

**Before the
Environmental Protection Agency
Washington, D.C.**

In the Matter of:)
Request for public comment on the design) Docket ID No: EPA- HQ-OA-2022-0859
and implementation of the Greenhouse Gas)
Reduction Fund program)

**COMMENTS OF ADVOCATES FOR THE EMS DISABLED
December 5, 2022**

The following (collectively, hereinafter, “**Advocates for the EMS Disabled**”) submit these comments in response to the request for public comments relating to the above-captioned matter:¹ Wired Broadband, Inc. (Forest Hills, NY); Children’s Health Defense www.childrenshealthdefense.org; California Fires and Firefighters, Susan Foster and Shannon Shine, Co-Founders (Lyons, CO); Hon. Renee Collymore, Democratic Liaison, 57th Assembly District (Brooklyn, NY); Howard Goodman, Esq. (Forest Hills, NY); 5G Free California, Julie Levine, Executive Director (Topanga, CA); New Yorkers 4 Wired Tech (New York, NY); Pennsylvanians for Safe Technology, Dr. DeSanto Ott PT DPT MS FMCHC, Founder & President, (www.pasafetech.org); Safe Technology Minnesota, Petra Brokken; Leo Cashman (MN); Virginians for Safe Technology, LLC: Jenny DeMarco, Communications Director, Mary Bauer, Retired RF Engineer (Fredericksburg, VA); and 5G Alert Westchester: Ruth F. Moss, Chet F. Moss, Anat Zamberg (Westchester, NY); Sustainable Upton, Laurie Wodin, et al, Co-Administrators (Upton, MA); Safe Tech Forward, Pamela Wallace, Director (Detroit, MI); Janet Fitzgerald (Rowley, MA); Virginia Brown (Talent, OR); Last Tree Laws, Massachusetts, Kirstin Beatty, Director (Holyoke, MA); Jenny Holsinger (Wyoming, MN); Candia Lea Cole (St. Paul, MN); Tom Suttle (St. Paul, MN); Oregon for Safer Technology, Kelly Marcotulli, Executive Director (Ashland, OR); 5G Free Rhode Island, Sheila Resseger, M.A. (Cranston, RI); Eva Bortnick, Electromagnetic Disabled Advocate (OR); Canadian Educators for Safe Technology, Shelley Wright, Director (Innisfil, Ontario, Canada); Rhode Islanders for Safe Technology, Stephen R Dahl, Director (Kingston, RI); Frederick P. Sinclair, Jr, Town of Alfred Planning Board (Alfred, NY); Dr. Nancy VanDover (Durango, CO); Coloradans for Safe Technology

¹ EPA’s Request for Information: Greenhouse Gas Reduction Fund (RFI GHGRF), <https://www.regulations.gov/docket/EPA-HQ-OA-2022-0859/document>.

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Introduction

The EPA is seeking comment on how to allocate monies from the Greenhouse Gas Reduction Fund (the “Fund”), as authorized by the Inflation Reduction Act of 2022 (the “Act”), for the purposes of deploying “zero-emission technologies” and benefiting “low-income and disadvantaged communities.” The optimum solution that addresses both of these purposes is allocating monies to those who would build out fiber optics to and through the premises (FTTP). The superior capacity qualities of fiber over wireless have been affirmed by Tom Wheeler, former FCC Chair, promoting a “fiber first” technology that is “future-proof,” with wireless being a last resort and not a substitute for fiber.²

The EPA’s memorandum on this docket states an assumption, without supporting evidence, that “distributed technologies on residential rooftops” are “zero-emission technologies.” By “distributed technologies on residential rooftops” is meant wireless telecommunications, such as 4G, 5G and their progeny.

Any build out for any 5G wireless networks would not qualify for any of the stated purposes because of the established health hazards of wireless radiation, the growing number of people injured and disabled from wireless radiation, and the expected exponential increase in greenhouse gas (GHG) emissions to fuel the 5G networks, as these comments will show. “5G” is simply a marketing term meaning fifth generation cellular networks. Each of these factors associated with 5G and wireless networks runs contrary to the purposes of the Act and should disqualify any of them and their progeny from funding under the Act.

² 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.

The stated goal in the White House “Fact Sheet” has been to “deliver on [Pres. Biden’s] promise to build an economy that works for working families,” and to “grow the economy from the bottom up” by supporting “community-led projects in disadvantaged communities and address[ing] disproportionate environmental and public health harms related to pollution and climate change.”³ “All people deserve to ... live in healthy communities free from toxic pollutants.”⁴

In sharp contrast, 5G wireless networks, including those “distributed technologies on residential rooftops,” have created toxic zones, forcing working families who cannot otherwise afford to move to a safer location to live in wireless radiation toxic zones. Pittsfield, MA is one such glaring example where 17 people were injured soon after a cell tower was installed in their neighborhood in the Berkshires, with children vomiting in their beds, many of whom having to evacuate their homes.⁵

Another glaring example is of a former actress and showroom model who, at 84 years old and in low-income housing, suffered with tremendous agony, including nausea and vomiting almost daily for over two years, from persistent exposure to wireless radiation when wireless transmitters were installed on the roof directly above her studio apartment.⁶ She is elderly, disadvantaged, low-income and disabled, yet there was no accommodation or relief for her despite her voiced objections. She was forced to abandon her apartment of approximately 45 years. Therefore, any continued funding for more “distributed technologies on residential rooftops” and other wireless facilities, without due process and with the silencing of residents who object to them,⁷ means the perpetual continuation of these injuries. The irresponsible and unconstrained proliferation of “distributed technologies” of wireless transmitters will create more toxic zones and exacerbate the “disproportionate environmental and public health harms related to pollution and climate change”⁸ experienced predominantly by disadvantaged communities.

³ Fact Sheet: Inflation Reduction Act Advances Environmental Justice, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/17/fact-sheet-inflation-reduction-act-advances-environmental-justice/>.

⁴ Id.

⁵ <https://ehtrust.org/statement-by-courtney-gilardi-after-pittsfield-board-of-health-votes-to-send-cease-and-desist-order-for-verizon-cell-tower/>.

⁶ See, FCC submission, white paper, May 16, 2022, exhibits, “In Their Own Words,” submitted as a separate document to these comments.

⁷ See, e.g.:

Expert Forum on Cease & Desist Order on Verizon in Pittsfield, [https://www.youtube.com/watch?v=LZLbcOHpns8](https://www.youtube.com/watch?v=LZLbcOHpns8;);

Amelia Gilardi’s Slide Show on Pittsfield: <https://www.youtube.com/watch?v=PSHXWX5fk7s>;

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

@gracie5gremoval, <https://docs.google.com/document/d/e/2PACX->

[1vSZtImdqVtULrxEE7JT2M6or_1Mt2eXQHvY92E2J3bnWdC2lyc6YQVnfljgNztBF0X8UejXSUHzs1QC/pub](https://docs.google.com/document/d/e/2PACX-1vSZtImdqVtULrxEE7JT2M6or_1Mt2eXQHvY92E2J3bnWdC2lyc6YQVnfljgNztBF0X8UejXSUHzs1QC/pub).

⁸ Fact Sheet: Inflation Reduction Act Advances Environmental Justice, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/17/fact-sheet-inflation-reduction-act-advances-environmental-justice/>.

Therefore, what has been occurring with “distributed technologies” is not the panacea that the EPA, the FCC or other government agencies are making them out to be. These “distributed technologies” are not protective of people’s health or the value of their property in which they may have invested their life savings. They are being forced upon working families who do not want or need them, and who are routinely being denied a voice in whether to accept or reject them.⁹

Rather than provide the intended support to “community-led projects in disadvantaged communities,” the EPA is focusing on deploying “distributed technologies” that are working **against** “community-led projects.” The telecom industry is ensuring that their rights to public hearing, participation or consent are being ignored or eliminated. Rather, a top-down approach is being implemented on the ground, with the telecom industry advising local governments, falsely, that their “hands are tied” and must, through federal preemption, allow them to place any of these technologies anywhere they want to increase their capacity and bamboozling local and state officials to believing them. A recent ruling in federal district court in NY disagreed, noting that while increased capacity may be beneficial and profitable, it is “not protected by the [TCA].”¹⁰ Therefore, any assertion of federal preemption regarding 5G deployment is a fallacy and is not supported by the TCA; although this decision relates to NY jurisdiction, it is the correct result and should be applied for all jurisdictions in the U.S.

Therefore, “distributed technologies” and purportedly “community-led projects” are contradictory, in this context. In fact, this contradictory coexistence of terms is perpetuating the notion of “reducing regulatory and permitting barriers” to otherwise pave the way for rapid deployment being pushed by the telecom industry. These are not “barriers.” In fact, regulations and permitting rules are designed to protect residents’ health and welfare and to give them a right to be heard. Since the purpose of providing broadband is to provide connectivity, residents’ involvement in the process should not be cut off as a barrier. Rather, this notion of “barriers” is being used to further erect barriers to superior service by forcing residents to accept wireless, an inferior service, and a euphemism to ERECT barriers against residents, to take away their right to hearings and their right to be heard, and a barrier to entry for local fiber operators to provide fiber optics to the premises (FTTP). Residents are being exposed to wireless radiation that they do not want or need.

To allow for bona fide “community-led projects,” which are not in name only, the EPA should be **technology neutral** and allow the communities to decide which technology is better for them. The EPA’s stated purposes of the Act should, instead, be to provide funding for:

⁹ See ft 11 supra.

¹⁰ Extenet v. Flower Hill decision summary, <https://www.americansforresponsibletech.org/flower-hill-decision>.

“technologies that provide superior phone and broadband coverage.”

That would be more in keeping with a participatory and democratic process to ensure that the projects are, indeed, “community-led projects.”

A more fundamental question is, however, why is the EPA meeting out funding for technologies that it does not regulate? At this time, the EPA does not regulate non-ionizing radiation emitted from these “distributed technologies.”¹¹ The agency was defunded at the time of the passage of the Telecommunications Act of 1996 (TCA) due to heavy telecom industry influence when the agency concluded health hazards associated with wireless radiation.¹² Having said that, the EPA should reclaim its jurisdiction in regulating non-ionizing radiation since the FCC is not a health agency and neither the FCC nor the FDA are regulating non-ionizing radiation for safety. At that time, the EPA had already concluded that wireless radiation fell into two hazardous categories: a category 2B possible human carcinogen and a probable human carcinogen.¹³ Unfortunately, the results were buried.¹⁴

The EPA states that these “distributed technologies” are aimed at helping “low-income and disadvantaged communities.” Exactly the opposite is true. Over 150 communities and organizations around the country are protesting what they view as an onslaught of hazardous wireless radiation and aesthetic blight of cell towers cropping up outside their homes and children’s bedrooms, and over their roofs in apartment buildings.¹⁵ Numerous personal injuries are documented in the submissions to the FCC on May 16, 2022 and June 30, 2022, and to the National Environmental Justice Advisory Council (NEJAC) on July 6, 2022 (these submissions are being provided as attachments, and are incorporated in these comments by this reference).

Moreover, there is a large, diverse and growing disadvantaged community – which the Act purports to help – of disabled individuals who suffer significant and continuous injuries 24/7 from exposure to electromagnetic radiation or radio-frequency (RF) radiation from wireless base stations, cell towers, “5G” cells, “smart” utility meters, and other telecommunications infrastructure and devices (collectively, “distributed technologies” or “wireless infrastructure”)

¹¹ <https://www.epa.gov/radiation/radiation-resources-outside-epa>.

¹² See Overpowered, What Science Tells Us About the Dangers of Cell Phones and Other WiFi-Age Devices, at 110-114, Martin Blank, PhD, an EMF expert with PhDs from Columbia University and University of Cambridge.

¹³ Id.

¹⁴ Id.

¹⁵ For a listing of over 150 organizations around the country objecting to the irresponsible and unconstrained placement of cell towers, 5G nodes and other wireless technology,

<https://www.americansforresponsibletech.org/partners>.

Residents claim microwave radiation concerns are met with little response from elected officials

<https://cranstonline.com/stories/its-always-falling-on-deaf-ears,178291>.

placed right next to or on top of their homes, businesses, schools, libraries, medical facilities and other public locations which are frequented by the public. Those suffering symptoms are estimated to range up to 30% of the American population, or almost 100 million people.¹⁶ They are the “EMS disabled.” (EMS means electromagnetically sensitive, referring to physiological injuries caused by electromagnetic radiation.)

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

The alternative is FTTP, and communities should and must be given the opportunity to choose, without coercion or duress.

In these comments, we will address the following:

1. Guidelines for determining funding – encourage stakeholder input in the process
2. The current mode of wireless deployment is supplanting the democratic process
3. Legal perspective – summary
4. Any decarbonization of the atmosphere cannot occur without the decarbonization of RF radiation (i.e., electrosmog)
5. Installing “distributed technologies” are a public safety issue
6. EMF/RF’s adverse Impacts on Birds, Bees and Trees
7. The EPA should regain its jurisdiction on regulating non-ionizing radiation
8. Fiber optics – the superior choice – adopting Tom Wheeler’s “fiber-first” policy
9. Fiber optics is good for the workforce and is good for a new energy economy
10. The EMS disabled are disadvantaged communities – children are more vulnerable to RF microwave radiation.

Those joining in these comments comprise grass-roots organizations, non-profits and individuals providing support to people who have been injured and who are EMS disabled. The lessons learned from other pollutants and toxins, such as asbestos, lead and smoking, indicate that the longer a government refuses to follow established science, the more harmful it is for

¹⁶ 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>.

people's health and the economy. That RF radiation can be hazardous is settled science, the majority view in peer-reviewed scientific communities and established by an industry commissioned scientific report.¹⁷

Guidelines for Determining Funding – Encourage Stakeholder Input in the Process

It is critical that all voices and perspectives are heard and to obtain the consensus and consent from various important stakeholders: school superintendents, parents, local residents, the elderly, economic development groups, departments of public works, police representatives, fire department representatives, hospital leaders, nonprofits, local grass-roots organizations, local internet service providers (ISPs), local fiber operators, and groups for those disabled or suffering from wireless radiation sickness (i.e., The Electrosensitive Society (at <https://www.electrosensitivesociety.com/>), and other similar groups; (see also, <https://pubmed.ncbi.nlm.nih.gov/26372109/>). In rural areas, stakeholders would also include Rural Electric Associations (REAs), to the extent that REAs exist in their respective areas.

State and local government should be required to hold public meetings and hearings inviting, at a minimum, the foregoing groups, as well as the community at large, for comment and discussion. Notice of such meetings/hearings should be published widely, and repeatedly (to ensure that all stakeholders who will be affected actually see the notice – actual notice rather than constructive notice), on social media, print publications, and special invitations to the above groups, with sufficient advance notice of at least several months.

The protocol for these hearings/meetings should ensure that legacy and incumbent providers and their affiliates should not be given preferential treatment and should not be allotted more time to speak at the meetings/hearings than others. All should be given equal time to speak for at least 5 minutes, or whatever greater time may be allotted, but in no event less than 5 minutes. If there is any question and answer period, all individuals and entities should be given equal time.

Residents must be given the right to choose the method of broadband access (wired or wireless), by providing them with sufficient notice and the power to consent to wired or

¹⁷ Mobile Telecommunications and Health/Review of the current scientific research, ECOLOG Institut, Hannover, April 2000, <https://ehtrust.org/wp-content/uploads/ecolog2000.pdf>; ECOLOG is a research organization founded in 1991 by scientists from the University of Hannover.

wireless access, particularly given the proven hazardous nature of wireless technology. Appropriate accommodation must be made for those who are disabled or suffering from wireless radiation sickness. Residents should have veto power over any wireless infrastructure in their neighborhoods or outside of their homes or bedrooms, especially given that insurance companies will not insure for any injuries from wireless radiation as the insurance companies view it as a pollutant¹⁸

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

Here is a brief description of why those disabled from wireless radiation sickness or EMS are a significant stakeholder group. The U.S. Access Board recognizes EMS and on its website relating to accommodations under the Americans with Disabilities Act, the U.S. National Building Sciences reported finding that in a survey, there were 2-6% of people sensitive to electromagnetic fields in a studied region.¹⁹ Further research shows that of 332.4 million Americans, about 5 million are severely sensitive to EMF and 99.7 million Americans are moderately sensitive to EMF.²⁰

Stakeholder input should also be obtained from smaller, local, competitive fiber operators and that such input be consistently and equitably obtained. Historically, the voices of smaller competitive operators have been drowned out and over-powered by larger and better capitalized companies. The interests of the community are better served by smaller, competitive, local fiber operators and those operators should be building the last mile. Importantly, legacy and incumbent providers and prior recipients of taxpayer funding should be required, as a condition for continued licensure to operate and provide services to consumers,

¹⁸ “Electromagnetic Field Insurance Policy Exclusions,” <https://ehtrust.org/key-issues/electromagnetic-field-insurance-policy-exclusions/>).

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

²⁰ 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>; “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>.

to provide access to the middle mile to these local fiber operators. Since the middle mile infrastructure was built with taxpayer funds, it should be required to be open and available to these smaller competitive operators, much in the same way as the publicly funded interstate highway system is open to all. From the perspective of local competitive operators, the purpose of prior funding of the middle mile infrastructure has been to make it available for build-out by local fiber operators, not affiliated with legacy or incumbent providers.

Given that incumbent telecommunications carriers have already received prior government funding to build out middle mile infrastructure, there should be no further need for funding overbuilt middle mile infrastructure. Therefore, the EPA should require the following from grant seekers:

1. Any entity that previously received government funding or grants should account for the funds they received and whether they achieved the results. If they are not able to account for the funds or if they have not achieved those results, they would be disqualified from receiving further funding.
2. EPA should require that all connector nodes in the middle mile be disclosed to local fiber providers so that local fiber providers may compete to provide services.

Therefore, competitive grants should ONLY be awarded for fiber optics to and through the premises.

Other stakeholders include residents and local grass-roots organizations who should be consulted especially since 5G, at higher frequencies, is already being used by the US as a military weapon.²¹ The 5G nodes point directly into people's homes and children's bedrooms. Why, then, are carriers installing those 5G nodes next to homes, schools and medical facilities? Residents and grass-roots organizations should have a say on whether they would approve such technology in extreme proximity to their homes, their children's bedrooms, schools and medical facilities.

The Current Mode of Wireless Deployment is Supplanting the Democratic Process

Rather than provide the intended support to "community-led projects in disadvantaged communities," by the EPA focusing solely on the deployment of "distributed technologies" is working **against** "community-led projects." On the ground, community rights to public

²¹ "Digital fortress: 5G is a weapon in national defense: A new generation of warfighting will occur (and be enabled by) low-latency 5G networks," Robotics, Greg Nichols, 10/21/20, <https://www.zdnet.com/article/digital-fortress-5g-a-weapon-in-national-defense/>.

hearing, participation or consent are being ignored or eliminated. This flies in the face of the spirit and the letter of the Act and the EPA's stated purposes.

Rather, a top-down approach is being implemented on the ground, with the telecom industry advising local governments, falsely, that their "hands are tied" and must, through federal preemption, allow them to place these technologies anywhere they want to increase their capacity and bamboozling local and state officials to believing them. A recent ruling in federal district court in NY disagreed. In upholding local government rights over the placement of wireless antennas, the court noted that while increased capacity may be beneficial and profitable, it is "not protected by the [TCA]."²²

Therefore, "distributed technologies" and purportedly "community-led projects" are contradictory, in this context. In fact, this contradictory coexistence of terms is perpetuating the notion of "reducing regulatory and permitting barriers" to otherwise pave the way for rapid deployment being pushed by the telecom industry. These are not "barriers." In fact, regulations and permitting rules are designed to protect residents' health and welfare and to give them a right to be heard. Since the purpose of providing broadband is to provide connectivity, residents' involvement in the process should not be cut off as a barrier. Rather, this notion of "barriers" is being used to further erect barriers to superior service by forcing residents to accept wireless, an inferior service, and a euphemism to ERECT barriers against residents, to take away their right to hearings and their right to be heard, and a barrier to entry for local fiber operators to provide fiber optics to the premises (FTTP). Residents are being exposed to wireless radiation that they do not want or need.

Communities view this hazardous wireless radiation penetrating into their homes, without consent, as an assault on their physical person. This is unwanted and involuntary exposure 24/7 from which they cannot escape when it penetrates into their homes. The accounts of personal injuries to residents and their children,²³ including cancer,²⁴ are numerous, only some of which are recounted in attached documentation to these comments.²⁵

²² Extenet v. Flower Hill decision summary, <https://www.americansforresponsibletech.org/flower-hill-decision>.

²³ "Children Sick After 4G/5G Small Cell Installation Sacramento City Council Meeting," <https://www.youtube.com/watch?v=qQDmIcB4qlo>.

²⁴ Brain Tumor Cases Go to Court, <https://publicnewsservice.org/2022-09-28/consumer/lawsuit-goes-to-court-alleging-cell-phones-cause-brain-tumors/a80806-1>; Brain Cancer Cases: After 21-Year Delay, Judge Hears Evidence in Lawsuit Alleging Cellphones Caused Plaintiffs' Brain Cancer, https://childrenshealthdefense.org/defender/lawsuit-cellphone-brain-cancer-jury-trial/?utm_source=salsa&eType=EmailBlastContent&eld=85fe9c29-0c51-470e-a80c-39f40e1003f3.

²⁵ See documents attached to these comments to the FCC filed May 16, 2022 and June 30, 2022 and to NEJAC filed on July 6, 2022.

To underscore the recent court decision in federal district court in NY, the court clarified that not only are local government hands NOT tied, but that the FCC rule allowing for the rapid deployment of 5G and foregoing local government oversight was not authorized under the TCA.

To allow for bona fide “community-led projects,” which are not in name only, the EPA should be **technology neutral** and allow the communities to decide which technology is better for them. The EPA’s stated purposes of the Act should, instead, be to provide funding for:

“technologies that provide superior phone and broadband coverage.”

That would be more in keeping with a participatory and democratic process to ensure that the projects are, indeed, “community-led projects.”

Legal Perspective - Summary

For decades, the rule of law under the Telecommunication Act of 1996 (TCA) was a two-pronged test, that the telecom carriers had to show a significant gap in phone service and that they were using the least intrusive means possible to fill that gap.²⁶ Under an erroneous FCC rule allowing for the rapid deployment of 5G, a telecom carrier’s need for increased capacity became sufficient for federal preemption under the TCA. That erroneous rule was overturned in federal district court in NY in July 2022, noting that while increased capacity may be beneficial and profitable, it is “not protected by the [Act].”²⁷ While the ruling is applicable at this time to NY jurisdictions, it should also be noted that the D.C. Circuit Court of Appeals in 2019 ruled against the FCC on this rule when the FCC gave 5G deployment a categorical exemption from environmental review under the National Environmental Policy Act (NEPA). The Court ruled that the FCC was required to comply with NEPA for 5G deployment.²⁸ Yet, 5G deployment continues unabated in direct contravention of the Court’s ruling and without regard to public health or safety. Indeed, Sen. Blumenthal confirmed in a hearing of telecom executives that there has been no pre-market testing for public health or safety.²⁹

The same court again ruled against the FCC in 2021 when it remanded back to the FCC its outdated wireless emission standards of 1996, admonishing the FCC for not taking into

²⁶ See, e.g., *Sprint Spectrum v. Willoth*, 176 F.3d 630 (2d Cir. 1999) (ruling that a telecommunications carrier is required to show a gap in cell phone service and the least intrusive means to fill that gap before federal preemption can apply), <https://casetext.com/case/sprint-spectrum-v-willoth#p643>.

²⁷ Extenet v. Flower Hill decision summary, <https://www.americansforresponsibletech.org/flower-hill-decision>.

²⁸ United Keetoowah, et al. v. FCC, (D.C. Ct of Appeals, 2019), <https://ehtrust.org/wp-content/uploads/Court-Opinion.pdf>.

²⁹ <https://mdsafetech.org/2019/02/13/no-research-on-5g-safety-senator-blumenthal-question-answered/>.

consideration the 11,000 pages of scientific studies of health hazards of wireless radiation below its emission limits, particularly as it related to children.³⁰

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

5G and wireless are not clean energy.³¹

RF radiation emitted from wireless infrastructure is environmental pollution, also known as electrosmog. “ElectroSmog refers to all man-made electromagnetic radiation created and present in our surrounding environment.”³² A pollutant can be radiation or sound wave, among other things, released into the environment with actual or potential adverse, harmful, unpleasant, or inconvenient effects.³³ Electrosmog is a pollutant. Electrosmog is constant with no off switch. RF radiation from wireless infrastructure is emitted into the air on a 24/7 basis, 365 days a year, with no “off” switch, and contributes substantially to the production of carbon dioxide in the environment and, therefore, to climate change and global warming.

Decarbonization is the process of reducing and removing carbon dioxide output.³⁴ It has been associated with improved air quality, and general benefits to society based on reduced mortality and other health outcomes.³⁵ ***However, any such purported benefits will likely be offset by the proliferation of electrosmog, and unquantifiable liabilities and health costs associated with it.*** This is already resulting in bad health outcomes and is quickly creating a new generation of disability – the EMS disabled. The lessons learned from other pollutants and toxins, such as asbestos, lead and smoking, indicate that the longer a government refuses to follow established science, the more deleterious it is for people’s health and the economy.

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

³⁰ Environmental Health Trust, et al v. FCC (D.C. Ct of Appeals, 2021), [https://www.cadc.uscourts.gov/internet/opinions.nsf/FB976465BF00F8BD85258730004EFDF7/\\$file/20-1025-1910111.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/FB976465BF00F8BD85258730004EFDF7/$file/20-1025-1910111.pdf).

³¹ Environmental Health Trust, “5G is Not So Green ...” <https://myemail.constantcontact.com/Studies-Confirm-5G-4G-Will-Increase-Radiation-Exposure.html?soid=1116515520935&aid=2ptEVCn03-U>.

³² <http://www.emfrf.com/electrosmog/>.

³³ “Biomagnetic Monitoring of Particulate Matter,” Prabhat K. Rai, (2016), <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/environmental-pollution>; see also, <https://www.sciencedirect.com/book/9780128051351/biomagnetic-monitoring-of-particulate-matter>.

³⁴ <https://www.collinsdictionary.com/dictionary/english/decarbonization>.

³⁵ See, e.g., Climate Action Council Draft Scoping Plan at <https://climate.ny.gov>; the Plan’s findings include that the: “decarbonization of New York can result in a substantial health benefit from improved air quality, on the order of \$50 - \$120 billion from 2020 – 2050 (based on reduced mortality and other health outcomes).”

GHG has long been established as an air pollutant since a U.S. Supreme Court ruling in 2007.³⁶ Electrosmog is a greenhouse gas. RF radiation is anthropogenic and emissions from wireless infrastructure are expected to substantially increase the amount of greenhouse gases. RF radiation emissions are also associated with serious health problems, including within the population of the EMS disabled.

It has been reported that the environmental footprint of wireless infrastructure contributes more to global warming than it does in preventing it.³⁷ More recently, energy consumption for wireless infrastructure has been reported at ten times that of fiber optics (with “5G” infrastructure requiring 2 to 3.5 times the energy needed for 4G towers).³⁸ Energy consumption from “5G” infrastructure **“is expected to increase 61x between 2020 to 2030** due to the energy demands of powerful network elements like massive MIMO³⁹ and edge servers [and] the proliferation of 5G cell sites ...”⁴⁰ [Emphasis added]

Wireless infrastructure requires increased energy use with negative implications for climate. As far back as 2013, it was predicted that the “wireless cloud” would produce “an increase in carbon footprint from 6 megatonnes of CO2 in 2012 to up to 30 megatonnes of CO2 in 2015, the equivalent of adding 4.9 million cars to the roads,” with up to 90% of this consumption “attributable to wireless access network technologies ...”⁴¹

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

³⁶ *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497 (2007) (holding that “greenhouse gases fit well within the [Clean Air] Act’s capacious definition of ‘air pollutant.’ ”)

³⁷ <https://ehtrust.org/wp-content/uploads/5G-and-Climate-Change-Flyer-EHT.pdf>.

³⁸ <https://www.emfacts.com/2020/09/5g-base-stations-use-up-to-three-and-a-half-times-more-energy-than-4g-infrastructure/>.

³⁹ MIMO means Multiple-Input Multiple-Output and “is a wireless technology that uses multiple transmitters and receivers to transfer more data at the same time” by combining “data streams arriving from different paths” in contrast to Single-Input Single-Output (SISO) technology which “can only send or receive one spatial stream at a time.” See, <https://www.intel.com/content/www/us/en/support/articles/000005714/wireless/legacy-intel-wireless-products.html>.

⁴⁰ <https://ehtrust.org/report-5g-to-increase-energy-consumption-by-61-times/>; see also “Reinventing Wires: The Future of Landlines and Networks,” at 73, National Institute for Science, Law and Public Policy, authored by Timothy Schoechle, PhD; <https://electromagnetichealth.org/wp-content/uploads/2018/02/ReInventing-Wires-1-25-18.pdf>.

⁴¹ <https://ehtrust.org/wp-content/uploads/5G-and-Climate-Change-Flyer-EHT.pdf>.

centers are enormous in size and consume prodigious amounts of electricity.”⁴²

To understand the magnitude of the impact of the telecommunications sector on climate change, Greenpeace reported in 2012, if the wireless "cloud" were a country, it would be the fifth largest consumer of energy in the world, and we have increased the cloud exponentially since then.⁴³

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

IMPORTANT NOTE: Wireless emissions are typically measured by averaging the peaks and lowest points of RF radiation emissions and exposure levels over a period of 30 minutes. There are two problems with this methodology. First, it completely obscures the effects of the pulsating nature of RF radiation emissions and does not account for 24/7 exposure by the population to RF emissions. Second, the pulsating peaks are higher than the recorded average.⁴⁴ Second, the health outcomes occur with the persistent pulsations of RF radiation emissions. It is the pulsed high peak power emissions that, e.g., increase the potential for traumatic brain injury.⁴⁵ To obtain a more accurate reading of RF radiation emissions, the maximum power density and peak power density levels per millisecond should be recorded, as adverse health outcomes arise from the peaking and pulsating nature of wireless emissions.⁴⁶

⁴² “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>.

⁴³ <https://www.greenpeace.org/static/planet4-international-stateless/2012/04/e7c8ff21-howcleanisyourcloud.pdf>.

⁴⁴ Dr. Magda Havas: WiFi in Schools is Safe. True or False? at 7:15, <https://www.youtube.com/watch?v=6v75sKAUFdc>.

⁴⁵ 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/>.

⁴⁶ Human-made electromagnetic fields: Ion forced-oscillation and voltage-gated ion channel dysfunction, oxidative stress and DNA damage (Review) (2021) Pangopolous DJ, et al. International Journal of Oncology. August 23, 2021. <https://pubmed.ncbi.nlm.nih.gov/34617575/>.

Computational modeling investigation of pulsed high peak power microwaves and the potential for traumatic brain injury. Sci Adv. 2021 Oct; 7(44). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8555891/>. ("These studies reveal that the MAE threshold depends on the energy in a single pulse (not the average power density) for sufficiently short pulses [e.g., 32 μ s in (46)], and peak power densities of 102 to 105 mW/cm² have been known to cause auditory effects in human participants (45).")

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

Electrosmog also refers to the intensity, the erratic pulsating RF radiation emanating from wireless and the production of dirty electricity. Regarding intensity, and to put this in perspective, Martin L. Pall, PhD, Professor Emeritus of Biochemistry and Basic Medical Sciences, Washington State University, had provided the FCC with evidence in the FCC's docket that the FCC's existing RF exposure limits "are approximately 7.2 million times too high."⁴⁷ This is noteworthy as this was in connection with a federal case decided in 2021 by the D.C. Circuit, Court of Appeals, where the FCC's emission limits were discredited and remanded for further consideration in light of scientific evidence which the FCC ignored that had been presented into the FCC's docket of health hazards below those limits.

It is the pulsations of RF radiation that cause adverse health outcomes.⁴⁸

In addition, RF radiation from cell towers can produce dirty electricity. Samuel Milham, MD, MPH, and former senior epidemiologist at Washington State Department of Health, explains how transient voltages can be generated by cell towers:

"every cell tower has an inverter or switching power supply to change the grid AC to DC to run the microwave transmitter and to charge the backup batteries. These generate dirty electricity [kilohertz pollution] which flows back into the grid."⁴⁹

The government's goals are reduction of GHG, clean energy, clean transportation (including increased cycling and walking), and community resiliency programs.⁵⁰ But the perceived health

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

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

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

⁴⁷ Appeals Court Tells FCC to Address Non-Thermal Health Impacts of Radiation from Wireless Technology on Children, the Public, and the Environment, Aug. 25, 2021, <https://ehtrust.org/appeals-court-tells-fcc-to-address-non-thermal-health-impacts-of-radiation-from-wireless-technology-on-children-the-public-and-the-environment/>.

⁴⁸ See, 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>.

⁴⁹ http://www.wi-cancer.info/antenna_sickness.aspx.

⁵⁰ Implementation Guidance, <https://www.whitehouse.gov/wp-content/uploads/2021/07/M-21-28.pdf>.

benefits will most likely be offset by the liabilities in the proliferation of electrosmog and the associated health hazards for the population at large, rendering a steadily growing population of EMS disabled. *Besides, who would want to walk or cycle through electrosmog?*

Installing “Distributed Technologies” is a Public Safety Issue – Risk of Cell Tower Fire, Collapse, Ice Falls

Cell towers and rooftop antennas have been known to catch on fire and/or collapse. Cell site developers tend to construct monopole cell towers and rooftop antennas as quickly and as cheaply as possible, meaning that any quality control over their manufacture, construction or maintenance is probably close to non-existent.

In addition, industry commentary admits that 5G runs hot. That means that thermal buildup at cellular base stations occurs because these base stations are tightly packed with lots of equipment required to do digital to analog conversions, and they are “power-hungry” requiring a large amount of energy consumption.⁵¹ A side effect of the 5G array of antennas is that the circuits are inefficient and “[t]hey get hot.”⁵² A lot of heat needs to be dissipated because of the amount of equipment, conversions and inefficiencies.⁵³

The risk of fire has been a problem with cellular installations. They are, essentially, electrical installations and should require compliance with strict electrical building codes. A subject matter expert on electrical safety in California and Nevada states that:

“Many people are not aware that electrical equipment, including all cell towers and 5G small cell sites, pose a fire threat that must be mitigated by a recognized electrical fire safety expert. Every electrical device is going to fail at some point. The goal is to ensure that failures do not imperil life, health and property.”⁵⁴

Therefore, wireless fires are electrical fires. There were four notable fires in Southern California within the last 15 years that were started, in whole in or in part, by telecommunications

⁵¹ 5G Heats Up Base Stations, <https://semiengineering.com/5g-heats-up-base-stations/>.

⁵² Id.

⁵³ Id.

⁵⁴ Guest Commentary: Is 5G a Potential Fire Hazard?, Tony Simmons, P.E., The Aspen Times, June 13, 2021, <https://www.aspentimes.com/opinion/guest-commentary-is-5g-a-potential-fire-hazard/>.

equipment failures or telecommunications equipment overload.⁵⁵ The Silverado Fire in 2020 was suspected to have been caused by the failure of a telecommunications lashing wire of T-Mobile. [It merged with a second fire and caused the evacuation of 130,000 people with significant population loss.] The Woolsey Fire in 2018 was also suspected at two ignition points to have been caused by a similar failure of lashing wire. Southern California Edison's own telecommunications backhaul line had a broken communication line and broken lashing wire noted on a telecommunications inspection. The broken equipment was not noted as an urgent repair, as should have been required. Six months later the Woolsey Fire ignited.⁵⁶ The Woolsey Fire, described in a report for the Los Angeles County as "the deadliest and most destructive fire in California history," encompassing 96,949 acres or 151.5 square miles, with 1,643 structures destroyed and three deaths.⁵⁷ The fire:

"caused residents to flee into the ocean because the three routes of exit out of the city were blocked by traffic and fire. The carrier, at this point, is unknown because the Woolsey Fire remains under criminal investigation. Over \$6 billion in damages was inflicted before the fire was finally extinguished. SCE [Southern California Edison] and the telecom that owned the lashing wire have shared responsibility for the Woolsey inferno."⁵⁸

The Malibu Canyon Fire in 2007, encompassing approximately 3,836 acres:⁵⁹

"was caused by the failure of an SCE utility pole that was overloaded with telecom equipment owned by AT&T, Verizon, and Sprint (now T-Mobile). These four and NextG, now owned by telecom infrastructure builder Crown Castle International, Inc. [were] accused of misleading investigators, and

⁵⁵ Protecting L.A. County's Future: How Fire Risks From Telecommunications Equipment, Climate Challenges & A Dangerous Shift Away From Environmental Review Threaten Los Angeles County's Future, Susan Foster, November 15, 2022.

⁵⁶ Investigation Report Of The Woolsey Fire, Safety And Enforcement Division Electric Safety And Reliability Branch Los Angeles, <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/safety-and-enforcement-division/investigations-wildfires/sed-investigation-report---woolsey-fire---redacted.pdf>.

⁵⁷ *City of Los Angeles, After Action Review of the Woolsey Fire Incident*, Citigate Associates, LLC, Nov. 17, 2019, at 4, <http://file.lacounty.gov/SDSInter/bos/supdocs/144968.pdf>.

⁵⁸ Guest Commentary: Is 5G a Potential Fire Hazard?, Tony Simmons, P.E., The Aspen Times, June 13, 2021, <https://www.aspentimes.com/opinion/guest-commentary-is-5g-a-potential-fire-hazard/>.

⁵⁹ *California Public Utilities Commission, Incident Investigation Report*, 10/21/2008, at 6, http://file.lacounty.gov/SDSInter/bos/bc/115889_ReportBack-BoardMotion60A-SessionWildfireReport.pdf.

eventually settled with the California Public Utilities Commission for over \$60 million.”⁶⁰

The Guejito Fire in San Diego in 2007 was started by a Cox Communications lashing wire. This fire merged into the Witch Creek Fire which became the largest and deadliest in San Diego history, and also forced the largest mass evacuation in California history.⁶¹

More recently, in April 2021, Verizon recalled 2.5 million hotspots due to fire risks. In 2021, a light pole on a high school campus in Chula Vista, California carrying an AT&T cell tower collapsed due to electrical arcing and damaged the stadium.⁶²

“Electrical arcing is when electricity jumps from one connection to another. This flash of electricity reaches temperatures of 35,000°F ... The heat from arcing burns the insulation around the wires” and can cause a fire.⁶³

Firefighters had to wait a half hour for the power to be turned off before they could put out the fire (see footnote for footage of damage).⁶⁴

Cell tower fires are not limited to California, but have also occurred across the country, including in New York.⁶⁵ In 2021 in Brooklyn, New York, the cause of fire on an apartment building rooftop was reported to be caused by an “electrical malfunction of a cell tower on the roof of a building.”⁶⁶ In Hanover, VA in 2020, a cell tower was engulfed in flames which officials believed to have been caused by electrical/mechanical issues.⁶⁷

⁶⁰ Guest Commentary: Is 5G a Potential Fire Hazard?, Tony Simmons, P.E., The Aspen Times, June 13, 2021, <https://www.aspentimes.com/opinion/guest-commentary-is-5g-a-potential-fire-hazard/>.

⁶¹ Protecting LA County’s Future: How Fire Risks From Telecommunications Equipment, Climate Challenges & A Dangerous Shift Away From Environmental Review Threaten Los Angeles County’s Future, Susan Foster, November 15, 2022, at 11.

⁶² Id.; see also, Stadium Light Catches Fire in Chula Vista, March 10, 2021, <https://www.youtube.com/watch?v=4Ux2QLdvswo>.

⁶³ *What is Electrical Arcing and What are the Warning Signs?*, <https://www.clovelectric.com/what-is-electrical-arcng>.

⁶⁴ *Chula Vista: Light Pole Collapses, Crushes Bleachers at Otay Ranch High School*, March 10, 2021, <https://www.nbcsandiego.com/news/local/light-pole-collapses-crushes-bleachers-at-otay-ranch-high-school/2544335/>.

⁶⁵ Other states that have reported cell tower fires are: MI, VA, PA, NC, TN, OH, NJ, FL, NV, GA, IA, WA, WI, MD, OR, see <https://www.ourwebofinconvenienttruths.com/fires-and-collapses/> (which provides a compilation from around the country).

⁶⁶ *Fire on Rooftop With Cell Antennas in Brooklyn, New York*, Apr 19, 2021, <https://ehtrust.org/firecell-tower-brooklyn-new-york/>.

⁶⁷ *Hanover cell tower catches fire*, NBC 12 Newsroom, June 26, 2020, <https://www.nbc12.com/2020/06/26/cell-phone-tower-hanover-catches-fire/>.

Although cell tower fires are infrequent, they are devastating when they do occur.⁶⁸ Fire has the danger of warping the tower and collapsing it down to a burning heap, that can ignite anything around it.

Fire consultant, Susan Foster (also Honorary Firefighter with the San Diego Fire Department) cautions that:

“electrical fires cannot be fought through conventional means until the power has been cut. Firefighters or anyone else trying to put water on an energized cell tower fire will be electrocuted ... Imagine this scenario, a cell tower catches on fire with winds gusting at 50 miles an hour. This fire is going to spread until the utility cuts the power and that can take between 10 minutes and one hour.”⁶⁹

Foster further cautions that, “the promise of 5G is hype, and the fire danger of having cell towers close to our homes, schools and places of business can have devastating consequences,”

To help protect from similar wildfires caused by telecommunications equipment, any installation design of a cellular site would need to be regulated with at least the same rigor as applied to electrical and building codes, rather than just leaving the design to telecommunications engineers.⁷⁰

There are also cell tower collapses which pose a danger. In 2022 in Las Vegas, NV, a cell tower came crashing only feet from people’s homes.⁷¹ In 2019 near Tucson, AZ, a 1000 foot cell tower crashed, and residents expressed concern about having no access to emergency services.⁷² In 2003 in Oswego, NY, a 165-foot cell tower crashed down within seconds, crushing the Fire Dept Chief’s car, missing a busy shopping area, the Fire Dept museum and the fire station.⁷³

⁶⁸ *Guest Commentary: Is 5G a Potential Fire Hazard?*, The Aspen Times, June 13, 2021, <https://www.aspentimes.com/opinion/guest-commentary-is-5g-a-potential-fire-hazard/>.

⁶⁹ *Guest Commentary: Is 5G a Potential Fire Hazard?*, The Aspen Times, June 13, 2021, <https://www.aspentimes.com/opinion/guest-commentary-is-5g-a-potential-fire-hazard/>.

⁷⁰ *Id.*

⁷¹ *Cell phone tower collapses near Nellis, Tropicana, crashing down feet from businesses, homes*, April 25, 2022, <https://www.fox5vegas.com/2022/04/25/cell-phone-tower-collapses-near-nellis-tropicana-crashing-down-feet-businesses-homes/>

⁷² *Toppled Tower Triggers Trouble*, Oct 17, 2019, <https://www.kold.com/2019/10/18/toppled-tower-triggers-trouble/>.

⁷³ *Oswego, New York Cellular Tower Crushes Chief's Vehicle*, Nov. 14, 2003, <https://www.firehouse.com/home/news/10530195/oswego-new-york-cellular-tower-crushes-chiefs-vehicle>.

There is also the danger of chunks of ice falling from cell towers. When ice begins to melt, it can dislodge and come hurtling to the ground at high speeds,⁷⁴ with the risk of serious personal injury and property damage.

EMF/RF's Adverse Impacts on Birds , Bees and Trees⁷⁵

RF radiation from wireless infrastructure is hazardous for flora and fauna.⁷⁶ There is no federal agency setting safety limits for birds, bees or trees, nor is there any funded mandate to do so.⁷⁷

“FCC limits were not developed to protect flora or fauna. Wireless radiation ‘safety’ limits for trees, plants, birds and bees simply do not exist. No U.S. agency nor international authority with expertise in science, biology or safety has ever acted to review research and set safety limits for birds, bees, trees and wildlife.”⁷⁸ Other attempts are being made to protect flora and fauna.⁷⁹

Birds

Eagles have been harmed or killed by lightning rod fixtures on cell towers; the Orphaned Wildlife Rehabilitation Society (OWL) in Delta has been reported to retrieve these eagles.⁸⁰ Residents have been concerned that cell towers “will increase the odds of attracting lightning strikes directly into the habitat which could ... occur at a time when it is heavily populated.”⁸¹

⁷⁴ *Cell Tower Ice Falls*, Jan 16, 2013, <https://www.youtube.com/watch?v=aqy32tzTRkA>.

⁷⁵ See <https://ehtrust.org/wp-content/uploads/Letter-National-Park-Service-Sept-2020-6.pdf>; see also, Dr. Magda Havas Letter on WiFi in Public Places, July 11, 2018, <https://ehtrust.org/wp-content/uploads/Dr.-Magda-Havas-Letter-on-WiFi-in-Public-Places-.pdf>.

⁷⁶ Effects of non-ionizing electromagnetic fields on flora and fauna, part 1. Rising ambient EMF levels in the environment, Levitt, Lai and Manville, March 28, 2022, <https://pubmed.ncbi.nlm.nih.gov/34047144/>.

⁷⁷ EHT Letter to US National Park Service on 5G, Cell Towers and Impacts to Pollinators, Trees and Wildlife, Sep 15, 2020, <https://ehtrust.org/eh-letter-to-us-national-park-service-on-5g-cell-towers-and-impacts-to-pollinators-trees-and-wildlife/>.

⁷⁸ 5G: Environmental Effects of Birds, Bees, Trees and Climate, <https://ehtrust.org/5g-and-small-cell-environmental-effects-birds-bees-trees-and-climate/>.

⁷⁹ See, e.g., *Protect Birds, Bees and Trees, Include Anthropogenic Radiofrequency Electromagnetic Radiation in Canadian Environmental Protection Act Amendments*, https://c4st.org/wp-content/uploads/docs/Studies/RF-EMR_in_CEPA_White_Paper_by_PCN_C4ST.pdf.

⁸⁰ Delaware River Basin Commission, Living Resources: Bald Eagles, <https://www.nj.gov/drbc/basin/living/bald-eagle.html#:~:text=The%20120%2Dmile%20stretch%20of,U.S.%20Fish%20and%20Wildlife%20Service>.

⁸¹ *River Road residents rally against cell phone tower*, Delta Optimist, March 3, 2022, <https://www.delta-optimist.com/local-news/river-road-residents-rally-against-cell-phone-tower-5110646>.

David Hancock, a renowned biologist of the Hancock Wildlife Foundation who has been studying eagles for more than 60 years, said that cell towers adversely affect their breeding activity:

“Cell towers have a very negative affect on eagles (and other raptors). The towers attract them to perch and even nest, which results in unproductive breeding activity.”⁸²

With regard to animals in general, scientists have observed that RF radiation have toxic effects on animals at “vanishingly low intensities,” including effects on “orientation and migration, food finding, reproduction, mating, nest and den building, territorial maintenance, defense, vitality, longevity and survivorship” of wildlife.⁸³ “Wildlife loss is often unseen and undocumented until tipping points are reached.”⁸⁴

Artificial, man-made RF radiation is a form of environmental pollution which can harm wildlife, including bats and birds such as sparrows. Cell towers located in their habitats would be continuously irradiating 24/7, 365 days a year, without refuge from the cell towers, and wildlife could suffer long-term effects, such as:

“reduction of their natural defenses, deterioration of their health, problems in reproduction and reduction of their useful territory through habitat deterioration.”⁸⁵

Toxic effects “have been observed in mammals such as bats, cervids, cetaceans, and pinnipeds among others, and on birds, insects, amphibians, reptiles, microbes and many species of flora. Cyto- and geno-toxic effects have long been observed in laboratory research on animal models

⁸² River Road residents rally against cell phone tower, Delta Optimist, March 3, 2022, <https://www.delta-optimist.com/local-news/river-road-residents-rally-against-cell-phone-tower-5110646>.

⁸³ Id; see also, Johansson O, *The Stockholm Declaration about "Life EMC"*, Bee Culture Magazine 2022; May issue: 56-61 and Levitt BB, Lai HC, Manville AM. Effects of non-ionizing electromagnetic fields on flora and fauna, Part 3. Exposure standards, public policy, laws, and future directions. Rev Environ Health. 2021 Sep 27. Doi: 10.1515/reveh-2021-0083. Epub ahead of print. PMID: 34563106. <https://pubmed.ncbi.nlm.nih.gov/34563106/>.

⁸⁴ Levitt BB, Lai HC, Manville AM. Effects of non-ionizing electromagnetic fields on flora and fauna, part 1. Rising ambient EMF levels in the environment. Rev Environ Health. 2021 May 27;37(1):81-122. doi: 10.1515/reveh-2021-0026. PMID: 34047144, <https://pubmed.ncbi.nlm.nih.gov/34047144/>.

⁸⁵ Electromagnetic pollution from phone masts. Effects on wildlife, Alfonso Balmori, August 2009, <https://www.sciencedirect.com/science/article/abs/pii/S0928468009000030?via%3Dihub>. See also, The incidence of electromagnetic pollution on wild mammals: A new “poison” with a slow effect on nature? Alfonso Balmori, November 2009.

Balmori, A. The incidence of electromagnetic pollution on wild mammals: A new “poison” with a slow effect on nature?. Environmentalist 30, 90–97 (2010). <https://doi.org/10.1007/s10669-009-9248-y>.

that can be extrapolated to wildlife.”⁸⁶ Different habitats for wildlife, including aquatic environments, “rely on the Earth’s natural geomagnetic fields for critical life-sustaining information,” with which RF radiation interferes.⁸⁷

Birds are particularly susceptible to RF radiation. Studies done in 1975 in the ranges of 1-10 KHz⁸⁸ and 10-16 GHz⁸⁹ showed that bird feathers (the hollow part) were receptors for RF radiation.

RF radiation has been associated with observed declines in bird populations. As early as 2009, two studies observing House Sparrows in Spain⁹⁰ and Belgium⁹¹ during breeding season showed a decline in the House Sparrows associated with mobile phone base stations. Balmori and Hallberg who conducted the study in Spain, concluded even more generally that RF radiation may be responsible for the observed decline of sparrows in Europe.

More recently, on May 29, 2022 it was reported that 35 dead terns were found in a nature reserve in the Netherlands.⁹² Three cell towers located on the edge of the reserve and within the terns’ habitat had been augmented with 18 new 4G antennas – 6 antennas on May 25, 2022, and 12 antennas on May 29, 2022.

On June 24, 2022, it was reported that 4,600 dead adult and young Sandwich terns from another nature reserve, the Waterdunen nature reserve in the Netherlands, had been collected. The nature reserve had hosted 7,000 pairs of terns flying from Africa to breed during the Spring of 2022. Since the end of June, 2022, the colony no longer exists. From April to June, 2022, two cell towers **less than 2 miles** from the reserve had been augmented with 18 new antennas – from 6 to 12 antennas on one tower on May 18, 2022, and from 6 to 18

⁸⁶ Levitt BB, Lai HC, Manville AM. Effects of non-ionizing electromagnetic fields on flora and fauna, Part 2 impacts: how species interact with natural and man-made EMF. Rev Environ Health. 2021 Jul 8. doi: 10.1515/reveh-2021-0050. <https://pubmed.ncbi.nlm.nih.gov/34243228/>.

⁸⁷ Id.

⁸⁸ The properties of bird feathers as converse piezoelectric transducers and as receptors of microwave radiation. I. Bird feathers as converse piezoelectric transducers, Blanco and Sierra, 1975, <https://pubmed.ncbi.nlm.nih.gov/1235241/>.

⁸⁹ Id.

⁹⁰ *The Urban Decline of the House Sparrow (Passer domesticus): A Possible Link with Electromagnetic Radiation*, Alfonso Balmori &Örjan Hallberg, July 7, 2009 <https://www.tandfonline.com/doi/abs/10.1080/15368370701410558?journalCode=iebm20>.

⁹¹ *A Possible Effect of Electromagnetic Radiation from Mobile Phone Base Stations on the Number of Breeding House Sparrows*, Joris Everaert &Dirk Bauwens, July 7, 2009, <https://www.tandfonline.com/doi/abs/10.1080/15368370701205693?journalCode=iebm20>.

⁹² *News and information about the Dutch mobile networks*, <https://www.cellphonetaskforce.org/wp-content/uploads/2022/07/Birds-on-Texel-Island.pdf>.

antennas on the second tower on June 23, 2022. The towers are also within a fish habitat, on which the terns depend for foraging.

In contrast, in another nature reserve in the Netherlands 20 miles from Waterdunen and more isolated, a small but healthy colony of terns are apparently thriving and no dead birds were found from April to July, 2022. From distances of **up to 8 miles away** from the reserve, there are a total of 35 4G antennas facing the reserve, with only two of those antennas having been added since April, 2022.

Bees

Bees, as our primary source of pollination, are injured from RF radiation which means a decrease in pollination and, in turn, food production. A study showed that “every time a bee approaches a power line or a cell phone antenna, it becomes stressed and, therefore, its internal temperature increases and the pollination service decreases.”⁹³ Moreover, “[h]oneybees are among the species that use magnetoreception, which is sensitive to anthropogenic electromagnetic fields, for navigation.”⁹⁴

Researchers have proposed that the stress of exposure to RF radiation has weakened bee populations’ resistance to other environmental stressors such as pesticides and chemicals.⁹⁵ A study performed by placing two mobile phones under a beehive showed that when the phones were turned on, within 20-40 minutes, the bees began emitting “piping” calls and squeaks announcing their start of swarming which means they are about to abandon the hive.⁹⁶ Another study corroborated this study and found that the bees “stopped producing honey, egg production by the queen bee halved, and the size of the hive dramatically reduced.”⁹⁷

Another study examining how insects, including the Western honeybee, react to RF radiation exposure at frequencies from 2GHz to 120GHz, in simulations found increases in absorbed

⁹³ Research confirms negative effects of power lines on bees, May 3, 2022, <https://ehtrust.org/research-confirms-negative-effects-of-power-lines-on-bees/>.

⁹⁴ Bandara, P., & Carpenter, D. O. (2018). Planetary electromagnetic pollution: It is time to assess its impact. *The Lancet. Planetary Health*, 2(12), e512–e514. [https://doi.org/10.1016/S2542-5196\(18\)30221-3](https://doi.org/10.1016/S2542-5196(18)30221-3).

⁹⁵ Id.

⁹⁶ *Why a mobile phone ring may make bees buzz off: Insects infuriated by handset signals*, Daily Mail, May 13 2011, <https://www.dailymail.co.uk/sciencetech/article-1385907/Why-mobile-phone-ring-make-bees-buzz-Insects-infuriated-handset-signals.html>; see also, “Cell Phones Caused Mysterious Worldwide Bee Deaths, Study Finds.” Fox News, May 13, 2011, <https://www.foxnews.com/tech/cell-phones-caused-mysterious-worldwide-bee-deaths-study-finds>.

⁹⁷ *5G & Other Wireless Radiation Is Having A Detrimental Impact On Bees: Here’s The Science*, Arjun Walia December 31, 2021, <https://thepulse.one/2021/12/31/5g-other-wireless-radiation-is-destroying-bees/>.

power of 3-370%.⁹⁸ Researchers concluded that “[t]his could lead to changes in insect behaviour, physiology and morphology over time...”⁹⁹ and that:

“enough research has been performed to indicate an urgent need to reduce electromagnetic radiation exposures to protect the bee population and in turn, protect the environment. As 5G will increase radiation exposures and use new higher frequencies shown to be highly absorbed into insects, scientists are calling for a moratorium on 5G.”¹⁰⁰

Andrew Goldsworthy, a biologist from the UK's Imperial College, London, explains that insects, as well as animals, use cryptochrome for navigation and:

“to sense the direction of the earth's magnetic field and their ability to do this is compromised by radiation from [cell] phones and their base stations. So basically bees do not find their way back to the hive.”¹⁰¹

Goldsworthy contacted the UK communications regulator OFCOM (Office of Communications), that “a change of phone frequencies would stop the bees being confused.”¹⁰²

A review of 45 peer-reviewed scientific studies found physiological and morphological changes in plants, such maize, roselle, pea, fenugreek, duckweeds, tomato, onions and mungbean plants, which appeared to be very sensitive to RF radiation.¹⁰³ This can have repercussions for our food supply.

Trees

It has been shown that trees are damaged by RF radiation from mobile phone base stations, with damage starting on one side and then “extending to the whole tree over time.”¹⁰⁴ Tree

⁹⁸ *5G & Other Wireless Radiation Is Having A Detrimental Impact On Bees: Here's The Science*, Arjun Walia December 31, 2021, <https://thepulse.one/2021/12/31/5g-other-wireless-radiation-is-destroying-bees/>.

⁹⁹ *5G & Other Wireless Radiation Is Having A Detrimental Impact On Bees: Here's The Science*, Arjun Walia December 31, 2021, <https://thepulse.one/2021/12/31/5g-other-wireless-radiation-is-destroying-bees/>.

¹⁰⁰ Id.

¹⁰¹ *Study links bee decline to cell phones*, Sasha Herriman, CNN, June 30, 2010, <http://edition.cnn.com/2010/WORLD/europe/06/30/bee.decline.mobile.phones/index.html>.

¹⁰² *Study links bee decline to cell phones*, Sasha Herriman, CNN, June 30, 2010, <http://edition.cnn.com/2010/WORLD/europe/06/30/bee.decline.mobile.phones/index.html>.

¹⁰³ Review: Weak radiofrequency radiation exposure from mobile phone radiation on plants, M. Halgamug, Sept 20, 2016, <https://pubmed.ncbi.nlm.nih.gov/27650031/>.

¹⁰⁴ Radiofrequency radiation injures trees around mobile phone base stations, Aug. 24, 2016, <https://pubmed.ncbi.nlm.nih.gov/27552133/>.

damage was found with chronic exposure to RF radiation.¹⁰⁵ Visual observations of tree damage include:

“irregular leaf coloration, leaf wilt, leaf loss, temporal and spatial irregularities in the seasonal leaf color change and leaf loss, fewer shoots, greatly elongated shoots with foliage at the tip and bare patches farther down the shoot, changes in branching patterns, and dead limbs and branches. The damage is most prominent at the edge on one side of the crown. This area is referred to as the starting point of damage. From there, the damage decreases in its intensity toward the opposite side of the crown that may be less affected or not at all. The crown volume, which is damaged within this geometric space, is referred to as the damage area. It will continue to develop further over the course of several growing seasons.¹⁰⁶

Forests are instrumental for maintaining air quality, preserving habitat for wildlife and providing cover for fish habitats.

This hoped for carbon sequestration from trees is not likely to occur if trees are damaged or die from the proliferation of wireless infrastructure.

With the advent of wireless infrastructure installations, many trees that have not been cut down are likely to be damaged, making the forests less able to absorb greenhouse gases.

The EPA Should Regain Its Jurisdiction on Regulating EMF, Non-Ionizing Radiation

The EPA released a report in March 1990 through its Office of Health and Environmental Assessment (OHEA), then headed by Dr. Robert McGaughy, which:

“recommended that EMFs be formally designated as known ‘probable human carcinogens’ and that RF/MW radiation ... be considered a ‘possible human carcinogen’ (along with other class B carcinogens such as DDT, PCBs and formaldehyde).”¹⁰⁷

¹⁰⁵ *Tree Damage from Chronic High Frequency Exposure*, <https://ehtrust.org/wp-content/uploads/tree-health-radiation-Schorpp-2011-02-18.pdf>.

¹⁰⁶ Tree damage caused by mobile phone base stations; An observation guide, Helmut Breunig, March 2017, https://kompetenzinitiative.com/wp-content/uploads/2019/08/2017_Observation_Guide_ENG_FINAL_RED.pdf

¹⁰⁷ See *Overpowered, What Science Tells Us About the Dangers of Cell Phones and Other WiFi-Age Devices* (2014), at 110-114, Martin Blank, PhD, an EMF expert with PhDs from Columbia University and University of Cambridge.

A New York Times article featured the study and quoted then-OHEA director, Dr. William Farland:

“Over the past few years, more and more people have begun to say there does seem to be something there, that we need to do more work, whereas before we were saying that it was not worth pursuing. This is an important step in getting more research done.”

Unfortunately, Dr. McGaughy’s recommendations were buried and the report was never published. The wireless industry was in full swing to defang the EPA by the mid 1990s.

Public worries were growing and wireless stocks were plummeting when a brain cancer case arose alleging causality with the use of a cell phone. The industry pledged \$25 million towards a research initiative to dispel the public’s fears, and hired Dr. George Carlo, epidemiologist and medical scientist. He led a team of 200 scientific experts. His findings were released in Feb 1999 and found the presence of micronuclei (DNA fragments) in the blood indicating that the radiation from mobile phones had caused irreparable DNA damage in cells. The wireless industry then started a campaign to discredit the findings of the scientist that they hired.

The EPA should reclaim its rightful jurisdiction to regulate EMF, non-ionizing radiation, to protect the public, as it was taken away due to pressure from the wireless industry in order to be profitable at the cost of public health.

Fiber Optics – the Superior Choice – Adopting Tom Wheeler’s “Fiber-First” Policy

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

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

“[l]ower energy consumption, reduced waste and sustainable architecture, characteristics that make fiber infrastructure an environmentally advantageous choice.”¹⁰⁸

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.”¹⁰⁹

Wheeler, in advocating for a ***“fiber first”*** policy, testified in Congress in March 2021:¹¹⁰

“To prioritize symmetrical 1 gigabit capacity ... is to prioritize a ‘fiber first’ policy. (Such a policy is consistent with the hybrid fiber-coax (HFC) strategy of cable systems’ [DOCSIS 4.0](#) and its 10 Gbps down/6 Gbps up capability.)”¹¹¹

Wheeler further stated that:

“[f]iber’s benefits are driven by the combination of increased processing power at the ends of the fiber and the ability to handle that increasing capacity... [A]pplying increased processing to the data flowing through a conduit that itself has increasing capacity is the definition of futureproofing.”¹¹²

Another factor to consider for purposes of ensuring digital equity and broadband inclusion is affordability, capacity and scalability to meet increasing user demands over the local network’s economic life, including performance, speed, low latency, capacity and reliability. Fiber best meets these demands. Wireless is less reliable and less scalable to meet future customer demands and has higher operational expense.¹¹³

¹⁰⁸ *How Fiber Can Help Make Your Network Greener*,

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

¹⁰⁹ Fiber Optic Broadband, A Greener Internet Solution, <https://www.otelco.com/a-greener-internet-solution/>.

¹¹⁰ 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.

¹¹¹ Id.

¹¹² Id.

¹¹³ “To Reduce Network Operating Expenses, Choose FTTH,” Masha Zager, July 2020,

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

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

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

Fiber to and through the premises (FTTP), also referred to as fiber to the room (FTTR) is the superior service for bridging the digital divide and providing appropriate accommodation for the EMS disabled, so that these communities are not left behind.¹¹⁴ Wheeler said that wireless should be used only as a last resort, not a first resort, in his March, 2021 Congressional testimony.¹¹⁵ **He stated that despite approximately \$40 billion of government subsidies “over the last decade,” those subsidies:**

“have failed to deliver the goal of universal access to high-speed broadband ... because it failed to insist on futureproof technology, ... and focused more on the companies being subsidized than the technology being used or the people who were supposed to be served.”¹¹⁶

Fiber is “futureproof” while wireless is not.

FTTP will provide the best capacity for remote learning for children and students, particularly those who are already EMS disabled, and more reliable access to medical and other services for the elderly and disabled during emergencies or severe weather when wireless service is more

¹¹⁴ [Reinventing Wires](https://electromagnetichealth.org/wp-content/uploads/2018/02/ReInventing-Wires-1-25-18.pdf), National Institute for Science, Law and Public Policy (NISLAPP), authored by Timothy Schoechle, PhD, <https://electromagnetichealth.org/wp-content/uploads/2018/02/ReInventing-Wires-1-25-18.pdf>.

¹¹⁵ 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.

¹¹⁶ Id.

likely to be interrupted. FTTP will also prevent the exclusion of the EMS disabled who cannot be near wireless infrastructure or wireless Internet.

Wheeler's statements point to the fact that wireless and fiber are not equivalent broadband media –wireless is and should be a complement, not the primary access method.¹¹⁷ A policy paper of the National Institute for Science, Law and Public Policy, "Re-Inventing Wires: The Future of Landlines and Networks", authored by Timothy Schoechle, PhD, communications technology expert, similarly states that:

"[f]iber is unmatched in its speed, performance, reliability, etc. ... Wireless is not a substitute for fiber."¹¹⁸

Fiber is more affordable, scalable from symmetrical (upload and download) speeds of 100 Mbps to 1Gbps to 10Gbps, has a longer life span of 25-50 years and is safer and more cybersecure, has lower operational expenses,¹¹⁹ and is available at more affordable prices. Fixed broadband generally delivers faster speeds, permits higher consumption at a lower price, and has far higher data caps.¹²⁰

By contrast, wireless typically requires equipment upgrades, constant maintenance and re-investments about every 5 years. An example of fiber deployment, consumers in Hamilton County, TN have multiple service options, which include speeds of up to 1000 Mbps (1 Gbps). Pricing and capacity are scalable and provide for 300 Mbps at \$57.99/month and 1 Gbps at \$67.99, in each instance with symmetrical speeds.¹²¹ Wireless technology is not able to

¹¹⁷ 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).

¹¹⁸ "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>.

¹¹⁹ <https://optics.fiberbroadband.org/Full-Article/reduce-network-operating-expenses-choose-ftth>.

¹²⁰ In the Matter of Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, 36 FCC Rcd 836, 841, ¶11 (2021).

¹²¹ <https://bestneighborhood.org/tv-and-internet-hamilton-county-tn/>.

effectively compete with similar high-speed Internet, with the FCC only requiring 25 Mbps download / 3 Mbps upload speeds.^{122 123}

The Fiber Broadband Association (FBA), the largest fiber optics trade association in the U.S., has as its tagline, ***“If it isn’t fiber, it isn’t broadband.”***¹²⁴ The FBA has shown that consumers prefer the higher symmetrical speeds that fiber provides.¹²⁵ The FBA also shows the superior technology of fiber in its white paper, ***“The Market Has Spoken.”***¹²⁶ ***The National Telecommunications and Information Administration (“NTIA”) in implementing the Infrastructure and Jobs Act is prioritizing fiber optics over wireless in creating a future-proof technology grid.***¹²⁷ So should the EPA.

Fiber Optics Is Good for the Workforce And Is Good for a New Energy Economy

Developing a workforce in a new energy economy would go a long way to achieving these goals. It is particularly important to focus on training and workforce opportunities in the disadvantaged communities, to ensure career opportunities and good jobs for otherwise marginalized communities, while making those communities more resilient.

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

¹²² <https://www.allconnect.com/blog/internet-speed-classifications-what-is-fast-internet>.

¹²³ <https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2018-broadband-deployment-report>.

¹²⁴ <https://s3.amazonaws.com/files.fiberbroadband.org/download/3555.4237?AWSAccessKeyId=AKIAIZGD7FMLIYL BZNI&Expires=1650065068&Signature=CfFGHmOkZaAovAfuGmXXs2hDpKo%3D>.

¹²⁵ https://www.broadbandworldnews.com/document.asp?doc_id=773546.

¹²⁶ <https://www.fiberbroadband.org/p/cm/ld/fid=978>.

¹²⁷ *NTIA Official Acknowledges Clear Preference for Fiber in Infrastructure Deployment Program*, June 13, 2022, <https://broadbandbreakfast.com/2022/06/ntia-official-acknowledges-clear-preference-for-fiber-in-infrastructure-deployment-program/>.

This fiber optics operator noted that he personally trained at least 50 individuals, who either dropped out of high school or barely made it through, to become highly trained and skilled optical fiber splicing technicians in the field, who can make from \$56,700¹²⁸ to over \$100,000 per year. A fiber splicing technician “splice[s] thin strands of flexible glass [fiber optics] that allow the transmission of light from one location to the next”¹²⁹ and “to expand telecommunications networks into new areas or to replace existing lines.”¹³⁰

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

Fiber deployment can also be an economic boon to the economy. Take the example of the city of Chattanooga and Hamilton County in Tennessee.¹³¹ 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.”¹³² Because of its fiber optics network, it has the fastest broadband network in the U.S.

A study calculated the realized economic value of fiber optic infrastructure in Hamilton County and the city of Chattanooga, over about a 10-year period from 2011 to March 2020.¹³³ The economic value exceeded \$2.69 billion and 9,516 jobs over the study period, with the value

¹²⁸ <https://bestaccreditedcolleges.org/articles/fiber-optic-splicing-jobs-duties-and-requirements.html>.

¹²⁹ Fiber Optical Splicer, <https://www.mylearningalliance.com/courses/fiber-optical-splicer/>.

¹³⁰ Fiber Optic Splicing Jobs Duties and Requirements, <https://bestaccreditedcolleges.org/articles/fiber-optic-splicing-jobs-duties-and-requirements.html>.

¹³¹ “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.

¹³² “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/>.

¹³³ Ten Years of Fiber Optic and Grind Infrastructure in Hamilton County, Tennessee, Bento Lobo, Univ of TN at Chattanooga, Aug. 2020, https://www.researchgate.net/publication/352221978_Ten_Years_of_Fiber_Optic_and_Smart_Grid_Infrastructure_in_Hamilton_County_Tennessee.

exceeding the costs of the fiber optic project by over \$2.20 billion, and about 40 percent of all jobs created. It found that about 52% of the value of the fiber infrastructure was reflected in local economic development – “over \$1.4 billion in new investments, startup funding, real estate development and payments-in-lieu of taxes.”¹³⁴ “Each county resident is estimated to have benefited by about \$646 per year due to the incremental value generated by the fiber optic infrastructure.”¹³⁵

These successes were achieved because the city realized the economic advantages of fiber optics over wireless infrastructure and owning its broadband, referred to as municipal broadband.¹³⁶ The successes of Chattoona’s fiber optics deployment were reported as far back as 2014.¹³⁷

Another example of substantial long term cost savings using fiber broadband is Chanute, KS which “operates a 10 Gbps fiber-optic broadband ring.”¹³⁸ 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.”¹³⁹ City Manager J.D. Lester refers to municipal broadband as ‘the great equalizer for Rural America’...’¹⁴⁰

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.¹⁴¹

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

¹³⁴ Id.

¹³⁵ Id.

¹³⁶ “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/>.

¹³⁷ “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>.

¹³⁸ In Kansas, Rural Chanute Built Its Own Gigabit Fiber and Wireless Network,” Christopher Mitchell 10-2-21, <https://ilsr.org/chanute-rural-gigabit/>.

¹³⁹ Id.

¹⁴⁰ Id.

¹⁴¹ <https://www.soar-ky.org/prtc/>.

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.”¹⁴²

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

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

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

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

Adoption: Consumers will more easily adopt broadband if it is fiber, based on lower monthly cost and best capacity (more data, less latency). Fiber-fast speeds delivered to consumers and lower cost to consumers, especially in the long run, will encourage adoption, this compared to the increasing costs of wireless that requires continuous upgrades in equipment, creating an environment whereby telecommunications carriers can simply pass increasing costs to the consumers, endangering adoption or continued use. Fiber broadband offers hundreds and

¹⁴²“Re-inventing Wires: The Future of Landlines and Networks,” by Timothy Schoechele, PhD, Timothy Schoechele, PhD, Senior Research Fellow, National Institute for Science, Law & Public Policy (NISLAPP), <https://gettingsmarteraboutthesmartgrid.org/pdf/Wires.pdf>.

thousands of Mbps for both upload and download speeds (symmetrical) at affordable prices. For example, in Hudson County, TN, consumers have multiple service options, among which are Xfinity at 987 Mbps (average speed) with 96.34% availability and EPB Power at 1000 Mbps with 94.12% availability. Pricing and capacity are scalable and provide for 300 Mbps at \$57.99/month and 1 Gig at \$67.99, in each instance symmetrical upload and download speeds. (See <https://bestneighborhood.org/tv-and-internet-hamilton-county-tn/>) Therefore, consumers will have a higher adoption rate if, rather than 100 download / 25 upload asymmetrical speeds or the current FCC speed at 25/3, consumers are offered superior fiber broadband symmetrical speeds of at least 100 Mbps ranging up to 10 Gbps, with the ability to quickly scale upwards in speed.

The EMS Disabled are Disadvantaged Communities

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

Those suffering injuries from exposure to RF radiation are known as having electromagnetic sensitivity (EMS), radiation poisoning or microwave sickness.¹⁴³ Therefore, those with symptoms from these injuries are either “EMS sensitive” or “EMS disabled.” Those suffering symptoms are estimated to range up to 30% of the American population, or almost 100 million people.¹⁴⁴ To be clear, having EMS is not about sensitivity, rather, it involves severe physiological injuries directly associated with pulsed RF radiation exposure. The injuries to which this disadvantaged community has been subjected give rise to “impairment[s] that substantially limit[] one or more major life activities” under the Americans with Disabilities Act.¹⁴⁵

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

¹⁴³ Electromagnetic Sensitivity, also known as “microwave sickness,” <https://ehtrust.org/science/electromagnetic-sensitivity/>.

¹⁴⁴ 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>.

¹⁴⁵ 42 U.S.C. §12102(1)(A).

Public health has meant ***“the health of the most sensitive members of the population,”*** a guiding principle adopted by Congress in connection with setting any ambient exposure standards under the Clean Air Act.¹⁴⁶ The EMS disabled are “the most sensitive members of the population” and their numbers are growing.

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

The U. S. Access Board provided a designation of EMS disability going back to 2002.¹⁴⁷ And, yet, the EMS disabled have borne the brunt of environmental exposure to RF radiation, and their debilitation from such exposure have led to an inability to participate in normal activities.

EMS involves severe physiological injuries directly associated with pulsed RF radiation exposure manifested as a constellation of symptoms.¹⁴⁸ It is a “spectrum condition” ranging from discomfort, to neurological and immunological disorders to debilitation and life threatening impairments.¹⁴⁹

Common EMS symptoms directly associated with pulsed RF radiation exposure include sleep disturbances, chronic fatigue, chronic pain, poor short-term memory, loss of immediate memory, difficulty concentrating (e.g., “brain fog”), mood disturbances (depression/ anxiety), skin problems (including skin lesions), dizziness, balance disorder, loss of appetite, heart palpitations, tremors, vision problems, tinnitus, nose bleeds, asthma, nausea, reproductive problems and headaches, among others.¹⁵⁰ RF radiation exposure can also lead to blood-brain

¹⁴⁶ “The Challenge of Nonionizing Radiation: A Proposal for Legislation,” Karen A. Massey, referencing H.R. Rep. No. 294 at 50, 95th Cong, 1st Sess. 136, reprinted in [1977] US. Code Cong & Ad. News 1077, 1215, <https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=2692&context=dlj>.

¹⁴⁷ U.S. Access Board, *Advancing Full Access & Inclusion for All*, “Indoor Environmental Quality Project,” <https://www.access-board.gov/research/building/indoor-environmental-quality/>.

¹⁴⁸ 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>.

¹⁴⁹ 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>.

¹⁵⁰ *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->

barrier leakage, damage to the immune system, chronic inflammation; impaired melatonin production and impaired blood flow to the brain.¹⁵¹ “A 2017 MRI (magnetic resonance imaging) study shows clear evidence of impaired blood flow in 10 electro-sensitive subjects.”¹⁵² The symptoms are from the physiological injuries that individuals have sustained.¹⁵³

Studies show that non-ionizing RF radiation, i.e., below the level of thermal (heating) effects is also known to increase oxidative stress and damage mitochondria.¹⁵⁴ Oxidative stress is caused by an imbalance in cells caused by the accumulation of free radicals which interferes with the ability of cells to detoxify. Mitochondria are the energy producing mechanisms of cells. It has been found that the increase in oxidative stress and damage to mitochondria, along with many of the physiological injuries, are similar whether for ionizing or non-ionizing RF radiation.¹⁵⁵

To put EMS symptoms in perspective, they are similar to “microwave syndrome,” a term referring to symptoms experienced by U.S. diplomats in Russia, Cuba and Washington, D.C.: “severe piercing headaches, fatigue, nausea, vomiting, dizziness, insomnia, imbalance, nosebleeds, memory loss, hives, ringing in the ears, loss of eyesight and hearing loss.”¹⁵⁶ In 2020, the National Academy of Sciences, in its report to the U.S. Dept. of State, determined that pulsed RF radiation from bad actors is the most plausible explanation for the diplomats’ injuries.¹⁵⁷

Exposure to RF Radiation, Injuries and Disabilities

[2022-FINAL-REDACTED.pdf](#) (providing a comprehensive summary of scientific findings of health hazards from RF radiation).

¹⁵¹ 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>.

¹⁵² *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/>.

¹⁵³ 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>.

¹⁵⁴ Id.; see also, *New Review Paper: Genetic Effects of Non-Ionizing Electromagnetic Fields*, Henry Lai, Feb. 6, 2021, <https://ehtrust.org/new-review-paper-genetic-effects-of-non-ionizing-electromagnetic-fields-by-henry-lai-phd/>.

¹⁵⁵ 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>.

¹⁵⁶ *Mystery Solved: 2020 NAS Report Links Diplomats Neurologic Symptoms from “Havana Syndrome” to Directed Microwave Radiation Similar to Electromagnetic Illness*, April 6, 2021, <https://mdsafetech.org/2021/04/06/mystery-solved-2020-nas-report-links-diplomats-neurologic-symptoms-to-directed-microwave-radiation-similar-to-electromagnetic-illness/>; also see, *Illness Suffered by Us Diplomats Likely Caused by Pulsed Microwaves- National Academies of Sciences Report Says*, Jan 15, 2020, <https://ehtrust.org/illness-suffered-by-us-diplomats-likely-caused-by-pulsed-microwaves-national-academies-of-sciences-report-says/>.

¹⁵⁷ National Academies of Sciences, Engineering, and Medicine. 2020, *An Assessment of Illness in U.S. Government Employees and Their Families at Overseas Embassies*, Washington, DC: The National Academies Press. <https://doi.org/10.17226/25889>.

With RF radiation, there is cumulative exposure over time which causes or contributes to injuries and disabilities. In the first known study to test the safety of “5G,” a recently published Swedish study confirmed that RF radiation well below authorized emission limits in Sweden can cause health outcomes. A “5G” base station had been installed on a rooftop and two individuals living in an apartment just below the rooftop developed, what the study referred to as, symptoms of microwave syndrome.¹⁵⁸ After installation, the amount of RF radiation was, on average, 188 times greater than prior to installation, with the maximum peaks being over 1,000 times greater. This was constant exposure. Once they moved to a lower RF radiation environment, their symptoms decreased or disappeared.

The EMS disabled are not able to live, work or visit in spaces or buildings where wireless equipment is deployed.¹⁵⁹ A pre-eminent scientist, Dr. Beatrice Golomb,¹⁶⁰ conducted a survey whereby hundreds participated. **Many stated that they either gave no credence to – or did not hear about – any hazards, until they themselves were injured.**¹⁶¹

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.’”¹⁶² Many had been high-functioning individuals, such as engineers, doctors and lawyers.

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

¹⁵⁸ *First Study so Far: 5G Causes the Microwave Syndrome*, <https://ehitrust.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/>.

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

¹⁶⁰ <https://www.golombresearchgroup.org/pagecv>.

¹⁶¹ 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>.

¹⁶² Id.

A 2019 Bevington study¹⁶³ analyzed the prevalence of EMS disabilities within the population:

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

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

Percentages	Number of U.S. EMF Sensitive/Disabled
Can't work – 0.65%	2.16 million
Severe symptom – 1.5%	4.99 million
Moderate symptoms – 5%	16.6 million
Mild symptoms – 30%	99.7 million

With the Act's emphasis on "working families," access to work is critical for disadvantaged communities. The EMS disabled are most affected when they cannot work safely in environments containing RF radiation inside a building, such as Wi-Fi, or RF radiation coming from outside a building from nearby base station antennas.¹⁶⁴ This is not a disability that only affects the EMS disabled, but given the estimated number of people with EMS symptoms in the U.S., it has the potential of adversely affecting America's workforce. EMS disability can be accommodated by creating RF radiation free zones that employ only wired facilities in the work and home environments.

Vulnerable Communities as Disadvantaged Communities: Children

Children are a vulnerable community adversely affected by RF radiation in their homes and in their schools.¹⁶⁵ Children absorb more RF radiation than adults, and fetuses are at even greater risk.¹⁶⁶ Children's "brain tissues are more absorbent, their skulls are thinner and their relative

¹⁶³ 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>.

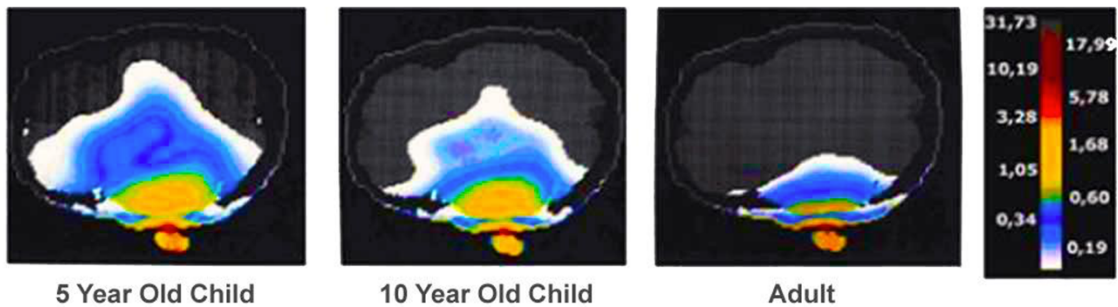
¹⁶⁴The Prevalence of People with Restricted Access to Work in Manmade Electromagnetic Environments, <https://mdsafetech.files.wordpress.com/2019/10/2018-prevalence-of-electromagnetic-sensitivity.pdf>.

¹⁶⁵ *Children and Wireless Radiation*, <https://ehtrust.org/educate-yourself/children-and-wireless-faqs/>.

¹⁶⁶ *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>.

size is smaller.”¹⁶⁷ RF radiation penetrates more deeply into the skulls of children compared to adults,¹⁶⁸ as shown below in cell phone usage.¹⁶⁹

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, 2011.¹⁷⁰

¹⁶⁷ Id.

¹⁶⁸ 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/>.

¹⁶⁹ *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/>.

¹⁷⁰ 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.”¹⁷¹

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.¹⁷² There are also neurological implications to RF radiation exposure for children.¹⁷³ Adolescent school children who were exposed to high levels of RF radiation also 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.¹⁷⁴

A 2022 study confirms severe neurological effects of chronic exposure to RF radiation.¹⁷⁵ It concluded that “chronic exposure of 2100-MHz frequency caused oxidative stress, which leads to neural damage and demyelination.” While the general population, including children, are generally exposed to RF radiation 24/7, 365 days a year, the exposure that was used in this study was much less, only 3 months at 4 hours a day, 5 days a week.

Another example of children being injured from RF radiation from wireless infrastructure was provided at a Sacramento, CA City Council meeting.¹⁷⁶ A cell tower was installed outside near the children’s bedroom. Soon afterward, they suffered from flu-like symptoms which persisted

¹⁷¹ *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>.

¹⁷² 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.

¹⁷³ 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/>.

¹⁷⁴ 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/>.

¹⁷⁵ “Evidence of the radiofrequency exposure on the antioxidant status potentially contributing to the inflammatory response and demyelination in rat brain,” June 11, 2022, Environmental Toxicology and Pharmacology, <https://www.sciencedirect.com/science/article/pii/S1382668922000965?via%3Dihub>.

¹⁷⁶ “Children Sick After 4G/5G Small Cell Installation Sacramento City Council Meeting,” <https://www.youtube.com/watch?v=qQDmlcB4qlo>.

for two months until the family installed metal shielding on the house to deflect the cell tower's RF radiation. From a real estate perspective, they would have to leave their "dream" home and try to sell it, although mostly likely at a devalued amount, because of its proximity to the cell tower.

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."¹⁷⁷

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

"... if you have a child, or a grandchild, his sperm, or her eggs (all of which she will already have by the time she is a fetus in utero), will be affected by the oxidative stress damage created by the electromagnetic radiation, in a fashion that may affect your future generations irreparably."¹⁷⁸

Vulnerable Communities as Disadvantaged Communities: Women

Women are also a vulnerable community. Some studies show that RF radiation appears to disproportionately affect women. For example, respondents to participate in two studies in Finland and Japan were 80.9%¹⁷⁹ and 95%¹⁸⁰ women, respectively. The women reported sleeping disorders, fatigue, headaches, and difficulty in concentration, memory and thinking.

Vulnerable Communities as Disadvantaged Communities: Elderly

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

An example is an 84-year-old elderly woman who suffered injuries from wireless infrastructure in NYC. The woman is low-income and was living in subsidized housing. After wireless transmitters were placed on the rooftop of her apartment building directly over her ceiling, she suffered from severe radiation sickness symptoms day and night for over 2 years. *They*

¹⁷⁷ 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>.

¹⁷⁸ Id.

¹⁷⁹ "Electromagnetic hypersensitive Finns: Symptoms, perceived sources and treatments, a questionnaire study," Hagstrom, Auranen and Ekman, April 1, 2013, <https://pubmed.ncbi.nlm.nih.gov/23557856/>.

¹⁸⁰ "Reported functional impairments of electrohypersensitive Japanese: A questionnaire survey," Kato and Johansson, March 27, 2012, <https://pubmed.ncbi.nlm.nih.gov/22458999/>.

included, among others, severe tinnitus, bilateral hearing loss, sleep deprivation, severe headaches, irritable bowel syndrome and persistent nausea and vomiting, for 2 years. (

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

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

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

Another example is an elderly couple in Long Beach, CA who must evacuate their home because of an impending installation of wireless infrastructure close to their home.¹⁸¹ The wife is an artist, medically diagnosed as EMS. The planned installation is only 25 feet from her art studio in her home. Their dilemma comes alive on video (see video in footnotes).¹⁸²

Vulnerable Communities as Disadvantaged Communities: Firefighters

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

“... slowed reaction time, lack of focus, lack of impulse control, severe headaches, anesthesia-like sleep, sleep deprivation and depression.”¹⁸³

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

“Firefighters have reported getting lost on 911 calls in the same community they grew up in, and one veteran medic forgot where he was in the midst of basic CPR on a cardiac victim and couldn’t recall how to start the procedure

¹⁸¹ “Maira loses her home to AT&T,” <https://youtu.be/e0tkLVJHpu8>.

¹⁸² Id.

¹⁸³ *International Association of Firefighters (IAFF) Votes to Study Health Effects of Cell Towers on Fires Stations; Call for Moratorium on New Cell Towers on Fire Stations Until Health Effects Can Be Studied,* https://ehtrust.org/wp-content/uploads/pr_iaff_vote-1.pdf.

over again...Prior to the installation of the tower on his station, this medic had not made a single mistake in 20 years.”¹⁸⁴

The International Association of Firefighters stated their position since 2004 that they “oppose the use of fire stations as base stations for towers and/or antennas for the conduction of cell phone transmissions” until there is proven evidence of their safety.¹⁸⁵ They refer to a multitude of scientific studies showing evidence of health effects from RF radiation.

“Firefighters have long contended they are willing to risk their lives for their fellow citizens; they are unwilling to risk deadly consequences as a result of living with cell towers on their stations in order to facilitate corporate profits.”¹⁸⁶

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

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

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

“[W]e have, as the evidence adduced herein indicates, far exceeded the ‘level of proof required to justify action for health protection.’ The theory

¹⁸⁴ 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>.

¹⁸⁵ *International Association of Fire Fighters: Cell Tower Radiation Health Effects*, <https://www.iaff.org/cell-tower-radiation/>.

¹⁸⁶ Testimony on 5G, Firefighters & Cell Towers to Malibu City Council by Susan Foster, <https://ehtrust.org/testimony-on-5g-firefighters-cell-towers-to-malibu-city-council-by-susan-foster/>; see also, *Firefighters Unions Opposing Cell Towers*, May 17, 2017, <https://ehtrust.org/firefighter-unions-opposing-cell-towers/>.

that non-ionizing RFR exposure could not cause cancer has been refuted using the scientific method.”¹⁸⁷

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

Industry’s Settled Science:

As early as April 2000, the ECOLOG Institute, which was commissioned by T-Mobil in Germany (parent company to T-Mobile in the U.S.), issued a report on its study of the risks of electromagnetic fields (EMFs) because of the rapidly expanding mobile telecommunications industry. The results were twofold: (1) findings of adverse health impacts associated with exposure to EMFs and (2) strong precautions and warnings to significantly lower the power of the EMFs to which the public would be exposed.¹⁸⁸ The findings included risks of cancer (of the central nervous system and testicular cancer), leukemia, damage to the immune system and cognitive impairments. It found that for all stages of cancer development, power flux densities of less than 1 W/m² were sufficient. “For some stages of cancer development, intensities of 0.1 W/m² or even less may suffice to trigger effects.”¹⁸⁹

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

¹⁸⁷ Prof. Tom Butler, University College Cork, On the Clear Evidence of the Risks to Children from Smartphone and Wi-Fi Radio Frequency Radiation, at 26, https://stopsmartmeters.org.uk/wp-content/uploads/2019/03/On-the-Clear-Evidence-of-the-Risks-to-Children-from-Smartphone-and-WiFi-Radio-Frequency-Radiation_Final.pdf.

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

¹⁸⁸ [Mobile Telecommunications and Health/Review of the current scientific research](https://ehtrust.org/wp-content/uploads/ecolog2000.pdf), ECOLOG Institut, Hannover, April 2000, <https://ehtrust.org/wp-content/uploads/ecolog2000.pdf>; ECOLOG is a research organization founded in 1991 by scientists from the University of Hannover.

¹⁸⁹ Id.

The Institute also provided precautions for vulnerable populations in “residential areas, schools, nurseries, playgrounds, hospitals and all other places at which humans are present for longer than 4 hours.”¹⁹⁰

In an article, “Why Tech Leaders Don't Let Their Kids Use Tech,”¹⁹¹ 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.”¹⁹²

Federal Communications Commission (FCC):

The FCC admitted in 2019 that at least some radio-frequency radiation (RFRs) can cause instantaneous non-thermal adverse effects with RFR frequencies ranging between 3 KHz and 10 MHz.¹⁹³

Food and Drug Administration (FDA):

Linda Birnbaum, Ph.D., former Director of the U.S. NIEHS and former Director of the National Toxicology Program (NTP) spanning across the Department of Health and Human Services organizations which involves NIH, FDA and CDC, has stated:¹⁹⁴

¹⁹⁰ Id.

¹⁹¹ “Why Tech Leaders Don't Let Their Kids Use Tech,” <https://kidzu.co/health-wellbeing/why-tech-leaders-dont-let-their-kids-use-tech/>.

¹⁹² Id.

¹⁹³ Proposed Changes in the Commission’s Rule Regarding Human Exposure to Radiofrequency Electromagnetic Fields, 34 FCC Rcd 11687, 11743-11745, ¶¶122- 124 & nn. 322-335 (2019).

¹⁹⁴ *Environmental Health Trust, et al v. FCC*, Motion for Leave to File Brief of Amicus Curiae Joseph Sandri in Support of Petitioners Urging Reversal, Aug. 5, 2020, <https://ehtrust.org/wp-content/uploads/20-1025-Amicus-Brief-Joe-Sandri.pdf>.

- ***“Effects from [wireless] radiofrequency radiation (RFR) such as genetic toxicity, immunotoxicity, oxidative stress, changes in gene and protein expression, changes in cell differentiation and proliferation, and increased permeability of the blood brain barrier were reported in these [scientific] publications.” (pg. 8).***
- ***“The phase I [NTP] studies established that non-thermal levels (<10C or no detectible change in temperature) of RFR exposure had toxicological implications in biological systems.” (pg. 9).***
- ***“The NTP found and published evidence of DNA damage after only 90 days of exposure.” (pg. 9).***
- ***“Overall, the NTP findings demonstrate the potential for RFR to cause cancer in humans. The independent peer review of the entire proceedings carried out by toxicologists, pathologists and statisticians independent of the NTP staff conducted March 26-28, 2018, concluded that there was ‘clear evidence of cancer,’...exposure to RFR is associated with an increase in DNA damage.” (pg. 11).¹⁹⁵***

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

FCC’s thermal limit is designed to protect from acute, short-term injuries from thermal effects, i.e., increase in body temperature, but may not be protective from thermal effects from chronic exposure. The NTP is recognized as the premier institute to conduct toxicology studies. The NTP study challenged the hypothesis that RF radiation is not harmful (at 6:50).¹⁹⁶ The NTP successfully refuted that hypothesis.

¹⁹⁵ See also, Prof. Tom Butler, University College Cork, *On the Clear Evidence of the Risks to Children from Smartphone and Wi-Fi Radio Frequency Radiation*, at 4 (“Dr. John Bucher, Senior Scientist, at the National Toxicology Program stated, ***“We have concluded that there was clear evidence that male rats developed cancerous heart tumors called malignant schwannomas. The occurrence of malignant schwannomas in the hearts of male rats is the strongest cancer finding in our study.”*** [Emphasis added]) https://stopsmartmeters.org.uk/wp-content/uploads/2019/03/On-the-Clear-Evidence-of-the-Risks-to-Children-from-Smartphone-and-WiFi-Radio-Frequency-Radiation_Final.pdf. Prof. Tom Butler is a social scientist, and is a former satellite and microwave communications engineer and IT professional, former Principal Investigator of the Governance Risk and Compliance Technology Centre in Ireland, a current member of the European Commission’s Expert Group on Regulatory Obstacles to Financial Innovation in FinTech. “With over €8.5 million in research funding on the application of digital technologies to date, he has over 220 publications and 11 inventions.”

¹⁹⁶ Id.

Creating controversy about the science is simply more war-gaming, funding industry-friendly studies while discrediting prominent scientists and their peer-reviewed studies.¹⁹⁷ Placing industry-friendly experts in government agencies designed to oversee them, seems to be a reprise from the tobacco industry.¹⁹⁸

Military - U.S. Naval Medical Research Institute

As early as 1971, the U.S. Naval Medical Research Institute (NMRI) published a report which summarized the findings of over 2300 scientific studies which included thermal (ionizing) and non-thermal (non-ionizing), biological hazards of RF radiation. The NMRI updated its work in 1976 and published a bibliography of 3,700 scientific papers on the biological hazards of RF radiation.¹⁹⁹ With respect to otherwise non-thermal, non-ionizing, RF radiation, the NMRI found, among many other things:²⁰⁰

- “Oxidative process change (a precursor for DNA strand breaks and ultimately cancer)
- Decreased fertility

¹⁹⁷ *UW Scientist Henry Lai Makes Waves in the Cell Phone Industry*, <https://seattlemag.com/article/uw-scientist-henry-lai-makes-waves-cell-phone-industry>.

¹⁹⁸ *The inconvenient truth about cancer and mobile phones*, Hertsgaard, M & Dowie, M. (2018), *The Guardian*, Jul 14, 2018, <https://www.theguardian.com/technology/2018/jul/14/mobile-phones-cancer-inconvenient-truths>.

¹⁹⁹ “On the Clear Evidence of the Risks to Children from Non-Ionizing Radio Frequency Radiation: The Case of Digital Technologies in the Home, Classroom and Society,” Prof. Tom Butler, University College Cork, Ireland, <https://mdsafetech.org/wp-content/uploads/2020/05/5g-professor-tom-butler-on-the-clear-evidence-of-the-risks-to-children-from-non-ionizing-radio-frequency-radiation-the-case-of-digital-technologies-in-the-home-classroom-and-society-.pdf> at 23;

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

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

²⁰⁰ *Id.*

- Altered fetal development
- Muscle contraction
- Cardiovascular changes
- Altered menstrual activity
- Liver enlargement.”

Other military experts have found that RF radiation is hazardous.²⁰¹ Declassified reports dating back to the 1970s document serious biological effects of non-ionizing RF radiation, including from the U.S. Army Medical Intelligence and Information Agency Office of the Surgeon General, CIA and NASA.²⁰²

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

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

1. In 2011, the World Health Organization’s (WHO) International Agency for Research on Cancer (IARC) classified wireless radiation as a Group 2B possible carcinogen.²⁰³ This conclusion was based upon an increased risk of malignant brain cancer (glioma) identified in those who used cell phones for over 10 years for an average of 30 minutes per day.

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

“When considered with recent animal experimental evidence, the recent epidemiological studies strengthen and support the conclusion that RFR should be categorized as carcinogenic to humans (IARC Group 1).”²⁰⁴

2. “Since 2011, the scientific evidence linking wireless to cancer has significantly increased and today several published reviews conclude that the current body of evidence indicates cell

²⁰¹ Military Experts, <https://sites.google.com/site/understandingemfs/military-experts?authuser=0>.

²⁰² Id.

²⁰³ https://www.iarc.who.int/wp-content/uploads/2018/07/pr208_E.pdf.

²⁰⁴ <https://www.sciencedirect.com/science/article/abs/pii/S0013935118303475>.

phone radiation is a proven Group 1 human carcinogen (Miller et al 2018, Peleg et al 2018 Carlberg and Hardell 2017, Belpomme et al 2018).”²⁰⁵

In fact, in 2019, “the majority of independent researchers ... have called for nonionizing microwave radiation to be reclassified as a Class 1 carcinogen, along with cigarette smoke.”²⁰⁶ By independent researchers is meant those who are not funded by industry and therefore would not have a conflict of interest in reporting results and providing transparency.²⁰⁷ Laboratory and epidemiological evidence was collected during the ensuing 8 years since 2011, whereby an Advisory Group of 29 scientists from 18 countries recommended that the IARC prioritize non-ionizing RFR to reclassify it as a Class 1 carcinogen.²⁰⁸

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

"Given the human, animal and experimental evidence, I assert that, to a reasonable degree of scientific certainty, the probability that RF exposure causes gliomas and neuromas is high."²⁰⁹

²⁰⁵ <https://ehtrust.org/science/whoiarc-position-on-wireless-and-health/>.

²⁰⁶ *On the Clear Evidence of the Risks to Children from Non-Ionizing Radio Frequency Radiation: The Case of Digital Technologies in the Home, Classroom and Society*, Prof. Tom Butler, University College Cork, Ireland, <https://mdsafetech.org/wp-content/uploads/2020/05/5g-professor-tom-butler-on-the-clear-evidence-of-the-risks-to-children-from-non-ionizing-radio-frequency-radiation-the-case-of-digital-technologies-in-the-home-classroom-and-society-.pdf>.

²⁰⁷ *On the Clear Evidence of the Risks to Children from Non-Ionizing Radio Frequency Radiation: The Case of Digital Technologies in the Home, Classroom and Society*, at 4, Prof. Tom Butler, University College Cork, Ireland, <https://mdsafetech.org/wp-content/uploads/2020/05/5g-professor-tom-butler-on-the-clear-evidence-of-the-risks-to-children-from-non-ionizing-radio-frequency-radiation-the-case-of-digital-technologies-in-the-home-classroom-and-society-.pdf>; <https://www.theguardian.com/technology/2018/jul/14/mobile-phones-cancer-inconvenient-truths>.

²⁰⁸ Miller, A. B., Morgan, L. L., Udasin, I., & Davis, D. L. (2018). Cancer epidemiology update, following the 2011 IARC evaluation of radiofrequency electromagnetic fields (Monograph 102). *Environmental research*, 167, 673-683.: [//www.sciencedirect.com/science/article/pii/S0013935118303475](https://www.sciencedirect.com/science/article/pii/S0013935118303475); see also, Hardell letter to firefighters, October 14, 2014, “Health hazards of base stations and other sources of radiofrequency electromagnetic field (RF-EMF) exposure,” https://ehtrust.org/wp-content/uploads/HARDELL-14-October-2014_1-1.pdf.

²⁰⁹ <https://www.saferemr.com/2021/03/expert-report-by-former-us-government.html?m=1>.

4. Ronald Melnick, Ph.D., retired NIEHS senior toxicologist who won the American Public Health Association's 2007 David P. Rall Award for public health advocacy and led the design of the NTP study²¹⁰ states:

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

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

²¹¹

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

"Children ... are not little adults and are disproportionately impacted by all environmental exposures, including cell phone radiation. In fact, according to IARC, when used by children, the average RF energy deposition is two times higher in the brain and 10 times higher in the bone marrow of the skull, compared with mobile phone use by adults."²¹²

6. New Hampshire formed a State Commission to examine whether wireless radiation is harmful to human health. The majority of that New Hampshire State Commission came to the conclusion that exposure to wireless radiation is harmful to human health and the environment. The commission was convened through bipartisan legislation²¹³ that was signed by the governor. Commission membership included unbiased experts in fields

²¹⁰ Bio of Dr. Melnick, <https://ehtrust.org/wp-content/uploads/Melnick-Bio.pdf>.

²¹¹ Dr. Ron Melnick – London 5G Conference, https://www.youtube.com/watch?v=zSx_yDzxvM8&t=2295s.

²¹² <https://ehtrust.org/wp-content/uploads/American-Academy-of-Pediatrics-letter-to-the-FCC-July-12-2012.pdf>.

²¹³ <https://legiscan.com/NH/text/HB522/2019>.

relating to health and radiation exposure, and they issued their Final Report in November 2020.²¹⁴

Conclusion

“All people deserve to ... live in healthy communities free from toxic pollutants.”²¹⁵
Therefore, to allow for bona fide “community-led projects,” which are not in name only, the EPA should be **technology neutral** and allow the communities to decide which technology is better for them. The EPA’s stated purposes of the Act should, instead, be to provide funding for:

“technologies that provide superior phone and broadband coverage.”

That would be more in keeping with a participatory and democratic process to ensure that the projects are, indeed, “community-led projects.”

For the stated purposes of deploying “zero-emission technologies” and benefiting “low-income and disadvantaged communities,” the optimum solution that addresses both of these purposes is allocating monies to those who would build out fiber optics to and through the premises (FTTP).

²¹⁴ Final Report of the Commission to Study the Environmental and Health Effects of Evolving 5G Technology, Nov. 1, 2020, (RSA 12-K:12-14, HB 522, Ch. 260, Laws of 2019), <http://www.gencourt.state.nh.us/statstudcomm/committees/1474/reports/5G%20final%20report.pdf>.

²¹⁵ Id.