

MIKE KUGLITSCH

STATE REPRESENTATIVE • 84TH ASSEMBLY DISTRICT

DATE: May 29, 2019
RE: **2019 Assembly Bill 234**
TO: Assembly Committee on Jobs and The Economy
FROM: Representative Mike Kuglitsch
SUBJECT: Regulation of wireless facilities and imposing setback requirements for certain mobile service support structures.

Thank you Chair Neylon and Members of the Committee for your consideration of Assembly Bill 234, which regulates 5G wireless deployment and authorizes setbacks for macro cell towers. I am here to request your support in the deployment of the next generation of advanced wireless technology and to return more local control to macro cell tower siting in Wisconsin.

Consumers and businesses are using mobile devices more than ever to connect to the world around them and data traffic on AT&T's mobile network has grown more than 470,000% since 2007.

To meet the growth in consumer demand, the United States is moving swiftly to lead the world in the next generation of wireless connectivity. 5G, or small cells, are wireless antennas that can be installed on existing structures like utility poles and street lights to enhance existing 4G/LTE wireless networks. 5G networks are often deployed in dense urban areas to help enhance connectivity and boost capacity for customers. These low-powered radio access nodes typically have a coverage ranging from 30 to several hundred feet and are the solution to current network congestion.

Assembly Bill 234 lays out a consistent and efficient application and permit process allowing wireless providers to make the necessary investment in updating infrastructure for the deployment of 5G. Wisconsin is the last state in the Midwest to adopt laws defining 5G wireless distribution and unless the legislature acts soon, Wisconsin stands to lose further investment dollars.

Foxconn passed on Minnesota, Iowa, Illinois, Indiana, Michigan and Ohio to develop in Wisconsin and yet we are the doughnut hole in the Midwest in terms of the 5G service they will depend on. To ensure, smart cities, virtual reality, autonomous vehicles and other technologies are available in the near future, Wisconsin must adopt and implement AB 234.

The bill streamlines and standardizes the rules that will accelerate the deployment of small cell technology in Wisconsin – helping pave the way for future high-speed wireless connectivity, which promises to be 10 to 100 times faster than current wireless speeds.

Based on the rules adopted by the Federal Communications Commission, AB 234 includes fair and consistent rules simplifying the process and allowing companies to quickly deploy small cell technology and bring advanced wireless infrastructure to Wisconsin.

As a result, 5G is expected to rollout in the Wisconsin market later this year and address increased capacity demands from consumers. By 2021, the number of 5G connections is forecast to reach a figure between 20 and 100 million. Spending on 5G mobile infrastructure for that same year is forecast to be at around \$2.3 billion.

Macro cell tower language is incorporated into this legislation with setbacks equal to the length of the tower's height, so a 200 foot tower would have a 200 foot setback from the property line. In addition, language was added to expand municipal authority to apply setback requirements on macro cell towers. Finally, it provides an ability for local neighborhoods to have more control over the macro towers in their communities.

Finally, I believe it is our job as legislators to allow innovation and emerging technologies to prosper and to be welcome in our state and this legislation continues Wisconsin as a technology leader in the Midwest.

Thank you Mr. Chair, I ask for your support of this legislation and I am happy to take any questions.



DEVIN LEMAHIEU

STATE SENATOR

Assembly Committee on Jobs and the Economy
Testimony on Assembly Bill 234
May 29, 2019

Chairman Neylon and Members,

Thank you for hearing my testimony on Assembly Bill 234 which establishes a framework for the deployment of small cell facilities.

Consumers and businesses are using mobile devices more than ever to connect to everyone and everything around them. According to the Federal Communications Commission, the United States is moving swiftly to lead the world in the next generation of wireless connectivity – or 5G.

The deployment of small cell facilities will pave the way for 5G connectivity. Small cells are wireless antennas that can be installed on existing structures like utility poles and street lights to enhance existing 4G/LTE wireless networks.

Wisconsin is the only state in the Midwest to not adopt a law defining 5G wireless distribution. Unless a uniform framework for deployment is set, Wisconsin stands to lose significant wireless infrastructure investment.

AB 234 sets the structure for small cell deployment throughout Wisconsin and sets the standards and fees wireless service providers must adhere to when applying for small cell locations. Furthermore, the proposal provides local governments with additional flexibility to regulate setbacks for certain mobile service support structures.

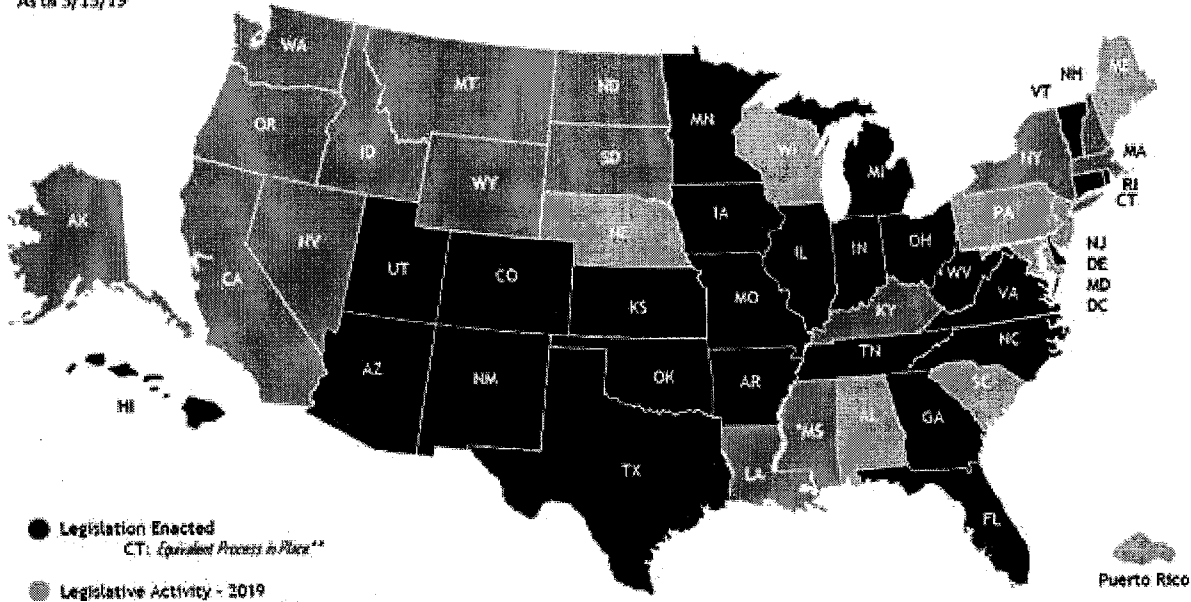
Representative Kuglitsch and I authored similar legislation last session. While AB 234 has the same goal as last session's proposal, a recent FCC ruling has provided basic guidelines for deployment of this new technology. Some of these federal procedures have been incorporated into this legislation.

I ask you to support this legislation to ensure that Wisconsin residents are able to experience the next generation of wireless technology.

Thank you for your time and I am happy to answer any questions.

National Wave of Small Cell Legislative Activity

As of 5/15/19



- **Legislation Enacted**
*CT: Equivalent Process in Place***
- **Legislative Activity - 2019**
*Filed: CT, FL (repeal-opp), GA, MS (repeal-opp),
 ME, MS, NE, NJ, SC, VT, WV, PR
 Anticipated: PA, NH, AI
 Sent to Study: NY*

*Non-industry bill rejected and defeated.
 **PUC Order Date and/or Ongoing Regulations

Puerto Rico



MILWAUKEE COMMON COUNCIL

City Hall Room 205, 200 E. Wells Street, Milwaukee, WI 53202 • (414) 286-2221 • Fax (414) 286-3456 • www.milwaukee.gov/council

City of Milwaukee Testimony on AB 234 May 29, 2019 Assembly Committee on Jobs and the Economy

The City of Milwaukee began working with small cell wireless service providers a few years ago and has negotiated contracts with five different companies to allow for such collocation. These contracts have come with a learning curve in understanding the various companies' needs, while preserving public safety through protection of our facilities. We have diligently worked through adjustments in our processes to allow for this collocation because Milwaukee is excited about the technology and the increased service level it can provide to our community. To date, we have installed over 300 small cell wireless facilities.

To be consistent with our position last session, the City of Milwaukee remains opposed to AB 234/SB 239 mainly on the basic principle that the bill does not allow us to recover our costs. The fees specified in the bill are below our actual and direct costs so we believe taxpayers will be subsidizing the build out of this wireless network. Additionally, the bill nullifies our contracts two years after enactment and the Legislature should not interfere with local government contracts that were negotiated in good faith between two parties.

Since the 2017 bill was introduced, the FCC has issued a ruling over small cell wireless facility deployment. The current bill codifies the fees and rates in the FCC ruling. However, AB 234/SB 239 does not include a provision in the FCC ruling permitting local units of government to exceed the FCC's presumptively reasonable fee limits if the local unit of government is able to demonstrate that such greater fees are a reasonable approximation of costs and non-discriminatory. Current Wisconsin law already dictates that communities cannot charge more than their actual and direct costs to provide a service, it is unnecessary to codify these fees.

Further, the bill creates some additional operational challenges that are heavily weighted in favor of the industry versus local communities. For example, the bill allows the providers to bundle up to 30 locations in one application. If each company submitted 5 applications with 30 locations each, then we only have 10 days to review 750 locations which would be nearly impossible. The make ready provision that allows the companies to complete work over 365 days but only gives the local government 60 days to complete the make ready is unbalanced. The make ready work needs to be coordinated with the installation of the equipment so the time frames should be equal. Under the section where approvals are not required, at a minimum, we would want to receive notification for conducting routine maintenance in the right of way in order to coordinate with any other work that is being done.

I do acknowledge that AB 234/SB 239 is an improvement from the 2017 bill and appreciate the authors' and industry's willingness to include some modifications. Those improvements are: inclusion of a 2% fee escalator, an automatic adjustment to fee caps whenever the FCC adjusts its determination of what fee amounts are presumptively reasonable, authority to regulate the aesthetics and placement in historic districts, and clarifying language in subsection 9 so that local governments can continue to regulate the use of the right of way by communication service providers.

Unfortunately, even with the aforementioned changes the City of Milwaukee cannot support the bill under the basic principles that we should be able to recover our costs so that taxpayers are not subsidizing the wireless service providers and the Legislature should not interfere in our contracts. For these reasons, we ask you to not support AB 234/SB 239. Thank you.

For more information, please contact:

Brenda Wood, Intergovernmental Policy Manager

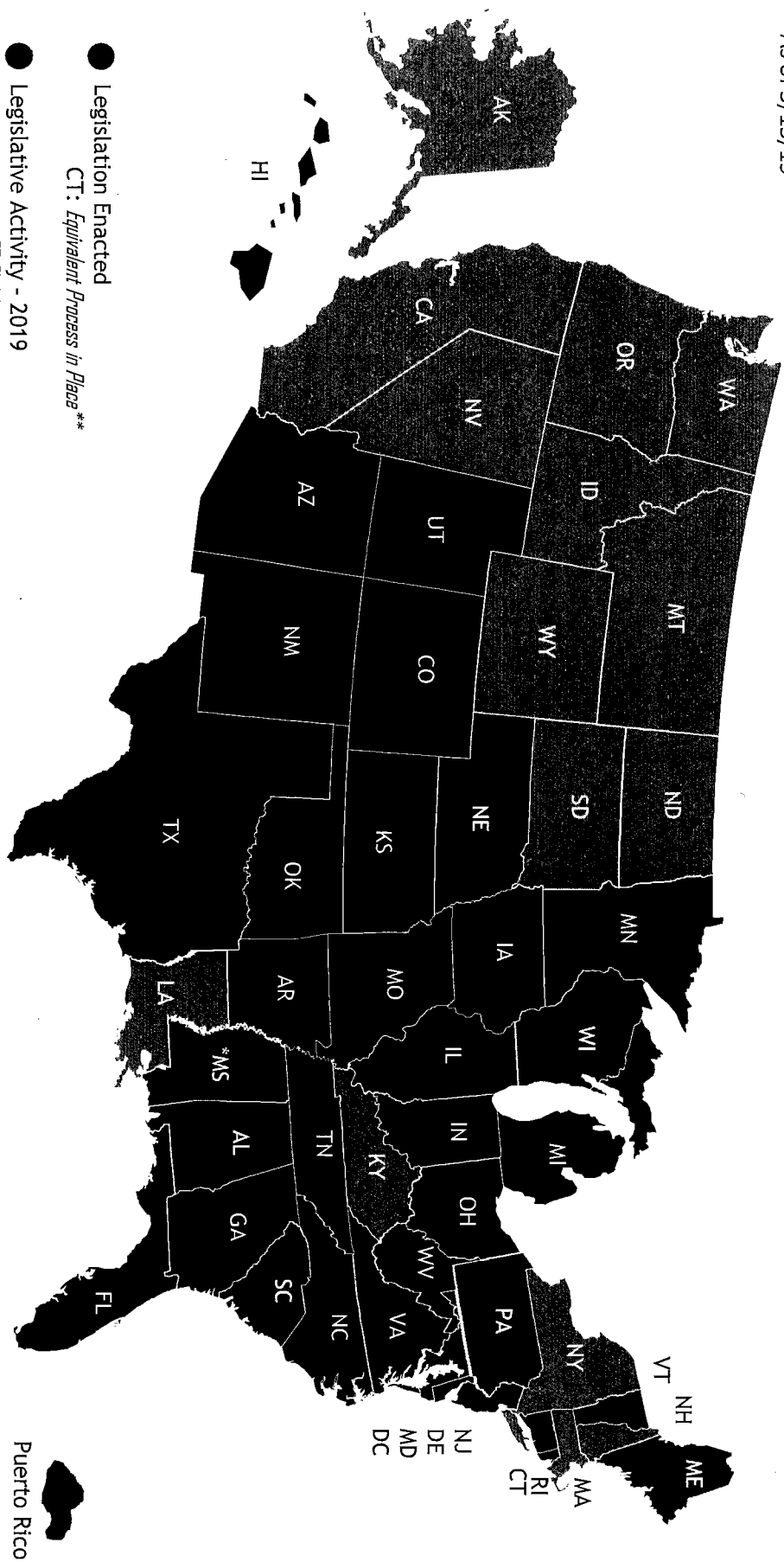
City of Milwaukee

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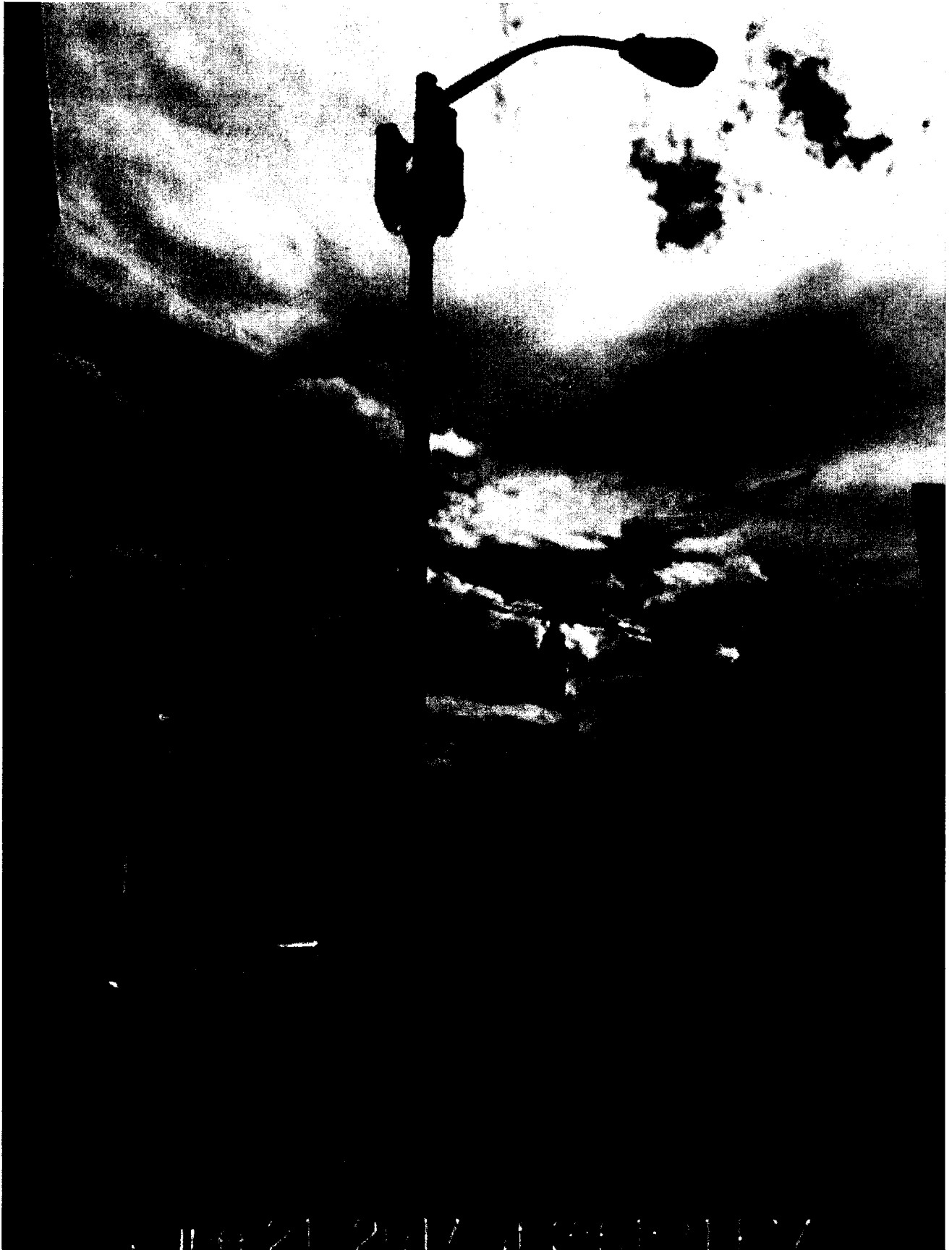
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National Wave of Small Cell Legislative Activity

As of 5/15/19

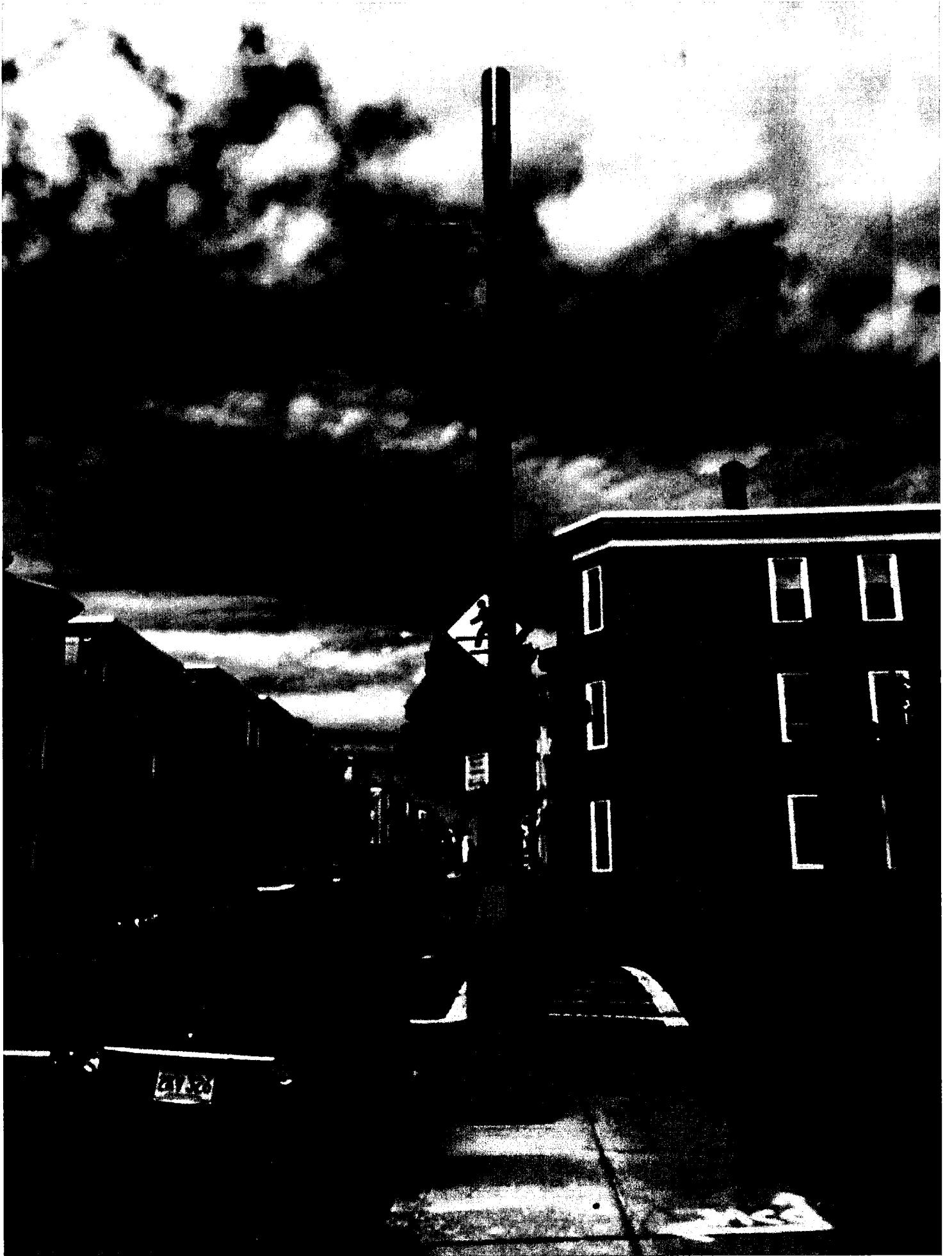


*Non-industry bill opposed and defeated.
**PJDC Order Streamlined Siting Regulations









Oral Testimony in Opposition to AB 234 and SB 239

May 28, 2019

Catherine Kleiber

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“Grassroots Public Education and Advocacy”

Founder and Director - Author and Webmaster

Independent Researcher

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Please oppose AB 234 and SB 239. The telecommunications industry is motivated by profits above all else, just like other industries that have brought us past public health disasters - lead paint, asbestos, tobacco, radium - so supporting legislation that forces 5G on communities across Wisconsin when the telecom industry has admitted in testimony to Congress that 5G has not been tested for safety is horribly foolish and does not serve the interests of the state.

AB 234 and SB 239 remove communities' remaining rights to protect public health and the environment and also any remaining rights to charge the telecommunications industry fair market value for the use of public infrastructure and right of ways. A little research will show you that AB 234 and SB 239 are essentially the same as laws being promoted by the telecom industry for their monetary benefit and to facilitate the easy rollout of 5G across the country by steamrolling local governments that would otherwise try to protect their residents' health and their local environment.

More and more studies are finding that exposure to wireless radiation is hazardous to public health. The recent U.S. National Toxicology Program study looking at wireless radiation found “clear evidence of cancer” and DNA breakage. The Ramazzini study replicated the National Toxicology Program study at lower levels of exposure and also found that wireless radiation is carcinogenic. Another replicated study found that wireless radiation is a cancer growth promoter. The advisory panel to the International Agency for Research on Cancer (IARC) has recommended that IARC re-evaluate wireless radiation (which is already a Group 2B - possible human carcinogen) for carcinogenicity. Independent experts are calling for it to be classified as Group 1 - carcinogenic to humans.

Wireless radiation has been shown to have serious neurological and cardiac effects. It causes oxidative damage, endocrine disruption, inappropriate activation of voltage-gated ion channels, changes in enzyme function, and is pro-inflammatory. A recent study provides evidence that exposure to wireless radiation may cause premature labor and delivery.

The legislature should not be forcing such a dangerous environmental pollutant on communities across Wisconsin.

AB 234 and SB 239 open the State of Wisconsin to increased liability since no insurance company provides liability insurance for the health and environmental effects of wireless radiation, except possibly as a costly special rider. This is because the science showing that wireless radiation is a health hazard is so

strong. The Wisconsin legislature should take this as a sign that they do not want to take on this liability either.

Finally, studies show broadband/cell tower installations lower property values up to 20%. These studies were done before most people were aware of the health hazard they pose, so the devaluation will only increase as more and more people become aware. Ultimately, properties near towers, including "small cells" may become unsaleable. AB 234 and SB 239 discriminate against lower income neighborhoods by exempting neighborhoods zoned as solely single family. If the technology is undesirable in single family neighborhoods, nobody should be forced to have it.

For all these reasons, you should all oppose AB 234 and SB 239.

The legislature should be seeking to minimize the presence of wireless radiation and warn the public about the hazard it poses. The legislature should repeal 2013 Act 20 which makes it harder for communities in Wisconsin to protect public health and the environment than for communities in other states to do so. The legislature and Governor should ask the Attorney General to challenge the constitutionality of the 1996 Telecommunications Act which has forced hazardous wireless radiation exposures on communities for 23 years. WIRED broadband is safer, more reliable and secure, much faster and much more energy efficient. The legislature should make providing WIRED broadband across the state a priority, earmarking all state broadband funds for WIRED networks only. The legislature also needs to repeal Wisconsin Statute § 66.0422 and revise current statutes so communities can readily install WIRED broadband networks. Community broadband networks have been very successful in numerous locations, providing very high quality internet at a very reasonable rate using fiber to the premises and acting as an engine for economic development.

Thank you for your time. Please vote against passing AB 234/SB 239 out of committee.

Please take time to read my written testimony (sent by email) which contains links to references and websites.

May 29, 2019 Madison, WI – 5G Bill AB234

BY: CAROL SEIBERT

Thank you for allowing me to speak today. My name is Carol Seibert.

In 2002, Robert Kane, a former senior telecom engineer wrote: ***“Never in human history has there been such a practice as we now encounter... with the marketing and distributing of products hostile to the human biological system... by an industry with FOREKNOWLEDGE of those (harmful) effects.”***

Robert Kane’s book Cell Phone Radiation — Russian Roulette:

https://microondes.files.wordpress.com/2010/03/robert_c_kane_cellular_telephone_russian_roulette.pdf

I am NOT **wary or suspicious** of TECHNOLOGICAL ADVANCEMENTS. I have worked CLOSELY with technology FROM 1978 thru today. In fact, in 1980 I was the FIRST WOMAN to run the new ELECTRONIC SCOREBOARD for the Milwaukee Brewers Baseball Team.

I AM Wary And Suspicious however, of a GOVERNING BODY that HAS NOT revisited SAFETY STANDARDS that are **26 YEARS OLD** in light of SCIENTIFIC EVIDENCE that SHOWS MICROWAVE RADIATION causes **biological harm** on **ALL LIVING THINGS**.

- And I am PROOF OF BIOLOGICAL HARM! In 2014, I became the proverbial “canary in the coal mine” when I developed **RADIATION SICKNESS** (aka **MICROWAVE SICKNESS** or **EHS - Electro Sensitivity**.) Basically, that means I am ALLERGIC to and cannot BE around any wireless radiation including cell phones, cordless phones, fitbits, wireless routers, ‘**smart**’ utility meters, cell towers, etc.
- Wireless Technology triggered severe neurological and hormonal imbalances in **my body and my brain**. When exposed to Microwave Radiation I get crushing headaches, nerve related muscle cramps throughout my body especially my feet and legs; I get heart palpitations, heartburn, nausea. I have chronic insomnia, eye pain, impaired vision, and brain fog... just to name a few. I am often debilitated with extreme **pain and fatigue** for several days. MR can affect my mood, temperament and personality. MR can even be life threatening, causing a stroke or heart attack. All scientific fact. In fact, I am putting my life in harm’s way by being in this room today.
- For over 6 years, I have been living a physically and emotionally painful, restricted and isolated life, having almost too many losses to count: my health, my home, my career, family and friends, social activities; travel, and **almost all my personal freedoms**: I can NO longer TRAVEL by airplane, train, bus or ship). MR defines WHERE I CAN GO, LIVE, SLEEP; even WHAT I CAN AND CANNOT WEAR on my body (including NO makeup. NO METAL: eyeglasses, jewelry, even MY WEDDING RING...etc!). It ALL HAD TO GO!!
- Going to the doctor, dentist and grocery store are very challenging. Wireless technology has invaded every corner of our lives!
- BUT LOSING TIME WITH MY 11 GRANDCHILDREN IS TRULY THE MOST PAINFUL. I can no longer go to my THEIR EVENTS: dance recitals, football or hockey games, awards ceremonies, XMAS pageants. The

last 5 years I could not attend my granddaughters wedding or another's US Air Force Commissioning; I missed cousins weddings, high school and college graduations!

- I love my family and my grandchildren dearly and AM SO PROUD OF THEM. But not being able to be a part of these Milestones with them is truly HEARTBREAKING. **I've not been able to get used to the DISAPPOINTMENT.** Its HARD!
- Every day i'm challenged to fight for my survival. And I'm here pleading with you to hear my STORY AND MY PAIN... so that it does NOT one day BECOME YOUR PAIN ... OR THE LOSS of someone you love.
- **SADLY, I AM NOT ALONE with EHS.** At least **3-10%** of the population ARE afflicted with **EHS**. We are all looking for a SAFE place to live, but even OUR HOMES are being radiated 24/7 by the UTILITY COMPANY (WE ENERGIES) with 'smart meters' WITH NO customer OPT OUT options for a non-radiating meter even under the American Disabilities Act? Where is our Government Protection? Why are our human rights being violated? And now you want to put 5G on Lamp Posts near our homes too?? Insanity!
- What's really FRIGHTENING IS THAT **MOST PEOPLE do NOT FEEL the effects** of wireless radiation, ever. They may have a **serious health crisis**—Anxiety, Depression, Diabetes, tumor, cancer, heart attack, stroke, etc... but yet **they will not CONNECT THE DOTS** back to WIRELESS RADIATION because of the shroud of (Telecom and government) dishonesty UNDER which the **TRUTH** is being kept from the public.
 - **The RISK OF HARM TO pregnant mothers, children, the sick and elderly is even greater.** We will see more birth defects, Autism, cancer, etc.
 - Suicide rates in our teens and Veterans ARE CLIMBING! The survival of ALL living things IS AT RISK!
- **5G WILL HELP JOBS AND THE ECONOMY???** Initially, Maybe. **Long Term--NO!!**
- **Ultimately 5G WILL HURT JOBS and the ECONOMY in Wisconsin!** Within 5-7 years of 5G rollout.... if not sooner, **SCIENTIST MARTIN PALL PREDICTS total CHAOS:** people will likely continue to get sicker, cancers will skyrocket. (look around—they already are!), **productivity** will suffer; **unemployment and disability** will RISE SHARPLY. **HEALTH INSURANCE RATES WILL INCREASE.** **Medicare** will be flooded. Also, because MICROWAVE RADIATION affects our brain function, you will likely see **Crime, mental illness, neurodegenerative diseases and suicides** RISE steadily. This is science, not conjecture. This will put a tremendous financial and psychological burden on the state.
- YOU WILL NOT BE ABLE TO TURN BACK THE CLOCK TO REGAIN THE HEALTH OR TRUST OF THE FINE CITIZENS OF THIS BEAUTIFUL STATE!
- **THINK CAREFULLY.** Then PLEASE VOTE **NO** on the 5G bill **AB 234.**

Sincerely and Respectfully,

Carol Seibert
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Testimony of Patrick Fucik on behalf of Sprint Corporation
In Support of AB 234
Before the Wisconsin Assembly Committee on Jobs and the Economy
May 29, 2019

Good morning Chairman Neylon and members of the committee. My name is Patrick Fucik and I am the National Director of State Legislative Affairs for Sprint. Thank you for the opportunity to provide written testimony on behalf of Sprint and our 223 employees that call Wisconsin home in support of AB 234.

I would first like to thank Senator LeMahieu and Representative Kuglitsch for the outstanding job they have done to help advance this legislation. Without their countless hours of shepherding the wireless industry, the League of Wisconsin Municipalities and the various other stakeholders to reach this point, Wisconsin would not be at the forefront of realizing the benefits that 5G technology will provide.

It is clear from the involvement of all the stakeholders that finding common ground on AB 234 was essential to keeping Wisconsin at the leading edge of the latest in wireless infrastructure deployment and the economic development that this deployment will provide. You have heard from the sponsors about what 'small cell' technology is and how it's deployment is the future of 5G technology but I wanted to make sure you have a visual as to what a small cell looks like so I have included several pictures at the bottom of my testimony.

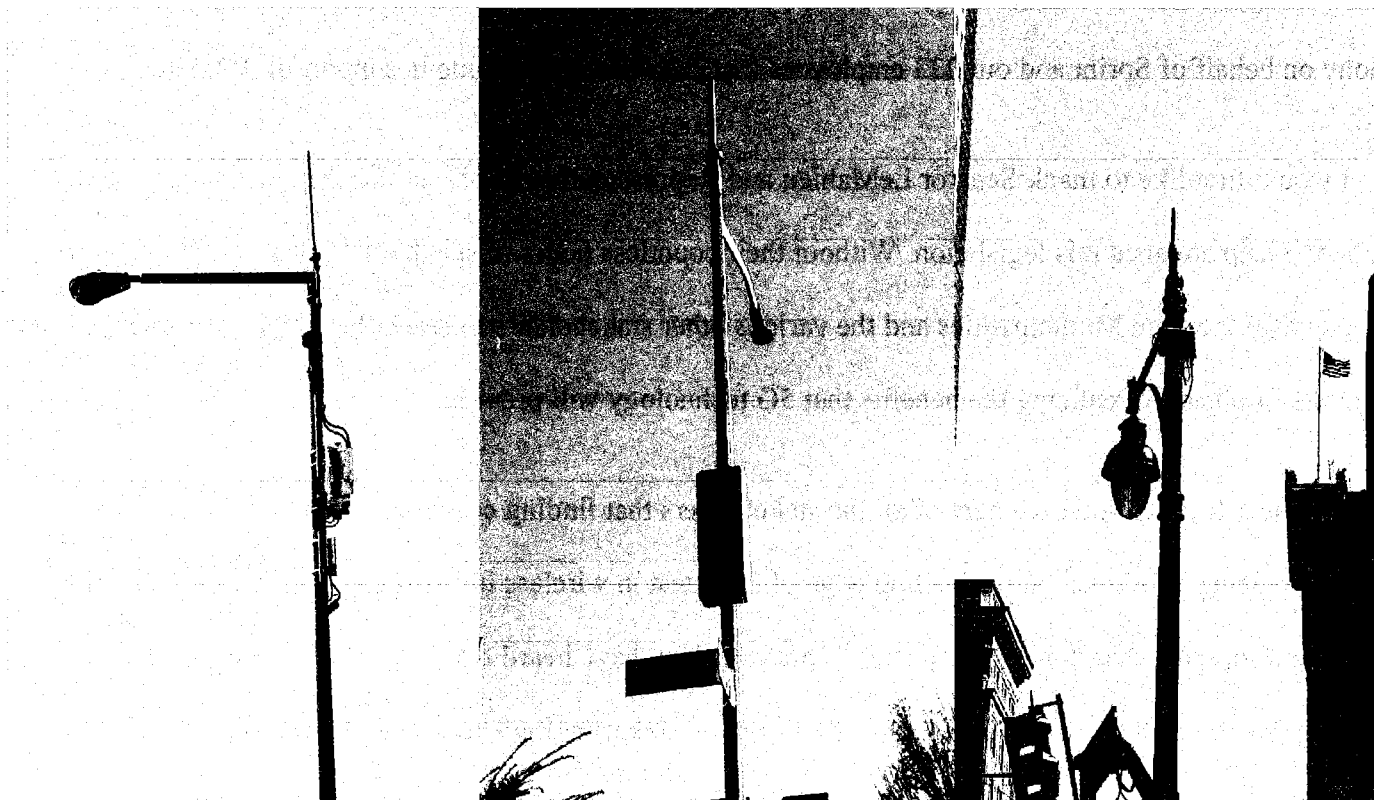
The industry shift to small cell deployment will create a uniform and efficient process for installing small wireless facilities throughout Wisconsin and it is important that the State modernize its current statutes to keep pace with the changes in technology and the way wireless carriers will be deploying 5G technology.

To date, since the 2016 legislative sessions, 25 states have now passed small cell bills – half of the country. The fact that so many states have passed similar legislation provides further evidence that modernizing

state laws to address the latest deployment technologies of wireless providers is paramount to states remaining competitive in the arena of 5G deployment. It is essential that Wisconsin statutes be updated in order to keep pace with the technological advancements that will foster the next generation of wireless network infrastructure using small cells. The passage of AB 234 will ensure that Wisconsin remains competitive in this arena.

It is for these reasons that I respectfully urge you to support AB 234.

Thank you.





Move Forward to a Safe, Healthy, and Prosperous Future in Wisconsin

Phone: 414-423-6292 (landline)

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Protect Property Values: Change State Law to Allow Municipalities & Counties to Provide WIRED Broadband

Broadband internet is being regarded as an essential service, therefore it should be treated as such by state law. Municipal and county governments should be allowed to create entities to provide WIRED broadband service to their residents, just as they are allowed to provide other utility services. WIRED broadband is safer, faster, and more secure than WIRELESS broadband. Even before there was widespread public awareness of the health and environmental risks, studies showed that property values around cell/broadband towers were up to 20% lower than for comparable properties that were not near towers. Since WIRED broadband does not require unsafe and unsightly transmitter towers and is far faster, more energy efficient (<https://whatis5g.info/energy-consumption/>), and more secure, it should be the choice for those looking for a sustainable and healthy future.

Protect Public Health & the Environment: Prohibit Use of Public Funds to Provide WIRELESS Broadband

There is widespread agreement that the FCC limits governing wireless radiation¹ are not biologically-protective for humans or the environment (www.electricalpollution.com/WirelessKillsTrees.html) during the chronic exposures to wireless radiation that we experience today. The Department of Interior, the Environmental Protection Agency, and the American Academy of Pediatrics have gone on record stating that the FCC wireless radiation limits are outdated. The FCC wireless radiation limits were only intended to protect a large male from thermal harm (cooking) during a short-term exposure. Thus, everyone is vulnerable to biological harm, including pregnant women and children, from the ubiquitous chronic wireless radiation exposures that are occurring today. The recent National Toxicology Program (NTP) study found clear evidence of a link to cancer, as have other studies (www.EHTrust.org). The International Agency for Research on Cancer (IARC) has already classified radiofrequency radiation as a Group 2B Possible Human Carcinogen. In March 2019, an IARC advisory panel recommended that the carcinogenicity of radiofrequency radiation be re-evaluated. Some experts are calling for the classification to be changed to Group 1 Carcinogenic to Humans. In which case, public money spent on wireless infrastructure would have been wasted on installation of a dangerous infrastructure that would need to be removed. Additional money would still need to be spent to install WIRED broadband. Thus, no public funding should be wasted on providing WIRELESS broadband anymore. Public funds should be focused solely on providing WIRED broadband which is not only safer, but also faster, more secure, and uses far less energy than WIRELESS broadband.

Restore Copper Landlines to Provide Safe Access to Telephonic Communication & Optimal 911 Service

Wireless devices themselves emit microwave/radiofrequency radiation at levels that were found in the NTP and Ramazzini Studies to cause cancer. The hazard they represent is serious enough that the Italian government was ordered in 2019 by the Italian court to begin a public awareness campaign warning about the health risk posed by cordless phone and cell phone use. France has recalled thirteen cell phone models for exceeding French safety limits (which are even weaker than the FCC wireless radiation limits) when the phones are used as they always are - in contact with the body - against the head, in pockets, bras, socks...(<https://ehtrust.org/new-study-cell-phones-exceed-safety-limits-when-phones-touch-the-body/>). Radiation emitted by wireless technology is harmful to pregnant women and their unborn children. Links have been made to miscarriage, pre-term delivery, and cognitive and behavioral impacts on children (<https://ehtrust.org/science/pregnancy-wireless-and-electromagnetic-fields/>). Current state law allows telecommunications providers to force residents to use dangerous wireless communication because there is no longer a requirement that they properly maintain their copper landline system. The health and safety of Wisconsin residents and the environment necessitate restoring the requirement that telephone companies properly maintain their copper landline systems and provide universal service.

Emergency services are better able to provide timely service to people calling from landlines so people who are prevented from having landline service by their telephone company are therefore also prevented from having optimal emergency services (<http://www.nbcnews.com/tech/security/why-calling-911-your-cell-not-always-good-idea-n99736>). This particularly becomes an issue when the caller cannot provide location information, whether due to age (extreme youth) or incapacitation.

Return Control of Cell/Broadband Tower/Antenna Siting to Local Governments

In light of the inadequate and outdated FCC wireless radiation limits, it is increasingly important that local governments be allowed under state law to take whatever steps are necessary to protect the health of their residents. The state should also stop promoting measures to limit local governments' ability to protect public health, the environment, historical districts, and public interest, like the Broadband Forward! ordinance being promoted by the Wisconsin Public Service Commission.

Ensure Public Health & Safety, the Environment, and Public Interest Are Paramount in Technology Decisions

The Wisconsin Technology Committee should consist of public and environmental health experts, consumer protection advocates, and environmental and biological scientists who are and have been completely independent of the technology industry and who would be charged with vetting any policy advice provided by the Wisconsin Technology Council to ensure that it is in the public interest, namely it provides definite benefits without endangering public health or the environment. The Committee should also be charged with identifying potentially dangerous technology and recommending necessary changes to protect public health and the environment.

Protect Wisconsin by:

Learn More and Take Action:
www.ElectricalPollution.com
www.WisconsinSafeTech.com
www.OconomowocForSafeTechnology.org

Supporting affordable broadband internet access with safe, reliable, secure WIRED infrastructure all the way to the home/premises instead of powerful wireless "small" cell antennas (5G/IoT). Excellent resource: "[Reinventing Wires: The Future of Landlines and Networks](#)."

- Ask Sen. Baldwin and Sen. Johnson to support H.R. 530. This Bill would help restore local control to local municipalities by overturning the overreaching Sept. 2018 FCC Order.
- Ask Sen. Baldwin and Sen. Johnson to sponsor/support legislation to repeal Section 704 of the 1996 Telecommunication Act
- Sponsor or support legislation to prohibit use of public broadband funds to install wireless technology, which endangers public health and the environment.
- Sponsor or support legislation to repeal parts of 2011 Act 22 so telecoms are again responsible for repairing copper lines, insuring capacity for landlines which are proven the most reliable emergency communication.
- Sponsor or support legislation to repeal 2013 Act 20 and return power to local governments to regulate the siting of cell phone, WiFi, and broadcast towers.
- Sponsor or support legislation to repeal Wisconsin Statute Annotated § 66.0422 and revise current statutes so communities can readily install WIRED broadband networks.
- Sponsor or support legislation to encourage affordable broadband internet access with safe, reliable, secure WIRED infrastructure all the way to the home/school/business instead of radiation emitting wireless "small" cell antennas.
- Sponsor legislation to change the membership and mission of Wisconsin Technology Committee to protection of public health and the environment and the public interest in vetting policy recommendations put forward by the Wisconsin Technology Council.

¹All wireless devices emit radiofrequency radiation. Modern wireless technology uses pulsed modulated radiofrequency radiation, mostly in the microwave range. There has never been a safe level of exposure to microwave radiation determined in the scientific literature. All of the following use this form of man-made microwave radiation to send and receive data: cell phones, cordless phones, Bluetooth, laptops, Chromebooks, iPads and other tablets, iPods, smartboards, classroom access points, WiFi routers, baby monitors, utility "smart" meters, home assistants, and many gaming systems, hearing aids, pacemakers, vehicles, and wearable devices, as well as cell/broadband towers, including "small" cell antennas for 4G/5G. Note: Other terms often used in association with wireless devices are electromagnetic fields (EMFs), electromagnetic radiation (EMR) and millimeter waves (MMW), and the lay designation - wireless radiation - which we use in this briefing.



Wireless
Infrastructure
Association

Testimony of

Arturo Chang
State Government Affairs Counsel
Wireless Infrastructure Association

Before the

Assembly Committee on Jobs and the Economy Committee

Wednesday, May 29, 2019

AB 234 SUPPORT

Dear Chairman Neylon and members of the committee,

Thank you for holding this important hearing on Assembly Bill 234 (AB 234). My name is Arturo Chang, and I am State Government Affairs Counsel at the Wireless Infrastructure Association (WIA) testifying in support of this bill. WIA is the principal trade association representing the companies that build, own, and manage wireless facilities in Wisconsin and throughout the U.S. WIA works to support the delivery of advanced wireless services to communities across the country in a responsible and sustainable manner to maintain American leadership in the global race to 5G.

AB 234 is a balanced approach that encourages deployment of small 5G infrastructure while ensuring that localities retain the necessary authority to regulate the continuity of structures being built in the public rights-of-way. A state-wide streamlined approach provides greater predictability that will encourage private investment in these next generation networks. This effort will usher in 5G services that will create jobs, stimulate local economies, and bring efficiencies in local government services, from trash collection to traffic management.

Wisconsin consumers are using more wireless data than ever and are dependent on being connected in their everyday lives. Specifically, over fifty-one percent of Wisconsin



Wireless
Infrastructure
Association

households have “cut the cord” and rely entirely on wireless services.¹ We anticipate that number increasing over the next few years. AB 234 would allow the wireless industry to invest in Wisconsin, which will result in greater infrastructure investment, increased capacity, and advanced wireless connectivity.

Furthermore, 5G will bring many benefits to Wisconsin, including more innovative services and technology for smart cities. Smart cities use electronic data collection sensors for connected services in public safety, public works, telemedicine, autonomous vehicles, and more. For instance, telemedicine expands healthcare services by increasing remote access to treatment. These new innovations and advanced services will make communities safer and more efficient. Recent studies estimate that the wireless industry will invest over \$1.2 billion in deploying small wireless facilities and 5G services that will, in turn, increase Wisconsin’s GDP by over \$2.2 billion and create at least 13,800 new jobs.²

Thank you again, Chairman Neylon and members of the Committee, for holding this hearing. WIA appreciates your consideration as it continues to support American innovation in the global race to 5G competitiveness.

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¹ Wireless Substitution: State-level Estimates from the National Health Interview Survey, 2017, CENTERS FOR DISEASE CONTROL – NATIONAL CENTER FOR HEALTH STATISTICS, NATIONAL HEALTH INTERVIEW SURVEY EARLY RELEASE PROGRAM (released March 2019), *available at* <https://bit.ly/2TYU8vK>.

² See The Race to 5G, CTIA – Everything Wireless, 5G Economic Impact for Wisconsin, *available at* <https://www.ctia.org/5g/print?state=WI>.



May 29, 2019

The Honorable Adam Neylon
Chair, Assembly Jobs and the Economy Committee
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The Honorable Patrick Snyder
Vice-Chair, Assembly Jobs and the Economy Committee
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State Capitol
PO Box 8953
Madison, WI 53708

RE: Support AB 234 – Streamlined Deployment of Small Wireless Facilities

Dear Chair Neylon and Vice-Chair Snyder,

On behalf of CTIA, the trade association for the wireless communications industry, I am writing to express strong support for AB 234, related to the efficient and streamlined deployment of small wireless facilities. This legislation creates a critical framework to promote job creation, economic investment and opportunity throughout Wisconsin.

The people of Wisconsin continue to demand – at increasing levels – access to wireless products and services. This is demonstrated by the fact that there are more wireless devices as there are people in Wisconsin.¹ In addition, over half of Wisconsin residents live in wireless-only households.² These demands from customers, which includes the residents and businesses of Wisconsin, require that wireless networks be both updated to meet the existing demand and readied for the next generation of wireless services.

Specifically, the existing rules governing wireless networks are designed for wireless facilities that can be up to 200 feet tall or more. Tomorrow's networks will rely on new small cell technology which will be placed on structures such as utility poles and streetlights. These new networks need

¹ FCC, Voice Telephone Services Report: Status as of June 30, 2017, at <https://www.fcc.gov/voice-telephone-services-report>, last accessed 5/24/2019.

² CDC, National Center for Health Statistics, https://www.cdc.gov/nchs/data/nhis/earlyrelease/Wireless_state_201903.pdf, last accessed 5/24/2019.



new rules and AB 234 establishes an updated common sense framework to facilitate millions of dollars in new investment in Wisconsin.

Small cells will provide needed additional capacity to accommodate growing consumer demands and help connect 100 times more devices. In a few short years, nearly everything will be connected to ubiquitous wireless networks at speeds up to 100 times faster than today, thanks to the framework established by AB 234. Small cells will help unlock new 5G services from remote healthcare solutions to autonomous cars. Wisconsin's communities will be smarter and more connected, and entire sectors, from public safety to tourism, to transportation, will be transformed.

Accenture has found that 5G and small cell deployments will provide tremendous economic benefits. Specifically, Accenture estimates that wireless operators will invest as much as \$275 billion nationwide over seven years creating up to three million jobs and adding approximately \$500 billion to the U.S. GDP through direct and indirect potential benefits.³ In Wisconsin, 5G deployment in a community like Milwaukee may create over 5,500 jobs and increase GDP by over \$900 million, and a community like Oshkosh may create over 600 jobs and increase GDP by over \$100 million.⁴

In 2018, the Federal Communications Commission (FCC) recognized the importance of winning the global race to 5G and the need to expedite the deployment of small wireless infrastructure to help reach that goal. With its issuance of the State and Local Wireless Infrastructure Declaratory Ruling and Third Report and Order (Order), the FCC set guardrails – including clear timelines and cost-based fees – around state and local siting practices.⁵ These reforms are timely and necessary, and they provide clarity to both communities and applicants while respecting the important role that states and localities continue to play in the siting process.

While the FCC's leadership in this action and others is critical, there is a key area the Order does not address that AB 234 does, notably "permitted use" and deemed granted. The "permitted use" construct ensures that a zoning hearing is not required for every submitted small cell application. A zoning hearing for every small cell application would drain local resources and treat small cells like 200-foot macro cell towers, thereby delaying deployment, and more importantly, delaying the benefits of enhanced wireless services and 5G for the citizens of Wisconsin. Additionally, AB 234 includes provisions providing for a deemed granted remedy. This provision ensures that inaction on an application does not delay deployment of small wireless infrastructure.

³ "How 5G Can Help Municipalities Become Vibrant Smart Cities," Accenture Strategy, Jan 12, 2017, https://newsroom.accenture.com/content/1101/files/Accenture_5G-Municipalities-Become-Smart-Cities.pdf, last accessed 5/24/2019.

⁴ *Ibid.*

⁵ See <https://docs.fcc.gov/public/attachments/FCC-18-133A1.pdf>; last accessed 5/24/2019.



In closing, over the past three years, twenty-five (25) states – including all surrounding states of Michigan, Minnesota, Iowa and Indiana – have enacted statewide small cell legislation providing for streamlined and efficient processes for the deployment of small wireless facilities. Appropriate siting and land use regulation will facilitate and encourage capital investment. Enactment of AB 234 will send a signal that Wisconsin is ready for these investments.

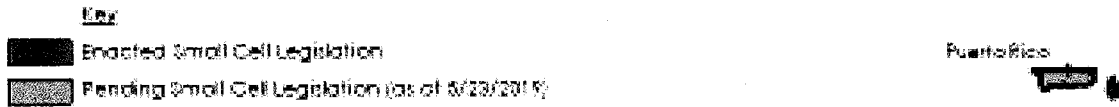
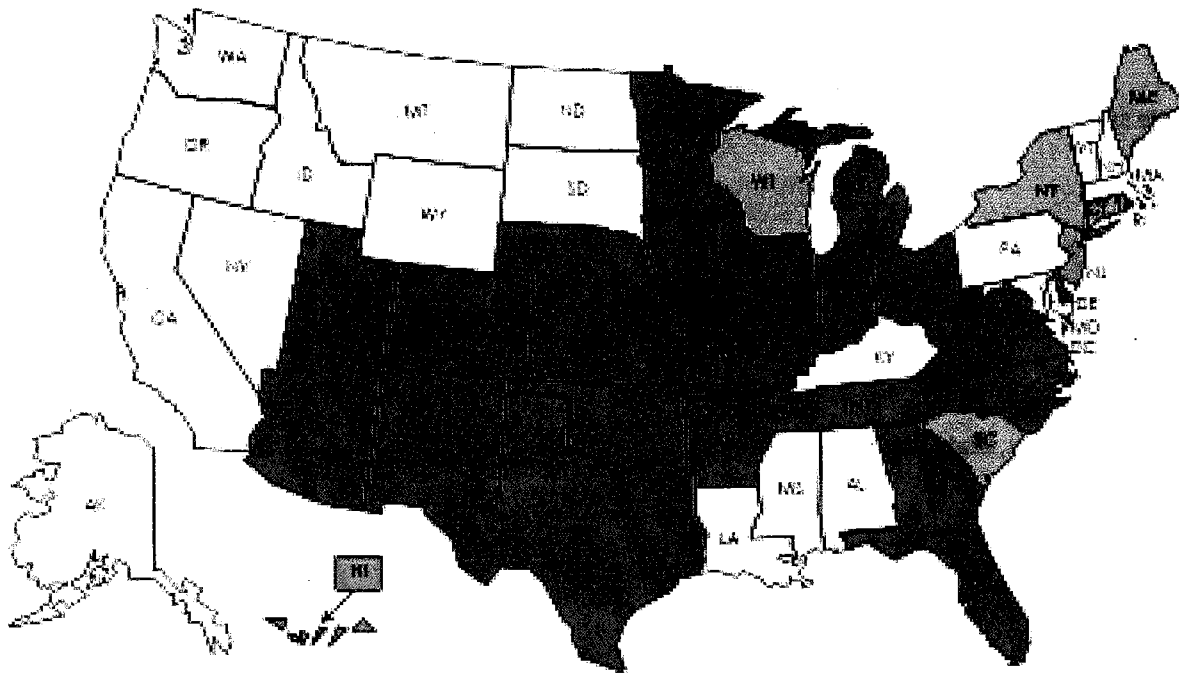
We strongly and respectfully urge the passage of AB 234.

Sincerely,

Gerard Keegan
Vice President, State Legislative Affairs
CTIA



State Small Cell Legislative Activity





The case for supporting Wisconsin wireless facility siting legislation (LRB-1451)

The problem: The demand for mobile data infrastructure is exploding. Traditional cell sites have capacity limits. It's like cars trying to crowd onto a busy highway. The increased use of apps and data means it's rush hour all day long. The infrastructure that once served your community so well now easily gets congested. So how do carriers expand a network that's at or near capacity? One option is a small cell solutions (SCS) network. SCS use a series of small, low-powered nodes that are placed on existing infrastructure like utility poles and streetlights in existing rights of way. These nodes are then connected by fiber optic cable to maximize capacity.

The challenge is that a patchwork of regulations across multiple local jurisdictions, combined with demands for unfair fees and long approval times, makes the deployment of the connectivity your constituents demand a slow and overly costly process.

The solution: LRB 1451 creates a regulatory framework for state and local governments to place wireless infrastructure in rights-of-way, regulates the access to certain government structures by wireless providers, provides for the resolution of related disputes and authorizes political subdivisions to impose setback requirements for certain mobile service support structures.

Among numerous other provisions, the bill prohibits the state and political subdivisions from entering into an exclusive agreement with any person for the use of ROW for the construction, operation, or maintenance of small wireless infrastructure. It also provides that the state and local governments may impose nondiscriminatory rates or fees on wireless providers only if they charge other entities the same, with some exceptions.

Why this is important:

- **Need:** There is a 6X projected increase in mobile data traffic between 2015-2020.
- **Public safety:** 80% of 911 calls come from wireless devices. Nearly 50% of school administrators prioritize mobile access when updating emergency response plans.
- **Connectivity to services:** Over 50% of households rely solely on mobile service to connect to the internet.
- **Economic growth:** As more commerce occurring in the mobile space, Wisconsin businesses need strong wireless data infrastructure to succeed and grow.

For more information contact:

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Joe Leibham: 608-258-4275 jleibham@foley.com

Jenny Malcore: 608-250-7416 jmalcore@foley.com

Our role in your world.

We own and operate the nation's most unique and comprehensive portfolio of communications infrastructure. It all works together to meet unprecedented demand—connecting people, businesses, and communities and erasing life's conventional boundaries.

Our infrastructure transforms everything around us.

People

We connect people to the devices, apps, and data they rely on to communicate, stay informed, and live their lives to the fullest.

Businesses and organizations

We make sure businesses and other large organizations have secure access to the essential data and applications they need to embrace new technologies and stay ahead.

Communities

We provide connections that improve safety and efficiency and that make communities better places to live.

Schools and universities

Our fast, secure fiber networks support new learning technologies in the classroom and promote groundbreaking research in higher education.

First responders

We give police officers, firefighters, and EMTs secure access to the information they need to react quickly to emergencies.

Venues

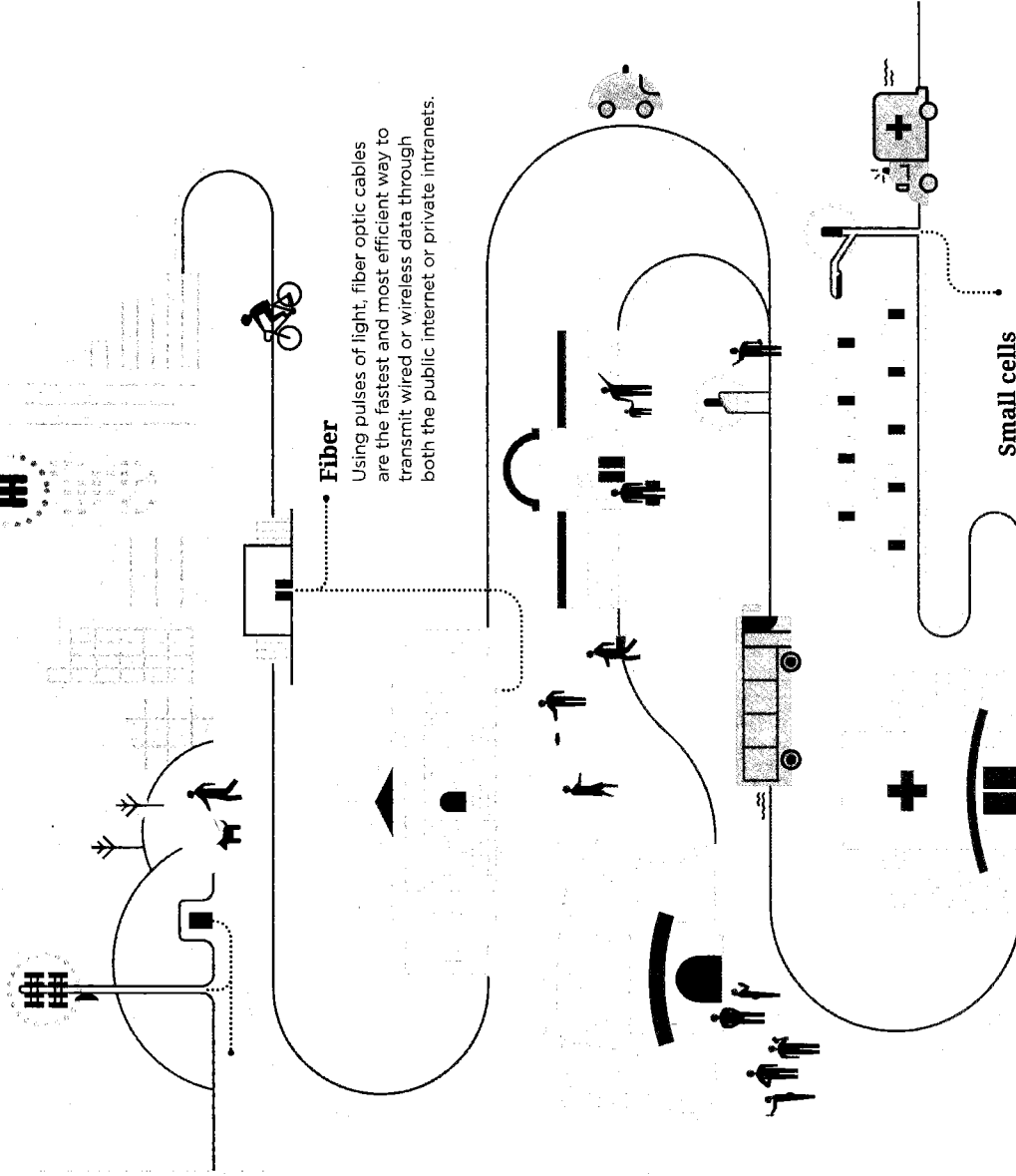
We give stadiums, convention centers, amusement parks, and other venues the wireless coverage and capacity to accommodate large crowds.

Innovators

We help deploy exciting new technologies that build smarter communities and create new opportunities for cities and technology companies alike.

Cell towers

Towers receive and transmit cellular signals over a large geographic area—carrying the voice and data that people send and receive on their wireless devices.



Fiber

Using pulses of light, fiber optic cables are the fastest and most efficient way to transmit wired or wireless data through both the public internet or private intranets.

Small cells

Lower to the ground, and often attached to streetlights or utility poles, small cells add additional wireless coverage and capacity—or bring new coverage where towers aren't feasible.



CROWN CASTLE
The pathway to possible.



Build on our strength.

Invested in your community

250

towers/macro sites

150

small cell nodes

2

fiber miles

more than

37.2%¹

estimated population coverage of 5,771,000²

75

zoning and permitting jurisdictions

32

average years left on ground leases

Crown Castle at a glance

Our nationwide portfolio of communications infrastructure connects cities and communities to essential data, technology and wireless service—bringing information, ideas and innovations to the people and businesses that need them.

- > 40,000+ towers
- > Approximately 65,000 small cell nodes on air or under contract
- > Approximately 65,000 route miles of fiber
- > Nearly 100 offices
- > 4,500+ employees
- > Our patented tool, CCIsites,TM gives you an industry-leading database of communications infrastructure
- > S&P 500 company listed on the NYSE

¹Estimated using 700MHz contours ²United States Census Bureau
Data represents quarterly approximations and is subject to change.

Contract Vehicles

Michigan Collegiate Telecommunications Association (MICTA) MSA
General Services Administration (GSA) IT MAS Schedule 70
Contract No. GS-35F-465DA, SIN 132-52

For more information, please contact (866) 482-8890 or visit CrownCastle.com



CrownCastle.com
The pathway to possible.

COMMITTEE ON JOBS AND THE ECONOMY

Testimony in Support of AB234 – relating to the regulation of Small Wireless Facilities

Stephanie Cassioppi

U.S. Cellular

May 29, 2019

Chairperson Neylon, Vice Chairperson Snyder and members of the Committee, my name is Stephanie Cassioppi and I am the Director of State Regulatory and Legislative Affairs for U.S. Cellular. On behalf of U.S. Cellular and our 1100 employees who call Wisconsin home (about 20% of our workforce), thank you for holding this important hearing and for the opportunity to testify on Assembly Bill 234 (“AB234”) relating to the regulation of small wireless facilities (“small cells”).

U.S. Cellular has been providing wireless service in Wisconsin since 1988. We take pride in the strength of our network, in both urban and rural areas of Wisconsin. U.S. Cellular strongly supports the goals of AB234, to facilitate wireless broadband deployment to all Wisconsin residents. AB234 will encourage efficient deployment of small cell wireless infrastructure in the state and enable all the benefits of increased 4G capacity and connectivity, and 5G implementation.

As a wireless carrier with a rural, as well as urban focus, we believe it is important to understand the possibilities and benefits of small cells to all areas of Wisconsin. Small cells augment the traditional wireless macro tower networks. Small cells are often more cost efficient, adaptable, and practical than deploying additional traditional cell towers. Data usage has exploded and created capacity issues on existing networks. Small cells help keep up with consumer demand in these overloaded areas. For example, small cells deployed along a busy highway could alleviate the congestion at the nearby traditional cell towers by offloading and handling wireless communications in the area. As technology evolves and 5G is deployed, small cells will be needed for connectivity as well as enhanced and state of the art data and wireless applications.

While it is likely that small cells will be more pervasive in urban areas, there are certainly rural applications and opportunities that cannot be ignored. Small cells are important to the economic development and vitality of rural areas by providing cost effective alternatives to additional macro cells for new office parks, industrial or agricultural facilities and co-ops that need additional or improved coverage. Small cells can provide needed capacity, or enhanced connectivity, to areas that enjoy seasonal or occasional increases in wireless use, such as college campuses, lakes, county fairs, parks, and sports arenas. And, without a doubt, the enhancement and evolution of technology in all areas of the state is important to public safety.

In summary, **AB234 – relating to the regulation of Small Wireless Facilities**, is essential for Wisconsin. Its passage is vital to enhance the economic viability and lives of all those who call Wisconsin home.

Thank you for the opportunity to testify in support of AB234. On behalf of U.S. Cellular, I strongly urge its approval.

Testimony to Oppose AB234 & AB239 Public Record Submission

Jan Young

W195 S 8623 Plum Creek Blvd.

Muskego, WI 53150

414-305-6546

Dear Committee Members:

I am here today to voice concerns regarding the future of our children's health with subsequent impending impact on future generations in our state because of 5G technology.

There is one thing that each political party agrees upon and that is providing the best life for our children and grandchildren, which will be our future workforce.

I urge you to place a provision in your bill to keep these 5G small cells and cell towers away from residential, daycares, and schools. There is no study that has proven 5G is safe.

Smartphones became popular in 2010 and WIFI in homes and businesses became common starting in 2009 and with faster speeds accelerating use in 2014.

Now, children's exposure to wireless radiation is unprecedented. Health effects are cumulative in the body – our children will be the ones with the greatest health ramifications.

In 2016 the National Toxicology Program released results from a \$30 million study showing undeniable association between wireless radiation and cancer.

Children are far more vulnerable to the damaging effects of wireless radiation as a child's brain absorbs 2 to 3 times as much radiation as ours, and sources of exposure are everywhere. Kids are using smartphones, tablets, computers, they are exposed to WIFI at home, in their schools, smart meters, and also cell towers.

On April 4th, 2019, CBS reported that at Weston Elementary school in Ripon, CA, several children and teachers were getting cancer from what they believed was from a cell tower that was erected on school grounds. Seven children and three teachers were diagnosed with cancer within a 3-year period.

These parents fought for their children's health and with media exposure, Sprint was forced to bring down the cell tower.

Health risks associated with wireless radiation are not only limited to cancer. This radiation has been linked to neurological dysfunction and cognitive problems – autism, ADHD, depression, suicide, emotional and behavioral issues, anxiety, headaches, fatigue, insomnia, cardiac problems, DNA damage, diabetes, tinnitus, reduced tissue repair, & autoimmune issues.

According to the CDC, suicide rates for children ages 10-17 increased 31% in the last 16 years.

Depression and anxiety among children have steadily increased. 1 in 6 children aged 2-8 years have a mental, behavioral, or developmental disorder.

It isn't a coincidence that all of these statistics have shot up in the last 10-15 years.

Lately we hear a lot about measles and how kids should be protected. We hear how we must protect kids from lead paint and lead in water and we make laws to protect them as they are vulnerable.

Our FCC guidelines are severely outdated – the acceptable levels in the U.S. are 100X higher than other countries. Many countries have begun to reduce radiation exposure to children. The most dangerous technology upon us is 5G because the millimeter waves are so much more powerful. This is a human experiment and we will not be able to escape.

One does not have to smoke a cigarette, one can avoid lead paint, and asbestos, however we will not be able to get away from this radiation when these small cells are 2-5 homes apart and everybody is bathed in it.

You ran for your position to help the people of Wisconsin. Your main job is to protect the citizens of our state – our children are the most vulnerable and will be affected the greatest.

The future of our state and the future of our citizens are in your hands at this moment in time. Please protect us.

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<https://ehtrust.org/science/cell-towers-and-cell-antennae/>

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<https://www.who.int/en/news-room/fact-sheets/detail/electromagnetic-fields-and-public-health-mobile-phones>



What You Need To Know About 5G Wireless and “Small” Cells

“We recommend a moratorium on the roll-out of the fifth generation, 5G, for telecommunication until potential hazards for human health and the environment have been fully investigated by scientists independent from industry...RF-EMF has been proven to be harmful for humans and the environment.”

— 2017 5G Scientific Appeal (signed by more than 200 scientists and doctors from 35 countries)

Nationwide, communities are being told by wireless companies that it is necessary to build “small cell” wireless facilities in neighborhoods on streetlight and utility poles in order to offer 5G, a new technology that will connect the Internet of Things (IoT). At the local, state, and federal level, new legislation and new zoning aim to streamline the installation of these 5G “small cell” antennas in public rights-of-way.

The radiation from small cells is not small: Wireless antennas emit microwaves — non-ionizing radiofrequency radiation — and essentially function as cell towers. Each installation can have over a thousand antennas that are transmitting simultaneously.

Millions of small cells to be built in front yards: The Federal Communications Commission estimates that millions of these wireless transmitters will be built in our rights-of-way, directly in front of our homes.

5G will add to — not replace — our current wireless technology: 5G will not only utilize current 3G and 4G wireless frequencies already in use but also add higher frequency — submillimeter and millimeter waves — in order to transmit data at superfast speeds.

Community authority is overruled: Communities are being stripped of their right to make decisions about this new technology. “Streamlining” means almost automatic approval. Public notice and public hearings are being eliminated. Even if every homeowner on the block opposes the antennas on their street, the opposition will be disregarded.

Scientists worldwide are calling for a halt to the 5G Roll-out: Over 200 scientists and doctors issued a declaration calling for a moratorium on the increase of 5G cell antennas citing human health effects and impacts to wildlife.

Read the 2017 Scientific Appeal on 5G To the European Commission

Read the 2015 EMF Scientist Appeal to the United Nations

Read Letters From Dozens of Scientists on Health Risks of 5G

Cumulative daily radiation exposure poses serious public health risks: Peer reviewed, published science indicates that exposures to wireless radiation can increase cancer risk, alter brain development and damage sperm. Most people are unaware that wireless technology was never tested for long-term safety, that children are more vulnerable and that the accumulated scientific evidence shows harm.

Decreased property values: Studies show property values drop up to 20% on homes near cell towers. Would you buy a home with a mini cell tower in the yard? Read research showing decreased property value from cell towers near homes.

Microwave antennas in front yards present several worker and public safety issues: Unions have already filed comments that workers were injured, unaware they were working near transmitting antennas. How will HVAC workers, window washers, and tree cutters be protected? The heavy large equipment cabinets mounted on poles along our sidewalks also present new hazards. Cars run into utility poles, often, what then? US Dept of Labor letters on cell tower safety

Fiber is the safe alternative: Worldwide, many regions are investing in wired fiberoptic connections which are safer, faster, more reliable, provide greater capacity, and are more cyber-secure. Read “Re-Inventing Wires: The Future of Landlines and Networks,” by the National Institute for Science, Law & Public Policy

www.ehtrust.org

All text in this document in blue is hyperlinked to resources for more information.

Please also see <https://ehtrust.org/factsheet-need-know-5g-small-cells-science-policy-public-health/> for additional resources.

KEY RESEARCH AND REPORTS

5G Frequencies Are Absorbed Into the Skin

Physicists found that the higher millimeter frequencies intended for 5G use are preferentially absorbed into the sweat duct at much higher rates than other organ tissues. Read two published studies "The Modeling of the Absorbance of the Sub-THz Radiation by Human Skin." The human skin as a sub-THz receiver - Does 5G pose a danger to it or not? Paul Ben-Ishai, PhD Lecture.

5G Frequencies Are Used As Weapons

Millimeter frequencies have the capacity to cause a severe burning sensation in the skin and are used by the U.S. Department of Defense in crowd control guns called Active Denial Systems.

Landmark US National Toxicology Program (NTP) Study Finds "Clear Evidence of Cancer" and DNA Damage

The NTP studies found male rats exposed for two years to cell phone radiation developed significantly increased gliomas (brain cancer) and schwann cell tumors, the very same types of tumors increased in long-term human cell phone users. NIH/NTP presentation on DNA results states "exposure to RFR has the potential to induce measurable DNA damage under certain exposure conditions." Press Coverage, Peer Review Report

Cell Tower Radiation is Linked To Damage in Human Blood

A published study compared people living close and far from cell antennas and found people living closer to cellular antennas had changes in blood that predicts cancer development. Read Zothansiana et al, 2017. Read a Compilation of Research on Cell Tower Radiation

Published Scientific Review on 5G Finds Adverse Effects

Scientific literature documents evidence of nonthermal cellular damage from wireless radiation used in telecommunications to DNA integrity, cellular membranes, gene expression, protein synthesis, neuronal function, the blood brain barrier, melatonin production, sperm damage and immune dysfunction. Russell 2018

Cellular Radiation Negatively Impacts Birds and Bees

Published research finds the frequencies alter bird navigation and disturb honeybee colonies. Research on EMF and Bees. Research on Wildlife

RESOURCES

Research on 5G and Cell Tower Radiation

A 5G Wireless Future: Will it give us a smart nation or contribute to an unhealthy one? Santa Clara Medical Association Bulletin, Cindy Russell MD, 2017

Letters by Scientists in Opposition To 5G Research on Cell Tower Radiation, 2017

Biological Effects from Exposure to Electromagnetic Radiation Emitted by Cell Tower Base Stations and Other Antenna Arrays, Levitt and Lai, 2010

Radiofrequency radiation injures trees around mobile phone base stations, Waldmann-Selsam et al., 2016

Department of Interior Letter on the Impact of Cell Towers on Migratory Birds, Willie R. Taylor Director, Office of Environmental Policy and Compliance, 2014

Anthropogenic radiofrequency electromagnetic fields as an emerging threat to wildlife orientation, Bahmori, 2015

Briefing Memorandum On The Impacts from Thermal and Non-thermal Non-ionizing Radiation to Birds and Other Wildlife, Manville, 2016

Database of Worldwide International Policy To Reduce EMF

Youtube Scientific Videos on 5G

TAKE ACTION

Contact local, state and federal elected officials in person.

Share this information with your friends, family and community.

Ask for government policy that reduces RFR exposure to the public.

Citizens in all states must organize and take action to halt legislation that increases cell antennas in neighborhoods.

LEARN MORE

Federal Legislation To Know

US States With Streamlining Bills

5G Small Cell Antennas To Be Placed On:

- Street lights
- Trashcans
- Utility poles
- Bus stops
- Sides of buildings

5 Reasons Why Small Cells Are Not Small

- Increased radiation near homes
- Refrigerator-sized equipment cabinet
- Drop in property values
- Taller poles
- Fixtures weigh hundreds of pounds

Crown Castle's 2016 10-K Annual Report says:

"If radio frequency emissions from wireless handsets or equipment on our wireless infrastructure are demonstrated to cause negative health effects, potential future claims could adversely affect our operations, costs or revenues... We currently do not maintain any significant insurance with respect to these matters."

Read warnings from Crown Castle, Verizon and other wireless companies.

The American Academy of Pediatrics says:

"An Egyptian study confirmed concerns that living nearby mobile phone base stations increased the risk for developing:

- Headaches
- Memory problems
- Dizziness
- Depression
- Sleep problems"

AAP on Cell Towers

Letter from oncologist Lennart Hardell MD & Colleagues:

"There is a substantial body of evidence that this technology is harmful to humans and the environment. The 5G millimeter wave is known to heat the eyes, skin and testes... Of particular concern are the most vulnerable among us — the unborn, children, the infirm, the elderly and the disabled. It is also expected that populations of bees and birds will drastically decline."

2017 Scientific Letter

Peer Reviewed Research Studies on Radiofrequency Radiation Have Found:

- Headaches
- Sperm damage
- Altered brain development
- Depression
- Neurological symptoms
- Hormone changes
- Memory problems
- Sleep problems
- Cancer

Science:

BioInitiative 2012 Report by Independent Scientists
Dr. Moskowitz, University of California at Berkeley
Dr. Lennart Hardell Örebro University Sweden
The Baby Safe Project
Whatis5g.info
Physicians for Safe Technology
Environmental Health Trust 5G Resources

www.ehtrust.org

 ENVIRONMENTAL HEALTH TRUST



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May 29, 2019

Re: Health Effects of 5G Telecommunication Infrastructure

I have been asked by the CTIA to address any concerns over possible health effects related to 5G telecommunication infrastructure.

My name is Eric Swanson. I am a professor of theoretical physics at the University of Pittsburgh. I have published more than 100 papers on biophysics, nuclear physics, and condensed matter physics and given approximately 250 academic talks in 25 countries over a thirty year career. I am the founder of the American Physical Society Topical Group on Hadronic Physics and an elected Fellow of the American Physical Society. I am also the author of *Science and Society* (Springer), *Applied Computational Physics* (Oxford University Press), and many newspaper and magazine op-eds and articles.

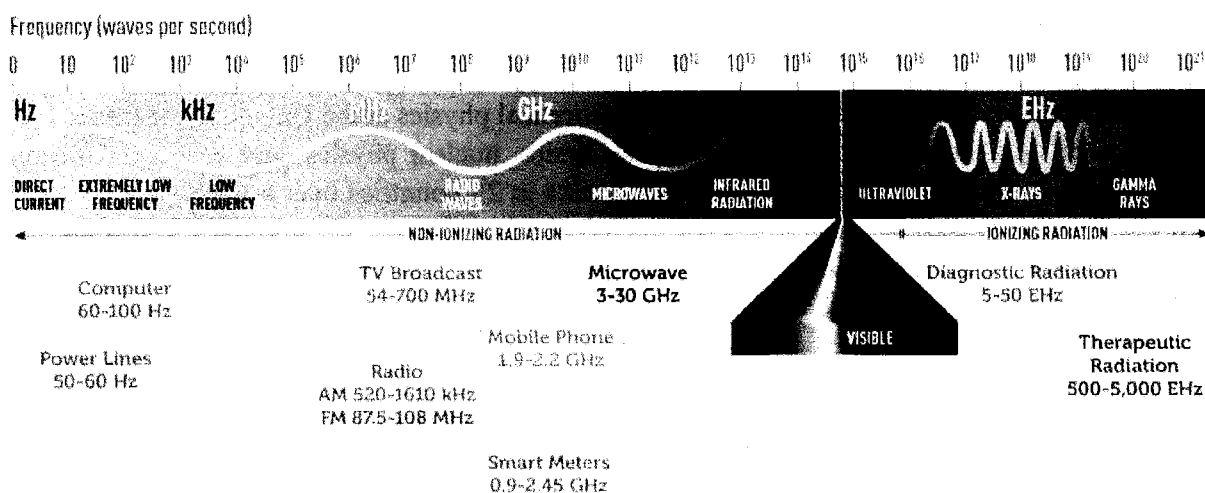
Because this report will be addressing issues concerning electromagnetic fields I would like say a few words about what this is. Electromagnetic fields are waves that are created by moving charges (usually electrons) that traverse space at the speed of light. These waves are the *simplest phenomena known in the universe* and the physics related to them is well established. Waves only have three basic characteristics: frequency (how many times the wave oscillates per second), amplitude (the "height" of the wave), and polarization (we are most familiar with this via polaroid sunglasses). The figure below shows the "electromagnetic spectrum", which is just a representation of the names that we apply to different frequencies of radiation. Notice that visible light is part of the spectrum. Other familiar parts are UV radiation at slightly higher frequency than visible light, x-rays at even higher frequency, and microwaves and radio waves at lower frequency.

When it comes to human health concerns there is an important distinction between different parts of the spectrum. While I could explain this in terms of physical concepts, it is probably more useful to appeal to things we all know. UV radiation can be harmful because it can cause sunburns and skin cancer. X-rays and the higher frequency gamma rays can be even more harmful (at sufficient doses X-rays can cause cancer and gamma rays can kill people outright). Alternatively, we can happily spend days or months under indoor lighting with no chance of getting sunburn or skin cancer. The reason for this is that visible light is *below* the threshold frequency for causing damage to molecules in our cells. This threshold is referred to as the ionization threshold: electromagnetic waves that can break DNA bonds are called *ionizing* and

electromagnetic waves that cannot break bonds are called *nonionizing*. The electromagnetic fields emitted by a cell phone and wireless infrastructure are nonionizing radiofrequency (RF) fields.

The frequencies used by 4G cellphones are around 2 GHz (this means two billion oscillations per second). These frequencies are about one million times lower than UV frequencies, which places them well on the safe side of the ionization threshold. 5G cellphones and infrastructure operate at RF frequencies that are approximately 30000 times below the ionizing threshold.

ELECTROMAGNETIC SPECTRUM



In the USA, 5G wireless infrastructure and 5G-capable cellphones are regulated by the Federal Communications Commission. All new equipment is tested and must comply with safety limits that have been set by the FCC. The FCC adopted the RF emission regulations based on standards recommended by international standards setting bodies such as the National Council on Radiation Protection and the Institute of Electrical and Electronics Engineers. It did so after consulting with federal health and safety organizations such as the FDA, Environmental Protection Agency, Occupational Safety and Health Administration, and National Institute for Occupational Safety and Health to develop “consensus” regulations. Together, these bodies have assessed thousands of scientific studies concerning possible health effects of nonionizing radiation. Animal tests and other studies indicate that thermal effects start to be felt at an energy deposition rate of approximately 100W/kg (this is called the *specific absorption rate*, or SAR)¹. The FCC mandates that the general public be exposed to no SARs greater than 1.6 W/kg. In fact, according to the FCC, typical exposures near cellphone towers are hundreds or thousands of times lower than this figure. The FCC also mandates that *maximum permissible*

¹ For comparison, the heating pad I use to warm my arthritic knees is rated at 50W. I estimate it warms about 1 lb of my body, so this rather pleasant heating corresponds to a SAR of 100W/kg.

exposure (called MPE, this is a measurement of the energy deposition rate by area) be lower than approximately 1 mW/cm².²

The consensus of the world-wide health and government health and safety organizations is that non-ionizing fields at the levels allowed by the FCC regulations are safe. For example, federal agencies responsible for regulating the safety of cell phones and wireless infrastructure and leading cancer and health research institutions in the United States have not found any link between electromagnetic fields allowed by the FCC regulations and cancer or other adverse health effects:

The Federal Communications Commission (FCC): “As discussed above, radiofrequency emissions from antennas used for cellular and PCS transmissions result in exposure levels on the ground that are typically thousands of times below safety limits. These safety limits were adopted by the FCC based on the recommendations of expert organizations and endorsed by agencies of the Federal Government responsible for health and safety. Therefore, there is no reason to believe that such towers could constitute a potential health hazard to nearby residents or students.”³

The Food and Drug Administration (FDA): “Based on our ongoing evaluation of this issue, the totality of the available scientific evidence continues to not support adverse health effects in humans caused by exposures at or under the current radiofrequency energy exposure limits.”⁴

National Cancer Institute: “... although many studies have examined the potential health effects of non-ionizing radiation from radar, microwave ovens, cell phones, and other sources, there is currently no consistent evidence that non-ionizing radiation increases cancer risk in humans.”⁵

American Cancer Society: “At ground level near typical cellular base stations, the amount of RF energy is thousands of times less than the limits for safe exposure set by the US Federal Communication Commission (FCC) and other regulatory authorities ... Some people have expressed concern that living, working, or going to school near a cell phone tower might increase the risk of cancer or other health problems. At this time, there is very little evidence to support this idea.”⁶

Other worldwide health and safety organizations are in accord:

² FCC 13-39 (March 2013), Appendix A.

³ FCC RF Safety FAQ <https://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/radio-frequency-safety/faq/rf-safety#Q15> (last accessed March 11, 2019).

⁴ FDA Statement, Statement from Jeffrey Shuren, M.D., J.D., Director of the FDA's Center for Devices and Radiological Health on the National Toxicology Program's report on radiofrequency energy exposure, Nov. 1, 2018, <https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm624809.htm>.

⁵ National Cancer Institute, “Cell Phones and Cancer Risk” Factsheet (2019), <https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet> (last accessed March 11, 2019).

⁶ American Cancer Society, “Cellular Phone Towers”, <https://www.cancer.org/cancer/cancer-causes/radiation-exposure/cellular-phone-towers.html> (2018) (last accessed March 11, 2019).

European Commission, Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) (2015): “Overall, the epidemiological studies on mobile phone RF EMF exposure do not show an increased risk of brain tumours. Furthermore, they do not indicate an increased risk for other cancers of the head and neck region.”⁷

World Health Organization (2006): “Recent surveys have indicated that RF exposures from base stations and wireless technologies in publicly accessible areas (including schools and hospitals) are normally thousands of times below international standards . . . From all evidence accumulated so far, no adverse short- or long-term health effects have been shown to occur from the RF signals produced by base stations.”⁸

Health Canada (2014): “The Panel has concluded that the balance of evidence at this time does not indicate negative health effects from exposure to RF energy below the limits recommended in the Safety Code.”⁹

United Kingdom Health Protection Agency Independent Advisory Group on Non-Ionizing Radiation (HPA) (2012): “In summary, although a substantial amount of research has been conducted in this area, there is no convincing evidence that RF field exposure below guideline levels causes health effects in adults or children.”¹⁰

Swedish Council for Working Life and Social Research (2012): “Extensive research for more than a decade has not detected anything new regarding interaction mechanisms between radiofrequency fields and the human body and has found no evidence for health risks below current exposure guidelines.”¹¹

Norwegian Institute for Public Health (2012): “The studies have been performed on cells and tissues, and in animals and humans. The effects that have been studied apply to changes in organ systems, functions and other effects. There are also a large number of population studies with an emphasis on studies of cancer risk. The large total number of studies provides no evidence that exposure to weak RF fields causes adverse health effects.”¹²

Similarly, the **Institute of Electrical and Electronics Engineers’ International Committee on Electromagnetic Safety (IEEE/ICES)**, which is one of the expert organizations that the FCC

⁷ European Commission, Scientific Committee on Emerging and Newly Identified Health Risks, Opinion, “Health Effects of Exposure to EMF,” (2015) (available at https://ec.europa.eu/health/scientific_committees/emerging/docs/scenihr_o_041.pdf).

⁸ World Health Organization, “Electromagnetic fields and public health: base stations”, (2006), <https://www.who.int/peh-emf/publications/facts/fs304/en/> (last accessed March 11, 2019).

⁹ Health Canada, “A Review of Safety Code 6 (2013): Health Canada’s Safety Limits for Exposure to Radiofrequency Fields,” (2014) (available at https://rsc-src.ca/sites/default/files/SC6_Report_Formatted_1.pdf).

¹⁰ Health Protection Agency, “Health Effects from Radiofrequency Electromagnetic Fields, Report of the Independent Advisory Group on Non-Ionising Radiation,” (2012) (available at <https://www.ncbi.nlm.nih.gov/nlmcatalog/101602435>).

¹¹ Ahlbom A., *et al.*, Swedish Council for Working Life and Social Research, “Radiofrequency Electromagnetic Fields and Risk of Disease and Ill Health: Research during the last ten years,” (2012) (available at <http://www.fas.se/pagefiles/5303/10-y-rf-report.pdf>).

¹² Norwegian Institute of Public Health, Report 2012:3, “Low-level radiofrequency electromagnetic fields, an assessment of health risks and evaluation of regulatory practice,” (2012) (available at <http://www.fhi.no/dokumenter/545eea7147.pdf>).

relies on in setting its RF emission standard, analyzed 52 years of studies and concluded that “the weight of scientific evidence supports the conclusion that there is no measurable risk associated with RF exposures”¹³ even at levels five times higher than that permitted by the FCC. In short, *the consensus of the scientific community is that the scientific evidence does not support any link between exposure to regulated RF and adverse health effects.*

5G telecommunication technology seeks to increase data rates by a factor of 100 over 4G networks (to 1Gbps or higher), decrease latency (time wasted in establishing communication) by a factor of 50 or more, and increase user density drastically (up to one mobile device per 10 square feet). These capabilities will enable smart city technology, the “internet of things”, mobile service on airplanes, remote medicine, and the machine-to-machine communication required for the robotic cars of the future. It will achieve these things by placing low power small cell wireless infrastructure close together and by employing more of the electromagnetic spectrum (specifically, the spectrum near 30 GHz). Because 30 GHz radiation is nonionizing and the emissions from cell phones and small cell wireless infrastructure are regulated by the FCC’s exposure standards that have withstood the test of time, there is no reason to believe there is a risk of adverse health effects. In addition, one can estimate MPE levels by using published data concerning the size of 5G small cell wireless infrastructure and their power ratings (these are also regulated by the FCC). The result is an MPE that is approximately 500 times below the FCC limit. Thus 5G technology presents no substantial risk to the general public, and certainly does not present risk that current regulations cannot manage.

Sincerely,



E.S. Swanson
Professor of Physics
University of Pittsburgh

¹³ Institute of Electrical and Electronics Engineers, International Committee on Electromagnetic Safety (SCC39), “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300 GHz,” (2006).



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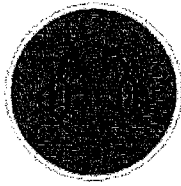
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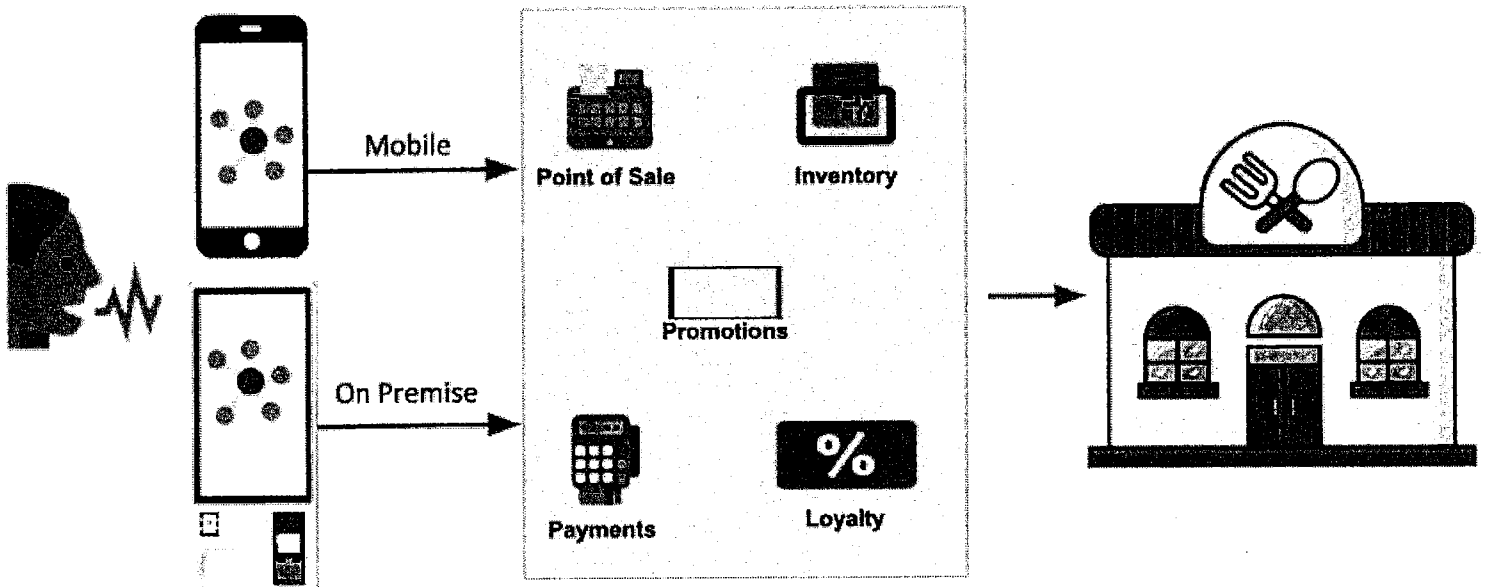
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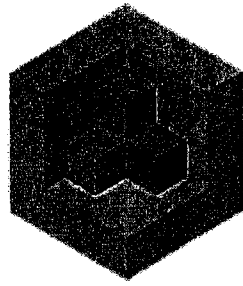
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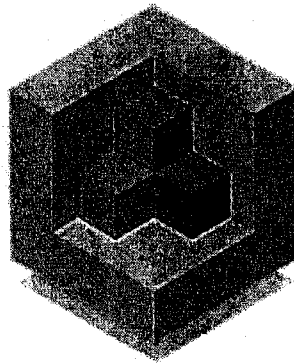
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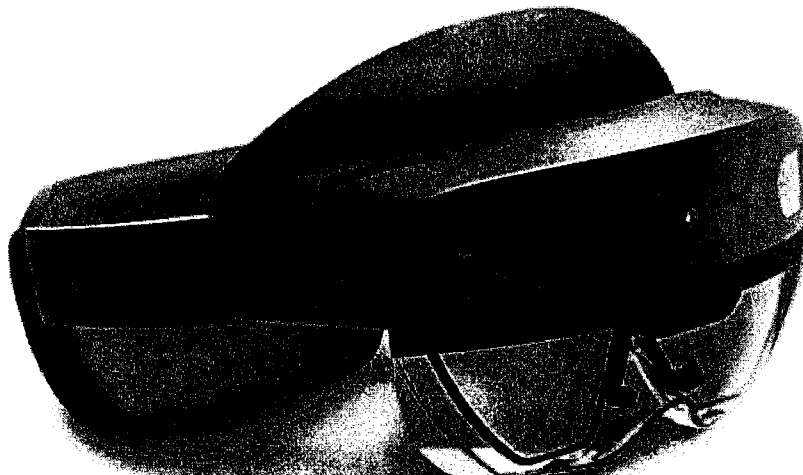
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FOR THE PUBLIC RECORD IN OPPOSITION TO AB 234 AND SB 239:

FROM:

**ELAINE UNGER
WISCONSIN FOR SAFE TECHNOLOGY, UA
4815 SUTTON LANE
GREENDALE, WI 53129**

May 29, 2019

Elaine Unger

From: Elaine Unger <elaineunger@att.net>
Sent: Monday, May 27, 2019 6:34 PM
To: Elaine Unger
Subject: FW: AB 234 and SB 239 - Small Cell Legislation - Oppose

Importance: High

From: Elaine Unger [mailto:elaineunger@att.net]
Sent: Sunday, May 26, 2019 1:12 PM
To: 'Joe.Zapf@legis.wisconsin.gov'; 'Rep.Neylon@legis.wisconsin.gov'; 'Rep.Snyder@legis.wisconsin.gov'; 'Rep.Dittrich@legis.wisconsin.gov'; 'Rep.Kulp@legis.wisconsin.gov'; 'Rep.Tittl@legis.wisconsin.gov'; 'Rep.Macco@legis.wisconsin.gov'; 'Rep.Wittke@legis.wisconsin.gov'; 'Rep.Magnafici@legis.wisconsin.gov'; 'Rep.Ballwegi@legis.wisconsin.gov'; 'Rep.Ohnstad@legis.wisconsin.gov'; 'Rep.Neubauer@legis.wisconsin.gov'; 'Rep.Stuck@legis.wisconsin.gov'; 'Rep.Fields@legis.wisconsin.gov'; 'Rep.Zamarripa@legis.wisconsin.gov'; 'Brian.Radday@legis.wisconsin.gov'; 'Sen.LeMahieu@legis.wisconsin.gov'; 'Sen.Feyen@legis.wi.gov'; 'Sen.Wanggaard@legis.wisconsin.gov'; 'Sen.Taylor@legis.wisconsin.gov'; 'Sen.Bewley@legis.wi.gov'
Cc: 'Rep.Skowronski@legis.wisconsin.gov'; 'Sen.Craig@legis.wisconsin.gov'
Subject: AB 234 and SB 239 - Small Cell Legislation - Oppose
Importance: High

May 26, 2019

Dear Rep. Kuglitsch, Jobs and the Economy and Utilities and Housing Committee Members:

Thank you for your hard work and leadership on behalf of the citizens of the State of Wisconsin!

Earlier this year, I spoke with **Rep. Kuglitsch** at an event in New Berlin for Judge Hagedorn to express my concerns over small cell antennas, lack of local municipal control and proven health effects. **He encouraged me to send an email to the legislative committees holding hearings on Small Cell Legislation.** I've also spoken to **Rep. Skowronski** and **Sen. Craig** on a number of occasions.

Many of your constituents are alarmed by AB 234 and SB 239 and some of the reasons are below, so please slow down and do some research before allowing the deployment of 5G-enabled small cell antennas in the public rights-of-way across Wisconsin. This is a serious matter that requires careful consideration.

Scientists and doctors have called for a moratorium on the 5G roll out due to health and environmental concerns, and Brussels, Belgium; Florence, Italy; and other nations have halted the 5G roll out due to radiation concerns, so why is the U.S. trying to win the Race to 5G?

If this issue is new to you, please review the **attached letter to Governor Evers** from Dr. Devra Davis, award-winning scientist and President of Environmental Health Trust. Or watch this short video of Michigan State Senator Patrick Colbeck's riveting testimony against 5G small cells and the usurping of local control: <https://www.youtube.com/watch?v=-UEuOYOED4>. Or re-read the email below (1 of 3) emailed and sent via U.S. Mail to all Wisconsin legislators last September.

WHO ARE WE?

I am lead organizer of Wisconsin For Safe Technology, UA, a grassroots citizens' group raising awareness about the health effects of wireless radiation, the impact of the 5G (Fifth Generation technology) roll out and sharing wireless safety tips. We are part of a national coalition of over 70 other organizations and support the principles of Americans For Responsible Technology.

On May 15, we, along with 29 other organizations across the nation, participated in the 5G National Day of Action in opposition to 5G-enabled small cell antennas. Together, we asked the wireless companies to suspend the deployment of small cell wireless antennas spaced 2-10 homes apart near places where people live, work and play until such time as chronic, low-level exposure to radio-frequency (RF) microwave radiation (wireless radiation) can be proven safe for everyone! **There are ZERO studies proving that 5G technology is safe and yet it is barreling toward us all.**

We are not opposed to technology. We are against technology that has been proven harmful to human health and the environment. We support safe technology like affordable broadband internet access with safe, reliable, secure WIRED infrastructure all the way to the premises. **See attached Legislative Briefing for solutions.**

THE ISSUES

Since 2013, Wisconsin municipalities have had their hands tied and have even been sued for denying cell tower permits and citizens across Wisconsin have been fighting the placement of cell towers near homes/schools because of health, safety and property value concerns.

Cell tower siting is an important issue to citizens/municipalities and the one-size-fits-all approach does not work. The same applies to Big Telecom's push for more wireless infrastructure to deploy 5G technology which is not a public service, not necessary for public safety and puts health at risk.

The wireless industry has pressed our elected representatives for weaker regulations so it can continue to profit at our expense.

THE URGENCY

Our world scientists are indicating that today's electrosmog from wireless radiation emitted by cell towers/antennas and other wireless technologies is bringing the worst public health crisis technologically advanced nations have ever seen.

5G is an application of a technology already proven harmful to humans and the environment. Wireless radiation (cell phones, Wi-Fi, tablets, cell towers, etc.) has been scientifically proven to **cause cancer, DNA damage, neurological and cognitive harm, heart abnormalities, infertility and miscarriage, migraines, chronic fatigue, anxiety/depression, tinnitus, behavior problems, sleep disorders and much more.**

What will happen when powerful 5G antennas are deployed throughout Wisconsin neighborhoods, involuntarily exposing citizens to harmful radiation 24/7 for non-essential perks such as driverless cars, virtual reality, faster downloads, smart appliances and the Internet of Things, which means that virtually everything we own and buy will contain a microchip and an antenna and will connect wirelessly from appliances to milk cartons, diapers to toothbrushes, not to mention massive amounts of data that will be collected about citizens for marketing and surveillance? We can't opt out. We can't turn them off.

MEMBERS OF CONGRESS RAISE 5G HEALTH CONCERNS

On February 6, 2019, at a Senate Hearing, **U.S. Senator Blumenthal** asked industry representatives if it has conducted independent, scientific studies to ensure that 5G is biologically safe for the American people. The wireless industry conceded it has not. Here is the video.

Attached are recent letters to the FCC about its outdated exposure guidelines and 5G safety from Rep. DeFazio, Rep. Suozzi, Sen. Blumenthal and Congresswoman Eshoo.

THE FCC – THE MOST CAPTURED AGENCY IN D.C.

All of today's wireless devices and cell towers/antennas send and receive data through two-way manmade microwave radiation. No safe level of microwave radiation has ever been determined.

When you ask someone with the telecom industry if a cell tower or wireless device (cell phone) is safe, they won't tell you they are safe. Instead they will tell you they are FCC compliant. That's the problem!

Current FCC guidelines governing public exposure to wireless radiation were set in 1996 before we had Wi-Fi and cell towers everywhere and have not been updated to reflect use of today's wireless technology.

These outdated guidelines were based solely on a thermal theory which means how much heat it takes to raise the temperature of one's skin. Today's science proves there are many adverse biological effects at exposure levels much lower than the FCC guidelines.

Government agencies, scientists and doctors have asked the FCC to reassess the outdated guidelines (which were set by industry engineers, not scientists or doctors), especially to take into account children, pregnant women and the elderly. Even the American Academy of Pediatrics asked the FCC to reassess exposure guidelines for children and nothing has been done.

It should be no surprise that the FCC is run by former telecom representatives. The head of the FCC, Ajit Pai, is a former Verizon attorney. They are protecting the interests of industry, not the American people.

The United State's exposure guidelines are some of the least protective in the world.

Freedom of choice is a fundamental American value and the FCC and the telecom industry should not force citizens to endure involuntary exposure to radiation in their own homes.

PLEASE WITHDRAW SMALL CELL LEGISLATION TO PREVENT:

1. Harmful health impacts which will be extremely costly to the State.
2. Loss of local control and the right to defend constituents from Big Telecom greed. (Partial remedy proposed by Anna Eshoo HR 530 supported by Rep. Gwen Moore).
3. An economic boondoggle. Constituents are not asking for the Smart Highways, Smart Cities, Smart Appliances, Smart Gadgets and the Internet of Things. This is a huge industry heist.
4. Privacy and security breaches.
5. Increased energy use.
6. Decreased reliability of the communications system as a whole.
7. Unsightly and hazardous aesthetic blight and clutter in our neighborhoods.
8. Property devaluation due to landowners' concerns re health, environment, and aesthetics.
9. Increased harm to bees, butterflies, birds, wildlife and trees.
10. Danger to workers unaware they are working unaware they were working near transmitting cell antennas. 5G will increase risk to utility workers, HVAC workers, window washers, and tree trimmers.
11. Less equality in internet access than wired systems can provide (no rural revolution).
12. Slower internet speeds than wireline cable or fiber optic to the premises.
13. Exorbitant expenses for cities.
14. Increased behavioral addiction to devices, especially among children, orchestrated by Big Telecom, with adverse societal consequences like increased lack of social skills, anxiety, depression and other neuropsychiatric effects impacting Wisconsin's future workforce.

ADDITIONAL RESOURCES

1. Dr. Sharon Goldberg Testimony in opposition to 5G.
2. Dr. Devra Davis, Ph.D. expert letter to Governor Evers.
3. SUMMARY prepared by Wisconsin For Safe Technology about 5G including **SOLUTIONS**.
4. 5G FACT SHEET by Environmental Health Trust.
5. A guide with POLICY RECOMMENDATIONS prepared by Fmr. Michigan Senator, Patrick Colbeck.
6. Physicians For Safe Technology executive summary on wireless technology and public health.
7. "Re-Inventing Wires: The Future of Landlines and Networks" details why the U.S. and our communities should instead invest in hard-wired telecommunications infrastructure to support economic growth, bridge the digital divide and diminish risks to security, privacy, public health and the environment.

Please confirm your receipt of this email. Thank you for your time and consideration!

Sincerely,

Elaine Unger

4815 Sutton Lane

Greendale, WI 53129

Elaine Unger, Lead Organizer

Wisconsin For Safe Technology, UA

414-423-6292 (landline)

www.WisconsinSafeTech.com

Wireless Safety Tips

<https://www.facebook.com/wisconsinsafetech/>

#Stop5G

Sent from a hardwired computer in a low RF radiation environment.



A citizens' group raising awareness about 5G technology and part of a national coalition and supports the principles of
Americans For Responsible Technology

You can turn off your cell phone. You cannot turn off a cell tower.

From: Elaine Unger [mailto:elaineunger@att.net]

Sent: Monday, September 10, 2018 6:18 AM

To: 'Rep.Allen@legis.wisconsin.gov'; 'Rep.Anderson@legis.wisconsin.gov'; 'Rep.August@legis.wisconsin.gov';
'Rep.Ballweg@legis.wisconsin.gov'; 'Rep.Barca@legis.wisconsin.gov'; 'Rep.Berceau@legis.wisconsin.gov';



'Rep.Bernier@legis.wisconsin.gov'; 'Rep.Billings@legis.wisconsin.gov';
'Rep.Born@legis.wisconsin.gov'; 'Rep.Bowen@legis.wisconsin.gov';
'Rep.Brandtjen@legis.wisconsin.gov'; 'Rep.Brooks@legis.wisconsin.gov';
'Rep.Rob.Brooks@legis.wisconsin.gov'; 'Rep.Brostoff@legis.wisconsin.gov';
'Rep.Considine@legis.wisconsin.gov'; 'Rep.Crowley@legis.wisconsin.gov';
'Rep.Doyle@legis.wisconsin.gov'; 'Rep.Duchow@legis.wisconsin.gov';
'Rep.Edming@legis.wisconsin.gov'; 'Rep.Hebl@legis.wisconsin.gov';
'Rep.Hesselbein@legis.wisconsin.gov'; 'Rep.Hintz@legis.wisconsin.gov';
'Rep.Horlacher@legis.wisconsin.gov'; 'Rep.Hutton@legis.wisconsin.gov';
'Rep.Jacque@legis.wisconsin.gov'; 'Rep.Jagler@legis.wisconsin.gov';
'Rep.Jarchow@legis.wisconsin.gov'; 'Rep.Katsma@legis.wisconsin.gov';
'Rep.Kerkman@legis.wisconsin.gov'; 'Rep.Kessler@legis.wisconsin.gov';
'Rep.Kitchens@legis.wisconsin.gov'; 'Rep.Kleefisch@legis.wisconsin.gov';
'Rep.Knodl@legis.wisconsin.gov'; 'Rep.Kolste@legis.wisconsin.gov';
'Rep.Kooyenga@legis.wisconsin.gov'; 'Rep.Kremer@legis.wisconsin.gov';
'Rep.Kuglitsch@legis.wisconsin.gov'; 'Rep.Kulp@legis.wisconsin.gov';

'Rep.Loudenbeck@legis.wisconsin.gov'

Subject: Small Cell 5G Wireless Facilities Deployment/State & Federal Legislation

Wisconsin For Safe Technology, UA

5281 Oakton Lane • Greendale, WI 53129

www.wisconsinforsafetechnology@gmail.com

www.WisconsinSafeTech.com

September 10, 2018

MEMO IN OPPOSITION

To: Wisconsin Elected Representatives
From: Elaine Unger, 4815 Sutton Lane, Greendale, WI 53129
on behalf of Wisconsin For Safe Technology
Re: State of Wisconsin/Federal Legislation
"Small" Cell 5G Wireless Facilities Deployment

- We are Wisconsin For Safe Technology, UA, a citizens' group that uses technology—safely—but is opposed to Federal (S. 3157) and State (previously proposed AB 348) legislation which severely limits a municipality's authority to control where AT&T, Verizon and other wireless providers install powerful "small" cell 4G/5G (Fifth Generation) antennas/towers to facilitate the rollout of 5G, a new technology (not proven safe for humans or the environment) for faster internet speeds and to connect the Internet of Things (smart appliances, robots, driverless cars).
- We oppose Wisconsin's 2013 Mobile Tower Siting Regulations which removed local control over the siting of macro cell towers allowing cell towers as close as 25 ft. from properties.
- We support faster, safer, more reliable wired fiber optics.
- We are raising awareness about the detrimental **biological effects** (not just thermal heating effects) from the radiation emitted by all wireless technologies (cell phones, tablets, WiFi, cell towers/antenna, etc.) from headaches, chronic fatigue, sleep disorders, depression, anxiety, nose bleeds, nausea to memory/attention difficulties, cardiovascular problems, cancers and more. Children are more at risk

because of their thinner skulls and developing brains. The specific frequency range utilized for 5G has been used by the U.S. Military in their Active Denial System which causes a burning sensation in the skin.

- We are sharing wireless safety tips so we can all start taking steps to reduce our exposure to wireless radiation. You can turn off your cell phone. You cannot turn off a cell tower!
- 1. We strongly oppose the preemption of local oversight and zoning authority over the siting and installation of powerful 4G/5G wireless antennas/towers on utility poles and street lights in our neighborhoods near homes and schools—in our front and back yards—spaced 2-12 houses apart—where we live, work and play—from **Milwaukee to Superior**. Local governments are uniquely qualified and trusted by their residents to manage the installation of technology infrastructure into their communities.
- 2. While the telecom industry calls this “Small Cell Wireless Deployment,” the impact on individuals and families living in homes across Wisconsin would be huge and with associated equipment as large as a refrigerator, not a small pizza box. Lobbyists for the giant telecom industry are in Washington trying to get rid of any local control over dangerous wireless transmitting equipment. This is an unprecedented assault on the health, privacy, safety, security and property values of Wisconsin residents and all over the United States.
- 3. 5G is **not** a utility and the Federal government should not allow any private industry to **override local zoning regulations or discretionary review**. **For-profit companies should not be permitted to use public property without compensating taxpayers, or use private rights-of-way without consent of property owners.**
- 4. Despite what the telecom industry says, **the race to implement 5G is completely unnecessary**. It will **not** improve cell phone reception or assist first-responders in an emergency. It will **not** magically bring broadband to underserved or rural communities and fix the digital divide. This massive build-out of wireless infrastructure is to enable telecom companies to send powerful signals into homes to **compete with cable companies**.

Wisconsin is not unique. A growing number of communities and cities across the United States have organized against the preemption of local control, so we ask **YOU, our esteemed Wisconsin elected representatives**:

- Will you please **oppose** FCC WT Docket Nos. 17-79 and 17-84 “Streamlining Deployment of Next Generation Wireless Infrastructure” **before the FCC’s next meeting on September 26, 2018?**
- Will you please strongly **oppose** legislation forcing 4G/5G “small” cell technology on communities?
- Will you please draft legislation returning control to the municipalities—keeping all cell towers away from homes/schools—and not just proposing tower height setbacks?
- Will you please apply pressure to the FCC, Congress and the President to **oppose** legislation and other Federal efforts to preempt local control and force 4G/5G “small” cell technology on communities?
- Will you please actively support and promote faster, safer, more reliable wired fiber optics instead of dangerous inherently unsecure wireless technology?
- Will you please pressure the FCC to update its outdated radiation exposure guidelines? In 2012, the U.S. Government Accountability Office instructed the FCC to do so, but the FCC has failed to respond. It is waiting to roll out 5G first. Did you know the FCC is staffed by former members of the telecom industry and the head of the FCC is a former Verizon attorney?

Please research any topic in this Memorandum of Opposition. A simple internet search will bring up thousands of independent, peer-reviewed scientific studies showing the harm from wireless radiation including the **March 2018 U.S. Government National Toxicology Program Study: "Clear evidence of cancer."** Start here if you like: [5G Fact Sheet](#) and [Wisconsin For Safe Technology flyer in opposition to 5G](#) with FAQs about wireless radiation. Our cell phones and wireless devices are not as innocent as they seem.

Most importantly, here are [wireless safety tips](#) to protect your loved ones.

We look forward to hearing from you and hope you will take action to protect the citizens of our beautiful State of Wisconsin and across the United States. Thank you! Finally, from Retired U.S. Government Physicist Ronald M. Powell, Ph.D.:

"5G is capable of inflicting a new level of harm on the entire population."
#Stop5G

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Website: www.WisconsinSafeTech.com
<https://www.facebook.com/wisconsinsafetech/>
#Stop5G



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7100 N Rachel Way
Unit 6 Eagles Rest
Teton Village WY 83025



For US Mail
P.O. Box 58
Teton Village WY 83025
www.ehtrust.org

The Honorable Tony Evers
Governor of Wisconsin
115 East, State Capitol
Madison, WI 53702

January 13, 2019

Dear Governor Evers:

Environmental Health Trust (EHT) is a nonprofit Think Tank and policy organization dedicated to identifying and reducing environmental health hazards. EHT provides independent scientific research and advice on controllable environmental hazards to local, state and national governments.¹ We brief policymakers nationally and internationally and most recently our scientists were invited to present at the first 5G Wireless Forum in Michigan by State Senator Patrick Colbeck². We hope you will watch the presentations now online of Dr. Ronald Melnick presenting the findings of the National Toxicology Program cell phone radiation study, Dr. Anthony Miller presenting the scientific evidence on cancer, and Theodora Scarato presenting on the groundswell of protective policy nationwide. I presented on the unique vulnerability of children and impacts to DNA and brain development.

Wisconsin's 2013 Mobile Siting Regulations were passed removing a significant amount of local municipal control over cellular antennas installations. Today, we write to advise you of scientific grounds for major health and environmental concerns about the densification of 4G "small" cells and 5G cellular antennas installations.

There are numerous problems with the densification of cellular antennas, such as:

- Wireless installations would result in a significant aesthetic blight that will take away the character of neighborhoods and wreak havoc on property values. Studies show property values drop up to 20% on homes located near cell towers.³
- "Small cells" are not small; each installation would increase the height of the pole, could include up to 1,000 antennas simultaneously sending and receiving signals and a large equipment cabinet.
- The cellular antennas would emit microwave radiofrequency radiation, which is an environmental pollutant known to cause cancer and other adverse health and environmental effects (e.g., on birds, bees, trees) according to internationally recognized authoritative research, including studies conducted by the U.S. National Toxicology Program, which is the nation's premiere testing program.
- Antenna installations will impact the tree canopy due to necessary tree trimming and radiation effects.

In light of the scientific documentation, EHT writes today to:

- *Share technical information explaining why more than 200 expert scientists are urging a moratorium^{4,5} on the 5G rollout until companies prove its safety.*
- *Request that government officials halt the deployment of 5G "small cells" in Wisconsin.*

¹ For example, at the invitation of the Israel Institute for Advanced Study (IIAS) of the Hebrew University of Jerusalem, EHT organized and chaired the 2017 Expert Forum on Wireless Radiation and Health, bringing together scientists and engineers from more than ten high tech nations.

² 5G Wireless Forum, Michigan December 2018

³ Cell Phone Towers Lower Property Values: Documentation And Research on Cellular Base Stations Near Homes, Environmental Health Trust.

⁴ Lerchl, Alexander, et al. "Tumor promotion by exposure to radiofrequency electromagnetic fields below exposure limits for humans." *Biochemical and Biophysical Research Communications*, vol. 459, no. 4, 2015, pp. 585-90.

⁵ Tillmann, Thomas, et al. "Indication of cocarcinogenic potential of chronic UMTS-modulated radiofrequency exposure in an ethylnitrosourea mouse model." *International Journal of Radiation Biology*, vol. 86, no. 7, 2010, pp. 529-41.

- Request that government officials support the implementation of wired systems using fiber optic cables to connect premises. As explained in more detail below, wired systems are faster, cheaper and safer than wireless systems.

5G: An Untested Application of a Technology Known to Harm Humans and Wildlife

Peer reviewed research links EMF emissions to myriad adverse environmental and health effects. Environmental effects include disruptions to reproduction, development, orientation and migration of animals,⁶ and damage to plants and crops.⁷ Human health effects include impaired reproduction, increased incidence of brain cancer, DNA breaks, oxidative stress and immune dysfunction, altered brain development, sleep changes, hyperactivity, and memory and cognitive problems.⁸ Since the WHO/IARC classified EMF as a Group 2B Possible Carcinogen in 2011, the peer reviewed research connecting wireless exposure to cancer has significantly strengthened. For example:

- The 10 year \$30 million National Institute of Environmental Health Sciences National Toxicology Program's (NTP) Studies of the Toxicology and Carcinogenicity of Cell Phone Radiation found that RFR was associated with "clear evidence" of cancer due to the increased malignant schwannomas found in RFR-exposed male rats. The brain (glioma) cancers and tumors in the adrenal glands were also considered evidence of an association with cancer. In addition, exposed animals had significantly more DNA damage, heart damage and low birth weight.
- The Ramazzini Institute published its findings that animals exposed to very low-level RFR developed the same types of cancers as reported by the NTP.
- Long-term research on humans who have used cell phones has found increased tumors—schwannomas and glioblastomas—the same cell type as found in the NTP and Ramazzini Institute studies. Persons who started using cell phones under age 20 had the highest risk.⁹

⁶ See, e.g., Kimmel, Stefan, et al. "Electromagnetic radiation influences on honeybees (Apis mellifera)." *IAS-InterSymp Conference*, 2007 (finding that 39.7% of the non-irradiated bees had returned to their hives while only 7.3% of the irradiated bees had); Cucurachi, C., et al. "A review of the ecological effects of radiofrequency electromagnetic fields (RF-EMF)." *Environment International*, vol. 51, 2013, pp. 116–40; "Briefing Paper on the Need for Research into the Cumulative Impacts of Communication Towers on Migratory Birds and Other Wildlife in the United States." *Division of Migratory Bird Management (DMBM)*, U.S. Fish & Wildlife Service, 2009; Balmori, A. "Mobile phone mast effects on common frog (Rana temporaria) tadpoles." *Electromagnetic Biology and Medicine*, vol. 29, no. 1-2, 2010, pp. 31-5; Harkless, Ryan, Muntather Al-Quraishi and Mary C. Vagula. "Radiation hazards of radio frequency waves on the early embryonic development of Zebrafish." *SPIE Proceedings*, vol. 9112, 2014.

⁷ See, e.g., Waldmann-Selsam, C., et al. "Radiofrequency radiation injures trees around mobile phone base stations." *Science of the Total Environment*, vol. 572, 2016, pp. 554-69; Halgamuge, M.N. "Weak radiofrequency radiation exposure from mobile phone radiation on plants." *Electromagnetic Biology and Medicine*, vol. 36, no. 2, 2017, pp. 213-235; Halgamuge, Malka N., See Kye Yak and Jacob L. Eberhardt. "Reduced growth of soybean seedlings after exposure to weak microwave radiation from GSM 900 mobile phone and base station." *Bioelectromagnetics*, vol. 36, no. 2, 2015, pp. 87-95; Haggerty, Katie. "Adverse Influence of Radio Frequency Background on Trembling Aspen Seedlings." *International Journal of Forestry Research*, vol 2010, no. 836278, 2010.

⁸ For more information on acute health symptoms, see, e.g., Martin Pall, *Microwave Frequency Electromagnetic Fields (EMFs) Produce Widespread Neuropsychiatric Effects Including Depression*, 75 *J. Chemical Neuroanatomy* 43-51 (Sept. 2016); Response of residents living in the vicinity of a cellular phone base station in France; Electromagnetic Fields: A Hazard to Your Health?, Healthy Children.

⁹ Mobile phone and cordless phone use and the risk for glioma – Analysis of pooled case-control studies in Sweden, 1997–2003 and 2007–2009

- A 2015 Jacobs University study (replicating a 2010 study) found that weak cell phone signals significantly promote the growth of tumors in mice, and that combining a toxic chemical exposure with RF more than doubled the tumor response.^{10,11}

Due to these findings, several scientists are of the opinion that the weight of current peer reviewed evidence supports the conclusion that radiofrequency radiation should be regarded as a human carcinogen.^{12,13,14}

Published research on wireless frequencies has found impacts on reproduction and brain development in addition to a myriad of other adverse effects.^{15,16,17,18} 5G would use today's wireless frequencies while adding new, higher frequencies to transmit data at faster speeds. These higher frequency millimeter waves uniquely penetrate the eyes and skin,^{19,20,21,22} and have been shown to accelerate bacterial and viral cell growth.²⁰ Millimeter waves were originally developed as a military weapon to create the sensation that the skin is burning.²¹ Currently accepted standards are not sophisticated enough to measure effects on sweat glands or quantify the risks of cumulative exposure.^{22,23} Any future applications of these technologies must consider the biological effect of cumulative exposures to these frequencies.

Children are more vulnerable.

¹⁰ Lerchl, Alexander, et al. "Tumor promotion by exposure to radiofrequency electromagnetic fields below exposure limits for humans." *Biochemical and Biophysical Research Communications*, vol. 459, no. 4, 2015, pp. 585-90.

¹¹ Tillmann, Thomas, et al. "Indication of cocarcinogenic potential of chronic UMTS-modulated radiofrequency exposure in an ethylnitrosourea mouse model." *International Journal of Radiation Biology*, vol. 86, no. 7, 2010, pp. 529-41.

¹² Adams, Jessica A., et al. "Effect of mobile telephones on sperm quality: a systematic review and meta-analysis." *Environment International*, 70, 2014, pp. 106-112.

¹³ Deshmukh, P.S., et al. "Cognitive impairment and neurogenotoxic effects in rats exposed to low-intensity microwave radiation." *International Journal of Toxicology*, vol. 34, no. 3, 2015, pp. 284-90.

¹⁴ Aldad, T.S., et al. "Fetal Radiofrequency Radiation Exposure From 800-1900 MHz-Rated Cellular Telephones Affects Neurodevelopment and Behavior in Mice." *Scientific Reports*, vol. 2, no. 312, 2012.

¹⁵ Adams, Jessica A., et al. "Effect of mobile telephones on sperm quality: a systematic review and meta-analysis." *Environment International*, 70, 2014, pp. 106-112.

¹⁶ Deshmukh, P.S., et al. "Cognitive impairment and neurogenotoxic effects in rats exposed to low-intensity microwave radiation." *International Journal of Toxicology*, vol. 34, no. 3, 2015, pp. 284-90.

¹⁷ Aldad, T.S., et al. "Fetal Radiofrequency Radiation Exposure From 800-1900 MHz-Rated Cellular Telephones Affects Neurodevelopment and Behavior in Mice." *Scientific Reports*, vol. 2, no. 312, 2012.

¹⁸ Sonmez, O.F., et al. "Purkinje cell number decreases in the adult female rat cerebellum following exposure to 900 MHz electromagnetic field." *Brain Research*, vol. 1356, 2010, pp. 95-101.

¹⁹ A lecture by Paul Ben-Ishai, PhD at the Israel Institute for Advanced Studies on this finding can be found on the 2017 IIAS Conference website. Feldman, Yuri and Paul Ben-Ishai. "Potential Risks to Human Health Originating from Future Sub-MM Communication Systems." *Conference on Wireless and Health*, 2017.

²⁰ Cindy L. Russell, 5G Wireless Telecommunications Expansion: Public Health and Environmental Implications, 165 *Env'tl Res.* 484 (2018).

²¹ For information on Active Denial Systems, see, e.g., Vehicle-Mounted Active Denial System (V-MADS) ; Active Denial System FAQs.

²² A lecture by Paul Ben-Ishai, PhD at the Israel Institute for Advanced Studies on this finding can be found on the 2017 IIAS Conference website. Feldman, Yuri and Paul Ben-Ishai. "Potential Risks to Human Health Originating from Future Sub-MM Communication Systems." *Conference on Wireless and Health*, 2017.

²³ Hayut, Itai, Paul Ben Ishai, Aharon J. Agranat and Yuri Feldman. "Circular polarization induced by the three-dimensional chiral structure of human sweat ducts." *Physical Review E*, vol. 89, no. 042715, 2014.

Children's skulls are thinner, their heads are smaller, and the radiation penetrates deeper into their brain. Research has found that a child's head's absorption can be over two times greater, and absorption of the skull's bone marrow can be ten times greater, than adults.^{24,25} The American Academy of Pediatrics, which is the largest organization of U.S. pediatricians, has repeatedly written to the U.S. government documenting children's vulnerabilities and recommends reducing children's and pregnant women's exposure.²⁶

The California Department of Health, the Connecticut Department of Health, many international health organizations and medical associations, and more than 20 governments are recommending wireless exposure reduction, especially for children.²⁷

Several countries have allowable public exposure limits lower than ICNIRP levels with limits that are even more protective for kindergartens, schools and hospitals. In addition, some governments' regulatory actions include banning cell phones or removing Wi-Fi and cell towers in or near schools.²⁸ For example:

- Belgium and France have banned the sale of cell phones designed for young children and made it illegal to market cell phones to children less than 14 years of age.
- France has banned cell phones in elementary and middle schools, and playgrounds.²⁹
- The Supreme Court of India upheld the High Court of the State of Rajasthan's decision to remove all cell towers from the vicinity of schools, hospitals and playgrounds because this radiation is "hazardous" and causes cancer, brain tumour, digestive disorder and tachycardia.³⁰
- The Environment Minister of Italy has decreed to reduce as much as possible indoor exposure to both ELF-EMF and RF-EMF.
- Cyprus has banned Wi-Fi from kindergartens and elementary classrooms.
- In Chile, the 2012 "Antenna Law" prohibits cell antennas/towers in "sensitive areas" such as "educational institutions, nurseries, kindergartens, hospitals, clinics, nursing homes or other institutions of similar nature."³¹

Children will have a lifetime of exposure to wireless radiation; in order to protect their healthy future, public health authorities must limit this exposure as much as possible.

The Public: Not Protected, Not Warned

²⁴ A lecture by Paul Ben-Ishai, PhD at the Israel Institute for Advanced Studies on this finding can be found on the 2017 IIAS Conference website. Feldman, Yuri and Paul Ben-Ishai, "Potential Risks to Human Health Originating from Future Sub-MM Communication Systems," *Conference on Wireless and Health*, 2017.

²⁵ Hayut, Itai, Paul Ben Ishai, Aharon J. Agranat and Yuri Feldman. "Circular polarization induced by the three-dimensional chiral structure of human sweat ducts," *Physical Review E*, vol. 89, no. 042715, 2014.

²⁶ <https://ehtrust.org/wp-content/uploads/American-Academy-of-Pediatrics-Letters-.pdf>

²⁷ For more on international policy actions, see our online briefing: "International Policy Briefing: Cautionary Policy on Radiofrequency Radiation Actions by Governments, Health Authorities and Schools Worldwide," Environmental Health Trust, 2017.

²⁸ See Database of Worldwide Policies on Cell Phones, Wireless and Health, Environmental Health Trust.

²⁹ "Plus de téléphones portables dans les écoles et collèges à la rentrée 2018 », annonce Jean-Michel Blanquer, *Le Monde* (Dec. 10, 2017).

³⁰ Abhinav Sharma, Rajasthan HC orders relocation of mobile towers from schools, hospitals, *Economic Times* (Nov. 28, 2012).

³¹ New communications antenna law in Chile, 20 Communications Law: Newsletter of the International Bar Association Legal Practice Division 14-16 (2013).

In the United States, RFR radiation regulatory limits were set by the FCC more than two decades ago in 1996. However the FCC limits are not safety standards. Although the EPA was actively researching this issue and tasked to develop proper safety limits,^{32,33} the EPA was abruptly defunded in 1996 and the FCC adopted guidelines developed by industry-connected non-independent groups.³⁴ Experts from U.S. government agencies (including the EPA and NIOSH) have repeatedly documented issues concerning the inadequacy of these limits but their letters have gone unanswered.^{35,36} The EPA has clarified that the FCC limits do not protect against effects from long-term low-level exposures.³⁷ In 2008, the National Academy of Sciences released a Report on research needs that included recommending research on the impacts to brain development and exposures to children and pregnant women.³⁸ In 2012, the Government Accountability Office issued a Report calling for RFR standards to be updated with current research and consideration of today's commonplace exposures from an escalating number of sources.

Moreover, recent cell phone radiation tests released by the French government found that nine out of ten cell phones exceed regulatory limits for radiofrequency radiation when tested in body contact positions (simulating a phone in pants pocket, bra or resting on chest). Despite this documentation, U.S. radiation limits have still not been revised. To this date, there has been no public record of independent systematic review of the research by any U.S. health agency in order to set proper safety standards. The current outdated regulations are inadequate to protect public health.

Since 1997, insurance companies have refused to insure wireless companies and "electromagnetic field exclusions" in insurance policies are an industry standard. EMFs are deemed as "high-risk" in insurance white papers, and EMFs are defined as a "pollutant" by many insurance companies alongside smoke, chemicals and asbestos. Some companies will only cover liability from EMFs under additional "Pollution Liability" policy enhancement coverage. Some policies not only exclude damages from EMFs but also exclude paying for the defense of "*any supervision, instruction, recommendation, warning or advice given or which should have been given in connection with bodily injury, property damage, abatement and/or mitigation etc.*"

Wireless companies warn their shareholders—in mandated annual 10k filings—that they may incur financial losses from lawsuits related to EMF radiation emissions of their products. For example:

- AT&T states, "*We may incur significant expenses defending such suits or government charges and may be required to pay amounts or otherwise change our operations in ways that could materially adversely affect our operations or financial results.*"

³² A lecture by Paul Ben-Ishai, PhD at the Israel Institute for Advanced Studies on this finding can be found on the 2017 IAS Conference website. Feldman, Yuri and Paul Ben-Ishai. "Potential Risks to Human Health Originating from Future Sub-MM Communication Systems." *Conference on Wireless and Health*, 2017.

³³ Hayut, Itai, Paul Ben Ishai, Aharon J. Agranat and Yuri Feldman. "Circular polarization induced by the three-dimensional chiral structure of human sweat ducts." *Physical Review E*, vol. 89, no. 042715, 2014.

³⁴ <https://www.fcc.gov/general/fcc-policy-human-exposure#block-menu-block-4>

³⁵ A lecture by Paul Ben-Ishai, PhD at the Israel Institute for Advanced Studies on this finding can be found on the 2017 IAS Conference website. Feldman, Yuri and Paul Ben-Ishai. "Potential Risks to Human Health Originating from Future Sub-MM Communication Systems." *Conference on Wireless and Health*, 2017.

³⁶ Hayut, Itai, Paul Ben Ishai, Aharon J. Agranat and Yuri Feldman. "Circular polarization induced by the three-dimensional chiral structure of human sweat ducts." *Physical Review E*, vol. 89, no. 042715, 2014.

³⁷ <https://ehtrust.org/wp-content/uploads/4c0f61dc30c3d6bb27d90f53a57c616e.pdf>

³⁸

<https://www.nap.edu/catalog/12036/identification-of-research-needs-relating-to-potential-biological-or-adverse-health-effects-of-wireless-communication-devices>

- Crown Castle's 2016 10-K ANNUAL REPORT, states that, "*If radio frequency emissions from wireless handsets or equipment on our wireless infrastructure are demonstrated to cause negative health effects, potential future claims could adversely affect our operations, costs or revenues. The potential connection between radio frequency emissions and certain negative health effects, including some forms of cancer, has been the subject of substantial study by the scientific community in recent years. We cannot guarantee that claims relating to radio frequency emissions will not arise in the future or that the results of such studies will not be adverse to us...If a connection between radio frequency emissions and possible negative health effects were established, our operations, costs, or revenues may be materially and adversely affected. We currently do not maintain any significant insurance with respect to these matters.*"

Most wireless companies—from AT&T to Nokia to T Mobile to Verizon Wireless—have issued similar warnings to their shareholders.³⁹ Will the Wisconsin public also be warned of the risk?

Scientists Worldwide: Stop 5G

An increasing number of experts around the world are calling for a moratorium on 5G—due to the unprecedented threat to public health and the environment—to stop the installation of radiation-emitting equipment placed within meters of homes, playgrounds and schools.

- In 2015, the International EMF Scientist Appeal, now signed by over 225 scientists from 41 nations, urging the development of more protective guidelines for EMF (including RF-EMF), encouraging precautionary measures, and calling for education of the public about health risks, particularly risks to children and fetal development, was submitted to the Secretary-General of the United Nations, the Director-General of the World Health Organization and U.N. Member Nations.⁴⁰
- In June 2017, EMF Scientists submitted Comments to the U.S. FCC, asking the FCC to critically consider the potential impact of the 5th generation wireless infrastructure on the health and safety of the U.S. population before proceeding to deploy this infrastructure.
- In September 2017, I joined over 180 experts from 35 countries who sent a declaration to the European Union calling for a moratorium on 5G until hazards have been fully investigated by independent scientists, citing potential neurological impacts, infertility and cancer.⁴¹

Wireline networks can satisfy consumer demand for faster speeds and are more cost-effective, energy efficient, safe and reliable in comparison to wireless networks.⁴²

The tobacco and asbestos crises demonstrate that failing to act on public health hazards when they arise can lead to irreversible damage later. EHT thus strongly opposes building out 5G infrastructure—which would place thousands of new sources of microwave radiation emissions in close proximity to workers and families—at least until more testing has been conducted. We join with hundreds of scientific experts from around the world⁴³ to urge that Wisconsin instead support the installation of underground fiber optic cables all the way to premises. We also hope

³⁹ Corporate Company Investor Warnings In Annual Reports 10k Filings Cell Phone Radiation Risks

⁴⁰ Blank, M., et al. "International Appeal: Scientists call for protection from non-ionizing electromagnetic field exposure." *European Journal of Oncology*, vol. 20, no. 3/4, 2015, pp. 180-2.

⁴¹ "Appeal to the European Union: Scientists warn of potential serious health effects of 5G." 13 September 2017.

⁴² For an in-depth discussion of the benefits of wired infrastructure, see Timothy Schoechle, Re-Inventing Wires: The Future of Landlines and Networks, National Institute for Science, Law and Public Policy (2018).

⁴³ Russell, Cindy. "A 5G Wireless Future: Will it give us a Smart Nation or Contribute to an Unhealthy One?" Santa Clara Bulletin, Jan./Feb. 2017.

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that you will expand support for research and training in this field so that future decisions can be based on solid information.

Environmental Health Trust scientists are prepared offer you our expertise in next steps to protect the health of the people of Wisconsin. We thank you for your consideration of this issue.

Sincerely,

A handwritten signature in cursive script that reads "Devra Davis".

Devra Davis, PhD, MPH
Fellow, American College of Epidemiology
Visiting Prof. Hebrew Univ. Hadassah Medical Center & Ondokuz Mayıs Univ. Medical School
Associate Editor, *Frontiers in Radiation and Health*
President, Environmental Health Trust



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Cancer epidemiology update, following the 2011 IARC evaluation of radiofrequency electromagnetic fields (Monograph 102)^{*}

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ABSTRACT

Epidemiology studies (case-control, cohort, time trend and case studies) published since the International Agency for Research on Cancer (IARC) 2011 categorization of radiofrequency radiation (RFR) from mobile phones and other wireless devices as a possible human carcinogen (Group 2B) are reviewed and summarized. Glioma is an important human cancer found to be associated with RFR in 9 case-control studies conducted in Sweden and France, as well as in some other countries. Increasing glioma incidence trends have been reported in the UK and other countries. Non-malignant endpoints linked include acoustic neuroma (vestibular Schwannoma) and meningioma. Because they allow more detailed consideration of exposure, case-control studies can be superior to cohort studies or other methods in evaluating potential risks for brain cancer. 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). Opportunistic epidemiological studies are proposed that can be carried out through cross-sectional analyses of high, medium, and low mobile phone users with respect to hearing, vision, memory, reaction time, and other indicators that can easily be assessed through standardized computer-based tests. As exposure data are not uniformly available, billing records should be used whenever available to corroborate reported exposures.

1. Introduction

With rapidly increasing applications for wireless devices targeting populations of all ages, exposures to the associated radiofrequency radiation (RFR) are increasing in number and diversity. Radiation sources include communications devices such as mobile (cell) or cordless phones, laptops and tablets, baby monitors, wearable devices and associated infrastructure (e.g. routers, antennae on towers, and distributed antennae systems (DAS) that can employ directional couplers or wireless amplifiers to enhance accessibility). Thus, the technology entails direct and growing personal exposures to an expanding array of wireless transmitting devices (WTDs).

In 2011, a Working Group of the World Health Organization's International Agency for Research on Cancer (IARC) classified RFR as a

possible human carcinogen (Group 2B) (IARC, 2013). In this paper we review the human epidemiology and some other relevant studies published since the IARC Working Group meeting.

1.1. Wireless phone types

The principal sources of exposure of humans to RFR are cell and cordless phones. The radiated power and technologies for cell phones have evolved over the years, as summarized in Table 1 (Hardell and Carlberg, 2015).

2. Case-control studies; glioma

Aydin et al. (2011) reported the results of CEFALO, a multicenter

^{*} This paper was prepared for and revised with the Epidemiology Working Group of the Expert Forum: Wireless Radiation and Human Health at the Hebrew University, January 23–26, 2017. sponsored by the Israel Institute for Advanced Study and Environmental Health Trust, with support from the U.S. National Institutes of Health/ National Institute of Environmental Health Sciences and Dr. Lucy R. Wiletzky.

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Congress of the United States
Washington, DC 20515

April 16, 2019

The Honorable Ajit Pai
Chairman
Federal Communications Commission
445 12th Street. SW
Washington, DC 20554

Dear Chairman Pai,

I write to express the concern of constituents and local officials in my district regarding possible detrimental health effects of radiofrequency radiation (RF) emitted by 5G small cells.

From Huntington to Lake Success and beyond, small cell towers are being installed in residential neighborhoods in close proximity to houses throughout my district. I have heard instances of these antennae being installed on light poles directly outside the window of a young child's bedroom. Rightly so, my constituents are worried that should this technology be proven hazardous in the future, the health of their families and value of their properties would be at serious risk.

As I am sure you are aware, the National Toxicology Program (NTP) released a study in November of last year which linked RF radiation used in 2G and 3G networks to cancerous growths in rats.¹ Though this \$30 million, 10 year long study does not apply to 4G or 5G technology, the ubiquity of cellphone use throughout our country requires that this research be taken seriously in safety determinations of cellular technologies moving forward. While I understand that the FDA has reviewed this specific study, I wish to pass along my constituents' strong desire that further studies also be taken seriously and given a proper evaluation.² This is just one of the many pieces of research forwarded to my office by passionate activists who want to ensure the safety of their family, friends, and communities.

Another area of concern for many of my constituents is the FCC's outdated guidelines for safe human exposure to RF energy. The Commission's original updated guidelines were created in 1996 when much of the technology in use today was not yet available for widespread consumption, including 5G.³ In a letter dated December 17, 2018, Commissioner Carr explains

¹ National Toxicology Program, "Cell Phone Radio Frequency Radiation Studies," https://www.niehs.nih.gov/health/materials/cell_phone_radiofrequency_radiation_studies_508.pdf

² U.S. Food and Drug Administration, Office of the Commissioner. "Press Announcements - Statement from Jeffrey Shuren, M.D., J.D., Director of the FDA's Center for Devices and Radiological Health on the National Toxicology Program's Report on Radiofrequency Energy Exposure." U S Food and Drug Administration Home Page. November 1, 2018. <https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm624809.htm>.


³ "Human Exposure to Radio Frequency Fields: Guidelines for Cellular Antenna Sites." Federal Communications Commission. March 12, 2019. <https://www.fcc.gov/consumers/guides/human-exposure-radio-frequency-fields-guidelines-cellular-and-pcs-sites>.

that safe exposure limits have been altered and updated in the FCC's guidelines since that time. How have these safety determinations been made and does the FCC plan on releasing the data it used to set these new limits?

5G will bring about a transformation to how people and networks communicate. While I understand the importance of this technology for the future of the American economy, I believe we must also be as certain as possible that it is safe. I respectfully request that you provide my office and all relevant House Committees with the information used by the FCC, FDA, and other related health agencies to make 5G safety determinations.

Please contact Michael Christesen (michael.christesen@mail.house.gov) in my office with any questions.

Sincerely,


Thomas R. Suozzi
Member of Congress

(TRS/mcc)

PETER A. DEFAZIO
4TH DISTRICT, OREGON

TRANSPORTATION AND
INFRASTRUCTURE
CHAIRMAN



Congress of the United States
House of Representatives

April 15, 2019

Chairman Ajit Pai
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Dear Chairman Pai and Acting Commissioner Sharpless:

I write to inquire about the status of the federal government's research into the potential health effects of radiofrequency (RF) radiation and its relation to the Federal Communications Commission's (FCC) current guidelines for what it considers to be safe RF exposure levels for humans.

As you know, the impending rollout of 5G technology will require the installation of hundreds of thousands of "small cell" sites in neighborhoods and communities throughout the country, and these installations will emit higher-frequency radio waves than previous generations of cellular technology. This means that Americans will be exposed to more non-ionizing RF radiation than ever before.

The FCC's current guidelines for RF safety were adopted in 1996, a time when our society's relationship with and understanding of wireless technology was much different than it is today. In fact, in August 2012 – almost seven years ago – the Government Accountability Office (GAO) released a report recommending that the FCC "should formally reassess and, if appropriate, change its current RF energy exposure limit and mobile phone tested requirements..."¹ The report continued:

The [FCC's] RF energy exposure limit may not reflect the latest research, and testing requirements may not identify maximum exposure in all possible usage conditions...By not formally reassessing its current limit, FCC cannot ensure it is using a limit that reflects the latest research on RF energy exposure. FCC has also not reassessed its testing requirements to ensure that they identify the maximum RF energy exposure a user could experience.

While I was pleased to see the FCC seek comments in 2013 on whether its RF safety guidelines should be reassessed,² it is unacceptable that six years later the FCC still has not conducted a reassessment of its 1996 guidelines.

Meanwhile, concern about exposure to RF radiation has been increasing. My constituents in southwest Oregon have expressed their concerns regarding possible health effects from increased RF exposure, particularly in light of upcoming 5G technology. They are not alone – Americans across the country are expressing similar worries about possible adverse health effects from this technology, and they are understandably demanding answers from the federal government.

Moreover, states and municipalities across the country, including in my congressional district, are hearing from citizens who are concerned about this technology being installed in their communities. Yet

¹ Government Accountability Office, "Exposure and Testing Requirements for Mobile Phones Should Be Reassessed," GAO-12-771, July 2012, <https://www.gao.gov/assets/600/392901.pdf>.

² Federal Communications Commission, "Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies: Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields," FCC 13-39, 29 March 2013, <https://docs.fcc.gov/public/attachments/FCC-13-39A1.pdf>.

PLEASE RESPOND TO:

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(541) 440-3523
- defazio.house.gov

because Section 704(a) of the Telecommunications Act of 1996 – legislation which I opposed – expressly prohibits state and local governments from regulating wireless infrastructure based on RF emissions, and because the FCC's onerous new clarifying rules³ usurp local control over 5G small cell installations, states and municipalities are forced to depend on the federal government for information about the safety of 5G technology.

It is clear that the federal government has not been transparent enough about the current status of 5G RF radiation research and its guidelines on RF exposure limits. As Senator Richard Blumenthal noted in a February 2019 Senate hearing,⁴ the FCC's and FDA's responses to congressional inquiries on this issue have been less than satisfactory, merely reiterating general statements that 5G technology is safe without citing specific research or studies.

Even though the FDA states that it “believes the weight of scientific evidence does not show an association between exposure to radiofrequency from cell phones and adverse health outcomes,” it also states that “there is consensus that additional research is warranted to address gaps in knowledge...”⁵

I request the FCC and FDA provide answers to the following questions:

1. What scientific literature or research has the FCC and FDA used to determine that 5G technology will not cause any adverse health effects in humans? Please cite specific studies and research conducted.
2. What gaps exist in our current understanding of possible health effects from 5G technology, as well as the possible health effects of RF radiation writ large?
3. What efforts has the federal government taken to educate the public, as well as state and local governments, about its research on RF radiation and safety guidelines as it relates to 5G technology?

I strongly urge the FCC, FDA, and relevant agencies to be open and transparent about the research and methods used for determining RF safety guidelines, as well as any outstanding questions your agencies may have about this new technology. Full transparency is needed, and the American people expect and deserve no less from their government.

I look forward to your reply.

Sincerely,



PETER A. DEFAZIO
Member of Congress

³ Federal Communications Commission, “Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment,” FCC 18-111, 2 August 2018; <https://docs.fcc.gov/public/attachments/FCC-18-111A1.pdf>, and FCC 18-133, 26 September 2018, <https://docs.fcc.gov/public/attachments/FCC-18-133A1.pdf>.

⁴ Senate Committee on Commerce, Science, and Transportation; Hearing, “Winning the Race to 5G and the Next Era of Technology Innovation in the United States,” 02:03:59 – 2:08:50, 6 February 2019, <https://www.commerce.senate.gov/public/index.cfm/hearings?ID=06336057-CC60-45DF-A361-32D7401E16C1B>.

⁵ U.S. Food and Drug Administration, “Radiation-Emitting Products: Current Research Results,”

[https://www.fda.gov/Radiation-](https://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/ucm116335.htm)

[EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/ucm116335.htm](https://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/ucm116335.htm)

Congress of the United States
House of Representatives
Washington, DC 20515-3003

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March 28, 2019

The Honorable Ajit Pai
Chairman
Federal Communications Commission
445 12th Street, SW
Washington, D.C. 20554

Dear Chairman Pai,

I write to you regarding the Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment order, the public health concerns surrounding 5G technologies, questions surrounding the safety measures taken by your agency prior to implementation of this technology and the role of local governments in overseeing deployment and retaining control over infrastructure and rights-of-way in their communities.

As you know, current regulations governing radiofrequency (RF) safety were put in place in 1996 and have not yet been reassessed for newer generation technologies. Currently, the FCC's specific absorption rate (SAR) limits only apply to devices operating at frequencies up to 6.0 GHz. However, 5G technology operates at frequencies at and exceeding 24 GHz, which requires numerous small cell sites to be densely installed close to homes, schools, and workplaces. Despite the close proximity to sensitive areas where these high-band cells will be installed, little research has been conducted to examine 5G safety. The FCC has admitted, "the SAR probe calibration, measurement accuracy, tissue dielectric parameters and other SAR measurement procedures required for testing recent generation wireless devices need further examination".¹

On November 14, 2018 the FCC initiated an auction for 28 GHz and 24 GHz bands.² The deployment of these cells continues today despite little knowledge of the long-term health outcomes of this technology. Lacking existing studies into the human impact of high-band 5G cells, further investigation is needed to ensure that elevated RF levels in new locally deployed small cell sites will not be a health risk to communities on the ground.

As you know, the FCC's Declaratory Ruling on September 26, 2018 made several regulatory changes to local governments' ability to administer the rollout of 5G technology.³ These changes

¹ Federal Communications Commission, Office of Engineering and Technology, Laboratory Division, "SAR Measurement Requirements for 100 MHz TO 6 GHz"
https://apps.fcc.gov/eddb/GetAttachment.html?id=RUMcMDL7fmDLsdRSshCN0A%3D%3D&desc=865664%20201%20SAR%20Measurement%20100%20MHz%20to%206%20GHz%20v01r04&tracking_number=28242

² Federal Communications Commission, "AUCTIONS OF UPPER MICROWAVE FLEXIBLE USE LICENSES FOR NEXT-GENERATION WIRELESS SERVICES", Public Notice, FCC-18-109, August 3, 2018,
<https://docs.fcc.gov/public/attachments/FCC-18-109A1.pdf>

³ Federal Communications Commission, "Declaratory Ruling and Third Report and Order", FCC 18-133, September 26, 2018.

include restrictions on how towns and cities review small cell deployment applications, a new "shot-clock" that opens up local governments to lawsuits from 5G providers after 60 days without a final decision on a small cell application, and a cap on the fees that cities can charge for filing deployment applications. A city's ability to regulate and manage 5G deployment is essential to protecting the health, safety and welfare of its residents.⁴

I have heard from a number of my constituents in Lavallette, New Jersey who are worried about the deployment of small cell 5G networks in their neighborhoods. Specifically, my constituents worry that FCC has failed to thoroughly explore all potential safety concerns regarding 5G technologies for human exposure. They are also concerned that local government possess little power to oversee and influence the deployment process. In order to ensure that my constituents are aptly educated on 5G's potential impacts on public health, I would appreciate your response to the following questions:

1. What recent, independent scientific studies demonstrate the safety of 5G technologies?
2. Has the FCC or any other agency conducted research into potential long-term health outcomes of repeated exposure to radiofrequencies similar to those present in high-band 5G cells? If so, what were the results of such study?
3. Have any 5G telecommunications service providers conducted studies into the long-term health outcomes of repeated exposure to radiofrequencies similar to those present in high-band 5G cells? If so, what were the results of such study?
4. How are the FCC and 5G service providers working with local governments and municipalities to address citizens' concerns concerning 5G implementation?
5. What procedure exists for residents to file complaints with the FCC regarding the installation of small cell 5G sites in their neighborhoods?

In order to ensure accurate and swift communication of information to my constituents regarding this issue, I respectfully request a prompt response to these questions.

I look forward to hearing from you on this important matter.

Sincerely,



Andy Kim
Member of Congress

CC: The Honorable Michael O'Rielly, Commissioner, Federal Communications Commission
The Honorable Jessica Rosenworcel, Commissioner, Federal Communications Commission
The Honorable Brendan Carr, Commissioner, Federal Communications Commission
The Honorable Geoffrey Starks, Commissioner, Federal Communications Commission

<https://docs.fcc.gov/public/attachments/FCC-18-133A1.pdf>

⁴ City of Philadelphia Law Department, "Comments of the City of Philadelphia", September 19, 2018

[https://ecfs.fcc.gov/file/109192671/202479/City%20of%20Philadelphia%20Comments%20to%20Draft%20Declaratory%20Ruling%20and%20Third%20Report%20and%20Order%20\(WT%2017-79%3B%20WC%2017-84\).pdf](https://ecfs.fcc.gov/file/109192671/202479/City%20of%20Philadelphia%20Comments%20to%20Draft%20Declaratory%20Ruling%20and%20Third%20Report%20and%20Order%20(WT%2017-79%3B%20WC%2017-84).pdf)

Congress of the United States

Washington, DC 20510

December 3, 2018

The Honorable Brendan Carr
Commissioner
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Dear Commissioner Carr:

We write with interest regarding your recent remarks on the safety of 5G technologies during a Senate Commerce Committee field hearing in Sioux Falls, South Dakota.

During this hearing, the Mayor of Sioux Falls, the Honorable Paul TenHaken, asked about “the health ramifications of 5G and small cell deployment.” His request, as the leader of his municipality, was for “clear direction, talking points, studies that have been done that show that there is no harm to our constituents and to the taxpayers on putting these small cells on towers close to libraries, close to schools, close to their homes.”

Speaking on behalf of the Federal Communications Commission (FCC), you explained, “Federal law actually says that state and local governments can’t take [radiofrequency] concerns into account given how much work has gone into this issue at the federal level...Both at the FCC and other expert health agencies in Washington, they stay very much up to speed on these issues and have reached the determination that these are safe.”

Most of our current regulations regarding radiofrequency safety were adopted in 1996 and have not yet been updated for next generation equipment and devices. For example, the FCC’s specific absorption rate (SAR) limits do not apply to devices operating above 6.0 GHz; however, 5G devices will operate at frequencies as high as or even exceeding 24 GHz. The FCC has acknowledged, “The SAR probe calibration, measurement accuracy, tissue dielectric parameters and other SAR measurement procedures required for testing recent generation wireless devices need further examination.”¹

Furthermore, the final results of the world’s largest and most expensive study to date on the link between radiofrequency radiation and cancer were only just released on November 1, 2018 by the National Toxicology Program (NTP)—an inter-agency program within the U.S.

¹ Federal Communications Commission, Office of Engineering and Technology, Laboratory Division, “SAR Measurement Requirements for 100 MHz TO 6 GHz,”
https://apps.fcc.gov/kdb/GetAttachment.html?id=RUMcMDL7fmDLsdRSsbCNoA%3D%3D&desc=865664%20D01%20SAR%20Measurement%20100%20MHz%20to%206%20GHz%20v01r04&tracking_number=28242.

Department of Health and Human Services.² That study, which began in 1999, is limited in scope to radiofrequency radiation associated with 2G and 3G cell phones. As you know, this study found evidence of cancerous heart tumors, as well as some evidence of cancerous brain tumors, in male rats exposed to high levels of radiofrequency radiation like that used in 2G and 3G cell phones. However, researchers have cautioned that findings “do not apply to 4G or 5G technologies.”³

To ensure we communicate accurate information to our constituents—many of whom have concerns similar to Mayor TenHaken’s—we respectfully request you provide to our offices the 5G safety determination from FCC and relevant health agencies that you referred to during the field hearing. Please also include current citations for the studies informing that safety determination. Like Mayor TenHaken, we recognize that the literature on 5G technology may be limited “because it’s so new,” and are interested in acquainting ourselves with the latest studies evaluating the health effects of high-band frequencies and modulations that would be used in 5G networks.

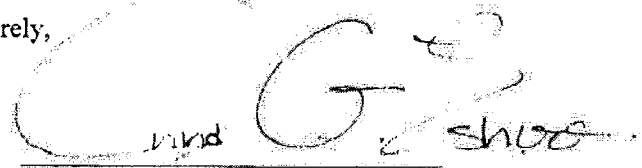
The cooperation and partnership of localities and states will be critical as we move forward with this transformative technology, which promises wireless speeds as much as five times faster and with much lower latency. Carriers will also need updated guidelines governing the authorization of devices to be used with 5G. We also believe it is critical for the FCC to act on its March 27, 2013 Further Notice of Proposed Rulemaking and Inquiry to ensure all individuals, and especially those working in close proximity to the hundreds of thousands of small cell facilities to be deployed, are protected from any kind of excess radiofrequency radiation.⁴

We look forward to hearing from you on this important matter. We respectfully request a response by December 17, 2018.

Sincerely,



Richard Blumenthal
United States Senator



Anna G. Eshoo
Member of Congress

² William J. Broad, “Study of Cellphone Risks Finds ‘Some Evidence’ of Link to Cancer, at Least in Male Rats,” New York Times (New York, New York), November 1, 2018, <https://www.nytimes.com/2018/11/01/health/cellphone-radiation-cancer.html>.

³ National Toxicology Program, “Cell Phone Radio Frequency Radiation Studies,” https://www.niehs.nih.gov/health/materials/cell_phone_radiofrequency_radiation_studies_508.pdf.

⁴ Federal Communications Commission, “Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies; Proposed Changes in the Commission’s Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields,” 28 FCC Rcd 3498 (4), <https://docs.fcc.gov/public/attachments/FCC-13-39A1.pdf>.

ALSO THE PUBLIC RECORD IN OPPOSITION TO AB 234 AND SB 239:

LETTERS FROM SCIENTISTS, DOCTORS, AARP, SIERRA CLUB AND OTHERS

IN OPPOSITION TO

**5G TECHNOLOGY/SMALL CELL LEGISLATION IN CALIF.
BUT APPLICABLE TO WISCONSIN**

**SUBMITTED WITH PERMISSION FROM
PHYSICIANS FOR SAFE TECHNOLOGY**

&

ENVIRONMENTAL HEALTH TRUST

FROM:

**ELAINE UNGER
WISCONSIN FOR SAFE TECHNOLOGY, UA
4815 SUTTON LANE
GREENDALE, WI 53129**

May 29, 2019



**PHYSICIANS
FOR
SAFE
TECHNOLOGY**

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Breast Health Awareness
Foundation

To: The Honorable Gavin Newsom

From: Physicians for Safe Technology

Re: 5G and Small Cell Deployment Moratorium

Date: May 17, 2019

Dear Governor Newsom:

The deployment of 5G, or fifth generation wireless technology, is among the many urgent challenges facing your Administration. Wireless radiation is increasingly recognized as a human and environmental toxin, well supported by an abundance of scientific evidence. We feel the broad expansion of 5G higher radiofrequency technology is a clear threat to human health and the environment and needs to be urgently addressed.

5G wireless technologies have been hailed by industry as an immediate necessity for our society to move forward with high speed broadband, however, there are substantial downsides now recognized.

Analysis has shown that compared to wired technology, 5G is slower, and more costly in the long term. In addition:

- It requires vastly more energy (IoT and data) contributing to climate change
- It poses tremendous cybersecurity vulnerabilities to individuals and to the nation
- It produces radically greater radiation exposures to man and the environment

Physicians for Safe Technology supports a moratorium on 5G on cell towers and in space, and a shift forward towards faster, cheaper and more secure options that include wired, cabled and fiberoptic-only solutions to reduce ambient exposure to radiofrequency radiation (RFR). In addition, every effort should be made to maintain and sustain our traditional landlines; still the clearest, safest and most secure means of emergency communications.

FCC and Industry Promote 5G by Removing Local Authority

In 2018 Governor Brown courageously vetoed SB649, a bill that would have stripped local governments' power to place antennas in the public right of way, even as 20 other states passed similar legislation. Unfortunately, California's autonomy is being threatened by the federal "Small Cell" Ruling and Order (FCC 18-133) which took effect in April 2019, preempting state law and removing the rights of municipalities to regulate the placement of "small cell" antennas in the public right-of-way along with restricting the fees they can assess. The FCC ruling is being challenged in the Ninth District Circuit Court. Representative Anna Eshoo introduced a bill in Congress (HR 530) to reverse the FCC Order. However, both challenges to the

FCC order will take many months, and the outcome is unsure. The National League of Cities and hundreds of municipalities are opposed to the FCC order and in support of HR530.

No Evidence of Safety for 5G

The 5G rollout is occurring *despite* a substantial and growing repository of scientific literature demonstrating that radiofrequency radiation is harmful to humans and the environment: *despite* reports from many nations that with each new rollout of technology a new group of people experiences health problems; and *despite* tremendous opposition by citizen and scientist groups throughout the world. The fact that this is being rapidly implemented worldwide, rather than slowly and systematically, taking time to assess the negative effects and consequences, is a signal that there is an interest group aggressively pushing this against the will of the people.

Contrary to claims that the higher frequencies involved in 5G can only affect skin, 5G frequencies have been shown, by science declassified by the CIA in 2012, to cause biologic disturbance throughout the body (heart, liver, spleen, bone marrow and kidneys). This occurred with just minutes a day of exposure. Because the higher 5G frequencies are more easily blocked (by being absorbed by trees, plants and buildings), 5G "small cells" must be placed every few houses. **This new radiation spectrum will be superimposed on existing technologies and frequencies, producing synergistic toxicity**, not only with other frequencies of ambient radiation, but with chemical exposures as well. This will produce an inescapable hazard for humans, pets and wildlife.

With strong support from industry, the FCC leasing of RFR spectrum is flagrantly and irrationally being conducted without any safety testing of 5G, nor the complex mix of RFR which will be emitted. As Senator Blumenthal stated recently at a hearing of the Senate Commerce Committee, "So we are flying blind on health and safety."

5G Marketed and Installed Without Oversight or Pre-market Safety Testing

A newer design with phased arrays and beam-forming will be used in 5G phones and cell towers that will increase exposure to pulsed radiation signals seeking to connect with anything in the surroundings. 5G "test" installations have already been placed in some cities with no oversight or monitoring by any health agency.

New Risks with 5G in Space: Weather Forecasts

5G in space is also being planned with public/private partnerships without thoughtful discussion of the broad risks, although scientists from NASA and NOAA are now very concerned about electromagnetic interference with weather forecasting satellites, stating this "could threaten the safety of aircraft and naval vessels, and reduce military awareness of battlefield conditions."

FCC Standards Only Consider Heat Injury-Not Biological Toxicity

The FCC standards only require testing for heat generation and not the broad adverse biological effects on all living organisms that have been demonstrated in decades of research on 2G, 3G and 4G radiation (**Pall 2018**) (**Sage and Carpenter 2014**) (**Saravanamuttu 2013**) (**Waldmann-Selsam 2016**). Some have claimed the energy of non-ionizing wireless radiation is insufficient to cause harm but research disproves this assertion. (**Belpomme 2018**) (**Hinrikus 2018**) (**Nielson 2019**)

Due to the Telecommunications Act of 1996, industry currently has the power to place cellular antennas even if they are deemed unsafe or harmful to humans or wildlife, and even if there are people experiencing demonstrable harm. Introduction of legislation to impose 5G upon us, has been coupled with the introduction of legislation to indemnify the government and industry from harm caused. The insurance industry will not insure against harms from this radiation.

5G Higher Frequencies with Different Health Concerns

Compared to current wireless technologies, 5G technology uses higher frequencies with shorter millimeter wavelengths (fractions of an inch) which are closer to the ionizing radiation spectrum. Whereas 3G and 4G microwave radiation used in cell phones, Wi-Fi, Smart Meters and cell towers passes through the body affecting cellular processes along the way, millimeter wavelengths penetrate only the superficial layers of skin and the eyes. There is some evidence of direct injury to the eyes as well as skin and underlying structures with millimeter waves. Considerable health effects can occur as well in all organ systems due to activation of

receptor structures in the skin leading to disturbances in the bone marrow, cardiovascular system, nervous system, immune system and the metabolic system. (Zalyubovskaya 1977)

Old and new studies indicate adverse effects of 5G. Neufeld and Kuster (2018) highlight in their research that the FCC standards will need to be raised for 5G, due to excessive heat with rapid short bursts of data transfer. Zalyubovskaya (1977) disturbingly describes research on both humans and animals showing a myriad of adverse effects from millimeter wavelengths. No evaluation of long term health effects from this type of millimeter radiation has been conducted, and in fact, there has not been the promised updated FCC reassessment of safety standards for 2G, 3G and 4G which we are continuously exposed to today. In addition, monitoring 5G millimeter wave radiation requires sophisticated and expensive equipment that is difficult to obtain, even for EMF consultants. The only indicator of harm from 5G will be long term illness requiring decades of epidemiologic research to uncover.

5G and the Environment: Trees, Bees and Agriculture

The potential environmental effects of 5G are profound. A diverse array of wildlife including bees, birds, turtles, dolphins, salamanders, salmon and amphibians use weak electromagnetic signals from the earth for navigation, foraging and breeding. Alteration of environmental electromagnetic fields has been shown to cause abnormal behavior, developmental abnormalities, impairment of reproduction and increased mortality. Effects have also been found in bacteria with changes in bacterial resistance patterns (Soghomonyan 2016). Research indicates that a domino effect of harm could occur on ecosystems.

Pollinating and wild insects are particularly vulnerable to 5G radiation. Thielens (2018) demonstrated that all insects examined showed increased RF power absorption at and above 6 GHz due to a resonance effect causing heat injury. 5G which uses 600 MHz to 300 GHz will stress ecosystems and contribute to the insect apocalypse experienced around the world now in "protected" and in urban areas. (Hallman 2017) (Sanchez-Bayo and Wyckhuys 2019)

Agriculture

Our California economy is largely based on agriculture. Pollinating insects are a critical part of that economy. Insects pollinate 87% of flowering plants. Insects are part of the nutrient cycle and are food for birds and other wildlife. The dramatic decline of insects in California (Simons 2019) could be due to many factors (habitat loss, pesticides, climate change), but increasing pervasive radiation from cell towers is just now being considered as a potential factor. It is economically wise to use all measures to prevent insect losses, preserve biodiversity and sustain our agricultural regions.

Summary of Risks from 5G

- Damage to the eyes- cataracts, retina
- Immune system disruption
- Metabolic disruption
- Damage to sperm
- Skin damage
- Collapse of insect populations, the base of food for birds and bats
- Rise in bacterial antibiotic resistance and bacterial shifts
- Damage to plants and trees

5G Moratorium in Brussels and Geneva Passed Due to Health Concerns

In 2018 the European Commission Scientific Committee on Health, Environmental and Emerging Risks (SCHEER) listed 5G radiation as an emerging health and environmental issue. In Brussels, Belgium, 5G was halted due to health concerns and a need to relax radiation standards if adopted. The Environment Minister Céline Fremault stated, "The people of Brussels are not guinea pigs whose health I can sell at a profit. We cannot leave anything to doubt." In the Canton of Geneva, Switzerland, which includes 45 municipalities, 5G was banned, in order to investigate health concerns. A petition to the German Parliament was signed by 54,000 people to stop the auction of 5G frequencies in April, 2019. The municipality of Rome, Italy has asked to halt the rollout of 5G.

Harmful impacts of current wireless technology have already been demonstrated and impacts will be expanded with the addition of other higher frequencies. We strongly believe that facilitating massive new radiofrequency exposures from 5G technologies while failing to conduct a formal FCC agency reassessment of current radiofrequency radiation exposure limits inexcusably imperils human health.

Summary

Citizens and governments worldwide are now realizing that the deployment of 5G has potentially irreversible consequences for human and environmental health that ultimately affects our national and economic security. Over 230 scientists and medical doctors around the world have called for a 5G moratorium (5G Appeal). Like tobacco, pesticides and toxic industrial chemicals, corporations have engaged in decades of denial of evidence-based risks to profit from their activities without the responsibility or liability for harm to others. Corporate speech drowns out the scientific warnings.

Radiofrequency radiation is not inert, it is bioactive. We believe in order to protect humans and the environment there needs to be:

- A moratorium on 5G deployment;
- Reevaluation of safety standards to consider non-thermal biologic effects of RFR; and
- Repeal of federal laws to allow states and local governments to consider health and environmental effects with cell tower placement and without automatic shot clock approvals

Physicians for Safe Technology urges you to

- Oppose any legislative bill or policy that accelerates (“streamlines”) the deployment of 5G or “small cell” towers;
- Advance legislation which places a moratorium on 5th Generation technologies; and
- Support policies which promote education, monitoring and independent research into 5G and other wireless technologies to elevate this issue in the medical and public health sectors. More analysis and research is needed prior to deployment.

We have bestowed upon our children one toxic legacy after another. Let’s be careful and not careless with their future. With a 5G moratorium, we can avoid creating more problems for Californians, especially our most vulnerable citizens. We cannot afford any more unintended consequences or experiments on our health.

Sincerely,

Cindy Russell, MD.
Executive Director
Physicians for Safe Technology

WWW.MDSafeTech.org

Our vision is a world where technology serves our needs without undermining our physical, psychosocial or environmental health.

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AARP Real Possibilities in

California

1415 L Street, #960 | Sacramento, CA 95814
1-866-448-3614 | Fax: 916-446-2223 | TTY: 1-877-434-7598
aarp.org/ca | caaarp@aarp.org | twitter: @aarpca
facebook.com/aarpcalifornia

July 19, 2017

The Honorable Lorena Fletcher Gonzalez, Chair
Assembly Appropriations Committee
State Capitol, Room 2114
Sacramento, California 95814

Re: SB 649 (Hueso): Wireless Telecommunications Facilities – As Amended – OPPOSE

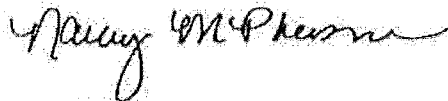
Dear Assembly Member Gonzalez:

On behalf of more than 3.3 million AARP members in California, I am writing in opposition of SB 649, which would harm California consumers. AARP believes that government should conduct the public's business in an open, inclusionary, and equitable manner, and that administrative agencies should promote fairness, openness, and accountability in public decision-making. Unfortunately, SB 649 does just the opposite. It is part of a nationwide effort to undermine the authority of local jurisdictions by allowing the installation of wireless or "small-cell" technology without requiring city or county discretionary permits. The wireless industry has convinced the Federal Communications Commission to launch a proceeding that preempts local authority if permits are not processed as quickly as the industry desires. This is clearly a usurpation of local authority and is contrary to the public's interest in transparent, accountable government.

In addition, this bill aims to bypass the standard California Environmental Quality Act (CEQA) review, which identifies the environmental impact of physical developments. SB 649 also prevents local jurisdictions from rejecting small-cell towers on public property, with the only exception being fire departments. This essentially negates a jurisdiction's local zoning rights. Furthermore, this bill denies municipalities the right to charge a telecommunications company a fair market rate for the lease and rental of public property, which could potentially harm the economic welfare of the community through lost revenue and subsequent taxation in order to make up for that loss.

In summary, AARP opposes SB 649 because it undermines the authority of local governments and thereby deprives local citizens the right to have a say about where small-cell towers are located in their communities. For these reasons, we urge you to vote "NO" this bill. If you have any questions about AARP's opposition to SB 649, please contact Blanca Castro, Advocacy Director, at (916) 556-3021 or bcastro@aarp.org

Sincerely,



Nancy McPherson, State Director

cc: Senator Ben Hueso

June 26, 2017

The Honorable Cecilia Aguilar-Curry, Chair
Assembly Local Gov't Commission
Room 157, 1020 N Street
Sacramento, CA 95814

RE: SB 649 (Hueso) – Small Cell Wireless Facilities - -OPPOSE

Dear Chair Aguilar-Curry:

Environmental Working Group (EWG) opposes SB 649 by Senator Hueso. This bill would make the installation of small cell wireless facilities, such as those used to facilitate 5G networks, ministerial rather than discretionary at the local government level.

The health impacts of cellular transmissions have been debated more and more passionately the last ten years because there are studies that raise real concerns about the effects of radio frequency (RF) energy or radiation on humans. This is why EWG sponsored two bills by former Senator Leno (SB 1212 in 2010 and SB 932 in 2011) that would have required sellers of cell phones to inform consumers that minimizing exposure to cell phone radiation is prudent and in fact recommended by cell phone manufacturers in their included manuals.

Studies on the health impacts of cell phones and their transmission infrastructure are continuing. As new information becomes available, local government ought to be able to use it to help guide their decision-making, including locational issues such as proximity to homes, school, and hospitals. EWG believes that allowing cities and counties to weigh the potential impacts of transmission networks before permits are issued for their construction is essential and SB 649 would prevent them from doing so. And, if more definitive health concerns arise, state law would have to be changed in order to give local governments the flexibility to do their due diligence.

For these reasons, we must oppose SB 649 and urge a “no” vote in the Local Government Committee.

Sincerely,



Bill Allayaud
California Director of Government Affairs
Environmental Working Group

cc: Senator Hueso

July 26, 2017

The Honorable Ben Hueso
Member of the California State Senate
Room 4035, State Capitol
Sacramento, CA 95814

RE: SB 649 (Hueso) – Small Cell Wireless Facilities - OPPOSE

Dear Senator Hueso:

Environmental Working Group (EWG) respectfully opposes your SB 649, which would make the installation of small cell wireless facilities, such as those used to facilitate 5G networks, ministerial rather than discretionary at the local government level.

The health impacts of cellular transmissions have been debated for over ten years because there are studies that raise real concerns about the effects of radio frequency radiation on humans. This is why EWG sponsored two bills by former Senator Leno, SB 1212 (2010) and SB 932 (2011) that would have required sellers of cell phones to inform consumers to minimize exposure to cell phone radiation by reading the manual that comes with the phone, as this is in fact recommended by cell phone manufacturers in their included manuals.

Studies on the health impacts of cell phones and their transmission infrastructure are continuing, but there is already adequate existing sound science for government to proceed with caution on the roll-out of the new technology. In particular, the results of the \$25 million National Toxicology Program study (2016) that showed tumors in rats caused by a typical amount of heavy cell phone use are to be reckoned with. And, most of the past science has analyzed older cellular technology like 2G and 4G, so we are moving into uncharted waters with 5G with its different wavelengths and energy levels.

Local governments must be able to evaluate science and respond to the wishes of their citizens and neighborhoods before permits are issued for this technology and SB 649 short-circuits that process. This includes important decisions about locating the technology near homes, schools, and hospitals. We simply cannot rely upon the word of the FCC (in terms of safety standards) to protect the health of Californians.

For these reasons, EWG will be urging a “no” vote for the Assembly floor. We will be writing a separate letter to the Assembly Appropriations Committee on fiscal concerns.

Sincerely,



Bill Allayaud
California Director of Government Affairs
Environmental Working Group



August 15, 2017

The Honorable Cecilia Aguilar-Curry
Chair, Assembly Local Government Committee
State Capitol Building, Room 5144
Sacramento, CA 95814

SB 649 (Hueso)- Wireless Telecommunications Facilities- OPPOSE

Chair Aguilar-Curry,

On behalf of the undersigned, we write to register our opposition to SB 649 (Hueso) which would prohibit local discretionary review of "small cell" wireless antennas, including equipment collocated on existing structures or located on new "poles, structures, or non-pole structures," including those within the public right-of-way and buildings. The proposal preempts adopted local land use plans by mandating that "small cells" be allowed in all zones as a use by-right, including all residential zones. Because of this, this proposal essentially provides a CEQA exemption for installation of these facilities, undermining the ability for communities to comment and register their concerns associated with previously mentioned installation. These "small cell" installations not only can cause an aesthetic blight, but can release levels of radiation that we don't yet know conclusively the health impacts they can impose of humans, especially developing bodies and minds of children. These small cell boxes could pop up anywhere: grocery stores, outside school, playgrounds, communal places, with no requirement to mitigate effects or understand potential environmental and health hazards.

For these reasons, we urge your "no" vote in committee.

Thank you,

Jena Price, Legislative Affairs Manager
California League of Conservation Voters

Kyle Jones, Legislative Associate
Sierra Club California

Jane Williams, Executive Director
California Communities Against Toxics

Alliance of Nurses for Healthy Environments



June 26, 2017

The Honorable Cecilia Aguilar-Curry,
Chair Assembly Local Gov't Commission
Room 157, 1020 N Street Sacramento,
CA 95814

RE: SB 649 (Hueso) – Small Cell Wireless Facilities -- OPPOSE

Dear Chair Aguilar-Curry:

I am a Professor of Public Health at the University of San Francisco and a Board Member of the national Alliance of Nurses for Healthy Environments. I am very concerned about moving forward with expanding the use of small-scale wireless technologies at the same time that there is mounting evidence of the potential for health risks from the associated radio frequency energy and radiation, particularly to children. The Alliance of Nurses for Healthy Environments ascribes to the precautionary principle as it applies to human health. We firmly believe that early warnings in the scientific literature should be heeded and that our policy development should reflect the synthesis of the best and latest scientific evidence.

At this point in time, we oppose SB 649 and believe that we need an exhaustive review of the science before we allow significant expansion of small cell wireless facilities, such as those to facilitate 5G networks. The results of the literature review should inform our policies. We must be sure that vulnerable populations such as pregnant women and young children will not be unduly harmed from their proximity to unnecessary radio frequency energy. It is important that we continue to examine what constitutes a safe distance and how we can continue to pivot when more information becomes available. We are concerned that the passage of SB 649 will entrench us in a policy for which we have insufficient assurances and which, if passed, will require the burden of effort to reverse.

For these reasons, we oppose SB 649 and urge a "no" vote in the Local Government Committee.

Thank you for considering our concerns.

Sincerely,

Barbara Sattler, RN, MPH, DrPH, FAAN
Board Member

June 27, 2017

Assembly Member Cecilia M. Aguiar-Curry
Local Government Committee Chair
State Capitol
P.O. Box 942849
Sacramento, CA 94249-0004
Via email

Re: SB 649 - OPPOSE

Dear Chair Aguiar-Curry,

On behalf of The Greenlining Institute, I am writing to express our opposition to SB 649. SB 649 will not close the digital divide. Instead, it will allow phone and broadband providers to override community decisions about how those communities use public space. Additionally, SB 649 will allow providers to use community-owned property without paying just compensation.

Local Communities Fully Understand the Need for Advanced Phone and Broadband Services.

Every community in California is eager to see faster, more reliable, and more affordable phone and broadband service. Local governments are very aware that advanced telephone and broadband services are critical for access to educational, employment, and economic opportunities. Access to these opportunities is particularly critical for communities of color, who, as a result of the racial wealth and income divides, are more likely to live in areas that lack access to advanced phone and broadband services. State and local governments are particularly well-positioned to ensure that providers are serving communities equitably and non-discriminatorily and that community-members have equitable access to economic opportunity.

SB 649 Would Not Help Close The Digital Divide.

Sadly, communications providers have repeatedly demonstrated that they will not make advanced services available to low-income or rural areas unless **they are required to do so**. SB 649 contains no such requirement, instead allowing providers to pick and choose where to build their networks without any community input. Under SB 649, it is likely that providers will focus any service improvements on high-income areas. SB 649 in no way guarantees that low-income communities and communities of color will gain increased access to advanced communications services. Accordingly, SB 649 will not help close the digital divide.

SB 649 Would Eliminate the Ability of Communities to Promote their Interests and Priorities.

It is important to remember that the rights-of-way that providers use to build out their networks are **owned by communities and managed by municipalities.**¹ Currently, if a phone or broadband provider wants access to a local community's right-of-way, it can negotiate with that community for a franchise, paying fair-market value for that access. Additionally, communities can currently negotiate with providers to advance community priorities and interests in exchange for access to community-owned rights of way. For example, if a provider seeks access to build out its network in a high-income area, a community could grant access to that in exchange for that providers' providing high-speed broadband to anchor institutions in lower-income areas. SB 649 would eliminate communities' ability to manage their rights-of-way, unduly interfering with those communities' right to self-determination.

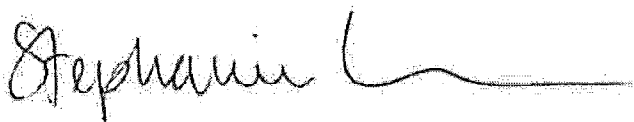
SB 649 Would Allow Providers to Use Community-Owned Property without Paying Just Compensation.

Phone and broadband providers already reap windfall profits from Californians. SB 649 limits communities to charging set prices and fees for access to their rights-of-way. These artificial restrictions distort the market and force consumers to subsidize providers' costs. SB 649 prevents communities from getting full market value in exchange for access to rights-of-way. Accordingly, SB 649 increases the power of providers to extract profits from local communities that already face monopoly or near-monopoly prices.

Greenlining supports any legislative measure that increases the availability of advanced communications services to communities of color. Unfortunately, SB 649 is not such a measure. The bill promises to widen the digital divide, place control over community-owned property in the hands of providers, and fail to compensate communities fairly. Accordingly, Greenlining OPPOSES SB 649.

If you have any questions, please do not hesitate to contact me.

Sincerely,



Stephanie Chen
Energy & Telecommunications Policy Director

¹ Frederick E. Ellrodd III & Nicholas P. Miller, Property Rights, Federalism, and Public Rights-of-Way (2003) 26 Seattle Univ. Law. Rev. 475, 477.

Martin Pall, PhD

August 7, 2017

Dear California Legislators,

I am Dr. Martin Pall, Professor Emeritus of Biochemistry and Basic Medical Sciences at Washington State University. I am a published and widely cited scientist on the biological effects of electromagnetic fields and speak internationally on this topic. I am particularly expert in how wireless radiation impacts the electrical systems in our bodies. I have published 7 studies showing there exists exquisite sensitivity to electromagnetic fields (EMFs) in the voltage sensor in each cell, such that the force impacting our cells at the voltage sensor has massive impact on the biology on the cells of our bodies [1-7]. These papers are discussed in over 360,000 web sites which can be easily found by Googling (Martin Pall electromagnetic). I received my PhD at Caltech, one of the top scientific institutions in the world.

EMFs act by activating channels in the membrane that surrounds each of our cells, called voltage-gated calcium channels (VGCCs). The EMFs put forces on the voltage sensor that controls the VGCCs of about 7.2 million times greater than the forces on other charged groups in our cells [4,6,7]. This is why weak EMFs have such large biological effects on the cells of our bodies! EMFs works this way not only on human and diverse animal cells [1-7] but also in plant cells [7] so that this is a universal or near universal mechanism of action.

Thousands of published studies show biological and health effects from electromagnetic fields. We now know the mechanism that can explain these effects. The mechanism is a function of the electromagnetics of each cell—not solely about heating effects from the radiation (on which present FCC guidelines are based).

This new understanding [1-7] means we can debunk the claims of the wireless industry that there cannot be a mechanism for effects produced by these weak EMFs. The 20 years plus of industry propaganda claims are false. Rather the thousands of studies showing diverse health impacts of these EMFs can be explained. We now have a mechanism, one that is supported by both the biology and the physics, both of which are pointing in exactly the same direction. I am sending as a separate document a list of 134 reviews, each of which provides from 12 to over a thousand individual citations showing health impacts of low intensity EMFs, EMFs that the telecommunications industry claims cannot have such effects. **These 134 reviews and thousands of primary scientific papers they cite show that the industry propaganda has no scientific support whatsoever.**

The consensus among independent scientists on this is further confirmed by the 2015 (and later) appeal made to the United Nations and member states, stating that the current EMF safety guidelines are inadequate because they do not take into consideration non-thermal effects. This was signed by 225 scientists from 41 countries, each of whom had

published peer reviewed studies on EMF health effects – a total of 2,000 papers published in this area by the signers, a substantial fraction of the total publications in this area.

According to industry, the forces electromagnetic fields place on electrically-charged groups in the cell are too weak to produce biological effects. However, the unique structural properties of the voltage-gated calcium channel (VGCC) protein can, it turns out, explain why the force on a cell's voltage sensor from low-intensity EMFs are millions of times stronger than are the forces on singly-charged groups elsewhere in the cell.

It would be a disaster for the health of Californians to be exposed to the antennas envisioned in SB.649. The State of California would be making a grave mistake to proceed with supporting the commercial interests of the wireless industry with this legislation. **Legislators would best pause to understand the gravity of the biological effects, and the ramifications for physical and mental health, as well as consequences from continual damage to human DNA, and learn the facts from scientists who are independent of the wireless industry, not from the industry lobbyists who have a gigantic conflict of interest.**

VGCC activation in cells produced by low intensity EMFs can explain long-reported findings that electromagnetic fields and a wide range of biological changes and health effects. The first 6 of these (see below) were well documented 46 years ago in the U.S. Office of Naval Medical Research report, published in 1971 [8]. The others that follow have been extensively documented subsequently in the peer-reviewed scientific literature:

- 1) Various neurological/neuropsychiatric effects, including changes in brain structure and function, changes in various types of psychological responses and changes in behavior.
- 2) At least eight different endocrine (hormonal) effects.
- 3) Cardiac effects influencing the electrical control of the heart, including changes in ECGs, producing arrhythmias, changes that can be life threatening.
- 4) Chromosome breaks and other changes in chromosome structure.
- 5) Histological changes in the testes.
- 6) Cell death (what is now called apoptosis, a process important in neurodegenerative diseases).
- 7) Lowered male fertility including lowered sperm quality and function and also lowered female fertility (less studied).
- 8) Oxidative stress.
- 9) Changes in calcium fluxes and calcium signaling.
- 10) Cellular DNA damage including single strand breaks and double strand breaks in cellular DNA and also 8-OHdG in cellular DNA.
- 11) Cancer which is likely to involve these DNA changes but also increased rates of tumor promotion-like events.
- 12) Therapeutic effects including stimulation of bone growth.
- 13) Cataract formation (previously thought to be thermal, now known not to be).
- 14) Breakdown of the blood-brain barrier.
- 15) Melatonin depletion and sleep disruption.

They may be low intensity but with regard to the VGCCs, electromagnetic fields can have a tremendously powerful impact on the cells of our bodies. Furthermore, published studies showing that calcium channel blocker drugs block or greatly lower biological effects from electromagnetic fields confirm there is a VGCC activation mechanism that is causing various effects. Higher frequency electromagnetic fields from 5G technologies on the horizon pose even greater biological concern than those to which we are exposed today. We should be moving, instead, to wired technologies at every opportunity, based on what we know in science today, not expanding and supporting the proliferation of wireless.

I want to make several additional points very clear:

1. The Physics and the Biology are both pointing in the same direction. Both show that EMFs act primarily via activating the VGCCs in the cells of our bodies.
2. DNA damage known to be produced by these EMFs occur in human sperm and may also occur in human eggs, leading to large increases in mutation in any children born. It is thought that an increase in mutation frequency of 2.5 to 3-fold will lead to extinction because of accumulation of large numbers of damaging mutations. We may already be over this level, and if so, simply continuing our current exposures will lead to eventual extinction. Further increases in exposures will be more rapidly self-destructive.
3. Pulsed EMFs are, in most cases, more biologically active and therefore more dangerous than are non-pulsed (continuous wave) EMFs. All cordless communication devices communicate via pulsations, because it is the pulsations that carry the information communicated. All the industry claims of safety are based on a theory (only thermal effects) that was known to be wrong back in 1971 [8] – and that was before many thousands of additional studies were published providing massive confirmation that industry claims are false.
4. The industry is trying to move to much higher frequencies because these much higher frequencies allow much higher pulsations and therefore much higher transmission of information. However, these higher pulsation rates make these ultra-high devices vastly more dangerous. This is part of the reasons why it is so important to vote down SB.649.
5. None of our wireless communication devices are ever tested biologically for safety – not cell phone towers, not cell phones, not Wi-Fi, not cordless phones, not smart meters and certainly not 5G phones, or radar units in cars – before they are put out to irradiate an unsuspecting public.
6. The telecommunications industry has corrupted the agencies that are supposed to be regulating them. The best example of this is that the FCC which regulates EMFs in the U.S. is a “captured agency”, captured by the industry it is supposed to regulate, according to an 8 chapter document published by the Edmond J. Safra Center for Ethics at Harvard University [9]. Is it any wonder, therefore, that the industry keeps touting that their devices are within the safety guidelines set by the FCC?

I urge you to do the right thing on behalf of the health of Californians and future generations. Please let me know if I can provide further information. (503) 232-3883.

Sincerely,

Martin Pall, PhD (Caltech, 1968)

Professor Emeritus of Biochemistry and Basic Medical Sciences

Washington State University

Citations:

1. Pall ML. 2013 Electromagnetic fields act via activation of voltage-gated calcium channels to produce beneficial or adverse effects. *J Cell Mol Med* 17:958-965.
2. Pall ML. 2014 Electromagnetic field activation of voltage-gated calcium channels: role in therapeutic effects. *Electromagn Biol Med*. 2014 Apr 8.
3. Pall ML. 2015 Scientific evidence contradicts findings and assumptions of Canadian Safety Panel 6: microwaves act through voltage-gated calcium channel activation to induce biological impacts at non-thermal levels, supporting a paradigm shift for microwave/lower frequency electromagnetic field action. *Rev Environ Health* 30:99-116.
4. Pall ML. 2015 Elektromagnetische Felder wirken über die Aktivierung spannungsabhängiger Calciumkanäle, um günstige oder ungünstige Wirkungen zu erzeugen. *Umwelt-Medizin-Gesellschaft* 28: 22-31.
5. Pall ML. 2015 How to approach the challenge of minimizing non-thermal health effects of microwave radiation from electrical devices. *International Journal of Innovative Research in Engineering & Management (IJIREM)* ISSN: 2350-0557, Volume-2, Issue -5, September 2015; 71-76.
6. Pall ML. 2016 Microwave frequency electromagnetic fields (EMFs) produce widespread neuropsychiatric effects including depression. *J Chem Neuroanat* 75(Pt B):43-51. doi: 10.1016/j.jchemneu.2015.08.001, Epub 2015 Aug 21.
7. Pall ML. 2016 Electromagnetic fields act similarly in plants as in animals: Probable activation of calcium channels via their voltage sensor. *Curr Chem Biol* 10: 74-82.
8. Naval Medical Research Institute Research Report, June 1971. Bibliography of Reported Biological Phenomena ("Effects") and Clinical Manifestations, Revised, ZR Glaser.
9. Captured Agency: How the Federal Communications Commission Is Dominated by the Industries It Presumably Regulates, by Norm Alster. Published by Edmond J. Safra Center for Ethics, Harvard University. An e-book under the Creative Commons 4.0 License: <https://creativecommons.org/licenses/by/4.0/>

September 08, 2017

The Honorable Jerry Brown
Governor, State of California
c/o State Capitol, Suite 1173
Sacramento, CA 95814

RE: SB 649 (Hueso) – Small Cell Wireless Facilities

Honorable Governor Brown,

I have recently learned of proposed Bill SB 649 regarding the streamlining of small cell wireless facilities.

As a member of the Physics department of Ariel University, and before that the Hebrew University of Jerusalem, I have studied the subtle effects of electromagnetic radiation on biology and biological materials. I have published more than 50 articles in the field of Dielectrics (the study of the interaction of materials with radio waves), including many on the interaction of cellular frequencies with biological materials such as proteins and blood. My last article investigated the interaction of 5G electromagnetic radiation with human skin.¹ One could argue that I have a certain amount of expertise.

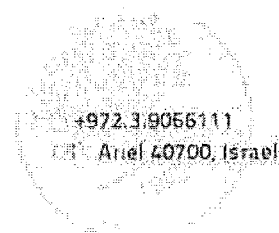
In light of our work and a growing number of publications showing the frequency range of 5G can have serious biological effects, we believe that current efforts to accelerate the implementation of 5G should be delayed until additional studies are made to assess the critical impact on human health.

It is not for me to lecture to elected officials on how cities should develop technologically, nor is it for me to try and stop the juggernaut that is the cellular industry. However, I would like to point out to you important information on the possible public health implications of the explosion in unregulated cellular phone and wireless device use.

The term "health" has never featured too heavily in the lexicon of the Cellular Industry. It has been assumed, conveniently, that any possible effects on the human anatomy from the use of cell phones would be only mild heating. And that this is something that the body could easily deal with. As a consequence, the governing safety limits were set in 1998 by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) based on the premise that if radiofrequency radiation limits protected human tissue from overheating, then the public was adequately protected. They considered that the effect to humans would at most cause the agitation of water inside cellular tissues that would dissipate as heat, similar to what a microwave oven does, but at far lower energies.

The trouble is that our knowledge has progressed in the last 19 years and we now understand that the interaction of microwave energy and our tissues is far more subtle. There is increasing evidence of non-thermal biological consequences arising from our interaction with cellular phone radiation. A few examples; in 2014 a team from the University of Exeter, UK published a report linking the effect of

¹ Bezaieel, Noa, Yairi Feldman and Paul Ben Ishai, "The Modeling of the Absorbance of Sub-THz Radiation by Human Skin," *IEEE Transactions on Terahertz Science and Technology* PP 99 (2017): 1-9, doi: 10.1109/THZ.2017.2736345.





cellular phones on declining sperm quality.² They based their research on over 1492 subjects from around the world. In 2009, Columbia University showed that radio frequencies were leading to stress in living cells.³ This in turn seriously affects their ability to perform, as particular cellular pathways were disrupted. Further evidence along this direction was provided by a group from the University of Rennes.⁴ I can add plenty more examples, but I think that it is summed up by a recent public announcement. Advisors to the World Health Organization International Agency for Research on Cancer (WHO/IARC), themselves well versed in radio frequencies and in cancer, have publicly stated that evidence has been met to classify cellular radiation as meeting scientific criteria for a Group 1 carcinogenic agent to humans.^{5,6}

As I said above, it is not my job and neither is it realistic for me to stop the placing of thousands of antennas throughout your state. But it is my job to point out the health hazard to you before you make such a momentous decision.

Yours sincerely

A handwritten signature in black ink, appearing to read "Paul Ben Ishai".

Dr. Paul Ben Ishai
Department of Physics
Ariel University

CC

Tom Dyer, Chief Deputy Legislative Affairs Secretary

² Adams, J.A., et al. "Effect of mobile telephones on sperm quality: a systematic review and meta-analysis" *Environment International* 70 (2014): 106-12. doi: [10.1016/j.envint.2014.09.013](https://doi.org/10.1016/j.envint.2014.09.013)

³ Blank, M. and R. Goodman. "Electromagnetic fields stress living cells." *Pathophysiology* 16 2-3 (2009): 71-8. doi: [10.1016/j.pathophys.2009.01.006](https://doi.org/10.1016/j.pathophys.2009.01.006)

⁴ Hobauzit, Denis, et al. "Transcriptome analysis reveals the contribution of thermal and the specific effects in cellular response to millimeter wave exposure." *PLoS One* 9, 10 (2014): e109435.

doi: [10.1371/journal.pone.0109435](https://doi.org/10.1371/journal.pone.0109435)

⁵ "Cancer Expert Declares Cell Phone and Wireless Radiation As Carcinogenic to Humans." Environmental Health Trust (2017). <https://ehtrust.org/cancer-expert-declares-cell-phone-wireless-radiation-carcinogenic-humans/>

⁶ Carlberg, Michael and Lennart Hardell. "Evaluation of Mobile Phone and Cordless Phone Use and Glioma Risk Using the Bradford Hill Viewpoints from 1965 on Association or Causation." *BioMed Research International* 2017 (2017): 9218486. doi: [10.1155/2017/9218486](https://doi.org/10.1155/2017/9218486)

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June 28, 2017

The Honorable Cecilia Aguiar-Curry
Chair of the Local Government Committee
1020 N Street, Room 157
Sacramento, CA 95814

RE: SB 649 (Hueso) – Small Cell Wireless Facilities — OPPOSE

Dear Chair Aguiar-Curry:

As a nonprofit research and policy organization dedicated to identifying and reducing environmental health hazards, Environmental Health Trust (EHT) writes to advise you of serious scientific grounds to reject SB 649 as advanced by Senator Hueso. I have personally served as an expert advisor to the California Department of Health as well as the San Francisco and Berkeley City governments on matters relevant to this bill. EHT has been honored to work with California government and scientists for over a decade. At the invitation of the Israel Institute for Advanced Study of the Hebrew University of Jerusalem, EHT recently organized and chaired an Expert Forum on Wireless Radiation and Health, bringing together scientists and engineers from more than ten high tech nations. Reflecting these efforts, EHT provides independent scientific research and advice on avoidable environmental health hazards to local, state and national governments.

SB 649 will pave the way for widespread introduction of 5G microwave wireless radiation frequency (RF) that has never been tested for its impact of public health or the environment. Other RF microwave radiation such as that used by cellphones and other wireless devices has been classified as a "possible carcinogen" by the International Agency for Research on Cancer in 2011 and more recently dubbed a "probable carcinogen," by expert researchers looking at newer information in 2015.^{1,2,3} In addition, this bill could result in the loss of hundreds of millions of dollars in local revenue, as the San Francisco Chronicle noted today.

By ignoring growing scientific evidence of harm, the bill effectively will ensure the widespread exposures of millions of Californians to an agent that growing numbers of scientists and nations consider a serious

¹ World Health Organization. "IARC classifies radiofrequency electromagnetic fields as possibly carcinogenic to humans." WHO, Press Release, no. 208, 2011.

² IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. "Non-ionizing radiation, Part 2: Radiofrequency electromagnetic fields." *IARC Monographs On The Evaluation of Carcinogenic Risks to Humans*, vol. 102, pt. 2, 2013.

³ Morgan, L. Lloyd, et al. "Mobile phone radiation causes brain tumors and should be classified as a probable human carcinogen (CA1)." *International Journal of Oncology*, vol. 46, no. 5, 2015, 1865-71.

health threat. Recently, studies have found that the frequencies which will be used in 5G and other future technologies can have harmful effects⁴, as Dr. Cindy Russell, Vice President of Community Health for the Santa Clara Medical Association noted.⁵ As articulated in their state Constitution, California cities and counties have a duty to protect the health and safety of their residents.

EHT has a longstanding history of research and policy advice to state, local and national governments regarding strategies to reduce disease and promote health by avoiding environmental health hazards. Our organization opposes the broad scale installation of untested wireless antennas and associated electrical equipment close to humans and through critical wildlife habitat and corridors. Both federal and local zoning controls are needed to assure that cellular equipment are installed to avoid significant and serious safety threats of electrical shock, fire, and radio frequency (RF) microwave radiation exposures, as well as chronic impacts on public health and the environment.

Consistent with public health concepts of preventing harm by reducing exposure to suspected carcinogens, EHT opposes the usurpation and preemption of local authority that will allow federal and state authorities to place what state reports of the bill indicate can be thirty thousand new radiating 5G cell antennas on city and county utility, light poles, and other right of ways in close proximity to city and county workers, children, residents and visitors. In some cases towers will need to be sited every 100 feet with antennas at a height of 30 feet or less. Local authority and duty should not be overridden by preemptive federal or state policies such as SB 649 which disregards scientific evidence on this matter as outlined below.

Regarding potential health risks from RF a number of corporations advise their shareholders that they face serious risks from RF. For instance, Crown Castle's 2016 10-K ANNUAL REPORT, states that,

"If radio frequency emissions from wireless handsets or equipment on our wireless infrastructure are demonstrated to cause negative health effects, potential future claims could adversely affect our operations, costs or revenues. The potential connection between radio frequency emissions and certain negative health effects, including some forms of cancer, has been the subject of substantial study by the scientific community in recent years. We cannot guarantee that claims relating to radio frequency emissions will not arise in the future or that the results of such studies will not be adverse to us...If a connection between radio frequency emissions and possible negative health effects were established, our operations, costs, or revenues may be materially and adversely affected. We currently do not maintain any significant insurance with respect to these matters."

Most wireless companies from AT&T to Nokia to T Mobile to Verizon Wireless have issued similar warnings to their shareholders.

Regarding public health impacts, recently released research findings from the premiere test program of the National Institute of Environmental Health Sciences (NIEHS) add to the body of scientific evidence

⁴ Feldman, Yuri, et al. Human Skin as Arrays of Helical Antennas in the Millimeter and Submillimeter Wave Range. *Physical Review Letters*, vol. 100, no. 128102, 2008.

⁵ Russell, Cindy. "A 5G Wireless Future: Will it give us a Smart Nation or Contribute to an Unhealthy One?" Santa Clara Bulletin, Jan./Feb, 2017.

indicating that RF microwave radiation can be harmful. The 10 year \$25 million NIEHS National Toxicology Program's Studies of the Toxicology and Carcinogenicity Cell Phone Radiation reports that RF produced increases rates of highly malignant very rare tumors: gliomas of the brain and schwannomas of the heart.⁶ These experimental findings are consistent with human studies showing increased rates of gliomas and acoustic neuromas (schwann cells) among humans exposed to cell phone radiation. In addition to increased cancers, the NTP study also reported that prenatally exposed animals produced offspring with lower birth weight and evidence of direct genetic damage.

Since the 2011 WHO/IARC classification, the peer reviewed research connecting microwave exposure to cancer has significantly strengthened. In 2015, a study replicated a 2010 experiment that found that weak cell phone signals significantly promote the growth of tumors in mice, and that toxic chemical exposures combine with RF to more than double the tumor response.^{7,8} The Ramazzini Institute is engaged in similar research with RF that is 1000 less than the NTP exposures—set to mimic radiation exposure levels caused by network equipment (e.g., cell tower antenna emissions).

Consistent with the NTP findings, the Ramazzini Institute team report significantly lower litter weights, as presented at the January 2017 Conference on Wireless and Health at Israel Institute for Advanced Study, Hebrew University of Jerusalem.⁹ Findings of effects at such low levels is indication of the capability of low level electromagnetic radiation exposure to result in biological effects.

Other studies finding serious increased risk of glioma in regular cell phone users are of special relevance. In 2014, a French national study linked higher cell phone exposure to increased glioma in cell phone users.¹⁰ A newly published research report in the *American Journal of Epidemiology* finds that Canadians who have used cell phones for 558 hours or more have more than a doubled risk of brain cancer.¹¹ Previous published re-analysis of the multi country Interphone study data has found stronger positive associations to glioma risk among long term users and heavy users and a statistically significant association between where tumors were located and how much radiation an individual received from their phone.^{12,13}

⁶ Wyde, Michael, et al. "Report of Partial findings from the National Toxicology Program Carcinogenesis Studies of Cell Phone Radiofrequency Radiation in Hsd: Sprague Dawley 00 SD rats (Whole Body Exposure)." *bioRxiv*, no. 055699, 2016.

⁷ Lerchl, Alexander, et al. "Tumor promotion by exposure to radiofrequency electromagnetic fields below exposure limits for humans." *Biochemical and Biophysical Research Communications*, vol. 459, no. 4, 2015, pp. 585-90.

⁸ Tillmann, Thomas, et al. "Indication of cocarcinogenic potential of chronic UHFIS-modulated radiofrequency exposure in an ethylnitrosourea mouse model." *International Journal of Radiation Biology*, vol. 86, no. 7, 2010, pp. 529-41.

⁹ Belpoggi, Fiorella. "Recent findings on wireless radiation and health from the Ramazzini Institute could reinforce the NTP results." *Conference on Wireless and Health*, 2017.

¹⁰ Courreau, Gaëlle, et al. "Mobile phone use and brain tumours in the CERENAT case-control study." *Occupational Environmental Medicine*, vol. 71, no. 7, 2014, pp. 514-22.

¹¹ Momoli, F., et al. "Probabilistic multiple-bias modelling applied to the Canadian data from the INTERPHONE study of mobile phone use and risk of glioma, meningioma, acoustic neuroma, and parotid gland tumors." *American Journal of Epidemiology*, 2017.

¹² Turner, Michelle C., et al. "Investigation of bias related to differences between case and control interview dates in five INTERPHONE countries." *Annals of Epidemiology*, vol. 26, 12, 2016, pp. 827-32.

More recently, research carried out by physicists in Israel and others have shown that the higher millimeter wave frequencies to be used in 5G applications uniquely interacts with sweat ducts of the human skin which can then function as antennas to amplify signals. This work extends studies first produced in 1986.¹⁴ The potential long-term impact of such stimulation on precancerous skin growths should be evaluated carefully, including potential super-growth of bacteria.¹⁵ A [lecture](#) by Paul Ben-Ishai, PhD, and published research on this issue can be found on the [2017 Conference website](#).^{16, 17, 18}

Cancer is not the only health concern presented by wireless devices and infrastructure. Impacts on [reproduction](#) and [brain development](#) have also been repeatedly reported in the peer reviewed literature in addition to a myriad of other adverse effects.^{19, 20, 21, 22}

In light of these developments showing growing evidence of the biological impact of RF, it is imperative that new infrastructure and 5G not be introduced widely into commerce at this time. The State of California needs to critically consider the potential impact of massive new and possibly carcinogenic wireless exposures to their population. Before introducing additional untested wireless technology into the environment, it is necessary to:

- model exposures to infants, children and pregnant women;
- conduct experimental tests on exposures' impacts on wildlife; and
- evaluate impacts on human systems through in vitro and in vivo toxicology

In 2015, the [International EMF Scientist Appeal](#), now signed by over 225 scientists from 41 nations, was submitted to the Secretary-General of the United Nations, the Director-General of the World Health Organization and U.N. Member Nations urging the development of more protective guidelines for EMF (including RF-EMF), encouraging precautionary measures, and calling for education of the public about

¹³ Grell, Kathrine, et al. "The intracranial distribution of gliomas in relation to exposure from mobile phones: analyses from the INTERPHONE study." *American Journal of Epidemiology*, vol. 184, no. 11, 2016, pp. 818-28.

¹⁴ Gandhi OP, Riaz A. "Absorption of millimeter waves by human beings and its biological implications." *IEEE Transactions on Microwave Theory and Techniques*, vol. 34, no. 2, 1986, pp. 228-235.

¹⁵ Soghomonyan D, K. Trchounian and A. Trchounian. "Millimeter waves or extremely high frequency electromagnetic fields in the environment: what are their effects on bacteria?" *Applied Microbiology and Biotechnology*, vol. 100, no. 11, 2016, pp. 4761-71.

¹⁶ Feldman, Yuri and Paul Ben-Ishai. "Potential Risks to Human Health Originating from Future Sub-Millimeter Communication Systems." *Conference on Wireless and Health*, 2017.

¹⁷ Hayut, Itai, Paul Ben Ishai, Aharon J. Agranat and Yuri Feldman. "Circular polarization induced by the three-dimensional chiral structure of human sweat ducts." *Physical Review E*, vol. 89, no. 042715, 2014.

¹⁸ Feldman, Yuri, et al. "Human Skin as Arrays of Helical Antennas in the Millimeter and Submillimeter Wave Range." *Physical Review Letters*, vol. 100, no. 128102, 2008.

¹⁹ Adams, Jessica A., et al. "Effect of mobile telephones on sperm quality: a systematic review and meta-analysis." *Environment International*, 70, 2014, pp. 106-112.

²⁰ Deshmukh, P.S., et al. "Cognitive impairment and neurogenotoxic effects in mice exposed to low-intensity microwave radiation." *International Journal of Toxicology*, vol. 34, no. 3, 2015, pp. 284-90.

²¹ Aldad, T.S., et al. "Fetal Radiofrequency Radiation Exposure From 800-1900 MHz-Rated Cellular Telephones Affects Neurodevelopment and Behavior in Mice." *Scientific Reports*, vol. 2, no. 312, 2012.

²² Sonmez, O.F., et al. "Purkinje cell number decreases in the adult female rat cerebellum following exposure to 900 MHz electromagnetic field." *Brain Research*, vol. 1356, 2010, pp. 95-101.

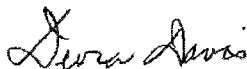
health risks, particularly risks to children and fetal development.²³ Most recently, the EMF Scientists have submitted [Comments to the FCC](#) asking the FCC to critically consider the potential impact of the 5th generation wireless infrastructure on the health and safety of the U.S. population before proceeding to deploy this infrastructure.

California firefighters have lobbied to protect themselves and successfully received exemption on health grounds from the installation of these cell towers. Similarly cities and counties should be given the needed local controls to protect their citizens from the health and safety risks of these installations. As currently envisioned, transmitters can be placed in close proximity to bedrooms and schools without consideration of the health of their occupants. Research is critically needed to evaluate the public health and environmental impacts of proposed wireless facilities before deployment.

Worldwide, governments are acting to minimize exposures to children as they are most vulnerable. For example, the Supreme Court of India upheld the High Court of the State of Rajasthan's decision to remove all cell towers from the vicinity of schools, hospitals and playgrounds because of radiation "hazardous to life." In Chile, the 2012 "[Antenna Law](#)" prohibits cell antennae/towers in "sensitive areas".²⁴ Please learn more about international policy actions such as these in our [online briefing](#).²⁵

The assumption that all wireless technology is safe has been shown through recent studies to be incorrect. EHT strongly opposes the widespread installation of 5G antennas and towers and believes that the state should move forward on its commitment to support the installation of fiber optic cables buried in the ground to every business, home, school, and hospital in California. We urge the state not to ignore this evidence of harm from RF. Please vote "no" vote on SB 649 and uphold the rights of local government to protect public health and the environment.

Sincerely,



Devra Davis, PhD, MPH

Fellow, American College of Epidemiology

Visiting Prof. Hebrew Univ. Hadassah Medical Center & Ondokuz Mayıs Univ. Medical School

Associate Editor, *Frontiers in Radiation and Health*

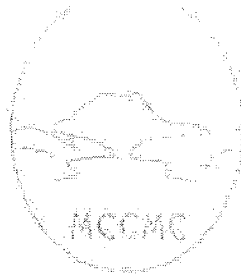
President, Environmental Health Trust

²³ Blank, M., et al. "[International Appeal: Scientists call for protection from non-ionizing electromagnetic field exposure](#)." *European Journal of Oncology*, vol. 20, no. 3/4, 2015, pp. 180-2.

²⁴ "[New communications antenna law in Chile](#)." *Communications Law: Newsletter of the International Bar Association Legal Practice Division*, vol. 20, no. 1, 2013, pp. 14-16.

²⁵ "[International Policy Briefing: Cautionary Policy on Radiofrequency Radiation Actions by Governments, Health Authorities and Schools Worldwide](#)." Environmental Health Trust, 2017.

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BRANDERBURG - HILL VALLEY - MENLO PARK
ROSS - SALT LAKE CITY - TIBURON

Reply to: Alice Fredericks
Chair, Legislative Committee
MCCMC Tiburon Town Hall
1505 Tiburon Blvd
Tiburon, CA 94920

March 27, 2017

The Honorable Ben Hueso
California State Senate, District 40
State Capitol Building, Room 4035
Sacramento, CA 95814
VIA FAX: 916-651-4940

**RE: SB 649 as Proposed to be Amended by RN 17 08941 (Hueso), Wireless and Small Cell Telecommunications Facilities
Notice of Opposition**

Dear Senator Hueso:

The Legislative Committee of Marin County Council of Mayors and Councilmembers (MCCMC) recommended by consensus that MCCMC oppose SB 649 and proposed amendments related to the permitting of wireless and small cell telecommunications facilities. This proposal unnecessarily and unconstitutionally strips local authority over public property and shuts out public input and local discretion by eliminating consideration of the aesthetic and environmental impacts of "small cells."

This proposal would prohibit local discretionary review of "small cell" wireless antennas, including equipment collocated on existing structures or located on new "poles, structures, or non-pole structures," including those within the public right-of-way and buildings. The proposal preempts adopted local land use plans by mandating that "small cells" be allowed in all zones as a use by-right, including all residential zones.

The proposal provides a de facto exemption to the California Environmental Quality Act (CEQA) for the installation of such facilities and precludes consideration by the public of the aesthetic and environmental impacts of these facilities, all of which are of particular importance when the proposed location of facilities is within a residential zone.

The proposal preempts local authority by requiring local governments to make available sites they own for the installation of a "small cell." While a city may place "fair and reasonable terms and conditions" on the use of city property, the proposal does not provide the city with any discretion to deny a "small cell" to be located on city property except for fire department sites. This measure gives control of public property to private telecommunications companies, while also precluding local governments from leasing or licensing publicly owned property. Under this proposal, local governments would be required to give preferential treatment to one industry that has received "most favored nation" status under state law.

The Legislative Committee of MCCMC opposes SB 649.

Respectfully,

Alice Fredericks, Chair
Legislative Committee
Marin County Council of Mayors and Councilmembers

cc:
Senator McGuire
Assembly Member Levine
David Jones
Nancy Hall Bennett

Harry Vere Lehmann
Principal Attorney

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Facsimile: 898-6959

Via fax: 916-319-2181

August 24, 2017

The Hon. Assemblymember Lorena Gonzalez-Fletcher, District 80
Chair, Assembly Appropriations Committee,
Care Of: Ms. Jennifer Galehouse, Deputy Chief Consultant
Assembly Appropriations Committee

RE: Due to multi-axial EMF crossfire, SB 649 will disproportionately injure the poor, in District 80, and in the rest of urban and suburban California.

Dear Assemblymember Gonzalez-Fletcher:

Due to multi-axial overlapping signal saturation, if SB 649 is enacted as intended, the negative health consequences will fall disproportionately upon the poor. Below are relevant factors supporting this fact:

1. One goal of installing 50,000 new cellular distribution antennas is that 5G customers will be able to receive the digital entertainment now provided by cable through the 5G network.
2. The cellular broadcast signals from these incorrectly-labeled 'small cell' microwave transmitters are not cohesive, but rather spherical; not like a laser, more like a lightbulb.
3. With the 5G approach a single local microwave broadcast antenna can carry many different programs simultaneously.
4. When non-coherent broadcasts are from the same or nearby towers, their signals will overlap, think of overlapping 3D Venn Diagrams, or like a yard lit by lights of many different colors from the same pole.
5. It is therefore unavoidable that such differing signals from the same (or separate and nearby local) 'small cell' 5G antennas will overlap.
6. The result of overlapping of non-coherent radio-frequency broadcasts is expanded signal concentration, with an increase in received signal density proportional to the proximity of recipient sites to each other.

7. Anyone familiar with the lives of our more recently arrived Hispanic residents knows that their living situations tend to be more dense than the density experienced by financially secure residents. People of all races who live in assisted circumstances are in the same situation: The square footage in apartment units is proportional to what can be afforded.
8. For example, if on any given evening at 8 p.m. there are 16 units in an apartment building, and each one is viewing 5G digital entertainment, ***then all 16 units will be saturated from each of the non-coherent broadcasts being made from the 'small cell' antenna(s) involved.***
9. While there will also be increased signal density in apartments occupied by well-to-do residents, the radiation saturation experienced by the poor will be greater, because the units are closer together.
10. Poorer residents, in addition to living in more tightly packed units, due to financial circumstance will sometimes live with more people in each unit than the well-to-do. With 5G entertainment, an increase in people using tablets in any given also increases saturation density.
11. Well established science already supplied to Appropriations shows that cellular radiofrequency non-ionizing radiation causes harm to the human biological system, including glioblastoma, and that this harm is caused in part by breakage of the DNA molecule strands as well as disruption of cellular calcium ion utilization. Even 'ordinary' single unit cellular phones will cause a kill-off of 50% of the sperm in a male who keeps a cellular device in his front pants pocket. A recent Israeli study showed a kill-rate at 47%. The poor will be hurt worse than people who live in single family homes far from the streets.

The above noted effects are not tied to race but they *are* tied to money and resulting density of occupation. People who are living in the most congested circumstances will experience far greater levels of signal density. My father was a truly great man who worked as a school custodian in his later years and I was working full time in a restaurant while a freshman in high school. I am glad to still see the world in many ways with the eyes of a person from the serving classes. This is a time when each of us, regardless of background, should recognize that the deployment of so-called "small cell" 5-G will hurt the poor more than the rich. As a lawyer and as CEO of Green Swan, our advocacy company, I volunteer to debate this with whatever lawyer the telecom industry wishes to sacrifice for that process.

Very truly yours,



Harry V. Lehmann, as a lawyer
and as CEO of Green Swan, Inc.

Transmission Log

LEHMANN LAW OFFICE

Thursday, 2017-08-24 10:13

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| 2017-08-24 | 10:12 | SCAN | 02311 | 0:24 | 24000 | 9163192181 | 2 | OK -- V.34 1B31 |

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Via fax: 916-319-2181

August 24, 2017

The Hon. Assemblymember Lorena Gonzalez-Fletcher, District 80
Chair, Assembly Appropriations Committee.
Care Of: Ms. Jennifer Galehouse, Deputy Chief Consultant
Assembly Appropriations Committee

RE: Due to multi-axial EMF crossfire, SB 649 will disproportionately injure the poor, in District 80, and in the rest of urban and suburban California.

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6. The result of overlapping of non-coherent radio-frequency broadcasts is expanded signal concentration, with an increase in received signal density proportional to the proximity of recipient sites to each other.



June 22, 2017

Assembly Member Cecilia M. Aguiar-Curry
Chair of the Local Government Committee
1020 N Street, Room 157
Sacramento, California 95814

RE: SB 649

Dear Assembly Member Aguiar-Curry:

I am writing in opposition to SB 649 which will deny the public's right to participate in local decisions. The public has a constitutional right to protect our homes, our privacy, our health and the health of our children from RF radiation which soon will be in the form of 5G millimeter waves.

5G, the technology for which these small cells are a foundational part of the infrastructure, has not been tested on humans. On June 20, 2016 then-outgoing FCC Chairman Tom Wheeler announced at the Washington Press Club that 5G "redefines network connectivity for years to come." When asked by a Bloomberg reporter about health concerns, Chairman Wheeler replied the FCC did not have time to study health because the infrastructure for 5G will "generate tens of billions of dollars in economic activity." In short, 5G is a moneymaker. That concept is driving this bill and it is simply wrong. Not only is it wrong, but it is dangerous, and we need to listen to the firefighters before approving a bill from which there is no viable return.

SB 649 states: "the impact on local interests from individual small wireless facilities will be sufficiently minor." I disagree. The Bill was written by the industry, for the industry. It fails the consumer. It particularly fails the unborn, children, those with immune suppression, the infirm, the disabled, and the elderly. This technology has the capacity to completely disable sensitive segments of the population. It has the ability to inhibit repair of DNA, an essential component to our survival. An increasing number of studies show it has the ability to break DNA outright.

From a neurological and immunological perspective, RF (wireless) radiation has the power to interfere with how we think, how we behave, how we feel. It affects the Central Nervous System (the brain), and it affects our immune system. Those two systems overlap more than any other bodily systems, and thus if one is adversely affected, the other may be, as well. Many people are rendered EHS or "electro-hypersensitive" after continuous exposure to WiFi, cell towers, or cell phone exposure. This is particularly true if the exposure is 24/7, which small cells would be.

Over 15 years ago California did a survey and determined as many as 7% of its population was EHS or electro-hypersensitive, e.g. they have adverse reactions sometimes hours after exposure to wireless such as headache, cognitive impairment, inability to sleep, inability to stay awake, tinnitus, depression, or inability to focus. Conservative estimates in Europe and the US put the number at 3% with respect to EHS in a given population. Some studies show 11% as a more current reflection of EHS. In 2015 the US Census Bureau put the population of California at 39.14 million. Assuming the more conservative 3%, that translates to over 11.7 million Californians who must seek relief from wireless exposure for medical reasons.

Because 5G (for which SB 649 was requested by industry) is designed to penetrate walls with a focused, amplified beam there will be no safe haven, thus leaving California without a low cost prudent avoidance policy for those who are disabled from EMF exposure. Many of these small cells will be directly outside the homes and work places of individuals who are EHS.

Furthermore, there is virtually no oversight with respect to our existing RF exposure to 2G, 3G and 4G, and none is written into the bill to monitor or in any way assess the health impact of 5G. This bill will instantly make life more difficult for the 11 million-plus people who are EHS to find refuge from wireless. In fact, it will make it virtually impossible because 5G on small cell antenna can penetrate any wall, any barrier. That is what 5G is designed to do. This will be in direct violation of the Americans with Disabilities Act.

Additionally, health care costs for California will rise with this massive build out of infrastructure resulting in an exponential increase in radiation exposure not just at work and at school, but at home.

This bill is being rushed to passage, and there is a failure on the part of the bill's sponsors to take the potential health impact into consideration. It is up to you all as legislators to pause and consider the implications of what you are doing. Somehow people have come to believe wireless is like oxygen. We need it to survive. The truth is the exact opposite is true. When did anyone ever think microwave radiation was safe? Yes, this is microwave radiation. RF radiation is a euphemism. It is window-dressing. This technology is *not* safe.

I am far from alone in voicing this opinion. Just look at the firefighters. They are very well aware of the dangers as firestations were among the first commercial spaces targeted for cell tower placement, and the firefighters have lived with this exposure 24/7 for years. **The firefighters oppose SB 649 due to health concerns and have been granted an exemption for their stations.** I concur with the exemption for the firefighters.

As an Honorary Firefighters for the San Diego Fire Department, as the organizer of the only SPECT brain scan study of firefighters in California or anywhere in the US and Canada, as the original author of Res. 15 to call for a moratorium on the placement of cell towers throughout the US and Canada (2003), as a US Adviser to the Radiation Research Trust, and as a medical writer I can assure you that the language of your bill suggesting a "minor" impact is dangerously wrong. I am far from alone. 122 cities throughout California officially oppose SB 649. In addition, to date, 12 counties and myriad organizations oppose this bill.

I have worked with firefighters for over 15 years. My focus has been testing and educating firefighters about the neurological effects of RF radiation, yet the carcinogenic effects are deeply disturbing, as well. Brain cancer is now one of the leading cancers among firefighters and is considered a presumptive cancer in many states. Bottom line: Cell towers have made firefighters ill, impaired their ability to work and protect the public, and may have contributed to deaths.

On February 23, 2013 under WT Docket No. 12-357 I filed my comments with the FCC detailing the findings of a 2004 brain study I organized in which Dr. Gunnar Heuser and Dr. J. Michael Uszler of Santa Monica, CA conducted a pilot study of six (6) California firefighters who had been exposed to a cell tower 9' from their station for five years. These men had become ill – some within minutes, some within hours – after activation of the cell tower next to their station *in spite of months of reassurances from the industry that there were no ill effects from the towers*. The men were experiencing profound neurological symptoms.

The symptoms experienced by the firefighters, all of whom had passed rigorous physical and cognitive exams prior to being hired by the fire department, included but were not limited to the following: headaches, extreme fatigue, sleep disruption, anesthesia-like sleep where the men woke up for 911 calls “as if they were drugged”, inability to sleep, depression, anxiety, unexplained anger, getting lost on 911 calls in the town they grew up in, a twenty (20) year medic forgetting basic CPR in the midst of resuscitating a coronary victim, and immune-suppression manifest in frequent colds and flu-like symptoms.

All six (6) firefighters were found to have brain abnormalities on SPECT scan [single-photon emission computed tomography]. The doctors thought they would find areas of limited function in the brain based on the symptomatology. Instead, they found a pervasive, hyper-excitability of the neurons which suggested the exposure to RF (microwave) radiation was causing the neurons to continually fire without benefit of rest. RF radiation appeared to act as a constant stimulant even when the men were away from the station and in repose. The SPECT scans were considered abnormal in all six firefighters.

Cognitive function, reaction time, and impulse control were measured objectively using T.O.V.A. testing [Test of Variables of Attention]. In all six (6) firefighters, impairment was found with cognitive function, reaction time and impulse control. Three (3) of the six (6) firefighters were captains. The captain on each shift is in charge of making life altering decisions for all firefighters and potential victims. They order firefighters into a burning building, and conversely, they order them out before a roof may collapse, for example. Impairment of all three critical functions could cost firefighters and the community they serve either life or limb.

The testing was conducted in 2004. The cell towers were in place at the two (2) fire stations where the test subjects work for the duration of a twenty-two (22) year lease. The men we tested have remained at the stations as this is the only work they know in the only community they have ever lived in. One (1) of the six (6) men tested did move to another department after his wife gave birth to a boy who was diagnosed with Autism at age 2. This was the first live birth experienced by the “firefighter family” at this department since activation of the tower three (3) years earlier.

What is particularly germane to the critical decisions you are currently facing with SB 649 has to do with the industry line that the radiation from these small cells will be well under the safety guidelines set by the FCC. The FCC currently allows 1,000 microwatts per centimeter squared (uW/cm²) as an emission standard from cell towers. Yet all the symptoms attributed by the firefighters, as well as measurable brain and central nervous system abnormalities described above, occurred within close proximity to a cell tower measured at between 1 - 2 uW/cm² by Peter Sierek, BBEC, CEO of Environmental Testing & Technology in Encinitas, CA. **Thus the emissions from towers were measured at approximately 1/1000th to 1/500th of the FCC's allowable limit.** "Hot spots" of reflected radiation were measured at 15 and 30 uW/cm², yet these "hot spots" were still a fraction of what the FCC allows. Therefore, I strongly suggest **the FCC is not basing its standards on biological effects, but rather physics, and principles of physics do not protect the brains and central nervous systems of even the strongest among us -- our firefighters.** Please see my FCC filing at <https://ecfsapi.fcc.gov/file/7022117660.pdf>

You know the gist of this, or you would not have granted an exemption for firefighters from SB 649. In fact, Section 65964.2 specifically states small cells will not be located on a fire department facility. I know the firefighters asked for and received this exemption based on their concerns about adverse health effects from cell towers on or near their stations.

I know this exemption would not have been granted had you not believed that firefighters were at risk. And if firefighters, the strongest of the strong among us, are experiencing symptoms that impair their work performance due to severe headache, disorientation, sleep disturbance, cognitive impairment, delayed reaction time, lack of impulse control and mood swings, that begs the obvious question: What about the rest of us?

I implore you to see this bill for what it is. It is industry's gift to industry carried out by well-intentioned senators and assembly members who think they are doing what is best for their constituents. The "best" is to deny this carte blanche blanketing of small cells without local control.

Listen to the firefighters, and understand these brave men and women speak for all of us. If they are concerned about harm to their health, then we should be as well.

Respectfully Submitted,

Susan Foster

/s/ Susan Foster

Susan Foster *for the* RADIATION RESEARCH TRUST
US Adviser
Honorary Firefighter, San Diego Fire Department
Medical Writer
Rancho Santa Fe, CA 92091
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ALSO THE PUBLIC RECORD IN OPPOSITION TO AB 234 AND SB 239:

LETTERS FROM SCIENTISTS, DOCTORS, AARP, SIERRA CLUB AND OTHERS

IN OPPOSITION TO

**5G TECHNOLOGY/SMALL CELL LEGISLATION IN CALIF.
BUT APPLICABLE TO WISCONSIN**

**SUBMITTED WITH PERMISSION FROM
PHYSICIANS FOR SAFE TECHNOLOGY**

&

ENVIRONMENTAL HEALTH TRUST

FROM:

**ELAINE UNGER
WISCONSIN FOR SAFE TECHNOLOGY, UA
4815 SUTTON LANE
GREENDALE, WI 53129**

May 29, 2019

Harry Vere Lehmann
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July 6, 2017

VIA PRIORITY MAIL and/or HAND DELIVERY and/or EMAIL

Assemblymember Marc Levine
5135 State Capitol
Sacramento, CA 95814

Re: Mass casualties are likely in District 10 from passage of SB 649

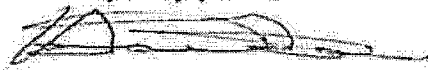
Dear Assemblymember Levine,

Senate Bill 649, a decision now before you, will likely result in mass fatalities in your District including children, who due to skull development levels and other factors, are more subject than adults to the effects of the carcinogenic cellular radiation which will saturate the homes in your District if this Bill is passed. Like you, I disdain inflammatory phrases as such are so often deployed by emotionally over-loaded people with incomplete capture of the facts and science. Yet, directly relevant to SB 649, the Toxicology Program of our federal National Institutes of Health has shown through their \$25 million study, as announced on May 27, 2016, that cellular wireless radiation affects human tissue via non-thermal means and the formation of glioma, the cancer cell which results in glioblastoma (the brain cancer that kills people). Brain cancer killed four of my colleagues and friends which is what led me several years ago into dedication to our work educating consumers about smartphone proximity through www.greenswan.org. SB 649 is not about smart phone proximity but the constant radiation from the 50,000 towers from SB 649 presents a moral necessity to oppose this Bill. SB 649, now pushed by an industry which makes huge donations and contributions, is being advocated to wirelessly supplant cable as a main means of delivering TV, et al. Senate Bill 649 should be stopped in its tracks in order to protect the residents of your District. At the very least, SB 649 should be put on hold pending further study, as our federal Senate decided regarding the federal version of the same Bill, called S-19, pending further study.

As a trial lawyer, I have specialized in engineering and scientific proof civil cases since 1983. As nearly as I can tell I've personally handled approximately 1,600 civil cases, including certified class actions like the Chevron aviation gasoline matter (new engines for 1647 aircraft), the Mobil Oil AV-1 matter (overhauled or replaced engines for 850 aircraft, mostly twins), and I served as part of the plaintiffs' team in the Yuba Flood Cases, which after far too long settled against the State for \$423 million, as well as many hundreds of other cases, some of them also involving large groups of plaintiffs. I am not important, or by contemporary standards wealthy. Like you, I want facts, not hot-headed opinion from

some alarmist. Rather, our opposition to SB 649 is not grounded in emotion, but strongly grounded in science. If this Bill is allowed to be passed by our Assembly and is then signed into law, mass Crimes Against Humanity will likely result due to radiation exposure, as you are hereby notified and warned. Dated May 23, 2017, a 14 page submission on this subject was made to the already-overworked Senate Appropriations Committee, which presentation was composed of a detailed and annotated letter over my signature and supported by a Declaration under Penalty of Perjury by Mr. Paul McGavin. Paul and I are mere two of the large of California residents who, like representatives of cities and counties, oppose SB 649. Rather than taking up your time with more of my own words, and having given you this legal Notice of the likely consequences from the passage of SB 649, I respectfully advise you of said letter submitted to Senate Appropriations to your attention, and hereby incorporate that May 23rd Appropriations letter herein by this reference as though more fully set forth. Copies of that letter and Declaration should be immediately available to you from Senator Lara's office if you so request. I note in closing the additional factor that if SB 649 becomes law in California, the State will face ruinous financial loss from the resulting ADA complaints, all as set forth in that incorporated letter. A selection of sources for your study is listed below. Thank you.

Very truly yours,



Harry V. Lehmann

A small selection of articles and sources related to non-ionizing radiation and health:

<https://ehctrust.org>

<http://scientists4wiredtech.com>

<http://scientists4wiredtech.com/2017/03/rfr-hazards/>

<https://www.niehs.nih.gov/news/newsletter/2016/6/science-highlights/cellphones/index.htm>

<http://www.motherjones.com/environment/2016/05/federal-study-links-cell-phone-radiation-cancer/>

<http://www.abc.ca/news/cell-tower-radiation-harmful-to-humans-study-1.958047>

<http://www.wsj.com/articles/cellphone-boom-spurs-antenna-safety-worries-1412293055>

<http://www.latimes.com/business/la-fi-cellphone-5g-health-20160808-snap-story.html>



DATE: July 12, 2017
 TO: Members of the California State Assembly
 FROM: A Coalition of California Cities
 RE: SB 649 (Hueso) Special Permitting and Mandated Leasing of Public Property for "Small Cell" Wireless Infrastructure

Over 215 California Cities are on record remaining strongly opposed to SB 649 (Hueso), which would require special permitting and mandated leasing of public property for "Small Cell" wireless infrastructure. This bill represents a major shift in telecommunication policy and law by: requiring local governments to lease out the public's property; placing a cap on attachment rates; eliminating the ability for cities to negotiate public benefits such as free Wi-Fi in public parks; and disregarding the public's input and full discretionary review in all communities in the state except for areas in coastal zones and historic districts.

SB 649 makes key changes to existing law, this measure:

1. Forces cities and counties to lease out their public property for wireless equipment;
2. Eliminates negotiated leases, and places a \$250 cap on what they call an attachment rate instead;
3. Eliminates public input, full local discretion, and ability to reduce equipment blight by using encroachment and building permits instead of discretionary permits;
4. Eliminates any conditional requirements to provide public benefits. This bill specifically prohibits "in-kind" conditions for issuing a permit such as free Wi-Fi in public parks as a condition of the permit; and
5. Eliminates ability to remove equipment that is blighting neighborhoods.

These permitting changes are significant because:

- This bill allows for antennas as large as 6 cubic feet, associated and ground mounted equipment totaling 35 cubic feet, with no size or quantity limitations for a host of "ancillary" equipment;
- This bill is aimed at street lights, traffic lights, and public buildings such as libraries where communities currently have a say. To clarify, the equipment identified in the bill is already permissible on utility poles; and
- This bill gives the wireless industry too much control over public infrastructure without imposing any meaningful requirements that these private, for-profit companies use the facilities appropriately.

Cities have a responsibility to protect public property and to condition fair use over taxpayer assets. Unlike the wireless industry, cities are not driven by profit, but by the public services we strive to deliver – from police, fire, libraries, infrastructure, and parks. Despite promises made by the wireless industry, this bill does nothing to require the technology meet 5G; that there is equitable deployment to unserved/underserved areas, or that whatever cost savings these private companies will benefit from this bill are passed onto their customers.

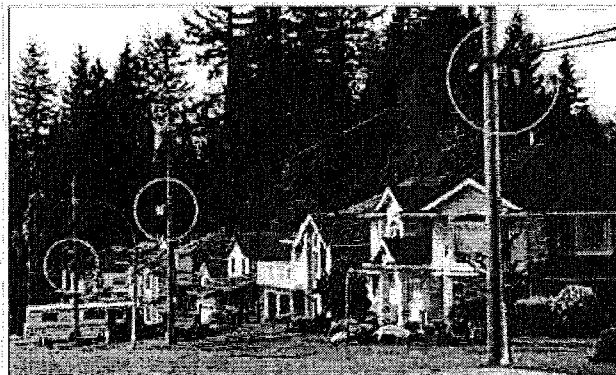
SB 649 is the wrong answer for California.

5th Generation (5G) Wireless Communications Fact Sheet

On July 14, 2016 the Federal Communications Commission allocated a high-frequency spectrum for 5G communications utilizing millimeter waves (mmW), the next phase in wireless cellular technology. But critical questions about the safety of this technology remain.

Thousands of published studies have established indisputable evidence of harmful health effects from exposure to microwave or radio-frequency radiation.

5G technology will require a dense network of millions of RF antennas, deployed in neighborhoods in towns and cities across the country, further exposing Americans to radio-frequency radiation in their homes, schools and businesses.



Wireless transmitters in a residential neighborhood

Concurrent with the rollout, new laws are being introduced in state legislatures across the country that would block the rights of local governments to control the installation of 5G antennas in public "rights of way." This unprecedented appropriation of local regulatory control prohibits local authorities from considering health, safety, aesthetic or environmental issues related to 5G technology.

Additional Facts about 5G:

- **5G mobile networks/wireless systems** are designed to deliver even faster internet speeds and expand the capacity of "smart devices" and machine-to-machine communications – the "Internet of Things" (IOT). It will be capable of transmitting large amounts of data over short distances.
- **5G wireless networks will utilize millimeter waves (mmWaves).** Compared with current cellular and WiFi networks which rely on microwaves that employ frequencies up to 6 gigahertz (GHz), 5G will use millimeter and sub-millimeter waves in higher frequency ranges (between 30 GHz and 300 GHz).
- **5G antennas will be placed on utility poles, lamp posts and commercial buildings.** mmWaves have short wavelengths, making it difficult for them to travel through buildings or other obstacles, including foliage on trees and even rain. 5G technology will require many closely spaced antennas for optimum functionality.
- **Exposure to all types of wireless radiation is associated with cancer and other health effects.** The World Health Organization has classified wireless radiation as a Group 2B "possible human carcinogen," and a recent study conducted by the National Institutes of Health has corroborated this finding. Studies have also found that normal exposures to radio frequency radiation can cause disruption of normal brain development in fetuses and learning disabilities, heart abnormalities and electro-hypersensitivity. Populations especially at risk from this type of radiation include pregnant women, children, those with implanted medical devices, electromagnetically sensitive individuals and the elderly.

- **mmWaves have unique health impacts on the human body.** Sweat ducts within our skin, the largest organ in the human body, act as antennae when in contact with mmWaves. The waves penetrate 1 to 2 millimeters of human skin tissue and are also absorbed by the surface layers of the eye's cornea.
- **Plants and animals are also harmed by wireless radiation.** Studies have found that electromagnetic radiation from mobile phone cell sites damages trees, and several studies have clearly demonstrated that radio-frequency radiation changes the makeup and structure of plants. Many research analyses also cite wireless technology as a contributing factor in the decline of bird, frog, bat, and honeybee populations.
- **mmWaves could make bacteria resistant to antibiotics.** One study analyzing mmWave interaction with bacteria found that the waves can cause changes in bacteria's sensitivity to different biologically active chemicals, such as antibiotics. This study suggests that mmWaves might create antibiotic resistance in bacteria, creating concern in the medical community.
- **The FCC is pushing for implementation of 5G without considering its potential impacts on public health.** To date, the FCC has failed to conduct any analysis of the potential biological health effects of 5G technology (or for that matter, 2G, 3G or 4G), despite a growing body of science. FCC guidelines to avoid the thermal (heat) effects of exposure to microwaves was last updated in the 1990s.

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- Waldmann-Selsam, Cornelia, et al. "Radio-frequency radiation injures trees around mobile phone base stations." *Science of The Total Environment* 572 (2016): 554-569.
- Massey University; "Could Future Wireless Communications Be Harmful?" (2016) http://www.massey.ac.nz/massey/about-massey/news/article.cfm?mnarticle_uid=238A1039-989F-C67F-4DA1-FFD7FF123DBB
- Soghomonyan et al, "Millimeter waves or extremely high frequency electromagnetic fields in the environment: what are their effects on bacteria?." *Applied Microbiology and Biotechnology* 100.11 (2016): 4761-4771.
- Stein, Yael, MD of the Hadassah Medical Center, Jerusalem, Israel, "Letter to the FCC in Opposition to 5G Spectrum: Frontiers Millimeter Wave Technology." <https://ehtrust.org/letter-fcc-dr-yael-stein-md-opposition-5g-spectrum-frontiers/>
- Global Union Against Radiation Deployment from Space; Comment filed September, 2016. <https://ecfsapi.fcc.gov/file/DOC-55dde23da8400000-A.pdf>
- Wu, Ting, Theodore S. Rappaport, and Christopher M. Collins. "The human body and millimeter-wave wireless communication systems: Interactions and implications." *Communications (ICC), 2015 IEEE International Conference on.* IEEE, 2015.
- Osseiran, Afif, et al. "Scenarios for 5G mobile and wireless communications: the vision of the METIS project." *IEEE Communications Magazine* 52.5 (2014): 26-35.
- International Agency for Research on Cancer (World Health Organization); http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf
- Ryam et al, "Radio frequency radiation of millimeter wavelength: potential occupational safety issues related to surface heating." *Health Phys.* 2000; 78 (2): 170-81.



Beatrice Alexandra Golomb, MD, PhD
 Professor of Medicine
 UC San Diego School of Medicine
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 La Jolla, CA 92093-0995
 Phone: 858 558-4950 x201

August 18, 2017

To whom it may concern.

I urge in the strongest terms that you vigorously oppose California SB 649.

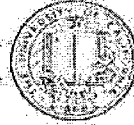
If this bill passes, many people will suffer greatly, and needlessly, as a direct result.

This sounds like hyperbole. It is not.

My research group at UC San Diego alone has received hundreds of communications from people who have developed serious health problems from electromagnetic radiation, following introduction of new technologies. Others with whom I am in communication, have independently received hundreds of similar reports. Most likely these are a tip of an iceberg of tens or perhaps hundreds of thousands of affected person. As each new technology leading to further exposure to electromagnetic radiation is introduced – and particularly introduced in a fashion that prevents vulnerable individuals from avoiding it – a new group become sensitized to health effects. This is particularly true for pulsed signals in the radiowave and microwave portion of the spectrum, the type for which the proposed bill SB 640 will bypass local control.

Mechanisms by which health effects are exerted have been shown to include oxidative stress (the type of injury against which antioxidants protect, see optional section below), damage to mitochondria (the energy producing parts of cells), damage to cell membranes^{1,21}, and via these mechanisms, an impaired “blood brain barrier”^{3,5} (the blood brain barrier defends the brain against introduction of foreign substances and toxins; additionally, disruption can lead to brain edema⁶), constriction of blood vessels and impaired blood flow to the brain⁷, and triggering of autoimmune reactions^{8,9}. Following a large exposure, that depresses antioxidant defenses, magnifying vulnerability to future exposures, some persons no longer tolerate many other forms and intensities of electromagnetic radiation that previously caused them no problem, and that currently cause others no problem. But this group deserves – nay needs – the right to be able to avoid these exposures.

Affected individuals not only experience “symptoms” that “merely” cause them distress and suffering, when they are exposed – symptoms like headaches^{10,11}, ringing ears^{10,11} and chest pain¹⁰ from impaired blood flow, heart rhythm abnormalities^{10,11}, and inability to sleep^{10,11}. These symptoms arise from physiological injury. Moreover, **many experience significant health problems that can include seizures¹¹, heart failure, hearing loss¹²⁻¹⁴ and severe cognitive impairment^{11,15}**. The mechanisms involved are those also involved in development and progression of neurodegenerative conditions including Alzheimer’s disease¹⁶.



Fully half who were employed when their problems developed lost their job because of the problem, among participants of a survey we conducted. They reported that their condition had cost them up to 2 million dollars to date. Many had lost their homes. A number became homeless, and have swelled the ranks of so-called “EMF refugees”¹⁷⁻¹⁹. Among those affected, many were previously high functioning individuals – engineers, doctors, lawyers. The best and the brightest are among those whose lives – and ability to contribute to society – will be destroyed. High profile individuals with acknowledged electrohypersensitivity include, for instance, Gro Harlem Brundtland – the former 3-time Prime Minister of Norway and former Director General of the World Health Organization²⁰; Matti Niemela, former Nokia Technology chief²¹; as well as the wife of Frank Clegg²², who formerly headed Microsoft Canada and is current head of Canadians for Safe Technology²³.

Each new roll-out of electromagnetic technology for which exposure is obligatory, swells the ranks of those who develop problems with electromagnetic fields (EMF). – particularly following a significant exposure to pulsed radiowave-microwave radiation, and particularly when people have no ability to avoid it.

Many state that they didn’t give credence to the problem (if they had heard of it at all) **until they themselves fell prey to it.**

This is not a psychologically driven condition. Multiple objective physiological changes reflecting mechanisms of injury have been shown in persons with this condition^{24, 25}.

The role for oxidative stress, that has been shown in innumerable studies (below), is affirmed by evidence of a link of this condition to genetic variants in antioxidant defenses, that are less avid in defending against oxidative stress³⁰⁷. People cannot manipulate their genes, to produce such an outcome by suggestibility.

An analysis by a University of Washington researcher showed that most studies funded by industry reported failure to show physiological effects. However, most studies without such industry bias affirmed effects. This is redolent of findings shown in medicine²⁶, regarding which the former editor in chief of the BMJ (the British Medical Journal), Richard Smith, noted, based on findings of a study, “This {result} suggests that, far from conflict of interest being unimportant in the objective and pure world of science where method and the quality of data is everything, it is the main factor determining the result of studies.”²⁷. So where articles deny injury from nonionizing radiowave-microwave radiation, there is commonly a stake aligned with financial benefit from such denial.

Those who are affected are in desperate need of protection by our elected officials. They need creation of safe spaces and housing, and roadways to allow travel, not removal of any prospect of one; protection of local rights to make decisions - **not removal of any recourse or ability to avoid what injures them.** They are far more strongly in need of protections than a great many protected classes – their problems arose due to actions of others, against which they were given no control – *and can be reversed*, in most cases, if the assault on them is rolled back. Through no fault of their own, and in some cases against their will (e.g. before opt out was permitted with smart meters), they were subjected to an



exposure that has altered their lives as they knew them, and forced them – needlessly - to the margins of society.

Let our focus be on safer, wired and well shielded technology – not more wireless.

This legislation, if passed, and the resulting unrestricted roll-out of this technology, will predictably and directly injure and disable a new group, and add depth of suffering to those already affected.

In other spheres we abridge freedoms to protect the vulnerable few. We require that every schoolchild be vaccinated, supposedly to protect the vulnerable few who may not respond effectively to a vaccine. The need to protect the vulnerable group is deemed to be so great that it justifies the decision to abridge individual rights.

In contrast, this bill seeks to abridge individual freedoms, and local rights, in the service of *harming* a vulnerable group, and creating a new one.

(The common factor appears to be that in both cases, the direction is aligned with a powerful industry that influences political decisions.)

Luckily, no abridgment of individual rights and freedoms is required to protect, here.

If any group can opt out (such as, I understand, firefighters*)²⁸; then every group deserves that equal right. Others should not be second class citizens, subject to fewer protections.

It would go far to helping this cause if anyone complicit in promoting or passing the legislation (and then after that, *their* families) were required to be the first subjected, for a substantial test period, to the *greatest* amount of exposure that anyone *else* (and their families) may be subjected to, when new policies of this type are rolled out. It will still not do them equal damage; because they may not represent the vulnerabilities that others will have; but such a policy might help them to think twice. *That* is a bill I would strongly endorse.

Most who are now affected – were not, until they were. This may become you – or your child or grandchild. Moreover, 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.

It was noted above that, among survey completers, fully half of those who were employed at the time they developed electrosensitivity, lost employment *due to* this problem. (This may understate the scope of the tragedy, since this most-affected group may be least likely to be able to respond to an online survey.) **Many who previously had no problem navigating in the world are now restricted from access to basic services** like hospital care, post offices and libraries because of these problems. With each new introduction of technology that exposes many to yet a new nondiscretionary source of electromagnetic radiation, particularly (but not exclusively) that which emits pulsed radiation in the radiowave-microwave part of the spectrum, a new group of people are affected; and the suffering of those who are already affected increases greatly.



Please, defend the public and our future. Protect the rights of the individual and the locality, against a form of incursion that will lead to serious harm to some – and set a terrible precedent. **Vote no on California SB 649**, and urge that everyone else do the same.

Sincerely,

Beatrice Alexandra Golomb, MD, PhD
 Professor of Medicine
 UC San Diego School of Medicine

*Comment on the fire fighter exemption: "The legislature granted an exemption from SB 649 to the firefighters who requested it for health reasons. Throughout California firefighters have long complained of often disabling symptoms from cell towers on their stations. Cities frequently rent out space on fire stations to add to city revenue. ...Symptoms experienced by the firefighters have included neurological impairment including severe headache, confusion, inability to focus, lethargy, inability to sleep, and inability to wake up for 911 emergency calls. Firefighters have reported getting lost on 911 calls in the same community they grew up in, and one veteran medic forgot where he was in the midst of basic CPR on a cardiac victim and couldn't recall how to start the procedure over again...Prior to the installation of the tower on his station, this medic had not made a single mistake in 20 years. A pilot study (2004) of California firefighters showed brain abnormalities, cognitive impairment, delayed reaction time, and lack of impulse control in all 6 firefighters tested (<https://ecfsapi.fcc.gov/file/7022117660.pdf>). This study led to the overwhelming passage of Resolution 15 by the International Association of Firefighters in Boston in August 2004. Res. 15 called for further study and was amended to impose a moratorium on the placement of cell towers on fire stations throughout the US and Canada."^{15 28}
 Clearly, others who experience similar problems also deserve protections.

Optional – More on the Science

There is a robust literature showing that electromagnetic radiation, including in nonionizing frequencies, and at levels^{29,30} below those that are cause thermal effects (heating) – causes physiological effects, injury, and cell death – not only in humans but many animals and plants^{3, 7, 31-49}. Unsurprisingly, industry has sought – against the tide of evidence to the contrary - to maintain that radiation must be ionizing or heating to cause injury.

Scores or hundreds of studies show that radiation, including specifically radiowave-microwave spectrum radiation, and including low-level exposure, can impair antioxidant defenses, increase "oxidative stress" (free radical injury) and damage mitochondria, the energy producing parts of cells^{1, 2, 34, 50-6930, 70-104105-13646, 137-171}. These effects occur with ionizing and nonionizing radiation, at thermal and subthermal levels. (Indeed, much or most of the damage by ionizing radiation, and radiation above the thermal limit, occurs by mechanisms also documented to occur without ionization, and below the thermal limit.) These



mechanisms cohere with the mechanisms documented to play a role in symptoms and health conditions that are reported in those who are electrosensitive – extending to seizures¹⁷²⁻¹⁷⁶, heart failure¹⁷⁷⁻¹⁸⁴ and cognitive decline^{5, 32, 57, 108, 185-195}.

These mechanisms have known involvement in induction of brain cancer, metabolic diseases like obesity and diabetes, autism, autoimmune disease, and neurodegenerative conditions, conditions that have exploded. In each case these have been linked, or presumptively linked, in some studies to electromagnetic radiation^{8, 9, 16, 34, 196-219}.

Such radiation also has effects on sperm^{33, 100, 220-228}, and the DNA of sperm²²⁹ (consistent with recent news reports of marked recent declines in sperm counts and function)..

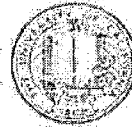
Such radiation also has toxic effects in pregnancy²³⁰, to the fetus and subsequent offspring²³¹⁻²³⁵ including at low levels²³⁶, and is tied to developmental problems in later life, including attention deficit and hyperactivity^{31, 235-241}. It is critical to defend pregnant women (and eggs of girls who may at a later time become pregnant) from exposures with such toxicity.

Electromagnetic radiation across much or most of the spectrum (not excluding visible light) has been shown to depress levels of melatonin^{40, 72, 242-252}, which is best known for its role in sleep (and indeed, impaired sleep is the most consistent symptom in affected individuals^{10, 11}).

Melatonin is in fact a critical antioxidant that defends the body against harm from many toxic exposures²⁵³⁻²⁶⁶ including electromagnetic radiation itself^{61, 66, 67, 82, 101, 107, 118, 121, 138, 144, 151, 204, 249, 267-284} - reducing the oxidative stress that is implicated in cancer, metabolic diseases like obesity and diabetes, autism, autoimmune disease, bipolar disorder and neurodegenerative conditions, and that also plays a role in heart attack and stroke^{9, 285-329330-343}.

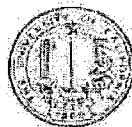
Radiation, and specifically radiation in the radiowave-microwave portion of the spectrum can also depress levels of other critical antioxidant systems that also defend the body against chemical, radiation, and other sources of injury. These other antioxidant systems include the glutathione system, superoxide dismutase and catalase^{81, 102, 115, 116, 233, 344-358} which are also involved in defending against health problems.

This suggests that depression of antioxidant defenses due to electromagnetic radiation may magnify risk of chemically induced health effects (and depression of antioxidant systems due to some chemicals may amplify risk of harm from electromagnetic radiation). Indeed just such effects have been reported^{359, 360}.



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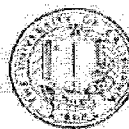
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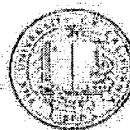
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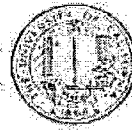
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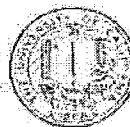
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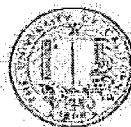
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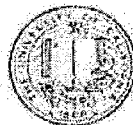
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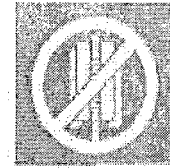
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Scientists warn of potential serious health effects of 5G

September 13, 2017



We the undersigned, more than 180 scientists and doctors from 35 countries, recommend a moratorium on the roll-out of the fifth generation, 5G, for telecommunication until potential hazards for human health and the environment have been fully investigated by scientists independent from industry. 5G will substantially increase exposure to radiofrequency electromagnetic fields (RF-EMF) on top of the 2G, 3G, 4G, Wi-Fi, etc. for telecommunications already in place. RF-EMF has been proven to be harmful for humans and the environment.

(Note: [Blue links](#) below are references.)

5G leads to massive increase of mandatory exposure to wireless radiation

5G technology is effective only over short distance. It is poorly transmitted through solid material. Many new antennas will be required and full-scale implementation will result in antennas every 10 to 12 houses in urban areas, thus massively increasing mandatory exposure.

With "[the ever more extensive use of wireless technologies](#)," nobody can avoid to be exposed. Because on top of the increased number of 5G-transmitters (even within housing, shops and in hospitals) according to estimates, "[10 to 20 billion connections](#)" (to refrigerators, washing machines, surveillance cameras, self-driving cars and buses, etc.) will be parts of the Internet of Things. All these together can cause a substantial increase in the total, long term RF-EMF exposure to all EU citizens.

Harmful effects of RF-EMF exposure are already proven

[More than 230 scientists from 41 countries](#) have expressed their "serious concerns" regarding the ubiquitous and increasing exposure to EMF generated by electric and wireless devices already before the additional 5G roll-out. They refer to the fact that "numerous recent scientific publications have shown that *EMF affects living organisms at levels well below most international and national guidelines*". Effects include increased cancer risk, cellular stress, increase in harmful free radicals, genetic damages, structural and functional changes of the reproductive system, learning and memory deficits, neurological disorders, and negative impacts on general well-being in humans. Damage goes well beyond the human race, as there is growing evidence of harmful effects to both [plants](#) and [animals](#).

After the scientists' appeal was written in 2015 additional research has convincingly confirmed serious health risks from RF-EMF fields from wireless technology. The world's largest study (25 million US dollar) [National Toxicology Program \(NTP\)](#), shows statistically significant increase in the incidence of *brain and heart cancer* in animals exposed to EMF below the ICNIRP (International Commission on Non-Ionizing Radiation Protection) guidelines followed by most countries. These results support results in human epidemiological studies on RF radiation and brain tumour risk. [A large number of peer-reviewed scientific reports](#) demonstrate harm to human health from EMFs.

The International Agency for Research on Cancer (IARC), the cancer agency of the World Health Organization (WHO), in 2011 concluded that EMFs of frequencies 30 KHz – 300 GHz are possibly [carcinogenic to humans \(Group 2B\)](#). However, new studies like the NTP study mentioned above and several epidemiological investigations including the latest studies on mobile phone use and brain cancer risks [confirm that RF-EMF radiation is carcinogenic to humans](#).

The [EUROPA EM-EMF Guideline 2016](#) states that "there is strong evidence that *long-term exposure to certain EMFs is a risk factor for diseases* such as certain cancers, Alzheimer's disease, and male infertility... Common EHS (electromagnetic hypersensitivity) symptoms include headaches, concentration difficulties, sleep problems, depression, lack of energy, fatigue, and flu-like symptoms."

An increasing part of the European population is affected by ill health symptoms that have for many years been linked to exposure to EMF and wireless radiation in the scientific literature. The International Scientific Declaration on EHS & multiple chemical sensitivity (MCS), Brussels 2015, declares that: "In view of our present scientific knowledge, we thereby stress all national and international bodies and institutions...to recognize EHS and MCS as true medical conditions which acting as sentinel diseases may create a *major public health concern in years to come worldwide* i.e. in all the countries implementing unrestricted use of electromagnetic field-based wireless technologies and marketed chemical substances... *Inaction is a cost to society* and is not an option anymore... we unanimously acknowledge this serious hazard to public health...that major primary *prevention measures are adopted and prioritized, to face this worldwide pan-epidemic in perspective.*"

Precautions

The Precautionary Principle (UNESCO) was adopted by EU 2005: "*When human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm.*"

Resolution 1815 (Council of Europe, 2011): "*Take all reasonable measures to reduce exposure to electromagnetic fields, especially to radio frequencies from mobile phones, and particularly the exposure to children and young people who seem to be most at risk from head tumours...Assembly strongly recommends that the ALARA (as low as reasonably achievable) principle is applied, covering both the so-called thermal effects and the athermic [non-thermal] or biological effects of electromagnetic emissions or radiation" and to "improve risk-assessment standards and quality".*

The Nuremberg code (1949) applies to all experiments on humans, thus including the roll-out of 5G with new, higher RF-EMF exposure. All such experiments: "*should be based on previous knowledge (e.g., an expectation derived from animal experiments) that justifies the experiment. No experiment should be conducted, where there is an a priori reason to believe that death or disabling injury will occur; except, perhaps, in those experiments where the experimental physicians also serve as subjects.*" (Nuremberg code pts 3-5). Already published scientific studies show that there is "a priori reason to believe" in real health hazards.

The European Environment Agency (EEA) is warning for "Radiation risk from everyday devices" in spite of the radiation being below the WHO/ICNIRP standards. EEA also concludes: "*There are many examples of the failure to use the precautionary principle in the past, which have resulted in serious and often irreversible damage to health and environments...harmful exposures can be widespread before there is both 'convincing' evidence of harm from long-term exposures, and biological understanding [mechanism] of how that harm is caused.*"

"Safety guidelines" protect industry – not health

The current ICNIRP "safety guidelines" are obsolete. All proofs of harm mentioned above arise although the radiation is below the ICNIRP "safety guidelines". Therefore new safety standards are necessary. The reason for the misleading guidelines is that "conflict of interest of ICNIRP members due to their *relationships with telecommunications or electric companies* undermine the impartiality that should govern the regulation of Public Exposure Standards for non-ionizing radiation...To evaluate cancer risks it is necessary to include scientists with competence in medicine, especially oncology."

The current ICNIRP/WHO guidelines for EMF are based on the obsolete hypothesis that "The critical effect of RF-EMF exposure relevant to human health and safety is heating of exposed tissue." However, scientists have proven that many different kinds of *illnesses and harms are caused without heating* ("non-thermal effect") at radiation levels well below ICNIRP guidelines.

We urge the EU:

- 1) To take all reasonable measures to halt the 5G RF-EMF expansion until independent scientists can assure that 5G and the total radiation levels caused by RF-EMF (5G together with 2G, 3G, 4G, and WiFi) will not be harmful for EU-citizens, especially infants, children and pregnant women, as well as the environment.
- 2) To recommend that all EU countries, especially their radiation safety agencies, follow Resolution 1815 and inform citizens, including, teachers and physicians, about health risks from RF-EMF radiation, how and why to avoid wireless communication, particularly in/near e.g., daycare centers, schools, homes, workplaces, hospitals and elderly care.
- 3) To appoint immediately, without industry influence, an EU task force of independent, truly impartial EMF-and-health scientists with no conflicts of interest¹ to re-evaluate the health risks and:
 - a) To decide about new, safe "maximum total exposure standards" for all wireless communication within EU.
 - b) To study the total and cumulative exposure affecting EU-citizens.
 - c) To create rules that will be prescribed/enforced within the EU about how to avoid exposure exceeding new EU "maximum total exposure standards" concerning all kinds of EMFs in order to protect citizens, especially infants, children and pregnant women.
- 4) To prevent the wireless/telecom industry through its lobbying organizations from persuading EU-officials to make decisions about further propagation of RF radiation including 5G in Europe.
- 5) To favor and implement wired digital telecommunication instead of wireless.

We expect an answer from you no later than **October 31, 2017** to the two first mentioned signatories about what measures you will take to protect the EU-inhabitants against RF-EMF and especially 5G radiation. This appeal and your response will be publicly available.

Respectfully submitted,

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WE will add signatories to the following list through the end of 2017. The updated list of signatories and the appeal can be found later [HERE](#).



¹ Avoid similar mistakes as when the [Commission \(2008/721/EC\)](#) appointed [industry supportive members for SCENIHR](#), who submitted to EU [a misleading SCENIHR report on health risks, giving telecom industry a clean bill to irradiate](#) EU-citizens. The report is now quoted by radiation safety agencies in EU.

Signatories to the 5G Appeal (As of September 13, 2017)

Note: The endorsements are personal and not necessarily supported by the affiliated universities or organizations.

EU and European Nations

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Osmo Hänninen, PhD, Professor Emeritus (Physiology), Kuopio

Georgiy Ostroumov, PhD (in the field of RF EMF), independent researcher

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Marc Arazi, MD, Physician (Whistleblower on Phonegate international scandal), Nogent-sur-Marne

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