/EMF by the BioInitiative Working Group (“BIWG”)—29

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<sup>33</sup> 34 FCC Rcd 11687, at \*11692 n.30 (citing [https://www.niehs.nih.gov/health/materials/cell\\_phone\\_radiofrequency\\_radiation\\_studies\\_508.pdf](https://www.niehs.nih.gov/health/materials/cell_phone_radiofrequency_radiation_studies_508.pdf)).

<sup>34</sup> Id.

<sup>35</sup> Id.

<sup>36</sup> 34 FCC Rcd 11687, at \*11693 n.33.

<sup>37</sup> [JA](#); [JA @527](#); [JA](#).

independent world-leading RF/EMF scientists and public health experts. The BIR reviewed over 3,800 studies and concluded that non-thermal pulsed/modulated RF/EMF has a panoply of adverse effects at levels well below the FCC's exposure limits. Updated several times, the 2007 version was the basis for a 2009 European Parliament Resolution<sup>38</sup> on "[h]ealth concerns associated with EMF. Numerous commenters referred to BIR and several members of the BIWG submitted individual work in the record.<sup>39</sup> Petitioner David Carpenter is a co-editor of the BIR.

4. The Commission also received appeals and recommendations to reduce RF/EMF exposure from 30 scientific, medical, and health organizations and groups,<sup>40</sup> including:

- a) The 2002 Frieburger Appeal,<sup>41</sup> signed by 1,000 doctors, asserted that RF/EMF is a "fundamental trigger" for "a dramatic rise in severe and chronic diseases." "[T]herapeutic efforts" are becoming "less effective" and its growing uniqueness "prevents the patient's thorough recovery."

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<sup>38</sup> [JA\\_@22](#).

<sup>39</sup> [JA\\_](#).

<sup>40</sup> [JA\\_](#).

<sup>41</sup> [JA\\_](#).

- b) The California Medical Association (CMA), in a 2014 Resolution,<sup>42</sup> highlighted conditions consistent with Radiation Sickness<sup>43</sup> and asserted that current limits are outdated and inadequate.
- c) The American Academy of Environmental Medicine (AAEM) stated in 2013 that “there has been an “exponential increase” in “radiofrequency induced disease and hypersensitivity.”<sup>44</sup>
- d) Over 200 scientists from 42 countries who collectively published over 2,000 peer-reviewed RF/EMF studies sent an appeal letter to the United Nations and WHO in 2015, stating: “Based upon peer reviewed, published research, we have serious concerns regarding the ubiquitous and increasing exposure to...wireless devices.” They listed several adverse health effects, called for biologically-based RF/EMF guidelines, and urged that “medical

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<sup>42</sup> [JA](#).

<sup>43</sup> Radiation Sickness is also sometimes called “Microwave Sickness,” “Electro-sensitivity” (ES), or “Electromagnetic Hyper-Sensitivity” (EHS). All these describe a syndrome where the injured develop symptoms as a result of RF/EMF exposure. This brief predominantly uses “Radiation Sickness,” which is the Centers for Disease Control’s usage.

<sup>44</sup> [JA](#).



professionals be educated about the biological effects of electromagnetic energy and electromagnetic sensitivity.”<sup>45</sup>

e) In 2017, 190 doctors and scientists presented a similar appeal. They wrote that thermally based regulations are “obsolete” and “new safety standards are necessary.”<sup>46</sup>

f) A Council of Europe report concluded that guidelines should cover non-thermal effects.<sup>47</sup> Numerous other organizations, scientific conferences, appeals and medical groups support this position.<sup>48</sup>

The *Order* did not address or acknowledge any of these significant materials.

#### **D. Non-Thermal Causal Mechanism**

*Order* states “no scientific evidence establishes a causal link between wireless device use and cancer or other illnesses.”<sup>49</sup> The BIR noted this claim was “patently false.”<sup>50</sup> Over fifty scientists and professors directly refuted this

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<sup>45</sup> [JA](#).

<sup>46</sup> [JA](#).

<sup>47</sup> [JA](#).

<sup>48</sup> [JA](#); [JA](#).

<sup>49</sup> 34 FCC Rcd 11687, at \*11695.

<sup>50</sup> [JA](#).

contention. It “reflects a lack of...understanding of the scientific literature. More than a thousand studies...show biological mechanisms of effect that do not involve heat.”<sup>51</sup>

Oxidative Stress is a known causal “mechanism of harm” that can lead to cancer, non-cancer illnesses and DNA damage. Oxidative Stress occurs when the body is unable to counteract or detoxify free radicals through neutralizing antioxidants. A “meta-analysis” of 100 studies showed that 93 found non-thermal RF/EMF induces Oxidative Stress. Oxidative Stress “should be recognized as one of the primary mechanisms” of RF/EMF injury.”<sup>52</sup> The 2019 BIR collected 203 RF/EMF studies showing Oxidative Stress.<sup>53</sup> BIR also provided evidence of RF/EMF Oxidative Stress-induced downstream mechanisms, including damage to the mitochondria, the energy producer for cells, and the Blood-Brain-Barrier (“BBB”).<sup>54</sup>

The BBB prevents toxins in the blood from entering the brain and causing neurological damage. Dozens of studies demonstrate that RF/EMF can damage the

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<sup>51</sup> [JA](#).

<sup>52</sup> [JA](#).

<sup>53</sup> [JA](#); [JA](#).

<sup>54</sup> [JA](#); [JA @26, 84, 85, 103, 140, 189, 190, 206, 232, 256, 307, 379, 397, 452, 454, 525.](#)

BBB.<sup>55</sup> A Navy-funded study was the first to show RF/EMF BBB damage.<sup>56</sup> Professor Salford confirmed these findings.<sup>57</sup> BIR concluded that BBB leakage can occur with exposures 1,000 times lower than FCC limits, at levels similar to holding a mobile phone at arm's length.<sup>58</sup> BBB damage can explain the headaches suffered by many from wireless exposure.<sup>59</sup> A 2015 study revealed that 13%-28% of Radiation Sickness subjects had BBB leakage biomarkers.<sup>60</sup>

### **1. Modulation/Pulsation, Peak, Simultaneous and Cumulative Exposure Risks**

EPA scientist Dr. Carl Blackman concluded that “modulation may be more important for guidelines than RF levels.”<sup>61</sup> BIR Section 15<sup>62</sup> analyzes 250 studies and shows that the exclusive focus on radiation levels is inadequate because it does not take frequency, modulation, duration or dose into account. Dr. Frey concurs: “The issue is not whether cell phones are safe; it is whether the particular

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<sup>55</sup> [JA\\_@3-4](#); [JA\\_@14](#).

<sup>56</sup> [JA\\_](#).

<sup>57</sup> [JA\\_](#).

<sup>58</sup> [JA\\_@10](#).

<sup>59</sup> [JA\\_@14](#)

<sup>60</sup> [JA\\_](#).

<sup>61</sup> [JA\\_@522](#).

<sup>62</sup> [JA\\_](#).

frequencies and modulations that the FCC assigned to cell phones, based on faulty assumptions, are safe.”<sup>63</sup>

A meta-analysis showed that almost 100% of studies that use actual pulsed/modulated mobile exposures showed effects. The authors observed that “[l]iving organisms seem to have decreased defense against environmental stressors of high variability.”<sup>64</sup> BIR and other scientists also noted that frequency-specific, amplitude-modulated and pulsed EMFs have long been used for medical purposes to treat bone fractures, advanced carcinoma<sup>65</sup> and chronic pain.<sup>66</sup> These treatments would not work if human bodies were unaffected by non-thermal pulsed and modulated emissions.

The *Order* did not address this issue.

#### **E. Exposure→Mechanism→Disease**

RF/EMF exposure impacts human biology and negatively impacts important bodily mechanisms. This can cause multiple diseases.

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<sup>63</sup> [JA](#); [JA](#).

<sup>64</sup> [JA](#); [JA](#).

<sup>65</sup> [JA](#).

<sup>66</sup> [JA](#).

## 1. Cancer

Consistent with the NTP and Ramazzini studies, many commenters submitted extensive evidence demonstrating an increased risk of several forms of cancer from RF/EMF exposure. IARC classified RF/EMF as a 2B (possible) carcinogen in 2011. In a 2017 update, the BIR found that research published since the IARC evaluation supported “a causal association between RF radiation and brain and head tumors,”<sup>67</sup> with “consistent finding of increased risk” between cell phone use and glioma.<sup>68</sup>

A literature survey by Petitioner Dr. Paul Dart in 2013 concluded that “epidemiological research shows that greater than 10 years of cell phone use” significantly increases risk of ipsilateral brain tumors (glioma) and that the risk is greater in individuals who started cell phone use as children.<sup>69</sup> Dr. Dart also reviewed studies showing increased cancer risk from exposures to cellular towers, with proximity a key factor.<sup>70</sup> And a 2011 review of almost one-hundred studies on

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<sup>67</sup> BIWG, *Use of Wireless Phones and Evidence for Increased Risk of Brain Tumors*, 2017 Supplement (Hardell), [https://bioinitiative.org/wp-content/uploads/2017/11/Hardell-2017-Sec11-Update-Use\\_of\\_Wireless\\_Phones.pdf](https://bioinitiative.org/wp-content/uploads/2017/11/Hardell-2017-Sec11-Update-Use_of_Wireless_Phones.pdf) at 3.

<sup>68</sup> *Id.*

<sup>69</sup> [JA @61](#).

<sup>70</sup> *Id.* at 38-41.

long-term exposure to RF/EMF, including from cell phones and cellular towers, found it “promote[s] cancer development.”<sup>71</sup>

These authors also reviewed studies investigating potential mechanisms that could lead to cancer. This research demonstrates that RF/EMF exposures below thermal levels lead to DNA breakage and chronic inflammation that increases the activity of free radicals (oxidative stress).<sup>72</sup> Accordingly, all three submissions concluded that current regulations based on thermal heating should be re-assessed for non-thermal effects.<sup>73</sup>

Aside from the NTP study, the *Order* does not address any cancer-related submissions.

## 2. Reproductive

The BIR documents that “[s]everal international laboratories have replicated studies showing adverse effects on sperm quality, motility and pathology in men who use and particularly those who wear a cell phone, PDA or pager on their belt

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<sup>71</sup> [JA @66-67](#).

<sup>72</sup> [JA @31-35](#); [JA @67-68](#).

<sup>73</sup> BIWG, *Use of Wireless Phones and Evidence for Increased Risk of Brain Tumors*, 2017 Supplement (Hardell), [https://bioinitiative.org/wp-content/uploads/2017/11/Hardell-2017-Sec11-Update-Use\\_of\\_Wireless\\_Phones.pdf](https://bioinitiative.org/wp-content/uploads/2017/11/Hardell-2017-Sec11-Update-Use_of_Wireless_Phones.pdf); [JA @62](#); [JA @67-68](#).

or in a pocket.”<sup>74</sup> “[O]ther studies conclude that usage of cell phones, exposure to cell phone radiation, or storage of a mobile phone close to the testes of human males affect sperm counts, motility, viability and structure (Aitken et al, 2004; Agarwal et al, 2007; Erogul et al, 2006).”<sup>75</sup> In addition, “animal studies have demonstrated oxidative and DNA damage, pathological changes in the testes of animals, decreased sperm mobility and viability, and other deleterious damage to the male germ line (Dasdag et al, 1999; Yan et al, 2007; Otitoloju et al, 2010; Salama et al, 2008; Behari et al, 2006; Kumar et al, 2012).”<sup>76</sup>

Commenters raised these concerns in the *Inquiry*. EHT noted there is strong evidence that exposure to RFR reduces fertility in males (McGill and Agarwal, 2014) and females (Roshangar *et al.*, 2014).” Increased usage of “mobile phones and increased exposure coming from WiFi, smart meters and other wireless devices has been paralleled in time with male hypofertility and sperm abnormalities in semen (Rolland *et al.*, 2013).” As shown by some studies “these

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<sup>74</sup> BioInitiative Report, at Summary for the Public, Summary of the Evidence, Sage

<sup>75</sup> *Id.*

<sup>76</sup> *Id.*

effects may be related to holding an active wireless laptop in a man's lap or having an active mobile phone on their belt.”<sup>77</sup>

### 3. Neurological

RF/EMFs, especially when pulsed and modulated, generate neurological responses. BIR analysis involving 222 studies <sup>78</sup> and another detailed science review <sup>79</sup> confirmed this phenomenon and showed effects on sleep, memory, learning, perception, visual, auditory and motor abilities. Hippocampus studies explain the memory and learning effects.<sup>80</sup> Swiss government and Berkeley University studies on adolescents showed adverse effects on memory and cognitive functions and cumulative effects.<sup>81</sup> Human EEG studies record effects on brain physiology, alpha brain waves, cortical activity, brain synchronization, sleep and epileptic seizures.<sup>82</sup> Forty studies indicate Oxidative Stress is a causal mechanism for some of these effects.<sup>83</sup>

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<sup>77</sup> [JA @646](#).

<sup>78</sup> [JA](#) ; [JA](#) ; [JA](#) .

<sup>79</sup> [JA](#) .

<sup>80</sup> [JA @19](#).

<sup>81</sup> [JA](#) .

<sup>82</sup> [JA @63](#).

<sup>83</sup> [JA @6](#).



The *Order* did not mention any of this information.

#### 4. Prenatal and Perinatal Complications and Children

The submissions in the record demonstrate adverse effects from RF/EMF during the prenatal period, through childhood, including teenage years. Both animal and human studies identify prenatal RF/EMF exposure is a risk factor for subsequent ADHD and attention/behavioral problems.<sup>84</sup>

Professor Hugh Taylor, MD, the Chair of Yale's Department of Obstetrics Gynecology and Reproductive Sciences performed a 2012 study showing that fetal exposure to RF/EMF permanently affects brain neurodevelopment, memory and behavior in mice, and can lead to ADHD.<sup>85</sup> The prenatal exposure resulted in brain electrical signaling changes throughout their lifetime.<sup>86</sup> This filing cites to 27 other studies.<sup>87</sup>

Professor Suleyman Kaplan, Editor of the *Journal of Experimental and Clinical Medicine*, wrote the FCC that chronic exposure can have long-term brain morphology effects. He detailed four animal studies showing that one hour a day

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<sup>84</sup> [JA](#).

<sup>85</sup> [JA](#).

<sup>86</sup> [JA @4](#).

<sup>87</sup> [JA](#).

prenatal RF exposure decreased brain cells in regions responsible for memory, attention and learning.<sup>88</sup> Twenty-six studies from 2008-2017 show perinatal exposure affects nervous system development and function. Five studies indicate the cerebellum is especially vulnerable because it contains embryonic neural stem cells that play a critical brain development role.<sup>89</sup>

The human evidence confirms these findings. UCLA studies on 13,159 women,<sup>90</sup> 28,745 children<sup>91</sup> and a cohort of 5 studies on 83,884 women<sup>92</sup> revealed that children whose mothers used cell phones during pregnancy had more emotional problems (25%), hyperactivity (35%) and conduct problems (49%). Clinical evidence shows that removing exposure to wireless RF reduces and/or eliminates behavioral problems in children.<sup>93</sup>

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<sup>88</sup> [JA\\_](#).

<sup>89</sup> [JA\\_@7.](#)

<sup>90</sup> [JA\\_@45.](#)

<sup>91</sup> [JA\\_](#).

<sup>92</sup> [JA\\_@375.](#)

<sup>93</sup> [JA\\_](#).

Studies on 1,300 adolescents indicate 1 year of cell phone exposure adversely affects their memory.<sup>94</sup> Testimonies in the record discuss children that have developed Radiation Sickness.<sup>95</sup>

Dr. Kaplan explained that children are now exposed to RF/EMF radiation while *in utero*. They begin using RF-enabled devices earlier and will have longer lifetime and cumulative exposures than previous generations. Environmental insults during the early growth stages can have profound impacts later in life.<sup>96</sup> Children also have less ability to remove themselves from harmful environments.

John Wargo, Ph.D., Yale Professor of Environmental Risk and Policy wrote “[t]he scientific evidence is sufficiently robust.” “The weight of the evidence supports stronger ...regulation by the federal government.”<sup>97</sup>

For these reasons, The American Academy of Pediatrics (“AAP”), an organization of 60,000 pediatricians, the Maryland State Children’s Environmental Health And Protection Advisory Council,<sup>98</sup> and numerous experts urged the FCC

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<sup>94</sup> [JA](#) ; [JA @63](#); [JA](#) .

<sup>95</sup> [JA](#) ; [JA](#) .

<sup>96</sup> [JA](#) .

<sup>97</sup> [JA](#) .

<sup>98</sup> [JA @51](#) .

to develop regulations that reflect both the biological sensitivity of children and the changes in usage patterns that exacerbate susceptibility.<sup>99</sup>

The *Inquiry* invited comments on whether the RF/EMF regulations are appropriate for device use by children notwithstanding the representation in IEEE Std 1528–2003 that the standard adopted by the FCC “represents a conservative case for men, women, and children.”<sup>100</sup> In response, commenters submitted scientific evidence that RF limits are not protective of children because children not only have more intense exposures than adults but more importantly that children are uniquely sensitive due to their developing brains<sup>101</sup> (vulnerabilities which the FCC did not address).

#### **F. The Human Evidence-Radiation Sickness**

The *Order* ignores substantial evidence of human sickness from RF/EMF. Considerable evidence came directly from people who had developed Radiation Sickness.

The scientific and medical communities now understand more about the symptoms, physiological injuries and the mechanisms of harm for Radiation

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<sup>99</sup> [JA](#); [JA](#); [JA](#).

<sup>100</sup> 28 FCC Rcd 3498, at \*3575.

<sup>101</sup> [JA](#).

Sickness. There are diagnosis guidelines and government-approved classifications. Doctors and scientists warn that it is widespread, and the rates are growing. Courts and US agencies have recognized it.

Over a hundred individuals advised FCC that they and/or other family members,<sup>102</sup> developed Radiation Sickness or described consistent symptoms.<sup>103</sup> Advocacy groups supplied 74 additional individual cases<sup>104</sup> and referred to hundreds more.<sup>105</sup> 10 included physicians' diagnoses.<sup>106</sup>

Radiation Sickness describes a constellation of mainly neurological symptoms that manifest as a result of RF/EMF exposure. It is a "spectrum condition" Some experience discomfort while others are entirely debilitated.<sup>107</sup> The testimonies and the scientific literature recite a host of symptoms, including headaches, memory and cognitive problems, sleep problems, heart palpitations and/or increased heart rate, ringing in the ears, fatigue, skin rashes, tingling, nose

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<sup>102</sup> [JA\\_](#); [JA\\_](#); [JA\\_](#).

<sup>103</sup> [JA\\_](#).

<sup>104</sup> [JA\\_](#); [JA\\_](#); [JA\\_](#); [JA\\_](#).

<sup>105</sup> [JA\\_](#)

<sup>106</sup> [JA\\_](#).

<sup>107</sup> [JA\\_@6](#); [JA\\_@3](#).

bleeds, unremitting flu like symptoms, dizziness and burning sensations. Exposure avoidance is the only effective management treatment. *Id.*

The US uses a modified version of WHO's International Classification of Diseases (ICD) Codes. The CDC uses Clinical Modification (CM) and Procedural Classification System (PCS) Code T-66 for a diagnosis of "Radiation Sickness." Code W-90 recognizes that "Exposure to Other Nonionizing Radiation" can cause injury.<sup>108</sup> The Austrian Medical Association issued diagnosis guidelines in 2011.<sup>109</sup> They were updated and improved by European Academy of Environmental Medicine in 2016, citing 235 scientific references for symptoms, physiological damage and mechanisms of harm.<sup>110</sup> These guidelines are used by doctors worldwide. Courts around the world recognize the condition.<sup>111</sup> *Yannon v. N.Y. Tel. Co.*, 86 A.D.2d 241, 450 N.Y.S.2d 893 (App. Div. 3rd Dept. 1982) affirmed a Worker's Compensation Board finding that microwave emissions caused "microwave sickness" and death.

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<sup>108</sup> [JA @2](#); [JA @25](#).

<sup>109</sup> [JA](#).

<sup>110</sup> [JA](#).

<sup>111</sup> [JA @7-8](#).

California firefighters developed Radiation Sickness after a cell tower appeared on their station. They reported typical symptoms, including memory/concentration difficulties like getting lost in their hometown and forgetting basic CPR. Computer-tomography scans revealed pervasive neuron hyper-excitability<sup>112</sup>

Additional studies reveal severe physiological injuries. A functional MRI<sup>113</sup> study and a 675-subject study both revealed impaired brain blood flow.<sup>114</sup> The latter identified biomarkers, and showed autoimmune antibodies (23%), BBB leakage (15-28%), Oxidative Stress (40%) and reduced melatonin (100%). Another study identified genetic predispositions.<sup>115</sup> Hundreds of studies show that FCC-authorized RF/EMF exposures can cause the symptoms, injuries and mechanisms associated with Radiation Sickness.<sup>116</sup>

The *Order* did not address the scientific evidence on Radiation Sickness or the “human evidence.” Other federal agencies, including the Navy, Army and

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<sup>112</sup> [JA\\_](#); [JA\\_](#); [JA\\_](#); [JA\\_](#).

<sup>113</sup> Magnetic Resonance Imaging scanners use RF/EMF to generate images of the organs in the body.

<sup>114</sup> [JA\\_@4](#).

<sup>115</sup> *Id.* at 9.

<sup>116</sup> [JA\\_](#).

NASA,<sup>117</sup> have. Military-declassified materials admit to “possible adverse effects on human health” and recognize modulation as a potential harm agent.<sup>118</sup>

In 2002, the Justice Department’s Architectural and Transportation Barriers Compliance Board (Access Board) recognized that “electromagnetic sensitivities may be considered disabilities under the ADA.”<sup>119</sup> The National Institute of Building Sciences (NIBS) 2005 report concluded RF/EMF is an “access barrier” and can render buildings “inaccessible” to those with Radiation Sickness. *Id.* at 68.

Public exposure to RF/EMFs has exploded since 1996. Radiation Sickness is now prevalent, and it is getting worse. A 2002 survey by the State of California’s Department of Health Services reported 3% are affected.<sup>120</sup> Surveys before 2005 found a 10% rate.<sup>121</sup> 190 Scientists wrote in 2017 that it may become a “worldwide pan-epidemic.”<sup>122</sup> A European Parliament resolution found the problem is growing

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<sup>117</sup> [JA\\_](#) ; [JA\\_@15](#); [JA\\_@15](#).

<sup>118</sup> [JA\\_](#).

<sup>119</sup> [JA\\_@4-5](#); [JA\\_](#).

<sup>120</sup> [JA\\_@10](#).

<sup>121</sup> [JA\\_](#).

<sup>122</sup> [JA\\_@2](#).



“exponentially.”<sup>123</sup> Physicians also provided direct clinical evidence. Drs. Elliot and Jelter reported an increase in patients.”<sup>124</sup>

## **G. Technological/Exposure Sources**

### **1. Existing Cell Towers**

Dozens of studies and individual testimonies reveal profound harms from existing cell towers.<sup>125</sup> A 2012 study of 1.5 years’ exposure found hormonal and cell stress effects and evidence of dose-response at radiation levels 1,000,000 times lower than the FCC guidelines.<sup>126</sup> Telecom company study (Swisscom) found dose response and neurological effects.<sup>127</sup> Epidemiological studies revealed typical Radiation Sickness symptoms<sup>128</sup> along with negative effects on hormones, sperm, DNA and cancer.<sup>129</sup> Effects bore a direct relationship to distance from the cell tower:

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<sup>123</sup> [JA\\_@2.](#)

<sup>124</sup> [JA\\_](#); [JA\\_](#).

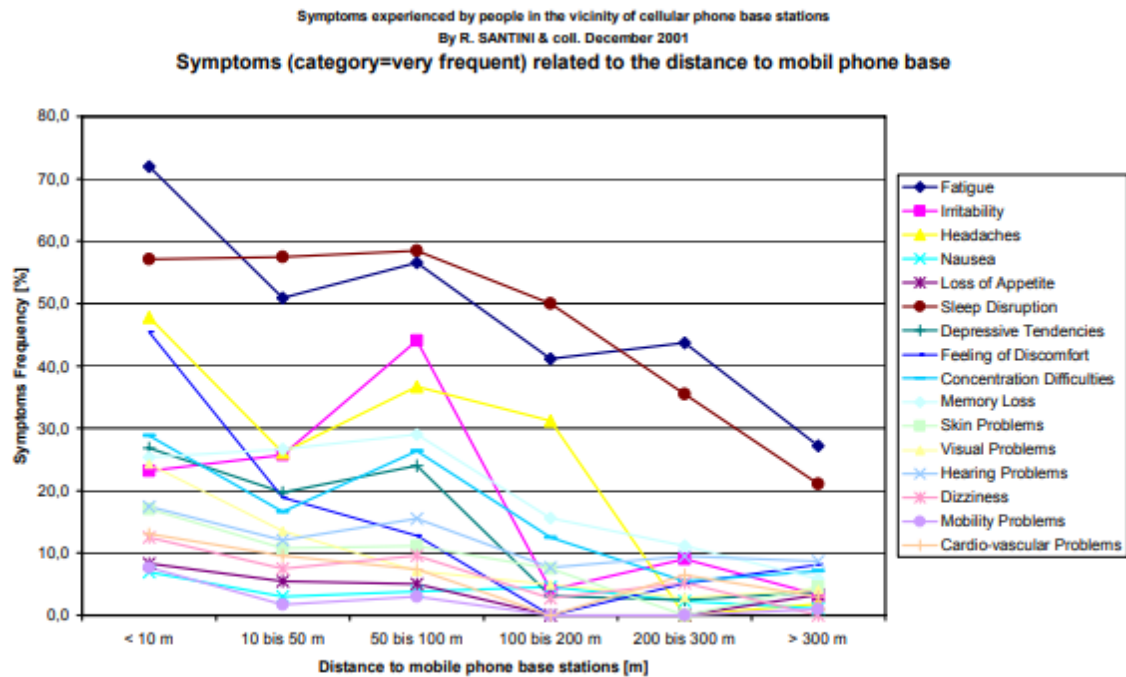
<sup>125</sup> [JA\\_](#).

<sup>126</sup> [JA\\_](#).

<sup>127</sup> [JA\\_@9.](#)

<sup>128</sup> [JA\\_@30-34.](#)

<sup>129</sup> [JA\\_](#).



Graph: Incidence (%) of Complaints by Respondents (n=530) Living in the Vicinity of Mobile Phone Base Stations as a Function of Distance

Another study indicates cell tower RF/EMF can cause antibiotic resistance, a major threat to public health.<sup>130</sup> A 2017 human study showed significantly higher DNA damage and Oxidative Stress. This study concluded: “[B]ase stations in the residential areas...[are] silently creeping in the lives of residents”<sup>131</sup> BIR concurs.<sup>132</sup>

<sup>130</sup> [JA\\_@106.](#)

<sup>131</sup> [JA\\_.](#)

<sup>132</sup> [JA\\_.](#)

## 2. 5G Poles/Small Cells

5G (or Fifth Generation) completely changes the wireless environment and exponentially increases forced exposure to radiation. 5G is the infrastructure for the Internet of Things. It intends to wirelessly interconnect 50 billion more devices and requires at least a 1,000 times higher capacity than current infrastructure.<sup>133</sup>

This involves a massive infrastructure intensification including 800,000 new cell towers.<sup>134</sup> When the 1996 RF regulations were finalized cell towers were 50-200 feet high and often relatively far away from people.<sup>135</sup> 5G uses “small cells” with antenna heights limited to 50-feet.<sup>136</sup> They are usually installed on utility poles in public rights-of-way and are sometimes only a few feet from homes and bedrooms. Although small cells may use less power than big cell towers, they are closer to people. Radiation exposure is therefore exponentially higher.<sup>137</sup>

5G can operate in the lower (600 MHz), mid (2.5-4.2 GHz) and higher millimeter-wave bands (24-47 GHz) and have complex modulations. A growing body of evidence indicates 5G deployment and accompanying 4G densification can cause

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<sup>133</sup> [JA\\_](#); [JA\\_](#).

<sup>134</sup> [JA\\_](#); [JA\\_](#); [JA\\_](#).

<sup>135</sup> OET 56, at 20, <http://tinyurl.com/y26mog56>.

<sup>136</sup> 47 U.S.C. §1.6002(l)(1)(i).

<sup>137</sup> [JA\\_@487](#); [JA\\_@1](#); [JA\\_@490](#); [JA\\_@1](#); [JA\\_@1](#).

DNA damage, cancer, harm to bees, trees, cell membrane effects, antibacterial resistance, reduced immunity, neurological effects, reproductive effects, and interaction with sweat glands and the evidence leaves little doubt that adverse effects will ensue especially with more complex modulations.<sup>138</sup>

### 3. Cellphones

Over 95% of Americans own cellphones, with the share of smart phones at 81%, and other wireless devices, including laptops, also widely used.<sup>139</sup> The public “receives the highest exposure from transmitters close to the body.”<sup>140</sup> Depending on design and positioning, a cellphone held close to the ear “can result in high specific rates of absorption (SAR) of [RF] energy in the brain.”<sup>141</sup> A hands-free device may lower exposure of the brain but “may increase exposure to other parts of the body.”<sup>142</sup>

SAR values reflected in the 1996 regulations are based on “a handful of animal studies that were used to determine the threshold values of SAR for the

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<sup>138</sup> [JA\\_](#); [JA\\_@18, 27, 41, 72, 217](#).

<sup>139</sup> Pew Research Center, Mobile Fact Sheet, <https://www.pewresearch.org/internet/fact-sheet/mobile/>.

<sup>140</sup> [JA\\_@34](#).

<sup>141</sup> *Id.*

<sup>142</sup> *Id.*

setting of human exposure guidelines....”<sup>143</sup> These studies demonstrated disruption of behavior from thermal (or tissue heating) effects after short term exposure.<sup>144</sup>

Today’s cellphones differ from the ones in use when the RF/EMF limits were adopted. They may contain several antennas including for the 2G, 3G, 4G frequency bands and Wi-Fi.<sup>145</sup> Modern technology also allows wireless devices to operate with 5G technology at much higher frequencies than when they were adopted.<sup>146</sup>

The Commission failed to address either the change in technology or the available scientific data relating to wireless devices. The FCC failed to consider the BIR, the IARC Monograph, the various international appeals from scientists, and numerous publications and studies relating to human health risks from wireless device use.

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<sup>143</sup> [JA @373, 379.](#)

<sup>144</sup> *Id.*

<sup>145</sup> NTP Technical Report on the Toxicology and Carcinogenesis Studies in Hsd: Sprague Dawley SD Rats Exposed to Whole-Body Radio Frequency Radiation at a Frequency (900 MHz) and Modulations (GSM and CDMA) Used by Cell Phones at 7 (November 2018), [https://www.niehs.nih.gov/ntp-temp/tr595\\_508.pdf](https://www.niehs.nih.gov/ntp-temp/tr595_508.pdf).

<sup>146</sup> *Id.* at 19.

Petitioner EHT presented epidemiology studies published after the initial IARC 2011 categorization of RFR as a possible human carcinogen (Group 2B).<sup>147</sup> Based on studies in Sweden, France, the UK, and other countries, these epidemiological studies found evidence sufficient to consider RFR as a *probable* human carcinogen (Group 2A) and, when supplemented with other studies including the Ramazzini and NTP studies, there was sufficient epidemiological evidence to “upgrade the IARC categorization of RFR to Group 1, carcinogenic to humans.”<sup>148</sup>

Nasim and Kim examined the 5G downlink transmission to wireless devices and found human RFR exposure could “far exceed the Commission’s SAR limit for frequencies under 6 GHz.”<sup>149</sup> RFR safety concerns are raised by beam forming, greater bandwidth, and closer proximity to transmitters delivering a signal that far exceeds 4G systems.<sup>150</sup>

A study by the Director of the National Institute on Drug Abuse shows through brain imaging that the glucose levels in the brain are significantly higher–

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<sup>147</sup> [JA\\_](#).

<sup>148</sup> *Id.* at 9.

<sup>149</sup> [JA\\_@1](#).

<sup>150</sup> [JA\\_@2](#).

especially in the areas closer to the antennae—after cellphone use.<sup>151</sup> A study of non-thermal effects of high frequency radiation from cellphones and wireless devices on the eyes finds reversible and irreversible ocular changes also went unaddressed.<sup>152</sup> Yet another unaddressed health concern was the *cumulative effects* of RFR exposures from multiple wireless devices, including wi-fi and smart meters.<sup>153</sup>

Numerous cell phones studies confirm neurological effects from cell phones as shown in a completion of 700 cell phones studies' abstracts.<sup>154</sup> 15 EEG studies published between 2007-2017 found effects from 2G, 3G and 4G handset emissions.<sup>155</sup>

A 2013 functional MRI human study exposed 18 participants to a 4G cellphone located 1 centimeter away from the right ear for 30 minutes.<sup>156</sup> Brain images revealed human brain neural activity in both sides of the brain, even though

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<sup>151</sup> [JA\\_@2](#).

<sup>152</sup> [JA\\_@489](#).

<sup>153</sup> See e.g. [JA\\_@7](#).

<sup>154</sup> [JA\\_](#).

<sup>155</sup> [JA\\_](#); [JA\\_](#); [JA\\_](#).

<sup>156</sup> [JA\\_@98](#).

the exposure was on one side, indicating a neural mechanism for the effects on the remote side of the brain. This can only be explained by non-thermal effects.

None of the health issues raised in this and other studies were considered.

#### 4. Wi-Fi

Wi-Fi is another example of effects from chronic exposure and pulsation/modulation. Human and animal studies confirmed profound effects from Wi-Fi and/or the 2.45 GHz frequency it uses as a carrier wave.<sup>157</sup> For example, a study observed deleterious effects on growing testes.<sup>158</sup> A 2019 meta-analysis<sup>159</sup> of 23 Wi-Fi studies, including 5 on humans, concluded Wi-Fi is hazardous to male sperm count, motility and DNA integrity. Twenty-two studies published between 2016-2019 strengthen previous findings.<sup>160</sup>

Swisscom's US patent application for "safer" Wi-Fi admitted that "the influence of "electrosmog" on the human body is a known problem." "Non-thermal pathway" "impacts can be considerable" and "will continue to increase in

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<sup>157</sup> [JA\\_](#); [JA\\_@181](#); [JA\\_](#); [JA\\_@6](#); [JA\\_](#).

<sup>158</sup> [JA\\_](#).

<sup>159</sup> [JA\\_@6](#).

<sup>160</sup> [JA\\_@85, 89, 181](#).



the future for many people.” RFR can cause DNA damage that “lead[s] to increased cancer risk.”<sup>161</sup>

## 5. Smart Meters

The regulations’ method of averaging the exposure during compliance testing obscures real exposure levels and pulsation effects. “Smart Meters” illustrate the problem. In a response to a comment, the FCC claimed that “the devices normally transmit for less than one second, a few times a day and consumers are normally tens of feet or more from the meter face...”<sup>162</sup> Many commenters corrected this assertion. Fifty experts in a letter “Correcting the Gross Misinformation”<sup>163</sup> explained that a single smart meter can emit up to 190,000 intense bursts (or pulses) each day. The bursts can be two and a half times above the FCC’s limits. People can receive aggregate exposure greater than from a cell phone. These finding were confirmed by a technical report and other expert

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<sup>161</sup> [JA\\_@89.](#)

<sup>162</sup> [JA\\_.](#)

<sup>163</sup> [JA\\_.](#)

submissions.<sup>164</sup> People can sleep a foot away from a meter or be close to apartment complex meter banks.<sup>165</sup> The cumulative exposure is never measured.<sup>166</sup>

These erratic bursts/pulses create a bioactive on/off effect. One study of a physician with Radiation Sickness showed symptoms caused by the off-on, on-off rather than intensity, and concluded that “chronic exposure to low RFR can cause even greater harm than an acute exposure to high levels.”<sup>167</sup> The BIR pointed out the same issues.<sup>168</sup> Petitioner Paul Dart, MD and 4 other MDs provided an 87-page review explaining why Smart Meters pose a significant risk to public health. He submitted additional supporting analyses addressing chronic exposure, electro-sensitivity, DNA damage, cancer, brain tumors, infertility and mechanisms of harm.<sup>169</sup> AAEM referenced a peer-reviewed paper with 92 case studies<sup>170</sup> on smart meters health effects.

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<sup>164</sup> [JA\\_](#).

<sup>165</sup> [JA\\_](#).

<sup>166</sup> [JA\\_](#); [JA\\_](#).

<sup>167</sup> [JA\\_](#).

<sup>168</sup> [JA\\_](#); [JA\\_](#).

<sup>169</sup> [JA\\_](#); [JA\\_](#); [JA\\_](#); [JA\\_](#).

<sup>170</sup> [JA\\_](#).

Many individuals testified to horrible injuries by Smart Meters and their devastating impact on their lives.<sup>171</sup> The *Order* failed to mention any of this even though the *Inquiry* expressly asked about pulsation-related or other special issues.

## H. Additional *Inquiry* Issues

### 1. Cell Phone and Wireless Device Testing

Cellphones and handheld wireless devices held close to the body must be tested and certified to ensure compliance with the FCC SAR limits. The 1996 regulations stated that “portable devices shall be tested...based on ‘standard’ operating conditions or positions.”<sup>172</sup>

Numerous submissions criticized the FCC compliance tests. First, the test does not reflect different physical characteristics based on age or size. Second, the test uses a separation distance and does not simulate the way people actually use phones and wireless devices—such as in positions against the body. Third, and most importantly, the testing regime’s SAR measurement is thermal-based, *i.e.* focused on heating only (See *supra*).

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<sup>171</sup> JA\_.

<sup>172</sup> 11 FCC Rcd 15123, at \*15149. In 1997, the FCC issued Bulletin 65, consisting of voluntary “guidelines and suggestions” for implementing the testing regime. 1997 FCC LEXIS 4631 at 1 (Bulletin 65).

In fact, the health hazards associated with mobile phone fields have nothing to do with heat so SAR is irrelevant to understanding health hazards. While the Commission at para. 15 of the Order maintains that SAR testing is “conservative” for all ages, this has no bearing on whether RFR causes biological harm. The SAR measurement also does not account for the unique characteristics of an information carrying wave that can moderate the biological impacts. In particular, the type of modulation, the pulse rate, and polarization are not accounted for in SAR or MPE power density measurements.

While the 1996 regulations refer to testing of “human tissue,” in practice, authorized testing facilities use a standardized anthropomorphic mannequin (“SAM”) to test cellphones.<sup>173</sup> The SAM models an adult male over six feet tall, weighing 220 pounds and transmits RF signals to a plastic shell containing a homogenous liquid with undifferentiated electrical properties (in lieu of actual human tissue).<sup>174</sup> A temperature probe measures the heat at various points in the liquid. The FCC has acknowledged other testing methodologies may be more

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<sup>173</sup> 28 FCC Rcd 3498, at \*3523.

<sup>174</sup> [JA @9](#).

accurate for actual people of different sizes and ages and human tissue with non-uniform electrical properties but does not require their use.<sup>175</sup>

The agency-sanctioned testing procedures<sup>176</sup> require cellphones to be tested simulating use against the ear (not the skull) and “against” the body (torso), but with a separation distance up to 2.5 cm allowed when tested against the body. These procedures assume devices are carried and used away from the body in accessories such as “belt clips and holsters.”<sup>177</sup> The FCC has recognized that these requirements may not identify the maximum exposure under *actual* use with zero separation (*e.g.*, in a pocket).<sup>178</sup>

Furthermore, the Commission maintains that the SAR limits provide a large margin of safety because they “are set at a level 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....”<sup>179</sup> Notwithstanding the presumed safety margin, the 2012 GAO Report recommended that the FCC reassess the testing

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<sup>175</sup> 28 FCC Rcd 3498, at \*3523.

<sup>176</sup> In 2015, Bulletin 65 was superseded by FCC KDB publication 447498 “RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices,” <https://tinyurl.com/jqxbklk>.

<sup>177</sup> *Id.* at 10.

<sup>178</sup> 28 FCC Rcd 3498, at \*3588.

<sup>179</sup> *Id.* at \*3582.

requirements “in likely usage configurations, particularly when mobile phones are held against the body, and update testing requirements as appropriate.”<sup>180</sup> The *Inquiry* acknowledged that “exposure in excess of our limits might result” in certain untested positions of use such as a phone in the pocket or in certain conditions such as in an area of low service.<sup>181</sup> Accordingly, the *Inquiry* asked the public to comment as to whether the body-worn separation distance should be changed or eliminated.

Subsequently, numerous parties submitted studies and comments identifying deficiencies in the certification and testing regime. Commenters demonstrated:

- (a) The SAR unit should be redesigned to capture non-thermal effects.<sup>182</sup>
- (b) The SAM model underestimates RF exposure in specific brain regions, especially for adults with heads smaller than the SAM model and children,<sup>183</sup> and

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<sup>180</sup> GAO Report, Telecommunications- Exposure and Testing Requirements for Mobile Phones Should be Reassessed (July 2012) at 28, <https://tinyurl.com/yyw2d8ea>.

<sup>181</sup> 28 FCC Rcd 3498, at \*3587.

<sup>182</sup> [JA\\_@3](#) (Pong Letter); [JA\\_@3-5](#) (CSCP Comments).

<sup>183</sup> [JA\\_](#). For example, in 2019, Dr. Om P. Gandhi published the results of SAR tests that he had conducted on 13 cellphones from different manufacturers. He found that none of the cellphones would pass the FCC’s SAR exposure limits when tested in positions that mimic actual use conditions, *i.e.* against the body. [JA\\_](#).

erroneously assumes all human tissue in the head contains uniform electrical properties.<sup>184</sup>

(c) The proximity requirements should be modified to include a “zero spacing” requirement<sup>185</sup> because many people today carry their devices at zero or near zero distance from their bodies.<sup>186</sup> Published analysis document that phones clearly exceed FCC SAR limits when tested in body contact positions.<sup>187</sup> The FCC ignored evidence of a case study finding an association between breast cancer in women and the wearing of cellphones in bras, directly against the tissues of the breast with zero separation.<sup>188</sup>

(d) The FCC’s assertion that the SAR exposure limit has a 50 times safety margin for cell phone exposure limits is factually incorrect. In its Reply Comments, Pong Research Corporation demonstrates that the limit was selected

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<sup>184</sup> [JA @8](#).

<sup>185</sup> [JA @6](#) (Pong Reply Comments); [JA @9-10](#) (EWG Reply Comments); CSCP [JA @5](#) (CSCP Comments); [JA @5](#) (CSCP Reply Comments).

<sup>186</sup> The Pong Research Corporation (Pong) submitted test results showing that the 1.6 W/kg standard was significantly exceeded when true “against-the-body” testing was conducted. [JA @2](#).

<sup>187</sup> [JA](#).

<sup>188</sup> [JA @4](#) (*quoting West, et al., “Multifocal Breast Cancer in Young Women with Prolonged Contact between Their Breasts and Their Cellular Phones” 2013 Case Reports in Medicine*).

arbitrarily from observations of lab rats conducted in 1980.<sup>189</sup> In their reply comments, EHT, Environmental Working Group (EWG) and the CSCP also dispute the validity of the claimed 50-times safety margin.<sup>190</sup> CSCP challenged the supposed safety margin because many peer-reviewed, independently-funded studies show “negative biological effects at levels as much as 1,000 times below the current FCC exposure standard!”<sup>191</sup>

## 2. Environmental Harm

Substantial evidence in the administrative record concerns the impact of RFR on wild and domesticated animals, and, therefore indirectly, on the human environment. These submissions include:

(1) A July 14, 2016 “Briefing Memorandum”<sup>192</sup> by Dr. Albert M. Manville, II, former agency lead on avian-structural impacts — including from radiation—at the U.S. Fish and Wildlife Service. Dr. Manville addresses RFR impacts on wildlife, particularly migratory birds:

There is an increasing body of published laboratory research that finds DNA damage at low intensity exposures— well below levels of thermal heating —

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<sup>189</sup> [JA\\_@13-14.](#)

<sup>190</sup> [JA\\_@77.](#)

<sup>191</sup> [JA\\_@2.](#)

<sup>192</sup> [JA\\_.](#)



.... This body of work would apply to all species, including migratory birds....<sup>193</sup>

(2) A 2010 report by an expert committee organized by the Government of India that analyzed 919 peer-reviewed studies.<sup>194</sup> The report found:

•Of the non-human species, impacts on birds and bees appear to be relatively more evident. Exposure to EMR field is shown to evoke diverse responses varying from aversive behavioural responses to developmental anomalies and mortality in...bees, amphibians, mammals and birds....Other wildlife such as amphibians and reptiles also appear to be at high risk with possible interference of EMF with metamorphosis and sex ratios where temperature dependent sex determination is operational.<sup>195</sup>

(3) A 2009 technical review of problems with reproduction, possible DNA damage, and behavioral changes in wild birds, domesticated chickens, bats, pigs, mice, rats, and insects and arachnids when exposed to non-thermal RFR in various laboratory and field situations.<sup>196</sup>

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<sup>193</sup> *Id.* at 3.

<sup>194</sup> [JA\\_](#).

<sup>195</sup> *Id.* at 6-7. Elsewhere, the report observes: “electromagnetic radiations are being associated with the observed decline in the population of sparrow in London and several other European cities (Balmori, 2002, Balmori, 2009, Balmori & Hallberg, 2007). In [the] case of bees, many recent studies have linked the electromagnetic radiations with an unusual phenomenon known as ‘Colony Collapse Disorder’. *Id.* at 3.

<sup>196</sup> [JA\\_](#) and [JA\\_](#).

Submissions also demonstrated adverse impacts on trees and other plant life.<sup>197</sup>

## I. NEPA

Commenters made clear that any re-evaluation of the 1996 RF/EMF s regulations must comply with NEPA. *See infra* 49 (summarizing NEPA obligations). The FCC had indicated in the *Inquiry* that while NEPA may eventually apply, the FCC’s obligations under the statute had not yet been triggered.<sup>198</sup>

Commenters disagreed with the FCC’s statement and stressed the *Inquiry* required a full-blown environmental analysis (called an “Environmental Impact Statement” or “EIS”).<sup>199</sup> Others noted an EIS is legally required where a “major Federal action significantly affect[s] the quality of the human environment.” *Id.* (*see* 42 U.S.C. §4332).<sup>200</sup>

The *Order* did not address these submissions or explain why an EA or EIS was not completed.

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<sup>197</sup> [JA\\_](#); [JA\\_](#).

<sup>198</sup> [JA\\_@6](#).

<sup>199</sup> [JA\\_@2](#); [JA\\_@2](#); [JA\\_@4](#); [JA\\_@2-3](#).

<sup>200</sup> [JA\\_@2](#) and [JA\\_@1](#); [JA\\_@3](#).

## SUMMARY OF ARGUMENT

1. The fourteen Petitioners in this consolidated appeal have standing to challenge the *Order*. The four EHT Petitioners and six of the CHD Petitioners is each a “party aggrieved” under the Hobbs Act. 28 U.S.C. §2344.

2. All fourteen Petitioners have standing under Article III of the U.S. Constitution because the *Order* caused each of them particularized and concrete injury-in-fact that would likely be redressed by a favorable decision. *Humane Soc’y of the U.S. v. Vilsack*, 797 F.3d 4, 8 (D.C. Cir. 2015). The Petitioners identify and describe numerous and varied negative professional and/or personal impacts of the *Order* in the declarations that accompany this Brief.

3. The *Order* closes an FCC *Inquiry* begun in 2013 into whether to revise and update regulations promulgated in 1996 to protect the public health and safety and to meet the FCC’s obligations under NEPA. The FCC received an enormous number of peer-reviewed scientific and medical studies, analyses, and reports demonstrating a consensus of the scientific community that radiofrequency radiation is harmful and sometimes lethal to individuals and the environment. The record also contains numerous statements from many individuals who must live day-by-day suffering these harms.

4. The factual record in this case is strong. Yet the *Order* gives no consideration to most of the evidence presented to it. By perpetuating a situation that is proven to constitute a threat to public health and safety, the FCC has failed to meet its statutory obligation under the Communications Act to protect public health and safety.

5. The FCC also has also failed to engaged in reasoned decision-making and to base its decision on substantial evidence and has acted in an arbitrary and capricious manner in violation the Administrative Procedure Act. An agency cannot lawfully ignore material evidence simply because the evidence presents a position with which the agency may disagree.

6. The decision to terminate the *Inquiry* is a major federal action that could significantly affect the human environment and, therefore, the decision was subject to the procedural requirements of NEPA. Yet the FCC did not take the *hard look* at the range of possible adverse environmental effects of its decision required by NEPA. Nor did it consider the relevant evidence in the record of likely environmental harm. As a consequence, the agency violated NEPA.

7. The FCC also erred because it did not consider the evidence in the record of many individuals suffering the effects of unavoidable exposure to radiofrequency radiation. The agency simply ignored the ills and challenges faced

by individuals who are especially susceptible to Radiation Sickness. In so doing, the FCC begged the question of whether the agency has a responsibility under the ADA, the FHA, and the United States Constitution to develop a remedy that would address the ills being visited upon these people.

### STANDARD OF REVIEW

Where an FCC order is challenged under the APA, this Court's review is limited to the administrative record. 5 U.S.C. §706; 47 U.S.C. §402(g). *AT&T Corp. v. FCC*, 86 F.3d 242, 245 (D.C. Cir. 1996). It must “hold unlawful and set aside agency action, findings, and conclusions” if they are found to be “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law” or “unsupported by substantial evidence.” 5 U.S.C. §706(2)(A), (E); *AT&T Corp.*, 86 F.3d at 245. Further, this Court must vacate any order that is “contrary to constitutional right, power, privilege, or immunity” or “in excess of statutory jurisdiction, authority, or limitations.” 5 U.S.C. §706(2)(B), (C). While judicial review under the APA is deferential, the Court's inquiry must be “searching and

careful.” *Brookings Municipal Tel. Co. v. FCC*, 822 F.2d 1153, 1164 (D.C. Cir. 1987).<sup>201</sup>

Moreover, as there is no private cause of action under NEPA, courts apply the APA’s arbitrary and capricious standard when reviewing factual findings underlying an agency’s NEPA analysis. *Sierra Club v. U.S. Army Corps of Eng’rs*, 990 F. Supp. 2d 9, 22 (D.D.C. 2013) (citation omitted); 5 U.S.C. §706. But where an agency does not apply NEPA at all, as is the case here, this failure raises a question of law, and thus this Court reviews *de novo* the agency’s decision not to comply with NEPA. *Citizens Against Rails-To-Trails v. Surface Transp. Bd.*, 267 F.3d 1144, 1150-51 (D.C. Cir. 2001); *Sierra Club*, 990 F. Supp. 2d at 22-23; *Sierra Club v. USDA*, 777 F. Supp. 2d 44, 54 (D.D.C. 2011) (citations omitted).

## ARGUMENT

### I. Standing

#### A. Hobbs Act

All EHT Petitioners and all individual CHD Petitioners submitted comments to the *Inquiry* dockets. Hertz@¶3; Brokken @¶4; Lee@¶3; Stanley@¶2;

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<sup>201</sup> See *Fox TV Stations, Inc. v. FCC*, 280 F.3d 1027, 1045, 1049 (D.C. Cir. 2002) (applying APA and arbitrary and capricious standard to FCC decision to close Notice of Inquiry and retain (*i.e.*, not repeal or modify) certain rules).

Baran@¶3; Farver@¶3; Jelter@¶2; Carpenter@¶3; Tachover@¶¶34-36. Further, Dr. Erica Elliot MD, Angela Tsiang, and Mary Adkins, who are CHD members, filed comments and request that CHD advance their interests. Elliot@¶3; Tsian@¶3; Adkins@¶3. As the FCC did not adequately respond to their comments, and denied requested relief, each Petitioner is a “party aggrieved” under the Hobbs Act. 28 U.S.C. §2344. Hertz@¶24; Brokken@¶27; Lee@¶37; Stanley@¶23; Baran@¶41; Farver@¶41; Jelter@¶24; Carpenter@¶¶30-57, 58-63, 66; Tachover@¶¶34-36, 56-62.

### **B. Article III Standing.**

To establish Article III standing, each Petitioner must show particularized and concrete injuries-in-fact traceable to the *Order* that are likely to be redressed by a favorable decision. *Humane Soc’y of the U.S. v. Vilsack*, 797 F.3d 4, 8 (D.C. Cir. 2015). They must each suffer harms to a “legally protected interest.” *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 560 (1992). An injury is particularized if it “affect[s] the plaintiff in a personal and individual way.” *Spokeo, Inc. v. Robins*, 136 S. Ct. 1540, 1548 (2016) (internal quotation marks omitted). It is concrete if it

is “real,” “actually exists,” and is not “speculative.” *Id.* at 1548-1549. Each Petitioner has standing based on one or more of the injuries addressed below.<sup>202</sup>

As for individual Petitioners, illness from toxic environmental agents provides standing. *NRDC v. EPA*, 464 F.3d 1, 7 (D.C. Cir. 2006) (illness “likely to occur”); *Mountain States Legal Found. v. Glickman*, 92 F.3d 1228, 1234-35 (D.C. Cir. 1996) (non-trivial increased risk). Many of the petitioners suffer from Radiation Sickness and related conditions. Hertz@¶¶18-19; Brokken@¶22; Lee@¶6; Stanley@¶7; Baran@¶5; McMahon@¶3; Gallo@¶18. These injuries are clearly both particularized and concrete where petitioners have had to, *inter alia*, quit jobs and school, avoid public spaces, stop traveling by air, and spend money to shield themselves from nearby RF/EMF emissions. Scarato@¶¶9-42; Barris@¶¶5-26; Hertz@¶¶20, 22; Brokken@¶¶8, 13-14, 17; Lee@¶20; Stanley@¶¶11-12, 16; Baran@¶¶6, 32-37; McMahon@¶¶5, 8; Gallo@¶¶15, 20.

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<sup>202</sup> Petitioners also fall within the “zone of interests” protected by the substantive statutes in this case. *Mendoza*, 754 F.3d at 1016. The TCA obligates the FCC to guard against RF/EMF emissions that could harm human health and the environment. NEPA ensures that the FCC considers all relevant evidence regarding the human environment. *Gunpowder Riverkeeper v. FERC*, 807 F.3d 267, 274 (D.C. Cir. 2015). The ADA and FHA guarantee accommodations for a disability or handicap.



Individual petitioners also demonstrate standing when they allege exposure to harmful levels of hazardous materials due to an agency's failure to adopt more stringent safety limits. *Nuclear Energy Inst., Inc. v. EPA*, 373 F.3d 1251, 1265-66 (D.C. Cir. 2004) (EPA's failure to promulgate strong exposure limits for disposal of radionuclides). Here, the underlying basis of many Petitioners' claims is that the FCC failed to adopt necessarily stringent RF/EMF limits or cellphone testing procedures by not considering compelling evidence of non-thermal impacts.

Scarato@¶44; Barris@¶29; Brokken@¶¶5-7; Lee@¶37; Stanley@¶22;  
Baran@¶38; Farver@¶15; Jelter@¶¶17, 20; Tachover@¶7; Dart@¶42;  
Carpenter@¶¶30-57, 63, 66.

Financial harm provides standing because money is property and requiring expenditure of personal funds injures a protected interest. *Czyzewski v. Jevic Holding Corp.*, 137 S. Ct. 973, 983 (2017); *see also Twin Rivers Paper Co. LLC v. SEC*, 934 F.3d 607, 616 (D.C. Cir. 2019); *Carpenters Indus. Council v. Zinke*, 854 F.3d 1, 6 (D.C. Cir. 2017). Many Petitioners in this case have been required to expend substantial sums to deal with past RF/EMF exposures and to minimize future exposures (*e.g.*, buying shielding to block radiation, moving homes).

Scarato@¶¶9-42; Barris@¶¶5-26; Hertz@¶17; Brokken@¶16; Baran@¶35;  
McMahon@¶5; Gallo@¶15; Tachover@¶16.

Individuals may also show standing based the violation of a procedural right provided such violation threatens a concrete interest of theirs. *City of Dania Beach v. FAA*, 485 F.3d 1181, 1185 (D.C. Cir. 2007) (discussing NEPA failures). They do not, however, need to show that “correcting the procedural right would necessarily alter the final” outcome.” *Mendoza v. Perez*, 754 F.3d 1002, 1010 (D.C. Cir. 2014). Here, the TCA requires the FCC to protect citizens from harmful RF/EMF exposures.<sup>203</sup> And both the APA and NEPA obligate the FCC to consider relevant materials indicating that human health and environment may be adversely effected or that the FCC’s cellphone testing procedures are inadequate. *Id.* (APA); *Scientists’ Inst. for Public Info. v. AEC*, 481 F.2d 1079, 1086 n.29 (D.C. Cir. 1973) (NEPA).

All individual Petitioners have alleged that the FCC failed to consider and explain why it decided not to amend the RF/EMF regulations or testing protocols despite having not considered record evidence showing numerous potential non-thermal injuries at exposure levels allowed by the Commission. *Nat’l Wildlife Fed’n v. Hodel*, 839 F.2d 694, 712 (D.C. Cir. 1988) (based on NEPA failures). Scarato@¶44; Barris@¶29; Hertz@¶24; Brokken@¶27; Lee@¶39; Stanley@¶23;

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<sup>203</sup> *Supra.*

Baran@¶41; Farver@¶41; Jelter@¶24; McMahon@¶13; Gallo@¶26;  
Tachover@¶63; Dart@¶63; Carpenter@60, 63; Tachover@¶¶56-62.

Scientists and physicians also have a legally-protected interest in the ability to engage in their chosen professions, in accordance with ethical and other duties imposed by law or custom. An agency action that significantly undercuts their ability to do so is a “professional injury.” Courts recognize “professional injury” standing, but oftentimes the argument founders on the additional tests for concreteness, particularization, imminence and redressability. *Animal Legal Defense Fund v. Espy*, 23 F.3d 496, 499 (D.C. Cir. 1994). By refusing to justify the decision to maintain the RF/EMF limits or consider non-thermal impacts, the FCC has frustrated the professional declarants’ ability to effectively treat and heal their patients. Jelter@¶22; Elliot@¶¶19-20; Dart@¶60; Carpenter@¶¶47, 57-63.

Further, a non-profit organization has standing to pursue claims on its own behalf so long as it meets the same standing requirements as an individual plaintiff. *Equal Rights Ctr. v. Post Props., Inc.*, 633 F.3d 1136, 1138 (D.C. Cir. 2011). Injury-in-fact has two parts: “first, whether the agency’s action or omission to act injured the organization’s interest, and, second, whether the organization used its resources to counteract that harm.” *Id.* (quoting *PETA v. U.S. Dep’t of Agric.*, 797 F.3d 1087, 1094 (D.C. Cir. 2015)). As part of the first inquiry, the organization must also

demonstrate a “direct conflict between the defendant’s conduct and the organization’s mission.” *Nat’l Treasury Emps. Union v. United States*, 101 F.3d 1423, 1430 (D.C. Cir. 1996).

Here, all three organizational Petitioners pursue missions of protecting consumers and citizens, including children, from harmful RF/EMF emissions. And the FCC’s decision has “perceptibly impaired” the organizational Petitioners’ ability to provide counseling, education, referral and other assistive services to the general public, including Radiation Sickness sufferers and others exposed to RF/EMF. *Havens Realty Corp. v. Coleman*, 455 U.S. 363, 379 (1982); *Spann v. Colonial Vill., Inc.*, 899 F.2d 24, 27 (D.C. Cir. 1990). EHT@¶3; CSCP@¶¶3-7; Tachover@¶¶44-62.

Moreover, the FCC’s failure to consider and explain its decision not to update the RF/EMF regulations and cellphone testing procedures, despite overwhelming evidence of non-thermal harms at FCC-approved levels, results in an informational injury. *Am. Anti-Vivisection Soc’y v. USDA*, 946 F.3d 615, 618-20 (D.C. Cir. 2020); *Scientists’ Inst. for Public Info.*, 481 F.2d at 1086 n.29 (NEPA organizational standing). Now, organizational Petitioners cannot provide evaluations and analysis regarding the FCC’s purported justifications, whether to scientists looking for such advice or their members and followers asking for

guidance, because the FCC has not disclosed its reasoning. EHT@¶13; CSCP@¶12; Elliot@¶17; Tsiang@¶¶40-41; Adkins@¶20; Carpenter@¶¶57, 60-63; Tachover@¶¶47-62.

Deprivation of or interference with personal rights or liberty interests is also an injury. Those rights/interests include the ADA, FHA, bodily autonomy and property rights. The ADA and FHA each provide a private cause of action for refusal to accommodate a disability or handicap. 42 U.S.C §12133 (public services), §12188 (services by private entities).

Public and private service providers deny accommodations by claiming FCC-authorized emissions are “safe” and no accommodation is due and/or FCC rules pre-empt ADA and FHA remedies. The regulations authorize emissions that intrude on private property and invade the body. Harm to property or interference in property rights provides standing. *Scenic Am., Inc. v. United States DOT*, 836 F.3d 42, 55 (2016); *Idaho, By & Through Idaho Pub. Utils. Comm’n v. ICC*, 35 F.3d 585, 591 (D.C. Cir. 1994). Multiple record comments expressed personal objections to involuntary RF/EMF exposures and noted the FCC’s failure to clarify whether the exposure limits preempt these constitutional and statutory rights. *Anti-Vivisection Soc’y*, 946 F.3d at 619. Elliot@¶¶11, 15; Tsiang@¶¶35, 38;

Adkins@¶¶11, 18-19; Tachover@5, 35, 37, 41, 46-47, 51, 60; Carpenter@39, 45, 60

Finally, CHD has standing to represent its interests and its members, all of whom have common relevant interests. *Equal Rights Ctr. v. Post Props., Inc.*, 633 F.3d 1136, 1138 (D.C. Cir. 2011). To secure “associational standing” an organization must show that (a) its members would otherwise have standing to sue in their own right; (b) the interests it seeks to protect are germane to its purpose; and (c) neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit. *International Union, UAW v. Brock*, 477 U.S. 274, 282 (1986). As cited above, Petitioners and CHD members Elliot, Tsiang and Adkins have standing to sue in their own right and CHD seeks to protect their interests which are germane to its purpose. No Petitioner is required to participate individually in this litigation for relief to be granted.

By vacating and remanding the *Inquiry*, this Court would provide the FCC another chance to fully consider the mountains of evidence regarding non-thermal impacts of RF/EMF exposures, as well as address constitutional and statutory rights implicated by the *Order*, and to adequately explain and justify any decision to retain or amend its RF/EMF-related regulations.

## **I. APA**

## II. Statutory/Legal Background

Agency action is arbitrary and capricious if it “entirely failed to consider an important aspect of the problem” or “offered an explanation for its decision that runs counter to the evidence before the agency.” *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983). The agency must instead show a “rational connection between the facts found and the choice made.” *Brookings Mun. Tel. Co.*, 822 F.2d at 1165 (D.C. Cir. 1987). It must take a “hard look” at “all relevant issues” and engage in “reasoned decisionmaking.” *Neighborhood TV. Co. v. FCC*, 742 F.2d 629, 639 (D.C. Cir. 1984).

The *Order* fails several fundamental principles. First, an agency cannot completely ignore evidence that it does not like. It must review the “whole record,” including “whatever in the record fairly detracts from the evidence supporting the agency’s decision” and “it may not minimize such evidence without adequate explanation.” *Genuine Parts Co. v. EPA*, 890 F.3d 304, 312 (D.C. Cir. 2018).

Second, the agency must adequately respond to all material public comments, especially those “relevant to the agency’s decision and which, if adopted, would require a change in an agency’s proposed rule [because they] cast doubt on the reasonableness of a position taken by the agency.” *Home Box Office, Inc. v. FCC*, 567 F.2d 9, 35 n.58 (D.C. Cir. 1977). “Conclusory explanations for

matters involving a central factual dispute where there is considerable evidence in conflict do not suffice to meet the [Court's] deferential standards.” *Genuine Parts*, 890 F.3d at 312. Rather, the agency has to “respond in a reasoned manner to the comments received, to explain how the agency resolved any significant problems raised by the comments, and to show how that resolution led the agency to the ultimate rule.” *Action on Smoking & Health v. Civil Aeronautics Bd.*, 699 F.2d 1209, 1216 (D.C. Cir. 1983) (“*ASH*”).

Third, an agency’s decision must be supported by “substantial evidence” in the record. *Nat’l Lifeline Ass’n v. FCC*, 921 F.3d 1102, 1111 (D.C. Cir. 2019). “Evidence that is substantial viewed in isolation may become insubstantial when contradictory evidence is taken into account.” *Genuine Parts*, 890 F.3d at 312.

### **III. FCC Completely Ignored Evidence/Conclusory Treatment**

#### **A. No Mention of Non-Thermal Modulated/Pulsed/Peak or Long-Term Exposure**

The *Order* did not acknowledge or respond to most of the material, peer-reviewed scientific and medical evidence demonstrating adverse biological responses to currently-authorized RF/EMF exposures. It has no response to the significant scientific and medical evidence that modulation, pulsation and peak exposures may even be more important than mere carrier wave radiation. It says nothing about cumulative or long-term effects. The *Order* says nothing about



cumulative or long-term effects. It did not provide any reasoning to justify the conclusion that the current regulations protect public health and safety. Instead, it rejected the science because the scientific/medical experts did not also solve the engineering problem of being able to provide “viable” service within safe limits.<sup>204</sup>

The failure to respond to material comments was fatal. The evidence of harm was substantial, yet the FCC refused to meaningfully address it. The refusal to contend with these issues was arbitrary and capricious.

### **B. No Mention of Radiation Sickness**

The *Order* did not acknowledge or respond to any of the scientific, medical or individual evidence regarding Radiation Sickness. This was plainly material and well-documented. The refusal to recognize that real people—those the FCC is required to protect—are suffering, and the withholding of any promise of relief clearly violated its responsibilities under the Communications Act and was an abuse of discretion. The Commission owed an apology but delivered a gut-punch.

### **C. Environmental Harm**

The Order failed to address any of the evidence of substantive impacts of RFR on the non-human environment. The FCC violated its obligations under the

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<sup>204</sup> 34 FCC Rcd 11687, at \*11694.

APA to consider all relevant evidence and under NEPA to take a “hard look” at environmental impacts.

#### **D. RF/EMF Effects**

The FCC violated the APA because it failed to consider whether the RF/EMF regulations for wireless devices adopted almost a quarter century ago and based on the outdated technology of that era will fully protect the health and safety of the public in the modern wireless telecommunications environment. In rubber-stamping its decades-old emission regulations and finding no adverse health effects the *Order* failed to address such critical issues as the use of 5G wireless devices, the multiple array of antennas on today’s mobile phones, the growing use of Wi-Fi and the cumulative effect of radiation from multiple wireless sources. The Commission’s attempt to overlay emission regulations created for the 1990s on today’s complex telecommunications environment without any analysis of associated health risks—or even a recognition of the underlying differences in wireless devices and technology—is a breach of its duty under the Telecommunications Act and the APA.

The FCC also violated the APA because it did not even reference—much less evaluate—the multitude of studies and research papers that supported a link between wireless devices and infrastructure health risks. Scientific research of the past 20 years showing health effects, including cancer, neurological impacts, reproduction, and

immune system deficiencies, from the use of wireless sources were simply ignored in the seven paragraphs terminating the seven-year *Inquiry*.

The Commission's summation of the record containing many thousands of pages of significant and detailed scientific research and studies, including health studies relating to wireless devices, as being "brief comments or submissions of redundantly filed studies, reports and other publications" without naming a single commenter or study evidences a lack of any serious review or analysis of the record by the Commission in violation of the APA.

The Commission's violation of the APA is highlighted by its failure to fairly evaluate non-thermal health risks to humans from long term usage of cellphones—which were not protected by the 1996 emission regulations. A glaring omission from the *Order* is the *IARC Monograph* which addressed numerous health risks including its finding of a link between cellphone usage and brain cancer in humans. Although the Commission *specifically* requested comments on this important worldwide scientific research in the *Inquiry*, it did not address any of these comments or even reference the monograph in the *Order*.

Moreover, in its one-sided review of the NTP Study the FCC failed to provide any analysis—or even a recognition—of voluminous research in the *IARC Monograph*, the *BioInitiative Report*, and other significant scientific findings highlighted

throughout the comments that linked the use of mobile devices to negative health effects, including cancer. The omission of the *Monograph* is particularly egregious in that the NTP Study specifically found that the type of brain cancer observed in its animal studies was “similar to a type of brain tumor linked to heavy cellphone use in some human studies” including the *Monograph* which found that “there is an increased risk for glioma, a malignant type of brain cancer associated with wireless phone use.”

The evidence does not support the *Order* ¶¶2, 10, 11 13 claim that “sister agencies” support the decision. OSHA indicated that this issue is “not on OSHA’s regulatory agenda”<sup>205</sup> and advised the FCC to contact the National Institute for Occupational Safety and Health (“NIOSH”) and NTP.<sup>206</sup> The NTP is an FDA “sister agency” since both are DHHS divisions. Its report does not agree the regulations are adequate.<sup>207</sup> The CDC (another DHHS division) uses a classification system that recognizes that non-ionizing radiation can cause injury.<sup>208</sup> The EPA noted in 2002 that regulations’ premises are “not justified.”<sup>209</sup>

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<sup>205</sup> [JA](#).

<sup>206</sup> *Id.*

<sup>207</sup> *See* Part I.D.c.2 (NTP Study topic).

<sup>208</sup> *See* Part I.D. (Human Evidence – Radiation Sickness).

<sup>209</sup> [JA](#).

The Interior Department<sup>210</sup> contended in 2014 they are “out of date and inapplicable today.”<sup>211</sup> The Justice Department recognizes Radiation Sickness as a disability.<sup>212</sup> The relevant federal agencies do not, in fact, all agree current regulations are adequate.

An FDA department director (Dr. Jeff Shuren) did provide specific input in response to the FCC’s request. *Order* ¶¶11-12. There were apparently non-public, off-the-record discussions between FCC and FDA staff.<sup>213</sup> Mr. Shuren’s letter basically parroted back what the FCC wrote to FDA when it claimed the NTP conclusions do not support adverse health effects.<sup>214</sup> This directly conflicts with NTP findings and NIH scientist evaluations, and does not address the studies finding reproductive and nervous system damage.<sup>215</sup> Neither the FCC letter nor the “cut and paste” response from the FDA employee cite *any* scientific evidence or health data to support rejection of the NTP and other findings.<sup>216</sup>

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<sup>210</sup> [JA\\_](#).

<sup>211</sup> [JA\\_@49](#).

<sup>212</sup> [JA\\_](#).

<sup>213</sup> [JA\\_](#).

<sup>214</sup> [JA\\_](#).

<sup>215</sup> [JA\\_](#); [JA\\_](#) (both papers finding ICNIRP’s criticism of NTP to be unfounded).

<sup>216</sup> *Id.*

The Commission violated the APA by relying on off-the-record meetings and the summary conclusions of an FDA employee letter made public on the eve of the *Order's* release. The public had no meaningful opportunity to supply comments explaining why the FCC should not rely on the late-filed FDA employee letter.

Accordingly, the *Order* constitutes arbitrary and capricious rulemaking and must be set aside.

#### **E. Limited Discussion Re Children**

The numerous studies and comments on the *Inquiry* consistently demonstrate children's special situation while *in utero* and in their early years, and the inadequacies in the FCC's current approach—the SAM model—to protecting children. The FCC, at para. 15 of the *Order*, seems to acknowledge these age-related differences. Yet, without analyzing any of the studies or comments, the *Order* declines to adjust the regulations to better protect children. The FCC's decision not to act when the agency recognizes that physiological differences mean greater RFR exposure for children raises a serious question as to whether the FCC is serious about protecting the public health.

The FCC seeks to defend its inaction by maintaining that the existing cellphone testing method was designed to test for effects on children as well as adults and already appropriately takes into account children's physical differences.

The *Order* at n. 50 predicates this statement on the same statement from IEEE Std 1528-2003 that was discussed seven years ago in para. 53 of the *Inquiry* that the cellphone test setup currently in effect represents a conservative case “for men, women, and children” alike.

The *Order* provides no discussion of the many scientific studies of the issue in the intervening years that demonstrate the deleterious, sometimes life-threatening effects of RFR and the inadequacies of the SAM model as respects the special vulnerabilities of children. Nor, as requested by the AAP, does the agency consider changes in technology and the pattern of cellphone use, especially by children, that increase risks from RFR. It is difficult to understand why the agency would rely on the plainly outdated and false statement from IEEE Std 1528-2003.

Seemingly, as if to gild its decision with the patina of scientific reasoning, the *Order* at n. 54 refers to three studies—two from 2010 and one from 2006—that appear by their titles to relate to the issue of the differential in RFR for children’s heads versus adult heads. But the *Order* does not explain why it refers to the cited studies or explain how the cited studies, all of which tested for thermal effects, have any bearing over concerns about non-thermal biological effects.

Lacking any support in the record for its failure to address the vulnerabilities of children, the FCC in para. 15 of the *Order* turns to the FDA for support:

“Similarly, the FDA maintains that “[t]he scientific evidence does not show a danger to any users of cell phones from RF exposure, including children and teenagers.”” But the quoted statement is nothing more than a conclusion bereft of any analysis. The *Order* refers at n. 51 to an FDA webpage, that at the time the FCC released its *Order* contained a very similar conclusory statement and the webpage at the time also lacked any analysis or explanation to support the agency’s decision.

Thus, the FCC has not supported its decision to not to revise its safety regulations to account for the needs of children. Indeed, the FCC displayed a cavalier approach to protecting those needing protection the most. This refusal violates the FCC’s statutory duty to protect the public and is arbitrary, capricious, and unlawful.<sup>217</sup>

#### **F. Cell Phone Testing**

The administrative record contains substantial evidence that (a) the FCC’s cellphone certification and testing procedures and policies underestimate SAR exposures, and (b) do not test for RFR’s harmful biological effects. The

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<sup>217</sup> 7 U.S.C. §706(2)(A).



Commission does not contest these facts but seems to acknowledge their validity.<sup>218</sup>

Notwithstanding these uncontested facts, the *Order* briefly concludes that the existing cellphone testing procedures are adequate. This conclusion is particularly difficult to understand because the *Order* does not address the evidence showing otherwise. That is, the *Order* does not even attempt to explain why or how to adjust testing procedures and policies to correct for their admitted inaccuracies. For example, the *Order* recognizes inaccuracies in the SAM model but does not attempt to resolve them. Similarly, the *Order* does not explain why it won't modify testing procedures to examine how cellphones are actually used today.

Instead of addressing any of this substantial evidence, the *Order* simply concludes that against-the-body testing is unnecessary because tests are conducted against-the-head with no separation; these against-the-head tests are performed at the cellphone's maximum power setting; and testing separation distances are less

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<sup>218</sup> In the *Inquiry*, for example, the FCC acknowledged some of the limitations of the SAM model (“The SAM does not model children, tissue layers, or a hand holding the device....”) and invited comments on alternative methodologies that “can in principle more realistically model a range of variables not present using mannequins.” 28 FCC Rcd 3498, at \*3586.

than 2.5 cm. for “many devices”. With regard to the last point, the *Order* refers to only one type of cellphone—those with “tethering” capabilities, i.e. “hotspot mode”. Finally, the *Order* seeks to assure the public that the testing procedures and policies adequately protect against heating from RFR by recalling the supposed 50-times safety margin, discussed in the comments summarized above.

The *Order*'s defense of the current certification and testing procedures and policies, by ignoring virtually all of the relevant evidence demonstrating the need to revise and update those procedures and policies, violates the APA. An agency has a legal responsibility to address the relevant evidence placed before it and to explain how that evidence bears on the agency's handling of the matter.

Furthermore, the reasoning that the agency did offer is deeply flawed to the point of being arbitrary and capricious. The *Order* attempts to equate SAR testing against the head with SAR testing against the body so that the failure to require SAR testing against the body should be excused because SAR testing against the head is conducted. Yet no scientific or other factual evidence is offered to show that the SAR results would be the same.<sup>219</sup> Such reasoning is fantastical, arbitrary and capricious, and a clear violation of the APA.

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<sup>219</sup> Yet it is oddly consistent with the Commission's history of not recognizing that human tissue in and among different bodily organs has different electrical

Moreover, the statement made in the *Order* that the health effects from cellphones against the body need not concern people because there is a 50-times safety margin completely ignores the substantial evidence showing that the supposed safety margin is a completely arbitrarily derived number. Nor does the *Order* offer any new reason to conclude otherwise. In short, the *Order* did not engage in reasoned decision-making to support its assumption that the supposed 50-times margin of safety is real. The *Order*'s reliance on the supposed margin of safety is arbitrary, capricious, and unlawful.

Given all of these circumstances, the FCC's refusal to act to revise and improve its cellphone certification and testing procedures is plainly unreasonable, arbitrary and capricious, and unlawful in violation of the APA and the Telecommunications Act.

#### **IV. NEPA**

##### **A. Statutory/Legal Background**

Congress recognized under NEPA the "profound influences" of "new and expanding technological advances" and declared a "policy of the Federal

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properties and, therefore, different susceptibilities to RFR. Indeed, this failure to appreciate the proven different characteristics of differently placed human tissue resulted in adoption of the SAM model despite the proven fact that SAM produces inaccurate SAR readings and should be replaced.

Government” to promote beneficial uses of the environment “without...risk to health or safety.” 42 U.S.C. §4331.

For “major Federal actions significantly affecting the quality of the human environment,” a federal agency must prepare a “detailed statement” on the “environmental impact of the proposed action.” 42 U.S.C. §4332. While NEPA does not impose any substantive environmental mandates, it requires agencies to follow procedures for assessing environmental impacts of their decisions. *Am. Bird Conservancy, Inc. v. FCC*, 516 F.3d 1027, 1032 (D.C. Cir. 2008). These include preparing an Environmental Assessment (“EA”), or if necessary a more comprehensive Environmental Impact Statement (“EIS”), assuming the agency action has not been categorically excluded. *Id.*; 40 C.F.R. §§1508.9, .11. If an EA is prepared, and no significant impact is found, the agency issues a Finding of No Significant Impact (“FONSI”). 40 C.F.R. §1508.13.

These procedures serve two important “action-forcing” goals. First, they “ensure[] that the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts.” *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989). Second, they “guarantee[] that the relevant information will be made available to

the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision.” *Id.*; 40 C.F.R. §1500.1.

An agency also cannot simply state in conclusory fashion that an action will not have a significant effect on the human environment. Rather, the agency must, at a minimum, conduct an EA. *Found. On Economic Trends v. Heckler*, 756 F.2d 143, 146-47 (D.C. Cir. 1985). “The Court may not substitute its own findings of no significant environmental impact on the basis of arguments of the parties, when the agency has failed to prepare” an EA “in the first instance.” *Anacostia Watershed Soc’y v. Babbitt*, 871 F. Supp. 475, 482 (D.D.C. 1994).

### **B. Inquiry Triggered NEPA**

NEPA clearly applies to this *Order*. The *Order* constitutes a “major Federal action.” 42 U.S.C. §4332. The CEQ defines that term to include: (i) “actions with effects that may be major and which are potentially subject to Federal control and responsibility” and (ii) “new or revised agency rules, regulations, plans, policies, or procedures.” 47 C.F.R. §1508.18. Here, the RF/EMF regulations were adopted, in part, pursuant to Section §704 of the TCA. By issuing the *Order*, the FCC exercised its exclusive authority granted by Congress to set and enforce RF/EMF exposure limits. The *Order* will also have major effects. It determines the radiation levels that U.S. consumers and citizens will be continuously exposed to in and

outside their homes, and whether they have been placed at risk of non-thermal injuries. Finally, the *Order* essentially establishes new RF/EMF limitations as they are based on an entirely new administrative record which did not exist in 1996.

Further, the *Order* may “significantly affect[] the quality of the human environment.” 42 U.S.C. §4332. Whether this factor is met depends on “both context and intensity.” 40 C.F.R. §1508.27.<sup>220</sup> Among the relevant considerations, “intensity” refers to the “severity of impact,” including the “degree to which the proposed action affects public health or safety.” *Id.*; see *City of Dania Beach v. FAA*, 485 F.3d 1181, 1189 (D.C. Cir. 2007). An agency must also analyze whether possible effects are “highly uncertain,” “unique,” or “unknown,” and if they are “likely to be highly controversial.” 40 C.F.R. §1508.27; see *Found. on Economic Trends v. Weinberger*, 610 F. Supp. 829, 837 (D.D.C. 1985). Each of these elements is satisfied here.

The RF/EMF obviously affect public health and safety. Under the TCA, one of the driving factors behind the 1996 limitations was protecting consumers and citizens from harmful RF/EMF.<sup>221</sup>

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<sup>220</sup> “Context” requires the action to be analyzed in several contexts, such as “society as a whole (human, national), the affected region, the affected interests, and the locality.” *Id.* All of these are implicated by the RF/EMF regulations.

<sup>221</sup> *Supra.*

In addition, the FCC's assertions that the science underlying non-thermal impacts of RF/EMF is of "variable quality" or fails to make a "persuasive case" only further supports the need for a NEPA analysis.<sup>222</sup> No scientific certainty or consensus is required to constitute a significant effect. *Am. Bird Conservancy*, 516 F.3d at 1033.

The decision whether to maintain the 1996 regulations is also highly controversial. "The term 'controversial' refers to cases where a substantial dispute exists as to the size, nature, or effect of the major federal action rather than to the existence of opposition to a use." *Town of Creek Cave v. FAA*, 325 F.3d 320, 331 (D.C. Cir. 2003). Here, commenters referenced several thousand peer-reviewed studies indicating that RF/EMF can have devastating non-thermal effects which directly placed into question the purported evidence underpinning the FCC's decision not to strengthen RF/EMF protections.<sup>223</sup>

### **C. FCC Failed To Apply NEPA**

Accordingly, this Court, in applying a *de novo* standard of review, must find that the FCC failed to satisfy its NEPA obligations and vacate the *Order* so that the FCC can, at a minimum, conduct an EA. The FCC did not issue an EA or EIS. The

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<sup>222</sup> 34 FCC Rcd 11687, at \*11694.

<sup>223</sup> *Supra*.

*Order* also fails to explain why the *Inquiry* did not trigger the FCC's NEPA obligations and never even mentions NEPA.

Moreover, even if the *Order* is viewed as having considered health and environmental impacts, the FCC's decision to maintain the 1996 exposure limits still fails under the APA's arbitrary and capricious standard of review. 5 U.S.C. §706. When this Court reviews agency compliance with NEPA, it must determine, at a minimum, whether the agency took a "hard look" at the environmental consequences. *Robertson*, 490 U.S. at 350 (citation omitted). "An agency has taken a hard look...if the statement contains sufficient discussion of the relevant issues *and opposing viewpoints*, and the agency's decision is fully informed and well-considered." *Myersville Citizens for a Rural Cmty., Inc. v. FERC*, 783 F.3d 1301, 1324-25 (D.C. Cir. 2015) (emphasis added).

As such, mere conclusory statements regarding potential effects are insufficient. *Heckler*, 756 F.2d at 154.

Thus, for the same reasons the *Order* fails under the APA, it also falls short of complying with NEPA.



## V. Additional Legal Considerations

### A. Personal Objection to Involuntary Exposure

*Inquiry* ¶232<sup>224</sup> recognized that “exposures due to fixed RF sources are both involuntary and long-term.” At least 29 individuals advised the FCC they objected to involuntary exposure.<sup>225</sup> Others contended that involuntary exposure was a trespass, nuisance, assault, battery, or torture.<sup>226</sup> All asserted their statutory, constitutional and/or common law individual rights. The *Order* wrongly failed to acknowledge these comments or even address this topic.

### B. ADA/FHA

Petitioners strongly contest the notion current regulations adequately protect the general population. But assuming, *arguendo*, they are generally protective that cannot end the inquiry. Radiation Sickness is real, many have it and more will soon. The CDC and Justice Department agree it is, respectively, a source of injury and disability.<sup>227</sup> We know its cause. The only way to treat the disease is through exposure-avoidance. The issue is how that can be accomplished in today’s

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<sup>224</sup> 28 FCC Rcd at 3581

<sup>225</sup> JA\_.

<sup>226</sup> JA\_.

<sup>227</sup> See Part I.D. *supra*. [Human Evidence – Radiation Sickness]

wireless-infested world. Those with Radiation Sickness require consideration and accommodation on a case-by-case basis. FCC did nothing about them.

At large number of comments asked the FCC to clarify its regulations do not pre-empt ADA or FHA rights and remedies or prevent accommodations to those disabled by Radiation Sickness.<sup>228</sup> For example, Chris Nubbe contended that “[t]he Telecommunications Act should not be interpreted to allow them no remedy under City, State or Federal laws or constitutions.”<sup>229</sup> The Cities of Boston and Philadelphia specifically flagged this issue and sought clarification.<sup>230</sup>

Sufferers must surmount tremendous difficulties, mistreatment and discrimination. They face a dismal future: progressive worsening from unavoidable, ever-increasing and more intense exposure from multiple sources using a variety of pulsation/modulation schemes.<sup>231</sup> Some have died or committed suicide because constant RF/EMF was torturing them beyond their ability to survive or cope.<sup>232</sup>

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<sup>228</sup> [JA\\_](#).

<sup>229</sup> [JA\\_](#).

<sup>230</sup> [JA\\_@7-8](#).

<sup>231</sup> [JA\\_](#).

<sup>232</sup> [JA\\_](#).

The regulations provide “color of law” to wireless provider activities that inflict injuries on innocent people and children who just want to enjoy life, peace and security. They cannot go into public spaces, access medical care, obtain public services, use public transportation, drive on the road, fly, stay at a hotel or have a job. Their children are ridiculed, forced out of schools and into social isolation. Finding a home has become almost impossible.<sup>233</sup>

The question is whether the Commission’s regulations concerning the environmental effects of radio frequency preempt ADA/FHA accommodation obligations for those afflicted by Radiation Sickness. The Commission erred by not addressing these material comments.

### **C. Balancing and Public Interest**

The Commission opened the *Inquiry* because GAO recommended it assess the costs and benefits associated with keeping the current limits.” *Inquiry* ¶¶205-210.<sup>234</sup>

Six years later the *Order* summarily rejected requests for reduced limits because the scientists and medical experts did not venture outside their expertise and provide a full engineering analysis of how biologically-based limits “might affect the viability or performance of wireless services and devices.” *Order* ¶12. The FCC

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<sup>233</sup> [JA](#).

<sup>234</sup> 28 FCC Rcd at 3570-3571.

did not address the costs and benefits *associated with keeping the current limits* even though that was a primary purpose of the *Inquiry*. The FCC made no findings regarding the human or environmental impact under current limits, despite all the evidence of immense societal and personal costs.

#### **D. Burden of Proof**

*Inquiry* ¶210<sup>235</sup> promised a “science-based examination” and assured the FCC would be “responsive to the public’s interest...in RF exposure guidelines...based on the most current information, analysis, and expertise available.” Many commenters were not convinced. These concerns proved valid: the Commission discounted the scientific and medical evidence on specious grounds, without meaningful analysis, examination or explanation. The Commission elevated the *industry’s* health over *people’s* lives. This was arbitrary, irrational and inconsistent with the balancing required by law.<sup>236</sup>

*Inquiry* ¶¶6, 236-243<sup>237</sup> inquired whether the FCC should embrace “prudent avoidance” under the “precautionary principle.” Paragraph 237 asked if the Commission should adjust its regulations to protect against “non-thermal” effects.

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<sup>235</sup> 28 FCC Rcd at 3571.

<sup>236</sup> See Part I.B.I.

<sup>237</sup> 28 FCC Rcd at 3501, 3582-3585.

These were, in part, “burden” questions: do those advocating more protective limits have to prove the existing limits are inadequate, or does the FCC or industry have the burden to prove current thresholds are adequate?

This subject generated enormous discussion: over 130 commenters strongly supported use of the precautionary principle and/or prudent avoidance.<sup>238</sup> The scientific/medical submissions uniformly urged the precautionary principle and a finding of current inadequacy due to lack of any protection against non-thermal effects.<sup>239</sup> Many drew comparisons to prior instances where regulatory action came far too late, as was the case with asbestos, leaded petrol and tobacco.<sup>240</sup>

This issue was clearly important and material to everyone. The *Order*, however, failed to mention, much less resolve its *Inquiry* ¶¶6, 236-243 questions or all the comments addressing them. Nor did the Commission elucidate any balancing factors between “safety” and “efficient service.” That is because there were none. Service viability and reliability concerns under hypothetical lower limits outweighed any consideration of current risk. *Order* ¶12.<sup>241</sup>

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<sup>238</sup> JA\_.

<sup>239</sup> JA\_.

<sup>240</sup> [JA\\_](#).

<sup>241</sup> 34 FCC Rcd at 11694.

There is no meaningful explanation why the scientific and medical evidence regarding harms and risks from current limits was not valid. The public still has no idea why the FCC decided thousands of studies and hundreds of individual assertions of harm were unworthy of serious discussion. There is no hint of the risk level that must be proven before the FCC will even consider lower limits, or what evidentiary standard applies at the agency level.

*Order* ¶¶2, 10-16<sup>242</sup> lack any independent analysis, but do reveal the FCC imposed a conjunctive burden on those advocating change: they had to prove undue risk under current regulations and propose alternative limits that would still allow viable wireless service. Submission without replacement “viable” limits were rejected out of hand, without any evaluation of the science showing undue risk under current regulations. The *Inquiry* was about whether current limits are appropriate. The rulemaking to follow would establish “viable” replacements.

This sleight-of-hand allowed the FCC to avoid independent and searching evaluation and disposition of the scientific/medical evidence or the testimony by those who claimed current limits are inadequate. *Inquiry* ¶6<sup>243</sup> acknowledged the Commission had the ultimate burden and responsibility for “safe” regulations and

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<sup>242</sup> 34 FCC Rcd at 11688, 11697.

<sup>243</sup> 28 FCC Rcd at 3501.

limits but it did not even try. The *Order* does not explain how or why its current thresholds are indeed safe based on the evidence.

The FCC assigned impossible proof and persuasion burdens on those advocating change, even though the FCC is the one that has the burden at all times. Advocates did not have to prove the regulations are unsafe; the FCC has to conclude based on substantial scientific and medical evidence that its existing regulations *are safe*. More important, the Commission had the legal and moral duty to acknowledge the unchallenged human evidence of present actual sickness and provide some answers and respite to those who are clearly already sick.

The Commission is the “agency engaged in rulemaking” and is responsible for “solicit[ing] expert opinions and marshal[ing] the scientific data to ensure its both protect the public and provide for an efficient wireless network.” *Farina v. Nokia, Inc.*, 625 F.3d at 126. Public health and safety is a statutorily mandated factor, 47 U.S.C. §§151, 154(n), 254(c)(1)(A), 324, 332(a)(1), 336(h)(4)(B), 925(b)(2)(C), 1455(a)(3), so they are by definition an important issue. The FCC’s decisions must consider its duty to protect the public. *Mozilla Corp. v. FCC*, 940 F.3d 1, 60 (D.C. Cir. 2019). If and to the extent FCC-adopted emissions regulations override any other legal requirements, whether state, federal or even constitutional, the Commission had a much higher analytical and transparency

burden because it alone is responsible for getting it right. “Making that difficult decision was the agency’s job, but the agency failed to do it.” *Dep’t of Homeland Sec. v. Regents of the Univ. of Cal.*, Nos. 18-587, 18-588, 18-589, 2020 U.S. LEXIS 3254 \*43 (June 18, 2020).

The *Inquiry* was entirely about current levels. When it does open a rulemaking for new limits the FCC will have to determine a standard that adequately protects health while still allowing effective service. But the Commission refused to even consider whether some reduction could occur, so there could be a better balance between *both* ends (health and effective service).

The FCC did not articulate a satisfactory explanation for the action. There is no rational connection between the facts found and the choice made. It failed to consider important aspect[s] of the problem. *State Farm*, 463 U. S. at 43. The *Order* also fails the test for reasoned decision-making. It did not adequately respond to material issues raised by the *Inquiry* and extensively addressed by the comments. The reader has no idea what “proof” will suffice and what it will take for individuals claiming harm to obtain relief. The FCC is obviously committed to widespread non-thermal irradiation that exposes people as much as possible, without any regard to risk or objection, but it must follow the law to achieve that goal.



**E. Order Ignored Express Invocations of Constitutional, Statutory and Common Law Based Individual Rights**

**1. Property Rights**

FCC-authorized emissions intrude on private property against the owner's will. "The hallmark of a protected property interest is the right to exclude others. That is 'one of the most essential sticks in the bundle of rights that are commonly characterized as property.'" *Coll. Sav. Bank v. Fla. Prepaid Postsecondary Educ. Expense Bd.*, 527 U.S. 666, 673, 119 S. Ct. 2219, 2224 (1999).

Government-authorized interference with enjoyment and use of the land is a compensable taking. *United States v. Causby*, 328 U.S. 256, 66 S. Ct. 1062 (1946) (non-physical intrusion of airport noise).<sup>244</sup> *Kyllo v. United States*, 533 U.S. 27, 32 (2001) involved government agents that directed RF energy at the defendant's home. The energy waves intruded on the defendant's property and violated the owner's property-based right to exclude others. 533 U.S. at 34-40.

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<sup>244</sup> RF/EMF property intrusions are similar to loud noises. They, among other things, cause a reduction in melatonin production, which reduces sleep quality. See Part I.C.3. (neurological). Preventing someone from getting a good night's rest is classic nuisance.

## 2. Bodily Autonomy and Informed Consent

Non-consensual RF emissions violate individuals' right to bodily autonomy.

The FCC's current regulations authorize interference with human biological processes

“Bodily autonomy” and “autonomy privacy” derive from the “negative” individual liberty rights embodied in the Bill of Rights. *United States v. Rumely*, 345 U.S. 41 (1953); *NAACP v. Patterson*, 357 U.S. 449 (1958); *Griswold v. Connecticut*, 381 U.S. 479 (1965); *Stanley v. Georgia*, 394 U.S. 557 (1969); *Eisenstadt v. Baird*, 405 U.S. 438 (1972); *Roe v. Wade*, 410 U.S. 113 (1973). *Cruzan v. Dir. Mo. Dep't of Health*, 497 U.S. 261, 269-273 (1990) expressly recognized and reaffirmed the right to self-determination and bodily integrity. FCC-authorized emissions violate non-consenting citizens' “right to be let alone.”

In common law and most state statutes, non-consensual irradiation is a “battery.” “A battery is an intentional act that causes harmful or offensive bodily contact.” *Doe v. District of Columbia*, 796 F.3d 96, 107 (D.C. Cir. 2015). RF/EMF radiation “contacts” the body and penetrates the skin. People who suffer contact and penetration after expressing non-consent will be both harmed and offended. The wireless provider is intentionally unleashing radiation and knows there will be contact.

*Jacobson v. Massachusetts*, 197 U.S. 11, 25 S. Ct. 358 (1905) held a state may generally mandate vaccines. The Court closed its opinion, however, with an important caveat: if the individual can show a *special sensitivity due to a medical condition* there **must** be some process for case-by-case exceptions. This is necessary to avoid the ultimate liberty deprivations—denial of life itself or cruelty. 197 U.S. at 38-39.

Government-sanctioned and virtually mandatory exposure to RF/EMF can rise to the level of cruelty and inhumane treatment described in *Jacobson*. The FCC’s disregard for this situation has caused a sub-population to lose hope of ever being able to meaningfully participate in society.<sup>245</sup> Reasoned decision-making requires that the FCC at least acknowledge the situation and provide some rational justification for the incredible costs it is imposing on a significant segment of the population.

*Jacobson* also flatly requires that the Commission allow for some remedy for those who suffer from exposure. This is necessary to “‘protect the health and life’ of susceptible individuals.” *In re Abbott*, 954 F.3d 772, 789 (5th Cir. 2020) (citing *Jacobson*, 197 U.S. at 37). Many participants requested that the FCC

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<sup>245</sup> JA\_.

provide a remedy. It could have, at least, noted that those with individual health conditions related to or worsened by exposure can seek and obtain accommodations on a case-by-case basis or through an as-applied challenge. *See Gonzales v. Carhart*, 550 U.S. 124, 167 (2007). The Commission wrongly avoided the entire issue.

### 3. Preemption/Implied Repeal

The Communications Act does not expressly repeal ADA/FHA rights and remedies, which are specific and operate case-by-case. Unless there is “clear intention otherwise, a specific statute will not be controlled or nullified by a general one, regardless of the priority of enactment.” *Telecomms. Research & Action Ctr. v. FCC*, 836 F.2d 1349, 1361, n.25 (D.C. Cir. 1988). Similarly, there was no repeal by implication. There is no “clear and manifest evidence of congressional intent to displace the ADA or FHA through the Communications Act. The earlier and later statutes can be reconciled and coexist. *In re Grand Jury Subpoena*, 912 F.3d 623, 628 (D.C. Cir. 2019). Case-by-case accommodation does not disrupt the FCC’s authority to promulgate general standards. *G v. Fay Sch., Inc.*, 282 F. Supp. 3d 381, 395 (D. Mass. 2017).

An agency cannot repeal a statute. *Merritt v. Cameron*, 137 U.S. 542, 551-52 (1890). There is no evidence Congress intended to delegate its legislative

repealer power to the Commission, especially since the ADA and FHA are administered by other federal agencies and enforced through the courts. *Hunter v. FERC*, 711 F.3d 155, 160 (D.C. Cir. 2013). In any event, neither Congress nor the FCC can suspend or override constitutional rights.

The FCC had a duty to clarify, especially since courts are rendering mixed decisions. Two federal district courts held local authorities cannot consider individual citizens' health issues as part of the zoning process. *Santa Fe All. for Health & Safety v. City of Santa Fe*, 2020 U.S. Dist. LEXIS 80196, at \*35 (D.N.M. May 6, 2020); *Firstenberg v. City of Santa Fe, N.M.*, 782 F.Supp.2d 1262, 1271-1274 (D.N.M. 2011), vacated jurisdictional grounds, 696 F.3d 1018 (10th Cir. 2012).<sup>246</sup> *Santa Fe, supra* at \*29-31, \*33-34 held the FCC was the exclusive venue for health and safety issues. On the other hand, *G v. Fay, supra.*, 282 F. Supp. at 395 ruled that requests to schools for ADA accommodation are not preempted.

Commenters “plead[], and offer[ed] factual material in support of, a non-frivolous [legal] contention” that the FCC ignored or dismissed with no individual analysis. *WAIT I*, 418 F.2d at 1156. The *Order* pertained to the population in

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<sup>246</sup> There is a circuit split on whether state tort damages actions seeking damages for cancer caused by wireless devices are preempted. *Pinney v. Nokia, Inc.*, 402 F.3d 430 (4th Cir. 2005); *Farina v. Nokia, Inc.*, 625 F.3d 97 (3d Cir. 2010); *Robbins v. New Cingular Wireless PCS, LLC*, 854 F.3d 315 (6th Cir. 2017).

general; there was no recognition that discrete individuals might have one or more conditions that made them uniquely or especially harmed by RF/EMF. The FCC did not consider, or state, what could or should be done when an individual demonstrates injury and/or a violation of the individual's constitutional, common law or statutory rights on an "as-applied" basis.

*Order* notes 5, 306 and 308 indirectly imply FCC RF regulations overrule, pre-empt or impliedly repeal all individual rights and remedies granted by other federal statutes like ADA/FHA and even constitutionally-protected liberty/property interests, in the context of individual, as-applied challenges outside the context of local zoning. Yet nothing in the Communications Act or §332(c)(7) expressly repeals the ADA or FHA. Neither ADA nor FHA explicitly exempt covered entities from accommodation requirements. *Little Sisters of the Poor et al v. Pennsylvania, et al*, No. 19-431, slip op. at 20-22 (May 6, 2020); *see also* Alito and Gorsuch concurrence.

Section 332(c)(7) addresses only state and local government action and has nothing to do with other federal statutes. The Act's savings clauses clearly disfavor implied preemption, even as to state law. *See* 47 U.S.C. §§152 (notes), 253(b), 414, 601(c)(1). They say nothing of as-applied challenges Act. *See NRDC v. NRC*, 666 F.2d 595, 602 (D.C.Cir.1981); *Geller v. FCC*, 610 F.2d 973, 978 (D.C.Cir.1979)

(*per curiam*); *Network Project v. FCC*, 511 F.2d 786, 789 n.1 (D.C.Cir. 1975); *Functional Music, Inc. v. FCC*, 274 F.2d 543, 546 (D.C.Cir.1958), *cert. den.*, 361 U.S. 813 (1959). If there is conflict between the Act and the Constitution then the former falls, not the latter.

These individual rights/liberties issues were squarely before the Commission. Aside from its opaque comment in n.5 the *Order* failed to deal with them, even though all the FCC's cited cases base their holding on the proposition the Commission has exclusive original jurisdiction to resolve them. It failed to do so, leaving the Petitioners' rights and remedies in limbo. The Commission was not just "tolerably terse" in this respect; it was "intolerably mute." *WAIT Radio v. FCC*. 418 F.2d 1153, 1157 (D.C. Cir. 1969).

The Commission could have solved the "individual rights" issues in several ways. The easiest would be to include them in a rulemaking. It could have immediately closed the issue by stating the individual case-by-case claims are not preempted but are also outside its jurisdiction and should be pursued in a proper forum. The courts and some other regulators dealing with RF emissions issues arising from smart meters have so ruled. *White v. PPL Electric Utilities Corp.*, 2020 PA. PUC LEXIS 77 \*12 (May 21, 2020); *In re Whitaker*, 2020 N.C. App.

LEXIS 364 (Ct. App. May 5, 2020); *Metallo v. Orlando Utils. Comm'n*, 2015 U.S. Dist. LEXIS 116269 (M.D. Fla. Sep. 1, 2015).

When “human lives are at stake” an agency “must press forward with energy and perseverance in adopting regulatory protections.” *Pub. Citizen Health Research Grp. v. Brock*, 823 F.2d 626, 629 (D.C. Cir. 1987); *Pub. Citizen Health Research Grp. v. Auchter*, 702 F.2d 1150, 1157-1158 (D.C. Cir. 1983). The failure to address individual rights and accommodations issues by reconciling the Commission’s rules with other statutes like ADA/FHA and the Constitution was arbitrary, capricious, an abuse of discretion and a failure to engage in reasoned decision-making. *Little Sisters of the Poor et al v. Pennsylvania, et al*, No. 19-431, slip op. at 20-22 (May 6, 2020); *see also* Kagan concurrence in judgment slip op. at 7 (“Even in an area of broad statutory authority—maybe especially there—agencies must rationally account for their judgments.”)

## CONCLUSION

The Court must vacate the order closing the *Inquiry* and remand for proper disposition.



Respectfully submitted,

/s/ Edward B. Myers

Edward B. Myers  
Law Office of Edward B. Myers  
14613 Dehaven Court  
North Potomac, MD 20878  
Phone: 717-752-2032  
[edwardmyers@yahoo.com](mailto:edwardmyers@yahoo.com)

*Counsel for Petitioners 20-1025*

/s/ W. Scott McCollough

W. Scott McCollough  
McCollough Law Firm, P.C.  
2290 Gatlin Creek Rd.  
Dripping Springs, TX 78620  
Phone: 512-888-1112  
[wsmc@dotlaw.biz](mailto:wsmc@dotlaw.biz)

*Counsel for Petitioners 20-1138*

**CERTIFICATE OF COMPLIANCE**

I hereby certify that this brief complies with requirements of Federal Rule of Appellate Procedure 32(g)(1) and this Court's *Per Curiam* Order dated July 2, 2020 because it contains 17,205 words according to the count of Microsoft Word.

/s/ Edward B. Myers  
Edward B. Myers

**CERTIFICATE OF SERVICE**

I hereby certify that, on July 29, 2020, I filed the foregoing in the United States Court of Appeals for the District of Columbia Circuit via the CM/ECF system. I further certify that all parties are registered CM/ECF users, and that service will be accomplished via electronic filing.

/s/ Edward B. Myers

Edward B. Myers