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**SUBMITTED TO:**

**Docket ID No. EPA-HQ-OEJECR-2024-0146**

[www.regulations.gov](http://www.regulations.gov)

May 6, 2024

National Environmental Justice Advisory Council  
Environmental Protection Agency  
Washington, DC

Re: NEJAC Public Meeting April 23, 2024

Dear NEJAC Members,

Thank you for the opportunity to speak at the public meeting on April 23, 2024.

Here's a summary of what I presented and some additional information. Also, attached is a submission made to NEJAC on July 6, 2022 giving greater detail (incorporated herein by this reference).

I have been a technology attorney for over 20 years. I am also Executive Director and General Counsel for the NYC Alliance for Safe Technology, and am Co-Founder, Chair and General Counsel of the National Call for Safe Technology being a coalition of over 100 community groups and individuals.

We advocate for those injured or disabled by electrosmog, otherwise known as electromagnetic radiation – wireless radiation from cell towers, cell phones, tablets, computers, Wi-Fi routers, smart meters (that are supposed to read your electrical and water usage but emit a vast amount of radiation), includes 3G, 4G, 5G and beyond. This is air pollution even if you can't see it, and falls directly within the jurisdiction of the EPA.<sup>1</sup>

The EPA was involved in the research studying the safety of this radiation in the 1990s; after the research concluded that the radiation was dangerous producing biological effects, the EPA was

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<sup>1</sup> 42 USC § 7602(g) "The term 'air pollutant' means any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive (including source material, special nuclear material, and byproduct material) substance or matter which is emitted into or otherwise enters the ambient air..."

defunded.<sup>2</sup> The EPA needs to get back into the game of protecting the public and researching the safety of these new technologies, otherwise we will witness a catastrophic health disaster.

The 1990s research effort was in response to a broadcast on Larry King Live interviewing a man whose wife died of brain cancer which he alleged was caused from the repeated use of her cell phone.<sup>3</sup> X-rays showed that the tumor site was where she held her cell phone.<sup>4</sup> The next day telecom stocks declined. In an effort to staunch public criticism, industry funded the research which was done under the auspices of the EPA and other federal agencies.

The research program was run by a Chief Scientist under Wireless Technology Research, LLC (WTR), an independent, non-profit entity, with \$28.5 million in funding from the wireless industry (sent into a blind trust) and with scientific oversight by both an independent Peer Review Board at the Harvard School of Public Health and a U.S. Government Interagency Working Group, chaired by the FDA, and including EPA, OSHA, NIOSH, CDC, FCC, and NIH.<sup>5</sup> This remains the largest and most comprehensive, multi-disciplinary program looking into wireless technology health effects and risk management anywhere in the world to date.<sup>6</sup> The results of this peer reviewed research were that wireless radiation is biologically active producing biological effects and potentially hazardous to human health.<sup>7</sup>

The history in a nutshell. Prior to the Telecommunications Act of 1996, cabinet-level regulatory agencies were responsible for the safety of those exposed to radio frequency radiation: FDA was responsible for devices including cell phones; EPA was responsible for emissions from wireless infrastructure including cell towers; OSHA was responsible for workplace exposures. In the Telecommunications Act of 1996, as a means of simplifying deployment of new digital wireless phones and facilitating the first-ever spectrum auctions to the private sector, the FDA, EPA and OSHA were relegated to advisory roles and the full authority for public safety was vested in the non-regulatory agency, the politically structured FCC.<sup>8</sup> The FCC had neither the competency nor the resources to carry out the regulatory responsibilities and as such, wireless technology remains to this date in a regulatory void where consumers, proximal residents, and the environment are

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<sup>2</sup> Overpowered, What Science Tells Us About the Dangers of Cell Phones and Other WiFi-Age Devices, Martin Blank, PhD, 2014 at 110-112; “Dr. Martin Blank is an expert on the health-related effects of electromagnetic fields and has been studying the subject for over 30 years. He earned his first PhD from Columbia University in physical chemistry and his second from the University of Cambridge in colloid science. From 1968 to 2011, he taught as an Associate Professor at Columbia University. ... Dr. Blank has served as an invited expert regarding EMF safety for Canadian Parliament, for the House Committee on Natural Resources and Energy in Vermont, and for Brazil’s Supreme Federal Court.” (Quoted from inside book jacket)

<sup>3</sup> Cell Phones, Invisible Hazards in the Wireless Age, Dr. George Carlo and Martin Schram, 2001 at 7; Overpowered at 112-13.

<sup>4</sup> Overpowered at 113.

<sup>5</sup> Wireless Phones and Health II: State of the Science 2002 Edition, edited by George L. Carlo; Wireless Phones and Health: Scientific Progress, edited by George L. Carlo.

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

<sup>8</sup> Ibid; see also, <https://ehtrust.org/the-regulation-of-wireless-radiation-in-the-united-states-exemplar-of-a-regulatory-gap/>.

largely un-protected.<sup>9</sup> Therefore, the EPA must reclaim its jurisdiction to continue reviewing potential health effects of wireless radiation.

It is estimated that at least 30% of population is afflicted from this radiation poisoning and about 1% is severely disabled that they can no longer work or live in areas that have this radiation.<sup>10</sup> The disabled didn't see it coming. Exposure gives rise to a [constellation of symptoms](#), some of which include: headaches, nausea, vomiting, tinnitus, hearing loss, heart arrhythmia, tachycardia, neurological disorders; oxidative stress; immune dysfunction; ADHD, and damage to the blood-brain barrier.

The WHO'S International Agency for Research on Cancer (IARC) [classified wireless radiation](#) (2G and 3G) as a possible human carcinogen in 2011, similar to lead, diesel fuel and gasoline engine exhaust. A scientist in that working group, along with others, are now calling it a [human carcinogen](#). [Case studies](#) recently show consistently that exposure to 5G is linked to injury.

A study in 2000 commissioned by one of the major telecom carriers [found](#) links to cancer, leukemia, neurological disorders and cognitive impairment.

A telecom company in Switzerland [filed for a patent](#) to reduce wireless radiation stating the reason being the high risk of DNA damage and cancer from wireless radiation.

In terms of [climate change](#), 5G is an energy hog, a [battery vampire](#) (industry article term), expected to [increase consumption 61x](#) between 2020 and 2030. Ironically, it is not being considered in climate change.

Former FCC Chair [Tom Wheeler](#) (who came out of the wireless industry) testified that fiber is future proof with **wireless only as a last resort**. Wireless is inferior in every way compared to wired, e.g., 5G will never be as fast, reliable, secure or safe as fiber, short life span of wireless of up to 5 yrs, constant maintenance. Wired? Fiber lasts at least 25-50 yrs, little maintenance, capable of quantum broadband speeds, as well as superior cybersecurity (see Chattanooga, TN – ["Gig City Goes Quantum"](#)). The free market economy has spoken, and [2/3 prefer fiber to the premises](#). It has been an environmental injustice to foist wireless infrastructure, especially on low income communities who don't want it. It has been an environmental justice issue to get fiber to the premises, e.g., [Los Angeles](#), where a low-income community's digital divide didn't get solved until they got fiber.

In 1996 the FCC set its emission limits. The FCC has refused to update those limits, but the D.C. Circuit Court of Appeals [ruled against the FCC in 2021](#) and remanded its limits for failure to review 11,000 pages of peer-reviewed scientific studies submitted into the FCC docket showing harm below the FCC limits. Those limits **don't protect the public**. They serve as a **safe harbor for industry to shield them** from liability for personal injury, whether severe or fatal.

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<sup>9</sup> Ibid.

<sup>10</sup> The Prevalence of People with Restricted Access to Work in Manmade Electromagnetic Environments, <https://mdsafetech.files.wordpress.com/2019/10/2018-prevalence-of-electromagnetic-sensitivity.pdf>.

There has been no pre-market testing of 5G for public health or safety, as confirmed by [U.S. Senator Blumenthal](#) (CT) during a Feb. 2019 hearing of wireless telecom executives when he said “We’re kind of flying blind here as far as health and safety is concerned.” There have been [letters](#) from other members of Congress to the FCC regarding inquiries on safety with unsatisfactory responses from the FCC. Ultimately, the DC Circuit Court of Appeals disagreed with the FCC as cited in its 2021 ruling above.

Insurance companies have identified 5G as [high risk](#) because of the high potential of claims of personal injury.

[Over 70 federal telecom bills](#) have been introduced in Congress throwing cooperative federalism out the window to create barriers and to silence the current massive public opposition across the country against this telecommunications technology that is harming them, involuntarily exposing and injuring families and their children without their consent. For example, 25% of NYC is [opposed](#) to the 5G towers, and those bills, if passed, would override that opposition.

We need the industry to compete on safety. All of these legislative give-aways to the industry is stymying innovation on safety.

Meanwhile, there is [no one regulating safety](#) of this radiation – not the EPA, FDA, FCC or the CDC [since the mid 1990s](#). The National Toxicology Program [recently announced](#) that it will no longer study any public safety issue related to wireless radiation. We indeed are flying blind, putting technology ahead of science that would otherwise protect the public.

This regulatory void is particularly poignant when considering that the FCC only [recently disclosed](#) in response to FOIA requests, that tests it conducted in 2019 on cellphones manufactured by four companies [exceeded](#) the agency’s radio frequency exposure limits. Those facts were not disclosed to the public or to the D.C. Circuit Court of Appeals that was ruling on the FCC emission limits in 2021. Prior to this disclosure, there has been [wide public criticism](#) of the FCC’s limits not protecting public safety.

Therefore, we need the EPA, more than ever, to study the biological effects of electro-magnetic radiation, an air pollutant, and to bring the FCC limits to correct safety levels.

Respectfully submitted,

Odette J. Wilkens

On behalf of:  
Wired Broadband, Inc.  
NYC Alliance for Safe Technology  
The National Call for Safe Technology  
[www.thenationalcall.org](http://www.thenationalcall.org)

Attachment

**Before the  
Environmental Protection Agency  
National Environmental Justice Advisory Council  
Washington, D.C.**

In the Matter of:	)	
Request for Comments on EPA's Investments	)	Docket ID No: EPA-HQ-OA-2022-0053
to Address Environmental Justice Through	)	
the Justice40 Initiative	)	

**COMMENTS OF ADVOCATES FOR THE EMS DISABLED  
JULY 6, 2022**

Wired Broadband, Inc. (Forest Hills, NY); Children's Health Defense ([www.childrenshealthdefense.org](http://www.childrenshealthdefense.org)); Kent Chamberlin, PhD, Former member of the NH Commission to Study The Environmental and Health Effects of Evolving 5G Technology; Cecelia Doucette, Director, Massachusetts for Safe Technology; Scott Tips, President & General Counsel, National Health Federation; Liz Barris, The Peoples Initiative Foundation (Topanga, CA); Lauren Bond (New York, NY); Patricia Burke, HaltMA smartmeters.org (Millis, MA); Nick C., EMS Disabled (New York, NY); Children's Health Defense Florida (Riverview, FL); Coloradans for Safe Technology; Consumers for Safe Cell Phones (Bellingham, WA); Stephen R Dahl, Director, Rhode Islanders for Safe Technology (Kingston, RI); Linda Dance, Engineer (Gainesville, Florida); Donna DeSanto Ott, PT DPT MS, Pennsylvanians for Safe Technology (Reading, PA); Virginia Farver (Fort Collins, CO); Julie Flood, Patrons of the Planet (Warren, CT); Susan Foster, Medical Writer (CO); Jeri Friedman (Port Saint Lucie, FL); Floris R. Freshman (Scottsdale, AZ); Howard J. Goodman, Esq. (Forest Hills, NY); Liberty Goodwin, Director, Toxics Information Project (TIP); Mark Graham, Keep Cell Towers Away (Elk Grove, CA); Josh Hart, Director, Stop Smart Meters!, StopSmartMeters.org (Portola, CA); Health Freedom Florida (Tampa, FL); Christina Hildebrand, President/Founder, A Voice for Choice Advocacy (Mountain View, CA); Deb Hodgdon, New Hampshire for Safe Technology (Stratham, NH); Maureen van Hoek (Riverview, FL); Charlene Hopey (Topanga, CA); Shirley Denton Jackson (North Palm Beach, FL); Susan Jennings, Founder, Southwest Pennsylvania for Safe Technology (Mount Pleasant, PA); Pittsfield Cell Tower Injured and Concerned Citizens (Pittsfield, MA); Julie Levine, 5G Free California (Topanga, CA); Diana Losacco, (Lakewood, CO); Kelly Marcotulli, Oregon for Safer Technology (Ashland, OR); Ellen Marks, California Brain Tumor Association (Indian Wells, CA); mocoSafeG.org (Montgomery County, MD); Michael Muadin, President of AMRA, Alliance for

Microwave Radiation Accountability, Inc. (East Chatham, NY); Napa Neighborhood Association For Safe Technology (Napa, CA); New Yorkers 4 Wired Tech (New York, NY); Larry Ortega, Community Union, Inc. (Pomona, CA); Relocate the Cell Tower Group (Prescott, AZ); Sheila Resseger, Co-Founder, 5G Free Rhode Island (Cranston, RI); Safe Tech International; Safe Technology Minnesota (St. Paul, MN); Safe Tech for Santa Rosa (Santa Rosa, CA); Virginians for Safe Technology, LLC (Fredericksburg, VA); Pamela Wallace, Safe Tech Forward (Rochester Hills, MI); George Sinopidis (Queens, NY); Anne Wilder (Priest River, ID); Taffy Williams, NY4Whales.org and NY4Wildlife.org (Tuckahoe, NY); Stephanie Thomas, WiRED (Wireless Radiation Education and Defense) (Berkeley, CA); Soula Culver, WiRED (Berkeley CA); Phoebe Ann Sorgen, WiRED (Berkeley, CA); Meaven O'Conner, WiRED (Berkeley, CA); Cynthia Rahav, WiRED (Berkeley, CA); Sandy Nixon, WiRED (Berkeley, CA); Connie Anderson, WiRED (Kensington, CA); Sarah Aminoff (Union City, CA); Shelley Wright, Director, Canadian Educators for Safe Technology (Canada); Valeria Picchi, Alto5gPanamá (Panama City, Republic of Panama); Lic. DéboraH Rivas Berastegui, Stop 5G Uruguay (Montevideo, Uruguay); Rodolfo Touzet, Sociedad Argentina de Radioprotección (Buenos Aires, Argentina) (collectively, hereinafter, "**Advocates for the EMS Disabled**") submit these comments in response to the request for public comments<sup>11</sup> relating to the above-captioned matter.

## Introduction

President Biden's Justice40 Initiative is designed "to deliver at least 40 percent of the overall benefits from Federal investments in climate and clean energy to disadvantaged communities."<sup>12</sup> How disadvantaged communities are defined is important and needs to be flexible and inclusive. An inclusive approach in defining and identifying disabled communities would help shape more reliable metrics in measuring impact and benefits. What is causing climate change needs to be examined from various sectors of the economy, including those generated from the telecommunications sector.

There is a large, diverse and growing DAC of disabled individuals who suffer significant injuries from radio-frequency (RF) radiation exposure from wireless base stations, cell towers, "5G" cells, "smart" utility meters, and other telecommunications infrastructure and devices (collectively, "wireless infrastructure") placed right next to their homes, businesses, schools, libraries, medical facilities and other public locations which are frequented by the public. "5G" means fifth generation cellular networks.

Those suffering injuries from exposure to RF radiation are known as having electromagnetic sensitivity (EMS), radiation poisoning or microwave sickness.<sup>13</sup> Therefore, those with symptoms from these injuries are "EMS sensitive," and those with severe symptoms are "EMS disabled" (hereinafter, collectively, "EMS disabled"). To be clear, having EMS is not about sensitivity, rather, it involves severe physiological injuries directly associated with pulsed RF radiation exposure. The

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<sup>11</sup> New York State Department of Environmental Conservation: New York State to Hold Public Hearings on Draft Disadvantaged Communities Criteria, <https://content.govdelivery.com/accounts/NYSDEC/bulletins/31986d2>.

<sup>12</sup> <https://www.whitehouse.gov/omb/briefing-room/2021/07/20/the-path-to-achieving-justice40/>

<sup>13</sup> Electromagnetic Sensitivity, also known as "microwave sickness," <https://ehtrust.org/science/electromagnetic-sensitivity/>.

injuries to which this DAC has been subjected give rise to “impairment[s] that substantially limit[] one or more major life activities” under the Americans with Disabilities Act.<sup>14</sup>

What is emitted from wireless infrastructure, as well as cell phones, is commonly referred to as radio-frequency radiation (RFR) or RF radiation, electro-magnetic radiation (EMR), electro-magnetic fields (EMF), microwave radiation or wireless radiation. This RF radiation is pulsed; therefore, all references herein to RF radiation should be read as “pulsed RF radiation.”

RF radiation emitted from wireless infrastructure is environmental pollution and is expected to substantially increase the amount of greenhouse gases (GHG), as well as the associated health outcomes associated with pollution. Industry has already acknowledged in published consumer brochures that emissions from wireless frequencies are pollutants. Industry’s published annual reports and SEC reports<sup>15</sup> also warn of the risk of litigation arising from personal injuries from their wireless infrastructure (see the “Settled Science” section).

The installation of wireless infrastructure has been unconstrained, without the balancing of required local government oversight for public health and safety. Public health and safety have been entirely ignored. There has been no apparent benefit-cost analysis of the consequences of GHG emissions produced by wireless infrastructure on public health and safety or the high cost of wireless energy consumption. With the unconstrained proliferation of wireless infrastructure and the stampede of rubber-stamped permits and approvals, including for what is commonly referred to as “5G” antennas or cells, ***the Justice40 Initiative will fail to reach its goals of clean energy or helping disadvantaged communities, such as the EMS disabled.***

Therefore, the Justice40 Initiative is not complete without the inclusion of wireless infrastructure in its calculation of GHG and its associated health outcomes. Any projection of an improvement in ambient air quality may be entirely offset, and possibly worsened, by the GHG emissions from wireless infrastructure.

Stakeholder participation is key, particularly giving a voice to the EMS disabled, other vulnerable communities and the public at large who do not want or need any unnecessary and hazardous wireless infrastructure.

In these comments, we will address the following:

- The EMS disabled are disadvantaged communities;
  - Vulnerable communities as disadvantaged communities: children, women, the elderly and firefighters
- The impact of digital discrimination on the EMS disabled;
- Brief history on the disabled community’s efforts to end discrimination;

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<sup>14</sup> 42 U.S.C. §12102(1)(A).

<sup>15</sup> See, e.g., Verizon’s 2021 U.S. SEC Form 10–K at 17 which states:

<https://www.verizon.com/about/sites/default/files/2020-Annual-Report-on-Form-10-K.PDF>.

- Proposed criteria and metrics to identify the EMS disabled communities and to measure the cumulative impact of RF radiation on these communities;
  - A) Metric: RF radiation emissions, i.e., electrosmog
  - B) Metric: Energy efficiency – fiber optics deployment
  - C) Metric: Health Outcomes
- Any decarbonization of the atmosphere cannot occur without the decarbonization of RF radiation (i.e., electrosmog);
- Adverse effects of RF radiation on flora and fauna: trees, wildlife, bees;
- The settled science on adverse health effects from RF radiation: from industry, FCC, FDA, military, scientists and experts;
- Legal perspective;
- Federal agencies creating barriers for vulnerable communities and the EMS disabled;
- Creation of community resiliency plans: the need to accommodate EMS disabled communities;
- Remediation for greater community resiliency in reducing adverse impacts of RF radiation by adopting Tom Wheeler’s “fiber-first” policy; and
- Fiber optics is good for the workforce and is good for a new energy economy.

Appendices are attached as follows, and are incorporated herein by this reference:

- Appendix A – EMS Disabled – In Their Own Words
- Appendix B – Compilation of Research Studies on Cell Tower Radiation and Health

Those joining in these comments comprise grass-roots organizations, non-profits and individuals providing support to people who have been injured and who are EMS disabled. The lessons learned from other pollutants and toxins, such as asbestos, lead and smoking, indicate that the longer a government refuses to follow established science, the more harmful it is for people’s health and the economy. That RF radiation can be hazardous is settled science and the majority view in peer-reviewed scientific communities.

### **The EMS Disabled are Disadvantaged Communities**

The EMS disabled are disadvantaged communities. As an environmental justice issue, the cumulative impact of environmental pollution caused by RF radiation emissions has led to “negative public health effects” for the EMS disabled who are significantly suffering from RF radiation exposure. They are already injured (see Appendix A for personal stories of injured Americans – in their own words).

Wireless infrastructure is being forced onto residents, without notice, without their consent, without even an opportunity to be heard most of the time, and without any consideration to injuries to their health, no matter how much they are injured and despite incontrovertible evidence of those injuries.



Public health has meant ***“the health of the most sensitive members of the population,”*** a guiding principle adopted by Congress in connection with setting any ambient exposure standards under the Clean Air Act.<sup>16</sup> The EMS disabled are “the most sensitive members of the population” and their numbers are growing.

RF radiation emissions are an environmental hazard for the EMS disabled. RF radiation emissions are also an environmental hazard for vulnerable populations such as children, pregnant women and the elderly, and for the unsuspecting public who have not been informed of the health hazards of RF radiation emissions.

It has been noted in likely the most progressive state law on climate change in the U.S., that:

***“climate change especially heightens the vulnerability of disadvantaged communities, which bear environmental and socioeconomic burdens as well as legacies of racial and ethnic discrimination.”***<sup>17</sup> [Emphasis added.]

Those who have borne such burdens include the EMS disabled, ***who have been the unrelenting subject of discrimination, including digital discrimination and algorithmic bias,*** to belittle and deny the debilitating physical injuries of RF radiation exposure.<sup>18</sup> The EMS disabled have borne the brunt of environmental exposure to RF radiation, and their debilitation from such exposure have led to an inability to participate in normal activities.

And yet, the U. S. Access Board provided a designation of EMS disability going back to 2002.<sup>19</sup> In the Centers for Disease Control’s (CDC) disease classification system, the diagnosis code for radiation sickness is T66, and the code for injury from “Exposure to Other Nonionizing Radiation” is W90.<sup>20</sup> These codes would cover EMS.

EMS involves severe physiological injuries directly associated with pulsed RF radiation exposure manifested as a constellation of symptoms.<sup>21</sup> It is a “spectrum condition” ranging from

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<sup>16</sup> “The Challenge of Nonionizing Radiation: A Proposal for Legislation,” Karen A. Massey, referencing H.R. Rep. No. 294 at 50, 95<sup>th</sup> Cong, 1<sup>st</sup> Sess. 136, reprinted in [1977] US. Code Cong & Ad. News 1077, 1215, <https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=2692&context=dlj>.

<sup>17</sup> NYS Climate Leadership and Climate Protection Act (CLCPA), S6599 / A8429, legislative findings, Section 7, <https://www.nysenate.gov/legislation/bills/2019/S6599>.

<sup>18</sup> 59 year old social worker wins ‘early ill health retirement’ for disabling ‘Electromagnetic Hypersensitivity (EHS)’, Physicians’ Health Initiative for Radiation and Environment Press release June 15, 2022, <https://phiremedical.org/wp-content/uploads/2022/06/Press-Release-EHS-Social-Worker-granted-long-term-ill-health-pension-UK-Named.pdf>.

<sup>19</sup> U.S. Access Board, *Advancing Full Access & Inclusion for All*, “Indoor Environmental Quality Project,” <https://www.access-board.gov/research/building/indoor-environmental-quality/>.

<sup>20</sup> Available at <https://icd10cmttool.cdc.gov/>; also see, Brief of Children’s Health Defense, and Building Biology Institute, et al as Amici Curiae in Support of Appellees/Cross-Appellants “Customers,” at 21, Sept 14, 2021, <https://childrenshealthdefense.org/wp-content/uploads/Brief-and-Addendum-Submitted-9-14.pdf>.

<sup>21</sup> Brief of Children’s Health Defense, and Building Biology Institute, et al as Amici Curiae in Support of Appellees/Cross-Appellants “Customers,” Sept 14, 2021, <https://childrenshealthdefense.org/wp-content/uploads/Brief-and-Addendum-Submitted-9-14.pdf>.

discomfort, to neurological and immunological disorders to debilitation and life threatening impairments.<sup>22</sup>

Common EMS symptoms directly associated with pulsed RF radiation exposure include sleep disturbances, chronic fatigue, chronic pain, poor short-term memory, loss of immediate memory, difficulty concentrating (e.g., “brain fog”), mood disturbances (depression/ anxiety), skin problems (including skin lesions), dizziness, balance disorder, loss of appetite, heart palpitations, tremors, vision problems, tinnitus, nose bleeds, asthma, nausea, reproductive problems and headaches, among others.<sup>23</sup> RF radiation exposure can also lead to blood-brain barrier leakage, damage to the immune system, chronic inflammation; impaired melatonin production and impaired blood flow to the brain.<sup>24</sup> “A 2017 MRI (magnetic resonance imaging) study shows clear evidence of impaired blood flow in 10 electro-sensitive subjects.”<sup>25</sup> The symptoms are from the physiological injuries that individuals have sustained.<sup>26</sup>

Studies show that non-ionizing RF radiation, i.e., below the level of thermal (heating) effects is also known to increase oxidative stress and damage mitochondria.<sup>27</sup> Oxidative stress is caused by an imbalance in cells caused by the accumulation of free radicals which interferes with the ability of cells to detoxify. Mitochondria are the energy producing mechanisms of cells. It has been found that the increase in oxidative stress and damage to mitochondria, along with many of the physiological injuries, are similar whether for ionizing or non-ionizing RF radiation.<sup>28</sup>

To put EMS symptoms in perspective, they are similar to “microwave syndrome,” a term referring to symptoms experienced by U.S. diplomats in Russia, Cuba and Washington, D.C.: “severe piercing headaches, fatigue, nausea, vomiting, dizziness, insomnia, imbalance, nosebleeds, memory loss, hives, ringing in the ears, loss of eyesight and hearing loss.”<sup>29</sup> In 2020, the National

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<sup>22</sup> Brief of Children’s Health Defense, and Building Biology Institute, et al as Amici Curiae in Support of Appellees/Cross-Appellants “Customers,” Sept 14, 2021, <https://childrenshealthdefense.org/wp-content/uploads/Brief-and-Addendum-Submitted-9-14.pdf>.

<sup>23</sup> *Electrohypersensitivity as a Newly Identified and Characterized Neurologic Pathological Disorder: How to Diagnose, Treat and Prevent It*, Belpomme and Irigary, Int’l Journal of Molecular Sciences, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7139347/>; see also, Letter by Dr. Beatrice Golomb, Professor of Medicine, UC San Diego School of Medicine, Aug. 22, 2017, <https://mdsafetech.org/wp-content/uploads/2017/09/golomb-sb649-5g-letter-8-22-20171.pdf>; see also, Pittsfield Board of Health Emergency Order, <https://ehtrust.org/wp-content/uploads/Pittsfield-Health-Board-Cell-Tower-Order-to-Verizon-April-11-2022-FINAL-REDACTED.pdf> (providing a comprehensive summary of scientific findings of health hazards from RF radiation).

<sup>24</sup> Letter by Dr. Beatrice Golomb, Professor of Medicine, UC San Diego School of Medicine, Aug. 22, 2017, <https://mdsafetech.org/wp-content/uploads/2017/09/golomb-sb649-5g-letter-8-22-20171.pdf>.

<sup>25</sup> *Functional brain MRI in patients complaining of electrohypersensitivity after long term exposure to electromagnetic fields*, Heuser and Heuser, Sept. 26, 2017, <https://pubmed.ncbi.nlm.nih.gov/28678737/>.

<sup>26</sup> Letter by Dr. Beatrice Golomb, Professor of Medicine, UC San Diego School of Medicine, Aug. 22, 2017, <https://mdsafetech.org/wp-content/uploads/2017/09/golomb-sb649-5g-letter-8-22-20171.pdf>.

<sup>27</sup> Id.; see also, *New Review Paper: Genetic Effects of Non-Ionizing Electromagnetic Fields*, Henry Lai, Feb. 6, 2021, <https://ehtrust.org/new-review-paper-genetic-effects-of-non-ionizing-electromagnetic-fields-by-henry-lai-phd/>.

<sup>28</sup> Letter by Dr. Beatrice Golomb, Professor of Medicine, UC San Diego School of Medicine, Aug. 22, 2017, <https://mdsafetech.org/wp-content/uploads/2017/09/golomb-sb649-5g-letter-8-22-20171.pdf>.

<sup>29</sup> *Mystery Solved: 2020 NAS Report Links Diplomats Neurologic Symptoms from “Havana Syndrome” to Directed Microwave Radiation Similar to Electromagnetic Illness*, April 6, 2021, <https://mdsafetech.org/2021/04/06/mystery-solved-2020-nas-report-links-diplomats-neurologic-symptoms-to-directed-microwave-radiation-similar-to>

Academy of Sciences, in its report to the U.S. Dept. of State, determined that pulsed RF radiation from bad actors is the most plausible explanation for the diplomats' injuries.<sup>30</sup>

To put EMS symptoms in further perspective, they appear similar to symptoms from injuries from ionizing radiation. According to the Centers for Disease Control (CDC), symptoms from exposure to ionizing radiation "may include nausea, vomiting, headache, and diarrhea."<sup>31</sup> The CDC warns that:

"As with other toxins, '**the dose makes the poison.**' It is the radiation dose, or the amount of radiation, that is the critical issue in determining health consequences."<sup>32</sup>  
[Emphasis added.]

The dose given for ionizing radiation, such as X-rays and CT scans, tends to be time-limited and localized. ***In sharp contrast, the dose given for non-ionizing radiation, i.e., RF radiation, is constant at 24/7, 365 days a year, to the entire body, producing harsh health consequences*** (see Appendix A for personal stories, this section and the "Settled Science" section.) ***RF radiation is characterized by cumulative exposure.*** The CDC warns that people exposed to ionizing radiation will get the noted symptoms if, among other factors, radiation penetrates to internal organs and the entire body is exposed.<sup>33</sup> Similarly with respect to RF radiation, RF radiation from wireless infrastructure can expose the entire body and scientific studies show that it penetrates to internal organs (see this section and the "Settled Science" section).

## Ionizing Radiation and Non-Ionizing (RF) Radiation

There has existed an apparent dichotomy between ionizing and non-ionizing (RF) radiation, that only ionizing radiation can cause biological injury. However, upon closer examination, the distinction becomes meaningless, as biological injury can also occur with non-ionizing radiation.

Kent Chamberlin, Professor and Chair Emeritus of the Department of Computer and Electrical Engineering of the University of New Hampshire explains why the distinction is not material since they both produce biological effects.

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[electromagnetic-illness/](#); also see, *Illness Suffered by Us Diplomats Likely Caused by Pulsed Microwaves- National Academies of Sciences Report Says*, Jan 15, 2020, <https://ehtrust.org/illness-suffered-by-us-diplomats-likely-caused-by-pulsed-microwaves-national-academies-of-sciences-report-says/>.

<sup>30</sup> National Academies of Sciences, Engineering, and Medicine. 2020, *An Assessment of Illness in U.S. Government Employees and Their Families at Overseas Embassies*, Washington, DC: The National Academies Press. <https://doi.org/10.17226/25889>.

<sup>31</sup> Acute Radiation Syndrome (ARS): A Fact Sheet for the Public, Centers for Disease Control, <https://www.cdc.gov/nceh/radiation/emergencies/ars.htm#:~:text=Symptoms%20of%20ARS%20may%20include,and%20may%20come%20and%20go>.

<sup>32</sup> Health Effects of Radiation: Health Effects Depend on the Dose, Centers for Disease Control, <https://www.cdc.gov/nceh/radiation/dose.html#how>.

<sup>33</sup> Acute Radiation Syndrome (ARS): A Fact Sheet for the Public, Centers for Disease Control, <https://www.cdc.gov/nceh/radiation/emergencies/ars.htm#:~:text=Symptoms%20of%20ARS%20may%20include,and%20may%20come%20and%20go>.

*“The electromagnetic spectrum defines the range of frequencies over which electromagnetic waves can propagate, and that range of frequencies includes wireless communication signals as well as visible light, X-rays and gamma rays. In general terms, the electromagnetic spectrum can be partitioned into two categories, ionizing and non-ionizing, and **the delineation between those two categories is determined solely by frequency, where signals at frequencies higher than that of ultraviolet light are known to be ionizing and those below that frequency are non-ionizing.***

*“Ionizing radiation has sufficient energy to dislodge electrons from the atom or molecule and if that occurs, it will create an ion. Common examples of [ionizing radiation](#) sources are X-rays, nuclear radiation, and gamma rays from space. The [impacts of ionizing radiation](#) are well documented, and are known to cause serious illness if the amount of exposure to that radiation is high enough and if it occurs over a sufficiently long period of time. Exposure to non-ionizing also causes biological harm although the mechanism for that harm is different from that of ionizing radiation.*

***“Both ionizing and non-ionizing radiation can cause heating effects in biological tissues, and the degree of heating is proportional to the magnitude of the radiation, not the frequency. It is recognized that excessive heating of biological tissues can damage those tissues, and current regulatory limits were established with the assumption that non-ionizing radiation is safe provided that the radiation is below the thermal threshold.”***

Non-ionizing RF radiation has been shown by scientists and doctors to affect the structure of atoms or damage DNA, sharing similar traits to ionizing radiation (see Appendix B, and the “Settled Science” section). That means that RF radiation can cause physiological injury **below the thermal threshold**. Therefore, the distinction being drawn between ionizing and non-ionizing radiation, as it relates to RF radiation, becomes meaningless. As confirmed by renowned scientist, Dr. Golomb,

***“much or most of the damage by ionizing radiation, and radiation above the thermal limit, occurs by mechanisms also documented to occur without ionization, and below the thermal limit.”***<sup>34</sup> [Emphasis added.]

## Exposure to RF Radiation, Injuries and Disabilities

With RF radiation, there is cumulative exposure over time which causes or contributes to injuries and disabilities. In the first known study to test the safety of “5G,” a recently published Swedish

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<sup>34</sup> Letter by Dr. Beatrice Golomb, Professor of Medicine, UC San Diego School of Medicine, Aug. 22, 2017, <https://mdsafetech.org/wp-content/uploads/2017/09/golomb-sb649-5g-letter-8-22-20171.pdf>. Dr. Golomb is Professor of Medicine, Univ of CA, San Diego School of Medicine; she was a Robert Wood Johnson Clinical Scholar and Postdoctoral Fellow, Computational Neurobiology Laboratory, Salk Institute; she won the Robert Wood Johnson Generalist Physician Faculty Scholar Award; she has been in Who’s Who in America since 2000; and she participated in numerous expert panels. See full CV at <https://www.golombresearchgroup.org/pagecv>.

study confirmed that RF radiation well below authorized emission limits in Sweden can cause health outcomes. A “5G” base station had been installed on a rooftop and two individuals living in an apartment just below the rooftop developed, what the study referred to as, symptoms of microwave syndrome.<sup>35</sup> After installation, the amount of RF radiation was, on average, 188 times greater than prior to installation, with the maximum peaks being over 1,000 times greater. This was constant exposure. Once they moved to a lower RF radiation environment, their symptoms decreased or disappeared.

EMS symptoms have been legally recognized as functional impairments. Sweden has recognized EMS as a functional impairment.<sup>36</sup> EMS also became recognized: (a) in 2002 by the U.S. Access Board (the federal agency devoted to accessibility issues for people with disabilities),<sup>37</sup> (b) in 2007 by the Canadian Human Rights Commission,<sup>38</sup> (c) in 2009 by the European Parliament and 2019 by the European Economic and Social Committee,<sup>39</sup> and (d) in 2012 by the Austrian Medical Association which released its guidelines for diagnosis and treatment.<sup>40</sup> Courts have awarded

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<sup>35</sup> *First Study so Far: 5G Causes the Microwave Syndrome*, <https://ehtrust.org/study-5g-causes-microwave-syndrome/>; *5G Radiation Causes ‘Microwave Syndrome’ Symptoms, Study Finds*, see also, <https://childrenshealthdefense.org/defender/5g-radiation-microwave-syndrome-symptoms/>.

<sup>36</sup> Electrohypersensitivity: state-of-the-art of a functional impairment, Johansson O., *Electromagn Biol Med.* 2006;25(4):245-58. doi: 10.1080/15368370601044150. PMID: 17178584, <https://pubmed.ncbi.nlm.nih.gov/17178584/>.

<sup>37</sup> Id.

<sup>38</sup> Policy on Environmental Sensitivities, Canadian Human Rights Commission, 2007, Policy Reviewed 2014, [https://www.chrc-ccdp.gc.ca/sites/default/files/policy\\_sensitivity\\_0.pdf](https://www.chrc-ccdp.gc.ca/sites/default/files/policy_sensitivity_0.pdf); see also, Accommodation for Environmental Sensitivities: Legal Perspective, Wilkie and Baker, May 2007, [https://www.chrc-ccdp.gc.ca/sites/default/files/legal\\_sensitivity\\_en\\_1.pdf](https://www.chrc-ccdp.gc.ca/sites/default/files/legal_sensitivity_en_1.pdf); see also, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7139347/>.

<sup>39</sup> Full recognition of electromagnetic sensitivity in Europe, European Parliament, 2009 by resolution, [https://www.europarl.europa.eu/doceo/document/TA-6-2009-0216\\_EN.html](https://www.europarl.europa.eu/doceo/document/TA-6-2009-0216_EN.html); also see Digitalisation Challenges for Europe, European Economic and Social Committee, at 58, March 2019, <https://www.eesc.europa.eu/sites/default/files/files/qe-01-19-295-en-n.pdf>; see overview at <https://ehtrust.org/european-union-report-recommends-reducing-emfs-to-protect-people-with-electromagnetic-hypersensitivity-opinion/>.

<sup>40</sup> Austrian Medical Association guidelines for diagnosing and treating patients with electrohypersensitivity, March 2012, <https://magdahavas.com/electrosmog-exposure/austrian-medical-association-guidelines-to-diagnosing-and-treating-patients-with-electrohypersensitivity/>.

disability claims to people with electro-magnetic sensitivity in Australia,<sup>41</sup> France,<sup>42</sup> Spain,<sup>43</sup> and United States.<sup>44</sup>

The EMS disabled are not able to live, work or visit in spaces or buildings where wireless equipment is deployed.<sup>45</sup> A pre-eminent scientist, Dr. Beatrice Golomb,<sup>46</sup> conducted a survey whereby hundreds participated. **Many stated that they either gave no credence to – or did not hear about – any hazards, until they themselves were injured.**<sup>47</sup>

Although prior to their exposure they had no problem navigating in the world, after exposure their access to basic services such as hospital care, post offices and libraries became restricted. As a result of their injuries, they reported their condition cost them up to 2 million dollars, many lost their homes, and “a number became homeless and have swelled the ranks of so-called ‘EMF refugees.’”<sup>48</sup> Many had been high-functioning individuals, such as engineers, doctors and lawyers. She further states that:

***“The best and the brightest are among those whose lives – and ability to contribute to society –will be destroyed.*** High profile individuals with acknowledged electrohypersensitivity include, for instance, ***Gro Harlem Brundtland*** – the former 3-time Prime Minister of Norway and former Director General of the World Health Organization; [and] ***Matti Niemela***, former Nokia Technology chief ... ”<sup>49</sup> [Emphasis added]

Dr. Golomb further explains the plight of the EMS disabled, that:

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<sup>41</sup> The tribunal found in favor of a former CSIRO scientist who claimed workers' compensation for nausea, disorientation and headaches that he suffered when he was exposed to equipment that emitted electromagnetic fields (EMF); *McDonald v. Comcare* (General Administrative Division, Melbourne, Feb 2013), <http://www7.austlii.edu.au/cgi-bin/viewdoc/au/cases/cth/aat/2013/105.html>. CSIRO means Commonwealth Scientific and Industrial Research Organisation, and is Australia's national science agency.

<sup>42</sup> A Woman Has Been Awarded Compensation For Being "Allergic to Wi-Fi", ScienceAlert, 31 August 2015, <https://www.sciencealert.com/a-woman-has-been-award-compensation-for-being-allergic-to-wi-fi>; remarkably, the article attempts to belittle the woman's injuries, even after she is awarded compensation with a legally recognized disability, despite scientific proof of health hazards prior to and since this compensation claim, as set forth in these comments.

<sup>43</sup> Spain: High Court of Madrid Ruling Recognizes “Electrosensitivity” as Grounds for Total Permanent Disability, August 4, 2016, Maris, <https://www.elettrosensibili.it/2016/09/14/spain-high-court-of-madrid-ruling-recognizes-electrosensitivity-as-grounds-for-total-permanent-disability/>.

<sup>44</sup> JML Law Wins Appeal in 'Unprecedented' Disability Case Against LAUSD For Failure to Accommodate Teacher with Electroma, March 26, 2021, Bloomberg <https://www.bloomberg.com/press-releases/2021-03-26/jml-law-wins-appeal-in-unprecedented-disability-case-against-laUSD-for-failure-to-accommodate-teacher-with-electroma>.

<sup>45</sup> 59 year old social workers wins 'early ill health retirement' for disabling 'Electromagnetic Hypersensitivity (EHS),' Physicians' Health Initiative for Radiation and Environment Press release June 15, 2022, <https://phiremedical.org/wp-content/uploads/2022/06/Press-Release-EHS-Social-Worker-granted-long-term-ill-health-pension-UK-Named.pdf>.

<sup>46</sup> <https://www.golombresearchgroup.org/pagecv>.

<sup>47</sup> Letter by Dr. Beatrice Golomb, Professor of Medicine, UC San Diego School of Medicine, Aug. 22, 2017, <https://mdsafetech.org/wp-content/uploads/2017/09/golomb-sb649-5g-letter-8-22-20171.pdf>.

<sup>48</sup> Id.

<sup>49</sup> Id.



“They are far more strongly in need of protections than a great many protected classes – their problems arose **due to actions of others, against which they were given no control** – and can be reversed, in most cases, if the assault on them is rolled back.”<sup>50</sup>

In the case of a 59-year-old social worker who was found to be permanently disabled from exposure to RF radiation:

**“Mrs. Burns has a medical condition that renders her permanently incapable of undertaking any gainful work.** There currently are no treatments available for her condition; avoidance of emissions is the only way to significantly reduce her symptoms.”<sup>51</sup> [Emphasis added.]

Mrs. Burns commented on the unrelenting discrimination that she has been exposed to:

“I have worked in Health and Social Care for 35 years, supporting some of the most disabled and vulnerable members of our society and advocating to ensure their rights have been upheld. **To have been on the receiving end of societal prejudice, discrimination, ignorance and misunderstanding, has been devastating.**”<sup>52</sup> [Emphasis added.]

The discrimination against the EMS disabled has prevented progress in this area. **That people are not being informed of the health hazards of RF radiation, having it be forced upon them and their children without recourse, intruding into their homes, and then be discriminated against for the injuries they sustain as a result, should shock the conscience of any public official who took an oath to protect public health and welfare.**

Since the proliferation of wireless infrastructure, RF radiation has been intruding into people’s homes, businesses, schools and elsewhere, without their consent or knowledge, and injuring them. Just because RF radiation is invisible, its intrusion and harm are no less a case of the common law crime of assault and battery. With each new “generation” of wireless technology, people are being further exposed to RF radiation which they cannot avoid.<sup>53</sup> Agencies should be asking how they can protect public health and welfare, rather than shifting the burden of proof on the public.

An example is a police lieutenant in Astoria, Queens, who suffered injuries from wireless infrastructure installed in front of his front yard in NYC. Otherwise healthy before exposure to RF

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<sup>50</sup> Id.

<sup>51</sup> “59 year old social workers wins ‘early ill health retirement’ for disabling ‘Electromagnetic Hypersensitivity (EHS)’,” Physicians’ Health Initiative for Radiation and Environment Press release June 15, 2022, <https://phiremedical.org/wp-content/uploads/2022/06/Press-Release-EHS-Social-Worker-granted-long-term-ill-health-pension-UK-Named.pdf>.

<sup>52</sup> Id.

<sup>53</sup> Letter by Dr. Beatrice Golomb, Professor of Medicine, UC San Diego School of Medicine, Aug. 22, 2017, <https://mdsafetech.org/wp-content/uploads/2017/09/golomb-sb649-5g-letter-8-22-20171.pdf>.

radiation from the wireless transmitters, after his exposure, he suffered from heart arrhythmias and sleep deprivation. He underwent invasive medical cardiac procedures where the doctors found his condition could not be replicated in their offices away from the source of RF radiation. When he realized that his condition improved away from his home, he was compelled to evacuate his own home to live elsewhere in a safer environment, while still shouldering the financial burden of a substantial mortgage on his original house. Despite repeated attempts to meet with NYC representatives, he was ignored. (See Appendix A – Statement of George S.)

Ironically, there was recently an accommodation for cows in France who were affected by RF radiation.<sup>54</sup> A farmer noticed that among his dairy cow herd, milk production had dropped by 15-20% and 40 of his 200 cows had died, soon after the installation of 4G antenna just 200 meters from his farm. The farmer claimed it was damaging his cows' health. The court ordered the antenna to be switched off for 2 months while the situation was being monitored. The farmer said that "[t]here are no medical elements that could [otherwise] explain this brutal drop in milk production." The mayor who had authorized the installation had testified in favor of the farmer and feared "a catastrophe on a human level" for the 1,500 inhabitants of his town.

Because RF radiation is invisible, so, apparently, have been the sufferings of the EMS disabled. RF radiation cannot be perceived with the naked eye or by smell (such as gas leaking from a stove) and therefore goes unnoticed until one develops symptoms or is injured by it. ***The EMS disabled have been unsuspecting victims of their injuries that have now become their disabilities.*** Presenting these comments is an effort to make visible what has otherwise been invisible, until now – the EMS disabled.

With regard to the placement of "5G" cell sites, ***"no one in the homes impacted knew till they came home from work and saw the pole and small cell in its harmful placement,"***<sup>55</sup> meaning only feet from one's home. [Emphasis added.] An example:

***"... [5G] is a directional antenna reported by workers to be capable of transmitting 5 miles away, and is located directly outside a sensitive toddler's bedroom window at a house on the street above, is designed to beam directly through the house ... Even occupying the home is a major risk likely to sicken the occupants, as soon as it is turned on ... "***<sup>56</sup> [Emphasis added.]

There have been reports of health effects from cell towers.<sup>57</sup> You can hear directly from grassroots communities about the health problems that residents have been experiencing from RF radiation. The most striking example is occurring in Pittsfield, MA. When a wireless cell tower was placed at the end of their street, seventeen individuals became ill and many, who could afford to, evacuated

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<sup>54</sup> "French court orders 4G antennae switch-off over cow health concerns," Hannah Thompson, The Connexion, May 25, 2022, <https://www.connexionfrance.com/article/French-news/French-court-orders-4G-antenna-switch-off-over-cow-health-concerns>.

<sup>55</sup> "5G Small Cells and Property Value," <http://www.electrosmogprevention.org/international-electrosmog-prevention-news/stop-5g/5g-small-cells-and-property-value/>.

<sup>56</sup> Id.

<sup>57</sup> Cell Tower Health Effects <https://www.saferemr.com/2015/04/cell-tower-health-effects.html>, Center for Family and Community Health, School of Public Health, University of California, Berkeley.



their homes.<sup>58</sup> Those evacuating their homes must pay for an extra residence that is safer, while still maintaining their homes in Pittsfield. The others who could not afford to evacuate their homes have been suffering in their homes. They were experiencing radiation sickness from the cell tower for which there was no notice to residents, no hearing and no consent. Children were vomiting in their beds. Their neighborhood became a toxic zone. (see Appendix A – The Gilardi Family, Pittsfield, MA)

Injuries from RF radiation exposure also occur with exposure to “smart” utility meters. For instance, NYS residents have reported headaches, heart palpitations, nausea and mini-stroke. (See Appendix A – statements of Antonella D., Nick C., Peter L., Steve Romine)

RF radiation is analogous to second-hand smoke from cigarettes which is now prohibited. Similarly, individuals should not be subjected to second-hand RF radiation that they do not want or need and to which they did not consent.

The U.S. Access Board (which advises the Justice Department and other state and federal agencies under the Americans with Disabilities Act) notes that a U.S. National Institute of Building Sciences survey of a representative region found that 2-6% of the population are sensitive to electro-magnetic fields.<sup>59</sup> There are other sources showing the proliferation of EMF sensitivities and disabilities.<sup>60</sup>

A 2019 Bevington study<sup>61</sup> analyzed the prevalence of EMS disabilities within the population:

0.65% Can't work  
1.5% Severe symptoms  
5.0% Moderate symptoms  
30.0% Mild symptoms

Based on a population of 332.4 million people in the U.S., the numbers are shockingly high:

Percentages	Number of U.S. EMF Sensitive/Disabled
Can't work – 0.65%	2.16 million
Severe symptom – 1.5%	4.99 million
Moderate symptoms – 5%	16.6 million

<sup>58</sup> <https://ehtrust.org/statement-by-courtney-gilardi-after-pittsfield-board-of-health-votes-to-send-cease-and-desist-order-for-verizon-cell-tower/>.

<sup>59</sup> U.S. Access Board – Advancing Full Access & Inclusion for All - “Indoor Environmental Quality Project,” <https://www.access-board.gov/research/building/indoor-environmental-quality/>.

<sup>60</sup> Electrohypersensitivity (EHS) Is An Environmentally-Induced Disorder That Requires Immediate Attention, Dr. Magda Havas, J. Sci Discov (2019), <http://www.e-discoverypublication.com/wp-content/uploads/2019/03/JSD18020-final.pdf>; see also, Presentation by Karl Maret, M.D., M.Eng., Presentation, 1-17-20, <https://www.youtube.com/watch?v=Xilsy3mcjY>; “The Bioinitiative Report,” <https://bioinitiative.org/>.

<sup>61</sup> The Prevalence of People with Restricted Access to Work in Manmade Electromagnetic Environments, <https://mdsafetech.files.wordpress.com/2019/10/2018-prevalence-of-electromagnetic-sensitivity.pdf>.

Mild symptoms – 30%	99.7 million
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Access to work is critical for disadvantaged communities. The EMS disabled are most affected when they cannot work safely in environments containing RF radiation inside a building, such as Wi-Fi, or RF radiation coming from outside a building from nearby base station antennas.<sup>62</sup> This is not a disability that only affects the EMS disabled, but given the estimated number of people with EMS symptoms in the U.S., it has the potential of adversely affecting America’s workforce. EMS disability can be accommodated by creating RF radiation free zones that employ only wired facilities in the work and home environments.

### **Vulnerable Communities as Disadvantaged Communities: Children**

Children are a vulnerable community adversely affected by RF radiation in their homes and in their schools.<sup>63</sup> Children absorb more RF radiation than adults, and fetuses are at even greater risk.<sup>64</sup> Children’s “brain tissues are more absorbent, their skulls are thinner and their relative size is smaller.”<sup>65</sup> RF radiation penetrates more deeply into the skulls of children compared to adults,<sup>66</sup> as shown below in cell phone usage.<sup>67</sup>

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<sup>62</sup>The Prevalence of People with Restricted Access to Work in Manmade Electromagnetic Environments, <https://mdsafetech.files.wordpress.com/2019/10/2018-prevalence-of-electromagnetic-sensitivity.pdf>.

<sup>63</sup> *Children and Wireless Radiation*, <https://ehtrust.org/educate-yourself/children-and-wireless-faqs/>.

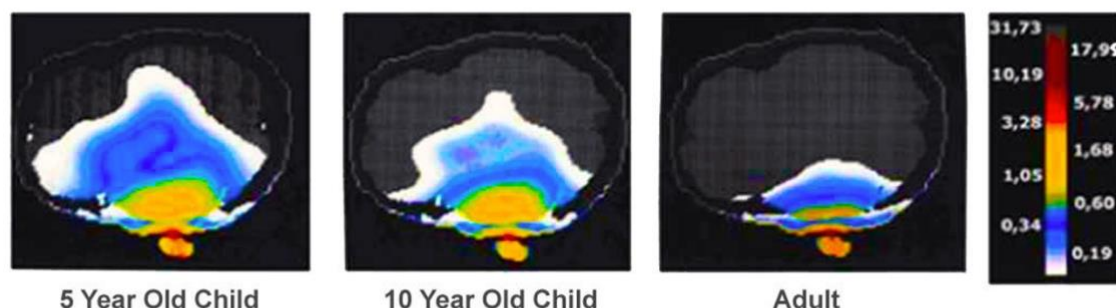
<sup>64</sup> *Why children absorb more microwave radiation than adults: The consequences*, Morgan, Kesar and Davis, Journal of Microscopy and Ultrastructure, Vol. 2, Issue 4, December 2014, 197-204, <https://www.sciencedirect.com/science/article/pii/S2213879X14000583>.

<sup>65</sup> Id.

<sup>66</sup> See, Dr. Melnick, London 5G Conference at 39:00, [https://www.youtube.com/watch?v=zSx\\_yDzxvM8&t=2295s](https://www.youtube.com/watch?v=zSx_yDzxvM8&t=2295s); <https://ehtrust.org/research-on-childrens-vulnerability-to-cell-phone-radio-frequency-radiation/> and <https://ehtrust.org/science/scientific-imaging-cell-phone-wi-fi-radiation-exposures-human-body/>.

<sup>67</sup> *Exposure limits: the underestimation of absorbed cell phone radiation, especially in children*, Gandhi, Morgan, Augusto de Salles, Han, Heberman, Davis, October 14, 2011, <https://pubmed.ncbi.nlm.nih.gov/21999884/>.

## Children are more vulnerable to RF microwave radiation.



Depth of absorption of cell phone radiation in a 5-year old child, a 10-year old child, and in an adult from GSM cell phone radiation at 900 MHz. Color scale on right shows the SAR in Watts per kilogram. Source: [Exposure limits: the underestimation of absorbed cell phone radiation, especially in children](#)

Source: Exposure limits: the underestimation of absorbed cell phone radiation, especially in children, Gandhi, Morgan, Augusto de Salles, Han, Heberman, Davis, October 14, 2011.<sup>68</sup>

Exposure to RF radiation “can result in degeneration of the protective myelin sheath that surrounds brain neurons” and “[d]igital dementia has been reported in school age children.”<sup>69</sup>

Elementary school children who were exposed to high levels of RF radiation generated from mobile phone base stations 200 meters from their schools “had a significantly higher risk of type 2 diabetes mellitus” than those exposed to lower RF radiation.<sup>70</sup> There are also neurological implications to RF radiation exposure for children.<sup>71</sup> Adolescent school children who were exposed to high levels of RF radiation also generated from mobile phone base stations within 200

<sup>68</sup> Id.

<sup>69</sup> *Why children absorb more microwave radiation than adults: The consequences*, Morgan, Kesar and Davis, *Journal of Microscopy and Ultrastructure*, Vol. 2, Issue 4, December 2014, 197-204, <https://www.sciencedirect.com/science/article/pii/S2213879X14000583>.

<sup>70</sup> Association of Exposure to Radio-Frequency Electromagnetic Field Radiation (RF-EMFR) Generated by Mobile Phone Base Stations (MPBS) with Glycated Hemoglobin (HbA1c) and Risk of Type 2 Diabetes Mellitus, Sultan Ayoub Meo et al, *International Journal of Environmental Research and Public Health*, 2015; [https://www.researchgate.net/publication/283726472\\_Association\\_of\\_Exposure\\_to\\_Radio-Frequency\\_Electromagnetic\\_Field\\_Radiation\\_RF-EMFR\\_Generated\\_by\\_Mobile\\_Phone\\_Base\\_Stations\\_with\\_Glycated\\_Hemoglobin\\_HbA1c\\_and\\_Risk\\_of\\_Type\\_2\\_Diabetes\\_Mellitus](https://www.researchgate.net/publication/283726472_Association_of_Exposure_to_Radio-Frequency_Electromagnetic_Field_Radiation_RF-EMFR_Generated_by_Mobile_Phone_Base_Stations_with_Glycated_Hemoglobin_HbA1c_and_Risk_of_Type_2_Diabetes_Mellitus).

<sup>71</sup> See generally, <https://ehtrust.org/research-on-childrens-vulnerability-to-cell-phone-radio-frequency-radiation/>; see also, <https://ehtrust.org/cell-towers-and-cell-antennae/compilation-of-research-studies-on-cell-tower-radiation-and-health/>.

meters from their schools had “delayed fine and gross motor skills, spatial working memory and attention” than those exposed to lower RF radiation.<sup>72</sup>

A 2022 study confirms severe neurological effects of chronic exposure to RF radiation.<sup>73</sup> It concluded that “chronic exposure of 2100-MHz frequency caused oxidative stress, which leads to neural damage and demyelination.” While the general population, including children, are generally exposed to RF radiation 24/7, 365 days a year, the exposure that was used in this study was much less, only 3 months at 4 hours a day, 5 days a week.

Another example of children being injured from RF radiation from wireless infrastructure was provided at a Sacramento, CA City Council meeting.<sup>74</sup> A cell tower was installed outside near the children’s bedroom. Soon afterward, they suffered from flu-like symptoms which persisted for two months until the family installed metal shielding on the house to deflect the cell tower’s RF radiation. From a real estate perspective, they would have to leave their “dream” home and try to sell it, although mostly likely at a devalued amount, because of its proximity to the cell tower.

Cell towers near schools and Wi-Fi in schools are potentially hazardous to children.<sup>75</sup> It was recently announced that Wi-Fi is being deployed in school buses.<sup>76</sup> No accommodation is being contemplated for unsuspecting or even EMS disabled children who will have no other safe school transportation alternative.

RF radiation “... has toxic effects in pregnancy, to the fetus and subsequent offspring ... and is tied to developmental problems in later life, including attention deficit and hyperactivity.”<sup>77</sup>

Here’s a cautionary note from Dr. Golomb, a renowned scientist in this area:

“... if you have a child, or a grandchild, his sperm, or her eggs (all of which she will already have by the time she is a fetus in utero), will be affected by the oxidative stress damage created by the electromagnetic radiation, in a fashion that may affect your future generations irreparably.”<sup>78</sup>

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<sup>72</sup> Meo, S. A., Almahmoud, M., Alsultan, Q., Alotaibi, N., Alnajashi, I., & Hajjar, W. M. (2018). Mobile Phone Base Station Tower Settings Adjacent to School Buildings: Impact on Students’ Cognitive Health. American Journal of Men’s Health; <https://pubmed.ncbi.nlm.nih.gov/30526242/>.

<sup>73</sup> “Evidence of the radiofrequency exposure on the antioxidant status potentially contributing to the inflammatory response and demyelination in rat brain,” June 11, 2022, Environmental Toxicology and Pharmacology, <https://www.sciencedirect.com/science/article/pii/S1382668922000965?via%3Dihub>.

<sup>74</sup> “Children Sick After 4G/5G Small Cell Installation Sacramento City Council Meeting,” <https://www.youtube.com/watch?v=qQDmlcB4qlo>.

<sup>75</sup> Dr. Magda Havas: WiFi in Schools is Safe. True or False?, <https://www.youtube.com/watch?v=6v75sKAUFdc>.

<sup>76</sup> “FCC Chairwoman Rosenworcel Pushes for E-Rate Funding of School Bus Wi-Fi,” May 11, 2022, <https://stnonline.com/news/fcc-chairwoman-rosenworcel-pushes-for-e-rate-funding-of-school-bus-wi-fi/>.

<sup>77</sup> Letter by Dr. Beatrice Golomb, Professor of Medicine, UC San Diego School of Medicine, Aug. 22, 2017, <https://mdsafetech.org/wp-content/uploads/2017/09/golomb-sb649-5g-letter-8-22-20171.pdf>.

<sup>78</sup> Id.

## **Vulnerable Communities as Disadvantaged Communities: Women**

Women are also a vulnerable community. Some studies show that RF radiation appears to disproportionately affect women. For example, respondents to participate in two studies in Finland and Japan were 80.9%<sup>79</sup> and 95%<sup>80</sup> women, respectively. The women reported sleeping disorders, fatigue, headaches, and difficulty in concentration, memory and thinking.

## **Vulnerable Communities as Disadvantaged Communities: Elderly**

The elderly who are on a limited income or live in subsidized housing and who cannot afford to move away from wireless infrastructure being installed next to their homes, or on their rooftops, are trapped in a wireless toxic zone.

An example is an 84-year-old elderly woman who suffered injuries from wireless infrastructure in NYC. The woman is low-income and was living in subsidized housing. After wireless transmitters were placed on the rooftop of her apartment building directly over her ceiling, she suffered from severe radiation sickness symptoms day and night for over 2 years. *They included, among others, severe tinnitus, bilateral hearing loss, sleep deprivation, severe headaches, irritable bowel syndrome and persistent nausea and vomiting, for 2 years.* (See Appendix A – statement of Lily Marie)

She could not find refuge anywhere in her studio apartment, where she had lived happily for 45 years. In her own words at the time, “It’s brutal.” She, therefore, had to evacuate her home of 45 years, but could not find a low-income housing alternative which trapped her in a toxic zone, suffering daily. Despite repeated attempts to receive accommodation, she was denied accommodation or ignored.

Her doctor, in confirming the woman’s symptoms to the building’s management, also noted, coincidentally, that she happened to have other patients in the same building complaining of similar symptoms after the placement of wireless transmitters on the rooftop.

About 150 tenants in her building (either having symptoms or supporting those with symptoms) complained of the rooftop transmitters in a letter to elected officials. They were also ignored.

Another example is an elderly couple in Long Beach, CA who must evacuate their home because of an impending installation of wireless infrastructure close to their home.<sup>81</sup> The wife is an artist,

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<sup>79</sup> “Electromagnetic hypersensitive Finns: Symptoms, perceived sources and treatments, a questionnaire study,” Hagstrom, Auranen and Ekman, April 1, 2013, <https://pubmed.ncbi.nlm.nih.gov/23557856/>.

<sup>80</sup> “Reported functional impairments of electrosensitive Japanese: A questionnaire survey,” Kato and Johansson, March 27, 2012, <https://pubmed.ncbi.nlm.nih.gov/22458999/>.

<sup>81</sup> “Moira loses her home to AT&T,” <https://youtu.be/e0tkLVJHpu8>.

medically diagnosed as EMS. The planned installation is only 25 feet from her art studio in her home. Their dilemma comes alive on video (see video in footnotes).<sup>82</sup>

### **Vulnerable Communities as Disadvantaged Communities: Firefighters**

Firefighters are also a vulnerable community. SPECT brain scans were conducted on six firefighters in California who had been working for up to five years in fire stations with cell towers and showed abnormal brain activity with the following results:

“... slowed reaction time, lack of focus, lack of impulse control, severe headaches, anesthesia-like sleep, sleep deprivation and depression.”<sup>83</sup>

Another symptom experienced by the firefighters has been an inability to wake up for 911 emergency calls.

***“Firefighters have reported getting lost on 911 calls in the same community they grew up in, and one veteran medic forgot where he was in the midst of basic CPR on a cardiac victim and couldn’t recall how to start the procedure over again...Prior to the installation of the tower on his station, this medic had not made a single mistake in 20 years.”<sup>84</sup>***

The International Association of Firefighters stated their position since 2004 that they “oppose the use of fire stations as base stations for towers and/or antennas for the conduction of cell phone transmissions” until there is proven evidence of their safety.<sup>85</sup> They refer to a multitude of scientific studies showing evidence of health effects from RF radiation.

***“Firefighters have long contended they are willing to risk their lives for their fellow citizens; they are unwilling to risk deadly consequences as a result of living with cell towers on their stations in order to facilitate corporate profits.”<sup>86</sup>***

What if firefighters working with cell towers near their stations could not remember where the fire was that they were supposed to respond to, or if there was a fire to respond to? As recounted above, this has already occurred. Will there be a growing number of EMS disabled firefighters? This is not only placing firefighters at risk, but also the public at large.

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<sup>82</sup> Id.

<sup>83</sup> International Association of Firefighters (IAFF) Votes to Study Health Effects of Cell Towers on Fire Stations; Call for Moratorium on New Cell Towers on Fire Stations Until Health Effects Can Be Studied,” [https://ehtrust.org/wp-content/uploads/pr\\_iaff\\_vote-1.pdf](https://ehtrust.org/wp-content/uploads/pr_iaff_vote-1.pdf).

<sup>84</sup> Letter by Dr. Beatrice Golomb, Professor of Medicine, UC San Diego School of Medicine, Aug. 22, 2017, <https://mdsafetech.org/wp-content/uploads/2017/09/golomb-sb649-5g-letter-8-22-20171.pdf>.

<sup>85</sup> International Association of Fire Fighters: Cell Tower Radiation Health Effects, <https://www.iaff.org/cell-tower-radiation/>.

<sup>86</sup> Testimony on 5G, Firefighters & Cell Towers to Malibu City Council by Susan Foster, <https://ehtrust.org/testimony-on-5g-firefighters-cell-towers-to-malibu-city-council-by-susan-foster/>; see also, *Firefighters Unions Opposing Cell Towers*, May 17, 2017, <https://ehtrust.org/firefighter-unions-opposing-cell-towers/>.

Firefighters are the strongest of the strong among us, having passed rigorous cognitive and physical exams prior to being hired. Yet, with cell towers on or next to their stations, they are becoming debilitated in large numbers. The “canaries in the coal mine” are the strongest of the strong among us – a warning to society at large.

### **Vulnerable Communities as Disadvantaged Communities: Others**

This is an environmental justice issue; e.g., in Poughkeepsie, NY, by anecdotal account, measurements were taken as far back as 2018, prior to any “5G” rollout, which already showed the highest levels of RF radiation in economically disadvantaged communities which were also communities of color.

Ultimately, ***exposure to RF radiation has become mostly mandatory from which the EMS disabled, vulnerable communities and the population at large cannot escape*** – communities being exposed to RF radiation from wireless infrastructure, without being informed of the associated health hazards, and without the opportunity to consent, are also vulnerable communities.

Indeed, communities who have received no notice or who have not consented to having wireless infrastructure located near their homes, businesses, medical facilities, etc. are disadvantaged communities. They are being forced to live in what will easily become, or what has already become, a wireless toxic zone for them with associated health risks and costs. These wireless health hazards are likely to increase health impacts exponentially on the population at large, rendering a steadily growing population of EMS disabled or EMS refugees. It’s time for the EPA to recognize and address this pan-epidemic.<sup>87</sup>

### **The Impact of Digital Discrimination on the EMS Disabled**

Digital discrimination refers to the problem of bias built into algorithmic systems, e.g., in Internet search engine results, that reflects discrimination in non-digital settings, hence algorithmic bias.<sup>88</sup> The EMS disabled have been the subject of algorithmic bias. Search results belittle and invalidate the sufferings of the EMS disabled. The following provides an insight into algorithmic bias:

“Digital discrimination entails treating individuals unfairly, unethically, or just differently based on their personal data that is automatically processed by an algorithm. Digital discrimination often reproduces the existing instances of

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<sup>87</sup>Scientists 5G appeal, available at <http://www.5gappeal.eu/the-5g-appeal/>.

<sup>88</sup> “Algorithmic Regulation” by Karen Yeung and Martin Lodge, chapter on “Digital Discrimination” by Natalia Criado, 2019, <https://oxford.universitypressscholarship.com/view/10.1093/oso/9780198838494.001.0001/oso-9780198838494-chapter-4#:~:text=Digital%20discrimination%20entails%20treating%20individuals,automatically%20processed%20by%20an%20algorithm.>



discrimination in the offline world by either inheriting the biases of prior decision-makers, or simply reflecting widespread prejudices in society.”<sup>89</sup>

For example, racial discrimination in digital technologies has been recognized as an emerging problem, with race being an algorithmic profiling factor.<sup>90</sup> This kind of algorithmic bias also discriminates against the EMS disabled. When conducting a simple search on Google, for instance, most of the search results show a bias against EMS symptoms caused by RF radiation, despite settled scientific evidence to the contrary (addressed in the “Settled Science” section). However, the range of issues to address regarding the EMS disabled is even greater than just digital discrimination and extends to misinformation on the Internet that disadvantages the EMS disabled, though not specifically data run through algorithms.

### **Brief History on the Disabled Community’s Efforts to End Discrimination**

To put in perspective what disabled communities, have had to undertake to be taken seriously by lawmakers, here’s a brief history. The Rehabilitation Act of 1973 was a starting point, but the most significant express validation of and protection for the disabled was finally achieved in the U.S. with the passage of the Americans with Disabilities Act of 1990 (ADA). The manner of its passage is noteworthy. Wheelchair-bound Americans took to the Capitol steps, left their wheelchairs behind and crawled up the Capitol steps. Included among them was an 8-year-old disabled girl. This demonstration by these “wheelchair warriors” was captured by the media and called the “Capitol Crawl,” as “a physical demonstration of how inaccessible architecture impacts people with disabilities.”<sup>91</sup> The ADA extended the prohibition against discrimination beyond federal contractors to employment, public services and accommodations.<sup>92</sup>

EMS disability is as silent and invisible as the toxin that creates the disability in the first place. The 3% (mild) and 35% (moderate)<sup>93</sup> portion of the population (between 9,975,000 or 115,500,000 million Americans) suffering from EMS, however, cannot travel to Washington DC to potentially sit on the Capitol steps. RF is so pervasive that any effort similar to the “Capitol Crawl” to raise awareness would put them at physical risk. These people have been silenced and rejected. They are isolated from play with other children, from study with fellow students, from advancement in the workforce and the financial means to support themselves in anything but subsidized housing. But even federally-subsidized housing is becoming inaccessible since those buildings appear to be a target for wireless tower leases because it is the path of least resistance in increasingly resistant communities.

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<sup>89</sup> Id.

<sup>90</sup> “Emerging digital technologies entrench racial inequality, UN expert warns,” <https://www.ohchr.org/en/press-releases/2020/07/emerging-digital-technologies-entrench-racial-inequality-un-expert-warns>.

<sup>91</sup> History Series, “When the ‘Capitol Crawl’ Dramatized the Need for Americans with Disabilities Act,” <https://www.history.com/news/americans-with-disabilities-act-1990-capitol-crawl>.

<sup>92</sup> International Brotherhood of Teamsters, “The Rehabilitation Acts of 1973 and 1974, and the Americans with Disabilities Act of 1990,” <https://teamster.org/rehabilitation-acts-1973-and-1974-and-american-disabilities-act-1990/>.

<sup>93</sup> C4ST Referencing Havas 2007. <https://c4st.org/what-is-electrosensitivity/>.



## **Proposed Criteria and Metrics to Identify the EMS Disabled Communities And to Measure Cumulative Impact of RF Radiation on these Communities**

Given the high cumulative exposure burden that EMS disabled communities, and other vulnerable communities, bear from RF radiation emissions, an effective strategy would require measuring and reducing air pollutants from RF radiation emissions.

The following are proposed criteria/metrics to assist in that strategy. Just as the disabled are not in specific geographic regions, but are interspersed throughout the U.S., so are the EMS disabled and vulnerable populations. The criteria consist of components and metrics to identify the EMS disabled and other vulnerable communities, and to measure the cumulative impact to these communities.

The metrics to include in any EPA metrics would include: a) RF radiation emissions (i.e., electrosmog), b) energy efficiency – fiber optics deployment, and c) health outcomes. Included here for each metric are the method of calculation for each metric and a quick synopsis of the rationale for inclusion. References have been provided for quick reference, although more references are provided in these comments in the footnotes.

### **A) Metric: RF Radiation Emissions, i.e., Electrosmog**

**Calculation Method:** To obtain an accurate reading of RF radiation emissions, the maximum power density and peak power density levels per millisecond should be recorded, as adverse health outcomes arise from the peaking and pulsating nature of wireless emissions. It is the pulsed high peak power emissions that, e.g., increase the potential for traumatic brain injury.

Other calculations to be made include:

- the number and precise locations of wireless infrastructure (e.g., wireless base stations, cell towers, antennas and cells);
- the number of feet/meters between wireless infrastructure and all homes, businesses, schools, medical facilities, libraries, other public institutions and other structures;
- the cumulative RF emissions from all wireless infrastructure, also known as electrosmog, in the outside environment;
- the cumulative RF emissions from all wireless infrastructure penetrating from the outside environment into homes, businesses, schools, medical facilities, libraries, other public institutions and any other structures;
- the prospective level of additional RF emissions, or electrosmog, from proposed wireless infrastructure in the outside environment;
- the prospective level of additional emissions, or electrosmog, from all proposed wireless infrastructure that would be penetrating from the outside environment into homes, businesses, medical facilities, libraries, other public institutions and any other structures; and

- the cumulative CO<sub>2</sub> greenhouse gas emissions in the environment from all wireless infrastructure within a particular radius.

**Rationale for Inclusion:** RF radiation is anthropogenic and emissions from wireless infrastructure are expected to substantially increase the amount of greenhouse gases. RF radiation emissions are also associated with serious health problems, including within the population of the EMS disabled and other vulnerable communities. Therefore, based on the greenhouse gas effects and the negative health outcomes arising from RF radiation, the CPCLA's mandate that "anthropogenic" pollutants be reduced or eliminated would necessarily include RF radiation emissions from wireless infrastructure. The decarbonization of the atmosphere cannot occur without the decarbonization of electrosmog.

Any perceived health benefits from reduction in fuel combustion or other air pollutants will likely not be realized with the proliferation of wireless infrastructure because of the associated health hazards of RF radiation, which are likely to increase exponentially the health impacts on the public at large, rendering a steadily growing population of EMS disabled.

See also these comments and other sources, in general.

#### **Data Source/References:**

- See industry referring to RF radiation as a pollutant:
  - Verizon Wireless Services, LLC, <https://ehtrust.org/wp-content/uploads/device-protection-brochure-nationwide.pdf>;
  - "Electromagnetic Field Insurance Policy Exclusion are the Standard," <https://ehtrust.org/key-issues/electromagnetic-field-insurance-policy-exclusions/>;
  - "Welcome to AT&T Multi-Device Protection Pack," <https://ehtrust.org/wp-content/uploads/ATT-Multi-Device-Protection-Pack-Insurance.pdf>; and
  - "Sprint Complete for Smart Devices, Tier1-2, Terms and Conditions," <https://ehtrust.org/wp-content/uploads/Sprint-Insurance-Terms-and-Conditions-Downloaded-2019.pdf>.
- Environmental Health Trust, "5G is Not So Green ..." <https://myemail.constantcontact.com/Studies-Confirm-5G-4G-Will-Increase-Radiation-Exposure.html?soid=1116515520935&aid=2ptEVCn03-U>.
- <http://www.emfrf.com/electrosmog/>.
- "Biomagnetic Monitoring of Particulate Matter," Prabhat K. Rai, (2016), <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/environmental-pollution>; see also, <https://www.sciencedirect.com/book/9780128051351/biomagnetic-monitoring-of-particulate-matter>.
- <https://www.emfacts.com/2020/09/5g-base-stations-use-up-to-three-and-a-half-times-more-energy-than-4g-infrastructure/>.
- <https://ehtrust.org/report-5g-to-increase-energy-consumption-by-61-times/>.
- See additional data sources in these comments.

## **B) Metric: Energy Efficiency – Fiber Optics Deployment**

#### **Calculation Method:**

- the amount of fiber optics deployed to and through the premises (FTTP), which also includes fiber to the room (FTTR);

- the amount of fiber optics needed to be deployed to ensure that fiber reaches to and through the premises FTTP and FTTR; and
- the number of public institutions (e.g., schools, libraries, medical facilities, school buses) that have wireless-free zones to accommodate the EMS disabled;
- the number of geographical areas (residential, business, etc.) that are solely wired to and through the premises (e.g., by fiber optics, cable or copper wire) to provide safe accommodations without the presence of wireless infrastructure either within or in close proximity to those areas;
- the pricing and affordability of telecommunications services, capacity (symmetrical and asymmetrical upload and download speeds), scalability and adaptability, in each instance to meet the special needs of the Communities.

### **Rationale for Inclusion:**

These metrics are crucial to make communities more resilient. Former FCC Chair Tom Wheeler called fiber “future proof,” and said that wireless should be used only as a last resort, not a first resort, in his March, 2021 Congressional testimony.<sup>94</sup> Wheeler’s statements point to the fact that wireless and fiber are not equivalent broadband media –wireless is and should be a complement, not the primary access method.<sup>95</sup> A policy paper of the National Institute for Science, Law and Public Policy, “Re-Inventing Wires: The Future of Landlines and Networks”, authored by Timothy Schoechle, PhD, communications technology expert, similarly states that “[f]iber is unmatched in its speed, performance, reliability, etc. ... Wireless is not a substitute for fiber.”<sup>96</sup>

Fiber provides a more superior technology to wireless for people to receive, or transition to, a safer, faster, more reliable, more cyber-secure, and creating safe spaces for the EMS disabled.

Fiber optics to the premises and fiber optics to the room (in either instance, FTTP). In contrast to wireless, fiber optics has “[l]ower energy consumption, reduced waste and sustainable architecture, characteristics that make fiber infrastructure an environmentally advantageous choice.”<sup>97</sup> Health benefits associated with energy efficiency interventions can be realized with

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<sup>94</sup> Tom Wheeler’s Testimony to Congress,

[https://energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Witness%20Testimony Wheeler FC 2021.03.22.pdf](https://energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Witness%20Testimony%20Wheeler%20FC%202021.03.22.pdf).

<sup>95</sup> See, In re Inquiry Concerning Deployment of ATC to All Americans, FCC 20-50, ¶¶10-12, 35 FCC Rcd 8986, 8991 (Apr. 2020) (“Fourteenth Broadband Competition Report”) (“...fixed broadband generally delivers faster speeds, permits higher consumption at a lower price, and has far higher data caps,...While users may substitute between mobile and fixed broadband when accessing certain services and applications, the record indicates that they are not yet functional substitutes for all uses and customer groups. Based on the record before us, we again find that fixed broadband and mobile wireless broadband services are not functional substitutes in all cases.”) (notes omitted).

<sup>96</sup> “Reinventing Wires: The Future of Landlines and Networks,” National Institute for Science, Law and Public Policy, authored by Timothy Schoechle, PhD; <https://electromagnetichealth.org/wp-content/uploads/2018/02/ReInventing-Wires-1-25-18.pdf>.

<sup>97</sup> <https://www.cablinginstall.com/cable/fiber/article/16465844/how-fiber-can-help-make-your-network-greener>

wired connections, such as fiber optics. “Fiber has a minimal ecological impact, reduces waste, consumes very little energy and helps decrease greenhouse gas emissions.”<sup>98</sup>

FTTP will provide the best capacity for remote learning for children and students, particularly those who are already EMS disabled, and more reliable access to medical and other services for the elderly and disabled during emergencies or severe weather when wireless service is more likely to be interrupted. FTTP will also prevent the exclusion of the EMS disabled who cannot be near wireless infrastructure or wireless Internet.

See also these comments and other sources, in general.

#### **Data Source/References:**

- Tom Wheeler’s Testimony to Congress, [https://energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Witness%20Testimony\\_Wheeler\\_FC\\_2021.03.22.pdf](https://energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Witness%20Testimony_Wheeler_FC_2021.03.22.pdf);
- *How Fiber Can Help Make Your Network Greener*, <https://www.cablinginstall.com/cable/fiber/article/16465844/how-fiber-can-help-make-your-network-greener>;
- *Fiber Optic Broadband, A Greener Internet Solution*, <https://www.otelco.com/a-greener-internet-solution/>;
- *Reinventing Wires: The Future of Landlines and Networks*, National Institute for Science, Law and Public Policy, authored by Timothy Schoechle, PhD; <https://electromagnetichealth.org/wp-content/uploads/2018/02/Reinventing-Wires-1-25-18.pdf>;
- *NTIA Official Acknowledges Clear Preference for Fiber in Infrastructure Deployment Program*, June 13, 2022, <https://broadbandbreakfast.com/2022/06/ntia-official-acknowledges-clear-preference-for-fiber-in-infrastructure-deployment-program/>;
- NEW REPORT: “Re-Inventing Wires: The Future of Landlines and Networks” Wireless Networks Are Not as Fast, Secure, Reliable or Energy-Efficient as Wired Systems, Says New Report, <https://gettingsmarteraboutthesmartgrid.org/wires.html>; and
- Getting Smarter About the Smart Grid, <https://gettingsmarteraboutthesmartgrid.org/pdf/Wires.pdf>.
- See additional references in these comments.

### **C) Metric: Health Outcomes**

#### **Calculation Method:**

- the number of people who are EMS disabled or in vulnerable communities
- an accompanying state registry (widely publicized to the public) to facilitate the ability of the EMS disabled to report their disabilities;
- a state registry (widely publicized to the public) to facilitate the ability of vulnerable populations to report potential and actual hazards of wireless infrastructure
- the locations of the EMS disabled and vulnerable communities.

#### **Rationale for Inclusion:**

Wireless infrastructure is a direct cause or a major contributing factor to the impairment of the EMS disabled.

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<sup>98</sup> Fiber Optic Broadband, A Greener Internet Solution, <https://www.otelco.com/a-greener-internet-solution/>.

See also these comments and other sources, in general.

#### Data Source/References:

- Mobile Telecommunications and Health/Review of the current scientific research, ECOLOG Institut, Hannover, April 2000, <https://ehtrust.org/wp-content/uploads/ecolog2000.pdf>;
- ECOLOG is a research organization founded in 1991 by scientists from the University of Hannover;
- "Why Tech Leaders Don't Let Their Kids Use Tech," <https://kidzu.co/health-wellbeing/why-tech-leaders-dont-let-their-kids-use-tech/>;
- See also, Prof. Tom Butler, University College Cork, On the Clear Evidence of the Risks to Children from Smartphone and Wi-Fi Radio Frequency Radiation, at 4 ("Dr. John Bucher, Senior Scientist, at the National Toxicology Program stated, "We have concluded that there was clear evidence that male rats developed cancerous heart tumors called malignant schwannomas. The occurrence of malignant schwannomas in the hearts of male rats is the strongest cancer finding in our study.") [https://stopsmartmeters.org.uk/wp-content/uploads/2019/03/On-the-Clear-Evidence-of-the-Risks-to-Children-from-Smartphone-and-WiFi-Radio-Frequency-Radiation\\_Final.pdf](https://stopsmartmeters.org.uk/wp-content/uploads/2019/03/On-the-Clear-Evidence-of-the-Risks-to-Children-from-Smartphone-and-WiFi-Radio-Frequency-Radiation_Final.pdf);
- Military Experts, <https://sites.google.com/site/understandingemfs/military-experts?authuser=0>;
- [https://www.iarc.who.int/wp-content/uploads/2018/07/pr208\\_E.pdf](https://www.iarc.who.int/wp-content/uploads/2018/07/pr208_E.pdf);
- <https://www.sciencedirect.com/science/article/abs/pii/S0013935118303475>;
- <https://ehtrust.org/science/whoiarc-position-on-wireless-and-health/>;
- Letter by Dr. Beatrice Golomb, Professor of Medicine, UC San Diego School of Medicine, Aug. 22, 2017, <https://mdsafetech.org/wp-content/uploads/2017/09/golomb-sb649-5g-letter-8-22-20171.pdf>;
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- Cell Tower Health Effects <https://www.saferemr.com/2015/04/cell-tower-health-effects.html>, Center for Family and Community Health, School of Public Health, University of California, Berkeley;
- <https://ehtrust.org/statement-by-courtney-gilardi-after-pittsfield-board-of-health-votes-to-send-cease-and-desist-order-for-verizon-cell-tower/>;
- U.S. Access Board – Advancing Full Access & Inclusion for All - "Indoor Environmental Quality Project," <https://www.access-board.gov/research/building/indoor-environmental-quality/>;
- Electrohypersensitivity (EHS) Is An Environmentally-Induced Disorder That Requires Immediate Attention, Dr. Magda Havas, J. Sci Discov (2019), <http://www.e-discoverypublication.com/wp-content/uploads/2019/03/JSD18020-final.pdf>;
- Presentation by Karl Maret, M.D., M.Eng., Presentation, 1-17-20, <https://www.youtube.com/watch?v=Xilsy3mcjY>; "The Bioinitiative Report," <https://bioinitiative.org/>;
- The Prevalence of People with Restricted Access to Work in Manmade Electromagnetic Environments, <https://mdsafetech.files.wordpress.com/2019/10/2018-prevalence-of-electromagnetic-sensitivity>;
- Children and Wireless Radiation, <https://ehtrust.org/educate-yourself/children-and-wireless-faqs/>;
- "Why children absorb more microwave radiation than adults: The consequences," Morgan, Kesar and Davis, Journal of Microscopy and Ultrastructure, Vol. 2, Issue 4, December 2014, 197-204, <https://www.sciencedirect.com/science/article/pii/S2213879X14000583>;
- Why children absorb more microwave radiation than adults: The consequences, Morgan, Kesar and Davis, Journal of Microscopy and Ultrastructure, Vol. 2, Issue 4, December 2014, 197-204, <https://www.sciencedirect.com/science/article/pii/S2213879X14000583>;
- See, Dr. Melnick, London 5G Conference at 39:00, [https://www.youtube.com/watch?v=zSx\\_yDzxvM8&t=2295s](https://www.youtube.com/watch?v=zSx_yDzxvM8&t=2295s); <https://ehtrust.org/research-on-childrens-vulnerability-to-cell-phone-radio-frequency-radiation/> and <https://ehtrust.org/science/scientific-imaging-cell-phone-wi-fi-radiation-exposures-human-body/>;

- Exposure limits: the underestimation of absorbed cell phone radiation, especially in children, Gandhi, Morgan, Augusto de Salles, Han, Heberman, Davis, October 14, 2011, <https://pubmed.ncbi.nlm.nih.gov/21999884/>;
- Electrohypersensitivity as a Newly Identified and Characterized Neurologic Pathological Disorder: How to Diagnose, Treat and Prevent It, Belpomme and Irigary, Int'l Journal of Molecular Sciences, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7139347/>;
- Letter by Dr. Beatrice Golomb, Professor of Medicine, UC San Diego School of Medicine, Aug. 22, 2017, <https://mdsafetech.org/wp-content/uploads/2017/09/golomb-sb649-5g-letter-8-22-20171.pdf>; and
- Pittsfield Board of Health Emergency Order, <https://ehtrust.org/wp-content/uploads/Pittsfield-Health-Board-Cell-Tower-Order-to-Verizon-April-11-2022-FINAL-REDACTED.pdf> (providing a comprehensive summary of scientific findings of health hazards from RF radiation).
- Also see Appendix B for other scientific studies.
- See additional references in these comments.

## Any Decarbonization of the Atmosphere Cannot Occur Without the Decarbonization of RF Radiation (i.e., Electrosmog)

Another goal of the Justice40 Initiative is clean energy. Wireless is not clean energy.<sup>99</sup>

RF radiation emitted from wireless infrastructure is environmental pollution, also known as electrosmog. “ElectroSmog refers to all man-made electromagnetic radiation created and present in our surrounding environment.”<sup>100</sup> A pollutant can be radiation or sound wave, among other things, released into the environment with actual or potential adverse, harmful, unpleasant, or inconvenient effects.<sup>101</sup> Electrosmog is a pollutant. Electrosmog is constant with no off switch. RF radiation from wireless infrastructure is emitted into the air on a 24/7 basis, 365 days a year, with no “off” switch, and contributes substantially to the production of carbon dioxide in the environment and, therefore, to climate change and global warming.

Decarbonization is the process of reducing and removing carbon dioxide output.<sup>102</sup> It has been associated with improved air quality, and general benefits to society based on reduced mortality and other health outcomes.<sup>103</sup> ***However, any such purported benefits will likely be offset by the proliferation of electrosmog, and unquantifiable liabilities and health costs associated with it.*** This is already resulting in bad health outcomes and is quickly creating a new generation of disability – the EMS disabled. The lessons learned from other pollutants and toxins, such as

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<sup>99</sup> Environmental Health Trust, “5G is Not So Green ...” <https://myemail.constantcontact.com/Studies-Confirm-5G-4G-Will-Increase-Radiation-Exposure.html?oid=1116515520935&aid=2ptEVCn03-U>.

<sup>100</sup> <http://www.emfrf.com/electrosmog/>.

<sup>101</sup> “Biomagnetic Monitoring of Particulate Matter,” Prabhat K. Rai, (2016), <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/environmental-pollution>; see also, <https://www.sciencedirect.com/book/9780128051351/biomagnetic-monitoring-of-particulate-matter>.

<sup>102</sup> <https://www.collinsdictionary.com/dictionary/english/decarbonization>.

<sup>103</sup> See, e.g., Climate Action Council Draft Scoping Plan at <https://climate.ny.gov>; the Plan’s findings include that the: “decarbonization of New York can result in a substantial health benefit from improved air quality, on the order of \$50 - \$120 billion from 2020 – 2050 (based on reduced mortality and other health outcomes).”

asbestos, lead and smoking, indicate that the longer a government refuses to follow established science, the more deleterious it is for people's health and the economy.

***The decarbonization of the atmosphere cannot occur without the decarbonization of electrosmog.***

GHG has long been established as an air pollutant since a U.S. Supreme Court ruling in 2007.<sup>104</sup> Electrosmog is a greenhouse gas. RF radiation is anthropogenic and emissions from wireless infrastructure are expected to substantially increase the amount of greenhouse gases. RF radiation emissions are also associated with serious health problems, including within the population of the EMS disabled.

It has been reported that the environmental footprint of wireless infrastructure contributes more to global warming than it does in preventing it.<sup>105</sup> More recently, energy consumption for wireless infrastructure has been reported at ten times that of fiber optics (with "5G" infrastructure requiring 2 to 3.5 times the energy needed for 4G towers).<sup>106</sup> Energy consumption from "5G" infrastructure ***"is expected to increase 61x between 2020 to 2030*** due to the energy demands of powerful network elements like massive MIMO<sup>107</sup> and edge servers [and] the proliferation of 5G cell sites ..."<sup>108</sup> [Emphasis added]

As far back as 2013, it was predicted that the "wireless cloud" would produce "an increase in carbon footprint from 6 megatonnes of CO<sub>2</sub> in 2012 to up to 30 megatonnes of CO<sub>2</sub> in 2015, the equivalent of adding 4.9 million cars to the roads," with up to 90% of this consumption "attributable to wireless access network technologies ..."<sup>109</sup>

"The cloud is a metaphor for a shared pool of computing resources (e.g., networks, servers, storage, applications, and services) that end users can access, configure, and release on demand. Cloud services are hosted on servers that reside in data centers—centralized clusters of computers and supporting

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<sup>104</sup> *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497 (2007) (holding that "greenhouse gases fit well within the [Clean Air] Act's capacious definition of 'air pollutant.'")

<sup>105</sup> <https://ehtrust.org/wp-content/uploads/5G-and-Climate-Change-Flyer-EHT.pdf>.

<sup>106</sup> <https://www.emfacts.com/2020/09/5g-base-stations-use-up-to-three-and-a-half-times-more-energy-than-4g-infrastructure/>.

<sup>107</sup> MIMO means Multiple-Input Multiple-Output and "is a wireless technology that uses multiple transmitters and receivers to transfer more data at the same time" by combining "data streams arriving from different paths" in contrast to Single-Input Single-Output (SISO) technology which "can only send or receive one spatial stream at a time." See, <https://www.intel.com/content/www/us/en/support/articles/000005714/wireless/legacy-intel-wireless-products.html>.

<sup>108</sup> <https://ehtrust.org/report-5g-to-increase-energy-consumption-by-61-times/>; see also "Reinventing Wires: The Future of Landlines and Networks," at 73, National Institute for Science, Law and Public Policy, authored by Timothy Schoechle, PhD; <https://electromagnetichealth.org/wp-content/uploads/2018/02/Reinventing-Wires-1-25-18.pdf>.

<sup>109</sup> <https://ehtrust.org/wp-content/uploads/5G-and-Climate-Change-Flyer-EHT.pdf>.



network, storage, and power resources. Some of these data centers are enormous in size and consume prodigious amounts of electricity.”<sup>110</sup>

To understand the magnitude of the impact of the telecommunications sector on climate change, Greenpeace reported in 2012, if the "cloud" were a country, it would be the fifth largest consumer of energy in the world, and we have increased the cloud exponentially since then.<sup>111</sup>

Is wireless infrastructure a sleeping giant of electrosmog? Projecting into the future, wireless energy consumption is only likely to significantly increase.

**IMPORTANT NOTE:** Wireless emissions are typically measured by averaging the peaks and lowest points of RF radiation emissions and exposure levels over a period of 30 minutes. There are two problems with this methodology. First, it completely obscures the effects of the pulsating nature of RF radiation emissions and does not account for 24/7 exposure by the population to RF emissions. Second, the pulsating peaks are higher than the recorded average.<sup>112</sup> Second, the health outcomes occur with the persistent pulsations of RF radiation emissions. It is the pulsed high peak power emissions that, e.g., increase the potential for traumatic brain injury.<sup>113</sup> To obtain a more accurate reading of RF radiation emissions, the maximum power density and peak power density levels per millisecond should be recorded, as adverse health outcomes arise from the peaking and pulsating nature of wireless emissions.<sup>114</sup>

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<sup>110</sup> "Reinventing Wires: The Future of Landlines and Networks," National Institute for Science, Law and Public Policy, authored by Timothy Schoechle, PhD; <https://electromagnetichealth.org/wp-content/uploads/2018/02/Reinventing-Wires-1-25-18.pdf>.

<sup>111</sup> <https://www.greenpeace.org/static/planet4-international-stateless/2012/04/e7c8ff21-howcleanisyourcloud.pdf>.

<sup>112</sup> Dr. Magda Havas: WiFi in Schools is Safe. True or False? at 7:15, <https://www.youtube.com/watch?v=6v75sKAUFdc>.

<sup>113</sup> Computational modeling investigation of pulsed high peak power microwaves and the potential for traumatic brain injury. Sci Adv. 2021 Oct; 7(44). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8555891/>.

<sup>114</sup> Human-made electromagnetic fields: Ion forced-oscillation and voltage-gated ion channel dysfunction, oxidative stress and DNA damage (Review) (2021) Pangopolous DJ, et al. International Journal of Oncology. August 23, 2021. <https://pubmed.ncbi.nlm.nih.gov/34617575/>.

Computational modeling investigation of pulsed high peak power microwaves and the potential for traumatic brain injury. Sci Adv. 2021 Oct; 7(44). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8555891/>. ("These studies reveal that the MAE threshold depends on the energy in a single pulse (not the average power density) for sufficiently short pulses [e.g., 32  $\mu$ s in (46)], and peak power densities of 102 to 105 mW/cm<sup>2</sup> have been known to cause auditory effects in human participants (45).")

Diplomats' Mystery Illness and Pulsed Radiofrequency/Microwave Radiation. Dr. Beatrice Golomb. Neural Comput. 2018 Nov; 30(11):2882-2985. <https://pubmed.ncbi.nlm.nih.gov/30183509/>; "Reported facts appear consistent with pulsed RF/MW as the source of injury in affected diplomats."

"5G: Great risk for EU, U.S. and International Health! Compelling Evidence for Eight Distinct Types of Great Harm Caused by Electromagnetic Field (EMF) Exposures and the Mechanism that Causes Them," Martin L. Pall, PhD, <https://peaceinspace.blogs.com/files/5g-emf-hazards--dr-martin-l.-pall--eu-emf2018-6-11us3.pdf>.

Belyaev, I., Dean, A., Eger, H. et al. "EUROPAEM EMF Guideline 2016 for the prevention, diagnosis, and treatment of EMF-related health problems and illnesses." Rev environ Health. 2016;31(3):363-397. Doi:10.1515/reveh-2016-0011.



To put this in perspective, Martin L. Pall, PhD, Professor Emeritus of Biochemistry and Basic Medical Sciences, Washington State University, had provided the FCC with evidence in the FCC's docket that the FCC's existing RF exposure limits "are approximately 7.2 million times too high."<sup>115</sup> This is noteworthy as this was in connection with a federal case decided in 2021 by the D.C. Circuit, Court of Appeals, where the FCC's emission limits were discredited and remanded for further consideration in light of scientific evidence which the FCC ignored that had been presented into the FCC's docket of health hazards below those limits.

The goals of the Justice40 Initiative as stated in its Implementation Guidance are reduction of GHG, clean energy, clean transportation (including increased cycling and walking), and community resiliency programs.<sup>116</sup> But the Initiative's perceived health benefits will most likely be offset by the liabilities in the proliferation of electrosmog and the associated health hazards for the population at large, rendering a steadily growing population of EMS disabled. ***Besides, who would want to walk or cycle through electrosmog?***

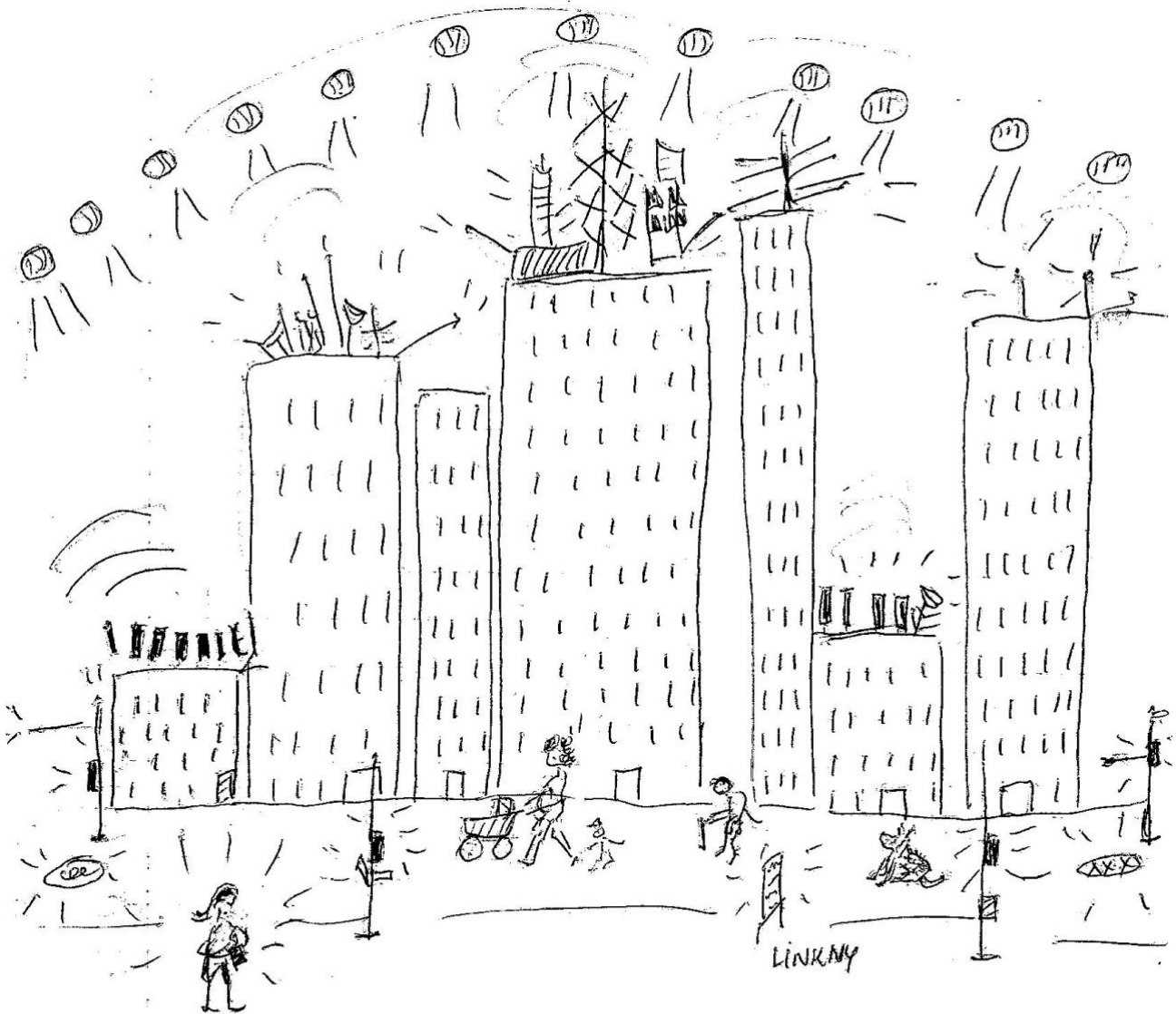
See the sketch below of the sources of ambient electrosmog and how it affects the general population engaging in ordinary daily activities. Since RF radiation is invisible, the sketch helps to visualize it by making the RF radiation more visible. The sketch was created by a senior citizen who is EMS disabled.

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B. W. G. (2012). "Bioinitiative Report 2012: A Rationale for Biologically-based Exposure Standards for Low-Intensity Electromagnetic Radiation."

<sup>115</sup> Appeals Court Tells FCC to Address Non-Thermal Health Impacts of Radiation from Wireless Technology on Children, the Public, and the Environment, Aug. 25, 2021, <https://ehtrust.org/appeals-court-tells-fcc-to-address-non-thermal-health-impacts-of-radiation-from-wireless-technology-on-children-the-public-and-the-environment/>.

<sup>116</sup> Implementation Guidance, <https://www.whitehouse.gov/wp-content/uploads/2021/07/M-21-28.pdf>.



HAVE A NICE DAY!

80,000 satellites  
 8m. base stations on earth  
 11,000 "small cells" in NYC alone  
 (est.) 8 b.t. cell phones in the world in 2021

JM 4/12/21

The Plan's perceived health benefits will likely not be realized with the proliferation of wireless infrastructure because of the associated health hazards, which may increase exponentially the

health impacts on the population at large, rendering a steadily growing population of EMS disabled.

EMS disabled tend to be low-income because of their inability to work in environments containing RF radiation. Interventions would include deploying wired solutions, such as FTTP, in place of wireless infrastructure, for fixed uses at home or at work, and creating safe spaces that are RF-free.

Hard-wired solutions, such as fiber optics to and through the premises (FTTP) is the preferred method of providing telecommunications connectivity. Incidentally, wireless infrastructure is completely dependent on fiber optics. Fiber optics has already been deployed by the telecommunications companies but not put into service for the “last mile,” installing wireless, instead”<sup>117</sup>

That RF radiation is a pollutant is documented by the telecommunications industry in their consumer product protection plans for which they disclaim liability for personal injury from RF radiation. For example, an industry brochure for consumers for cell phone insurance protection states:

***“Pollutants means any ... gaseous, or thermal irritant or contaminant including ... artificially produced electric fields, magnetic field, electromagnetic field, sound waves, microwaves and all artificially produced ionizing or non-ionizing radiation ...”***<sup>118</sup>

This caveat emptor disclaimer is used to warn consumers that they are using RF radiation on their cell phones, at their own risk. Similar definitions for pollution are in the product protection plans for other telecommunications companies.<sup>119</sup>

Annual reports from industry also acknowledge the risk of litigation from personal injuries from RF radiation. For example, one annual report states that:

***“... we also face current and potential litigation relating to **alleged adverse health effects on customers or employees who use such technologies including, for example, wireless devices.** We may incur significant expenses***

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<sup>117</sup> “How Did America Lose Over 41 Million Miles of Fiber Optics Since 2007?”

<https://kushnickbruce.medium.com/how-did-america-lose-over-41-million-miles-of-fiber-optics-since-2007-cbe7ec841da4>.

<sup>118</sup> Verizon Wireless Services, LLC, <https://ehtrust.org/wp-content/uploads/device-protection-brochure-nationwide.pdf>.

<sup>119</sup> “Electromagnetic Field Insurance Policy Exclusion are the Standard,”

<https://ehtrust.org/key-issues/electromagnetic-field-insurance-policy-exclusions/>,

“Welcome to AT&T Multi-Device Protection Pack,” <https://ehtrust.org/wp-content/uploads/ATT-Multi-Device-Protection-Pack-Insurance.pdf>,

“Sprint Complete for Smart Devices, Tier1-2, Terms and Conditions,” <https://ehtrust.org/wp-content/uploads/Sprint-Insurance-Terms-and-Conditions-Downloaded-2019.pdf>.

defending such suits or government charges and may be required to pay amounts or otherwise change our operations in ways that could materially adversely affect our operations or financial results.”<sup>120</sup> [Emphasis added]

A Verizon SEC 10-K report for 2021 states:

*“... our wireless business also faces personal injury and wrongful death lawsuits relating **to alleged health effects of wireless phones or radio frequency transmitters**. We may incur significant expenses in defending these lawsuits. In addition, we may be required to pay significant awards or settlements.”*<sup>121</sup> [Emphasis added]

Two of the largest insurance companies in the world (i.e., Lloyd’s of London and Swiss Re) have declined to insure telecommunications companies for any liability for personal injury that results from RF radiation exposures.<sup>122,123,124</sup> Insurance companies, reviewing potential RF radiation injuries to the public from a risk analysis perspective, have assessed RF radiation as “high” risk by the insurance industry and is, therefore, excluded from coverage. The insurance industry acknowledges the high potential of claims of RF radiation injuries from the public arising from RF radiation exposure.

Minority and rural communities have historically been affected by environmental hazards. Those mistakes should not be amplified by their exposure to wireless RF radiation in close proximity to their homes, schools and businesses.

Not only is there uncontrolled proliferation of electrosmog from wireless infrastructure, but to date there has been no environmental review or assessment under federal environmental law.

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<sup>120</sup> AT&T, Inc., 2021 Annual Report, <https://investors.att.com/~media/Files/A/ATT-IR-V2/financial-reports/annual-reports/2021/complete-2021-annual-report.pdf> at 41.

<sup>121</sup> Verizon's 2021 U.S. SEC Form 10-K at 17, <https://www.verizon.com/about/sites/default/files/2020-Annual-Report-on-Form-10-K.PDF>.

<sup>122</sup> <https://5gtechnologynews.com/insurance-companies-can-refuse-claims-related-to-electromagnetic-radiation-illnesses/>

<sup>123</sup> <https://ehtrust.org/wp-content/uploads/Swiss-Re-SONAR-Publication-2019-excerpt-1.pdf>, pg. 29.

<sup>124</sup> <https://ehtrust.org/key-issues/reports-white-papers-insurance-industry>.

## Adverse Effects of RF Radiation on Flora and Fauna: Trees, Wildlife, Bees<sup>125</sup>

The consequences of RF emissions from wireless infrastructure on the health of the EMS disabled and other vulnerable communities, including trees and pollinators and other flora and fauna, are not just a future concern, they are here. There may be an assumption built into climate change mitigation that our forests may provide large-scale carbon sequestration opportunities for emissions and that protecting forests is needed to achieve some level of carbon neutrality.<sup>126</sup>

***However, any reliance on trees and forests as our carbon sink will not be valid if trees and forests are damaged by the increased proliferation of wireless infrastructure.*** RF radiation from wireless infrastructure is not only hazardous for the EMS disabled, but also for the flora and fauna.<sup>127</sup> It has been shown that trees are damaged by RF radiation from mobile phone base stations, with damage starting on one side and then “extending to the whole tree over time.”<sup>128</sup> Tree damage was found with chronic exposure to radio frequency.<sup>129</sup> Any hoped-for carbon sequestration from trees is not likely to occur if trees are damaged or die from the proliferation of wireless infrastructure.

RF radiation also affects wildlife. Scientists have observed at “vanishingly low intensities” toxic effects on animals, including effects on “orientation and migration, food finding, reproduction, mating, nest and den building ... and longevity and survivorship” of wildlife.<sup>130</sup>

Bees, as our primary source of pollination, are injured from RF radiation which means a decrease in pollination and, in turn, food production. A study showed that “every time a bee approaches a power line or a cell phone antenna, it becomes stressed and, therefore, its internal temperature increases and the pollination service decreases.”<sup>131</sup>

Notably, there is no federal agency setting safety limits for trees, birds or bees, nor is there any funded mandate to do so.<sup>132</sup> A review of 45 peer-reviewed scientific studies found physiological

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<sup>125</sup> See <https://ehtrust.org/wp-content/uploads/Letter-National-Park-Service-Sept-2020-6.pdf>; see also, Dr. Magda Havas Letter on WiFi in Public Places, July 11, 2018, <https://ehtrust.org/wp-content/uploads/Dr.-Magda-Havas-Letter-on-WiFi-in-Public-Places-.pdf>.

<sup>126</sup> See Draft Scoping Plan for New York State’s CLCPA, <https://climate.ny.gov>; A finding of the Scoping Plan is that “large-scale carbon sequestration scale carbon sequestration opportunities include lands and forests and negative emissions technologies,” and that “[p]rotecting and growing New York’s forests is required for carbon neutrality.”

<sup>127</sup> Effects of non-ionizing electromagnetic fields on flora and fauna, part 1. Rising ambient EMF levels in the environment, Levitt, Lai and Manville, March 28, 2022, <https://pubmed.ncbi.nlm.nih.gov/34047144/>.

<sup>128</sup> Radiofrequency radiation injures trees around mobile phone base stations, Aug. 24, 2016, <https://pubmed.ncbi.nlm.nih.gov/27552133/>.

<sup>129</sup> *Tree Damage from Chronic High Frequency Exposure*, <https://ehtrust.org/wp-content/uploads/tree-health-radiation-Schorpp-2011-02-18.pdf>.

<sup>130</sup> Id. See also, Johansson O, “The Stockholm Declaration about “Life EMC””, Bee Culture Magazine 2022; May issue: 56-61.

<sup>131</sup> Research confirms negative effects of power lines on bees, May 3, 2022, <https://ehtrust.org/research-confirms-negative-effects-of-power-lines-on-bees/>.

<sup>132</sup> EHT Letter to US National Park Service on 5G, Cell Towers and Impacts to Pollinators, Trees and Wildlife,

and morphological changes in plants, such maize, roselle, pea, fenugreek, duckweeds, tomato, onions and mungbean plants, which appeared to be very sensitive to RF radiation.<sup>133</sup> This can have repercussions for our food supply.

## **The Settled Science on Adverse Health Effects of RF Radiation: From Industry, FCC, FDA, Military, Scientists And Experts**

***“[W]e have, as the evidence adduced herein indicates, far exceeded the ‘level of proof required to justify action for health protection.’ The theory that non-ionizing RFR exposure could not cause cancer has been refuted using the scientific method.”<sup>134</sup>***

Professor Tom Butler,  
also quoting Professor Rainer Frentzel-Beyme MD

### **Industry’s Settled Science:**

As early as April 2000, the ECOLOG Institute, which was commissioned by T-Mobil in Germany (parent company to T-Mobile in the U.S.), issued a report on its study of the risks of electromagnetic fields (EMFs) because of the rapidly expanding mobile telecommunications industry. The results were twofold: (1) findings of adverse health impacts associated with exposure to EMFs and (2) strong precautions and warnings to significantly lower the power of the EMFs to which the public would be exposed.<sup>135</sup> The findings included risks of cancer (of the central nervous system and testicular cancer), leukemia, damage to the immune system and cognitive impairments. It found that for all stages of cancer development, power flux densities of less than 1 W/m<sup>2</sup> were sufficient. “For some stages of cancer development, intensities of 0.1 W/m<sup>2</sup> or even less may suffice to trigger effects.”<sup>136</sup>

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Sep 15, 2020, <https://ehtrust.org/ehtrust-letter-to-us-national-park-service-on-5g-cell-towers-and-impacts-to-pollinators-trees-and-wildlife/>.

<sup>133</sup> Review: Weak radiofrequency radiation exposure from mobile phone radiation on plants, M. Halgamug, Sept 20, 2016, <https://pubmed.ncbi.nlm.nih.gov/27650031/>.

<sup>134</sup> Prof. Tom Butler, University College Cork, On the Clear Evidence of the Risks to Children from Smartphone and Wi-Fi Radio Frequency Radiation, at 26, <https://stopsmartmeters.org.uk/wp-content/uploads/2019/03/On-the-Clear-Evidence-of-the-Risks-to-Children-from-Smartphone-and-WiFi-Radio-Frequency-Radiation-Final.pdf>.

Prof. Tom Butler is a social scientist, and is a former satellite and microwave communications engineer and IT professional, former Principal Investigator of the Governance Risk and Compliance Technology Centre in Ireland, and a current member of the European Commission’s Expert Group on Regulatory Obstacles to Financial Innovation in FinTech. “With over €8.5 million in research funding on the application of digital technologies to date, he has over 220 publications and 11 inventions.”

<sup>135</sup> Mobile Telecommunications and Health/Review of the current scientific research, ECOLOG Institut, Hannover, April 2000, <https://ehtrust.org/wp-content/uploads/ecolog2000.pdf>; ECOLOG is a research organization founded in 1991 by scientists from the University of Hannover.

<sup>136</sup> Id.

The ECOLOG Institute also addressed the issue of electrosensitivity. It emphasized the importance of developing ***“a strategy for the research of the electrosensitivity phenomenon and its incidence, which would acknowledge the failure of traditional scientific methods to address the problem and allow the inclusion of the data available from the self-help groups and associations of the affected.”*** [Emphasis added]

The Institute also provided precautions for vulnerable populations in “residential areas, schools, nurseries, playgrounds, hospitals and all other places at which humans are present for longer than 4 hours.”<sup>137</sup>

In an article, “Why Tech Leaders Don't Let Their Kids Use Tech,”<sup>138</sup> it's reported that technology executives restrict or forbid their children's use of the very technology that they are providing to the public, including “the makers of smartphones and tablets, of social media channels and game boxes.” Reported examples have included technology “titans” such as former Apple's Steve Jobs and Bill and Melinda Gates have admitted to placing restrictions on their children's use of technology. Chris Anderson, former Wired magazine editor and CEO of 3D Robotics, said that his kids “accuse me and my wife of being fascists and overly concerned about tech, and they say that none of their friends have the same rules. That's because we have seen the dangers of technology firsthand. I've seen it in myself, I don't want to see that happen to my kids.”<sup>139</sup>

#### **Federal Communications Commission (FCC):**

The FCC admitted in 2019 that at least some radio-frequency radiation (RFRs) can cause instantaneous non-thermal adverse effects with RFR frequencies ranging between 3 KHz and 10 MHz.<sup>140</sup>

#### **Food and Drug Administration (FDA):**

Linda Birnbaum, Ph.D., former Director of the U.S. NIEHS and former Director of the National Toxicology Program (NTP) spanning across the Department of Health and Human Services organizations which involves NIH, FDA and CDC, has stated:<sup>141</sup>

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<sup>137</sup> Id.

<sup>138</sup> “Why Tech Leaders Don't Let Their Kids Use Tech,” <https://kidzu.co/health-wellbeing/why-tech-leaders-dont-let-their-kids-use-tech/>.

<sup>139</sup> Id.

<sup>140</sup> Proposed Changes in the Commission's Rule Regarding Human Exposure to Radiofrequency Electromagnetic Fields, 34 FCC Rcd 11687, 11743-11745, ¶¶122- 124 & nn. 322-335 (2019).

<sup>141</sup> *Environmental Health Trust, et al v. FCC*, Motion for Leave to File Brief of Amicus Curiae Joseph Sandri in Support of Petitioners Urging Reversal, Aug. 5, 2020, <https://ehtrust.org/wp-content/uploads/20-1025-Amicus-Brief-Joe-Sandri.pdf>.

- ***“Effects from [wireless] radiofrequency radiation (RFR) such as genetic toxicity, immunotoxicity, oxidative stress, changes in gene and protein expression, changes in cell differentiation and proliferation, and increased permeability of the blood brain barrier were reported in these [scientific] publications.” (pg. 8).***
- ***“The phase I [NTP] studies established that non-thermal levels (<1oC or no detectible change in temperature) of RFR exposure had toxicological implications in biological systems.” (pg. 9).***
- ***“The NTP found and published evidence of DNA damage after only 90 days of exposure.” (pg. 9).***
- ***“Overall, the NTP findings demonstrate the potential for RFR to cause cancer in humans. The independent peer review of the entire proceedings carried out by toxicologists, pathologists and statisticians independent of the NTP staff conducted March 26-28, 2018, concluded that there was ‘clear evidence of cancer,’...exposure to RFR is associated with an increase in DNA damage.” (pg. 11).<sup>142</sup>***

IMPORTANT NOTE: NTP refers to the National Toxicology Program. Since completion of the \$30 million NTP study (originally sponsored by the FDA to research possible biological effects of RFR), the results have been replicated by the Ramazzini Institute in another study using exposures below the FCC thermal thresholds (simulating emissions from cellular base stations and wireless transmitters).

FCC’s thermal limit is designed to protect from acute, short-term injuries from thermal effects, i.e., increase in body temperature, but may not be protective from thermal effects from chronic exposure. The NTP is recognized as the premier institute to conduct toxicology studies. The NTP study challenged the hypothesis that RF radiation is not harmful (at 6:50).<sup>143</sup> The NTP successfully refuted that hypothesis.

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<sup>142</sup> See also, Prof. Tom Butler, University College Cork, *On the Clear Evidence of the Risks to Children from Smartphone and Wi-Fi Radio Frequency Radiation*, at 4 (“Dr. John Bucher, Senior Scientist, at the National Toxicology Program stated, ***“We have concluded that there was clear evidence that male rats developed cancerous heart tumors called malignant schwannomas. The occurrence of malignant schwannomas in the hearts of male rats is the strongest cancer finding in our study.”*** [Emphasis added]) [https://stopsmartmeters.org.uk/wp-content/uploads/2019/03/On-the-Clear-Evidence-of-the-Risks-to-Children-from-Smartphone-and-WiFi-Radio-Frequency-Radiation\\_Final.pdf](https://stopsmartmeters.org.uk/wp-content/uploads/2019/03/On-the-Clear-Evidence-of-the-Risks-to-Children-from-Smartphone-and-WiFi-Radio-Frequency-Radiation_Final.pdf). Prof. Tom Butler is a social scientist, and is a former satellite and microwave communications engineer and IT professional, former Principal Investigator of the Governance Risk and Compliance Technology Centre in Ireland, a current member of the European Commission’s Expert Group on Regulatory Obstacles to Financial Innovation in FinTech. “With over €8.5 million in research funding on the application of digital technologies to date, he has over 220 publications and 11 inventions.”

<sup>143</sup> Id.



Creating controversy about the science is simply more war-gaming, funding industry-friendly studies while discrediting prominent scientists and their peer-reviewed studies.<sup>144</sup> Placing industry-friendly experts in government agencies designed to oversee them, seems to be a reprise from the tobacco industry.<sup>145</sup>

### **Military - U.S. Naval Medical Research Institute**

As early as 1971, the U.S. Naval Medical Research Institute (NMRI) published a report which summarized the findings of over 2300 scientific studies which included thermal (ionizing) and non-thermal (non-ionizing), biological hazards of RF radiation. The NMRI updated its work in 1976 and published a bibliography of 3,700 scientific papers on the biological hazards of RF radiation.<sup>146</sup> With respect to otherwise non-thermal, non-ionizing, RF radiation, the NMRI found, among many other things:<sup>147</sup>

- “Oxidative process change (a precursor for DNA strand breaks and ultimately cancer)
- Decreased fertility
- Altered fetal development
- Muscle contraction
- Cardiovascular changes
- Altered menstrual activity
- Liver enlargement.”

Other military experts have found that RF radiation is hazardous.<sup>148</sup> Declassified reports dating back to the 1970s document serious biological effects of non-ionizing RF radiation, including from

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<sup>144</sup> UW Scientist Henry Lai Makes Waves in the Cell Phone Industry, <https://seattlemag.com/article/uw-scientist-henry-lai-makes-waves-cell-phone-industry>.

<sup>145</sup> *The inconvenient truth about cancer and mobile phones*, Hertsgaard, M & Dowie, M. (2018), The Guardian, Jul 14, 2018, <https://www.theguardian.com/technology/2018/jul/14/mobile-phones-cancer-inconvenient-truths>.

<sup>146</sup> “On the Clear Evidence of the Risks to Children from Non-Ionizing Radio Frequency Radiation: The Case of Digital Technologies in the Home, Classroom and Society,” Prof. Tom Butler, University College Cork, Ireland, <https://mdsafetech.org/wp-content/uploads/2020/05/5g-professor-tom-butler-on-the-clear-evidence-of-the-risks-to-children-from-non-ionizing-radio-frequency-radiation-the-case-of-digital-technologies-in-the-home-classroom-and-society-.pdf> at 23;

See, Glaser, Z. (1972), *Bibliography of Reported Biological Phenomena ('Effects') and Clinical Manifestations attributed to Microwave and Radio-Frequency Radiation*, Naval Medical Research Institute, National Naval Medical Center, Bethesda, MD, <http://docs.stetzerelectric.com/Naval-Medical-Research-Institute-1972-Full-Bibliography.pdf>;

See also, Glaser, Z., Brown, P., Brown, M., (1976), *Bibliography of Reported Biological Phenomena ('Effects') and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation: Compilation and Integration of Report and Seven Supplements*, National Naval Medical Institute Detachment, Naval Surface Weapons Center, Dahlgreen Laboratory, Bethesda, MD, <https://ehtrust.org/1976-naval-medical-research-report-biological-effects-microwave-radiation-3700-references/>.

<sup>147</sup> Id.

<sup>148</sup> Military Experts, <https://sites.google.com/site/understandingemfs/military-experts?authuser=0>.

the U.S. Army Medical Intelligence and Information Agency Office of the Surgeon General, CIA and NASA.<sup>149</sup>

### Facts and Statements by U.S. Preeminent Scientists and Experts

As shown by the following facts and statements by the United States' preeminent scientists and experts in the area of wireless RF radiation research, it has become well established that wireless radiation exposure produces or has the recognized potential of producing biological effects. See also Appendix B for a more comprehensive list of scientific studies.

1. In 2011, the World Health Organization's (WHO) International Agency for Research on Cancer (IARC) classified wireless radiation as a Group 2B possible carcinogen.<sup>150</sup> This conclusion was based upon an increased risk of malignant brain cancer (glioma) identified in those who used cell phones for over 10 years for an average of 30 minutes per day.

Anthony B. Miller, M.D., Senior Epidemiologist, IARC, states in a 2018 updated assessment to the 2011 IARC classification of wireless radiofrequency radiation (RFR):

***"When considered with recent animal experimental evidence, the recent epidemiological studies strengthen and support the conclusion that RFR should be categorized as carcinogenic to humans (IARC Group 1)."***<sup>151</sup>

2. "Since 2011, the scientific evidence linking wireless to cancer has significantly increased and today several published reviews conclude that the current body of evidence indicates cell phone radiation is a proven Group 1 human carcinogen (Miller et al 2018, Peleg et al 2018 Carlberg and Hardell 2017, Belpomme et al 2018)."<sup>152</sup>

In fact, in 2019, "the majority of independent researchers ... have called for nonionizing microwave radiation to be reclassified as a Class 1 carcinogen, along with cigarette smoke."<sup>153</sup> By independent researchers is meant those who are not funded by industry and therefore would not have a conflict of interest in reporting results and providing transparency.<sup>154</sup>

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<sup>149</sup> Id.

<sup>150</sup> [https://www.iarc.who.int/wp-content/uploads/2018/07/pr208\\_E.pdf](https://www.iarc.who.int/wp-content/uploads/2018/07/pr208_E.pdf).

<sup>151</sup> <https://www.sciencedirect.com/science/article/abs/pii/S0013935118303475>.

<sup>152</sup> <https://ehtrust.org/science/whoarc-position-on-wireless-and-health/>.

<sup>153</sup> *On the Clear Evidence of the Risks to Children from Non-Ionizing Radio Frequency Radiation: The Case of Digital Technologies in the Home, Classroom and Society*, Prof. Tom Butler, University College Cork, Ireland, <https://mdsafetech.org/wp-content/uploads/2020/05/5g-professor-tom-butler-on-the-clear-evidence-of-the-risks-to-children-from-non-ionizing-radio-frequency-radiation-the-case-of-digital-technologies-in-the-home-classroom-and-society-.pdf>.

<sup>154</sup> *On the Clear Evidence of the Risks to Children from Non-Ionizing Radio Frequency Radiation: The Case of Digital Technologies in the Home, Classroom and Society*, at 4, Prof. Tom Butler, University College Cork, Ireland,

Laboratory and epidemiological evidence was collected during the ensuing 8 years since 2011, whereby an Advisory Group of 29 scientists from 18 countries recommended that the IARC prioritize non-ionizing RFR to reclassify it as a Class 1 carcinogen.<sup>155</sup>

3. Christopher J. Portier, Ph.D., former director of the National Center for Environmental Health at the Centers for Disease Control and Prevention (CDC) and a scientific advisor for the WHO, reviewed the most recent body of scientific research and literature to look at the feasibility of RFR causing specific brain tumors in humans and concluded in March, 2021:

***"Given the human, animal and experimental evidence, I assert that, to a reasonable degree of scientific certainty, the probability that RF exposure causes gliomas and neuromas is high."***<sup>156</sup>

4. Ronald Melnick, Ph.D., retired NIEHS senior toxicologist who won the American Public Health Association's 2007 David P. Rall Award for public health advocacy and led the design of the NTP study<sup>157</sup> states:

***"I strongly feel health and regulatory agencies should promote policies that reduce cell phone radiation exposure, especially for children and pregnant women. The agencies in the U.S. say, "if you are concerned" [placing the burden on the individual] rather than "we are concerned." Agencies should be clear and straightforward educating the public on "here is what you should do."***

***"The risk can be greater for children than adults due to the increased penetration of the radiation within brains of children and the fact that the developing nervous system is more susceptible to tissue damaging agents."***

<sup>158</sup>

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<https://mdsafetech.org/wp-content/uploads/2020/05/5g-professor-tom-butler-on-the-clear-evidence-of-the-risks-to-children-from-non-ionizing-radio-frequency-radiation-the-case-of-digital-technologies-in-the-home-classroom-and-society-.pdf>; <https://www.theguardian.com/technology/2018/jul/14/mobile-phones-cancer-inconvenient-truths>.

<sup>155</sup> Miller, A. B., Morgan, L. L., Udasin, I., & Davis, D. L. (2018). Cancer epidemiology update, following the 2011 IARC evaluation of radiofrequency electromagnetic fields (Monograph 102). Environmental research, 167, 673-683.: <https://www.sciencedirect.com/science/article/pii/S0013935118303475>; see also, Hardell letter to firefighters, October 14, 2014, "Health hazards of base stations and other sources of radiofrequency electromagnetic field (RF-EMF) exposure," [https://ehtrust.org/wp-content/uploads/HARDELL-14-October-2014\\_1-1.pdf](https://ehtrust.org/wp-content/uploads/HARDELL-14-October-2014_1-1.pdf).

<sup>156</sup> <https://www.saferemr.com/2021/03/expert-report-by-former-us-government.html?m=1>.

<sup>157</sup> Bio of Dr. Melnick, <https://ehtrust.org/wp-content/uploads/Melnick-Bio.pdf>.

<sup>158</sup> Dr. Ron Melnick – London 5G Conference, [https://www.youtube.com/watch?v=zSx\\_yDzxvM8&t=2295s](https://www.youtube.com/watch?v=zSx_yDzxvM8&t=2295s).

5. The American Academy of Pediatrics, a non-profit professional organization of 60,000 primary care pediatricians, pediatric medical subspecialists, and pediatric surgical specialists, stated in a letter to the FCC on July 12, 2012:

***“Children ... are not little adults and are disproportionately impacted by all environmental exposures, including cell phone radiation. In fact, according to IARC, when used by children, the average RF energy deposition is two times higher in the brain and 10 times higher in the bone marrow of the skull, compared with mobile phone use by adults.”<sup>159</sup>***

6. New Hampshire formed a State Commission to examine whether wireless radiation is harmful to human health. The majority of that New Hampshire State Commission came to the conclusion that exposure to wireless radiation is harmful to human health and the environment. The commission was convened through bipartisan legislation<sup>160</sup> that was signed by the governor. Commission membership included unbiased experts in fields relating to health and radiation exposure, and they issued their Final Report in November 2020.<sup>161</sup>

## Legal Perspective

Federal telecommunications law clearly states that the law exists

***“for the purpose of promoting safety of life and property through the use of wire and radio communication.”<sup>162</sup>***

That is the essential purpose of communications, and applies to wireless deployment. That RF radiation from wireless infrastructure has already injured a growing number of people who are now EMS disabled and who need to evacuate their properties means that ***wireless deployment has failed of its essential purpose.***

The FCC has gone far afield from fulfilling this purpose. Although RF radiation emission limits are set by the FCC under the Telecommunications Act of 1996 (“TCA”), the requirement is normally that the carrier show evidence of a gap in cell phone service and that they are using the least

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<sup>159</sup> <https://ehtrust.org/wp-content/uploads/American-Academy-of-Pediatrics-letter-to-the-FCC-July-12-2012.pdf>.

<sup>160</sup> <https://legiscan.com/NH/text/HB522/2019>.

<sup>161</sup> Final Report of the Commission to Study the Environmental and Health Effects of Evolving 5G Technology, Nov. 1, 2020, (RSA 12-K:12-14, HB 522, Ch. 260, Laws of 2019), <http://www.gencourt.state.nh.us/statstudcomm/committees/1474/reports/5G%20final%20report.pdf>.

<sup>162</sup> The Communications Act of 1934, Pub.L. 73–416, codified at Chapter 5 of Title 47 of the United States Code, 47 U.S.C. § 151 et seq.

intrusive means to fill that gap.<sup>163</sup> Otherwise, there is no federal preemption on installing cell towers or “5G” cells or other wireless infrastructure. To date, there appears to have been no demonstrable evidence of any gap in service by a physical drive-by or any physical testing of geographic areas for cell phone reception, or the information is not readily available.

Indeed, insofar as “5G” is not even meant for telephone service (rather, for the Internet of Things (“IoT”), faster down streaming of videos or driverless cars), its installation should not be subject to federal preemption. So far, the industry has used the most intrusive means by placing these “5G” cell sites on city poles, e.g., as little as 10-15 feet away from the windows of people’s homes, or over their rooftops where residents are suffering 24/7, 365 days a year, from the RF radiation, especially those living on the top floors just underneath the wireless antennas and cell sites.<sup>164</sup>

Native Americans challenged the installation of “5G” cell towers on their lands. The United Keetoowah Tribe brought suit against the FCC because of the FCC’s failure to conduct environmental review of “5G” deployment under the National Environmental Policy Act (NEPA).<sup>165</sup> The Court of Appeals for the D.C. Circuit in 2019 found that the FCC acted in an arbitrary and capricious manner in its rule for massive deployment of “5G” cell sites, particularly with the planned 800,000 locations for deployment in the U.S. To date, there has been no environmental review of “5G,” and yet “5G” is being deployed, unabated.

This lack of NEPA review, in effect continuing to provide a categorical exemption for wireless infrastructure, has fueled the unfettered deployment of wireless infrastructure in the U.S., the exacerbation of adverse health impacts on the EMS disabled, and the continued bias against the EMS disabled. Moreover, there has been no safety testing of “5G” cells, as Senator Blumenthal of Connecticut established during Senate testimony by telecommunications executives in 2019.<sup>166</sup>

The Court of Appeals for the D.C. Circuit again ruled against the FCC in August, 2021, when the FCC decided not to update its RF emission limits dating back to 1996. The limits were challenged as out-of-date, not based on science, and placing the general population at risk. The Court remanded the RF emission limits back to the FCC, calling out the FCC for acting in an **“arbitrary and capricious”** manner in **“its complete failure to respond to comments concerning environmental harm caused by” RF radiation below the current FCC emission limits.**<sup>167</sup> Those comments in the

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<sup>163</sup> See, e.g., *Sprint Spectrum v. Willoth*, 176 F.3d 630 (2d Cir. 1999) (ruling that a telecommunications carrier is required to show a gap in cell phone service and the least intrusive means to fill that gap before federal pre-emption can apply), <https://casetext.com/case/sprint-spectrum-v-willoth#p643>.

<sup>164</sup> Densified 4G/5G Wireless Telecom Facilities Onslaught in NYC, <https://ourtownourchoice.org/ny/wtf/>.

<sup>165</sup> United Keetoowah, et al. v. FCC, (D.C. Ct of Appeals, 2019), <https://ehtrust.org/wp-content/uploads/Court-Opinion.pdf>.

<sup>166</sup> <https://mdsafetech.org/2019/02/13/no-research-on-5g-safety-senator-blumenthal-question-answered/>.

<sup>167</sup> Environmental Health Trust, et al v. FCC (D.C. Ct of Appeals, 2021), [https://www.cadc.uscourts.gov/internet/opinions.nsf/FB976465BF00F8BD85258730004EFDF7/\\$file/20-1025-1910111.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/FB976465BF00F8BD85258730004EFDF7/$file/20-1025-1910111.pdf).

FCC docket consisted of 11,000 pages of scientific studies of proven harms and hundreds of people reciting their injuries, from RF radiation. The Court continued to admonish the FCC:

"...That failure undermines the Commission's conclusions regarding the adequacy of its testing procedures, ***particularly as they relate to children***, and its conclusions regarding the implications of long-term exposure to RF radiation, exposure to RF pulsation or modulation, and the implications of technological developments that have occurred since 1996, ***all of which depend on the premise that exposure to RF radiation at levels below its current limits causes no negative health effects***. Accordingly, we find those conclusions ***arbitrary and capricious*** as well." [Emphasis added.]

***"The factual premise—the non-existence of non-thermal biological effects—underlying the current RF guidelines may no longer be accurate."***

As scientists have warned, the "safety" limits protect industry, not people, since harmful health effects can occur well below those limits.<sup>168</sup> Almost a year later, the FCC has failed to update its outdated "safety" limits; and yet, the deployment of "5G" cells continues unabated.

***Would you board a plane whose safety guidelines have not been updated since 1996?***

### **Federal Agencies Creating Barriers for Vulnerable Communities and the EMS Disabled**

The EMS disabled and vulnerable communities are in desperate need of protection. The fact is that any recourse or ability to avoid what injures them has been removed. Our federal agencies seem to have been placed into service to harm or to prevent any recourse for the already EMS disabled and vulnerable communities and the creation of new generations of EMS disabled.

The "focus should be on safe, wired and well-shielded technology – not more wireless."<sup>169</sup> The EMS disabled, as well as vulnerable communities, require wired solutions, such as fiber optics; therefore, any barriers to providing fiber optics must be eliminated – immediately. Federal agencies have ignored their needs.

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<sup>168</sup> The 5G Appeal, <http://www.5gappeal.eu/the-5g-appeal/>.

<sup>169</sup> Letter by Dr. Beatrice Golomb, Professor of Medicine, UC San Diego School of Medicine, Aug. 22, 2017, <https://mdsafetech.org/wp-content/uploads/2017/09/golomb-sb649-5g-letter-8-22-20171.pdf>.

Remarkably, the U.S. Department of Housing and Urban Development (HUD) has issued guidance to its agency not to recognize any EMS claims.<sup>170</sup> This has created bias within the agency and other agencies:

“The Department of Energy and Department of Justice have also received numerous complaints dealing with these issues and have informed HUD that they will not open investigations under Section 504 based on these allegations. Based on advice from HUD’s Office of General Counsel, FHEO will not accept as jurisdictional allegations dealing with Smart Meters, RF and/or EMF issues, and any complaints already accepted will be closed... HUD reimburses only for cases that are jurisdictional under the federal Fair Housing Act. Where such complaints are accepted by a FHAP, they will not be accepted by HUD for payment.”<sup>171</sup>

The FCC has continued, unabated, to deploy 5G and other wireless technologies, despite the known dangers of wireless radiation and despite recent court rulings against the FCC. The Court of Appeals for the D.C. Circuit ruled twice against the FCC, once in 2019 for its failure to conduct environmental review before deployment “5G” cells under the National Environmental Protection Act (NEPA) and then in 2021 for its failure to review prolific scientific evidence of harm at RF radiation emission levels well below the FCC limits. The FCC’s failure to comply with either court order has fueled the unfettered deployment of wireless infrastructure, the exacerbation of adverse health impacts on the EMS disabled, and the continued bias against the EMS disabled.

The New Hampshire Commission examining EMF health effects extended an invitation to the FCC to provide comment or participate. It went unanswered. The New Hampshire Commission concluded.

“The FCC, using the science that they receive from other agencies and scientific/engineering associations, has set the allowable power intensity that can be emitted from these antennae. ***Testimony shows these limits are set well above many other industrialized nations. There are concerns by many Washington, DC watchers that the FCC is a captive agency whose Commission members come from the industry they are overseeing.***”

This is having a cascading effect on state agencies which are also creating barriers for the EMS disabled. For example, the Public Service Commission (PSC) has put up barriers against NYS residents from obtaining information, even with numerous Freedom of Information Law (FOIL) requests, in connection with “smart” utility meters that emit RF radiation and have caused life-threatening health outcomes.<sup>172</sup>

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<sup>170</sup> Letter addressed to “Fair Housing Enforcement Partners” by Joseph A. Pelletier, Director, Fair Housing Assistance Program, U.S. Dept. of Housing and Urban Development, obtained from Maine Human Rights Commission, 2017.

<sup>171</sup> Id.

<sup>172</sup> *Romine v. The Public Service Commission*, Case #533446, NYS Appellate Division, Third Dept, February 14, 2022.



Smart meters are usually attached to the side of a building or home or installed within a building or home, placing unsuspecting residents even closer to RF radiation exposure. Unsuspecting residents have been seriously injured and are now EMS disabled from the smart meters.<sup>173</sup> For instance, NYS residents have had to resort to litigation to have the PSC answer for its refusal to allow NYS residents to retain their analog meters or reinstate their analog meters<sup>174</sup> and to address the serious adverse health effects caused by the PSC's decision to force smart meters upon NYS residents without their consent and without an option to opt out.<sup>175</sup> (See statements in Appendix A of NYS residents injured by "smart" meters – Antonella D., Nick C., Peter L., Steve Romine)

A couple residing in Woodstock, NY were seriously affected by the installation of a smart meter on their home. The male was stricken with severe neck pain, muscle cramps and heart palpitations, while the female was stricken with nausea, vertigo headaches and mini-stroke for which she was hospitalized. Their situation and reasonable repeated requests over the course of 6 months for an accommodation of an easily obtainable analog meter fell on deaf ears of the electrical utility. For fear of another stroke occurring, the male replaced the smart meter with a purchased analog meter. In a complete dereliction of duty to protect public health and safety of the public, this couple's electrical service was cut-off and terminated for 6 years where eventually the couple was forced to move to another location having to abandon their rent friendly home of many years. (See statement of Steve Romine in Appendix A.)

NYS resident complaints of injuries and reasonable accommodation have fallen on deaf ears at the PSC. NYS residents are being forcibly subjected to installation of smart meters in their own homes.<sup>176</sup> This has been the case in other states, as well. ***This should offend the conscience of any public official who took an oath to protect public health and welfare.***

An amicus brief in an important smart meter case in PA delineates the multiple health hazards from doctors, scientists and engineers.<sup>177</sup> It includes statements from: (a) 57 physicians who collectively have over 3000 patients with EMS or conditions aggravated by exposure to RF radiation; (b) scientists with expertise in RF radiation, and that pulsed RF radiation generated by smart meters "is a significant harm agent;" (c) an engineer who explains how pulsed RF radiation

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<sup>173</sup> "Bullied by Smart Meters; A Technology We Can Do Without," West View News, May 3, 2022, <https://westviewnews.org/2022/05/03/bullied-by-smart-meters/web-admin/>.

<sup>174</sup> *Romine v. The Public Service Commission*, Case #533446, NYS Appellate Division, Third Dept, February 14, 2022.

<sup>175</sup> *Id.*

<sup>176</sup> Bullied by Smart Meters," <https://westviewnews.org/2022/05/03/bullied-by-smart-meters/web-admin/>.

<sup>177</sup> Brief of Children's Health Defense, and Building Biology Institute, et al as Amici Curiae in Support of Appellees/Cross-Appellants "Customers, Sept 14, 2021, <https://childrenshealthdefense.org/wp-content/uploads/Brief-and-Addendum-Submitted-9-14.pdf>.

from smart meters is conducted through a home's electrical wiring, making the entire home an antenna which is harmful; (d) the Building Biology Institute involved in attempting to mitigate the conditions in homes with smart meters, explaining that it is impossible to sufficiently mitigate such homes, the solution being to remove the smart meter and replace with an analog meter (costing about \$100).<sup>178</sup>

A pending case against the PSC alleges that the PSC misrepresented to the lower court that it had conducted an exhaustive review of 100 scientific peer-reviewed studies that purported to show that "smart" meters are biologically safe. However, when asked under FOIL requests to simply provide the 100 studies, a list of the studies or even a copy of the cover pages, the PSC denied the requests, admitting, ultimately, that "no records could be found after diligent search of research material by the Department." ***This appears to be a prima facie case of the PSC having none of the studies that it alleges to have exhaustively reviewed, by its own admission.***

The PSC is allowing the main utility in New York State to force residents to have smart meters despite their objections about their own health and personal safety against the hazards of smart meters. A NYC resident had requested to opt out of having a smart meter in her house. She received a letter from the utility denying her request. If a resident desires to opt out, the utility should not be in a position to question the resident's justifications or otherwise. ***The utility serves the residents of NYS, the residents do not serve the utility.*** (See Appendix A – statement of Antonella)

Second, the false notion of reducing or eliminating "regulatory and permitting barriers"<sup>179</sup> has been conjured up by agencies to accelerate the stampede of permits and approvals of wireless infrastructure while bypassing zoning regulations and permitting rules otherwise designed to protect residents' health and welfare. These are not "barriers." Rather, this false notion of "barriers" is being used as a euphemism to ERECT actual barriers against residents, particularly the EMS disabled, by silencing any opposition and denying them the right to notice and to be heard.

***This is, in effect, war-gaming those who are EMS disabled or otherwise vulnerable, by discrediting their legitimate injuries and perpetuating discrimination against them.*** War-gaming is a technique coined by industry as early as 1994 to discredit those who are not favorable to industry.<sup>180</sup> Our federal agencies should be protecting the EMS disabled, children and other vulnerable communities, on their own initiative, without forcing any burden of proof on them or taking a page out of the industry's playbook to war-game the population.

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<sup>178</sup> Id.

<sup>179</sup> Report of the Removal of State and Local Regulations Working Group, Broadband Deployment Advisory Committee, January 10, 2018, <https://www.fcc.gov/sites/default/files/bdac-regulatorybarriers-01232018.pdf>.

<sup>180</sup> The inconvenient truth about cancer and mobile phones, Hertsgaard, M & Dowie, M. (2018), The Guardian, Jul 14, 2018, <https://www.theguardian.com/technology/2018/jul/14/mobile-phones-cancer-inconvenient-truths>.

It is also erecting barriers for residents to prevent them from having a superior service that only fiber optics (FTTP) can provide (discussed further in these comments), and that would help reduce GHG in the telecommunications sector.

Rather, residents are being forcibly exposed to RF radiation that they do not want or need, an inferior service with known adverse health effects - wireless nodes facing their homes and their children's bedrooms, rooftop antennas directly above their apartments and "smart" meters being installed on their homes. ***Unsuspecting residents have been permanently injured and are now EMS disabled.***

Third, while there is a push towards reducing or eliminating "regulatory and permitting barriers," ironically, on the state level, more barriers have been imposed on fiber optics deployment to the premises (FTTP). For instance, the NYS Department of Transportation (DOT) is preventing fiber providers from effectively competing with wireless providers, and obstructing the ability of NYS residents, including the EMS disabled, to receive fiber to the premises (FTTP). PERM 75,<sup>181</sup> put into effect in November 2020, is a DOT permitting requirement, applicable only to fiber optics operators, which sets exorbitant and prohibitive rights-of-way use and occupancy fees which don't apply to wireless providers (including incumbent providers).<sup>182</sup> It discriminates against local fiber operators in NYS.<sup>183</sup> PERM 75 serves as a penalty and a barrier to entry for local fiber operators in NYS,<sup>184</sup> ***where rural areas will be most disenfranchised*** by effectively being denied access to fiber

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<sup>181</sup> PERM 75 is otherwise known as the Consolidated Application and Permit for Highway Work and Use & Occupancy for Fiber Optic Facilities and Supporting Infrastructure (11/23/2020). Authority is derived from

<sup>182</sup> The fee schedule is set forth at this link: <https://www.dot.ny.gov/divisions/engineering/real-estate/repository/NYSDOT%20FIBER%20OPTIC%20USE%20AND%20OCCUPANCY%20PERMIT%20FEE%20SCHEDULE%20FOR%20PUBLICATION%20OCT%202019.pdf>.

<sup>183</sup> Policy Analysis and Management, College of Human Ecology, Cornell University, states that: "Inexplicably, PERM 75 pertains only to fiber networks, not other utilities, such as water, sewer, or telephone. PERM 75 is expected to raise as much as \$30 million annually, but is counterproductive to the Broadband for All initiative's goal by disincentivizing broadband network expansion.

"Southern Tier Network, a non-profit Open Access Network provider operating across the region, estimates Perm 75 would increase network costs by \$400,000 per year plus an additional \$10,000-20,000 per mile on new fiber construction. Likewise, Ithaca Area Economic Development's (IAED) "Cayuga Data Juice—Broadband Connectivity" project can be expected to incur a \$250,000 "build tax" and an annual fee of \$40,000, effectively swamping the \$800,000 budget. A similar \$1.6 million fee has stalled a large broadband project in the North Country." Accessible at [https://www.human.cornell.edu/pam/research/cpip/cbn/blog/2\\_15\\_2021\\_PERM%2075](https://www.human.cornell.edu/pam/research/cpip/cbn/blog/2_15_2021_PERM%2075).

<sup>184</sup> Policy Analysis and Management, College of Human Ecology, Cornell University, states that:

"In 2015, New York State (NYS) launched an ambitious \$500 million Broadband for All initiative. The goal was statewide connectivity by 2018 ...

"Confounding capital improvement projects aimed at improving connectivity is PERM 75, a NYS Department of Transportation (DOT) permitting requirement that became effective in November 2020. PERM 75 authorizes the DOT to enact a "use and occupancy fee" on fiberoptic cable that run along state-owned rights-of-way (ROW).

broadband to the premises (FTTP). Cornell University's Policy Analysis and Management, College of Human Ecology criticized PERM 75, and how it will adversely affect rural areas.<sup>185</sup>

Wheeler pointed to such laws in his testimony to Congress in March 2021 that, "[f]or too long there have existed anti-competition, anti-consumer state laws that prohibit local governments, public-private partnerships and cooperatives from delivering broadband service. These laws were passed by state legislatures and have had the effects of denying the benefits of competition to citizens."<sup>186</sup>

Legislation has been introduced to repeal subdivision 24-e of Section 10 of the NYS Highway Law to rectify this discrimination against fiber operators,<sup>187</sup> but until the legislation is passed, the discrimination persists. A reprieve of applying these fees to fiber operators has been recently reported, however, it is not clear how long this reprieve will last without legislation to remove this discrimination entirely.

Fourth, another barrier is that fiber optics operators do not have access to middle mile fiber to connect to in order to provide services to a community, even if middle mile fiber has been deployed using, even partly, government funds. There is a barrier to entry imposed by incumbent telecommunications carriers who are running middle mile fiber past rural communities without serving them (hence the digital divide). This is a barrier against local fiber optic providers who would otherwise serve these communities.

Fifth, there is also the barrier to obtaining relief for injuries sustained from wireless infrastructure. What insurance coverage can telecommunications carriers provide for injuries sustained from RF

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"Under PERM 75, the DOT may charge: (1) A "build tax", including additional survey, design and engineering requirements, on average \$15,000 per mile; and (2) A \$0.26-0.80 per foot per year annual rental fee. Fees vary depending on whether the fiber is buried, aerial, or crosses a state ROW; they increase by 2% annually and may also be adjusted any time DOT renews a permit. Annual rental fees apply to new installations and retroactively to existing fiberoptic lines."

Accessible at [https://www.human.cornell.edu/pam/research/cpip/cbn/blog/2\\_15\\_2021\\_PERM%2075](https://www.human.cornell.edu/pam/research/cpip/cbn/blog/2_15_2021_PERM%2075).

<sup>185</sup> Policy Analysis and Management, College of Human Ecology, Cornell University, states that:

**"PERM 75 disproportionately affects rural regions since it is assessed per foot.** In geographically dense areas, the overall cost passed by providers onto subscribers is distributed over a larger base. **Conversely, rural users are fewer, farther apart, and less equipped to absorb additive costs imparted by a provider.**" [Emphasis added]

Accessible at [https://www.human.cornell.edu/pam/research/cpip/cbn/blog/2\\_15\\_2021\\_PERM%2075](https://www.human.cornell.edu/pam/research/cpip/cbn/blog/2_15_2021_PERM%2075).

<sup>186</sup> Tom Wheeler's Testimony to Congress,

[https://energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Witness%20Testimony\\_Wheeler\\_FC\\_2021.03.22.pdf](https://energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Witness%20Testimony_Wheeler_FC_2021.03.22.pdf).

<sup>187</sup> Assembly Bill 10932, 2019-2020 Legislative Session: "Relates to repealing provisions of the highway law and the transportation corporations law to reduce the cost of expanding broadband access; repealer,"

<https://www.nysenate.gov/legislation/bills/2019/a10932>.

radiation when the standard in the insurance industry is to exclude those injuries? As mentioned previously, two of the largest insurance companies in the world (i.e., Lloyd's of London and Swiss Re) have declined to insure telecommunications companies for any liability for personal injury that results from RF radiation exposures.<sup>188,189,190</sup> The insurance industry acknowledges the high potential of claims of RF radiation injuries from the public and have assessed RF radiation as "high" risk, and therefore excluded from coverage as a standard practice.<sup>191</sup>

### **Creation of Community Resiliency Plans: The Need to Accommodate EMS Disabled Communities**

The EMS disabled is a disadvantaged community that requires affirmance and accommodation. The Fair Housing Act ("FHA")<sup>192</sup> and Americans with Disabilities Act ("ADA")<sup>193</sup> require accommodations relating to a "physical or mental impairment" that "substantially limits one or more of the major life activities." See, e.g., 42 U.S.C. §12102(1)(A) and 28 C.F.R. §36.105.

Residents in disadvantaged communities must be given the right to be heard and to choose the method of broadband access (wired or wireless), by providing them with sufficient notice and the power to consent to wired or wireless access, particularly given the proven hazardous nature of wireless technology. Appropriate accommodation must be made for those who are disabled or suffering from RF radiation. Residents should have veto power over any wireless infrastructure in their neighborhoods or at least those right outside their homes or bedrooms, especially given that insurance companies will not insure for any injuries from RF radiation.

The perspective of those EMS disabled as stakeholders who are suffering or disabled from wireless radiation is particularly important in establishing digital equity and inclusion, and the EMS disabled should be given a voice. This would ensure that those otherwise suffering or disabled from wireless radiation are given accommodation by (1) being given access to fiber, rather than wireless, to access the Internet for medical attention, education and other uses; (2) being given equal access as everyone else to the Internet and (3) ensuring a far enough distance from wireless technology with minimum setbacks of 500 meters, or any greater amount of setback or relocation of wireless technology that the disabled require to live safely within their homes.

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<sup>188</sup> *Insurance Companies Can Refuse Claims Related to Electromagnetic Radiation Illnesses*, <https://5gtechnologynews.com/insurance-companies-can-refuse-claims-related-to-electromagnetic-radiation-illnesses/>

<sup>189</sup> <https://ehtrust.org/wp-content/uploads/Swiss-Re-SONAR-Publication-2019-excerpt-1.pdf>, pg. 29.

<sup>190</sup> <https://ehtrust.org/key-issues/reports-white-papers-insurance-industry>

<sup>191</sup> See also, *The inconvenient truth about cancer and mobile phones*, Hertsgaard, M & Dowie, M. (2018), The Guardian, Jul 14, 2018, <https://www.theguardian.com/technology/2018/jul/14/mobile-phones-cancer-inconvenient-truths>.

<sup>192</sup> 42 U.S.C. §3601, et seq.

<sup>193</sup> 42 U.S.C. §12101, et seq.

Making accommodation for the EMS disabled is a necessity. To ensure that the EMS disabled are included in digital equity and digital inclusion, the EMS disabled need access to broadband; otherwise, not having these minimal accommodations would totally exclude this EMS disabled population from having public access to the Internet in their home and in anchor institutions. More specific guidelines are delineated by the [Building Biologists](#), an organization whose mission is to help create healthy homes, schools, and workplaces free of toxic hazards, including those posed by electromagnetic radiation.<sup>194</sup>

### **Accommodation for Emergencies**

The EMS disabled require hardwired connections in the event of any emergency or natural disaster, such as heavy weather conditions or a tornado. An example of how fiber optics made possible the restoration of service during an emergency is in Chattanooga, TN. In November 2012, a tornado ripped through Chattanooga. Because of the fiber optics installation, even though it had been only partially completed at that time, the system was able to either prevent or automatically restore service from 23,000 customer outages.<sup>195</sup> The EMS disabled require access to services in such emergencies.

## **Remediation for Greater Community Resiliency in Reducing Adverse Impacts of RF Radiation by Adopting Tom Wheeler’s “Fiber-First” Policy**

The cost of inaction for the health of the population in pushing wireless infrastructure deployment on an increasing number of unsuspecting public, as well as EMS disabled, and the cost of innate obsolescence of wireless, may be unquantifiable. For instance, in NYS, it has been estimated that, in connection with implementing their new climate change state law, the “cost of inaction exceeds the cost of action by more than \$90 billion.”<sup>196</sup>

FTTP is the superior choice for these Communities, for digital inclusion and environmental equity to bridge the digital divide. Remediation in reducing the adverse impacts on the EMS disabled requires digital inclusion and digital equity. ***The only way that the promise of diversity and digital equity and digital inclusion can come true for EMS disabled communities is to ensure wired connection to the home and at work and ensure they can achieve wireless exposure avoidance - the only recognized treatment/lifestyle alternative.***

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<sup>194</sup> <https://buildingbiologyinstitute.org/>.

<sup>195</sup> “Smart Grid Helps Keep Lights Burning,” May 19, 2017 Editorial, Hamilton County Herald, <https://www.hamiltoncountyherald.com/Story.aspx?id=8646&date=5%2F19%2F2017>.

<sup>196</sup> Draft Scoping Plan for New York State’s CLCPA, <https://climate.ny.gov>.

The antidote to the unconstrained deployment of wireless infrastructure is fiber optics to the premises and fiber optics to the room (in either instance, FTTP). In contrast to wireless, fiber optics has:

***“[I]ower energy consumption, reduced waste and sustainable architecture, characteristics that make fiber infrastructure an environmentally advantageous choice.”<sup>197</sup>***

Health benefits associated with energy efficiency interventions can be realized with wired connections, such as fiber optics.

***“Fiber has a minimal ecological impact, reduces waste, consumes very little energy and helps decrease greenhouse gas emissions.”<sup>198</sup>***

Wheeler, in advocating for a ***“fiber first”*** policy, testified in Congress in March 2021:<sup>199</sup>

“To prioritize symmetrical 1 gigabit capacity ... is to prioritize a ‘fiber first’ policy. (Such a policy is consistent with the hybrid fiber-coax (HFC) strategy of cable systems’ [DOCSIS 4.0](#) and its 10 Gbps down/6 Gbps up capability.)”<sup>200</sup>

Wheeler further stated that:

“[f]iber’s benefits are driven by the combination of increased processing power at the ends of the fiber and the ability to handle that increasing capacity... [A]pplying increased processing to the data flowing through a conduit that itself has increasing capacity is the definition of futureproofing.”<sup>201</sup>

Another factor to consider for purposes of ensuring digital equity and broadband inclusion is affordability, capacity and scalability to meet increasing user demands over the local network’s economic life, including performance, speed, low latency, capacity and reliability. Fiber best meets these demands. Wireless is less reliable and less scalable to meet future customer demands and has higher operational expense.<sup>202</sup>

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<sup>197</sup> *How Fiber Can Help Make Your Network Greener*,

<https://www.cablinginstall.com/cable/fiber/article/16465844/how-fiber-can-help-make-your-network-greener>

<sup>198</sup> Fiber Optic Broadband, A Greener Internet Solution, <https://www.otelco.com/a-greener-internet-solution/>.

<sup>199</sup> Tom Wheeler’s Testimony to Congress,

[https://energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Witness%20Testimony\\_Wheeler\\_FC\\_2021.03.22.pdf](https://energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Witness%20Testimony_Wheeler_FC_2021.03.22.pdf).

<sup>200</sup> *Id.*

<sup>201</sup> *Id.*

<sup>202</sup> “To Reduce Network Operating Expenses, Choose FTTH,” Masha Zager, July 2020,

<https://www.bbcmag.com/broadband-applications/to-reduce-network-operating-expenses-choose-ftth>.



Fiber broadband would provide access, adoption, affordability, digital equity and digital inclusion. Fiber optics broadband to and through the premises is a necessity for disadvantaged communities and is the best solution to bridge the digital divide. It provides the best capacity for remote learning for children and students who are part of disadvantaged communities, and more reliable access to medical and other services for the elderly and disabled during emergencies or severe weather when wireless service is more likely to be interrupted or out of service. Fiber would also prevent the exclusion of those disabled or suffering from wireless radiation who cannot be near wireless infrastructure or wireless Internet.

These communities and unserved and underserved communities are disproportionately affected by lack of, or insufficient access to, broadband access. Middle mile fiber optics infrastructure has been built in many areas with middle mile fiber running past rural communities without serving them, hence the “digital divide.”

Fiber to and through the premises (FTTP), also referred to as fiber to the room (FTTR) is the superior service for bridging the digital divide and providing appropriate accommodation for the EMS disabled, so that these communities are not left behind.<sup>203</sup> Wheeler said that wireless should be used only as a last resort, not a first resort, in his March, 2021 Congressional testimony.<sup>204</sup> He stated that despite approximately \$40 billion of government subsidies “over the last decade,” those subsidies “have failed to deliver the goal of universal access to high-speed broadband ... because it failed to insist on futureproof technology, ... and focused more on the companies being subsidized than the technology being used or the people who were supposed to be served.”<sup>205</sup> Fiber is “futureproof” while wireless is not.

FTTP will provide the best capacity for remote learning for children and students, particularly those who are already EMS disabled, and more reliable access to medical and other services for the elderly and disabled during emergencies or severe weather when wireless service is more likely to be interrupted. FTTP will also prevent the exclusion of the EMS disabled who cannot be near wireless infrastructure or wireless Internet.

Wheeler’s statements point to the fact that wireless and fiber are not equivalent broadband media –wireless is and should be a complement, not the primary access method.<sup>206</sup> A policy paper

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<sup>203</sup> Reinventing Wires, National Institute for Science, Law and Public Policy (NISLAPP), authored by Timothy Schoechle, PhD, <https://electromagnetichealth.org/wp-content/uploads/2018/02/ReInventing-Wires-1-25-18.pdf>.

<sup>204</sup> Tom Wheeler’s Testimony to Congress, [https://energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Witness%20Testimony Wheeler FC 2021.03.22.pdf](https://energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Witness%20Testimony%20Wheeler%20FC%202021.03.22.pdf).

<sup>205</sup> Id.

<sup>206</sup> See, In re Inquiry Concerning Deployment of ATC to All Americans, FCC 20-50, ¶¶10-12, 35 FCC Rcd 8986, 8991 (Apr. 2020) (“Fourteenth Broadband Competition Report”) (“...fixed broadband generally delivers faster speeds, permits higher consumption at a lower price, and has far higher data caps,...While users may substitute between mobile and fixed broadband when accessing certain services and applications, the record indicates that they are not yet functional substitutes for all uses and customer

of the National Institute for Science, Law and Public Policy, “Re-Inventing Wires: The Future of Landlines and Networks”, authored by Timothy Schoechele, PhD, communications technology expert, similarly states that:

***“[f]iber is unmatched in its speed, performance, reliability, etc. ... Wireless is not a substitute for fiber.”<sup>207</sup>***

Fiber is more affordable, scalable from symmetrical (upload and download) speeds of 100 Mbps to 1Gbps to 10Gbps, has a longer life span of 25-50 years and is safer and more cybersecure, has lower operational expenses,<sup>208</sup> and is available at more affordable prices. Fixed broadband generally delivers faster speeds, permits higher consumption at a lower price, and has far higher data caps.<sup>209</sup>

By contrast, wireless typically requires equipment upgrades, constant maintenance and re-investments about every 5 years. An example of fiber deployment, consumers in Hamilton County, TN have multiple service options, which include speeds of up to 1000 Mbps (1 Gbps). Pricing and capacity are scalable and provide for 300 Mbps at \$57.99/month and 1 Gbps at \$67.99, in each instance with symmetrical speeds.<sup>210</sup> Wireless technology is not able to effectively compete with similar high-speed Internet, with the FCC only requiring 25 Mbps download / 3 Mbps upload speeds.<sup>211 212</sup>

The Fiber Broadband Association (FBA), the largest fiber optics trade association in the U.S., has as its tagline, ***“If it isn’t fiber, it isn’t broadband.”<sup>213</sup>*** The FBA has shown that consumers prefer the higher symmetrical speeds that fiber provides.<sup>214</sup> The FBA also shows the superior technology of fiber in its white paper, “The Market Has Spoken.”<sup>215</sup> ***The National Telecommunications and***

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groups. Based on the record before us, we again find that fixed broadband and mobile wireless broadband services are not functional substitutes in all cases.”) (notes omitted).

<sup>207</sup> “Reinventing Wires: The Future of Landlines and Networks,” National Institute for Science, Law and Public Policy, authored by Timothy Schoechele, PhD; <https://electromagnetichealth.org/wp-content/uploads/2018/02/ReInventing-Wires-1-25-18.pdf>.

<sup>208</sup> <https://optics.fiberbroadband.org/Full-Article/reduce-network-operating-expenses-choose-ftth>.

<sup>209</sup> In the Matter of Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, 36 FCC Rcd 836, 841, ¶11 (2021).

<sup>210</sup> <https://bestneighborhood.org/tv-and-internet-hamilton-county-tn/>.

<sup>211</sup> <https://www.allconnect.com/blog/internet-speed-classifications-what-is-fast-internet>.

<sup>212</sup> <https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2018-broadband-deployment-report>.

<sup>213</sup> <https://s3.amazonaws.com/files.fiberbroadband.org/download/3555.4237?AWSAccessKeyId=AKIAIZGD7FMIYLBZNI&Expires=1650065068&Signature=CfFGHmOkZaAovAfuGmXXs2hDpKo%3D>.

<sup>214</sup> [https://www.broadbandworldnews.com/document.asp?doc\\_id=773546](https://www.broadbandworldnews.com/document.asp?doc_id=773546).

<sup>215</sup> <https://www.fiberbroadband.org/p/cm/ld/fid=978>.

***Information Administration (“NTIA”) in implementing the Infrastructure and Jobs Act is prioritizing fiber optics over wireless in creating a future-proof technology grid.<sup>216</sup>***

In addition, any “electrification” of homes and cars would need to consider the EMS disabled and others sensitive to excessive electricity. Regarding the integration analysis findings, zero emission vehicles are not feasible for the growing population of EMS disabled and vulnerable communities. Therefore, the goal of no electrified vehicles being sold by 2035 will leave behind the EMS disabled who will not be able to use the vehicles because of the level of electricity and RF radiation that will be emitted and will be hazardous to them. This will leave the EMS disabled stranded who have no other means of transportation. Any electrification must be done without the use of RF radiation. Any electrification must be done in consultation with expert scientists, engineers and the Building Biology Institute and other experts in mitigating the effects of hazardous electricity (“dirty electricity”).

***“The Smart Meter Canard”<sup>217</sup>***

The installation of smart meters has been for the purported purpose of improving electricity reliability and efficiency, reducing pollution, and incorporating more renewable energy.<sup>218</sup> It was also intended to balance supply and demand, integrate toward distributable renewable sources, and provide two-way communication with customers and lower bills.<sup>219</sup> Those have not yet been delivered by utilities.<sup>220</sup> However, it has been reported to be more for the benefit of utilities in reducing their operating costs and increasing profits, while delivering unemployed meter readers,<sup>221</sup> and placing the public at risk for health from RF radiation and personal safety from smart meters exploding, burning out appliances and catching on fire.<sup>222</sup>

The smart meter grid utilizes a centralized utility approach in that “it positions the utility as the ‘gatekeeper’ and controller of the ‘gateway’ to the consumer and his home.”<sup>223</sup> However, ***this gateway should “belong[] to the consumer, not to the electric utility.”<sup>224</sup>*** NISLAPP recommends

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<sup>216</sup> NTIA Official Acknowledges Clear Preference for Fiber in Infrastructure Deployment Program, June 13, 2022, <https://broadbandbreakfast.com/2022/06/ntia-official-acknowledges-clear-preference-for-fiber-in-infrastructure-deployment-program/>.

<sup>217</sup> Getting Smarter About the SmartGrid, <https://gettingsmarteraboutthesmartgrid.org/pdf/Smart%20Grid%20Report%203-15-13.pdf> at 16.

<sup>218</sup> Getting Smarter About the SmartGrid, <https://gettingsmarteraboutthesmartgrid.org/pdf/Smart%20Grid%20Report%203-15-13.pdf>; see also, <https://gettingsmarteraboutthesmartgrid.org/>.

<sup>219</sup> <https://gettingsmarteraboutthesmartgrid.org/pdf/Smart%20Grid%20Report%203-15-13.pdf> at 11-12.

<sup>220</sup> Id. at 16.

<sup>221</sup> Id. at 12.

<sup>222</sup> Id. See also, <http://emfsafetynetwork.org/wp-content/uploads/2016/01/Summary-of-Evidence-on-Smart-Meter-Fires.pdf>.

<sup>223</sup> <https://gettingsmarteraboutthesmartgrid.org/pdf/Smart%20Grid%20Report%203-15-13.pdf> at 16.

<sup>224</sup> Id. at 16.

investments that integrate distributed renewable energy technologies to create a sustainable carbon-free energy economy.<sup>225</sup>

There's a built-in obsolescence to smart meters.<sup>226</sup> In addition, smart meters can cause a host of problems that are not caused by analog meters: "dirty electricity" emissions on home wiring, remote shutoff of one's utility service, appliance burnout complaints, higher bill complaints, to name a few.<sup>227</sup>

Because smart meters use RF bursts, "very short, very high intensity wireless emissions ... to signal the utility about energy usage," they "place an entirely new and significantly increased burden on existing electrical wiring."<sup>228</sup> ***That creates a condition where the load current on the electrical wiring is exceeded which leads to heat and can lead to fires.***<sup>229</sup> In addition, it's been reported that "[t]he location of the fire does NOT have to be in close proximity to the main electrical panel where the smart meter is installed."<sup>230</sup>

A utility worker blew the whistle on his utility employer, stating that smart meters cause fires and that the utility intentionally did not disclose this risk to the public.<sup>231</sup> There have been reports of fires, surges, exploding meters and damaged appliances. For example, in 2015 in Stockton, CA, a truck crashed into a utility pole which led to an electrical power surge "where [d]ozens of smart meters exploded and caught fire and cut power to about 5800 homes." Nearby residents described it like "a bomb going off, and strong enough to shake a house."<sup>232</sup>

In 2012, a utility in CA which mistakenly sent twice the normal voltage to homes caused a power surge which "fried" the appliances, including refrigerators, stoves, washers, dryers, TVs and air

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<sup>225</sup> Id. at 14.

<sup>226</sup> "Getting Smarter About the SmartGrid,"

<https://gettingsmarteraboutthesmartgrid.org/pdf/Smart%20Grid%20Report%203-15-13.pdf>; see also, <https://gettingsmarteraboutthesmartgrid.org/>. "Benefits of Analog Meters Vs. Smart Meters – Why you should opt-out today," <http://www.electrosmogprevention.org/stop-ca-smart-meter-news/san-diego-county-smart-meter-news/benefits-of-analog-meters-vs-smart-meters-why-you-should-opt-out-today/>.

<sup>227</sup> <http://www.electrosmogprevention.org/stop-ca-smart-meter-news/san-diego-county-smart-meter-news/benefits-of-analog-meters-vs-smart-meters-why-you-should-opt-out-today/>.

<sup>228</sup> Wireless Smart Meters and Potential for Electrical Fires. Commentary by Cindy Sage, Sage Associates and James J. Biergiel, EMF Electrical Consultant July 2010, <http://emfsafetynetwork.org/wp-content/uploads/2016/01/Summary-of-Evidence-on-Smart-Meter-Fires.pdf>.

<sup>229</sup> Id.

<sup>230</sup> Id.

<sup>231</sup> <https://www.youtube.com/watch?v=EnxloitNUek>.

<sup>232</sup> *Dozens of Smart Meters Explode from Power Surge*, March 30, 2015, <http://emfsafetynetwork.org/dozens-of-smart-meters-explode-from-power-surge/>.

conditioners, and 28 smart meters had to be replaced (the one smart meter observed had been charred).<sup>233</sup>

In 2011 in Santa Rosa, CA, three smart meters exploded at a shopping mall and were found to have been “blown off the electrical panel causing damage to the interior wiring of the electrical panel. A fire was still smoldering ...” and the fire battalion chief called it a “meltdown.”<sup>234</sup>

Smart meters have also “been reported to explode and catch fire in other areas, including Bakersfield, El Cerrito, and Berkeley, California, and in Oregon, Virginia and Texas ...”<sup>235</sup> In another instance in 2011 in Palo Alto, CA, 80 smart meters caught fire and burnt out after a power surge.<sup>236</sup>

In contrast, analog meters do not have internal electronics, and are unaffected by power surges.<sup>237</sup> Residents are questioning if these are safe for their homes.<sup>238</sup> In 2011, Portland, Oregon’s utility was replacing 70,000 smart meters because of fire risk.<sup>239</sup> In 2015, Lakeland, Florida’s utility was replacing 10,657 smart meters also because of fire risk.<sup>240</sup> The meters had already cost ratepayers \$2 million, and the replacements would cost another \$1.3 million, in addition to labor costs.

### **From “Smart” Grid to “Intergrid”**

Transition should be away from the “smart” grid to an “Intergrid,” where in the future, people would be “... generating their own green energy in their homes, offices and factories and sharing it with one another across intelligent distributed electricity networks – and Intergrid – just like people now create their own information and share it on the Internet.”<sup>241</sup>

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<sup>233</sup> *Power mishap damages appliances for Livermore residents*, Aug, 12, 2012, <https://abc7news.com/archive/8770840/>.

<sup>234</sup> <http://emfsafetynetwork.org/3-pge-smart-meters-explode-at-santa-rosa-mall/>.

<sup>235</sup> Id.

<sup>236</sup> <https://www.paloaltoonline.com/news/2011/09/04/power-surge-raises-questions-about-smartmeters>.

<sup>237</sup> Id.

<sup>238</sup> Id.

<sup>239</sup> [https://www.oregonlive.com/business/2014/07/pge\\_replacing\\_some\\_electricity.html](https://www.oregonlive.com/business/2014/07/pge_replacing_some_electricity.html).

<sup>240</sup> <https://smartmeterharm.org/2014/08/28/lakeland-electric-to-replace-10-657-residential-smart-meters-in-florida/>.

<sup>241</sup> *Getting Smart About the Smart Grid: Why the federal government stimulus programs underwriting billions of dollars of ‘dumb’ smart meters for utility companies – with taxpayer dollars – meters that will soon be obsolete and not integrate with, or enable, the ‘smart grid’ of the future on which U.S. energy sustainability depends*, National Institute for Science, Law & Public Policy, Aug 2012, <https://gettingsmarteraboutthesmartgrid.org/pdf/Smart%20Grid%20Report%203-15-13.pdf>.

## **FIBER OPTICS IS GOOD FOR THE WORKFORCE AND IS GOOD FOR A NEW ENERGY ECONOMY**

The Justice40 Initiative focuses on the goals of “Increased participation in clean energy good job training and subsequent good job placement/hiring.” Developing a workforce in a new energy economy would go a long way to achieving these goals. It is particularly important to focus on training and workforce opportunities in the disadvantaged communities, to ensure career opportunities and good jobs for otherwise marginalized communities, while making those communities more resilient.

Deploying FTTP would provide the opportunity to hire and train a diverse workforce in highly technical, administrative and managerial positions, and in field work. As identified by a fiber optics operator, professionals such as engineers, information technology personnel and Certified Geographic Information Systems Professionals (GISPs) are needed, but the real need, is for a trained field workforce. For example, there are many companies with expensive equipment such as directional drills that cannot find operators for those drills. On-the-job and classroom training would convert otherwise untrained individuals into a trained workforce.

This fiber optics operator noted that he personally trained at least 50 individuals, who either dropped out of high school or barely made it through, to become highly trained and skilled optical fiber splicing technicians in the field, who can make from \$56,700<sup>242</sup> to over \$100,000 per year. A fiber splicing technician “splice[s] thin strands of flexible glass [fiber optics] that allow the transmission of light from one location to the next”<sup>243</sup> and “to expand telecommunications networks into new areas or to replace existing lines.”<sup>244</sup>

With perhaps millions of miles that need to be deployed to get FTTP, this is a way of getting otherwise untrained, low-income individuals back to work and becoming gainfully employed. Therefore, state policy should be implemented to incentivize equipment operators and their unions to train, not just with respect to traditional equipment (e.g., cranes, loaders, back hoes), but also with respect to non-traditional equipment required for deploying fiber optics. A state grant program would help accelerate this process.

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<sup>242</sup> <https://bestaccreditedcolleges.org/articles/fiber-optic-splicing-jobs-duties-and-requirements.html>.

<sup>243</sup> Fiber Optical Splicer, <https://www.mylearningalliance.com/courses/fiber-optical-splicer/>.

<sup>244</sup> Fiber Optic Splicing Jobs Duties and Requirements, <https://bestaccreditedcolleges.org/articles/fiber-optic-splicing-jobs-duties-and-requirements.html>.

Fiber deployment can also be an economic boon to the economy. Take the example of the city of Chattanooga and Hamilton County in Tennessee.<sup>245</sup> It is a veritable rags to riches story of a geographic area historically marred by pollution and poverty that used fiber optics to spring into a clean energy economy and create a vibrant workforce, earning it the accolade of “Gig City.”<sup>246</sup> Because of its fiber optics network, it has the fastest broadband network in the U.S.

A study calculated the realized economic value of fiber optic infrastructure in Hamilton County and the city of Chattanooga, over about a 10-year period from 2011 to March 2020.<sup>247</sup> The economic value exceeded \$2.69 billion and 9,516 jobs over the study period, with the value exceeding the costs of the fiber optic project by over \$2.20 billion, and about 40 percent of all jobs created. It found that about 52% of the value of the fiber infrastructure was reflected in local economic development – “over \$1.4 billion in new investments, startup funding, real estate development and payments-in-lieu of taxes.”<sup>248</sup> “Each county resident is estimated to have benefited by about \$646 per year due to the incremental value generated by the fiber optic infrastructure.”<sup>249</sup>

These successes were achieved because the city realized the economic advantages of fiber optics over wireless infrastructure and owning its broadband, referred to as municipal broadband.<sup>250</sup> The successes of Chattanooga’s fiber optics deployment were reported as far back as 2014.<sup>251</sup>

Another example of substantial long term cost savings using fiber broadband is Chanute, KS which “operates a 10 Gbps fiber-optic broadband ring.”<sup>252</sup> This fiber network “connects schools and other community anchor institutions with gigabit networks ... The network generates \$600,000 per year for Chanute’s Electric Utility ... This ... has demonstrated that communities can meet their

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<sup>245</sup> “Ten Years of Fiber Optic and Smart Grid Infrastructure in Hamilton County, Tennessee,” Bento J. Lobo, Ph.D., CFA First Tennessee Bank Distinguished Professor of Finance, The University of Tennessee at Chattanooga, August 31, 2020, [https://www.researchgate.net/publication/352221978\\_Ten\\_Years\\_of\\_Fiber\\_Optic\\_and\\_Smart\\_Grid\\_Infrastructure\\_in\\_Hamilton\\_County\\_Tennessee](https://www.researchgate.net/publication/352221978_Ten_Years_of_Fiber_Optic_and_Smart_Grid_Infrastructure_in_Hamilton_County_Tennessee).

<sup>246</sup> “How Blazing Internet Speeds Helped Chattanooga Shed its Smokestack Past,” Cnet.com, August 20, 2015, <https://www.cnet.com/tech/services-and-software/how-blazing-internet-speeds-helped-chattanooga-shed-its-smokestack-past/>.

<sup>247</sup> Ten Years of Fiber Optic and Grind Infrastructure in Hamilton County, Tennessee, Bento Lobo, Univ of TN at Chattanooga, Aug. 2020, [https://www.researchgate.net/publication/352221978\\_Ten\\_Years\\_of\\_Fiber\\_Optic\\_and\\_Smart\\_Grid\\_Infrastructure\\_in\\_Hamilton\\_County\\_Tennessee](https://www.researchgate.net/publication/352221978_Ten_Years_of_Fiber_Optic_and_Smart_Grid_Infrastructure_in_Hamilton_County_Tennessee).

<sup>248</sup> Id.

<sup>249</sup> Id.

<sup>250</sup> “Chattanooga Mayor Pushes Back on 5G as Smart Cities Cure All,” MeriTalk, February 13, 2019, <https://www.meritalkslg.com/articles/chattanooga-mayor-pushes-back-on-5g-as-smart-cities-cure-all/>.

<sup>251</sup> “Fast Internet is Chattanooga’s New Locomotive,” New York Times, February 3, 2014, <https://www.nytimes.com/2014/02/04/technology/fast-internet-service-speeds-business-development-in-chattanooga.html#:~:text=Steve%20Clark%2C%20a%20senior%20vice,at%20one%20gigabit%20per%20second>.

<sup>252</sup> In Kansas, Rural Chanute Built Its Own Gigabit Fiber and Wireless Network,” Christopher Mitchell 10-2-21, <https://ilsr.org/chanute-rural-gigabit/>.



own telecommunications needs with smart public investments — they did not wait for national corporations to solve their problems.”<sup>253</sup> City Manager J.D. Lester refers to municipal broadband as ‘the great equalizer for Rural America’...’<sup>254</sup>

An example of a rural area which achieved access, digital equity and digital inclusion is rural eastern Kentucky. Peoples Rural Telephone Cooperative (PRTC) completed a 100% all fiber-to-the-premises buildout in 2014, a Gigabit-capable internet available to every home and business in the counties of Jackson and Owsley, Kentucky.<sup>255</sup>

In light of the enormous advantage fiber provides over wireless, the recommendations provided in the policy paper “Reinventing Wires: The Future of Landlines and Networks” of the National Institute for Science, Law and Public Policy (NISLAPP) should be followed. The former President of Microsoft Canada, Frank Clegg, calls the paper “a reasonable voice for our turbulent world.”<sup>256</sup>

NISLAPP explains that, first, the public needs publicly-owned and controlled wired infrastructure that is inherently more future-proof, more reliable, more sustainable, more energy efficient, safer, and more essential to many other services. Wireless networks and services, compared to wired access, are inherently more complex, more costly, more unstable (subject to frequent revision and “upgrades”), and more constrained in what they can deliver.

Secondly, NISLAPP recommends preserving, renewing, or expanding the use of existing (or new) copper wiring (and rights-of-way). Thirdly, there should be a policy of resorting to wireless access only at endpoints, ***primarily for things that move***, or in situations where wiring is not possible or practical—but not relying on wireless for basic access.

These recommendations are preferable to reliance on privatized or semi-privatized (e.g public-private partnerships) providers for Internet access, whether wired or wireless. Rather, the discussion should shift toward Internet as a basic public utility and a re-commitment to the Internet’s founding principles of open networks, interoperability and equal access to all, to wit:

- High-speed optical fiber-based Internet access networks should be available to every community and every member with a direct hard-wired connection to every household and workplace.
- The Internet has become a basic public good vital to our society (a public commons), and it should be available to all in a safe, reliable, fair, affordable, and energy-efficient manner.
- Wireless access service is not an adequate substitute for wires and should be considered only as an adjunct or complement to wired access service.
- Thus, in principle, community networks should be financed, constructed, and managed in a manner analogous to such public infrastructure as municipal water systems, sewers, streets, or libraries.

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<sup>253</sup> Id.

<sup>254</sup> Id.

<sup>255</sup> <https://www.soar-ky.org/prtc/>.

<sup>256</sup> “Re-inventing Wires: The Future of Landlines and Networks,” by Timothy Schoechle, PhD, Timothy Schoechle, PhD, Senior Research Fellow, National Institute for Science, Law & Public Policy (NISLAPP), <https://gettingsmarteraboutthesmartgrid.org/pdf/Wires.pdf>.

## Conclusion

Federal telecommunications law clearly states that the law exists “***for the purpose of promoting safety of life and property through the use of wire and radio communication.***” That is the essential purpose of communications, including wireless deployment. That RF radiation from wireless infrastructure has already injured a growing number of people who are now EMS disabled and who need to evacuate their properties means that ***wireless deployment has failed of its essential purpose.*** Fiber optics, on the other hand, is better suited to achieve this purpose.

The metrics delineated in these comments for identifying the EMS disabled and creating a registry, tracking electrosmog from wireless infrastructure, and tracking fiber deployment should be incorporated into EPA metrics. Fiber optics deployment for FTTP would help with the reduction of electrosmog from the telecommunications sector. It will also ensure the best connectivity and performance, cybersecurity, digital inclusion, environmental equity, as well as safety for the environment and for the health of the EMS disabled, other vulnerable communities and the population at large.

Collectively, the ECOLOG Institute study, peer-reviewed scientific studies, and government (and military) documentation, of health hazards from RF radiation are overwhelming – as are the injuries sustained from such RF radiation. The Court of Appeals for the D.C. Circuit in 2021 discredited the FCC’s RF radiation limits for wireless infrastructure by rebuking the FCC’s putative and outdated premise of no health hazards below its limits. These developments, along with admissions by industry in published brochures that RF radiation is a pollutant, and a seminal industry-funded study from the ECOLOG Institute of its health hazards, should settle the issue.

Federal agencies should be brought into compliance with the rule of law to ensure that no person is exposed to RF radiation against their will or be forced to endure physiological injury therefrom. The burden of protecting public health and safety, as well as ensuring the safety of equipment deployed to the public, is on federal agencies, including the EPA, who are answerable to the public. **The burden should not be on the public to show federal agencies the obvious – the established fact of injury from RF radiation.**

Protecting the EMS disabled, other vulnerable populations and the population at large from pulsed RF radiation from wireless infrastructure will also help to bring the U.S. closer to the goals of the Justice40 Initiative -- “to deliver at least 40 percent of the overall benefits from Federal investments in climate and clean energy to disadvantaged communities.”

As Chair Brenda Mallory of the White House Council on Environmental Quality has stated, the goal is to “help Federal agencies ensure that the benefits of the nation’s climate, clean energy, and environmental programs are finally reaching the communities that have been left out and left behind for far too long.”<sup>257</sup> The EMS disabled “have been left out and left behind for far too long.” Now with the Justice40 Initiative, the EPA has the opportunity to rectify this inequality for the disadvantaged communities of the EMS disabled. It can serve a significant role by prioritizing fiber as the access method of choice, and encouraging the development of RF-free zones in public areas and near residences so that the EMS disabled can once again have a safe home environment and rejoin the rest of society.

Respectfully submitted,

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**The following groups and individuals have granted permission to submit these comments on their behalf under the name of “Advocates for the EMS Disabled:”** Children’s Health Defense ([www.childrenshealthdefense.org](http://www.childrenshealthdefense.org)); Kent Chamberlin, PhD, Former member of the NH Commission to Study The Environmental and Health Effects of Evolving 5G Technology; Cecelia Doucette, Director, Massachusetts for Safe Technology; Scott Tips, President & General Counsel, National Health Federation; Liz Barris, The Peoples Initiative Foundation (Topanga, CA); Lauren Bond (New York, NY); Patricia Burke, HaltMA smartmeters.org (Millis, MA); Nick C., EMS Disabled (New York, NY); Children’s Health Defense Florida (Riverview, FL); Coloradans for Safe Technology; Consumers for Safe Cell Phones (Bellingham, WA); Stephen R Dahl, Director, Rhode Islanders for Safe Technology (Kingston, RI); Linda Dance, Engineer (Gainesville, Florida); Donna DeSanto Ott, PT DPT MS, Pennsylvanians for Safe Technology (Reading, PA); Virginia Farver (Fort Collins, CO); Julie Flood, Patrons of the Planet (Warren, CT); Susan Foster, Medical Writer (CO); Jeri Friedman (Port Saint Lucie, FL); Floris R. Freshman (Scottsdale, AZ); Howard J. Goodman, Esq. (Forest Hills, NY); Liberty Goodwin, Director, Toxics Information Project (TIP); Mark Graham, Keep Cell Towers Away (Elk Grove, CA); Josh Hart, Director, Stop Smart Meters!, StopSmartMeters.org (Portola, CA); Health Freedom Florida (Tampa, FL); Christina Hildebrand, President/Founder, A Voice for Choice Advocacy (Mountain View, CA); Deb Hodgdon, New Hampshire for Safe Technology (Stratham, NH); Maureen van Hoek (Riverview, FL); Charlene Hopey (Topanga, CA); Shirley Denton Jackson (North Palm Beach, FL); Susan Jennings, Founder, Southwest Pennsylvania for Safe Technology (Mount Pleasant, PA); Pittsfield Cell Tower Injured and Concerned Citizens (Pittsfield, MA); Julie

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<sup>257</sup> <https://www.whitehouse.gov/ceq/news-updates/2022/02/18/ceq-publishes-draft-climate-and-economic-justice-screening-tool-key-component-in-the-implementation-of-president-bidens-justice40-initiative/>.

Levine, 5G Free California (Topanga, CA); Diana Losacco, (Lakewood, CO); Kelly Marcotulli, Oregon for Safer Technology (Ashland, OR); Ellen Marks, California Brain Tumor Association (Indian Wells, CA); mocoSafeG.org (Montgomery County, MD); Michael Muadin, President of AMRA, Alliance for Microwave Radiation Accountability, Inc. (East Chatham, NY); Napa Neighborhood Association For Safe Technology (Napa, CA); New Yorkers 4 Wired Tech (New York, NY); Larry Ortega, Community Union, Inc. (Pomona, CA); Relocate the Cell Tower Group (Prescott, AZ); Sheila Resseger, Co-Founder, 5G Free Rhode Island (Cranston, RI); Safe Tech International; Safe Technology Minnesota (St. Paul, MN); Safe Tech for Santa Rosa (Santa Rosa, CA); Virginians for Safe Technology, LLC (Fredericksburg, VA); Pamela Wallace, Safe Tech Forward (Rochester Hills, MI); George Sinopidis (Queens, NY); Anne Wilder (Priest River, ID); Taffy Williams, NY4Whales.org and NY4Wildlife.org (Tuckahoe, NY); Stephanie Thomas, WiRED (Wireless Radiation Education and Defense) (Berkeley, CA); Soula Culver, WiRED (Berkeley CA); Phoebe Ann Sorgen, WiRED (Berkeley, CA); Meaven O'Conner, WiRED (Berkeley, CA); Cynthia Rahav, WiRED (Berkeley, CA); Sandy Nixon, WiRED (Berkeley, CA); Connie Anderson, WiRED (Kensington, CA); Sarah Aminoff (Union City, CA); Shelley Wright, Director, Canadian Educators for Safe Technology (Canada); Valeria Picchi, Alto5gPanamá (Panama City, Republic of Panama); Lic. DéboraH Rivas Berastegui, Stop 5G Uruguay (Montevideo, Uruguay); and Rodolfo Touzet, Sociedad Argentina de Radioprotección (Buenos Aires, Argentina).

## **APPENDIX A**

### **EMS Disabled Stories – In Their Own Words**

Note: Some names have been truncated or changed to protect individuals' privacy or because of fear of retaliation.

#### **GEORGE S., QUEENS, NEW YORK CITY**

George was a healthy New York Police Lieutenant with a good job, good health, and a three-story house in Astoria, Queens in New York City. George purchased the home in 2013 and refurbished it. He moved in a year later and in 2020 his younger sister, 31 years old, moved into the third story of the house. George was on the second floor. He had tenants on the first floor.

In September 2020, George returned from Europe where his father just had a quadruple bypass. He had been caring for him for five weeks. Just several feet from his front yard was a cell tower. He doesn't know if you'd call it a small cell or a macro tower. He doesn't really know the difference. But it was a 35' to 40' tall tower with a canister on top that appeared to be omnidirectional and two antennas facing in opposite directions but seeming to cover almost 360° at a slightly lower level than the canister itself. George's front yard lined up perfectly with the 1000-unit apartment building across the street which was probably the target of the wireless carrier. He had received no notice, no warning. He simply came back to find what appeared to be a multidirectional antenna on a big pole that had been placed atop the old utility pole just feet from his yard.

George's sister had just completed seven months of chemotherapy at Sloan-Kettering when the antenna was installed. She had been diagnosed with non-Hodgkin's Lymphoma, a type of cancer that affects the lymphatic system.

Even though her chemotherapy was behind her, George's sister started experiencing headaches and nausea after the cell tower was installed. She told her doctor about the new tower and the doctor cautioned that RF radiation could aggravate her condition. The oncologist advised that it was essential she avoid all radiation including RF (wireless) radiation during and after treatment.

George, for the first time in his life, started suffering from heart arrhythmias and sleep deprivation. He went to a cardiologist for an evaluation and was fitted with a halter containing a cardiac monitor to wear for two weeks. The results showed multiple arrhythmias. They were PVCs or premature ventricular contractions. These are the most common of the irregular heart rhythms. The heartbeat is created by electrical signals that originate in cells in the heart's upper chamber, the right atrium. That electrical signal moves down through the heart to the lower chambers

where the current arrives in the ventricles, causing them to contract and pump oxygen-rich blood out to the body. For George this meant that a critical heartbeat came too early, disrupting the heart's normal rhythm.

The sudden onset and the severity of the arrhythmia caused George's new cardiologist to suggest an invasive procedure where they placed a catheter through an artery into George's heart. The doctor tried to replicate the arrhythmia to see if they could perform a cardiac ablation to stop the electrical charge between heart chambers. Ablation is a procedure used in a small area of the heart tissue that is causing rapid and irregular heartbeats. Yet the doctor, to his surprise, was not able to replicate arrhythmia.

George did not have arrhythmia when outside of his home environment, only when in his house. The arrhythmia returned when George returned from the hospital procedure to his home. The doctor then did a second procedure to perform a cardiac ablation, but again, they found nothing wrong.

Increasingly, the level of radiation in the home was beginning to look like the culprit. In addition to the never before experienced cardiac arrhythmia, George had experienced headaches, lack of mental clarity, and insomnia that had come out of nowhere, noticeable when he first returned from caring for his father in September 2020. George had never even considered that cell towers could trigger symptoms. He used the technology and he liked it. He wasn't prone to conspiracy theories. He was a Police Lieutenant. and he relied on facts.

George decided to try an experiment. Even though his girlfriend rented one room in NYC, he started staying over there just to see if he slept better. There was a noticeable difference in all his symptoms. The symptoms simply did not occur away from home. In part to address his symptoms and in part to protect his sister, George and his sister moved out of the house. He was living in a rented home, all the while paying a significant mortgage on the home he owned – the one with the cell tower only feet from his front yard. George had bought the house across from the East River with every bit of savings he had from over 20 years of extremely hard work. He redid the house from top to bottom. He created four apartments in one three-story home and had a plan mapped out for his financial future. Then the cell tower came.

"They should have safe zones," explains George. "They should have a buffer zone from houses. What's fair is fair. We should have input on where these towers go. I came back to find my sister sicker than when I had left, and everybody I called at the city was either abrasive or they didn't have any information or they didn't know anything. The lack of empathy and the lack of control – like all of our freedoms are taken away with these towers – is like nothing I've ever seen before. It doesn't make any sense."

"I've been a public servant all my life. I was a full paramedic at 19 – the youngest in New York City. A police officer at 20. I worked my way up doing every beat that you can do," says George, and then he pauses. Silence follows, and there's good reason for that somber silence as he reflects. George and his partner were working near the World Trade Center on 9/11. They ran to help and in tandem they pulled people out. George would pull a victim out and as he pulled the person to

safety, his partner would run back in. Then they would switch. It was during one of those exchanges, as George was pulling another victim to safety, that his partner ran back in and then the tower collapsed. George's partner was later found in the rubble.

"I was finally a police lieutenant in charge of 300 people," George continues, "and suddenly they put this tower in my front yard and I couldn't sleep at night. I wasn't a great boss at that point because I was so sleep deprived. My heart was racing at night, and I was one of these people who believed that there was no harm from these towers. I use the technology. I like the technology. But you can't put these towers in people's yards with no notice, no negotiation, no room for compromise. Why not put the tower in the flat surface parking lot by the 1000-unit apartment complex the carrier was trying to service? I guess they liked the angle from my front yard because they probably made more money. It was a more direct line of radiation at more apartments. But I paid the price."

"I am \$250,000 in debt because I took my entire life savings and put it into the house and then spent years fixing the house up and was finally able to rent out the extra apartments." George states the facts matter-of-factly, not defeated, yet clearly not knowing how he can dig out of this hole as a Police Lieutenant. He has an unmarketable home, and his entire life savings is serving as a base station for a wireless carrier. "I was in Europe taking care of our dad and I came home to find my sister, who was finally done with her cancer treatment, was incredibly ill for no apparent reason. Her bedroom window was parallel with the tower. The doctor said if we stayed, her cancer could come back.

George S concludes "The FCC is betraying their responsibility...The FCC is not doing their job. If I'm not doing my job, I get indicted. If the FCC doesn't do their job, nothing happens to them. Aren't they supposed to be protecting us? So what happens to them? Nothing."

### **LILY MARIE, HELL'S KITCHEN, NEW YORK CITY**

Lily Marie was a professional actress, model, published lyricist and writer, member of SAG/AFTRA (Screen Actors Guild and American Federation of Television and Radio Artists) living on the top floor of a high-rise in the West Side of Midtown Manhattan in New York City, *also known as Hell's Kitchen*. Lily Marie had been working hard since she was 17, putting herself through college working as a secretary, model and waitress. The breakthrough in acting in New York City came after college. She doesn't consider herself a celebrity though others would. She's been a showroom, platform and print model for the top designers. Her favorite was Oscar de la Renta. She sang, and acted on stage in musicals, comedies and dramas, "did the soaps," television shows over 35 national on-screen television commercials and has a list of movie credits that include *The French Connection* with Gene Hackman, *Stiletto* with Alex Cord, *A Lovely Way to Die* with Kirk Douglas, *Borgia Stick* with Inger Stevens, *Rollover* with Jane Fonda and *Reflections in a Golden Eye* with Elizabeth Taylor and Marlon Brando, among others.

For 45 years, Lily Marie loved her apartment at the top of the NYC high-rise, and her spectacular northern view of the city that had brought her opportunity and an exciting career of hard work



and tremendous joy. However, everything in her world changed on September 30, 2019. That was the night wireless transmitters were activated after installation on the rooftop right above Lily Marie's apartment. There was no notification to the residents. Five antennas simply appeared on the rooftop, three of them directly above her apartment.

She recalls she instantly felt different, with sudden, severe headaches and a high-pitched constant tinnitus, what Lily Marie refers to as "screaming in my ears." It was worse at night. She would lie in bed, exhausted yet unable to sleep, experiencing heart palpitations, IBS (irritable bowel syndrome), diarrhea, nausea, dizziness, an electrical surge sensation running from her neck to her head, forgetfulness, and general cognitive dysfunction, or "brain fog." As the days went on, her symptoms worsened. She developed bilateral hearing loss, and persistent nausea and vomiting. Lily Marie experienced these symptoms 24/7 for 26 months. In her own words at that time: "It's brutal."

Lily Marie's symptoms were confirmed by her doctor as having been caused by the wireless transmitters on the rooftop right above her apartment. Her doctor reported that she had other patients living in the same building experiencing similar symptoms within the same time period, also caused by the wireless transmitters.

As a result, Lily Marie could not complete a 300-page novel which she was working on and which she was contracted to do because she could not concentrate or focus, experiencing "brain fog."

Lily Marie had to evacuate her apartment of 45 years and move to a more rural setting to escape from the transmitters above her apartment, and increasingly throughout New York City. Unfortunately, there are now wireless transmitters outside of her apartment in a more rural setting that are causing similar issues, although not as severe as the 26 months of hell she experienced in the penthouse floor overlooking New York City.

Lily Marie is now 84 years old and her EMS disability remains a constant. She wears protective EMF clothing every night with 2 pillows to protect her head/brain and heart. When explaining this syndrome of neurological symptoms she experiences to a new doctor in her new setting, that physician referred to the described symptoms and the attributions to cell towers as "a theory."

Lily Marie told the dismissive doctor she was dismissed. She now has a new physician who is aware of the neurological symptoms that can result from radiofrequency electromagnetic radiation exposure (RF-EMF). But this physician is at a loss about how to help Lily Marie.

The new managers in her current location will not be making any accommodation for her EMS disability, as they know nothing about the condition. They are kind, but without the appropriate instruction for how to minimize overall Wi-Fi exposure in the new assisted living facility, they are at a loss as to how they can help. Lily Marie would love to have hard wiring in the room she now rents at an assisted living facility so she could plug in a wired computer. She wants to communicate with her friends and those she worked in the business with for decades and continue her writing.

This woman who had a wonderful, exciting acting and writing career plus a showroom model for Oscar de la Renta, now, at nighttime, wraps her head in a protective EMF fabric ski cap, 2 pillows to stop the throbbing headaches and lessen the ringing in her ears and a fabric EMF scarf to cover her heart from palpitations.

## **LAUREN B., MANHATTAN, RESIDENT OF NEW YORK CITY**

I now live on the east side in midtown Manhattan. lived at 325 W. 38th St. on the west side in midtown Manhattan for 10 years. She is an author.

On Feb. 21, 2020, nine wireless transmitters on the rooftop of 325 W. 37<sup>th</sup> St, just outside my apartment which overlooks that rooftop. Six transmitters were approx.40 feet, and three were within 90 feet, from my windows. During the two weeks following the start of their operation, I experienced severe symptoms, which my doctor confirmed:

- Constant tinnitus
- Burning skin
- Shortness of breath
- Palpitations
- Increased pain in eyes, limiting visual function
- Vertical disturbances through cranium and occipital region simultaneous with horizontal intercranial disturbances extending through the ear canal and sharp stabbing pains extending into all 4 extremities
- Insomnia
- Severe migraines

## **Chronology**

The injuries started on Feb 21, 2020. The following is a chronology of my injuries from my contemporaneous notes at the time:

- 2/21/20 Very loud tinnitus began immediately and has continued to present.
- 2/25/20 Began waking after only 3 hours. Unable to return to sleep each night, not knowing a cause.
- 3/1/20 At 2 AM, I am wakened from a deep sleep because I'm gasping for breath. Something heavy is rhythmically pressing on my chest. My heart is racing. I am now sharply alert and not knowing why. I am seemingly paralyzed. Then, a strong, fiery energy core feeling 6 inches in diameter, enters with a sharp, searing stab through the top of my head. It is excruciating. I observe it surging through the center of my brain. Next it begins searing outward through my ear canals with long-burning razor-like piercing

through my head. My brain feels sectioned in 4 quadrants. I remain flattened and pinned on the mattress despite efforts to move and run out of the room.

I am horrified, this fiery surge is now continuing to course through my neck to the heart. How far is this going? The fiery energy core is so large, charges through and around my heart at once, as though no vessel is there, and now to my arms and hands. It continues straight down the core of my torso. It is extending through my legs. I am fully engulfed in burning, piercing energy.

It isn't over. It now flows up through my body in reverse, and surges down through my body again. This wave descends and ascends through me in the same sequence through my entire body as it had begun, in large, repeated surges. Still, as much as I try, I can't move.

This lasted a half hour. The pain is so much, I can't return to sleep after it stops. It feels unsafe to sleep. My skin is burning. My ears are ringing and burning. I don't know what happened, nor the source of this and how to protect myself, and when it might happen again. I am awake for the rest of the night and unable move. I am very weak.

The following days, burning skin and ringing in my ears are constant, and increase when I am inside the apartment. The intensity of energy present in the apartment is like being inside a fire and incredibly challenging to concentrate on any matter or to sleep.

Now eyes burn with increased intensity and does not abate with more applications of eyedrops. Focusing is more painful. Concentration is strenuous. There is heavy pressure on my heart.

The only changes in this building's vicinity are the cell towers. I identify the company and research the purposes of these cell towers across from me; pursue the owner of that building; and, inquire with my apartment manager in getting information. After multiple tries, we get no response from the owner. I continue researching.

Opening the door to the apartment and walking in, I'm met with a wave of constant sense of fire to the skin, heavy pressure on the heart, rapid heart rate, and an electrical burning and pressure through the brain, and shortness of breath. This was not present in the hall. Being inside the apartment, my condition worsened and I could not continue living in my apartment. The severe damage to my central nervous system and pain continued to increase. My apartment was not safe.

The following days I'm extremely concerned being inside the apartment and stay out. I arrange bedding on the bathroom floor, very nervous to sleep in the bedroom any more. Trying for a couple of nights, I was still waking after 3 hours. Reading on ways to deflect wire-less frequencies. I gather all items that I have, setting them in the bedroom to secure relief from the constant wave of frequencies penetrating the apartment and trying sleeping in the bed once more. I'm looking into what to purchase that is affordable, none of it is, and how to work with the

open air HVAC units under my windows. Learning more on wireless frequencies, I discover there is no protection that can be designed to prevent wireless frequencies' passage into my apartment, as these HVAC units must remain open.

- 3/5/20 After 3 hours sleep, again, I am awakened gasping for breath. The full event repeats exactly as it occurred 3/1/20 for one half hour. I was truly hoping the first night was a one-off. It is clear this is a schedule. I am not in any way, prepared for this and have yet a place to go. I need more time. I'm harmed and weaker. I cannot live through a third night of this. I'm seriously injured now, and I don't know that I could survive one more event with this. After spending days researching ways to address or accommodate this environment I'm finding none. I've been continuing contact with the building management with these concerns and seeking a safe room however temporary.

- 3/10/20 Contacts inquiring about cell towers and protections and recourse of safety for New York City residents.

- 1/ Emailed Mayor DeBlasio, no phone number available. Received case # email.
- 2/ Called Speaker Corey Johnson's office; referred me to DOITT
- 3/ Left message: Commissioner Bret Sikoff, DOITT. No response was ever given
- 4/ Left message: Asst Commissioner for Franchise Andrew Manshel. Responded after one week. Explained DOITT expressly for city properties, not residential.
- 5/ Spoke with DOITT Imani Charles, explained DOITT information from City Council ofc inaccurate, as it involves city properties, not residential. Recommends 311.
- 6/ Emailed Manhattan Borough office. Left message. No response was ever given.
- 7/ Called 311. They refer to DOITT although I explain DOITT states city properties only, not residential.

Manager at 311 viewed resources and suggested:

a/ Dept of Bldg, special investigation unit 212-825 2413 for permits and zoning/ No response was ever given.

b/ NYS Pub Serv Commission 800-342-3377 m-f 8:30-4/ No response was ever given.

c/ Community Board #4 212 736 4536:

Delores Rubin, Dist. Mgr, Manhattan Community Board. No response was ever given.

Jesse Bodine Manhattan Community Board. [jbodine@cb.nyc.gov](mailto:jbodine@cb.nyc.gov) 1st Wed @ 6:30, 3rd Wed

10 am Emailed/ No response was ever given. Left phone messages. No response.

There is no provision nor protection for individuals' rights and safety concerning wireless frequencies and wireless transmitters.

- 3/11/20 Secured temporary housing with a friend while seeking to move or arrange temporary shelter with the landlord.
- 3/19/20 New York City lockdown.

I had a safe place to live before the cell towers were installed. They changed my life

overnight. Securing emergency relocation through building management was arduous pursuit of forms, letters, phone calls over several months, along with advocates assisting.

- 4/21/2020

Called ADA DOJ ofc, 800-514-0301 directed to HUD Regional NYC ofc  
LM HUD Regional NYC ofc 212 264-8000 Spoke a few times with staff and their suggestions toward housing issues. No recommendations regarding cell towers.

- 4/23/2020

1/ Sen Hoylman 212 633-8052 left message/emailed. Advocacy for housing during lockdown. No advice on cell tower concerns.

2/ Mayor's ofc disability Housing Coordinator Arthur Jacobs 212 788 8948 LM or email: ajacobs2@.....Response received to assist during lockdown with housing concern, no advice on cell tower concerns.

3/ Speaker Johnson 212-564-7757....Left message. Advocacy for housing during lockdown. No advice on cell tower concerns.

4/ Assembly. Gottfried 212-807-7900 ....Left message. Advocacy for housing during lockdown. No advice on cell tower concerns.

## **Aftermath**

My sleep was restored once I left the building. Since moving from my apartment, the symptoms from my injuries still remain.

Migraines are more easily triggered. My heightened sensitivity to light and heat also triggers my migraines. Now the migraines predominantly begin through my right eye, splitting to the right half of my face and head to the neck, sometimes with nausea (where I did not have nausea before).

I continue to have a burning sensation 24/7 from my eyes through to the back of my head, and throbbing across to the lower back of my skull. There is painful, sharp pressure around the eyes limiting visual function.

Swift, painful intolerance of heat to the skin from lamps or furnace, within several feet distance, creates immediate palpitations, and sense of suffocation. There is constant sharpness at the crown of my skull. My brain now feels divided in 4 quadrants, along with the all-consuming electric pain, burning across my head through my ear canal.

My heart feels heavy pressure from the outside and sharpness internally. My heart has a sharp heartbeat and heavy ache. I'm physically weaker, collapsing every day. My body is heavier. I must lay down every hour. Over one year, organs are showing swift hormonal imbalance and challenge in function: kidneys, digestion, intestines, extremely dry skin.

What has now changed since 2/21/20 is that encountering a set of cell towers on buildings of any street, the painful hum penetrates my entire body. My ear canal intensifies with the sharp energy moving through my head. My heart races, and feels pushed in, creating a sense of

suffocation. It feels as though there is a brush of thin metal bristles pressing into my skin one inch deep, uniformly across my full chest in a 10-inch band. The exposure continues to be strong and painful for many hours.

All of these areas are in deeper, constant pain now. I feel neurologically burned through my eyes and nervous system, living with this sensation of being neurologically sliced and burned, and experiencing weakened vitality.

Walking by cell towers before 2/21/20 did not produce these effects. There are some buildings having 6 or more cell towers, that beams a laser-sharp effect I feel immediately pressure to the heart and sharpness in the diaphragm, seemingly slicing through my body front to back. It hurts deeply for days after this exposure. Avoiding these towers requires several blocks added distance. Some areas there are multiple rooftops heavily-packed with cell towers.

### **NICK C., NYC RESIDENT OF MANHATTAN'S UPPER EAST SIDE**

I have lived at 185 East 85th St., 25A, NY, NY 10028 for 54 years and counting. I had never had a problem with the 26 Con Edison meters that were installed on the other side of my apartment entrance door. Then Con Edison installed 26 "smart meters" on October 20, 2020. Shortly thereafter I experienced Tinnitus ringing very loudly in my head 24 hours a day, every day without stopping! It is truly unbearable. I also have headaches and feel chronically tired. I can't do my work as a professional graphics artist nearly as well because of this situation.

Also, around the same time several large rooftop wireless antennas were installed right across the street from my building which face my apartment. One would think I have excellent phone reception. To the contrary, my cell phone reception in my home is very unreliable. Regardless, I'm now right in the middle of the radiation between the 26 smart meters within a foot of my apartment front door and the large rooftop wireless antennas across the street. So, I'm trapped between at least two sources of focused, pulsating radiation!

I purchased an Electromagnetic Field Radiation Detector from Amazon to see if it would indicate the amount of radiation coming from the Smart Meters. When I turned it on in front of the panel of smart meters it immediately spiked and lit up red indicating that there was danger present. I phoned a friend who is on a citizens committee to stop 5G and Smart Meters in NY. It's called New Yorkers 4 Wired Tech. He has an RF Meter more sophisticated than mine and volunteered to come over to my apartment building to take a reading in front of the panel of 26 smart meters. His RF meter immediately spiked to the Extreme danger level and showed average readings as high as 4,930 microwatts per meter squared. This was recorded on film. According to the Building Biology Institute, the average reading should be under 10 microwatts per meter squared to be safe for long term exposure. This shows the intensity of the microwave radiation these so-called smart meters are emitting.

Back in late December, 2020, two Con Edison employees came over at my request and very much surprised me and a member of NewYorkers4WiredTech who was there with me. They told us that their company meter did not register any danger coming from their 26 smart meters. But it turns out that they did not measure the pulse-modulated microwave radiation that would have registered danger. Their meters were only set to detect base frequency levels. When we asked about the RF spikes which smart meters emit thousands of times per day, they were silent.

I have been advised by another knowledgeable person from New Yorkers 4 Wired Tech that there is special clothing, hats, curtains, and well as wall and window coverings that I can purchase to block out the pulsed microwave frequency from the smart meters and rooftop antennas. However, these items are very expensive. I should not have had these wireless devices installed so close to me, and I should not be put in the position of having to spend money I need for basic necessities to purchase protection so that Con Edison and telecom companies can earn huge profits while they have impaired my health and disrupted my life.

The lockdown from Covid 19 forced me to be home in my apartment far more than before. This has made the situation even worse. I feel both ill and trapped. I used to enjoy living in this neighborhood. Now, as a matter of survival, I am forced to consider relocating just to escape this constant exposure to the microwave radiation from the smart meters and wireless antennas I'm in the middle of. I can only hope something changes for the better soon.



**ANTONELLA D., ASTORIA, QUEENS, NEW YORK**

I have owned a three-family house in Astoria, Queens, NY since 1995. I have two tenants who rent out two apartments in my house. On or about the beginning of 2021, two "smart" meters were installed in my basement. One replaced the analog meter for the common areas and hallways, serviced by PLP Electric LLC, and the other replaced a tenant's analog gas meter. I had no health issues with the analog meters.

My health issues started with the installation of these smart meters. They were installed at the entrance to my basement. The remaining 6 meters are the original analog meters. Ever since the installation of these "smart" meters in my basement, I have been suffering from dizziness and headaches when I enter my basement or when I am in close proximity to my basement. I'm afraid if the rest of the analog meters get swapped out for "smart" meters, my symptoms will worsen.

Con Edison informed me that I cannot completely opt out of having "smart" meters in my own house, nor can I opt out for my tenants (they would have to opt out individually for their apartments). Con Edison also informed me that, under no circumstances, can I opt out of the PLP account which requires "smart" meters with no opt-out for common areas, such as the public hallways. PLP Electric LLC is the account that serves the common areas in a building or home with more than one family. PLP deems it a commercial account and they use that as a basis to not allow people to opt out- no matter the size of a house or building.

Even if I were able to have my tenants opt out, I would still be exposed to the radiation from the PLP meter. Also, if I asked my tenants to opt out, I would have to assume their monthly fee which would be an additional financial burden.

I avoid doing laundry in my basement or utilizing the area in any way -- an area I used to use often. Also, Con Edison is constantly sending my tenants and me notifications that we are required to pay a monthly no access fee of \$100.

It is unconscionable that as a property owner, I have no control over what is placed on my property even if it causes me health effects and prevents me from using part of my own house. It feels like a constructive eviction out of my basement. Unfortunately, there appears to be no recourse for me, or for those like me, who are suffering disabilities as a result of radiation exposure from "smart" meters.

## **STEVE ROMINE, WOODSTOCK, NEW YORK**

My name is Steve Romine and I have lived in Woodstock, New York since 1984. When I moved into this particular house in 2008, the landlord had a new electrical service installed upgrading from 60 amp service to 100 amp service. The electro-mechanical analog electric utility meter that was on the house before the upgrade was switched out and replaced with a transmitting/digital/smart utility meter by the utility (Central Hudson) without my informed consent or knowledge. It was a GE I-210 smart transmitting meter on the front of the house near the front door so anyone coming in or out of the house or standing in the front yard was being exposed to the wireless radiation, besides getting affected inside the house. During this time, I developed severe neck pain, muscle cramps and heart palpitations, which I attributed to getting older.

About 2013 my girlfriend, Nicole, and now partner, moved in with me. Once moved in, she began to experience nausea, vertigo and headaches. We were very concerned with all these profoundly worrisome symptoms.

We had heard from a friend that the digital/transmitting/smart utility meter might be causing the problem. We did the research and found that in California where there had been a roll out of these smart meters for the previous 5 years, people were complaining of adverse health effects. We researched the symptoms and found that the complaints of California's electric utility consumers were the same symptoms as Nicole was experiencing. We also discovered that these are classic symptoms of microwave radiation exposure originally coined "microwave sickness". The condition now is labelled "electrosensitive".

We discovered that we had a smart utility meter on our home after looking the model number up on General Electric website. We had a GE I-210 General Electric smart utility meter, one of the three models listed in the " 210 Smart Meter Family" of electric utility meters on GE's product info page.

I called Central Hudson the next day and was told by customer service that smart meters are not approved by the N.Y, Public Service Commission yet for deployment in New York so it cannot be a smart meter and that what we had on our home was an "ERT meter.

I then called General Electric Corporation's main office and spoke with three technical representatives in the smart meter division on three separate phone calls. I was told by three different tech reps that the GE I-210 is definitely a smart meter and that no one in the field calls them "ERT meters." They said the GE I-210 is a transmitting/digital/smart utility meter with an ERT module making it a one way communicating smart meter. Such utility meters are actually called Automated Meter Reader or AMR and is listed on page 7 fig 1 as a first generation smart meter in the Utility Telecom Councils publication "Smart Meters and Smart Meter Systems.

We obtained by purchase a high frequency analyzer meter which measures microwave radiation exposure. I measured the GE I-210 digital/smart meter emissions and they were much higher than the recommended exposures by the latest research report, The Bioinitiative Report of 2012. We also learned that The World Health Organization in 2011 has classified electromagnetic radiation, which is what is emitted from transmitting digital smart utility meters, a "possible cause of cancer" the same as lead, benzene and DDT, and should be reclassified to a "probable cause of cancer" according to ex-WHO chief scientist Anthony Miller, PhD.

We then realized Central Hudson was not being honest with us. On March 21st, 2013 we sent a legal Notice and Demand for Removal of All Digital Electric Meters Emitting Radiation and Loss of Easement Through Criminal Misconduct. Central Hudson was given 14 days to remove the smart utility meter and replace it with a time-tested, safe, analog electric utility meter, or acting in self defense under the protections of the US constitution, I would have to do the requested removal and installation myself.

On April 9th, 2013 we sent a legal " Notice of Default and a Warning of Liability." Central Hudson and chief execs were notified that they had defaulted for not responding to the claims set forth in the legal notice and thus through acquiescence agreed with the terms and conditions

We sent Central Hudson a total of 5 sets of lawful notices over the course of several months. At no time did Central Hudson, acknowledge the lawful notices or try to contact me and attempt to resolve the situation in any way. Over the course of several months we sent those lawful notices demanding removal of the smart meter 5 times.

Then, Nicole had a mini-stroke standing 10 feet at an angle of 45 degrees from the meter. I brought Nicole to Northern Dutchess County Hospital for medical observation and treatment. The hospital stated that after 2 days of admittance and observation, she appeared to be in perfect health and they didn't know why she had a mini-stroke. They did warn us upon leaving the hospital that, because she had a mini-stroke, she is at high risk for a major stroke in the next 90 days which could mean major disability or even possibly death.

Now we were both really worried and went home from the hospital after Nicole was discharged and began to research microwave exposure symptoms. Our research showed us that chronic exposure to low level microwave radiation can cause heart attacks and strokes. Realizing that Nicole was standing in front of the transmitting digital/smart/utility meter, I understood I had no choice but to remove the smart utility meter before Nicole has another stroke.

I turned off the power to the house with the main breaker. I put wooden pallets on the ground with heavy thick rubber mat's on top. I stood on that and wearing rubber gloves I removed the transmitting digital/smart meter and replaced it with a re-manufactured safe electro-mechanical analog electric utility meter that surpasses the ANSI Standards that the Public Service Commission uses to approve electric utility meters for use in New York.

All of the above activity of removal of smart utility meter and installation of the time tested safe non-transmitting analog meter was recorded by video documenting the last readings on the digital smart meter and the proper operation of the safe analog utility meter showing the dial spinning and electricity flowing. Our home had available electrical power for four days from the proper installation of the analog meter with no problems.

On May 16th, 2013 we sent a package containing Central Hudson's smart meter along with another set of legal documents, "Demand for Removal" and "Notice of Default" accompanied with a DVD documenting the removal of said smart utility meter and the installation of the re-manufactured, refurbished and re-calibrated safe electro-mechanical analog utility meter produced by Hialeah Meter Company. Their standards surpass the standards set by the NY Public Service Commission. All of this was mailed to Central Hudson Headquarters attention to James P. Laurito and Steven V. Lant, chief executives.

Then on May 20th, 2016 Central Hudson came to our home to disconnect us against our protests and proceeded to cut the wires at the pole, where they hung for 6 years while we were deprived of electrical service. It didn't seem to matter to Central Hudson that someone in the house was recovering from a stroke, they disconnected us anyway instead of simply inspecting and testing the installation of our refurbished analog meter or installing one of their own used analog utility meters, which they had the choice of doing but refused. Other electrical work can be done by anyone in Ulster County but needs to be inspected by an electrical inspector. Central Hudson has the ability to test meters to see if they are operating properly. At that point is the only time Central Hudson called us about our claims. At no time previous to my seeking them to correct the situation did they call me to work things out. When they finally called us they did so to threaten to have me arrested. I said I know my constitutional rights to self defense and that is why I removed the unsafe smart utility meter from our home as someone in the house was being affected adversely and was recovering from a stroke. The chief execs at Central Hudson refused to accommodate our health emergency.

***When I removed the transmitting meter, I was very surprised to discover that all my symptoms, including the severe neck pain that I thought would force me into retirement, disappeared and have not returned since I have lived without smart meters in my living environment for the past 7 years. I removed the smart utility meter to protect Nicole from a possible major stroke. I had no idea that in doing so my symptoms would disappear.***

I had suffered with severe neck pain, charlie horse cramps in my legs in the middle of the night when I was sleeping and slight heart palpitations periodically upon retiring to bed. All these symptoms can be caused by exposure to low levels of microwave radiation. Before I knew about the smart meter being on my home, I took 400 milligrams of Ibuprofen morning and night for 1

and 1/2 years to self-medicate away the pain from the neck as I couldn't afford a doctor and I didn't have any health insurance. The anxiety from the symptoms was incredibly worrisome.

My life was turned upside down and the emotional damage and psychological impact on me from worry over my partner Nicole was extremely difficult. Central Hudson adamantly refused to issue us a safe analog utility meter and demanded that we accept a GE I-210 smart utility meter back on our home, which would have put my partner Nicole at significant risk again. Furthermore Central Hudson demanded that we pay a \$500 disconnect/reconnect fee before they would reconnect our power. Besides many common law and civil law violations our constitutional rights were violated as well as International Rights established in Nuremberg Treaty called the "Nuremberg Code", and agreed to by all the developed nations in the world including the U.S.

Once the digital utility meter was taken off our home, Nicole gradually recovered 90% and has not had another stroke since, but now suffers with electrosensitivity and reported by other people who had a smart meter installed on their homes. We know for a fact these smart meters cause harm.

Having had all these experiences revolving around *involuntary exposures* to man-made pulsing artificial electromagnetic microwave radiation, Nicole founded the Smart Meter Forum monthly meeting in 2013, which recently has been renamed the Truthsayers Forum. I launched the original stopsmartmeterswoodstockny.com website, also known now as "The Truthsayers." I have two lawsuits pending against the past chief executives of the Utility, the Utility: Central Hudson, the parent company; Fortis Inc., and the New York State Public Service Commission. I have a weekly radio show on an independent, commercial free, community, progressive radio station Woodstock 104 (104.1 FM) called the "Woodstock Truth Squad," which broadcasts into parts of the Hudson valley in New York. I will eventually be posting audio links of the show on this website on the archives page. [Emphasis added.]

## **ROGER M., LOVELAND, COLORADO**

"It was a Friday afternoon when we were noticed. All the notice said was that Verizon was coming to install several small antennae on the rooftop. The workmen arrived on Monday. They came every day from 7 AM to 7 PM and worked for three or four weeks. It was more than a few antennae. They even had a crane to lift the concealment wall that shielded the wireless equipment they put literally above my head," recalls Richard M.

Richard lived on the top floor of ArtSpace, a not-for-profit four-story building. The residents were all artists of some kind. The subsidized housing provided a place to live and work at one's craft in Loveland, Colorado.

A musician and composer, Roger M. had played freelance gigs along the Front Range for years. A versatile musician, Roger was known as someone who was available for touring groups who

needed a backup player. He played for theater productions, cruise ships and was frequently found at his piano, writing jazz. His top floor apartment in Loveland doubled as home and studio, he had steady work performing and life was good.

Roger went from living his dream to living in his car to just trying to survive.

He is torn when apportioning blame. Roger doesn't know whether ArtSpace made a deal to lease out the rooftop of his building without seriously investigating the possible health consequences for the residents. Yet without doubt, he feels Verizon has told the residents too many carefully crafted lies to be doing anything other than purposeful concealment. And he is angry at the FCC for what Roger refers to as "gaslighting and failing to protect the public."

In the 1944 film *Gaslight* starring Ingrid Bergman, a husband uses deceit to convince his wife that she is delusional so he can steal from her. The term is commonly used to describe someone being manipulated into questioning their own reality, usually so it advantages the person or entity doing the manipulating.

"Verizon tells you that they are operating at just 2% of what the FCC allows," explains Roger, "at least that's what the first couple of flyers said. They had an apartment building full of sick residents and they were trying to tell us that we were fools to be concerned.

"They throw your life into chaos," Roger continues, "and amidst that chaos they deny any harm is coming from the tower. So when they told us what we were being exposed to was just a fraction of what the FCC allowed, I called the FCC. They told me the base station was well within the regulatory limits and then they quickly shifted to their default position: 'The FCC is not a health and safety agency.'

"They are playing us for fools – *both* Verizon and the FCC," says Roger, with special emphasis on the word *both*. "It's all smoke and mirrors. Verizon's lies wouldn't work without the FCC's and vice versa. That Verizon base station on our rooftop may be emitting 2% of what the FCC allows, but how can the FCC allow a level so high that at 2% every single person who lived in that ArtSpace building was feeling the effects either neurologically or they were sick all the time.

"My position is that the FCC should just stop talking because if their default position is they aren't a health and safety agency, what are they doing regulating the amount of radiation everybody in this country receives? They say they rely on other agencies, like the FDA. So you go to the FDA website and they say the same thing the FCC does. They say 'no known adverse health effects.'

"It's just a scam," surmises Roger. "This is one big shell game being played by a federal agency and a wireless carrier. They are joining together to gaslight anybody who gets sick."

Verizon had begun construction on the rooftop in January 2021. The residents think the tower was activated around April but they were unsure. Many were not feeling well but were trying to write their symptoms off to other things. No one wants to lose their home. But in August it became undeniable to all that the base station on the roof was a problem. Everybody was feeling sick or

suffering debilitating headaches and insomnia. By October, Roger was paying rent to house his piano and other instruments and sleeping in his car.

Yet this was Colorado and when winter came, Roger was forced to go into his savings to pay for a hotel. He was unable to find alternative housing. The waiting list for subsidized housing was years long, and he couldn't find an apartment he could afford. The man who could fit in anywhere as a musician suddenly had no place to go. He was still paying rent at ArtSpace and the hotels throughout the area were not cheap. He couldn't get out of his lease until finally, in an act of desperation or perhaps inspiration, Roger bought a meter that allowed him to do RF radiation measurements in his apartment. He videotaped the meter walking down the hallway toward his apartment. The readings were high but suddenly as he opened the apartment door, the meter jumped in multiples of 100  $\mu\text{W}$  per meter squared. Then Roger walked to various well-known places in Loveland, including coffee shops where people could come and use their laptops. Nothing came close to approximating the readings in Roger's apartment. He sent the video to the management company and ArtSpace. They let him out of his lease.

Roger explains that almost everyone moved out or at least they wanted to, but the problem for all was the rents which had skyrocketed since the pandemic, and there was really no place to go. Living in subsidized housing so they could do their craft – whether it was music or painting or pottery, had been appealing. In the beginning the building had quickly filled with artist-residents. Roger had been the first to move in and that was 2015. This was his community. This was everyone's community within ArtSpace. Now, as soon as they could get out of their leases, residents were leaving for cars, relative's homes, and the few able to afford other apartments.

"I don't know a person in the whole building who wasn't affected," recalls Roger. "Those of us closer to the rooftop probably got hit the hardest. I was like a zombie. It was the lack of sleep, I'm sure, but it was the lack of clarity of thought that went above and beyond sleep deprivation.

"Friends would come over and I wouldn't say anything because I didn't want to predispose them to thinking they didn't feel well," he explains. "But every single person who came over to visit would complain of a headache and body chills. I knew it wasn't some sort of 'mass hysteria' for those of us who lived in the building. It affected every single one of our friends.

"People stopped calling for gigs because I wasn't working, I couldn't perform, I couldn't compose, I couldn't think. I was just trying to survive," Roger states, a tired bluntness in his voice.

"I didn't move out capriciously. Who wants to leave their home, their personal possessions, and for me, my love and my profession – music."

The symptoms of electrosensitivity have not left Roger, even though he improved when he moved out of ArtSpace. The brain fog is still with him, he is without savings, and without income. After sharing his story, Roger pauses and then shares one final thought.

"What I want to say to Verizon and the FCC is 'Quit lying and quit killing us.'"



## **DIANA LOSACCO, LAKEWOOD, COLORADO**

In late 2019 a 5G cell tower was installed near my office. My office is on the 2nd floor with the top of the cell tower/antenna clearly visible. It's approximately 30' feet or less from the single pane window where I sat in front of at my workstation.

By mid-2020 I started to develop severe migraine type headaches, which would temporarily affect my eyesight. On one occasion, after leaving my office and getting into my car to drive home, I could not see well enough to drive. I attempted to find any potential source for the headaches (i.e., food allergies, environmental, etc.). The ONLY thing that had changed in my environment was the installation of the 5G cell tower. At this point, I'd not considered the 5G tower as a suspect. But the migraines continued along with vision impairment.

After eye exams, doctor visits, and my own research, I found many peer-reviewed, published science, and growing evidence that supports the facts that indeed cell tower radiation is associated with headaches (among MANY other potentially damaging biological effects). I purchased an RF (radio frequency) power meter to collect and analyze my work and home environment. The RF meter registered HIGH to extreme near the window in front of my office workstation.

On July 16th, 2020, I sent a consumer complaint to the FCC (having found out that the FCC regulates cell towers). I informed them of my headaches and asked if they could instruct the wireless provider to have their engineers check the RF emissions coming from this tower to make sure they were compliant with current RF emission guidelines. Sadly, the FCC DID NOTHING. Their reply was to note the complaint, thank me for my submissions and stated that, quote "no further action is required by the FCC. Your complaint was closed as of today".

On January 31st, 2022, I sent a comment to the FDA in support of a legal petition, 2021-P-1347, requesting the FDA immediately issue an "imminent Hazard" declaration with regards to public exposure of RF radiation. The FDA, to date has DONE NOTHING.

I no longer wanted to risk future migraines—I moved my office workstation to a back office, where the RF meter registered in moderate to lower emissions. I eventually began working from my home.

Having realized that not only cell towers can pose this hazard, but also many of my wi-fi devices, I've had to spend \$1,000's of dollars in my home office to create a SAFE RF environment. I use my cell phone only for emergencies. The migraines have subsided.

Hundreds of scholars, health professionals, scientists and 1,000's of citizens, like myself, have and continue to demand help and change from our government agencies.

I now ask that YOU, the EPA, take the opportunity with the Justice 40 initiative, to PROTECT citizens, like myself, from the many health and environmental hazards being created from exposure to radio frequency radiation.

**VIRGINIA FARVER, SAN DIEGO, CALIFORNIA**

I lost a son in 2008 from a cell tower on the San Diego State University campus. I have attached a picture of this cell tower that took my son's life. Notice the dead tree foliage next to the tower.



I have kept track of deaths on campus in this area. A professor sent me a list last fall of 9 more women who have left because of migraine headaches, or seizures or have died from cancers, including brain cancer. In 2008, 4 men in Nasatir Hall, room 131, near the cell tower, were diagnosed with brain cancer. My son, Rich, was one of the victims. I have investigated 6 school cancer clusters over the years and all were from some form of electro-magnetic radiation, including dirty electricity.

My son experienced many symptoms before being diagnosed with GBM brain cancer. Fatigue, headaches, endocrine problems (excessive underarm sweating, which disappeared after leaving campus), really bad memory problems. He was applying for law school at the time and would call me at home and once told me, "Mom, even if I were accepted into a program, I don't know if I can make it through. He went onto say, "I cannot remember anything." He also had dental problems

and so many more. These symptoms are real and can no longer be tolerated, by a government agency that is captured.

Ionizing radiation damages cells or DNA instantly and ***non-ionizing radiation (wireless) is cumulative radiation***. The more non-ionizing radiation received, the more cell or DNA damage. This is killing our children. I was involved with the CHD (Childrens Health Defense) and won the lawsuit against the FCC on August 13, 2021. Wireless is harmful and we have enough evidence!

The FCC during the proceedings stated that, "They are a spectrum allocation agency." They are not a health agency. It is now time that the FDA and EPA take this under their umbrella and start protecting the American Citizens. We can no longer wait and let this captured agency continue to harm people. Especially the most vulnerable including EHS victims, older Americans and most importantly our children.

### **THE GILARDI FAMILY, PITTSFIELD, MASSACHUSETTS**

It was Earth Day, 2021. Based on the children's classic *Alexander and the Terrible, Horrible, No Good, Very Bad Day*, Amelia Gilardi rewrote and retitled, for purposes of Earth Day, the story based on a challenge faced by her family and her community in which the environment plays a central role. "5G Earth Day Countdown: Children — Amelia's Terrible, Horrible, No Good, Very Bad Cell Tower Days" was an ode to her community and in so many ways, it spoke to a much broader audience.

*My name is Amelia and I am 13 years old.*

*A Verizon cell tower blindsided my Pittsfield, Massachusetts neighborhood and made us sick. This is my story.*

*Last March, we were sent home from school due to the pandemic. The ice skating show that we had worked so hard practicing for was cancelled. Auditions for my school musical were cancelled. My weekend nature program was cancelled. Everything was cancelled.*

*Everything except the construction happening in my neighborhood.*

*Trucks were rolling by our house – big ones, flatbed ones, trucks carrying other trucks. When trying to clear the corner between Plumb and Alma Street, the weight of the truck was so much it crushed the water main beneath the road. We couldn't get the car out past the repair crew and went without water for the day. No one knew why.*

*Because we were home with no plan to return to school, we tried to keep busy. For Christmas, my sister and I got mountain bikes and we went riding up our street like we always did. But this time, at the top of the street, we saw parked trucks and the cleared trees. Where there was forest that was once part of the Herman Melville Farm, a land*

*called “Arrowhead” after Melville having found them in the fields, was now a big, open clearing.*

*Trees by the dozens had been chopped down and were lying on the ground. Some had been wood chipped and spread from Alma Street to the clearing. None of the neighbors walking their dogs or out for a jog or pushing their children in strollers had any idea why.*

*Mom called our City Councilor and he didn’t know why. He said he would call the Department of Public Works and put some calls into the city to find out. When he got back to mom, he said no one knew anything about the construction. Mom came out for a walk with us and took a photo of the trucks. She called the construction company and asked what they were doing. That is when we learned it was a cell tower.*

Amelia Gilardi is an amazing 13-year-old playing the leading teen role in a theater she never tried out for, with some adults in roles she never dreamed she would witness.

Amelia Gilardi is Courtney Gilardi’s daughter. That explains a lot.

The startling news that a 115-foot tall, 12-antenna cell tower was being constructed in their neighborhood in the section of Pittsfield historically known as Shacktown concerned Amelia’s mother, Courtney. Construction had already begun. Twenty of the 22 neighbors had not been noticed as was required by the local zoning ordinance, and none of them had been noticed within the period of time allotted for an appeal of permit approval. In the ensuing months Courtney Gilardi and her neighbors struggled to understand how this could happen without notice in their community.

After the tower was activated symptoms were, for most, immediate. Courtney dove into the research. She contacted experts around the country, in Canada and in Europe. Verizon did not inform the residents when the tower was turned on. They knew because their bodies told them. They stopped sleeping through the night if they could get to sleep at all. They were plagued with headaches, vertigo, nausea, brain fog, skin rashes and within the next 18 months there would be two diagnoses of cancer and one recurrence of cancer. Family pets would die, and even the moles did not return to family gardens as the ground started to thaw after winter had passed. Bees and other pollinators began to disappear.

Courtney Gilardi and her husband have two girls, one Courtney refers to as “my little one” for the sake of privacy, and 13-year-old Amelia who has accompanied her mother to every Pittsfield City Council and Board of Health meeting, speaking publicly each time, imploring them month after month to help them find some relief from the injurious Verizon tower. Many of the neighbors joined the fight but few made it their mission to contact experts internationally and invite them to virtual town halls to educate residents and community leaders about the health impacts associated with RF (wireless) radiation.

What sets this story apart, where residents all over the country are starting to experience an intrusion of cell towers into residential neighborhoods and on school grounds at an alarming pace,

is the fact the Gilardis are fighting back. The relentless drumbeat by Courtney and Amelia began to include more neighbors as the months went by. Under longstanding Massachusetts law, Health Boards have strong and extensive authority to require that injurious commercial operation be eliminated, so the Gilardis asked the Board to step in and provide relief. On February 2, 2022 the Pittsfield, Massachusetts Board of Health unanimously voted to require that Verizon and the landowner to appear and show cause why the Board should not issue a cease and desist order. The Board took almost two years reviewing the extensive scientific, medical and personal evidence and expressly found that the cluster of illnesses was caused by the tower's operation. The Board encouraged Verizon to work with the city and residents to reduce the impact on these families but indicated Verizon would be required to cease operations if it persisted in its position that the city was powerless to protect Pittsfield residents from harm. This is the first known cease-and-desist by a state/local Board of Health against a wireless carrier in the United States.

Verizon refused to appear or negotiate. It responded to the Board of Health's issuance of the cease-and-desist with a [federal lawsuit](#), filed May 10, 2022, in a Massachusetts U.S. District Court. The carrier asked the court to rule that the Board is indeed powerless to protect Pittsfield residents even after an expert medical agency finding of both injury and causation. Verizon claims that state and local health authorities are completely preempted by [47 U.S.C. §332\(c\)\(7\)\(B\)\(II\)](#), which prohibits state and local [zoning authorities](#), from "regulat[ing] the placement, construction, and modification of [personal wireless service facilities](#) on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the [Commission's](#) regulations concerning such emissions." The tower looming over the Shacktown section of Pittsfield was tested and found to be within the regulatory limits set by the FCC, so Verizon contends it can operate even if the resultant emissions lead to severe injury or even death and in the face of traditional state police powers.

Courtney Gilardi has been working tirelessly to educate her own community, and simultaneously educating communities across the country, that this practice of wireless carriers bringing their cell towers into residential areas and next to schools has to stop. The fact that this tower is at least arguably within regulatory limits set by the FCC may make Verizon feel they have the upper hand, but it is clearly making a very wide swath of neighbors in the vicinity of the tower sick.

"My little one had headaches, dizziness, and felt like her head was 'buzzy,' explains Courtney. "She also suffered from the sensation that her skin was crawling and was itchy when she was in her room, which was on the side of the house closest to the cell tower. She complained of stomach aches and a once voracious eater and a like-clockwork sleeper could do neither. Since the tower was activated she has lost her appetite for food and complained she couldn't fall asleep. Those were never issues in the past. She also suffered with horrible nightmares. She would toss and turn and scream out. I only realized how often she did this after we moved to the cottage and she slept peacefully through the night."

The cottage Courtney is referring to is the unheated cottage they have rented so they can escape their home which they hope and pray they can return to, but much of that depends on a federal judge's decision. The cottage does not have hot water so Courtney and her family return to their "tower home" for a hot shower, but it is a place they can sleep through the night.

“When we would spend too much time at home, my little one would ask to leave and go to the cottage,” explains Courtney, describing how they would return to the house to get clothes, take a hot shower, and be with their toys and amenities they enjoyed and never contemplated leaving until Verizon became their unwelcome neighbor.

“She would say, ‘I’m ready now’ and we knew despite mentally wanting to stay in her own room with her toys, ‘lovies’, fort, books and the only home she had ever known, that physically she knew her body felt better spending time in a rundown cottage where the only thing she had was a mattress on the floor and many mice for company.

At our home by the tower, she would lay down on the kitchen bench with her legs curled up to her stomach with red, puffy eyes, looking miserable, sleep deprived and not feeling herself. She would be so nauseous that she missed school, which led to her losing confidence as she felt she was falling behind in her studies,” describes the mom of two. “Despite being one of the top students in the class, she felt like she had missed so much and felt ill so often and felt that reflected in her work, that she chose to not take the 5th grade MCAS testing.”

Courtney pauses for a moment as she describes what her “little one” has gone through, and then continues. “One day, within 10 minutes of going to school, she vomited into her face mask. It wasn’t the first time it would happen. She would sleep with a bucket besides her bed and both her dad and I would take turns holding her hair back.

“Amelia, at our first in person Board of Health meeting, shared what our routine was like. She reminded me that we needed to ‘show’ not ‘tell’ what life by the tower was like.” So, with her mother by her side, 13-year-old Amelia Gilardi sat behind the table testifying with her mom showing the various medications Amelia now takes, and the pan she would keep at the side of her bed when the waves of nausea were intense and sudden.

“Amelia would get dizzy. She is my ice skater and gymnast with great balance, and I would watch her walk into walls,” describes Courtney. “Sometimes she would vomit in the middle of the night and I’d hear her little voice besides me in the dark by my bedside saying, ‘Mama, I’m sick. I just threw up in the sink.’

“Sometimes she would get headaches. She would be dizzy. I remember her schooling from home and having missed several days and realizing that I should check in with the school nurse and tell her why. I remember wondering what she would say, and to my surprise, she actually knew about the [cell tower harms] issue and was supportive.”

“For Amelia, sleep had never come easy, but once she fell asleep, she was a sound and solid sleeper. After the tower, that wasn’t the case,” Courtney explains, describing the sudden onset symptoms of classic electromagnetic sensitivity. “She not only had a hard time falling asleep and was often still up at midnight. She just couldn’t stay asleep. She was up at 1:00 AM, 2:00 AM, 3:00 AM in the morning. She testified at the City Council getting as few as two to three hours of sleep a night. Often around 4:00 AM or 5:00 AM she would fall asleep, only to be woken by the alarm at

6:00 AM. She never felt or looked rested. She had dark circles under her eyes which always looked tired.

“She had headaches and would ask for Tylenol. We hardwired everything and bought her blue light glasses and tried to spend as much time away from home as possible.” Courtney describes trying to juggle their lives and adjust everything, sometimes on a daily basis. Watching her daughters’ misery was the hardest part. As she was trying to empower her neighbors she sometimes felt powerless herself. In describing Amelia’s struggle, Courtney shares, “Sometimes she would vomit, sometimes she would just retch, and watching that was even worse, because it was like something wanted to come out, but couldn’t, and she couldn’t get any relief. We tried Tums, papaya enzyme, chamomile, mints, ginger chews and ginger tea and a relaxing lavender spray. We tried everything, but nothing really worked besides distance, which meant leaving our home.”

When Amelia Gilardi wrote her own version of the children’s classic about Alexander’s horrible day, she ended with the following. The only factual change is that the Health Department has, indeed, sided with the Gilardis against Verizon. Now it’s up to a federal judge in a country with increasing numbers of residents extremely unhappy to have cell towers invading their neighborhoods and marking the school grounds at their children’s schools.

From Amelia:

***The really bad, worst, no good bad part –***

*We learned that we were not the only ones harmed by cell towers. We were put in touch with Noah Davidson’s family in Sacramento California. Both their girls, like us, got sick when a 5G tower was placed outside their bedroom window. No one listened to them either.*

*Mom learned about a boy, my age in Canada, also harmed by wireless radiation since he was 5 years old. They made a movie about him and others who were harmed, called Prisoners without Walls. We talked and I learned he liked the same book series. He loved playing video games. He spoke French and liked making videos.*

*We started meeting families from all over with everyday kids, like us, who had been harmed from wireless radiation either from cell towers or mobile devices. Why, if so many people were being hurt from this, was no one helping them?*

*So the truly bad, no good part is that the science is here but our legislators simply are not responding fast enough. Dr. Paul Heroux, Dr. Martha Herbert, Dr. Magda Havas, Dr. Cindy Russell, Dr. Sharon Goldberg, Theodora Scarato, Cecelia Doucette and many others have tried to educate Pittsfield about these issues. They have been silenced at meetings, and any letters from them or offers to present information or assist with an investigation have fallen on deaf ears.*



*My mom would ground me if I was told not to do something and I kept doing it over and over. I've heard my grandma say, "When we know better, we do better."*

*Big people, we know better. Please, do something. We never thought this could happen to us so please, don't wait until it happens to you.*

*I'm asking everyone who is reading this to **advocate for cell tower setbacks away from schools and homes**. I'm asking everyone to require the FCC standards that fail to protect us from biological harm to be updated. I'm asking you restore my neighborhood to the safe, residential place it was before the tower, and I am asking for each and every person to care about the wireless safety issue.*

*Our people, our pollinators and our planet depend on you.*

*Amelia*

## APPENDIX B

The source for this compilation of scientific studies is the Environmental Health Trust.<sup>258</sup>

### **COMPILATION OF RESEARCH STUDIES ON CELL TOWER RADIATION AND HEALTH**

Anthony B. Miller, L. Lloyd Morgan, Iris Udasin, Devra Lee Davis, [Cancer epidemiology update, following the 2011 IARC evaluation of radiofrequency electromagnetic fields \(Monograph 102\)](#), *Environmental Research*, Volume 167, 2018, Pages 673-683, ISSN 0013-9351

- Radiofrequency radiation is emitted by cell towers. This review paper concludes that “Based on the evidence reviewed it is our opinion that IARC’s current categorization of RFR as a possible human carcinogen (Group 2B) should be upgraded to Carcinogenic to Humans (Group 1).”

Zothansiam, et al. [“Impact of radiofrequency radiation on DNA damage and antioxidants in peripheral blood lymphocytes of humans residing in the vicinity of mobile phone base stations.”](#) *Electromagnetic Biology and Medicine* 36.3 (2017): 295-305.

- This study evaluated effects in the human blood of individuals living near mobile phone base stations (within 80 meters) compared with healthy controls (over 300 meters). The study found higher radiofrequency radiation exposures and statistically significant differences in the blood of people living closer to the cellular antennas. The group living closer to the antennas had for example, statistically significant higher frequency of micronuclei and a rise in lipid peroxidation in their blood. These changes are considered biomarkers predictive of cancer.

Rodrigues NCP, Dode AC, Andrade MKdN, O’Dwyer G, Monteiro DLM, Reis INC, Rodrigues RP, Frossard VC, Lino VTS. [The Effect of Continuous Low-Intensity Exposure to Electromagnetic Fields from Radio Base Stations to Cancer Mortality in Brazil.](#) *International Journal of Environmental Research and Public Health*. 2021; 18(3):1229. <https://doi.org/10.3390/ijerph18031229>

- For all cancers and for the specific types investigated (breast, cervix, lung, and esophagus cancers), the higher the exposure to RBS (radio base stations- cell antenna installations)

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<sup>258</sup> <https://ehtrust.org/cell-towers-and-cell-antennae/compilation-of-research-studies-on-cell-tower-radiation-and-health/>.

radiofrequency, the higher the median of mortality rate. In capitals where radio base station radiofrequency exposure was higher than 000/antennas-year, the median of the breast cancer mortality rate was 27.33/100,000, while for all cancers, it was 111.68/100,000 (Table 1).

Meo, S. A., Almahmoud, M., Alsultan, Q., Alotaibi, N., Alnajashi, I., & Hajjar, W. M. (2018). [Mobile Phone Base Station Tower Settings Adjacent to School Buildings: Impact on Students' Cognitive Health.](#) *American Journal of Men's Health*.

- High exposure to RF-EMF produced by mobile phone base station towers was associated with delayed fine and gross motor skills, spatial working memory, and attention in school adolescents compared to students who were exposed to low RF-EMF.

Rodrigues NCP, Dode AC, Andrade MKdN, O'Dwyer G, Monteiro DLM, Reis INC, Rodrigues RP, Frossard VC, Lino VTS. [The Effect of Continuous Low-Intensity Exposure to Electromagnetic Fields from Radio Base Stations to Cancer Mortality in Brazil.](#) *International Journal of Environmental Research and Public Health*. 2021; 18(3):1229. <https://doi.org/10.3390/ijerph18031229>

- “Conclusions: The balance of our results indicates that the exposure to radiofrequency electromagnetic fields from an RBS increases the rate of mortality by all cancers and specifically by breast, cervix, lung, and esophageal cancers. These conclusions are based on the fact that the findings of this study indicate that, the higher the RBS radiofrequency exposure, the higher the cancer mortality rate, especially for cervix cancer (adjust RR = 2.18). The spatial analysis showed that the highest RBS radiofrequency exposure was observed in a city located in the southern region of Brazil, which also showed the highest mortality rate for all types of cancer and specifically for lung and breast cancers.”

[Long-term exposure to microwave radiation provokes cancer growth: evidences from radars and mobile communication systems.](#) [Yakymenko](#) (2011) *Exp Oncology*, 33(2):62-70.

- Even a year of operation of a powerful base transmitting station for mobile communication reportedly resulted in a dramatic increase of cancer incidence among population living nearby.

[Association of Exposure to Radio-Frequency Electromagnetic Field Radiation \(RF-EMFR\) Generated by Mobile Phone Base Stations \(MPBS\) with Glycated Hemoglobin \(HbA1c\) and Risk of Type 2 Diabetes Mellitus](#), Sultan Ayoub Meo et al, *International Journal of Environmental Research and Public Health*, 2015

- Elementary school students who were exposed to high RF-EMFR generated by MPBS had a significantly higher risk of type 2 diabetes mellitus relative to their counterparts who were exposed to lower RF-EMFR.

Isabel López, Nazario Félix, Marco Rivera, Adrián Alonso, Ceferino Maestú. [What is the radiation before 5G? A correlation study between measurements in situ and in real time and epidemiological indicators in Vallecas, Madrid](https://doi.org/10.1016/j.envres.2021.110734). Environmental Research. Volume 194, March 2021, 110734. <https://doi.org/10.1016/j.envres.2021.110734>.

- Residents of a Madrid Spain neighborhood surrounded by nine telephone antennas took a survey. 105 measurements of electromagnetic radiation were taken both outside and inside the houses. People who were exposed to higher radiation values presented with more severe headaches, dizziness and nightmares and slept fewer hours.

[Neurobehavioral effects among inhabitants around mobile phone base stations](#) Abdel-Rassoul et al, Neurotoxicology, 2007

- This study found that living nearby mobile phone base stations (cell antennas) increased the risk for neuropsychiatric problems such as headaches, memory problems, dizziness, tremors, depression, sleep problems and some changes in the performance of neurobehavioral functions.

Meo SA, Almahmoud M, Alsultan Q, Alotaibi N, Alnajashi I, Hajjar WM, [Mobile Phone Base Station Tower Settings Adjacent to School Buildings: Impact on Students' Cognitive Health](#). Am J Mens Health. 2018 Dec 7:1557988318816914. doi: 10.1177/1557988318816914.

- This study investigated the impact of exposure to radiofrequency electromagnetic field (RF-EMF) radiation generated by mobile phone base station towers (MPBSTs) on cognitive functions. Two hundred and seventeen volunteer male students aged between 13 and 16 registered from two different intermediate schools: 124 students were from School 1 and 93 students were from School 2. The MPBSTs were located within 200 m from the school buildings. In School 1, RF-EMF was 2.010  $\mu\text{W}/\text{cm}^2$  with a frequency of 925 MHz and in School 2, RF-EMF was 10.021  $\mu\text{W}/\text{cm}^2$  with a frequency of 925 MHz. Students were exposed to EMFR for 6 hr a day, 5 days a week for a total period of 2 years. The Narda Safety Test Solution device SRM-3006 was used to measure RF-EMF in both schools, and cognitive functions tasks were measured by the Cambridge Neuropsychological Test Automated Battery (CANTAB). Significant impairment in Motor Screening Task (MOT;  $p = .03$ ) and Spatial Working Memory (SWM) task ( $p = .04$ ) was identified among the group of students who were exposed to high RF-EMF produced by MPBSTs. High exposure to RF-

EMF produced by MPBSTs was associated with delayed fine and gross motor skills, spatial working memory, and attention in school adolescents compared to students who were exposed to low RF-EMF.

Biological Effects from Exposure to Electromagnetic Radiation Emitted by Cell Tower Base Stations and Other Antenna Arrays, Levitt & Lai, Environmental Reviews, 2010

- This review of 100 studies found approximately 80% showed biological effects near towers. “Both anecdotal reports and some epidemiology studies have found headaches, skin rashes, sleep disturbances, depression, decreased libido, increased rates of suicide, concentration problems, dizziness, memory changes, increased risk of cancer, tremors, and other neurophysiological effects in populations near base stations.”

Mortality by neoplasia and cellular telephone base stations. Dode et al. (Brazil), Science of the Total Environment, Volume 409, Issue 19, 1 September 2011, Pages 3649–3665

- This 10 year study on cell phone antennas by the Municipal Health Department in Belo Horizonte and several universities in Brazil found a clearly elevated relative risk of cancer mortality at residential distances of 500 meters or less from cell phone transmission towers. Shortly after this study was published, the city prosecutor sued several cell phone companies and requested that almost half of the cities antennas be removed. Many antennas were dismantled.

Pearce, M., Limiting liability with positioning to minimize negative health effects of cellular phone towers, Environmental Research, Volume 181, 2020,

- “There is a large and growing body of evidence that human exposure to RFR from cellular phone base stations causes negative health effects including both i) neuropsychiatric complaints such as headache, concentration difficulties, memory changes, dizziness, tremors, depressive symptoms, fatigue and sleep disturbance, and ii) increased incidence of cancer and living in proximity to a cell- phone transmitter station.” The author recommends long-term planning “to minimize the risk of liability from unintended human harm due to cellular phone base station siting” including voluntary restrictions on the placement of cellular phone base stations within 500 m of schools and hospitals.”

Epidemiological Evidence for a Health Risk from Mobile Phone Base Stations Khurana, Hardell et al., International Journal of Occupational Environmental Health, Vol 16(3):263-267, 2010

- A review of 10 epidemiological studies that assessed for negative health effects of mobile phone base stations (4 studies were from Germany, and 1 each from Austria, Egypt, France, Israel, Poland, Spain) found that seven showed altered neurobehavioral effects near cell tower and three showed increased cancer incidence.

The review also found that eight of the 10 studies reported increased prevalence of adverse neurobehavioral symptoms or cancer in populations living at distances < 500 meters from base stations. None of the studies reported exposure above accepted international guidelines, suggesting that current guidelines may be inadequate in protecting the health of human populations.

Health effects of living near mobile phone base transceiver station (BTS) antennae: a report from Isfahan, Iran. Shahbazi-Gahrouei et al, Electromagnetic Biology Medicine, 2013.

- This cross-sectional study found the symptoms of nausea, headache, dizziness, irritability, discomfort, nervousness, depression, sleep disturbance, memory loss and lowering of libido were statistically increased in people living closer than 300 m from cell antennas as compared to those living farther away. The study concludes that “antennas should not be sited closer than 300 m to people to minimize exposure.”

How does long term exposure to base stations and mobile phones affect human hormone profiles? Eskander EF et al, (2011), Clin Biochem

- RFR exposures significantly impacted ACTH, cortisol, thyroid hormones, prolactin for females, and testosterone levels for males.

Investigation on the health of people living near mobile telephone relay stations: Incidence according to distance and sex Santini et al, 2002 , Pathol Bio

- People living near mobile phone masts reported more symptoms of headache, sleep disturbance, discomfort, irritability, depression, memory loss and concentration problems the closer they lived to the installation. Study authors recommend that the minimal distance of people from cellular phone base stations should not be < 300 m.

Navarro EA, Segura J, Portoles M, Gomez-Perretta C, The Microwave Syndrome: A preliminary Study. 2003 (Spain) Electromagnetic Biology and Medicine, Volume 22, Issue 2, (2003): 161 – 169

- Statistically significant positive exposure-response associations between RFR intensity and fatigue, irritability, headaches, nausea, loss of appetite, sleeping disorder, depressive tendency, feeling of discomfort, difficulty in concentration, loss of memory, visual disorder, dizziness and cardiovascular problems.

## Two Important Animal Studies on Radiofrequency Radiation

These studies indicate that government limits are non protective. Government limits are based on the assumption that radiofrequency radiation is only harmful at thermal levels. However, the cancers developed in animals in these studies at radiation levels that were non thermal.

Falcioni et al. 2018, "[Report of final results regarding brain and heart tumors in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz base station environmental emission](#)" Environmental Research Journal

- Researchers with the renowned Ramazzini Institute (RI) in Italy performed a large-scale lifetime [study](#) of lab animals exposed to environmental levels (comparable to allowable limits from cell towers) of RFR radiation and found the rats developed increased cancers- schwannoma of the heart in male rats. This study confirms the \$25 million [US National Toxicology Program](#) study which used much higher levels of cell phone radiofrequency (RF) radiation, but also reported finding the same unusual cancers as the Ramazzini- schwannoma of the heart in male rats. In addition, the RI study of cell tower radiation also found increases in malignant brain (glial) tumors in female rats and precancerous conditions including Schwann cells hyperplasia in both male and female rats.
- "Our findings of cancerous tumors in rats exposed to environmental levels of RF are consistent with and reinforce the results of the US NTP studies on cell phone radiation, as both reported increases in the same types of tumors of the brain and heart in Sprague-Dawley rats. Together, these studies provide sufficient evidence to call for the International Agency for Research on Cancer (IARC) to re-evaluate and re-classify their conclusions regarding the carcinogenic potential of RFR in humans," said Fiorella Belpoggi PhD, study author and RI Director of Research.
- The Ramazzini study exposed 2448 Sprague-Dawley rats from prenatal life until their natural death to "environmental" cell tower radiation for 19 hours per day (1.8 GHz GSM radiofrequency radiation (RFR) of 5, 25 and 50 V/m). RI exposures mimicked base station emissions like those from cell tower antennas, and exposure levels were far less than those used in the NTP studies of cell phone radiation.
- [Watch Press Conference](#)

Wyde, Michael, et al. "National Toxicology Program Carcinogenesis Studies of Cell Phone Radiofrequency Radiation in Hsd: Sprague Dawley® SD rats (Whole Body Exposure).[Statement on conclusions of the peer review meeting by NIEHS, released after external peer review meeting](#) and the [DNA damage presentation](#).

- This 25 million dollar study is the most complex study completed by the NTP and the world's largest rodent study on radiofrequency radiation exposure to date which found



long term exposure at non thermal levels associated with brain cancer and schwannomas of the heart in male rats. In addition damage to heart was found in all exposure levels.

### **More Important Studies on Cell Tower Radiation**

Cindy L. Russell, [5 G wireless telecommunications expansion: Public health and environmental implications](#), Environmental Research, 2018, ISSN 0013-9351

- Radiofrequency radiation (RF) is increasingly being recognized as a new form of [environmental pollution](#). This article reviews relevant [electromagnetic](#) frequencies, exposure standards and current scientific literature on the health implications of 2G, 3G, 4G and 5G.
- Effects can also be non-linear. Because this is the first generation to have cradle-to-grave lifespan exposure to this level of man-made microwave (RF EMR) radiofrequencies, it will be years or decades before the true health consequences are known. Precaution in the roll out of this new technology is strongly indicated.

Noa Betzalel, Paul Ben Ishai, Yuri Feldman, [The human skin as a sub-THz receiver – Does 5G pose a danger to it or not?](#), Environmental Research, Volume 163, 2018, Pages 208-216, ISSN 0013-9351,

- Researchers have developed a unique simulation tool of human skin, taking into account the skin [multi-layer structure](#) together with the helical segment of the sweat duct embedded in it. They found that the presence of the sweat duct led to a high specific absorption rate (SAR) of the skin in [extremely high frequency](#) band that will be used in 5G. “One must consider the implications of human immersion in the electromagnetic noise, caused by devices working at the very same frequencies as those, to which the sweat duct (as a helical antenna) is most attuned. We are raising a warning flag against the unrestricted use of sub-THz technologies for communication, before the possible consequences for public health are explored.”

[Mobile phone infrastructure regulation in Europe: Scientific challenges and human rights protection](#) Claudia Roda, Susan Perry, Environmental Science & Policy, Volume 37, March 2014, Pages 204-214.

- This article was published in Environmental Science & Policy by human rights experts. It argues that cell tower placement is a human rights issue for children.
- “We argue that (1) because protection of children is a high threshold norm in Human Right law and (2) the binding language of the Convention on the Rights of the Child obliges States Parties to provide a higher standard of protection for children than adults, any widespread or systematic form of environmental pollution that poses a long-term threat to

a child's rights to life, development or health may constitute an international human rights violation.

- In particular we have explained how the dearth of legislation to regulate the installation of base stations (cell towers) in close proximity to children's facilities and schools clearly constitutes a human rights concern according to the language of the Convention on the Rights of the Child, a treaty that has been ratified by all European States.

#### [SAFETY ZONE DETERMINATION FOR WIRELESS CELLULAR TOWER](#) Nyakyi et al, Tanzania (2013)

- This research looked at the radiation that cell towers emit and states a safety zone is needed around the towers to ensure safe sleeping areas. The authors state that "respective authorities should ensure that people reside far from the tower by 120m or more depending on the power transmitted to avoid severe health effect."

#### [A cross-sectional case control study on genetic damage in individuals residing in the vicinity of a mobile phone base station.](#) Ghandi et al, 2014 (India):

- This cross-sectional case control study on genetic damage in individuals living near cell towers found genetic damage parameters of DNA were significantly elevated. The authors state, "The genetic damage evident in the participants of this study needs to be addressed against future disease-risk, which in addition to neurodegenerative disorders, may lead to cancer."

#### [Human disease resulting from exposure to electromagnetic fields](#), Carpenter, D. O. Reviews on Environmental Health, Volume 28, Issue 4, Pages 159172.

- This review summarizes the evidence stating that excessive exposure to magnetic fields from power lines and other sources of electric current increases the risk of development of some cancers and neurodegenerative diseases, and that excessive exposure to RF radiation increases risk of cancer, male infertility, and neurobehavioral abnormalities.

#### [Signifikanter Rückgang klinischer Symptome nach Senderabbau – eine Interventionsstudie. \(English-Significant Decrease of Clinical Symptoms after Mobile Phone Base Station Removal – An Intervention Study\)](#) Tetsuharu Shinjyo and Akemi Shinjyo, 2014 Umwelt-Medizin-Gesellschaft, 27(4), S. 294-301.

- Japanese study Showed Statistically Significant Adverse Health Effects from electromagnetic radiation from mobile phone base stations. Residents of a condominium building that had cell tower antennas on the rooftop were examined before and after cell tower antennas were removed. In 1998, 800MHz cell antennas were installed, then later in 2008 a second set of antennas (2GHz) were installed. Medical exams and interviews were

conducted before and after the antennas were removed in 2009 on 107 residents of the building who had no prior knowledge about possible. These results lead researchers to question the construction of mobile phone base stations on top of buildings such as condominiums or houses.

[Effect of GSTM1 and GSTT1 Polymorphisms on Genetic Damage in Humans Populations Exposed to Radiation From Mobile Towers.](#) Gulati S, Yadav A, Kumar N, Kanupriya, Aggarwal NK, Kumar R, Gupta R., Arch Environ Contam Toxicol. 2015 Aug 5. [Epub ahead of print]

- In our study, 116 persons exposed to radiation from mobile towers and 106 control subjects were genotyped for polymorphisms in the GSTM1 and GSTT1 genes by multiplex polymerase chain reaction method. DNA damage in peripheral blood lymphocytes was determined using alkaline comet assay in terms of tail moment (TM) value and micronucleus assay in buccal cells (BMN). Our results indicated that TM value and BMN frequency were higher in an exposed population compared with a control group and the difference is significant. In our study, we found that different health symptoms, such as depression, memory status, insomnia, and hair loss, were significantly associated with exposure to EMR. Damaging effects of nonionizing radiation result from the generation of reactive oxygen species (ROS) and subsequent radical formation and from direct damage to cellular macromolecules including DNA.

[Subjective symptoms, sleeping problems, and cognitive performance in subjects living near mobile phone base stations,](#) Hutter HP et al, (May 2006), Occup Environ Med. 2006 May;63(5):307-13

- Found a significant relationship between some cognitive symptoms and measured power density in 365 subjects; highest for headaches. Perceptual speed increased, while accuracy decreased insignificantly with increasing exposure levels.

Oberfeld, A.E. Navarro, M. Portoles, C. Maestu, C. Gomez-Perretta, [The microwave syndrome: further aspects of a Spanish study,](#)

- A health survey was carried out in La Ñora, Murcia, Spain, in the vicinity of two GSM 900/1800 MHz cellular phone base stations. The adjusted (sex, age, distance) logistic regression model showed statistically significant positive exposure-response associations between the E-field and the following variables: fatigue, irritability, headaches, nausea, loss of appetite, sleeping disorder, depressive tendency, feeling of discomfort, difficulty in concentration, loss of memory, visual disorder, dizziness and cardiovascular problems.

[Bortkiewicz et al, 2004 \(Poland\), Subjective symptoms reported by people living in the vicinity of cellular phone base stations: review,Med Pr.2004;55\(4\):345-51.](#)

- Residents close to mobile phone masts reported: more incidences of circulatory problems, sleep disturbances, irritability, depression, blurred vision and concentration difficulties the nearer they lived to the mast.
- The performed studies showed the relationship between the incidence of individual symptoms, the level of exposure, and the distance between a residential area and a base station.

Wolf R and Wolf D, [Increased Incidence of Cancer Near a Cell-phone Transmitter Station](#), International Journal of Cancer Prevention, (Israel) VOLUME 1, NUMBER 2, APRIL 2004

- A significant higher rate of cancer (300% increase) among all residents living within 300m radius of a mobile phone mast for between three and seven years was detected.
- 900% cancer increase among women alone
- In the area of exposure (area A) eight cases of different kinds of cancer were diagnosed in a period of only one year. This rate of cancers was compared both with the rate of 31 cases per 10,000 per year in the general population and the 2/1222 rate recorded in the nearby clinic (area B). The study indicates an association between increased incidence of cancer and living in proximity to a cell-phone transmitter station.

[Changes of Neurochemically Important Transmitters under the influence of modulated RF fields – A Long Term Study under Real Life Conditions](#)(Germany), Bucher and Eger, 2011

- German study showing elevated levels of stress hormones (adrenaline, noradrenaline), and lowered dopamine and PEA levels in urine in area residents during 1st 6 months of cell tower installation. Even after 1.5 years, the levels did not return to normal.

[The Influence of Being Physically Near to a Cell Phone Transmission Mast on the Incidence of Cancer](#) (Umwelt·Medizin·Gesellschaft 17,4 2004) [Eger et al, 2004 \(Germany\)](#)

- 200% increase in the incidence of malignant tumors was found after five years' exposure in people living within 400m radius of a mobile phone mast. The proportion of newly developing cancer cases is significantly higher among patients who live within 400 meters of a cell phone transmitter. Early age of cancer diagnosis.

[Microwave electromagnetic fields act by activating voltage-gated calcium channels: why the current international safety standards do not predict biological hazard.](#) Martin L. Pall. Recent Res. Devel. Mol. Cell Biol. 7(2014).

- “It can be seen from the above that 10 different well-documented microwave EMF effects can be easily explained as being a consequence of EMF VGCC activation: oxidative stress, elevated single and double strand breaks in DNA, therapeutic responses to such EMFs,

breakdown of the blood-brain barrier, cancer, melatonin loss, sleep dysfunction, male infertility and female infertility.”

Pall ML. 2015. [Microwave frequency electromagnetic fields \(EMFs\) produce widespread neuropsychiatric effects including depression.](#) J. Chem. Neuroanat. 2015 Aug 20.

- Non-thermal microwave/lower frequency electromagnetic fields (EMFs) act via voltage-gated calcium channel (VGCC) activation.
- Two U.S. government reports from the 1970s to 1980s provide evidence for many neuropsychiatric effects of non-thermal microwave EMFs, based on occupational exposure studies. 18 more recent epidemiological studies, provide substantial evidence that microwave EMFs from cell/mobile phone base stations, excessive cell/mobile phone usage and from wireless smart meters can each produce similar patterns of neuropsychiatric effects, with several of these studies showing clear dose–response relationships.
- Lesser evidence from 6 additional studies suggests that short wave, radio station, occupational and digital TV antenna exposures may produce similar neuropsychiatric effects. Among the more commonly reported changes are sleep disturbance/insomnia, headache, depression/depressive symptoms, fatigue/tiredness, dysesthesia, concentration/attention dysfunction, memory changes, dizziness, irritability, loss of appetite/body weight, restlessness/anxiety, nausea, skin burning/tingling/dermographism and EEG changes. In summary, then, the mechanism of action of microwave EMFs, the role of the VGCCs in the brain, the impact of non-thermal EMFs on the brain, extensive epidemiological studies performed over the past 50 years, and five criteria testing for causality, all collectively show that various non-thermal microwave EMF exposures produce diverse neuropsychiatric effects.

