

**Before the  
National Telecommunications Information Administration  
Department of Commerce  
Washington D.C.**

In the Matter of )  
Proposed BEAD Alternative Broadband )  
Technology Guidance )

**COMMENTS ON NOTICE OF PROPOSED GUIDANCE  
BY ADVOCATES FOR THE EMS DISABLED**

**September 10, 2024**

**The parties listed below collectively constitute the “Advocates for the EMS Disabled,” have granted permission to submit these Comments on their behalf, and join together to submit these Comments:**

Wired Broadband, Inc. (non-profit; Forest Hills, NY); Virginians for Safe Technology, LLC: Jenny DeMarco, Communications Director, Mary Bauer, Retired RF Engineer (Fredericksburg, VA); Nancy Van Dover DVM, OMD, Dipl Acup, Andrea Mercier, Coloradans for Safe Technology (CO); 5G Free RI, Sheila Resseger, M.A., Co-Founder (Cranston, RI); Susie Molloy (Snowflake, AZ); Amy Harlib, Concerned Citizen (New York, NY); Katherine Katzin (Takoma Park, MD); Floris R. Freshman, Author, **EMF Disabled and Injured** (Scottsdale, AZ); Safe Technology International, Kate Kheel (Taneytown, MD); Safe Tech International, Patricia Burke, **EHS Disabled**, Journalist/Advocate (Millis, MA); Safe Tech International, Sara Aminoff (Union City, CA); Charlene Hopey, Fiber First LA (Topanga, CA); Gene Wagenbreth, Topanga, CA; Deborah Shisler, **EMS Disabled**; Safe Tech Westchester (White Plains, NY); Sharon Behn, Arden, NC; La Plata for Safe Technology, Igrid Iverson, **EMS Disabled** (La Plata, CO); Alison McDonough, **EMS Disabled** (Canton, MA); Longmont for Safe Technology, Doe Kelly, Founder, **Electromagnetically Sensitive Individual** (Longmont, CO); New Yorkers 4 Wired Tech (New York, NY); Charles Frohman, M.Ed, HIA, lobbyist, National Health Federation (VA); NY4Whales & NY4Wildlife, Taffee Williams, President (Tuckahoe, NY); Southwest Pennsylvania for Safe Technology, Susan Jennings, MPA, BA, Founder (Mount Pleasant, PA); Liz Barris, Director, **Electromagnetically Disabled**, The People’s Initiative Foundation (Topanga, CA); Shari Champagne, certified EMF meter testing, interpretation, remediation, Founder of EMF Radiation Solutions (Houme, LA); V. Pegues-Johnson (VA); Gabriela Munoz, **EMS Disabled** (Carmel, NY); EMF Safety Network, Sidnee Cox, Co-Director (Windsor, CA); Oregon for Safer Technology, Kelly Marcotulli, **EMS Disabled** (Ashland, OR); Janet FitzGerald, Speech-Language Pathologist (Rowley, MA); Consumers for Safe Cell Phones, Cynthia Franklin, Director (Bellingham, WA); Alison McDonough, **EMS Disabled** (Canton, MA); Lisa Allen, **EMS Disabled** (NJ); Rosemarie Russell, **EMS Disabled** (Hurricane, UT); Erin McDowell, RN, **EMS Disabled** (Rocky River, OH), Southwestern Ohio for Responsible Technology (SWORT); Craig McDowell, US Army Veteran (with metal implants, **increased susceptibility to EMS**), SWORT (Rocky River, OH); Ghislaine Sosa, **EMS Disabled** (New York, NY); Michele Hertz, **EMS Disabled** (Westchester County, NY); Safe Tech Hawaii, Debra Greene, PhD (Kihei, HI); Lisa Smith, PhD, Certified Building Biology Electromagnetic Radiation Specialist (Tucson, AZ); Safe Tech Tucson (Tucson, AZ); Cathy Scheller, **EMS Disabled**; Safe Technology MN, Leo Cashman, Co-Founder (St. Paul, MN), Petra Brokken, Co-Founder (St. Paul/Minneapolis metro area, MN); Kirstin Beatty, Director, **EMS Disabled**, Last Tree Laws (Holyoke, MA); Margaret M. Glaser, Retired School Psychologist, Safer Cellphone and Wi-fi Project (Chicago, IL); Massachusetts for Safe Technology, Cecelia Doucette, Director (Ashland, MA); Eugene J. Bazan, Ph.D. Secretary of PA Smart Meter Work Group (Lemont, PA); New

Hampshire for Safe Technology, Deb Hodgdon (Stratham, NH); Sustainability Management Consulting, Angela Casler, Owner, **EMS Injured**, (Chico, CA); Jan Kiefer (Scottsdale, PA); Constance C. McKnight, Bachelors and Masters in Architecture (Oakland, CA); and Virginia Farver (Fort Collins, CO).

## Executive Summary

We oppose adoption or implementation of the proposed BEAD guidance (the “Guidance”)<sup>1</sup> that would allow unlicensed fixed wireless and LEO satellite providers to receive BEAD funding for the following reasons:

### Huge waste of taxpayer funding

1. **Disposable infrastructure.** BEAD has been sold as a “generational” investment to bridge the digital divide once and for all. Fiber infrastructure has a lifespan of at least 50 years – perhaps longer – qualifying as a generational investment. Existing BEAD rules rightfully favor fiber deployment. Wireless infrastructure however, including satellites, has a lifespan of only five years. The hundreds of thousands of satellites proposed to be launched over the coming years will eventually all fall back to earth. In fact, they are required under FCC rules to fall back to earth so as not to clutter up space with decommissioned satellites.<sup>2</sup> Google tried a similarly quixotic project to float balloons over underserved countries to provide Internet service. The project was shut down after “failing to find a sustainable business model.”<sup>3</sup> BEAD funding is not intended for short-lived, disposable infrastructure with a lifespan of only a few years.
2. **Operating expenses cloaked as “deployment.”** BEAD funding is intended to fund capital expenditures (capex) to build networks.<sup>4</sup> Capital expenditure in this context is a one-time upfront expense to deploy infrastructure. The rationale for BEAD is that service providers are not investing in such capex because it would take too many years to recoup the investment. However, this guidance encourages the use of BEAD (capex) grants to pay for *operating expenses* (i.e. the monthly subscription cost) of satellite capacity. Section 4.4 of the Guidance discusses NTIA approval of “BEAD funds for the reservation of capacity on LEO networks” – reserving capacity on an already existing network. To emphasize this point: the satellite networks are **already built** and BEAD funding would be used to pay their operating costs. This is not capex. This is operating expense. There are already a number of programs that pay for individual subscribers’ broadband operating expenses on a means-tested basis, such as the Universal Service Fund, Affordable Connectivity Program (pending funding), and others.<sup>5</sup> Paying operating expenses for disposable infrastructure that has a five-year lifespan is a never-ending treadmill of taxpayer funding. The cost per gigabyte over fiber will continue to decrease while those stuck with poor quality satellite service will continue to need subsidies to pay a higher cost for lower quality service. The point of BEAD is to invest in capital expenditure with future proof infrastructure, which is faster for users, more reliable, and cheaper for taxpayers. NTIA should not use BEAD funding for operating expenses or reservation of capacity on satellite networks.

### Discriminatory against the EMS disabled

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<sup>1</sup> <https://www.ntia.gov/other-publication/2024/proposed-bead-alternative-broadband-technology-guidance>

<sup>2</sup> FCC Adopts New '5-Year Rule' for Deorbiting Satellites, FCC-22-74, 9/29/22  
<https://www.fcc.gov/document/fcc-adopts-new-5-year-rule-deorbiting-satellites-0>

<sup>3</sup> Alphabet shuts down Loon internet balloon company  
<https://techcrunch.com/2021/01/21/google-alphabet-is-shutting-down-loon-internet/>

<sup>4</sup> Infrastructure Investment and Jobs Act, §60102(f)(1)

<sup>5</sup> Red Light Report by Sen. Ted Cruz, Ranking Number, Senate Commerce Committee  
<https://www.commerce.senate.gov/services/files/0B6D8C56-7DFD-440F-8BCC-F448579964A3>

3. A growing number of Americans suffer from electromagnetic sensitivity (EMS); they are unable to tolerate exposure to electromagnetic radiation, including radiofrequency emissions from cell towers, terrestrial Wi-Fi networks, unlicensed wireless networks, and satellite networks. A peer-reviewed study from nearly 6 years ago, found that the prevalence of EMS was up to 30% of the population, with up to 1.5% being severe cases.<sup>6</sup> With levels of ambient radiation increasing dramatically in more densely populated areas, EMS disabled individuals are often forced to flee urban, suburban, and other populated areas to avoid these higher density electromagnetic radiation environments. Heavy-handed FCC preemption orders over the past five years have exacerbated the issue, intimidating local governments into the proliferation of cell towers in close proximity to residences across the country.
4. In order to survive, these EMS refugees are often forced to up-end their lives and flee to sparsely populated, difficult-to-reach areas to find lower electromagnetic radiation levels. These are the last remaining safe spots for millions of Americans.
5. The draft proposed BEAD guidance would increase ambient levels of environmental radiation in some of these remote areas, the last refuges for EMS disabled persons. The draft guidance makes no provision nor any consideration for their plight, the environmental injustice suffered by this vulnerable population, nor the economic damages inflicted upon them. In addition, the Guidance does not consider the disproportionate impacts of satellite and terrestrial based wireless facilities on vulnerable populations, such as women, children, people of color, people with lower incomes, and persons with disability. Those with lower incomes are often least able to flee their homes. See attached prior administrative filings for more information about the EMS disabled.
6. The Infrastructure Investment and Jobs Act (IIJA), which created the BEAD program, also states that “the Attorney General shall ensure that Federal policies promote equal access to robust broadband internet access service by prohibiting deployment discrimination.”<sup>7</sup> This Guidance discriminates against the EMS disabled.

### **Destructive to human health and the environment**

7. As mentioned above, the LEO satellites upon which the Guidance proposes to rely, have only a 5-year lifespan. Subsequently, the satellites are directed to crash into the earth, burning up upon reentry in the atmosphere and breaking into small dust particles, spreading toxic metals across the planet.<sup>8</sup> Mining these metals, many of which are rare earth metals for electronics, batteries, and solar panels, often occurs in unbearable conditions, under autocratic governments, and performed by child labor.<sup>9</sup> In addition, getting the satellites into space requires burning large amounts of poisonous rocket fuel, which is now present in human food.<sup>10</sup>

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<sup>6</sup> Journal of Environment and Health Science <https://doi.org/10.15436/2378-6841.19.2402>  
The Prevalence of People with Restricted Access to Work in Man-Made Electromagnetic Environments

<sup>7</sup> Infrastructure Investment and Jobs Act § 60506(c)  
<https://www.congress.gov/117/plaws/publ58/PLAW-117publ58.pdf>

<sup>8</sup> There is a risk that satellites do not disintegrate upon reentry and instead crash in whole pieces into the earth – potentially causing great harm if in a populated area. For satellites licensed by the US government, US taxpayers bear the liability arising from such impacts. See attached fact sheet, footnote 23.

<https://ehtrust.org/wp-content/uploads/Satellite-federal-bills-EHT-factsheet-11-1-23.pdf>

<sup>9</sup> How 'modern-day slavery' in the Congo powers the rechargeable battery economy. NPR Fresh Air, February 1, 2023

<https://www.npr.org/sections/goatsandsoda/2023/02/01/1152893248/red-cobalt-congo-drc-mining-siddharth-kara>

Mapping the Impact and Conflicts of Rare-Earth Elements, Institute for Policy Studies, November 28, 2023

<https://ips-dc.org/mapping-the-impact-and-conflicts-of-rare-earth-elements/>

<sup>10</sup> “The New Space Race Is Causing New Pollution Problems” the New York Times, January 9, 2024

<https://www.nytimes.com/2024/01/09/science/rocket-pollution-spacex-satellites.html>

Chemical used in rocket fuel is widespread in food, Consumer Reports finds, CBS News August 7, 2024

<https://www.cbsnews.com/news/consumer-reports-chemical-rocket-fuel-perchlorate/>

8. NTIA should treat the proposed guidance as a major federal action under the National Environmental Policy Act (NEPA) and prepare an environmental impact statement (EIS). The EIS should take into account, without limitation, (a) the radiofrequency impacts from satellites and the accompanying terrestrial infrastructure that is reasonably likely to result from this guidance, (b) other environmental impacts from satellites, many of which are described in this document, including for example impacts from rocket fuel during launches and the dispersion of toxic metals across the planet. A recent industry report estimated that this guidance could result in \$316 million of BEAD funding going to satellite and wireless deployments.<sup>11</sup> The draft guidance helps enable satellite and/or terrestrial deployment across millions of acres of land in the United States.<sup>12</sup> In addition, the 10-year time horizon for satellite infrastructure contemplated in the draft guidance, means that at least 2 generations of satellites will be launched and then burned up over the atmosphere, because each satellite only has a lifespan of 5 years.<sup>13</sup>
9. A robust literature documents the impacts on human health and the environment from radiofrequency radiation. Please see comments previously submitted to NTIA by Environmental Health Trust, which are incorporated herein by reference.<sup>14</sup>

The documents set forth in the following links are incorporated herein by reference:

- Comments of Advocates of the EMS Disabled, In the Matter of: Request for Comments on the Design and Implementation of \$2.75 Billion of the Digital Equity Act of 2021 Program submitted on May 1, 2023 at <https://thenationalcall.org/wp-content/uploads/2023/09/NTIA-2023-0002-5-1-23-FINAL.pdf> (also attached)
- Environmental Health Trust, Fact Sheet: Satellite Proliferation: Hundreds of Thousands of US Launches With No Environmental Review at <https://ehtrust.org/wp-content/uploads/Satellite-federal-bills-EHT-factsheet-11-1-23.pdf> (also attached)

Respectfully submitted  
on behalf of the EMS Disabled,

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<sup>11</sup> Satellite broadband joins the party for BEAD: What you need to know. 8/27/24

<https://www.fierce-network.com/broadband/satellite-broadband-joins-party-bead-what-you-need-know>

<sup>12</sup> The proposed guidance meets the definition of an MFA under [40 CFR 1508.1\(w\)](#) for multiple reasons, including without limitation, under subparagraph (1)(ii), by issuing an interpretation of policy, (1)(iv) as part of a concerted action that would implement satellite service, and (1)(vi) by "providing more than a minimal amount of financial assistance.. [for which NTIA] has authority to impose conditions on the receipt of the financial assistance to address environmental effects."

<sup>13</sup> <https://www.space.com/spacex-starlink-satellites.html>

<sup>14</sup> Comments submitted January 2, 2024 to NTIA, Office of Spectrum Management  
<https://www.ntia.gov/sites/default/files/environmental-health-trust-written-input.pdf>

**Before the  
National Telecommunications Information Administration  
Department of Commerce  
Washington, D.C.**

In the Matter of:	)	
Request for Comments on the Design and	)	Docket No: 2023-0002 / 230224-0051
Implementation of \$2.75 Billion of the Digital	)	
Equity Act of 2021 Program	)	

**COMMENTS OF ADVOCATES FOR THE EMS DISABLED  
MAY 1, 2023**

Wired Broadband, Inc., Forest Hills, NY; Children's Health Defense, Miriam Eckenfels-Garcia, Franklin Lakes, New Jersey; Rocky Mountains for Safe Technology, California Fires & Firefighters, Susan Foster & Shannon Shine, Boulder County, CO; Alliance for Microwave Radiation Accountability, Inc., Michael Muadin, President, East Chatham, New York; Kent Chamberlin, PhD, Professor and Chair Emeritus, former member of the NH Commission to Study The Environmental and Health Effects of Evolving 5G Technology, Durham, NH; Swedish Radiation Protection Foundation, Mona Nilsson, Adelsö, Sweden; Sehtab Ahmad, Sterling, VA; Jaivir Baweja, Herndon, VA; California Brain Tumor Association, Ellen Marks, Director, Indian Wells, CA; Sean A. Carney, Waterlooville, Hampshire, United Kingdom; Center for Safer Wireless, Desiree Jaworski, Haymarket, VA; Andrejka Coklyat, Denver, CO; Coloradoans for Safe Technology, Andrea Mercier, Colorado Springs, CO; Consumers for Safe Cell Phones, Cynthia Franklin, Director, Bellingham, WA; Soula Culver, Berkeley, CA; Luisa de Castro, Cabery, IL; Mr. and Mrs. John Decristofaro, Little Compton, RI; EMF Wellness Tucson, Lisa Smith, PhD, EMRS, Certified Building Biology Electromagnetic Radiation Specialist, Tucson, AZ; EMF Safety Network, Sidnee Cox, Director, Windsor, CA; 5G Free Rhode Island, Sheila Resseger, M.A., Cranston, RI; Janet FitzGerald, M.S., CCC-SLP; Floris Freshman, Scottsdale AZ; Sharon Fried, Prescott Valley, AZ; Howard J. Goodman, Esq., Forest Hills, NY; Idahoans For Safe Technology, David DeHaas, President, Boise, Idaho; Idahoan's For Safe Technology Foundation, LLC, Hank Allen, Boise, ID; Ithacans for Responsible Technology, Andrew Molnar, Ithaca, NY; Ithacans for Responsible Technology, Marie Skweir, Ithaca, NY; Shirley Joy Denton Jackson, North Palm Beach, Florida; The Leto Foundation, Westborough, MA; Massachusetts For Safe Technology, Janet Fitzgerald, Rowley, MA; mocoSafeG.org, Montgomery County, MD; New Yorkers 4 Wired Tech; PA Smart Meter Work Group, Eugene Bazan, Lemont, PA; Elyse Polonetsky, Irvington, NY; Miram Reed, Ashland OR; Ann Tomoko Rosen, Center for Acupuncture and Herbal Medicine, Westfield, NJ; Safe Tech Forward, Pamela Wallace, Rochester Hills, MI; Safe Tech Hawaii, Debra Greene, PhD, Maui, Hawaii; Safe Tech International, Sarah Aminoff, Union City CA; Safe Tech International, Kate Kheel, Baltimore,

MD; Safe Tech International, Patricia Burke, Millis, MA; SW Pennsylvania for Safe Technology, Susan Jennings, Mount Pleasant, PA; Virginians for Safe Technology, Fredericksburg, VA; (collectively, hereinafter, “**Advocates for the EMS Disabled**”) submit these comments in response to the request for public comments relating to the above-captioned matter. The foregoing groups and individuals have granted permission to submit these comments on their behalf under the name of “**Advocates for the EMS Disabled.**”

## Introduction

Advocates of the EMS Disabled applaud the NTIA’s stated initiative to design a \$2.75 billion program under the Digital Equity Act of 2021 to fund the stated goals of “ensuring that all Americans not only have access to affordable, reliable, highspeed internet but also the skills and resources needed for full participation” in the U.S. economy and in society.<sup>1</sup> That includes closing the digital divide, removing “systemic barriers,” and “promot[ing] digital inclusion and equity to ensure that all individuals and communities have the skills, technology, and capacity needed to reap the full benefits of our digital economy.”<sup>2</sup>

Advocates of the EMS Disabled also applaud the NTIA in seeking to have stakeholders engaged, “and most importantly, individuals with lived experiences who faced challenges of having access to ... devices to fully utilize affordable, reliable, high-speed internet.”<sup>3</sup>

**The individuals who have lived through challenges in accessing broadband are the EMS Disabled, who become injured or disabled near wireless technology, and must rely on wired connections, such as fiber, to access broadband at home and at work.** EMS means electromagnetic sensitivity, a recognized medical condition where people are injured by radio frequency (RF) radiation and are now disabled by extreme sensitivity to RF radiation.<sup>4</sup>

In connection with the above stated goals, the NTIA is seeking recommendations on a number of issues, the following being those that we are addressing here:

- (1) The EMS Disabled as a Covered Population
- (2) States Should Monitor Public Health Impacts of Using Wireless Technology
- (3) The EMS Disabled Require Accommodation under the Americans with Disabilities Act
- (4) Digital Equity and Inclusions Project
- (5) Providing Digital Literacy Programs
- (6) Fiber Optics Should be Given Priority for the EMS Disabled

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<sup>1</sup> Federal Register, Vol.88, No. 41, Thursday, March 2, 2023, Notices, pp. 13101-13106, <https://www.ntia.doc.gov/sites/default/files/publications/2023-04242.pdf>.

<sup>2</sup> Id.

<sup>3</sup> Id.

<sup>4</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/>.

## **Incorporations by reference:**

Incorporated herein by reference are the filings made by the Advocates of the EMS Disabled under:

- FCC Docket No. 22-69 in 2022 and in 2023, Implementing the Infrastructure Investment and Jobs Act: Prevention and Elimination of Digital Discrimination;
- Under FCC Docket No. 22-69, there were 333 commenters in 2022 and several of their comments are attached hereto as Addenda A, C and D. By 2023, there were 635 commenters in FCC Docket No. 22-69, several of their comments are attached as Addendum B. Addenda A, B, C and D form a part of these comments and are incorporated herein by this reference;
- White House Environmental Justice Advisory Council, Docket No. EPA-HQ-OA-2022-0050, Federal Disaster Preparedness, Relief and Community Resilience; Climate Resilience, Beta Version of the Climate and Economic Justice Screening Tool (CEJST) and Justice40 Initiative;
- National Environmental Justice Advisory Council, Docket ID No: EPA-HQ-OA-2022-0053, Request for Comments on EPA’s Investments to Address Environmental Justice Through the Justice40 Initiative; and
- Council on Environmental Quality, Docket ID No. CEQ-2022-0002-0023, Request for information on the beta version of the Climate and Economic Justice Screening Tool (CEJST).

Also incorporated herein by reference is Addendum E comprising the NTIA questions as a reference to the issues generally being addressed herein.

### **(1) The EMS Disabled as a Covered Population** (Refers Generally to Questions 1, 2 and 7)

There is a much-ignored but large and growing number of consumers in the disability community that have been specially injured and suffer unique digital discrimination: those who cannot be around RF radiation (also known as electro-magnetic radiation (EMR)) because it makes them sick or sicker. Although there are various names for the condition, including radiation poisoning, a common term is electro-magnetic sensitivity (EMS). They are the “EMS Disabled” community on behalf of whom these comments are filed. Wireless exposure is the direct cause of or a major contributing factor to the impairment.

Under the Digital Equity Act of 2021 (DEA), a “Covered Population” includes “individuals with disabilities” (Public Law No. 117-58, Sec. 60302(8)(E)). The Americans with Disabilities Act (ADA) defines a disability as “a physical or mental impairment that substantially limits one or more major activities” (42 USC 12102(1)(A)).



The U. S. Access Board has recognized EMS as a disability going back to 2002.<sup>5</sup> The EMS Disabled cannot be near wireless technology because it makes them sick. EMS includes severe physiological injuries directly associated with RF radiation exposure manifested as a constellation of symptoms.<sup>6</sup> It is a “spectrum condition” ranging from discomfort to neurological and immunological disorders to debilitation and life-threatening impairments.<sup>7</sup>

Common EMS symptoms directly associated with 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>8</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>9</sup> “A 2017 MRI (magnetic resonance imaging) study shows clear evidence of impaired blood flow in 10 electro-sensitive subjects.”<sup>10</sup> The symptoms are from the physiological injuries these individuals have sustained.<sup>11</sup>

Wireless technology is making millions of Americans sick, and it is past time that this pan-epidemic be recognized and addressed. These disabled individuals suffer significant injuries from RF radiation exposure from wireless base stations, cell towers, electric utility smart meters and other communications infrastructure and transmitters (collectively, “wireless infrastructure”) placed right next to their homes, businesses, schools, libraries, medical facilities and other public locations frequented by the public. Mobile and portable devices and wireless routers are also causing significant injury. The EMS Disabled are not able to live, work or visit in spaces or buildings where wireless equipment is deployed.<sup>12</sup>

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<sup>5</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>6</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>7</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>8</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>9</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>10</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>11</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>12</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,



It should be noted that an increasing number of healthy people are becoming injured and sick after exposure to wireless radiation. Dr. Beatrice Golomb,<sup>13</sup> a pre-eminent scientist who conducted a survey where hundreds participated found that **many stated they either gave no credence to – or did not hear about – any hazards, until they themselves were injured.**<sup>14</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>15</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>16</sup> [Emphasis added]

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

***“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>17</sup>

Because RF radiation is invisible, it 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.***

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

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<https://phiremedical.org/wp-content/uploads/2022/06/Press-Release-EHS-Social-Worker-granted-long-term-ill-health-pension-UK-Named.pdf>.

<sup>13</sup> <https://www.golombresearchgroup.org/pagecv>.

<sup>14</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>15</sup> Id.

<sup>16</sup> Id.

<sup>17</sup> Id.

sensitive to electro-magnetic fields.<sup>18</sup> There are other sources showing the proliferation of electro-magnetic radiation (EMR) sensitivities and disabilities.<sup>19</sup>

A 2019 Bevington study,<sup>20</sup> analyzed the prevalence of EMR within the population, and based on its percentages and on a population of 332.4 million people in the U.S., the numbers are staggering:

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
Mild symptoms – 30%	99.7 million

In 2022, FCC Docket No. 22-69 generated 333 commenters, 65.17% of whom stated they suffered from EMS disability or their family members and/or friends experienced symptoms of electro-magnetic sensitivity. Their stories are compelling, and they cry for acceptance, equity, inclusion and relief from their suffering. See Addendum A, “In Their Own Words.”

By 2023, the docket had generated 635 commenters, several additional commenters who are EMS Disabled are included in Addendum B, also “In Their Own Words.”

**(2) States Should Monitor Public Health Impacts  
of Using Wireless Technology**  
(Refers Generally to Questions 8, 16, 17, 18, 19)

States should monitor the public health impacts and outcomes of the population’s exposure to RF radiation and the use of wireless technology. States should establish a national registry (widely publicized to the public) to facilitate the public’s ability to report their disabilities and so that States can have metrics to determine an approximate number of people who are EMS disabled.

With RF radiation, there is cumulative exposure over time which causes or contributes to injuries and disabilities, even below otherwise authorized levels. In the first known study to test the safety of “5G,” a Jan 2023 published Swedish 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

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<sup>18</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>19</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>; Presentation by Karl Maret, M.D., M.Eng., Presentation, 1-17-20, <https://www.youtube.com/watch?v=XiIsy3mcjcY>; “The Bioinitiative Report,” <https://bioinitiative.org/>.

<sup>20</sup> “The Prevalence of People with Restricted Access to Work in Manmade Electromagnetic Environments,” Journal of Environment and Health Science, <https://mdsafetech.files.wordpress.com/2019/10/2018-prevalence-of-electromagnetic-sensitivity.pdf>.

developed, what the study referred to as, symptoms of microwave syndrome.<sup>21</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 these individuals moved to a lower RF radiation environment, their symptoms decreased or disappeared.

These findings have been corroborated by subsequent studies. A Feb 2023 study of two previously healthy men showed that they became sick when 5G antennas were installed on the rooftop of their business.<sup>22</sup> An April 2023 study of a 52 year old woman whose apartment was 60 meters from a 5G base station became sick.<sup>23</sup>

Other important facts to consider for public health and safety, including risk of cancer, as well as other medical conditions, from RF radiation:

1. There has been no pre-market testing of 5G for public health or safety, as confirmed by US Sen. Blumenthal (CT) during a hearing of telecom executives, and to which the Senator replied, “We’re kind of flying blind here as far as health and safety is concerned.”<sup>24</sup>
2. The three studies cited above (Jan, Feb and April, 2023) show adverse health impacts from exposure to 5G towers. Previously healthy individuals developed typical “microwave syndrome” symptoms shortly after the towers were installed: headaches, abnormal fatigue, heart arrhythmia, burning skin, trouble concentrating.<sup>25</sup> The significance of these reports is that non-ionizing radiation<sup>26</sup> from 5G — well below levels allowed by authorities — can cause health problems in individuals who had no prior history of electromagnetic sensitivity.<sup>27</sup> Dr. Lennart Hardell, lead author of the reports

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<sup>21</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>22</sup> <https://www.anncaserep.com/open-access/development-of-the-microwave-syndrome-in-two-men-shortly-after-9589.pdf>.

<sup>23</sup> <https://acmcasereport.com/pdf/ACMCR-v10-1926.pdf?fbclid=IwAR2J-mE3XeBxqaXPQdFxsIf9Q23bMCer9vgUBHnCvJXBrgBv-w7YdRUDwF0>.

<sup>24</sup> <https://ehtrust.org/health-effects-of-5g-wireless-technology-confirmed-at-us-senate-hearing-after-senator-blumenthal-questions-industry/>; see also, <https://mdsafetech.org/2019/02/13/no-research-on-5g-safety-senator-blumenthal-question-answered/>.

<sup>25</sup> Jan 2023 study of 63 year old man and 62 year old woman where 5G antennas were installed on the rooftop of their home, [https://www.gavinpublishers.com/assets/articles\\_pdf/Case-Report-The-Microwave-Syndrome-after-Installation-of-5G-Emphasizes-the-Need-for--Protection-from-Radiofrequency-Radiation.pdf](https://www.gavinpublishers.com/assets/articles_pdf/Case-Report-The-Microwave-Syndrome-after-Installation-of-5G-Emphasizes-the-Need-for--Protection-from-Radiofrequency-Radiation.pdf) and <https://childrenshealthdefense.org/defender/5g-radiation-microwave-syndrome-symptoms/>; Feb 2023 study of two previously healthy men where 5G antennas were installed on the rooftop of their business, <https://www.anncaserep.com/open-access/development-of-the-microwave-syndrome-in-two-men-shortly-after-9589.pdf>; April 2023 study of 52 year old woman whose apartment was 60 meters from a 5G base station, <https://acmcasereport.com/pdf/ACMCR-v10-1926.pdf?fbclid=IwAR2J-mE3XeBxqaXPQdFxsIf9Q23bMCer9vgUBHnCvJXBrgBv-w7YdRUDwF0>; see also, The microwave syndrome or electro-hypersensitivity: historical background <https://pubmed.ncbi.nlm.nih.gov/26556835/>.

<sup>26</sup> <https://childrenshealthdefense.org/emr/emf-key-terms-descriptions/>.

<sup>27</sup> <https://childrenshealthdefense.org/emr/emf-wireless-health-impacts/>.

and a world-renowned scientist on cancer risks from radiation, affirms these reports as “groundbreaking” because they serve as the “first warning of a health hazard.”<sup>28</sup>

3. The WHO’S International Agency for Research on Cancer classified wireless radiation (2G and 3G) as a possible human carcinogen back in 2011,<sup>29</sup> similar to lead, diesel fuel and gasoline engine exhaust.
4. The National Toxicology Program, commissioned by the Food and Drug Administration to conduct a \$30 million study, in 2018 found clear evidence of cancer;<sup>30</sup> NTP is one of the most prestigious institutions in the world in toxicology.
5. A study in 2000 commissioned by one of the major telecom carriers found links to cancer, leukemia, neurological disorders and cognitive impairment, with special caution for children and an acknowledgement of those already disabled from the radiation.<sup>31</sup>
6. One hundred sixty scientists worldwide submitted in 2015 The International Scientists’ Appeal to the United Nations to Protect Humans and Wildlife from the unconstrained proliferation of wireless radiation.<sup>32</sup>
7. Thousands of scientific and medical studies show neurological disorders; increased risk of cancer and brain tumors; DNA damage; oxidative stress; immune dysfunction; cognitive processing effects; altered brain development, sleep and memory disturbances, ADHD, abnormal behavior, sperm dysfunction, and damage to the blood-brain barrier.<sup>33</sup>
8. New Hampshire Commission that studied the health impacts of wireless radiation found that levels below the FCC emission limits can be harmful (see Addendum F, a letter from Dr. Kent Chamberlin to CB9 Manhattan).<sup>34</sup>
9. The Board of Health of Pittsfield, MA issued an emergency order to turn off a 4G cell tower that injured 17 residents most of whom evacuated their homes.<sup>35</sup> Children were found vomiting in their beds, pets were vomiting and residents were becoming ill.<sup>36</sup>

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<sup>28</sup> <https://www.stralskyddsstiftelsen.se/two-studies-show-that-5g-caused-the-microwave-syndrome-in-healthy-persons/>.

<sup>29</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>30</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>.

<sup>31</sup> T-Mobile Deutsche Telekom commissioned study by the Ecolog-Institute, April 2000, “Mobile Telecommunications and Health Review of the Current Scientific Research in View of Precautionary Health Protection,” <https://ehtrust.org/wp-content/uploads/ecolog2000.pdf>.

<sup>32</sup> Dr. Martin Blank, PhD, Dept of Physiology and Cellular Biophysics, Columbia University, announcing the appeal and warning on wireless radiation, <https://www.youtube.com/watch?v=HgECRrabuZQ>.

<sup>33</sup> A Rationale for Biologically-based Exposure Standards for Low-Intensity Electromagnetic Radiation, 2022, <https://bioinitiative.org/conclusions/>; see also, Adverse health effects of 5G mobile networking technology under real-life conditions, May 1, 2020, <https://pubmed.ncbi.nlm.nih.gov/31991167/>; Wireless Radiation (RFR) – Is U.S. Government Ignoring Its Own Evidence for Risk? March, 28, 2019, <https://electromagnetichealth.org/electromagnetic-health-blog/u-s-gov-ignoring-own-evidence/>; Oxidative Mechanisms of Biological Activity of Low-Intensity Radiofrequency Radiation, *Electromagnetic Biology and Medicine*, 35(2), 186-202, Yakymenko, I., Tsybulin, O., Sidorik, E., Henshel, D., Kyrylenko, O., & Kyrylenko, S. (2016), <https://pubmed.ncbi.nlm.nih.gov/26151230/>.

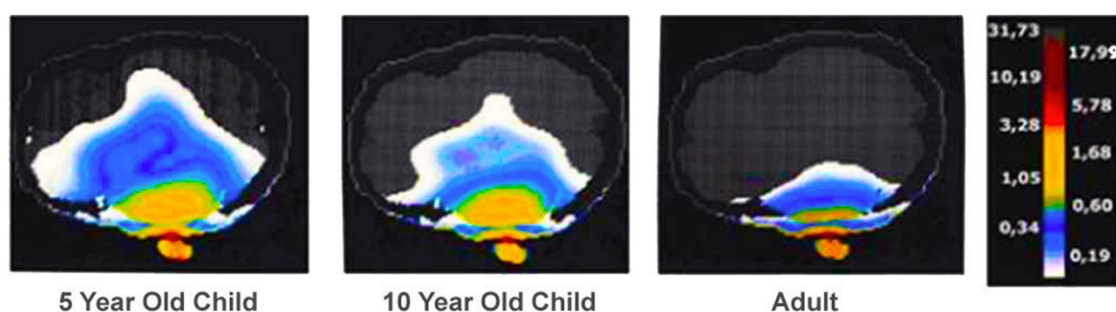
<sup>34</sup> <http://www.gencourt.state.nh.us/statstudcomm/committees/1474/reports/5G%20final%20report.pdf>.

<sup>35</sup> <https://ehtrust.org/cease-and-desist-order-against-verizon-cell-tower-by-board-of-health-pittsfield-ma/>.

<sup>36</sup> <https://ehtrust.org/family-injured-by-cell-tower-radiation-in-pittsfield-massachusetts/>; see also, <https://childrenshealthdefense.org/defender/pittsfield-massachusetts-verizon-cell-tower-lawsuit/>.

Children absorb more RF radiation than adults, and fetuses are at even greater risk.<sup>37</sup> Children's "brain tissues are more absorbent, their skulls are thinner and their relative size is smaller."<sup>38</sup> RF radiation penetrates more deeply into the skulls of children compared to adults,<sup>39</sup> as shown below in cell phone usage.<sup>40</sup>

## 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>41</sup>

<sup>37</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>38</sup> Id.

<sup>39</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>40</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/>.

<sup>41</sup> Id.

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>42</sup> It also increases the risk of childhood leukemia.<sup>43</sup>

There are also neurological implications to RF radiation exposure for children.<sup>44</sup> Cell towers near schools and Wi-Fi in schools are potentially hazardous to children.<sup>45</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>46</sup>
- Adolescent school children who were exposed to high levels of RF radiation generated from mobile phone base stations within 200 meters from their schools had “delayed fine and gross motor skills, spatial working memory and attention” than those exposed to lower RF radiation.<sup>47</sup>
- A ten-year old child testified of his cardiac condition being caused by exposure to RF radiation in a library where he was being tutored.<sup>48</sup>

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>49</sup>

Children born of mothers who used cell phones during pregnancy developed more behavioral problems by school age than those whose mothers did not use cell phones during pregnancy, with the following results: “25% more emotional problems, 35% more hyperactivity 49% more

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<sup>42</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>43</sup> *Key Scientific Evidence and Public Health Policy Recommendations*, 2007, at 19, David O. Carpenter, MD, Director, Institute for Health and the Environment University at Albany, Cindy Sage, MA, Sage Associates, [https://bioinitiative.org/wp-content/uploads/pdfs/sec24\\_2007\\_Key\\_Scientific\\_Studies.pdf](https://bioinitiative.org/wp-content/uploads/pdfs/sec24_2007_Key_Scientific_Studies.pdf).

<sup>44</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/>.

<sup>45</sup> Dr. Magda Havas: WiFi in Schools is Safe. True or False?, <https://www.youtube.com/watch?v=6v75sKAUFdc>.

<sup>46</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>47</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>48</sup> Child With Heart Problems From Wireless: 5G Health Risks California SB 649 Hearing, [https://www.youtube.com/watch?v=OgNLR9fQOX4&list=PLT6DbkXhTGoDakSqpl1i\\_7milpwGx4xMFq](https://www.youtube.com/watch?v=OgNLR9fQOX4&list=PLT6DbkXhTGoDakSqpl1i_7milpwGx4xMFq).

<sup>49</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>.



conduct problems and 34% more peer problems.”<sup>50</sup> A study involving 24,499 children found a 23% increase of emotional and behavioral difficulties.<sup>51</sup>

### **(3) The EMS Disabled Require Accommodation under the Americans with Disabilities Act (ADA)** (Refers Generally to Questions 1, 2, 7 and 11)

The EMS Disabled require affirmative and accommodation under the ADA. The ADA requires accommodations relating to a “physical or mental impairment” that “substantially limits one or more of the major life activities” (42 U.S.C. §12102(1)(A)).<sup>52</sup>

The EMS Disabled are not able to live, work or visit in spaces or buildings where wireless equipment is deployed. They also cannot successfully participate in virtual remote settings using free wireless connectivity because **wireless broadband is a barrier to them**: their lives are placed in jeopardy with any exposure to RF radiation. Children are also a vulnerable community and there is documented research on the adverse effects of RF radiation on them, as well.<sup>53</sup>

Digital access, equity and inclusion are vitally important for those disabled or suffering from RF radiation. Under the Digital Equity Act, “digital equity” means “hav[ing] the information technology capacity that is needed for full participation in the society and economy of the United States” and “digital inclusion” includes the ability to use “internet-enabled devices that meet the needs of the user,” (see Public Law No. 117-58, Sec. 60302(10)).

Since broadband connectivity is to serve all individuals in the United States, **the EMS Disabled should not be excluded – or permanently left behind**. They require broadband connectivity on an equal basis as other Americans, except that they require broadband connectivity – a necessary service – that will not make them sick. i.e., wired connections such as copper wire, cable or fiber optics. **They cannot adopt a technology that is injuring them**. They are entitled to the ability to use “internet-enabled devices that meet [their] needs.”

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

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<sup>50</sup> *Key Scientific Evidence and Public Health Policy Recommendations*, Supplement 2012, at 8, David O. Carpenter, MD, Director, Institute for Health and the Environment University at Albany, Cindy Sage, MA, Sage Associates, [https://bioinitiative.org/wp-content/uploads/pdfs/sec24\\_2012\\_Key\\_Scientific\\_Studies.pdf](https://bioinitiative.org/wp-content/uploads/pdfs/sec24_2012_Key_Scientific_Studies.pdf).

<sup>51</sup> Miller AB, Sears ME, Morgan LL, Davis DL, Hardell L, Oremus M, Soskolne CL. Risks to Health and Well-Being From Radio-Frequency Radiation Emitted by Cell Phones and Other Wireless Devices. *Front Public Health*. 2019 Aug 13;7:223. doi: 10.3389/fpubh.2019.00223. PMID: 31457001; PMCID: PMC6701402, also available at <https://www.frontiersin.org/articles/10.3389/fpubh.2019.00223/full#B42>.

<sup>52</sup> 42 U.S.C. §12101, et seq.

<sup>53</sup> See, <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/>.



building from nearby base station antennas.<sup>54</sup> Moreover, the increasing number of EMS Disabled has the potential of adversely affecting the U.S. workforce.

It was recently announced that the FCC is considering deploying Wi-Fi in school buses. **Accommodation is required for EMS Disabled children who may otherwise have no other safe school transportation alternative.**<sup>55</sup>

Appropriate accommodation for adults and children must be made for those who are disabled or suffering from RF radiation. EMS disability can be accommodated by creating wireless radiation free zones that employ only wired facilities in the work and home environments, and Wi-Fi free school buses. Also, there are best practices for school settings using low EMF settings, where appropriate.<sup>56</sup>

To illustrate the need for accommodation, 62.16% of the 333 commenters in FCC Docket No. 22-69 in 2022 advocated for accommodation of the EMS Disabled with fiber to the premises and wireless-free zones.<sup>57</sup> See Addendum C for excerpted comments.

Also, 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. 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.<sup>58</sup>

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.

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 wired connections, such as fiber, rather than wireless, to access broadband for medical attention,

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<sup>54</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>55</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>56</sup> LOW EMF Wiring Best Practices from Collaborative for High Performing Schools, [https://ehtrust.org/wp-content/uploads/2015/12/US-CHPS\\_Criteria\\_2014\\_Low-EMF-Criteria102314.pdf](https://ehtrust.org/wp-content/uploads/2015/12/US-CHPS_Criteria_2014_Low-EMF-Criteria102314.pdf) at 8-9.

<sup>57</sup> [https://www.fcc.gov/ecfs/search/search-filings/results?proceedings\\_name=22-69&sort=date\\_disseminated,DESC](https://www.fcc.gov/ecfs/search/search-filings/results?proceedings_name=22-69&sort=date_disseminated,DESC).

<sup>58</sup> Two of the largest insurance companies in the world (i.e., Lloyd's of London and Swiss Re) have declined to insure telecom companies for any liability for personal injury that results from RF radiation exposures. Insurance companies, reviewing potential RFR injuries to the public from a risk analysis perspective, have assessed RFR as "high" risk by the insurance industry and is, therefore, excluded from coverage. The insurance industry acknowledges the high potential of claims of injury from the public arising from RF radiation exposure; <https://5gtechnologynews.com/insurance-companies-can-refuse-claims-related-to-electromagnetic-radiation-illnesses/>; see also, <https://ehtrust.org/wp-content/uploads/Swiss-Re-SONAR-Publication-2019-excerpt-1.pdf> at 29; <https://ehtrust.org/key-issues/reports-white-papers-insurance-industry..>

education and other uses; (2) being given equal access as everyone else to broadband and (3) ensuring a far enough distance from wireless technology with minimum setbacks of 1640 feet (as set forth by the New Hampshire Commission),<sup>59</sup> from the property boundary, or any greater amount of setback or relocation of wireless technology that the disabled require to live safely within their homes and on their properties, and work safely within their businesses.

More specific guidelines are delineated by the [Building Biologists](https://buildingbiologyinstitute.org/), an organization whose mission is to help create healthy homes, schools, and workplaces free of toxic hazards, including those of electro-magnetic radiation.<sup>60</sup>

## **Accommodation in Community Anchor Institutions**

Making accommodation for the EMS Disabled is a necessity in community anchor institutions.<sup>61</sup> To ensure that the EMS Disabled are included in digital equity and digital inclusion, the EMS Disabled need access to broadband, as of right; otherwise, not having accommodations would totally exclude the EMS Disabled population from having public access in community anchor institutions.

A portion of each such institution would need to be accessible so as not to expose the EMS Disabled to RF radiation.

Here are some examples of accommodations needed for the EMS Disabled in community anchor institutions, which would include

- (1) Wi-Fi/[wireless free zones](#) – areas in a building that do not have Wi-Fi or other wireless technology and are free of any RF frequency of any kind penetrating into the “zone,”
  - a. solely wired for broadband and telecommunications and
  - b. free of any type of wireless transmitting or receiving devices, such as cell phones or smart meters
- (2) Flex zones with a turn off switch – areas in a building where wireless technology can be turned off, i.e., terminating all wireless transmitting signals originating from within the zone and attenuate all wireless receiving signals penetrating into the zone.
  - a. Transmitting signals can be terminated with a combination of a hard wire shut-off, permanent Wi-Fi free software deactivation that does not reset itself or just by using FTTP and cabled modems / routers / computer / telecommunications equipment.
  - b. The zone should be equipped with an easily accessible and visible “off” switch and robust software that does not permit wireless signals and prohibits

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<sup>59</sup> <http://www.gencourt.state.nh.us/statstudcomm/committees/1474/reports/5G%20final%20report.pdf>; see also, <https://www.gencourt.state.nh.us/statstudcomm/committees/1474/documents/Pearce%202020%20Limiting%20liability%20with%20positioning%20to%20minimize%20negative%20health%20effects%20cell%20phone%20towers.pdf>.

<sup>60</sup> <https://buildingbiologyinstitute.org/>.

<sup>61</sup> As defined in Public Law No. 117-58, Sec. 60302(6).

these software settings from being automatically overridden or automatically reset.

- (3) Flex zones with attenuation capability, i.e., include a way to lower receiving signals with a combination of RF attenuation building materials, equipment and products that reduce the RFR penetrating into the zone.
  - a. The goal here is to create an “as low as reasonably achievable” level of RF radiation for receiving signals entering into the zone.
- (4) Landline corded phones
  - a. All telecommunications access should be provided by telecommunications equipment (e.g., modems or routers) connected only by copper wire, cable or fiber optics.
  - b. Any connectors for fiber optics and other hard-wired alternatives must be secured and ensure a leak-free connection.

Since the EMS Disabled cannot use cell phones, they would need landline corded phones. Another accommodation would be when an EMS Disabled person would otherwise be required to notify a medical facility by cell phone that they are arriving for their appointment, an accommodation would simply be placing a buzzer at the door to announce their arrival.

In addition, the EMS Disabled require access to medical assistance and emergency services in case of any acts of God, access to which, incidentally, may also become interrupted with wireless infrastructure.

In order for the EMS Disabled to safely reach a zone, any wireless frequency within these institutions would require some form of wireless frequency attenuation (such as RF blocking, shielding or reduction device) over the wireless telecommunications equipment to significantly reduce the amount of wireless frequency emitting from that equipment. The attenuation may be reached without affecting wireless connectivity.

Alternatively, telecommunications equipment could simply be permanently connected to fiber optics or cable for an even faster, more secure and healthier experience. Those needing a connection for their cell phones would simply turn off their Wi-Fi and cellular connections and plug into the hardwired connections that would be made available to them at various locations within the zone, without any attenuation in service and with the possible advantage of even faster and more reliable service without doing so at the expense to their health.

### **Accommodation in Home Dwellings**

“A man’s [or woman’s] home is his [her] castle.” This has been a maxim for centuries and is no less relevant here. Since the proliferation of wireless infrastructure, wireless frequencies have been intruding into people’s homes, without their consent, and harming them. Accommodation is required to ensure that those already harmed from wireless frequencies are

protected from any further intrusion and harm. Indeed, RF radiation can be life threatening for the EMS Disabled.

To that end, the EMS Disabled require hard wire, either fiber optics, cable or copper wire, to the premises and hard wire, either fiber optics, cable or copper wire, through the premises. The EMS Disabled require prior notice of planned nearby facilities, their consent to the placement and there must be a minimum setback of at least 500 meters so that the EMS Disabled can live safely within their homes.

### **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>62</sup> The EMS Disabled require access to services in such emergencies.

The EMS Disabled, as well as vulnerable communities, require wired solutions, such as fiber optics; therefore, any barriers to providing fiber optics should be identified and eliminated. The “focus should be on safe, wired and well-shielded technology – not more wireless.”<sup>63</sup> This is 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>64</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>65</sup> A policy paper of the National Institute for Science, Law and Public Policy, “Re-Inventing Wires: The Future of Landlines and Networks,” similarly states that

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<sup>62</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>63</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>64</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>65</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).

“[f]iber is unmatched in its speed, performance, reliability, etc. ... Wireless is not a substitute for fiber.”<sup>66</sup>

### **The Benefits of Fiber for Accommodation**

Fiber optics to the premises and fiber optics to the room (in either instance, FTTP) 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.

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>67</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>68</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.

### **(4) Digital Equity and Inclusion Projects** (Refers Generally to Questions 3, 4, 6, 15, 19 and 23)

Fiber deployment shows how it can enhance digital equity and inclusion, while also being an economic boon to the economy. Take the example of the city of Chattanooga and Hamilton County in Tennessee.<sup>69</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>70</sup> Because of its fiber optics network, it has the fastest broadband network in the U.S with its entire population connected to fiber.

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<sup>66</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>67</sup> <https://www.cablinginstall.com/cable/fiber/article/16465844/how-fiber-can-help-make-your-network-greener>

<sup>68</sup> Fiber Optic Broadband, A Greener Internet Solution, <https://www.otelco.com/a-greener-internet-solution/>.

<sup>69</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>70</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/>.

A study calculated the estimated 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>71</sup>

“... the economic value of the fiber optic infrastructure, i.e. high-speed broadband and the smart grid, minimally exceeds \$2.69 billion and 9,516 jobs over the study period. The value exceeds the costs of the project by over \$2.20 billion, or by a factor of 4.42. Roughly 40 percent of all jobs created in Hamilton County in the study period can be attributed to the fiber infrastructure. Approximately 52 percent of the value of the infrastructure is manifested in local economic development, i.e. over \$1.4 billion in new investments, startup funding, real estate development and payments-in-lieu of taxes.”<sup>72</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>73</sup>

These successes were achieved because the city realized the economic advantages of fiber optics infrastructure and owning its broadband, referred to as municipal broadband.<sup>74</sup> The successes of Chattanooga’s fiber optics deployment were reported as far back as 2014.<sup>75</sup>

Another example of digital equity and inclusion which also reaped substantial long term cost savings using fiber broadband is Chanute, KS which “operates a 10 Gbps fiber-optic broadband ring.”<sup>76</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 own telecommunications needs with smart public investments — they did not wait for national corporations to solve their problems.”<sup>77</sup> City Manager J.D. Lester refers to municipal broadband as ‘the great equalizer for Rural America’...<sup>78</sup>

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<sup>71</sup> Ten Years of Fiber Optic and Grid 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>72</sup> Id.

<sup>73</sup> Id.

<sup>74</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>75</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>76</sup> In Kansas, Rural Chanute Built Its Own Gigabit Fiber and Wireless Network,” Christopher Mitchell 10-2-21, <https://ilsr.org/chanute-rural-gigabit/>.

<sup>77</sup> Id.

<sup>78</sup> Id.

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>79</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>80</sup>

**Digital equity and inclusion become more stable over time when using a more future-proof technology, such as fiber.** “Reinventing Wires” explains that 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.

NISLAPP recommends preserving, renewing, or expanding the use of existing (or new) copper wiring (and rights-of-way), with 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.

Although wireless may constitute “advanced telecommunications capability,” it is still a complement to, not an adequate substitute for fiber-fed service. A wireless based user will not receive the same speed, capacity, latency, security or quality of service as those for wired (fiber) based access. This is especially so for mobile services, but even fixed wireless solutions are inferior to direct fiber-fed service to the premises.

## **(5) Providing Digital Literacy Programs** (Refers Generally to Questions 20, 21, 22 and 24)

Digital literacy requires educating the public, businesses, schools, states, municipalities about the importance of hardwired connections. Educational materials along with links to experts in this area (such as the [Building Biology Institute](#)) can provide crucial information on how to hardwire equipment, along with the health, environmental, economic, quality of communications, and security reasons for doing so.

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<sup>79</sup> <https://www.soar-ky.org/prtc/>.

<sup>80</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>.



The digital literacy program should include, e.g., (1) guidance on the safe use of technology at home, school, work, and at community anchor institutions;<sup>81</sup> (2) how to use ethernet cords, adaptors for every device in which to plug the ethernet cords for a wired connection;<sup>82</sup> (3) how to attenuate RF radiation to the “as low as reasonably possible” without losing connectivity; (4) how distance from any wireless device or infrastructure is their friend; (5) how to protect babies from RF radiation and (6) how to hard-wire schools so as not to expose children to RF radiation.

## **(6) Fiber Optics Should Be Given Priority for the EMS Disabled**

(Refers Generally to Questions 8, 16, 17, 18, 19)

Over 50 percent of the 333 commenters in FCC Docket No. 22-69 in 2022 favored a “fiber first” policy, similar to the NTIA’s Broadband Equity, Access and Deployment (BEAD) program Notice of Funding Opportunity.<sup>83</sup> See Addendum D.

A choice needs to be built into the paradigm of providing broadband access to the EMS Disabled. It is not a one-size-fits-all solution. There need to be – and there are – technological alternatives that will make diversity, equity and inclusion a reality for those who are unable to use, or be near, RF radiation. And the numbers are growing.

Consumer choice has been a bulwark of our economy, and it should be no less for the EMS Disabled in the arena of broadband choice. Wireless should not be the only choice, and indeed, the NTIA has made fiber optics to the premises a priority over wireless, that, in order to achieve true broadband connectivity for the disadvantaged, underserved and unserved, fiber is the superior choice.

Otherwise, with wireless, the chasm of the digital divide will only be exacerbated by a growing population of EMS Disabled who will increasingly join the ranks of the disadvantaged, underserved and unserved. The U.S. Government Accountability Office (GAO), the highest audit institution of the federal government, has stated in its 2020 report that current wireless deployment is likely to exacerbate disparities in accessing telecommunications services.<sup>84</sup> Moreover, the National Digital Inclusion Alliance testified in Congress that the current wireless deployment will require cell phones with the new technology, which the underserved, low-

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<sup>81</sup> Protecting Babies from EMF <https://ehtrust.org/> and <https://ehtrust.org/?s=baby+safe>; How to Hard-Wire Schools (see, <https://www.techsafeschools.org/>; “Hardwire Options | TechSafe Schools” <https://www.techsafeschools.org/hardwire-options>).

<sup>82</sup> “How to Hardwire a Cell Phone to Ethernet Step by Step,” Environmental Health Trust <https://ehtrust.org/how-to-hardwire-a-cell-phone-to-ethernet-step-by-step/>; “You Can Hard Wire iPhone to the Internet With Ethernet Cable! – Tech Wellness,” <https://techwellness.com/blogs/expertise/hard-wire-connect-phone-tablet-laptop-internet/>; “EMF Medical Conference 2021 Talk: Reduce EMF in Your Home Office,” YouTube <https://www.youtube.com/watch?v=FFFdfAsTks8>).

<sup>83</sup> The BEAD NOFO is available at <https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf>.

<sup>84</sup> US Government Accountability Office 2020 Report “FCC Needs Comprehensive Strategic Planning to Guide Its Efforts,” <https://www.gao.gov/products/gao-20-468> (p.3). Full report <https://www.gao.gov/assets/gao-20-468.pdf#page=14>.

income households, will likely not be able to afford.<sup>85</sup> Therefore, wired connections would be a smarter grid to bridge the digital divide.

To achieve the stated goals of digital equity and inclusion, there needs to be a recognition that those disabled by RF radiation are excluded from broadband access unless they have a hard-wired alternative and there are RF free or flexible zones that will allow them to have equal access to broadband and the Internet afforded to others.

Wireless technology is not able to effectively compete with fiber-based high-speed Internet.<sup>86, 87</sup> The Fiber Broadband Association (FBA) has shown that consumers prefer the symmetrical speeds that fiber provides.<sup>88</sup> Fiber is the superior choice for broadband.<sup>89</sup> The FBA also shows the superior technology of fiber in its white paper, “The Market Has Spoken.”<sup>90</sup>

Digital inclusion should incorporate broadly all digital access needs of the EMS Disabled which would also apply to “digital devices, app[lications], and any other touch points involved in accessing, acquiring, maintaining, and benefiting from digital services.”<sup>91</sup>

## Conclusion

The EMS Disabled must rely on wired connections because they become injured or sick near wireless technology. The EMS Disabled are a Covered Population, and the States should monitor public health impacts of using wireless technology, including with a public registry of RF radiation harms, and make accommodations under the ADA. Digital literacy programs should include wired connections for those negatively affected by wireless technology. By providing accommodation for the EMS Disabled and making wired connections a priority for them, the EMS Disabled will be able to have equal access to broadband as other Americans, which they should have – as of right.

Respectfully submitted,

Odette J. Wilkens  
President & General Counsel  
Wired Broadband, Inc.

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<sup>85</sup> Testimony of Angela Siefer, Executive Director, National Digital Inclusion Alliance, before the U.S. House of Representatives, Subcommittee on Communications and Technology, Committee on Energy and Commerce, Jan 29, 2020, <https://www.congress.gov/116/meeting/house/110416/witnesses/HHRG-116-IF16-Wstate-SieferA-20200129.pdf>.

<sup>86</sup> <https://www.allconnect.com/blog/internet-speed-classifications-what-is-fast-internet>.

<sup>87</sup> <https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2018-broadband-deployment-report>.

<sup>88</sup> [https://www.broadbandworldnews.com/document.asp?doc\\_id=773546](https://www.broadbandworldnews.com/document.asp?doc_id=773546).

<sup>89</sup> See, e.g., <https://www.fiberbroadband.org/p/cm/ld/fid=978>; see also, “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>90</sup> <https://www.fiberbroadband.org/p/cm/ld/fid=978>.

<sup>91</sup> American Foundation for the Blind NOI Comments at 2, n 90.

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## **ADDENDUM A**

### **EMS DISABLED – IN THEIR OWN WORDS**

#### **Commenters from FCC Docket No. 22-69 in 2022**

Some 65.17% of 333 commenters stated they suffered from EMS disability or their family members and/or friends experienced symptoms of electromagnetic sensitivity.

I am a teacher and recently had to change schools due to reactions I was having from 2 cell towers put up in a community park right next to the school I work at. These towers are within 150 meters from my classroom. I understand the demand for better connectivity for the public but at what cost. I have experienced headaches, dizziness, brain fog, memory loss, and rash since in the classroom I am leaving this year. I also have students complain about headaches daily. Please look into the harmful effects these towers and the wifi in the classrooms may have on the teachers and students.

[Cheri Rose, June 1, 2022](#)

I am someone who has been diagnosed with Electromagnetic Hypersensitivity (EHS). This happened to me about 5 years ago when a SmartMeter was installed outside my bedroom window and I became very sick, unable to sleep at night (waking every hour suddenly), nerve pain, numbness, and cramping in my hand every time I held my cell phone, terrible tinnitus in my ears, anxiety and headaches, and nerve pain in my entire body. I have spent the past few years and a lot of money taking mitigation measure in my own home (hard wiring with ethernet connections, installing silver fabric screens over walls and windows, and purchasing shields to protect my body from the harmful wireless radiation waves) in addition to not using a cell phone except in emergencies and staying out of public wifi places. I have a difficult time even being in close proximity to someone using a newer stronger 5G compatible phone. Please recognize this condition that is making people sick and affecting more and more Americans every day because of the density of wireless radiation in our country and the proliferation of 4G/5G towers in our communities.

[Jennifer Manzler, June 1, 2022](#)

As a nurse with a diverse background of clinical experience, I, along with 3500 members of our group, “citizens for 5g awareness” are imploring you to take into account the disabilities and adverse symptoms that are a direct result of involuntary wireless radiation exposure, and act to remove and reduce cell panels, towers, and other impacting technology that is at fault along with the companies that have allowed this to continue. I myself have developed debilitating PVC’s and subsequent weakening of the ventricles of the heart after a small cell was constructed down the block from my home. While it has severely impacted my life, I want to use the opportunity to educate and advocate on

behalf of myself, others going through similar experiences, and those who do not yet have symptoms but soon very well may, as exposure continues unchecked.

[Sara Lobato, June 1, 2022](#)

Because of where I live, I must use a 5g device from T-Mobile. This device when turned on, within minutes induces headaches, ear ringing, and nausea to name a few. I can't work from home or connect to the outside world with this.

[Jason Diponio, June 1, 2022](#)

I am EMS-disabled. My symptoms started "years ago" & long before I even knew what EMS meant or was. The roll-out of 5G has literally, physically sickened me to the point that in the near future I will be forced to barely leave my home. I suffer from nausea, sometimes extreme, headaches, sometimes "stabbing" headaches while traveling past cell towers, tingling in my brain, tinnitus, difficulty sleeping at night, rapid heartbeat & now joint pain in hips & hands when exposed to WiFi in public places where I'm shopping including but not limited to: COSTCO (bad symptoms) Whole Foods (bad symptoms), Folsom City Zoo (they added new antennas inside zoo!), Church, Crunch Fitness, 24 Hour Fitness, my car dealership for service (WiFi antennas everywhere), coffee shops & even movie theaters! I feel like my life has been stolen from me. I was very active in Church, Gym, regular movie goer, restaurants, Folsom and Sacramento City Zoo memberships and much more. I believe in my local city economy which I've supported until recently. Since the roll-out of 5G approx 3+ months ago, I've been robbed of enjoying church, movies (gone to movies 60 yrs---a passion), and if gym is crowded I have to leave. I no longer attend Church & this is extremely upsetting to me! I'm even being WiFi'd from all my neighbors, their devices & antennas on houses in my neighborhood! I want to move somewhere where my body can heal & be away from all the electro-smog that I'm convinced will ultimately kill me based on how badly I feel at times. I have been "an above average" active person & exercised "above average" my entire life starting in elementary school. This has been extremely difficult! I've spent over \$14k for modifications in my home (prior to 5G) only to have my 5G neighbors infringe on my living space that is difficult again. Prior home modifications don't stand a chance with 5G! I have to sleep in the living room since my bedroom is too close to my neighbors 5G bedrooms & devices. I'm a 24x7 care-giver and conservator to my low-functioning special needs sister who suffers alongside me. This is so unfair to her since she doesn't understand what's happening to her. In her behalf, I am submitting another comment. I am no longer an active member of society & the government has failed to protect me & my sister (entire population actually) against harmful radiation! For that I am appalled. Thank you for taking this seriously & for working on a resolution for EMS-disabled people!

[Debbie Trublood, June 27, 2022](#)

As a person extremely sensitive to radiation from WiFi and cell towers I was driven from my home when a cell tower was built close to our property as resulting severe headaches and neurological complaints completely disabled me. I implore the FCC to take what EMS has done to a growing segment of the community seriously and offer protection from indiscriminate radiation.

[Lia Langston, June 1, 2022](#)

My partner has experienced headaches, brain fog, and drowsiness in the presence of high electromagnetic frequencies. We first realized this when his cell phone was on in a 2011 Prius. Problems were exacerbated when he bought a plug-in Prius which he was forced to trade in. We believe many drowsy drivers and car crashes may be created by use of EMF technologies without protection.

[Noalani Terry, June 1, 2022](#)

I have electromagnetic sensitivity, and have experienced the nightmare of being assaulted on a 24-7 basis by wireless radiation from utilities and neighbors I cannot control, in my own home. We must curb the reckless, unchecked agency of the telecom industry to place harmful cell towers and repeaters in close proximity to our living and sleeping spaces. I am not thriving and have continued health challenges due to the ever increasing exposure to constant radiation in my home, despite my best efforts to minimize my own contribution to the mess.

[Haw-Bin Chai, June 1, 2022](#)

I am one of the up to 30% of people who are sensitive to EMS and I request that you find a way to eliminate digital discrimination for the EMS disabled. We need to be able to participate in society and be safe in our own homes. Thank you.

[Jane Carlson, June 1, 2022](#)

I have been suffering from EHS for several years. I noticed heart palpitations, head pain, anxiety, loss of words, confusion on several occasions in 2018. They happened when I was using cell phones in the car. They happened when I was in proximity to a hotspot and wifi laptops. They happened when I tried using a Roku streaming player. They happened when I was upstairs from my tenant's "smart" meter, and I have paid PG&E to have that meter removed from my rental as it's been off my own home. I saw a cardiologist and other doctors who ruled out other serious problems. The symptoms continued and persist when I am in a building with wifi and with people using cell phones, even when I drive my kids to school and back. When I pass a cell tower, I feel a stabbing pain in my temple. I can only be outdoors and stay far away from people on their phones. We have a wired router and ethernet cords to our computers at home, and use a landline, no cell phone. This problem is huge, and I dread having to go to public places like the store, the library, and doctors' offices. It is a real problem learning how to live and cope. Only because I am, sadly, meeting more and more people who have similar experiences do I feel like this has got to change.

[Martha Glaser, June 9, 2022](#)

I am an EMS person and I have family members who are as well. We have the right to be free of this ever present, non stop radiation.

[Constanza Abrams, June 1, 2022](#)

I was diagnosed with EM Hypersensitivity in 2016, while living in a home immediately adjacent to two cell phone towers. This acute EMF exposure has permanently altered my

life, ability to function, work, travel, and everything else. I have a long-standing neurologic disease, which was never a major issue in my life before, but which was brought out of remission by living next to the cell towers. I became so ill, that my family was forced to move to a new home. In addition to my disease coming out of remission, I developed debilitating symptoms of aggravated nerve pain, migraines, heart arrhythmias, global inflammation, and several other health issues. I now have to severely limit my wireless EMF exposure for extended periods of time, in order to live a decent quality of life or be able to raise my children; and every time I don't do this, I become very ill again. Please don't deny this issue. I knew nothing about the harm from wireless radiation before my own condition developed, but now I KNOW wireless EMFs are damaging to all people--most especially those of us with body constitutions who are sensitive to these harmful radio waves. There are many of us who are literally becoming allergic to the modern world because of wireless EMFs everywhere, and it is terrifying to not have a place to go for safety where we can live normal, productive lives as people, parents, employees, etc. We deserve fair and equal treatment for our disabilities and our suffering. Thank you for your help with this most important and life-altering matter.

[Melia James, June 1, 2022](#)

As an EMF-sensitive individual and concerned RN I urge the FCC to ensure rigorous safety studies of 5G and other wireless technologies and protections for vulnerable people.

[Sheliah Roth, June 1, 2022](#)

4G and 5G has wreaked havoc on so many people I know, their children, animals, livestock and even plants/trees. Although I'm fortunate and am not constantly exposed to the 5G radiation, when I am exposed, I get incredibly sick. Please do not put any more of these towers up. They are a huge detriment to ALL living things.

[Abby Fredericksen, June 17, 2022](#)

Please look out for the citizens and stop the EMF signals in our neighborhoods! This is affecting our health. Headaches, dizziness and the feeling of unwell. We believe the future health of our children is at stake as well neurologically.

[P Stringer, Jun 17, 2022](#)

As is well known, EMF is the name given by the U.S. Access Board to the condition whereby individuals exposed to radio-frequency (RF) radiation from smartphones, WiFi, cell towers, smart meters and other wireless devices experience adverse health effects or worsening of existing health conditions. I am someone who is within the population where it is estimated that up to 30% of the U.S. population – almost 99 million people – suffer at least mild symptoms after exposure to RF radiation, and for some, wireless exposure is the direct cause of, or at least a major contributing factor to, the impairment. This technology is making millions of Americans sick, and it is past time that it be recognized and addressed.

[Julie Ranieri, May 30, 2022](#)



I am troubled by the news that we are forced to endure 5g everywhere we go. I am bothered when I am around 5g and have had health problems as a result. This onslaught needs to stop and the putting up of cell towers everywhere must be stopped as well.

[Karen Jones, June 1, 2022](#)

Thank you for taking time [] to hear someone who had severe headaches, nausea, trouble going to and staying (a)sleep, loud ringing in my ears so I don't hear people talking, have trouble keeping focused due to the pain, severe rashes, memory loss so severe I have to write down what I'm doing so I can finish tasks. There's more suffering from radiation poisoning from emf/emr wifi, smart meters (our apartments put 4 smart meters on each building) in between our bedroom windows so we ALL are drowned in it.

[Jerri Magruder, June 23, 2022](#)

As someone with EMS, I have spent thousands of dollars working to protect myself as best I can in my home and when I go out into the community. I get heart palpitations and other symptoms when exposed to RF (wireless) technology and so try to minimize my exposure.

[Bibi Caspari, June 21, 2022](#)

EMS sensitivity is real. I know many people who have it and many more who don't consciously realize it yet. But more and more people are recognizing and making changes. It's time for the FCC to do the job it was designed to do and protect people. You can't imagine the changes you can make so let me help. Imagine leaving to a place without 5G and losing an inch to your waistline within 24 hours because 5G affects our digestive systems...Imagine sitting to watch TV and having heart palpitations...Imagine joining a Zoom call with video and having your brain on fire...these are just a few real life scenarios that could happen to you. Make a change before you are its next victim.

[Kelly Gunkel, June 17, 2022](#)

Electromagnetic sensitivity (EMS) is the name given by the U.S. Access Board to the condition whereby individuals exposed to radiofrequency (RF) radiation from smartphones, WiFi, cell towers, smart meters and other wireless devices experience adverse health effects or worsening of existing health conditions. Estimates indicate that up to 30% of the U.S. population – almost 99 million people – suffer at least mild symptoms after exposure to RF radiation, and for some, wireless exposure is the direct cause of, or at least a major contributing factor to, the impairment. This technology is making millions of Americans sick, and it is past time that it be recognized and addressed.

[Eileen Gale, June 3, 2022](#)

I, too, am affected by wireless transmissions. My home is etherneted and I paid to have the wifi meters for electric and gas meters removed from my home. However, my part of town is filled with towers. I get headaches and feel intense levels of anxiety, teeth gnashing, etc. around modems on wifi. I take Excedrin everyday for the headaches, a mystery the Doc's can't account for. Please stop expanding the tower installations and

ethernet, cable or hardwire the transmissions from now forward and plan to retrofit the existing towered areas!

[Allene Avey, June 1, 2022](#)

After a few hours in close proximity to these technologies I have experienced severe and worsening physical pain, so much so that it interferes with my ability to work. While having access to internet and cellular technologies is important, it is also important to have the option to opt out of having looming technological threats implanted in our communities. Thanks for your time.

[Charles Braddock, June 1, 2022](#)

After many years, I had to leave a big City of New York and move to CT due to severe health issues caused by RF that is all over the NYC. And a few years later, I've come to find out that once safe areas of CT without any notice got to install "death towers" aka cell towers. Making me sick every time I pass by one with no way to escape. I ask FCC to act on their sworn due in protecting We, the People.

[Vira M., June 1, 2022](#)

EMF sickness is real. I have had issues with the WiFi causing me heart arrhythmias. We should be allowed to say No to the cell towers built outside our home. This is causing real illness!

[Kimberly Crawford, June 1, 2022](#)

Wireless technology does cause real discomfort and physical harm / side effects to the electromagnetically sensitive, a legitimate subset of the population. Our family, except for one member, has this sensitivity. To this end, robust, safe FiOs/wired fast internet should be made available to all Americans, a very reasonable accommodation.

[M Lynn, June 1, 2022](#)

I have been suffering from emf sensitivities for 30 years. When the smart meters came out, I became anxious and had heart palpitations which caused me to go on beta blockers. This was 12 years ago. When WiFi came out, my condition got worse to where I now have daily headaches. We are talking migraines here along with dizziness and more heart palpitations. Cell towers cause me to be more sensitive to EMFs with the above symptoms increased, hard to eat without taking pepto-bismol because of the terribly nervous stomach. Please consider all the people who are now becoming sensitive to EMFs like me. We don't need these symptoms, nor do we need WiFi. Cell phones can also cause the above problems as I cannot use one as it starts a headache immediately if I get too close to one.

[Joyce Soos, June 1, 2022](#)

I am filing on behalf of my low-functioning special needs sister. She also suffers from EMS. She has rapid heartbeat when we're in a buildings, stores, churches, gyms, movie theaters & even City Zoo's with WiFi, 5G and antennas everywhere! The biggest "clue" to me is she goes through behavioral changes. She is easily "agitated" & very moody when over-exposed to WiFi. She has been stripped of what little independence she had. I trained her to scan self checkout groceries but since implementation of 5G we both light

up like firecrackers and can no longer go through self check outs anymore. The 2 worse ones are COSTCO and Whole Foods! This has also taken the joy away from my sister who took pride & felt like she was contributing with such a simple task as scanning groceries at check out. She LOVES Church and the gym and visits lots of friends & doesn't understand why we're not attending Church anymore (she's in tears when I tell her no to church), can't go to movies (we used to go 2-4x per month pre-pandemic) and just started going back to movies recently (but now we can't with 5G and entire audience with cell phones on & our symptoms start). My heart literally breaks for all the special needs & autistic communities whose "behavioral issues" are written off by doctors, teachers & possibly some parents who are naive to the fact the EMS exists! In many cases, these innocent souls are given destructive medications to "calm them down" when in-fact a majority of their symptoms are probably due to over-exposure of EMF's, WiFi, 5G, antennas in their homes, workplaces and schools and NOT THEIR FAULTS! I can and will testify to this fact as 24x7 care-given to my low functioning, low communication skills sister. I'm heartbroken to watch her struggle with her brain & quizzically look to me for answers as to what is happening to her physically since she can't communicate her pain to me! It's horrible to watch and endure! As most special needs parents can probably testify to, "behavioral issues" can be "them" trying to "process" (but can't in ways that we can) of the pain (both physical & emotional) that they're experiencing. (Side note: I believe wholeheartedly that Road Rage & all the unnecessary media in brand new cars contributes to Road Rage & behavioral issues in "normal people" that I witness on a daily basis as vehicles also are a source of overexposure to WiFi, EMF's!) Please help all these innocent souls & provide safe havens, education on EMS to entire nation, doctors, teachers, care-givers etc., but especially to special needs, disabled, autistic organizations. Some of these innocent souls have no voices to help them & are written off by people who should be (but are not) looking out for their needs and could care less! Thank you for addressing this urgent matter!

[Debbie Trublood \(sister/conservator\) on behalf of Lori Trublood](#)

## **ADDENDUM B**

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

Additional commenters from FCC Docket No. 22-69 in 2023

**Janet Tache, March 28, 2023**

I have a family member who suffers greatly being just in the same room with a single cell phone turned on. She gets heart palpitations, flu symptoms, headache, blurred vision, dizziness, and muddled thinking. She can't go anywhere these days without feeling sick and terrible. I know a couple of men who get tinnitus. Several friends complain about their symptoms. And many people complain of feeling "fried" by wireless devices, which are literally everywhere. Apparently everyone's body is affected negatively, whether one feels it or not. The brains of babies and infants in the womb are extremely vulnerable to wireless devices. It is just wrong to force people into having things like wireless smart meters installed in their homes with no opt out possibilities. They are forced to pay for something that will hurt them, and too often there is no recourse, no opt-out. We are like frogs in slowly heating water, and no one seems to care. I believe that forcing exposure – even as part of a genuine effort to afford broadband access – is itself a form of discrimination as a matter of law. More importantly, it is fundamentally inequitable because it leads to great harm: people with severe symptoms are functionally excluded from public participation since almost all public spaces are flooded with RF, and those with wireless facilities nearby cannot even take refuge in their homes.

**Michael Muadin, President, The Alliance for Microwave Radiation Accountability, Inc., March 21, 2023**

The injured lose their civil rights and access to medical care, the legal system, and government. They are no longer able to walk into City Hall, a courthouse, a library, a bank, or a hospital. They are no longer able to go shopping for food or clothing. Every store is off limits due to the radiation from wifi and cell phones.

Any additional exposure to radiation robs the victims of the rest of their ability to use any electricity or electrical devices. It crashes their immune system, destroys the rest of their physical and mental health, and finally ends their lives.

The FCC has a chance to prevent this tragedy before it unfolds all across these United States, afflicting the people our Federal Government is supposed to protect, devastating the health, safety, and welfare of this great nation.

It takes a certain fearlessness to turn the tide of events and shape the course of human history. We urge you to have the courage to prioritize “fiber to the premises” solutions. We demand that you recognize and accommodate the victims of Microwave Radiation Syndrome and those who are EMS disabled.

**L. Decristofaro, March 14, 2023**

I never thought my life would be completely turned upside down after being disabled by wireless technology. I used to LOVE technology. I worked for a telecom and had every new device. I also was exposed to a lot of cellular, wi-fi, bluetooth, cordless phones etc. I started to experience burning nerve pain and muscle spasms and knots as well as extreme anxiety and depression with no known cause. Over the years 2011-2019 I got worse and worse with chronic insomnia, tremors, restless limbs, weakness, appetite loss, digestive issues, chronic pain, tinnitus, Blood pressure issues low and high, racing heart, excessive sweating, vertigo and so much more.

The office I worked in had industrial Wi-fi routers everywhere as well as 3G and 4G installed on the roof. There were a stream of ambulances called to this office on multiple occasions and we had no idea why so many “healthy” people needed ambulances at work. Before we moved to the top floor where my exposure was the highest, a man of 50 years old in good health, died suddenly at work of a heart attack. He worked on the top floor. 4G LTE had just been installed some months prior. On the top floor it was during this 3 month period where I received the highest amount of RF exposure at work. I experienced intense pressure in my eyes and head with burning nerve pain, red face that felt like sunburn, ringing in my ears, all over head hair loss (about 50% of my head of hair in 3 months) and awful heart palpitations that started a few hours after exposure. They would start slow and gain momentum. They were pounding like drum by the time I left work and they slowly went away at home for the next 3-4 hours. Until the next time I am exposed to wireless. The pain comes first intermittently in my head and sharp ear pains then my heart starts to get palpitations and BP increases or decreases and I can collapse and black out. It happened at work under the 3G antenna. I heard my skull cracking as it expanded and swelled from pressure and I collapsed and starting vomiting in a bucket. I don’t know how I got to my car because I blacked out.

After the move to the top floor I only lasted 3 months and had to get out of that building to a different office location without towers. We moved to the top floor in late September and by early December I was so rundown with radiation my immunity dropped and I was knocked out for 2 weeks with a bad cold. I generally never catch colds or flu. This radiation wrecked me. The damage from wireless radiation is cumulative.

Cumulative damage means it’s happening whether you know it or not. Every exposure pushed me over my tolerance and it’s happening daily to more and more people since more powerful frequencies have been turned up. We have layers of 3G from various carriers, TDMA, CDMA, and then we have 4G LTE and again multiple frequencies and carriers. On top we have 5G mm wave and Nationwide 5G with further in-building penetration. This is what pushed many people over the top. Since the day I started feeling pain near wireless my life has been a nightmare. It happened at a jury duty pool of 300 other people all streaming and using their devices all around me for hours. After about an hour I started having sharp head pains like an ice pick to my temple. Then heart palpitations started. They got stronger and stronger and I felt like I was going to have a heart attack. I sat there frozen afraid to say anything because I knew it would sound

incredible strange. After more than 3 hours I had to say something. They looked up my issue and they dismissed me due to the RF microwave radiation causing my heart palpitations (like a microwave affects a pacemaker) and I cried all the way home, realizing how small and difficult my life would be if I couldn't be around other people or near towers, Wi-fi...

After leaving the high RF office I thought I would be OK as long as I stayed away from towers. But as I learned at jury duty 4 years later following my chronic exposures at work I started having sharp pains in my temple near anything wireless. I became sensitive also to electric and magnetic fields which also causes pain, numbness and tingling and cognitive impairments. I was driving a Tesla and it made me feel even worse after that day. I had to sell it. I suffered oxygen loss that lasted several days from the effects from the intense wireless exposure I got. I was gasping for air at night in bed (night is when the body goes into restore/healing mode and it makes people more sensitive). This happened for at least 4 nights. The oxygen loss comes from rouleaux formation Red Blood cells that become thick or clumpy near EMF... it results in cognitive impairments like short term memory loss, poor decision making, trouble with new learning, attention and focus and getting stuck in fight/flight/freeze. Magda Havas renowned researcher has shown how RF affects the blood, autonomic nervous system and heart.

<https://pubmed.ncbi.nlm.nih.gov/24192494/> My endocrine system stopped working correctly. After two weeks following jury duty I had lost 20 pounds. My weight loss continued for several months at 85 pounds or less as I stopped looking, afraid. My normal weight was 115-125. My body was demineralizing and not absorbing water. I was dying slowly from radiation sickness.

If I have to go to a medical appointment or almost any other place including outdoor places (like outdoor gardens, zoos, or historical places) they are almost always saturated with high and extreme levels of radiation as detected on the Safe and Sound Pro II meter. My home is an average of 0.4 to 10 W/m<sup>2</sup> (green indicator). At a beach nearby the level is a constant red peaking 100, 300 to over 700 (Red indicator for extreme). This environment has induced migraines, palpitations become sick and vomiting. Most people's newer 5G phones will be over 200,000 W/m<sup>2</sup>. Same for wireless printers, computers and even bluetooth powered games and toys. Driving on a US highway the meter picked up over 500,000 W/m<sup>2</sup>. And there is no wireless in our vehicle.

Places with low signal are disappearing quickly and we have a right to be outside in the world free from being radiated. Elon Musk is planning on polluting the sky with 7 thousand low orbit 5G satellites blanketing the entire planet in RF radiation causing more illness and disability. I do not consent. Do you? For your pets, kids, grandkids??? Where does it end? No one should have to feel this way from wireless pollution. And make no mistake it is pollution blasting out of the towers, bathing the entire landscape with dangerous levels of Pulsed Microwave Radio-Frequency. Trees, plants, birds, bees, and more are being disrupted and harmed by the towers. Birds and bees and other insects are not migrating accurately because their own electrical magnetic navigation is disturbed by the artificial harmful frequencies. We have seen a 70% insect decline in populations and

bee colonies collapse when they cannot find their way back to the hive. We have no time to lose by ignoring this issue.

Telecoms are the Tobacco companies of yesterday. They are using the same tactics and the damage being done to our bodies, minds and DNA is catastrophic. There are plenty of scientific studies. Thousands of reports showing cancers and neurological issues, heart issues and every organ in the body is affected. We are seeing epic levels of anxiety, depression, fibromyalgia, cancers, heart issues in younger children... This is no surprise when you are being slowly microwaved 24x7 at home, at school, in the car, at the store... They use RADAR in some stores to monitor store aisles, radiating people, with a known carcinogen! How is this legal? Towers pose another threat to food and water nearby. If you have Wi-fi and radar, and towers etc the land and soil microbiome are affected. Food inside markets also loses nutrition from being radiated in shipping or just the constant Wi-fi making food less vital. For the first time recently it was announced that life expectancy has decreased! No surprise. And we know fertility is a big issue because cells are affected and harmed by RF radiation.

I never thought my life would be stolen from me because I can't be around anything wireless. People are being isolated and it's a burden on the entire country when we can't work or participate in society. There are support groups and the numbers are growing quickly in recent years. There are millions of people affected worldwide. At the "conservative estimate" 3-10% of the population of the US (Total estimate 330,000,000) that would equal 9,900,000 to 33,000,000 people conservatively! There are at least 3-15% of the worldwide population who have become sick like me. And many more are becoming affected and developing all kinds of POTS, long Covid, chronic fatigue, ADHD, Autism and more.

For those who figured out what is causing their issues we are stuck at home almost all the time. We have so few places we can go. It is the saddest existence. Even the beaches near me have become so full of RF radiation from towers and nationwide 5G that if I spend more than a few hours I end up having a terrible migraine with brain swelling and I end up vomiting for hours. I have to wear heavy clothing lined with silver fibers to reduce signals. I have to wear long sleeve cotton under the shirts and cotton leggings under that so the silver doesn't touch my skin. I have a beanie to cover my head and ears. Leaded glass eyewear for my eyes. These clothing pieces are extremely expensive and they can't even be washed regularly because they will degrade. I sleep in a faraday tent with silver mesh to block any RF from satellites, neighbor's devices and towers.

In 2021 we had to sell our dream home to move to a more rural area away from towers but they are popping up all the time. There is a new tower that just sprang up across the street from my doctor. The hospital has 4G masts all over the roof. They are erecting a new giant tower near the last "safe" beach in my area. That's the last place I can go and feel good out in public (if I can stay farther enough from people with their devices). It's incredibly sad seeing the walls closing in and feeling like you will not have any meaningful existence. There are almost no businesses without wireless (salon, museums, restaurants, concerts, hotels, airplanes, etc) Where can we be safe? I pleaded with



Plymouth Plantation to have a few hours where they might turn Wi-Fi off so I could spend a day outdoors and enjoy the historic place where they pretend it's 1620. They advised me that a visit would not be recommended and they are unable to turn Wi-fi off. Can you imagine? I have lost my savings trying to get well, trying to protect myself. Now I am afraid every day a new tower, antenna or strong neighbor's device will be the end for me.

The United States has some of the highest allowable RF limits in the world, but no one thinks of the cumulative effect when you have millions of people around you with their 5G phones that have probably 10 antennas or more inside and add their Fitbits, apple watches, tablets, smart connected cars, AirPods, wireless medical devices, hearing aids, alarm systems, more powerful bluetooth and intense wi-fi routers... It's too much exposure. Towers have multiple carriers so the limits really need to be reduced greatly and the culture can move toward ethernet and wired connections in home and work environments, using less wireless for tasks except as needed. Apparently cell phones are even more addictive than heroin so there needs to be some work to reduce people's exposure. All I am asking for is safe places for people to live without towers close by, lower RF limits imposed and safe places for medical treatment without antennas on the roofs and outside the facilities. Sensitive populations must be protected. ...

**Kimberly Fischer Bunyan, March 9, 2023**

Both myself and children have chronic Lyme which has made us EMF sensitive. Currently we are looking for a place to move to where we can have less impact from the chronic health conditions we suffer made worse by emf in our environment. We even had to send our children at great expense and sacrifice to a Waldorf school which has no technology or WiFi swirling all day at school in order to mitigate the negative effects of Emfs.

## ADDENDUM C

### **THE NEED FOR ACCOMMODATION OF EMS DISABLED TO FULFILL PROMISE OF DIVERSITY, EQUITY AND INCLUSION**

Some 62.16% of the 333 commenters in FCC Docket No. 22-69 advocated for accommodation of the EMS Disabled with fiber to the premises and wireless-free zones.

There must be an allowance for RF-free safe zones in public spaces and buildings to ensure inclusion in public life. Individuals who cannot be around RF must have the ability, as a matter of right, to obtain wired (fiber-based) broadband. Discriminating against vulnerable populations, such as those with EMS, is unconscionable and is not consistent with the goal of achieving diversity, equity and inclusion. I urge you to do everything in your power to halt any further discussion of expanding wireless services, recognize this specific problem and take special measures that are within your regulatory authority.

[Brent Rudolph, June 8, 2022](#)

Yes to access for everyone, but it must be #fiberfirst [t]o protect the health of the vulnerable. We oppose the cheaper, wireless rollout which emits toxic radiation 24/7. Medical literature has shown it to cause a variety of neurological and cognitive symptoms, oxidative stress, metabolic, hormonal and sleep disruptions among many other serious adverse reactions. There must be an allowance for RF-free “safe zones” in public spaces and buildings to ensure inclusion in public life. Those who cannot be around RF must have the ability, as a matter of right, to obtain wired (fiber-based) broadband.

[Erica Comerford, June 27, 2022](#)

There have to be WiFi/Cell and “smart” free zones set up as accommodations for people who are ElectroSensitive-Aware, ES-Injured, and ES-Sensitive. I believe I have been injured by being in a 2021 car purchased for newly driving family members, so cars also need to be able to be purchased that can be fully disconnected from Bluetooth, WIFI, Hotspots, and Cellular Data. The same will have to be true for train and airplane travel. I believe that forcing RF radiation exposure – even as part of a genuine effort to afford broadband access – is itself a form of discrimination as a matter of law. More importantly, it is fundamentally inequitable because it leads to great harm: people with severe symptoms are functionally excluded from public participation since almost all public spaces are flooded with RF, and those with wireless facilities nearby cannot even take refuge in their own homes. Please do all you can to enable fully WIRED TECHNOLOGY for all places, private and public, including Schools, Libraries, Hospitals, Universities, and more. This is a CRUCIAL matter to very many people. Thank you.

[Martha Glaser, June 9, 2022](#)

There must be an allowance for RF-free “safe zones” in public spaces and buildings to ensure inclusion in public life. Individuals who cannot be around RF must have the ability, as a matter of right, to obtain wired (fiber-based) broadband. Discriminating against vulnerable populations, such as those with EMS, is unconscionable and is not consistent with the goal of achieving diversity, equity and inclusion.

[Erik Harper, June 7, 2022](#)

People who are RF-sensitive, especially those with EMS disabilities, must be allowed equal access to broadband in a form that does not threaten or worsen their health and well-being.

[Carlos Ralat, May 30, 2022](#)

I believe that forcing RF radiation exposure – even as part of a genuine effort to afford broadband access – is itself a form of discrimination as a matter of law. More importantly, it is fundamentally inequitable because it leads to great harm. People with severe symptoms are functionally excluded from public participation since almost all public spaces are flooded with RF, and those with wireless facilities nearby cannot even take refuge in their own homes.

[Miriam Eckenfels-Garcia, May 27, 2022](#)

I’m urging you to formally recognize electromagnetic sensitivity and set a firm precedent whereby high speed wired connections are the preferred means of installation.

[Michael Kaminsky, June 17, 2022](#)

People who are RF-sensitive, especially those with EMS disabilities, must be allowed equal access to broadband in a form that does not threaten or worsen their health and well-being. There must be an allowance for RF-free “safe zones” in public spaces and buildings to ensure inclusion in public life. Individuals who cannot be around RF must have the ability, as a matter of right, to obtain wired (fiber-based) broadband.

[George and Donna Machen, June 7, 2022](#)

I [] plead with the FCC to make accommodations for EMS-disabled citizens by creating and including ‘wireless-free zones’ in public places.

[Melia James, June 1, 2022](#)

Please have schools and daycares use fiber/wire for internet and not WiFi. The EMF levels in classrooms where children are for 7 hours a day are so high! They need to be protected from the range of symptoms that can come with EMF sensitivity.

[Jennifer, May 30, 2022](#)

Discriminating against vulnerable populations, such as those with EMS, is unconscionable and is not consistent with the goal of achieving diversity, equity and inclusion. I urge the FCC to do everything in its power to halt any further discussion of expanding wireless services, recognize this specific problem and take special measures that are within its duty/regulatory authority to effectively address it.

[Julie Ranieri, May 30, 2022](#)

The FCC should always prioritize “fiber to the premises (FTTP)” solutions. FTTP is the installation of optical fiber directly to individual homes, multi-dwelling units, schools, municipal buildings and businesses to provide high-speed broadband access. The FCC should rely on fixed wireless only when fully wired is technically or economically infeasible. The main purpose of mobile wireless is to support mobility, not to be a substitute for wired fixed arrangements. Those who are RF-sensitive and especially those with EMS disabilities must be allowed equal access to broadband in a form that does not threaten or worsen their health and well-being. There must be an allowance for RF-free “safe zones” in public spaces and buildings to ensure inclusion in public life. Those who cannot be around RF must have the ability, as a matter of right, to obtain wired (fiber-based) broadband.

[Erik Harper, June 7, 2022](#)

People who are RF-sensitive, especially those with EMS disabilities, must be allowed equal access to broadband in a form that does not threaten or worsen their health and well-being. There must be an allowance for RF-free “safe zones” in public spaces and buildings to ensure inclusion in public life. I urge the FCC to do everything in its power to recognize this specific problem and take special measures that are within its duty/regulatory authority to effectively address it.

[Paul Rauh, June 17, 2022](#)

It is fundamentally inequitable because it leads to great harm: people with severe symptoms are functionally excluded from public participation since almost all public spaces are flooded with RF, and those with wireless facilities nearby cannot even take refuge in their own homes. It should be enough that people don’t want to be exposed to RF pollution with unknown harms. I am left wondering if my family’s health problems are caused or worsened by all the RF pollution, and we can’t opt out even to test whether it makes a difference.

[Kari Olsen, June 02, 2022](#)

This technology is making millions of Americans sick, and it is past time that it be recognized and addressed. I applaud the Federal Communications Commission’s (FCC) initial effort to place emphasis on “harms experienced by historically excluded and marginalized communities” and the desire for “meaningful policy reforms and systems improvements, as well as a framework for collaborative action to extend digital opportunity to everyone. There must be an allowance for RF-free safe zones in public spaces and buildings to ensure inclusion in public life. Individuals who cannot be around RF must have the ability, as a matter of right, to obtain wired (fiber-based) broadband.

[Greg Fedak, June 1, 2022](#)

Discriminating against vulnerable populations, such as those with EMS, is unconscionable and is not consistent with the goal of achieving “diversity, equity and inclusion.” I urge the FCC to do everything in its power to halt any further discussion of

expanding wireless services, recognize this specific problem and take special measures that are within its duty/regulatory authority to effectively address it.

[Kitt E Stevens, June 27, 2022](#)

There must be an allowance for RF-free “safe zones” in public spaces and buildings to ensure inclusion in public life. Individuals who cannot be around RF must have the ability, as a matter of right, to obtain wired (fiber-based) broadband.

[Angela Dicianno, June 6, 2022](#)

I am an EMS disabled individual who would like to make it known that broadband/hardwired internet should be available, accessible, and the norm and having WiFi free zones, workspaces and SCHOOLS needs to happen. My son has an insanely enormous WiFi tower on his schools property. This can't be what children have to have. This can't be what is happening. Everything is being harmed by this.

[Patience Pecoraro-Nead, June 1, 2022](#)

We cannot commit to stakeholder expectations nor our mission statements without safe places for EMS people, I feel that is including myself. My workplace is a place for alleged healing and EMS people have a right to be protected as do staff and visitors. Transparency is key. People first then things then money. Your entire plans will go south when too many people are sick from your lack of due process. Thank you for taking these matters seriously and involving and including experts in matters like this.

[Sam Filer, Don Hall, June 1, 2022](#)

Many people's lives are being destroyed by the mass use of RF. The FCC “acceptable limits” are not based on biological effects, only thermal. Most countries have far lower limits. These EMFs can eventually cause permanent disability and leave a person with no means of participating in society. We need access to safe, wired technology and wi-fi free zones in public spaces. And you must stop putting wireless transponders into things that come into our homes that we cannot escape. I have Direct TV and even though it is completely hard-wired, there is a powerful transponder within the receiver that is impossible to shut off that makes me very dizzy and unable to concentrate. It took years to find out why I couldn't be near it. Many more items, like appliances, will soon contain these for Smart Homes, making life impossible, so we'll have to live without many staple items we've enjoyed since the beginning of the Industrial Age. The only reason it is being done is for money and profit but the welfare of the people must come first.

[Beckie Takacs, June 1, 2022](#)

EMS is a real problem making people sick and disabled. There should [] be wireless free zones in public areas. This technology emits a toxin that significantly impacts the brain and other organs, triggering disabling headaches, 'brain fog,' vertigo, difficulty sleeping, skin rashes and a host of other symptoms. We should not ignore EMS because it is a health threat to all of us including animals. There should be guidelines and safety measures and warnings for the public.

[Nancy Bender, June 1, 2022](#)

People who are RF-sensitive, especially those with EMS disabilities, must be allowed equal access to broadband in a form that does not threaten or worsen their health and well-being. There must be an allowance for RF-free “safe zones” in public spaces and buildings to ensure inclusion in public life. Individuals who cannot be around RF must have the ability, as a matter of right, to obtain wired (fiber-based) broadband.

[Fariha Husain, May 27, 2022](#)

## ADDENDUM D

### FIBER TO THE PREMISES AS A SOLUTION

Over 50 percent of the 333 commenters in FCC Docket No. 22-69 in 2022 favored a “fiber first” policy, similar to the NTIA’s Broadband Equity, Access and Deployment (BEAD) program Notice of Funding Opportunity.<sup>92</sup> Here are a few excerpts:

Prioritize fiber to the premises (FTTP) solutions. The goal should be to bring fiber as close to the user as possible, to use a copper tail for short distances where necessary, and to resort to wireless technology as a last resort due to health implications of wireless. There must be an allowance for RF-free “safe zones” in public spaces and buildings to ensure inclusion in public life. Individuals who cannot be around RF must have the ability, as a matter of right, to obtain wired (fiber-based) broadband. Discriminating against vulnerable populations, such as those with EMS, is unconscionable and is not consistent with the goal of achieving “diversity, equity and inclusion.” I urge the FCC to do everything in its power to halt any further discussion of expanding wireless services, recognize this specific problem and take special measures that are within its duty/regulatory authority to effectively address it and use fiber as an alternative.

[Tracy C Schlanser, June 6, 2022](#)

Please do all you can to enable fully WIRED TECHNOLOGY for all places, private and public, including Schools, Libraries, Hospitals, Universities, and more. This is a CRUCIAL matter to very many people.

[Martha Glaser, June 9, 2022](#)

Hello Thanks for the opportunity to comment. Science begins with our collective experiences (what is known) combined with logic & reason. As an engineer in the telecom industry, I spent about 7 years (in the 1990s) designing & testing telecom equipment to meet the industry's requirements. The operating companies require equipment to limit RF emissions as well as be resistant to RF energy. The only reason for this is to not interfere with other electronics and intentional RF transmissions, including those in telecom. To pass the resistance tests the traffic must not have any bit errors when bombarded with RF at various frequencies & power. I learned that cell phones could create bit errors if the equipment could not pass the tests. It was at that time I realized that if cell phones could impact these shielded electronics which function at milliamp and low voltages (3v/5v/12v), how could they not impact living organisms where our electrical systems are in the millivolt & microamp range. Simple logic dictates that there must be some effect on living organisms without the shielding of the telecom equipment. In addition, RF was also known for its ability to excite molecules (one result is creating a

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<sup>92</sup> The BEAD NOFO is available at <https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf>.



heating effect). This could not be good for organisms either. Science dictates RF must have a negative effect on humans. While our experience can give us some good ideas of these negative effects, only research could give us the actual details of what these effects are. I came to learn there was a good deal of research from other countries during the early days of radar and in recent decades a great deal more research has been added. The FCC must be aware of this, no? Being exposed to so much RF humans are being harmed in many ways, so it's time to finally acknowledge this. You can no longer ignore the growing amount of evidence by many reputable scientists & organizations around the world. It's time to put fiber optic communications first, ahead of RF and 5G!

[Anthony P Notos, June 27, 2022](#)

Please build a broadband network with fiber optic cable to homes and businesses, rather than 5G. Fiber optic is better and safer in every respect. Fiber optic is faster, uses less energy, does not emit potentially hazardous radiation, and does not create a visual blight in our cities with ugly 5G transmitters located on every telephone pole. Please be smart and implement a fiber optic broadband system!

[Eben Fodor, June 7, 2022](#)

I am extremely concerned that the FCC is making wireless rollout the chosen way to go instead of wired (fiber-based) broadband which should be the preferred mode of broadband delivery.

[Bibi Caspari, June 21, 2022](#)

People have a right to choose what forms of technology they use. It should not be forced by removing choices. Every person, especially the EMS-disabled, should have access to fiber-based /wired broadband. The 5G rollover was done with our money & without our consent.

[Cindy Kortlever, June 2, 2022](#)

Please stop the buildout of more towers and infrastructure now so that people like me can escape to rural areas (the only places we can feel normal and well again) and invest money in creating hardwired schools and public spaces.

[Jennifer Manzler, June 1, 2022](#)

Prioritize fiber to the premises (FTTP) solutions. The goal should be to bring fiber as close to the user as possible, to use a copper tail for short distances where necessary, and to resort to wireless technology as a last resort.

[Manuela Seitz-Hipkins May 31, 2022](#)

As someone who suffers from a wide variety of sensitivities, I urge the FCC to take into consideration all those with EMS and keep fiber first when doing the vital work of providing everyone with broadband services. Please always prioritize "fiber to the premises (FTTP)" solutions. The FCC should rely on fixed wireless only when fully wired is technically or economically infeasible, keeping the main purpose of mobile wireless as supporting mobility--not to be a substitute for wired fixed arrangements. Please also consider allowing for RF-free "safe zones" in public spaces and buildings to ensure inclusion in public life. Those who cannot be around RF must have the ability to

obtain wired (fiber-based) broadband so that they may maintain equal access to technology as well. Thank you for ensuring everyone can safely make use of the technology we all need to participate in our current electronic society.

[Aleks Kosowicz May 30, 2022](#)

I am writing today to advocate for fiber to the premises (FTTP) solutions. The goal should be to bring fiber as close to the user as possible and to resort to wireless technology as a last resort. People who are RF-sensitive, especially those with EMS disabilities, must be allowed equal access to broadband in a form that does not threaten or worsen their health and well-being. Individuals who cannot be around RF must have the ability to obtain wired (fiber-based) broadband.

[Karol Olson, June 6, 2022](#)

While studies are still being conducted in this area, we know enough to use caution - since the long-term effects won't likely be known for many years. I am asking the FCC to protect our children - the future generation - through the use of fiber-based broadband, as opposed to running the risk of harming Americans by promoting wireless connectivity.

[Julie Ann Blowers, June 17, 2022](#)

Wired (fiber-based) broadband should be the preferred mode of broadband delivery and to finally recognize the need for special measures to address the electromagnetic sensitivity (EMS) disabled community.

[William Brobeil, June 17, 2022](#)

I must express my concern and demand for the option of wired broadband not only for the EMF DISABLED but for all those involved given the known risks of exposure.

[Roy Monsour, June 1, 2022](#)

The FCC should always prioritize "fiber to the premises (FTTP)" solutions. FTTP is the installation of optical fiber directly to individual homes, multi-dwelling units, schools, municipal buildings and businesses to provide high-speed broadband access. The FCC should rely on fixed wireless only when fully wired is technically or economically infeasible. The main purpose of mobile wireless is to support mobility, not to be a substitute for wired fixed arrangements. Those who are RF-sensitive and especially those with EMS disabilities must be allowed equal access to broadband in a form that does not threaten or worsen their health and well-being. There must be an allowance for RF-free "safe zones" in public spaces and buildings to ensure inclusion in public life. Those who cannot be around RF must have the ability, as a matter of right, to obtain wired (fiber-based) broadband.

[Dr. Carol Taccetta, June 17, 2022](#)

## **ADDENDUM E**

### **NTIA Questions Generally Being Addressed in this Submission**

**Question 1:** During the public comment period for the States' Digital Equity Plans, what guidance should NTIA and/or each State provide to enable communities to review and provide actionable feedback to States regarding their State Digital Equity Plans? What criteria/factors/outcomes should communities focus on in their review? How can NTIA ensure that States/Territories consult with Tribal entities about how best to meet Tribal members' needs? NTIA would like to learn from stakeholder experiences to inform the development of technical assistance resources to support applicants' efforts to identify successful project models, partnerships, activities, and strategies that deliver impactful and sustainable outcomes. In implementing the Bipartisan Infrastructure Law's programs, NTIA will offer technical assistance to all applicants and prospective sub-grantees. As a statutory requirement, these entities must evaluate the impact of funding projects on Covered Populations from the implementation of the Digital Equity Plans.

**Question 2:** Over the next year, NTIA will deliver technical assistance for States and Territories to develop holistic, actionable, and impactful State Digital Equity Plans. NTIA has created a Needs Assessment Guide, Asset Mapping Guide, Digital Equity Plan Guidance, Best Practices, Workforce Planning Guide, webinars, and other technical assistance resources. What additional guidance/resources should NTIA provide to States, Territories, and Tribal entities as they develop their Digital Equity Plans? What additional guidance can NTIA provide to help States and community organizations utilize other federal tools to close the digital divide by increasing access and reducing cost like the Affordable Connectivity Program? Individuals and communities who are most impacted by the digital divide are in the best position to help States, Territories, and Tribal entities understand the inequities and how best to focus and scale local efforts. How can individuals and communities provide feedback to States, Territories, and Tribal entities to ensure their unique communities' needs are solicited, considered, and reflected in the Digital Equity Plans?

**Question 3:** How should NTIA define success for the Capacity Grant Program? What outcomes are most important to measure? How should NTIA measure the success of the Capacity Grant Program, including measures and methods? How should NTIA encourage the Capacity Grant Program to ensure equity is achieved? Please explain. NTIA encourages

**Question 4:** How should NTIA design the Capacity Grant Program to ensure equity is achieved? Please explain. NTIA encourages stakeholders to provide the rationale for their comments, including available examples of studies, measures, outcomes, assessments and supporting information.

**Question 6:** What reporting requirements should NTIA establish for grantees to ensure that the voices of those most impacted by the digital divide are reflected in the implementation and updates of the Digital Equity Plans? What steps, if any, should NTIA take to monitor and

evaluate implementation practices? From a sustainability perspective, what role can collaborations, partnerships, and coalitions play? Please share examples of any existing impactful collaborations, partnerships, and/or coalitions. The Assistant Secretary is allowed to prescribe such rules as may be necessary to carry out the Capacity Grant Program.

**Question 7:** What rules, if any, should the Assistant Secretary develop to ensure that digital equity is achieved in the Capacity Grant Program?

**Question 11:** What rules, if any, should the Assistant Secretary develop to ensure that digital equity is achieved in the Competitive Grant Program?

**Question 15:** What are examples of past or current evidence-based or evidence-informed digital equity and/or inclusion projects or other relevant or similar projects that NTIA can showcase as a part of its technical assistance efforts to support applicants in identifying promising or evidence-based project models, partnerships, activities, and strategies to consider, replicate, and leverage lessons learned as applicable?

**Question 19:** For each of the Covered Populations, what are proven strategies and tactics, projects or programs, with outcome-based measures and impacts, that promote and achieve digital equity?

**Question 20:** Youth and young adults are members of each of the Covered Populations except for Older Americans. How can NTIA encourage and measure the effects of investments in our youth and young adult?

**Question 21:** To ensure all learners (youth, adult, incarcerated, etc.) have access to the opportunities that technology unlocks, how should NTIA promote a baseline or fundamental standard for digital literacy for all learners? What kind of baselines should NTIA's grant programs strive to achieve and should the intended outcomes be based on a type of standard which includes varying levels of digital skills, such as pre-basic, basic, intermediate and advanced?

**Question 22:** How can NTIA best ensure that States and Territories that receive funding under BEAD and Digital Equity Programs are closely aligning their planning efforts to close the equity gaps for all Covered Populations? How can NTIA work with the States, Territories, and their communities to promote the collective impact and outcomes between BEAD's Five-Year Action Plan and States' Digital Equity Plans to achieve equity for its Underrepresented Communities/ Covered Populations?

**Question 23:** How can NTIA encourage the design and implementation of Digital Equity Programs to support and advance the economic mobility of members of Underrepresented Communities/ Covered Populations to support BEAD implementation and broader economic outcomes (e.g., through new skills, upskilling, re-skilling, career pathways, and other high-quality workforce development activities)?

**Question 24:** How can the BEAD and Digital Equity Programs support and promote youth employment and skills building? What kind of programs, projects, and partnerships—based on existing evidence—would encourage and prepare youth to have the digital skills needed to be workforce-ready, but also to enter internet and internet related careers?

**FACT SHEET: FEDERAL LEGISLATION ON WIRELESS COMMUNICATIONS****Satellite Proliferation: Hundreds of Thousands of US Launches With No Environmental Review.<sup>1</sup>****Three Bills Pending**

**HR 1338** Requires FCC to process satellite applications, with an approach similar to **HR 3557**. Imposes shot clocks, automatic approvals of applications, and automatic renewals.

**HR 1339** Requires the FCC to pursue additional regulations to promote satellite use for precision agriculture.

**S. 1648 / HR 682** Allows commercial satellite launches to use spectrum that is currently reserved for national security (passed each chamber, pending reconciliation).

**Context: Over 1 Million Satellites Planned**

Satellite operators plan over one million satellites globally in the coming years.<sup>2</sup> By comparison, in 2018, prior to the recent wave of expansion, just over 1,300 satellites were active from all previous history.<sup>3</sup> In the US alone, the FCC has received 70,000 applications since 2016 and granted approximately 10,000.<sup>4</sup> With a lifespan of only five years per satellite,<sup>5</sup> the US is on a path to launching 14,000 satellites per year, just to maintain US-licensed networks.

**Regulatory Gap**

- In 1986, FCC determined that, “based upon the Commission’s experience,” its authorizations and licensing of satellites were categorically excluded under the National Environmental Policy Act,<sup>6</sup> although the FCC has provided no justification for maintaining this exclusion despite evidence of significant environmental effects of individual and cumulative satellite deployments.<sup>7</sup>
- In 2022, GAO recommended that FCC justify its NEPA categorical exclusion; FCC has not yet complied.<sup>8</sup>
- No federal agency has conducted a comprehensive review of the current body of science on the health and environmental impacts of wireless radiofrequency (RF) radiation,<sup>9</sup> despite significant evidence of serious biological harm.<sup>10</sup> The US Court of Appeals for the DC Circuit has twice ruled the FCC failed to address environmental effects of its actions.<sup>11</sup>

**Environmental and Other Impacts of Satellites**

- Increase radiofrequency (RF) radiation across the entire planet.<sup>12</sup>
- Release chemical and particulate emissions from satellite launches, which may affect climate and the ozone layer.<sup>13</sup>
- Spread alumina<sup>14</sup> and other toxic metals<sup>15</sup> upon reentry, as each satellite eventually falls to earth and disintegrates.
- Increase the risk of orbital debris, which is a growing threat to space infrastructure, as documented by GAO and others.<sup>16</sup>
- Increase light and radio pollution from satellites, which adversely impacts astronomy and dark skies.<sup>17</sup>
- Increase RF radiation on farms (particularly when combined with other bills pending in Congress<sup>18</sup>) despite known harms to plants,<sup>19</sup> birds, animals, and insects<sup>20</sup> (particularly pollinators and bees<sup>21</sup>), and despite zero assessment of the harms from this radiation or the threat to farm yields.<sup>22</sup>
- Create liability for US taxpayers under international law, as the FCC has not required satellite companies to bear this liability.<sup>23</sup>

**Pending Bills Would Fast-track Satellite Deployment, Despite:**

- No review of environmental or agricultural impacts
- No national security impact assessment, such as from orbital debris and spectrum sharing.<sup>24</sup>

## References

<sup>1</sup> The FCC Is Supposed to Protect the Environment. It Doesn't.

<https://www.propublica.org/article/fcc-environment-cell-towers-failures>

Environmental Procedures at the FCC: A Case Study in Corporate Capture (2022)

<https://www.fcc.gov/ecfs/document/1222046629894/7>

<sup>2</sup> One million (paper) satellites, *Science* 2023

<https://www.science.org/doi/10.1126/science.adi4639>

<sup>3</sup> Union of Concerned Scientists Satellite Database

<https://www.ucsusa.org/resources/satellite-database>

As of Nov. 7, 2022, only 14,450 satellites had been launched in all of human history, with 6,800 currently active according to the European Space Agency (ESA).

<https://www.space.com/spacex-starlink-satellites.html>

<sup>4</sup> <https://www.osstp.org/fcc-analysis>

<sup>5</sup> <https://www.space.com/spacex-starlink-satellites.html>

<sup>6</sup> Federal Register at page 14999

<https://www.govinfo.gov/content/pkg/FR-1986-04-22/pdf/FR-1986-04-22.pdf>

<sup>7</sup> *The Balance Group v. FCC* (opening brief, DC Circuit, 2020), page 29

[https://www.thebalancegroup.net/uploads/7/0/4/2/7042138/viasat.bg\\_-\\_opening\\_brief.pdf](https://www.thebalancegroup.net/uploads/7/0/4/2/7042138/viasat.bg_-_opening_brief.pdf)

<sup>8</sup> GAO noted that "because large constellations of satellites did not exist [in 1986], FCC's experience up to that point would not have involved the consideration of this technology." Satellite Licensing: FCC Should Reexamine Its Environmental Review Process for Large Constellations of Satellites (November 2022)

<https://www.gao.gov/products/gao-23-105005>

<sup>9</sup> <https://ehtrust.org/wp-content/uploads/5G-and-Cell-Tower-Radiation-Briefing-1.pdf>

<sup>10</sup> <https://ehtrust.org/science/top-experimental-epidemiological-studies/>

<sup>11</sup> *Environmental Health Trust v. FCC* (DC Circuit, 2021)

[https://www.cadc.uscourts.gov/internet/opinions.nsf/FB976465BF00F8BD85258730004EFD7/\\$file/20-1025-1910111.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/FB976465BF00F8BD85258730004EFD7/$file/20-1025-1910111.pdf)

*Keetoowah Band of Cherokee Indians v. FCC* (DC Circuit, 2019)

[https://www.cadc.uscourts.gov/internet/opinions.NSF/4001BED4E8A6A29685258451005085C7/\\$file/18-1129-1801375.pdf](https://www.cadc.uscourts.gov/internet/opinions.NSF/4001BED4E8A6A29685258451005085C7/$file/18-1129-1801375.pdf)

<sup>12</sup> Global coverage map:

<https://orbitalindex.com/feature/starlink-coverage/>

<sup>13</sup> Large Constellations of Satellites: Mitigating Environmental and Other Effects (September 2022)

<https://www.gao.gov/products/gao-22-105166>

<sup>14</sup> See note 7

<sup>15</sup> NOAA scientists link exotic metal particles in the upper atmosphere to rockets, satellites

<https://research.noaa.gov/2023/10/16/noaa-scientists-link-exotic-metal-particles-in-the-upper-atmosphere-to-rockets-satellites/>

<sup>16</sup> See note 13 above for GAO report, September 2022.

<https://www.space.com/starlink-satellite-conjunction-increase-threatens-space-sustainability>

See [S. 447](#), currently pending, which seeks to mitigate orbital debris.

<sup>17</sup> *International Dark Sky Association v. FCC* (2022)

<https://darksky.org/news/ida-appeals-fcc-approval-of-spacex-gen2-satellite-constellation/>

See also, Astronomer makes prediction on satellite pollution, *CNN*, June 11, 2022

<https://www.cnn.com/videos/world/2022/06/11/satellite-pollution-threatens-night-sky-fisher-pkg-ndwkd-vpx.cnn>

<sup>18</sup> See all bills promoting wireless radiation and antenna proliferation with precision agriculture [HR 1339](#), [S.2542](#), [HR 1697/S.734](#), [HR 4351](#), [HR 5062](#)

<sup>19</sup> <https://ehtrust.org/electromagnetic-fields-impact-tree-plant-growth/>

<sup>20</sup> <https://ehtrust.org/environmental-effects-of-wireless-radiation-and-electromagnetic-fields/>

<sup>21</sup> <https://ehtrust.org/published-research-adverse-effect-wireless-technology-electromagnetic-radiation-bees/>

<sup>22</sup> <https://ehtrust.org/radiofrequency-radiation-effects-on-agronomy-agricultural-crops-and-crop-yields>

<sup>23</sup> In 2018, the FCC recognized that under international treaties the US government is liable for damages that US satellites cause abroad, including falling debris. See paragraphs 76-80.

<https://www.fcc.gov/document/fcc-launches-review-rules-mitigate-orbital-space-debris-0>

In 2020, the FCC decided not to require satellite companies to carry insurance (paragraph 135). FCC has not required satellite companies to indemnify the US government (paragraph 136) for liability (paragraph 177), and acknowledged that: "[T]hose costs would be borne by U.S. taxpayers." (paragraph 178)

<https://www.fcc.gov/document/fcc-updates-orbital-debris-mitigation-rules-new-space-age-0>

<sup>24</sup> Letter to Congressional committees, National Call for Safe Technology (September 19, 2023)

<https://drive.google.com/file/d/1dfjM0yvGM08XjPV9XU2s6SRwEKFSbcJo/view>