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Washington, D.C. 20554

In the Matter of:	)	
Addressing the Homework Gap through the E-Rate Program	)	Docket No. WC 21-31
	)	

COMMENTS OF ADVOCATES FOR THE EMS DISABLED
IN RESPONSE TO THE ABOVE-REFERENCED MATTER

JANUARY 8, 2024

FILING PARTIES

The parties listed below collectively constitute the "Advocates for the EMS Disabled," and have joined together and have granted permission to submit these Comments:

Wired Broadband, Inc., Odette Wilkens, President & General Counsel, Forest Hills, NY; Children's Health Defense, https://childrenshealthdefense.org; Lennart Hardell, MD, PhD, The Environment and Cancer Research Foundation, Retired Professor in Department of Oncology, University Hospital, Örebro, Sweden; CT State Representative Anne Hughes, 135th House District, Easton, CT; Virginians for Safe Technology, LLC: Jenny DeMarco, Communications Director, Fredericksburg, VA; Virginians for Safe Technology, LLC, Mary Bauer, Retired RF Engineer, Fredericksburg, VA; James O'Beirne, Autumn92, software engineer, Round Hill, VA; Ingrid Iverson, **EMS Disabled**, La Plata for Safe Technology, CO; Deborah Shisler, **EMS Disabled**, La Plata for Safe Technology, CO; Coloradans for Safe Technology, Andrea Mercier (mother of a **severely disabled child** who is adversely impacted by geopathic stress and **various forms of non-ionizing radiation**), Colorado Springs, CO; Coloradans for Safe Technology, Nancy Van Dover, DVM OMD Dipl Acup, CO; Brenda Schafer, **EMS/MCS Disabled**, Frazier Park, CA; Sharon Behn, **EMS Disabled**, National Council for Independent Living Transportation Subcommittee, Member, Arden, NC; Virginia Farver, Fort Collins, CO; Susan Molloy, Snowflake, AZ; NY4Whales & NY4Wildlife, Taffee Wiliams, President, Tuckahoe, NY; Sara Aminoff, Union City, CA; Alliance for Microwave Radiation Accountability, Inc. (AMRA), Michael Muadin, President, East Chatham, NY; Consumers for Safe Cell Phones, Cynthia Franklin, Director, Bellingham, WA; Howard J. Goodman, Esq., Forest Hills, NY; Floris Freshman, Artist, Scottsdale, AZ; Pittsfield Injured & Concerned Citizens, Courtney Gilardi, Pittsfield, MA; Safe Cell 01240, Diane Sheldon, Lenox, MA; Ian R. Jarvis, Wolverhampton, UK; Arizonans for Safe Technology, Valeri Marsh, Director, Phoenix, AZ; EMF Safety Network, Marin Outreach/Education, Vicki Sievers, San Rafael, CA; California Brain Tumor Association, Ellen Marks, Director, Indian Wells, CA; Jacquelyn Sauriol, Portland, OR; Californians for Safe Technology, Jodi Nelson; Massachusetts for Safe Technology, Cecelia Doucette, Director, Ashland, MA; 5G Free California, Julie Levine, Executive

Director/CEO, Topanga, CA; Children's Health Defense Virginia Chapter, Caroline Kennedy, Advisor, Fairfax, VA; 5G Free RI, Sheila Resseger, M.A., Co-Founder, Cranston, RI; National Health Federation, Scott C. Tips, JD, President, Mossyrock, WA; Alison S. McDonough, **EMS Disabled**, Cambridge, MA; Napa Neighborhood Association for Safe Technology, Amy Martenson, Napa, CA; Center for Safer Wireless, Desiree Jaworski, Executive Director, Haymarket, VA; Connecticut for Responsible Technology, CT4RT.com, Paska Nayden, Co-Founder, Easton, CT; Safer Cellphone and Wifi Project, Margaret Glaser, Chicago, IL; Donna Romo, New York, NY; Kathleen Watson, Forestville, CA; Safe Technology Minnesota, Leo Cashman, St. Paul, MN; Charlene Hopey, Topanga, CA; Gene Wagenbreth, Topanga, CA; Erin McDowell, R.N. (**as an injured individual from cell towers close to home),** member of SWORT (Southwest Ohio for Responsible Technology), Awareness 5G: NE OH, National Call for Safe Tech, Children's Health Defense, Rocky River, OH; Craig McDowell, Rocky River, Ohio; Pennsylvanians for Safe Technology, Donna DeSanto Ott, PT DPT MS, President, Reading, PA; Gloria Shen, Asheville, NC; EMF Safety Network, Sidnee Cox, Director, Windsor, CA; Safe Tech 4 Santa Rosa, Santa Rosa, CA; Southwest Ohio for Responsible Technology, Cristina Shonk, Cincinnati, OH; Katherine Katzin, Takoma Park, MD; Electromagnetic Pollution Illnesses Canada Foundation, Barbara Payne, President, Toronto, Ontario, Canada; Safe Tech Tucson, Tucson, AZ; and EMF Wellness Tucson, Lisa Smith, PhD, EMRS, Tucson, AZ.

INTRODUCTION

Providing Wi-Fi hotspots is simply not the solution for bridging the "homework gap" because it is only a stop gap measure – a more permanent, wired, solution for school kids to have broadband access at home should be deployed. School children require the fastest, safest and most secure access to broadband. That means a wired connection, such as with coaxial cable and fiber optics, which provides that superior level of access and capacity. Why relegate children to a lesser, wireless technology, that can never provide that same level of access. Former FCC Chairman, and former CEO of CTIA, Tom Wheeler, testified in Congress about fiber being "future proof," and using wireless only as a last resort.[1] Moreover, wired broadband does not involve ever-increasing amounts of taxpayer funding into the indefinite future as is being proposed in providing ever-increasing Wi-Fi hotspots. With wired technology, it's 'once and done,' meaning that the need for Wi-Fi hotspots would decrease, thereby obviating any further taxpayer funding. Moreover, wireless technology depends on fiber, meaning that if the home is not already connected by fiber, fiber can be extended to the home. That means superior broadband access and capacity via wired connections to bridge the "homework gap."

The Notice of Proposed Rulemaking (NPRM)[2] refers to ensuring that spending under the E-Rate program is not wasteful. However, wireless technology, as a business model, has built-in obsolescence which guarantees a continuous stream of business income, but which will perpetuate, if not guarantee, the "homework gap." Therefore, the emphasis on Wi-Fi hotspots to bridge this gap will not solve it in the long run, but will perpetuate the very lack of broadband access that is fueling the digital divide. Therefore, expanding Wi-Fi hotspots would be wasteful because, in the long run, it will only serve to perpetuate the very lack of access to broadband that this NPRM is seeking to remedy.

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[1] 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.

[2] https://www.neca.org/docs/default-source/wwpdf/public/fcc2391.pdf.

Also, there is the unsupervised aspect of the use of Wi-Fi hotspots. Children are more likely to use Wi-Fi on their devices to be on social media, such as Tik-Tok, having nothing to do with homework. A growing body of evidence shows childhood addiction to social media platforms on their cell phones and tablets powered by Wi-Fi, commonly referred to as "social media addiction." **Therefore, the FCC should be protecting children from this type of addiction, not increasing the opportunity for childhood addiction.** particularly when such access would be unsupervised by teachers.

In addition, providing Wi-Fi hotspots will increase exponentially the level of radio frequency (RF) radiation from Wi-Fi to which children will be exposed. In so doing, the FCC is failing to comply with an appellate court order of 2021 that requires the FCC to examine the risks of such exposure to children.

These comments will focus on (1) built-in obsolescence of wireless technology that will perpetuate the "homework gap;" (2) fiber's superior access and capacity for home learning; (3) children's social media addiction would be exacerbated with more access to Wi-Fi hotspots; (4) the FCC's failure to comply with an appellate court's decision requiring that the FCC re-examine its RF exposure limits in relation to its effects on children;; and (5) the settled science on adverse bio-effects of RF radiation exposure on children, from which the FCC should protect children, rather than subsidizing a technology that would inevitably increase children's exposure to RF radiation.

(1) BUILT-IN OBSOLESCENCE OF WIRELESS TECHNOLOGY WILL PERPETUATE THE "HOMEWORK GAP"

There is planned, built-in, obsolescence with wireless technology. This is a trend, as reported by an industry publication, where "companies have turned to planned obsolescence to artificially render older products obsolete."[3] It is a tactic used to ensure that tech companies "can consistently turn a profit every time they launch new products."[4]

For instance, the major telecom carriers are already sunsetting their 3G networks, by design, as reported by the FCC.[5] That means that 3G-enabled only phones will become obsolete and consumers will be forced to buy a new cell phone for the new network.[6] It would also apply to other 3G-enabled equipment, such as "medical devices, tablets, smart watches, vehicle SOS services, home security systems." [7] This is artificially creating demand for later generation services, such as 5G as people are forced to buy 5G-enabled cell phones and equipment, and soon 6G and beyond.

Increasingly using Wi-Fi to bridge the "homework gap" is relegating school children to a perpetual cycle of obsolescence, apparently for corporate profit. This cycle will be perpetuated with future generations of wireless as it becomes necessary for more devices to be connected to ever-newer generations of wireless in order for devices to work. Those who cannot afford new devices will be left behind, perpetuating, if not guaranteeing, the digital divide. Soon, we'll be looking at further taxpayer funding under the E-Rate program to pay for these new devices. **This cycle of obsolescence is the kind of wasteful spending that this NPRM is seeking to prevent – and should prevent.**

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[3] https://cellularnews.com/mobile-phone/planned-obsolescence/.
[4] Id.
[5] https://www.fcc.gov/consumers/guides/plan-ahead-phase-out-3g-cellular-networks-and-service.
[6] Id.
[7] Id.

Moreover, wireless equipment and facilities have a much shorter life span, and require continuous periodic maintenance and replacement. Fiber has been federally prioritized as the superior choice to implement broadband nationwide to bridge the "digital divide." There is no planned, built-in obsolescence with coaxial cable, or fiber (which lasts 25-50 years), and is therefore more cost effective for school children in underserved communities, ensuring that they are not left behind.

(2) Fiber's Superior Access and Capacity for Home Learning

Underscoring the importance of fiber over wireless, former FCC Chairman, and former CEO of CTIA, Tom Wheeler, in his March 2021 Congressional testimony, described fiber as "future proof," and prioritized a "fiber first" policy for the nation.[8] Wheeler's statements point to the fact that wireless and fiber are not equivalent broadband media,[9] and that wireless should be used only as a last resort. "Fiber is unmatched in its speed, performance [and] reliability … "[10] far exceeding those of 5G, for example. In fact, 5G access has been reported to be no faster than 4G.[11] Fiber's life span far exceeds that of wireless at 25-50 years.[12]

The model that the FCC should be following is to support resiliency within communities, which would obviate any need for federal, taxpayer funding under the E-Rate program. That means supporting wired connections to bridge the "homework gap." For example, Chattanooga, TN, which is completely wired with fiber, offers every household with a school-aged child, free internet access. Chattanooga has been able to offer this service because its fiber network has been an economic boon for the city.[13] The city used fiber optics under a municipal broadband framework to spring into a clean energy economy and create a vibrant workforce, earning it the accolade of "Gig City," with the fastest broadband network in the U.S. The economic value of its fiber infrastructure over a 10-year period from 2011 to 2020 exceeded $2.69 billion and produced 9,516 jobs, beyond expectations.[14] Chattanooga's city-owned

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[8] 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.

[9] "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.

[10] Id.

[11] https://www.digitaltrends.com/mobile/how-fast-is-5g/.

[12] 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.

[13] *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/; *Why Chattanooga Has the Fastest Internet in the US*, https://tech.co/news/chattanooga-fastest-internet-usa-2018-08.

[14] "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;
See also, *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-

utility, EPB, can be viewed in a town hall discussing their successes, their self-reliance in providing free internet access to households with school-aged children, and future plans for **quantum connectivity**, only possible with their fiber optics infrastructure.[15]

Fiber to the premises (FTTP) provides the best capacity for remote learning for children, as well as more reliable access to medical and other services for the elderly and disabled during emergencies, and during severe weather when wireless service is more likely to be interrupted.

The Fiber Broadband Association (FBA), the largest fiber optics trade association in the U.S., has shown that consumers prefer the higher upload and download symmetrical speeds that fiber provides (which wireless cannot provide)[16] hence, ***"If it isn't fiber, it isn't broadband."*** [17] The FBA also shows the preference for superior technology of fiber in its report, "The Market Has Spoken."[18]

Moreover, wireless equipment has a much shorter life span (about 5 years), and requires continuous periodic maintenance and replacement. Who will pay for its upkeep over time? Will those costs be borne, even indirectly, by taxpayer funding from the E-Rate program?

(3) CHILDREN'S SOCIAL MEDIA ADDICTION WOULD BE EXACERBATED WITH MORE ACCESS TO WI-FI HOTSPOTS

We now come to the crucial issue of social media addiction. Unsupervised by teachers to provide a safe learning environment, children and adolescents, who would be the purported beneficiaries of Wi-Fi hotspots, are vulnerable to the catastrophic effects of social media addiction caused by their use of social media platforms on their mobile devices. Social media addiction has been scientifically recognized since 2008 associated with overuse of social media.[19] Injuries that children suffer from these platforms are numerous, including eating disorders, depression, anxiety, trouble sleeping, trauma, stress, obsessive compulsion, disruptive and impulse-control disorders, self-harm, suicidal ideation and suicide.[20] It has been asserted that the technology companies have designed their platforms to be

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smokestack-past/; *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/.
See also, for economic benefits of fiber deployment, In Kansas, Rural Chanute Built Its Own Gigabit Fiber and Wireless Network," Christopher Mitchell 10-2-21, https://ilsr.org/chanute-rural-gigabit/; and https://www.soar-ky.org/prtc/.

[15] Town Hall: *"Gig City Goes Quantum: the Amazing Chattanooga, TN Fiber Network Success Story! A Broadband Blueprint for NYC and for Cities across the U.S.,"* July 19, 2023, featuring Gary Bolton, President of the Fiber Broadband Association, Katie Espeseth, VP New Products, EPB, and Clayton Banks, CEO, Silicon Harlem, https://thenationalcall.org/resources/.

[16] https://s3.amazonaws.com/files.fiberbroadband.org/download/3555.4237?AWSAccessKeyId=AKIAIZGD7FMLIYLBZNIA&Expires=1650065068&Signature=CfFGHmOkZaAovAfuGmXXs2hDpKo%3D.

[17] https://www.broadbandworldnews.com/document.asp?doc_id=773546.

[18] https://www.fiberbroadband.org/p/cm/ld/fid=978.

[19] Tim Davies & Pete Cranston, *Youth Work and Social Networking: Interim Report, The National Youth Agency* (May 2008), Social Media Cases, para. #61.

[20] Nino Gugushvili et al., *Facebook use intensity and depressive symptoms: A moderated mediation model of problematic Facebook use, age, neuroticism, and extraversion* at 3, BMC Psych. 10, 279 (Nov. 28, 2022), Social Media Cases, para #96.

addictive, prioritizing profits over children's safety.[21] **Therefore, by increasing Wi-Fi hotspots, the FCC may be increasing the opportunity for children's further exposure to injurious social media platforms, and childhood addiction to those platforms.**

Children's social media addiction is the gravamen of two major lawsuits: (1) a Master Complaint of hundreds of cases for personal injury against defendant technology giants, Meta (Facebook and Instagram), Snap, ByteDance (Tik-Tok) and Google (YouTube), filed on May 15, 2023 in Superior Court in Los Angeles on behalf of children who have been injured or who have died as a result of their use of social media platforms (collectively, the "Social Media Cases")[22] and (2) a Complaint from a coalition of 41 state attorneys general and the District of Columbia against defendant Meta Platforms, Inc. (and related companies, "Meta"), filed on October 24, 2023 (the "AG Complaint").[23] Both complaints assert that the technology companies have designed their platforms to be addictive, being likened in a news article to tobacco and the opioid crisis.[24] Social media platforms' negative effects on children have also been the subject of a congressional hearing.[25]

Taxpayer dollars should not be spent enabling social media addiction. This would further facilitate technology companies to target young users, gather their personal information and viewing habits without parental oversight, and to generate more ad revenue.

The Master Complaint explains that social media platforms are designed to build in "stimuli and social reward mechanisms (e.g., 'Likes') that causes the [children] to compulsively seek social rewards."[26] Given the stimuli and rewards embedded in social media platforms, children and adolescents tend to engage in addictive and compulsive behavior.[27] Teenagers are vulnerable to social approval, and "[g]iven their limited capacity to self-regulate and their vulnerability to peer pressure, children (including teens) are at greater risk of developing a mental disorder from use of Defendants' products."[28] "Products" refers to the technology companies' platforms.

The AG Complaint further amplifies this issue by citing "overwhelming" internal research that the technology company has intentionally maximized the time and attention that children and teens spend on its platform often at the expense of their mental and physical health[29] -- "to entice, engage and

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[21] *Christina Arlington Smith, et al, v. TikTok Inc., et al*, Case No. 22STCV21355, Judicial Council Coordination Proceeding No. 5255, May 15, 2023 [Social Media Cases].

[22] Christina Arlington Smith, et al, v. TikTok Inc., et al, Case No. 22STCV21355, Judicial Council Coordination Proceeding No. 5255, May 15, 2023 [Social Media Cases].

[23] Complaint for Injunctive and Other Relief, filed in federal district court in northern CA, October 24, 2023 [AG Complaint], https://www.documentcloud.org/documents/24080215-meta-lawsuit; see also, https://www.wsj.com/tech/states-sue-meta-alleging-harm-to-young-people-on-instagram-facebook-f9ff4641?st=pqhz5px946q233z&reflink=mobilewebshare_permalink and https://apnews.com/article/metachildrenteensharmslawsuit-17858802d76143d358e38ee15150dc94.

[24] https://www.wsj.com/tech/states-sue-meta-alleging-harm-to-young-people-on-instagram-facebook-f9ff4641?st=pqhz5px946q233z&reflink=mobilewebshare_permalink.

[25] See, e.g., https://www.cruz.senate.gov/newsroom/press-releases/sen-cruz-to-tiktok-official-you-have-dodged-the-questions-more-than-any-witness-i-have-seen-in-my-nine-years-serving-in-the-senate.

[26] Social Media Cases, para. # 128.

[27] Fulton Crews et al., Adolescent cortical development: A critical period of vulnerability for addiction, 86 Pharmacology, Biochemistry and Behavior 189-199 (Feb. 2007), Social Media Cases, para. #79.

[28] Betul Keles et al., *A systematic review: the influence of social media on depression, anxiety and psychological distress in adolescents*, 25(1) Int'l J. Adolescence and Youth 79-93 (2019), Social Media Cases, para. #77.

[29] AG Complaint, para. #2; see also, https://www.wsj.com/tech/states-sue-meta-alleging-harm-to-young-people-on-instagram-facebook-f9ff4641?st=pqhz5px946q233z&reflink=mobilewebshare_permalink.

ultimately ensnare youth and teens."[30] The platform features are designed to be psychologically manipulative "to induce young users' compulsive and extended Platform use."[31] The AG Complaint further specifies how children's vulnerabilities have been exploited, by means of:

> "(a) dopamine-manipulating recommendation algorithms; (b) 'Likes' and social comparison features … ; (c) audiovisual and haptic alerts that incessantly recall young users to Meta's Social Media Platforms … ; (d) visual filter features known to promote young users' body of dysmorphia; (e) content presentation formats, such as infinite scroll, designed to discourage young users' attempts to self-regulate and disengage with Meta's Platforms."[32]

The AG Complaint cites unfair and deceptive practices under state consumer protection laws, and violations under the Children's Online Privacy Protection Act of 1998 (COPPA) by unlawfully collecting personal data of children under the age of 13 without parental consent. The Master Complaint cites Consumer Reports which reported that 7.5 million children under 13 were on Facebook and that age-algorithms have been used to target them.[33] A further breakdown in the U.S. shows that "[i]n 2021, 32% of 7- to 9-year-olds,[34] 49% of 10- to 12-year-olds,[35] and 90% of 13- to 17-year-olds . . . used social media."[36]

In an article, "*Why Tech Leaders Don't Let Their Kids Use Tech*,"[37] it's reported that technology executives restrict or forbid their children's use of the very technology that they are providing to the public, including "the makers of smartphones and tablets, of social media channels and game boxes." Reported examples have included technology "titans" such as former Apple's Steve Jobs and Bill and Melinda Gates have admitted to placing restrictions on their children's use of technology. Chris Anderson, former Wired magazine editor and CEO of 3D Robotics, said that his kids "accuse me and my wife of being fascists and overly concerned about tech, and they say that none of their friends have the same rules. That's because we have seen the dangers of technology firsthand. I've seen it in myself, I don't want to see that happen to my kids."[38]

The Mining of Children's Data, a Profitable Commodity for Tech Companies.

The technology companies design, engineer, market and operate their social media platforms "to maximize the number of children who download and use them compulsively."[39] They count on children seeing their ads to generates ad revenue and to mine "a trove of data about their preferences, habits and behaviors."[40] The safety risks for children were identified early on. Chairman Robert Pitofsky of the FTC identified the risks for children in COPPA testimony to the U.S. Senate Subcommittee on

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[30] AG Complaint, para. #1, https://www.documentcloud.org/documents/24080215-meta-lawsuit.
[31] AG Complaint, para. #2.
[32] AG Complaint, para. #4.
[33] Social Media Cases, para. #58.
[34] Share Too Soon? Children and Social Media Apps, C.S. Mott Child's Hosp. Univ. Mich. Health (Oct. 18, 2021), Social Media Cases, para, 97.
[35] Social Media and Teens, Am. Acad. Child & Adolescent Psychiatry (Mar. 2018); Social Media Cases, para. #97.
[36] Ibid, Social Media Cases, para. #97.
[37] "Why Tech Leaders Don't Let Their Kids Use Tech," https://kidzu.co/health-wellbeing/why-tech-leaders-dont-let-their-kids-use-tech/.
[38] Ibid.
[39] Social Media Cases, para. #52.
[40] Social Media Cases, para. #52.

Communications in 1998, that the internet facilitates and teaches children to disclose personal information without parental awareness or consent and poses safety risks.[41]

Exploiting children's data has become a profitable commodity.[42] The data enables technology companies to sell to advertisers the ability to target narrow tranches of people including children.[43] As the Master Complaint describes,

> "a child user today becomes an adult user tomorrow . . . Defendants' insatiable appetite for growth has created a need for younger and younger users . . . Like Joe Camel of old [tobacco industry ad targeted to children], Defendants' recent attempts to capture pre-adolescent audiences include 'kid versions' of apps that are 'designed to fuel [kids'] interest in the grown-up version.'[44]

The Master Complaint further explains:

> "Defendants' apps addict young users by preying on their already-heightened need for social comparison and interpersonal feedback-seeking.[45] Because of their relatively undeveloped prefrontal cortex, young people are already predisposed to status anxieties, beauty comparisons, and a desire for social validation.[46] Defendants' app encourage repetitive usage by dramatically amplifying those insecurities.[47]"

Former Google CEO, Eric Schmidt states that: "the greatest damage from social media seems to occur during the rapid brain rewiring of early puberty, around ages 11 to 13 for girls and slightly later for boys."[48] The important role of the prefontal cortex in children's development and its exploitation is further explained:

> "Children and adolescents are especially vulnerable to developing harmful behaviors because their prefrontal cortex is not fully developed."[49] The use of social media platforms impairs the normal development of the prefrontal cortex, which: "help[s] inhibit impulsive actions and 'regulate[s] emotional responses to social rewards.'"[50]

The prefrontal cortex develops later than other parts of the brain; therefore,

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[41] Social Media Cases, para. #56.
[42] Social Media Cases, para. #s 52 and 53.
[43] Social Media Cases, para. #52.
[44] Leonard Sax, *Is TikTok Dangerous for Teens*?, Inst. Family Stud. (Mar. 29, 2022), Social Media Cases, para. #53.
[45] Jacqueline Nesi & Mitchell J Prinstein, *Using Social Media for Social Comparison and Feedback-Seeking: Gender and Popularity Moderate Associations with Depressive Symptoms*, 43 J. Abnormal Child Psych. 1427-38 (Nov. 2015), Social Media Cases, para. #91.
[46] Susan Harter, The Construction of the Self: Developmental and Sociocultural Foundations (Guilford Press, 2d ed., 2012), Social Media Cases, para. #91.
[47] Social Media Cases, para. #91.
[48] Social Media Cases, para. #85.
[49] Nino Gugushvili et al., *Facebook use intensity and depressive symptoms: A moderated mediation model of problematic Facebook use, age, neuroticism, and extraversion* at 3, BMC Psych. 10, 279 (Nov. 28, 2022), Social Media Cases, para #64.
[50] Zara Abrams, *Why young brains are especially vulnerable to social media*, Am. Psych. Ass'n (Aug. 25, 2022), Social Media Cases, para. #63.

> "children and adolescents have less impulse control and less ability to evaluate risks, regulate emotions, regulate their responses to social rewards, than adults."[51]

The Master Complaint asserts that Defendants' product features "create and maintain a user's 'flow-like state,' a hyper-focused, hypnotic state, where bodily movements are reflexive and the user is totally immersed in smoothly rotating through aspects of the social media product."[52] This experience of 'flow,' as psychologists describe it, 'fully immerse[s]' users, distorts their perception of time, and is associated with excessive use of social media sites."[53]

Dr. Mark D. Griffiths, Distinguished Professor of Behavioral Addiction at Nottingham Trent University, U.K., explains that the "rewards" on social media platforms that are intermittent and unpredictable, explains "one of the main reasons why social media users repeatedly check their screens."[54] These unpredictable rewards trigger a dopamine release in anticipation of a potential reward; however, since dopamine quickly wears off, it can lead the user to "become disheartened and disengaged."[55] These periodic and unpredictable intervals of rewards keeps the user in a feedback loop, constantly checking for notifications.[56]

The Master Complaint explains how this addiction occurs in children:

> "Social rewards deliver a rush of dopamine and oxytocin, known as the 'happy hormones' … Dopamine is a neurotransmitter that is central to the brain's reward system."[57] "Between the ages of 10 and 12, dopamine receptors multiply . . . which makes social rewards – like compliments or laughter from a friend more pleasant – and adolescents become more sensitive to attention from others."[58]

Adolescents are at a stage where their personalities and identities are forming, much of which "is now reliant on social media."[59] During a period of craving, imaging shows "decreases of frontal cortex activity and executive functioning, leading to impaired 'decision-making, self-regulation, inhibitory control, and working memory.'"[60]

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[51] Social Media Caess, para. #65.
[52] See e.g., *What Makes TikTok so Addictive?: An Analysis of the Mechanisms Underlying the Wrold's Latest Social Media Craze*, Brown Undergraduate J. of Pub. Health (Dec. 13, 2021), Social Media Cases, para. #95.
[53] Nino Gugushvili et al., *Facebook use intensity and depressive symptoms: A moderated mediation model of problematic Facebook use, age, neuroticism, and extraversion* at 3, BMC Psych. 10, 279 (Nov. 28, 2022), Social Media Cases, para #95.
[54] AG Complaint, para. #157.
[55] AG Complaint, para. #158.
[56] AG Complaint, para. #159.
[57] Zara Abrams, *Why young brains are especially vulnerable to social media*, Am. Psych. Ass'n (Aug. 25, 2022), Social Media Cases, para. #66.
[58] Zara Abrams, *Why young brains are especially vulnerable to social media*, Am. Psych. Ass'n (Aug. 25, 2022), Social Media Cases, para. #68.
[59] Betul Keles et al., *A systematic review: the influence of social media on depression, anxiety and psychological distress in adolescents*, 25(1) Int'l J. Adolescence and Youth 79-93 (2019), Social Media Cases, para. #68.
[60] George Koob & Nora Volkow, *Neurobiology of addiction: A neurocircuitry analysis*, 3(8) Lancet Psychiatry 760-773 (August 2016), Social Media Cases, para. #70.

Social psychologist Adam Atler explains that "[t]he minute you take a drug, drink alcohol, smoke a cigarette . . . when you get a like on social media, all of those experiences produce dopamine, which is a chemical associated with pleasure. When someone likes an Instagram post, or any content that you share, it's a little bit like taking a drug. As far as your brain is concerned, it's a very similar experience."[61] Once the brain makes this association, the anticipation of a reward can now trigger a dopamine rush.[62]

The Master Complaint goes on to explain that:

> "Conversely, if the stimulus is withheld, feelings of fatigue and anxiety or depression may be experienced, along with decreased sensitivity to the stimulant, which is associated with the withdrawal component of addiction."[63] "Youth are more susceptible than adults to feelings of withdrawal when a dopamine hit wears off. Depending on the intensity, delivery and timing of the stimulus, and the severity of its withdrawal, these feelings can include anxiety, dysphoria and irritability.[64] Children and adolescents also are more likely to engage in compulsive behaviors to avoid these symptoms . . ."[65]

Therefore, the FCC may be enabling childhood social media addiction by enabling more Wi-Fi hotspots which may benefit the technology companies, but not the children, as amply demonstrated in the Master Complaint of the Social Media Cases and the AG complaint.

(4) THE FCC's FAILURE TO COMPLY WITH AN APPELLATE COURT'S DECISION REQUIRING THAT THE FCC RE-EXAMINE ITS RF EXPOSURE LIMITS IN RELATION TO ITS EFFECTS ON CHILDREN

The Court of Appeals for the D.C. Circuit ruled against the FCC in August, 2021, when the FCC declined to update its RF radiation emission limits dating back to 1996. The limits were challenged as out-of-date, not based on science, and placing the general population at risk. The Court remanded the RF emission limits back to the FCC, calling out the FCC for acting in an ***"arbitrary and capricious"*** manner in ***"its complete failure to respond to comments concerning environmental harm caused by" RF radiation below the current FCC emission limits.***[66] Those comments in the FCC docket consisted of 11,000 pages of peer-reviewed, scientific studies of proven harms, and hundreds of people reciting their injuries, from RF radiation. The Court also cited the FCC's failure to review those studies, **or examine its effects on children or long-term exposure.**[67] The Court continued to admonish the FCC:

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[61] Eames Yates, *What happens to your brain when you get a like on Instagram*, Business Insider(Mar. 25, 2017); Soren Krach et al, *The rewarding nature of social interactions*, 4(22) Frontiers in Behav. Neuro (May 28, 2010); Julian Morgans, *The Secret Ways Social Media is Built for Addiction*, Vice (May 17, 2017).

[62] Social Media Cases, para. #72.

[63] Substance Abuse and Mental Health Services Administration (US) Office of the Surgeon General (US). Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health. Washington (DC); US Dept of Health and Human Services; 2016 Nov., Chapter 1, Introduction and Overview of the Report, Social Media Cases, para. #73.

[64] George Koob & Nora Volkow, *Neurobiology of addiction: A neurocircuitry analysis*, 3(8) Lancet Psychiatry 760-773 (August 2016), Social Media Cases, para. #73.

[65] Social Media Cases, para. #73.

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

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

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

As scientists have warned, the "safety" limits protect industry, not people, since harmful bio-effects can occur well below those limits.[68] To date, the FCC has failed to update its 1996 limits, and **can no longer be viewed as safety limits to protect the public.** Instead, they serve as a **safe harbor for industry to provide immunity** from liability for personal injury, **no matter how badly children and others are injured**.[69]

The FCC **has failed to examine its effects on children**. Yet, the FCC's rule to expose children to more RF radiation by making Wi-Fi accessible on school buses ignores entirely the court's remand order to the FCC.

Would you board a plane whose safety guidelines have not been updated since 1996? Or buy a car under those conditions? Then why would the FCC want to expose children to RF radiation with more Wi-Fi hotspots, especially in light of the Court's remand order with specific reference to effects on children?

(5) THE SETTLED SCIENCE OF ADVERSE BIO-EFFECTS OF WI-FI RADIATION EXPOSURE ON CHILDREN

Children are particularly vulnerable and are adversely affected by RF radiation in their environment, homes and schools.[70] A special risk factor has been identified for children "due to their smaller body mass and rapid physical development, both of which magnify their vulnerability to known carcinogens, including radiation."[71] The American Academy of Pediatrics has pointed out that children are disproportionately affected by RF radiation due to their lower bone density and amount of fluid in the brain allowing for absorption of greater quantities of RF radiation than in adults.[72]

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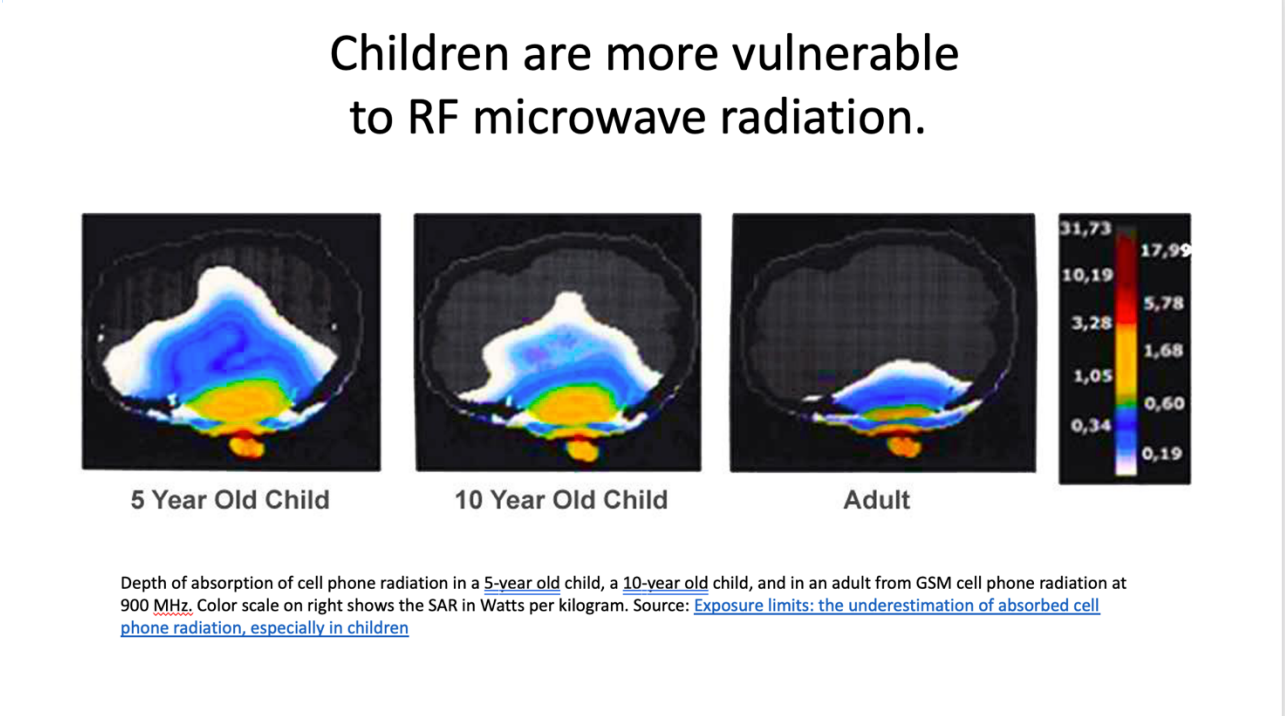
[67] Environmental Health Trust, et al v FCC, D.C. Court of Appeals, 2021.
[68] The 5G Appeal, http://www.5gappeal.eu/the-5g-appeal/.
[69] See also a comprehensive briefing, https://ehtrust.org/wp-content/uploads/Setbacks-Ordinances-Health-Liability-for-Wireless-Facilitites-.pdf and https://ehtrust.org/wp-content/uploads/5G-Health-and-Policy-New-York-City-March-15-2023-.pdf.
[70] *Children and Wireless Radiation,* https://ehtrust.org/educate-yourself/children-and-wireless-faqs/.
[71] *Key Scientific Evidence and Public Health Policy Recommendations*, Supplement 2012, at 21, 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/.

Children's "brain tissues are more absorbent, their skulls are thinner and their relative size is smaller."[73] RF radiation penetrates more deeply into the skulls of children compared to adults,[74] as shown below in cell phone usage.[75]



Source: Exposure limits: the underestimation of absorbed cell phone radiation, especially in children, Gandhi, Morgan, Augusto de Salles, Han, Heberman, Davis, October 14, 2011.[76]

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."[77] It also increases the risk of childhood leukemia.[78]

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[72] *Key Scientific Evidence and Public Health Policy Recommendations*, Supplement 2012, at 21, 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/.

[73] Ibid.

[74] See, Dr. Melnick, London 5G Conference at 39:00, 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/.

[75] *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/.

[76] Ibid.

[77] *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.

[78] *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.

There are also neurological implications to RF radiation exposure for children.[79] Cell towers near schools and Wi-Fi in schools are potentially hazardous to children.[80]

- 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.[81]

- 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.[82]

- 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.[83]

While children absorb more RF radiation than adults, fetuses are at even greater risk.[84] 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."[85]

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 conduct problems and 34% more peer problems."[86] A study involving 24,499 children found a 23% increase of emotional and behavioral difficulties.[87]

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[79] 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/.

[80] Dr. Magda Havas: WiFi in Schools is Safe. True or False?, https://www.youtube.com/watch?v=6v75sKAUFdc.

[81] *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.

[82] 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/.

[83] Child With Heart Problems From Wireless: 5G Health Risks California SB 649 Hearing, https://www.youtube.com/watch?v=OgNLR9fQOX4&list=PLT6DbkXhTGoDakSqp1i_7milpwGx4xMFq.

[84] *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.

[85] 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.

[86] *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.

[87] 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

Therefore, RF radiation can produce adverse health outcomes in children, a vulnerable population, whose parents have not been informed of potential health hazards of RF radiation. **Wi-Fi hotspots would exponentially increase children's cumulative exposure to RF radiation and associated bio-effects. Who would be required to measure the level of exposure?**

In a **ground-breaking decision in the United Kingdom**, a child was recognized with electro-magnetic disability and was awarded accommodation, meaning that the school was mandated to make accommodation for the child's condition.[88] This was decided in 2022 by the Upper Tribunal of the Administrative Appeals Chamber, which is to say that the decision is precedent setting in the U.K. In the child's own words:

> I am a 13-year-old girl with EHS [electro-magnetic hypersensitivity]. I have headaches, insomnia and other symptoms sometimes when exposed to WiFi or other kinds of EMF [electro-magnetic frequency]. . .These can become very severe . . . I can feel things and sense things most people can't. This has protected my health . . . I have previously been unable to go to school, as the school I went to put in WiFi . . . If you have EHS and are struggling to stay in good health, or can't go to school, or work, don't give up . . . People are becoming more aware of this condition, and even if right now it seems like nothing will ever change, it already is.[89]

However, in 2015, seven years prior to this decision, a 15-year old girl in the U.K. who had developed headaches and bladder problems attributed to her exposure to Wi-Fi routers in her school did not experience a positive outcome.[90] The school not only failed to acknowledge her severe condition but punished the girl for leaving class rooms containing routers that were causing her condition. In an apparent cry for help, the girl then either accidentally or intentionally, hanged herself, as her mother describes she was driven to despair.

Those suffering injuries from exposure to RF radiation are known as having electromagnetic sensitivity (EMS), also referred to as radiation poisoning or microwave sickness.[91] Hence, those with ensuing disabilities are referred to as "EMS Disabled." They cannot use or be near a technology such as Wi-Fi that is injuring them. It is the persistent pulsations of RF radiation that cause adverse bio-effects and ensuing disabilities.[92] It is the pulsed high peak power emissions that, for example, increase the potential for traumatic brain injury and consequent cognitive impairments.[93]

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.

[88] https://ehtrust.org/education-health-care-plan-ehcp-awarded-aug-2022-for-uk-child-on-the-basis-of-electromagnetic-hypersensitivity-ehs/.

[89] Ibid.

[90] https://www.pressreader.com/uk/daily-mail/20151201/281904477099139

[91] Electromagnetic Sensitivity, also known as "microwave sickness," https://ehtrust.org/science/electromagnetic-sensitivity/.

[92] Dr. Magda Havas: WiFi in Schools is Safe. True or False? at 7:15, https://www.youtube.com/watch?v=6v75sKAUFdc; see also, 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.

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

EMS disabilities encompass a constellation of symptoms which can include: sleep disturbances, chronic fatigue, chronic pain, poor short-term memory, difficulty concentrating (e.g., "brain fog"), skin problems, dizziness, loss of appetite, heart palpitations, tremors, vision problems, tinnitus, nose bleeds, asthma, reproductive problems and headaches, to name a few.[94] There are other sources showing the proliferation of such disabilities.[95] The symptoms are from the physiological injuries that individuals, including children, have sustained from exposure to wireless devices and facilities.[96]

Hazards of Wi-Fi for Children in School and at Home via Wi-Fi Hotspots

Providing Wi-Fi hotspots outside of a classroom is not an appropriate E-Rate use case because it requires extending the classroom campus from a fixed building location to areas away from a traditional classroom that are unsupervised, and where the hotspot is rife with student safety, health and potential personal injury hazards. Also, allowing unsupervised Internet access allows children to fall prey to social media like Tik-Tok. Lawmakers voiced strong opposition to funding Wi-Fi hotspots because this type of program doesn't even fall under the scope of an e-rate program.[97] **Anyplace a student can connect to the internet via Wi-Fi hotspots should not be the new academic standard.** This would lower the bar substantially for what should be considered a nurturing space for learning equivalent to a classroom. Learning environments need to be optimized to create a safe space with adult supervision for every child, provide an ergonomic laptop set-up[98] on a desk or table, and provide Americans with Disabilities Act (ADA) access accommodations for those who need it, especially in this case, for those that are Electromagnetically Sensitive (EMS).[99]

Students suffering from EMS – EMS students – would not be able to tolerate Wi-Fi hotspots, just as they cannot tolerate Wi-Fi nodes and routers in a classroom, which are typically set at the highest power levels.[100] Wi-Fi is set at high power levels – maximum transmission whether needed or not – and severely EMS students may not be able to tolerate them at all. EMS children will not have the same opportunities for broadband access if the E-Rate program concentrates on Wi-Fi hotspots to bridge the "homework gap." They will be perpetually left behind and will continue to be part of the "homework gap" because their only safe access is via wired connections to broadband, such as by coaxial cable or fiber. If given a Wi-Fi hotspot, they will be trapped in their home being radiated with radio frequency radiation (RFR), a Group 2B[101] possible carcinogen and telecom industry known air pollutant. RFR can be

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[94] "Electrohypersensitivity as a Newly Identified and Characterized Neurologic Pathological Disorder" Int'l Journal of Molecular Sciences, https://www.mdpi.com/1422-0067/21/6/1915.

[95] 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/.

[96] 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.

[97] Letter from Sen. Cruz and Rep. Rodgers to FCC Commissioner Gomez, Sept. 26, 2023, opposing using the E-Rate Program for hotspots for school children to use outside of the classroom, https://www.commerce.senate.gov/services/files/8DA42254-FE98-48F7-8F8B-B18319806A3D; see also, dissent by FCC Commissioner Brendan Carr in the NPRM, https://www.neca.org/docs/default-source/wwpdf/public/fcc2391.pdf.

[98] https://www.doe.virginia.gov/home/showpublisheddocument/2502/637952001829400000

[99] https://emfsafetynetwork.org/safety-precautions/electrical-sensitivity/

[100] https://www.techsafeschools.org/reducing-power

[101] https://monographs.iarc.who.int/list-of-classifications International Agency for Research on Cancer, World Health Organization, *IARC Monographs on the Identification of Carcinogenic Hazards to Humans*, rev 10-11-2023

toxic and is listed in the same category as these other possible carcinogens: lead, Mirex, gas engine exhaust and chloroform.

Wi-Fi hotspots will expose students to potentially toxic exposure to RFR[102] who may become subject to a higher likelihood of cancer[103] and permanent physical injuries as a result. This would amount to a dereliction of *in loco parentis* duties of the Department of Education to protect the safety and welfare of all the children under the supervision of their teaching and administrative staff during each school day or activity.

These Wi-Fi hotspots would probably be in extreme proximity to children. This becomes problematic. Depending on where the Wi-Fi hotspot is located, the main part of the children's bodies most exposed to RFR would be the top of their heads. This type of exposure should be avoided, not encouraged, as it has the capability of compromising the blood brain barrier with substantial evidence of impaired memory and damage to neurons. Research conducted by Dr. Salford, Dr. Nittby and Dr. Perrson, states that "EMF radiation leads to increased permeability of the Blood Brain Barrier (BBB) at non-thermal exposure levels. Damaging effects from radiofrequency EMF upon neurons has been shown after 28 days and 50 days."[104] Also, "When the BBB is more permeable, more toxins circulating in the blood can reach the brain."[105] Behavior can also be adversely impacted resulting in conditions such as depression, insomnia, impaired critical thinking and reasoning and suicide.[106, 107]

Wi-Fi in Schools

While there is medical research on the hazards of Wi-Fi for children in schools, these hazards would also extend to providing Wi-Fi in their homes via Wi-Fi hotspots. That means that children will be exposed continuously —at school and at home – to potentially hazardous radiation.

Letters from Doctors and Scientists Warning the Los Angeles Unified School District (LAUSD) Against Wi-Fi in Their Schools[108]

Letter from The American Academy of Environmental Medicine

Letter from Martha Herbert, M.D., Harvard Medical School, Massachusetts General Hospital

Letter from Martin Blank, Ph.D., Department of Physiology and Cellular Biophysics, Columbia University, New York, NY

Letter from Joel M. Moskowitz, Ph.D., School of Public Health, University of California, Berkeley

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[102] https://ntp.niehs.nih.gov/whatwestudy/topics/cellphones#:~:text=NTP%20conducted%20two-year%20toxicology%20studies%20in%20rats%20and,were%20published%20as%20Technical%20Reports%20in%20November%202018, National Toxicology Study (NTP).

[103] https://rumble.com/v2930dw-dr.-barrie-trower-the-truth-about-5g-and-wi-fi-part-1.html Dr. Barrie Trower - *"The Truth About 5G & Wi-Fi"* - Part 1.

[104] https://ehtrust.org/wi-fi-wireless-radio-frequency-radiation-can-damage-the-blood-brain-barrier/.

[105] https://ehtrust.org/wi-fi-wireless-radio-frequency-radiation-can-damage-the-blood-brain-barrier/.

[106] https://rumble.com/v2930dw-dr.-barrie-trower-the-truth-about-5g-and-wi-fi-part-1.html , Dr. Barrie Trower - *"The Truth About 5G & Wi-Fi"* - Part 1.

[107] https://www.sciencedirect.com/science/article/pii/S0013935118300355?via%3Dihub , *Wi-Fi is an important threat to human health*, Dr. Martin Pall, March 2018.

[108] https://manhattanneighbors.org/parents-schools/

Letter from Dr. Magda Havas, B.Sc., Ph.D., Trent University, ON, Canada

Letter from Toni Stein, Ph.D., West Coast Program Director of Environmental Health Trust

Letter from Cindy Sage, M.A., Sage Associates; Co-Editor, BioInitiative 2012 Report

Letter from Devra Davis, Ph.D. MPH, Environmental Health Trust

Industry Recognizes Bio-Hazards of Wireless Technology

To place RF radiation hazard in perspective, the very industry that offers wireless services views RF radiation as a pollutant and bio-hazard in published consumer brochures for cell phones, for which they disclaim liability for personal injury.[109] For example, an industry brochure for consumers for cell phone insurance protection states:

> ***"Pollutants means … any artificially produced electric fields, magnetic field, electromagnetic field, sound waves, microwaves and all artificially produced ionizing or non-ionizing radiation …***."[110]

Similar definitions for pollution are in the product protection plans for other telecommunications companies.[111] Industry's published annual reports and SEC reports[112] also warn of the risk of litigation arising from personal injuries from their wireless services. 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 these exposures.[113,114,115] Insurance companies, reviewing potential claims from a risk analysis perspective, have assessed RF radiation as "high" risk and is, therefore, generally excluded from coverage.

As early as April 2000, a study commissioned by a major telecom company showed findings of (1) adverse health impacts associated with exposure to RF radiation and (2) strong warnings to significantly lower the power of RF radiation exposure to the public.[116] The findings included risks of cancer (of the central nervous system and testicular cancer), leukemia, damage to the immune system and cognitive impairments. The study also recognized electro-sensitivity and the importance of developing a strategy

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[109] https://ehtrust.org/wp-content/uploads/device-protection-brochure-nationwide.pdf.

[110] https://ehtrust.org/wp-content/uploads/device-protection-brochure-nationwide.pdf.

[111] https://ehtrust.org/key-issues/electromagnetic-field-insurance-policy-exclusions/, https://ehtrust.org/wp-content/uploads/ATT-Multi-Device-Protection-Pack-Insurance.pdf, https://ehtrust.org/wp-content/uploads/Sprint-Insurance-Terms-and-Conditions-Downloaded-2019.pdf.

[112] See, e.g., Verizon's 2021 U.S. SEC Form 10–K at 17 which states: https://www.verizon.com/about/sites/default/files/2020-Annual-Report-on-Form-10-K.PDF.

[113] https://5gtechnologynews.com/insurance-companies-can-refuse-claims-related-to-electromagnetic-radiation-illnesses/

[114] https://ehtrust.org/wp-content/uploads/Swiss-Re-SONAR-Publication-2019-excerpt-1.pdf, pg. 29.

[115] https://ehtrust.org/key-issues/reports-white-papers-insurance-industry.

[116] Mobile Telecommunications and Health/Review of the current scientific research, ECOLOG Institut, Hannover, April 2000, available at https://docs.google.com/document/d/1Rd2c900GURf9YYQY-L2MHAFDYGlEt2R1tyMZYQhZTEA/edit; ECOLOG is a research organization founded in 1991 by scientists from the University of Hannover.

to address the problem, particularly in vulnerable populations in "residential areas, **schools, nurseries, playgrounds**, hospitals…"[117]

Bio-Hazards on a Larger Scale

On a larger scale, there have been serious risks to public health and safety:

1. There has been no pre-market testing of 5G for public health or safety, as confirmed by US Sen. Blumenthal (CT) during a Feb. 2019 hearing of wireless telecom executives. The telecom executives conceded that they were not aware of any independent scientific studies on the safety of 5G. Sen. Blumenthal also criticized the FCC and the FDA for inadequate answers on questions of public health. Sen. Blumenthal concluded, "We're kind of flying blind here as far as health and safety is concerned." [118]

2. Three studies since Jan 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 arrythmia, burning skin, trouble concentrating.[119] The significance of these reports is that non-ionizing radiation[120] from 5G — well below levels allowed by authorities — can cause health problems in individuals who had no prior history of electromagnetic sensitivity.[121] Dr. Lennart Hardell, lead author of the reports 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."[122] Dr. Hardell has also co-authored other studies regarding the adverse health impacts of exposure to electro-magnetic radiation, see Appendix A (attached hereto and incorporated herein by this reference) for a list of those studies.[123]

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[117] Ibid.

[118] 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/.

[119] 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 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-mE3XeBxqaXPQdFxslf9Q23bMCer9vgUBHnCvJXBrgBv-w7YdRUDwF0; see also, The microwave syndrome or electro-hypersensitivity: historical background https://pubmed.ncbi.nlm.nih.gov/26556835/.

[120] https://childrenshealthdefense.org/emr/emf-key-terms-descriptions/.

[121] https://childrenshealthdefense.org/emr/emf-wireless-health-impacts/.

[122] https://www.stralskyddsstiftelsen.se/two-studies-show-that-5g-caused-the-microwave-syndrome-in-healthy-persons/.

[123] See also, generally, www.environmentandcancer.com; letter to the Petaluma, CA School District at https://www.dropbox.com/scl/fi/1pztwf4e2no2ptjfsrg0t/Hardell-Letter-to-Petaluma-City-Schools-8-4-16.pdf?rlkey=d0v5mcnznvdr0uq1uj4u7b553&dl=0, and petition by Dr. Hardell, et al at https://www.dropbox.com/scl/fi/brpeoaxo7bul42t66188b/Hardell-et-al-Petition-about-wifi-in-schools-2-24-17.pdf?rlkey=dqlblcsq0iz9xo6d3kb0q72bx&dl=0.

3. The WHO'S International Agency for Research on Cancer (IARC) classified RF radiation (2G and 3G) as a possible human carcinogen back in 2011,[124] similar to lead, diesel fuel and gasoline engine exhaust.
    a. The WHO carefully states on its website that "only a few studies have been carried out at the frequencies to be used by 5G"[125] thereby skirting the issue of 5G safety. Indeed, a number of studies since Jan 2023 have already shown harm, as referenced above.[126]
    b. When the WHO states on its website lack of causality of harm from wireless radiation,[127] it is referring to the 2011 IARC "2B" classification based on possible carcinogenicity. However, over a decade later, Dr. Miller, a former Senior Epidemiologist and Senior Scientist at the IARC has stated, **"[t]here is sufficient evidence to now classify radiofrequency radiation as a human carcinogen."** [128]

4. The National Toxicology Program (NTP), commissioned by the Food and Drug Administration (FDA) to conduct a $30 million study, in 2018 found clear evidence of cancer.[129] NTP is one of the most prestigious institutions in the world in toxicology. Indeed, in 1999 the FDA nominated to the NTP the study of RF radiation "with a high priority," to conduct animal studies, stating that it was "**not scientifically possible to guarantee that non-thermal levels of microwave radiation . . . will not cause long-term adverse health effects.**"[130]

5. As early as 2015, over 230 scientists from over 40 countries have signed "The 5G Appeal" to halt the proliferation of 5G -- The International Scientists' Appeal to the United Nations to Protect Humans and Wildlife from the unconstrained proliferation of wireless radiation.[131] Other scientists have joined in consensus statements about their 5G concerns.[132]

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[124] https://www.iarc.who.int/wp-content/uploads/2018/07/pr208_E.pdf.
[125] https://www.who.int/news-room/questions-and-answers/item/radiation-5g-mobile-networks-and-health.
[126] 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 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-mE3XeBxqaXPQdFxslf9Q23bMCer9vgUBHnCvJXBrgBv-w7YdRUDwF0; see also, The microwave syndrome or electro-hypersensitivity: historical background https://pubmed.ncbi.nlm.nih.gov/26556835/.
[127] https://www.who.int/news-room/questions-and-answers/item/radiation-5g-mobile-networks-and-health.
[128] Professor Miller, MD, FRCP, FRCP (C), FFPH, FACE, is an eminent physician and expert in preventative medicine, a scientific advisor to various scientific and health authorities, and a former Senior Epidemiologist and Senior Scientist at the World Health Organization's (WHO) International Agency for Research on Cancer (IARC), https://phiremedical.org/2020-nir-consensus-statement-press-release/.
[129] *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.
[130] Letter from the Dept of Health and Human Services to the National Toxicology Program at the National Institute for Environmental Health Studies, May 19, 1999, https://ntp.niehs.nih.gov/sites/default/files/ntp/htdocs/chem_background/exsumpdf/wireless051999_508.pdf.
[131] http://www.5gappeal.eu/the-5g-appeal/; see also, Dr. Martin Blank, PhD, Dept of Physiology and Cellular Biophysics, Columbia University, announcing the appeal early on and warning on wireless radiation, https://www.youtube.com/watch?v=HgECRrabuZQ; see also, https://childrenshealthdefense.org/defender/5g-rollout-harm-regulation-profit/.
[132] https://phiremedical.org/wp-content/uploads/2020/11/2020-Non-Ionising-Radiation-Consensus-Statement.pdf.

6. 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.[133]

7. The New Hampshire Commission that studied the health impacts of wireless radiation found that levels below the FCC emission limits can be harmful.[134]

8. 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.[135] **Children were vomiting in their beds,** pets were vomiting and residents were becoming ill.[136]

CONCLUSION

For the foregoing reasons, school children should have the fastest, safest and most secure access to broadband, which is a wired connection – coaxial cable or fiber optics. Providing more Wi-Fi hotspots is not the solution for bridging the "homework gap," rather, a more permanent, wired, solution for school children to have broadband access at home should be deployed. Therefore, for the foregoing reasons set forth in these comments, the E-Rate program for more Wi-Fi hotspots should not be expanded.

On behalf of the Advocates for the EMS Disabled

Respectfully submitted,

Odette J. Wilkens
President & General Counsel
Wired Broadband, Inc. (non-profit)
owilkens@wiredbroadband.org

APPENDIX A

[133] See, e.g., 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/.

[134] http://www.gencourt.state.nh.us/statstudcomm/committees/1474/reports/5G%20final%20report.pdf.

[135] https://ehtrust.org/cease-and-desist-order-against-verizon-cell-tower-by-board-of-health-pittsfield-ma/.

[136] https://ehtrust.org/family-injured-by-cell-tower-radiation-in-pittsfield-massachusetts/.

Studies by Dr. Hardell, et al on the adverse health outcomes from exposure to electromagnetic radiation

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Nilsson M, Hardell L. Development of the microwave syndrome in two men shortly after installation of 5G on the roof above their office. Ann Clin Case Rep. 2023; 8. 2023;2378. https://www.anncaserep.com/open-access/development-of-the-microwave-syndrome-in-two-men-shortly-after-9589.pdf

Hardell L, Nilsson M. Case Report: A 52-year healthy woman developed severe microwave syndrome shortly after installation of a 5G base station close to her apartment. Ann Clin Med Case Rep. 2023;10(16):1-10. https://acmcasereports.org/pdf/ACMCR-v10-1926.pdf

Nilsson M, Hardell L. 5G Radiofrequency radiation caused the microwave syndrome in a family living close to the base stations. J Cancer Sci Clin Ther. 2023;7: 127-134. DOI:10.26502/jcsct.5079203

Nilsson M, Hardell L. A 49-year-old man developed severe microwave syndrome after activation of 5G base station 20 meters from his apartment. J Community Med Public Health 2023; 7: 382. DOI: https://doi.org/10.29011/2577-2228.100382

Nilsson M, Hardell L. Case Report: Both parents and their three children developed symptoms of the microwave syndrome while on holiday near a 5G tower. Ann Clin Med Case Rep. 2023; V12(1): 1-7. https://acmcasereport.org/wp-content/uploads/2023/12/ACMCR-v12-2046-1.pdf

Hardell L, Nilsson M. A woman aged 82 years with electromagnetic hypersensitivity since almost four decades developed the microwave syndrome after installation of 5G base stations in her living vicinity – ethical principles in medicine are violated. J Environ Science Public Health 2023; 7: In press