

To: United States Senators and Representatives  
From: Health, environment, and justice advocates and organizations  
**Please oppose any and all bills related to 5G and wireless radiation expansion**  
Date: November 13, 2017

Honorable decision-makers,

We, the undersigned health, environment, and justice advocates and organizations request you oppose the many pending federal bills related to the expansion of electromagnetic radio frequency radiation (wireless radiation or RFR) and 5G millimeter wave technology including but not limited to: **S.1988 SPEED Act, S.19 Mobile Now Act, S.1682 Airwaves Act, S-88 DIGIT Act, H.Res.521, and S.Res.242.**

Peer-reviewed published science shows wireless radiation harms public health and nature. Health effects include: fatigue, headaches, sleep problems, anxiety, ringing in the ears, heart problems, learning and memory disorders, increased cancer risk, and more. Children, the ill, and the elderly are more vulnerable. International independent scientists are calling for biologically-based public exposure standards and reducing wireless radiation.

Resolutions H.521 and S.242 promote 5G deployment. S.1988 SPEED Act is a bill that would limit federal, state, and local review over the installation of cell towers in our communities. S. 1988 is similar to California Senate Bill 649 which would have created a state mandated system of cell towers every couple hundred feet apart and eliminated local review and safety oversight. SB 649 was opposed by 300 cities, 47 counties and over 100 community, planning, health, environment and justice organizations. Governor Brown vetoed SB 649 on October 15, 2017<sup>1</sup>.

The threat of public and environmental harm from wireless radiation is real and growing. Local control is needed to ensure community safety, welfare and compliance with federal<sup>2</sup>, state and local laws<sup>3</sup>.

The Federal Communications Commission (FCC) is the government agency charged with overseeing RFR technology. However the FCC cannot be relied on to serve the public interest because the FCC is a regulatory captured agency.

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<sup>1</sup> <http://www.mercurynews.com/2017/10/16/california-gov-jerry-brown-vetoes-bill-easing-permits-on-cell-phone-towers/>

<sup>2</sup> FCC Tower and Antenna Siting: <https://www.fcc.gov/general/tower-and-antenna-siting>

<sup>3</sup> Cal. Const., art. XI, §7 “A county or city may make and enforce within its limits all local, police, sanitary, and other ordinances and regulations not in conflict with general laws.”

## Legal considerations

The Federal Telecommunications Act of 1996 currently preserves local zoning authority, and requires compliance with environmental laws and RFR safety rules. According to the FCC website<sup>4</sup>:

- “Building a new tower or collocating an antenna on an existing structure requires compliance with the Commission’s rules for environmental review. These rules ensure that licensees and registrants take appropriate measures to protect environmental and historic resources, and that the agency meets its obligations under the National Environmental Policy Act (NEPA) to consider the potential environmental impact of its actions, as well as under other environmental statutes such as the National Historic Preservation Act (NHPA) and the Endangered Species Act (ESA).”
- “NEPA requires agencies to consider and disclose the environmental effects of its actions to improve decision-making and encourage transparency, public participation, and accountability. Effects are defined broadly to include ecological, aesthetic, historic, social, and cumulative and indirect effects.”
- “Collocations, including Distributed Antenna Systems (DAS) and Small Cells, may also require compliance with these same processes.”
- “Section 332(c)(7) of the Communications Act preserves state and local authority over zoning and land use decisions for personal wireless service facilities, but sets forth specific limitations on that authority.” ...”The statute also preempts local decisions premised directly or indirectly on the environmental effects of radio frequency (RF) emissions, assuming that the provider is in compliance with the Commission's RF rules.”

The Federal Communications Commission historically honors local control over telecommunications siting. On July 14, 2016 FCC Commissioner Jessica Rosenworcel stated during her approval of 5G millimeter wave deployment, “*By law and tradition we honor local control in this country.*”<sup>5</sup> Any and all federal bills that would eliminate local control and deliberately thwart public participation should be rejected.

## Peer-reviewed, published science shows RFR harms public health

The BioInitiative Report, A Rationale for Biologically-based Public Exposure Standards for Electromagnetic Fields, updated in 2012, was prepared by 29 authors from ten countries. They reviewed 1800 studies and conclude, “*EMF and RFR are preventable toxic exposures. We have the knowledge and means to save global populations from multi-generational adverse health*

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<sup>4</sup> FCC Tower and Antenna Siting: <https://www.fcc.gov/general/tower-and-antenna-siting>

<sup>5</sup> At 19: 27 <https://www.fcc.gov/news-events/events/2016/07/july-2016-open-commission-meeting>

*consequences by reducing both ELF and RFR exposures. Proactive and immediate measures to reduce unnecessary EMF exposures will lower disease burden and rates of premature death.”<sup>6</sup> “Safety standards for sensitive populations will more likely need to be set at lower levels than for healthy adult populations. Sensitive populations include the developing fetus, the infant, children, the elderly, those with pre-existing chronic diseases, and those with developed electrical sensitivity (EHS).”<sup>7</sup>*

The National Toxicology Program partially published a 25 million dollar study in 2016 which is one of the largest and most comprehensive studies on cell phone radiation and cancer in the United States. Results showed that rats exposed to cell phone radiation developed two types of cancers: glioma, a brain tumor, and schwannoma, a heart tumor. The summary notes, *“Given the widespread global usage of mobile communications among users of all ages, even a very small increase in the incidence of disease resulting from exposure to RFR could have broad implications for public health.”<sup>8</sup>*

The International Agency for Research on Cancer at the World Health Organization classifies RFR as a 2B (possible) carcinogen.<sup>9</sup>

International independent scientists are calling for immediate measures to reduce RFR. The International EMF Scientist Appeal<sup>10</sup> signed by 235 scientists from 41 nations warn: *“We are scientists engaged in the study of biological and health effects of non-ionizing electromagnetic fields (EMF). Based upon peer-reviewed, published research, we have serious concerns regarding the ubiquitous and increasing exposure to EMF generated by electric and wireless devices. These include—but are not limited to—radiofrequency radiation (RFR) emitting devices, such as cellular and cordless phones and their base stations, Wi-Fi, broadcast antennas, smart meters, and baby monitors as well as electric devices and infra-structures used in the delivery of electricity that generate extremely-low frequency electromagnetic field (ELF EMF).” “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.”*

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<sup>6</sup> Bioinitiative Report <http://www.sciencedirect.com/science/journal/09284680/16/2-3> and [www.bioinitiative.org](http://www.bioinitiative.org)

<sup>7</sup> [http://www.bioinitiative.org/report/wp-content/uploads/pdfs/section\\_1\\_table\\_1\\_2012.pdf](http://www.bioinitiative.org/report/wp-content/uploads/pdfs/section_1_table_1_2012.pdf)

<sup>8</sup> NTP cell phone study <http://ntp.niehs.nih.gov/results/areas/cellphones/index.html>

<sup>9</sup> IARC/WHO <https://goo.gl/BrkpG8>

<sup>10</sup> EMF Scientist appeal <https://www.emfscientist.org/index.php/emf-scientist-appeal>

The following are quotes from science experts who signed the The International EMF Scientist Appeal.<sup>11</sup>

- *“Based upon epidemiological studies there is consistent evidence of increased risk for brain tumors (glioma and acoustic neuroma) associated with use of wireless phones.”* Lennart Hardell, MD, PhD University Hospital, Orebro, Sweden
- *“The harmful effects of electromagnetic fields, regardless of their frequencies, are now scientifically settled. Pregnant women (the fetus) and children and adolescents are particularly vulnerable.”*- Dominique Belpomme, MD, MPH, Paris V Descartes University, European Cancer & Environment Research Institute.
- *“U.S. regulatory standards and international guidelines only control for short-term heating of tissue. The standards do not protect us from the low-intensity, chronic exposures to electromagnetic fields (EMF) that are common today. The scientists who signed the Appeal request that the UN and member nations protect the global human population, and animal and plant life from EMF exposures. There has been strong support from the international scientific community for the Appeal, even among those who believe that scientists should not take public policy positions. Some have taken personal risks to sign the Appeal because this is a public health issue that affects everyone now, as well as future generations.”* Joel Moskowitz, Ph.D., Director of the Center for Family and Community Health, School of Public Health, University of California, Berkeley, USA

### **Proximity to RFR antennas is harmful**

The following peer-reviewed, published studies examine the adverse effects of wireless radiation in relation to antenna location.

- Biological effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays *“Both anecdotal reports and some epidemiology studies have found headaches, skin rashes, sleep disturbances, depression, decreased libido, increased rates of suicide, concentration problems, dizziness, memory changes, increased risk of cancer, tremors, and other neurophysiological effects in populations near base stations.”*<sup>12</sup>
- Neurobehavioral effects among inhabitants around mobile phone base stations *“The prevalence of neuropsychiatric complaints as headache (23.5%), memory changes (28.2%),*

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<sup>11</sup> <https://www.emfscientist.org/index.php/science-policy/expert-emf-scientist-quotations>

<sup>12</sup> <http://www.nrcresearchpress.com/doi/pdf/10.1139/A10-018?src=recsys&>

*dizziness (18.8%), tremors (9.4%), depressive symptoms (21.7%), and sleep disturbance (23.5%) were significantly higher among exposed inhabitants than controls... ”<sup>13</sup>*

- Epidemiological Evidence for a Health Risk from Mobile Phone Base Stations “*We found that eight of the 10 studies reported increased prevalence of adverse neurobehavioral symptoms or cancer in populations living at distances < 500 meters from base stations.*”<sup>14</sup>

### **Peer-reviewed, published science shows RFR harms nature**

The US Department of the Interior states RFR threatens birds, and criticizes the FCC’s radiation guidelines, stating, “*the electromagnetic radiation standards used by the Federal Communications Commission (FCC) continue to be based on thermal heating, a criterion now nearly 30 years out of date and inapplicable today.*” Two hundred forty-one bird species are at mortality risk from both tower collisions and from exposure to the radiation towers emit. This includes birds that are endangered or threatened, Birds of Conservation Concern, migratory birds, and eagles. Studies of radiation impacts on wild birds documented nest abandonment, plumage deterioration and death. Birds studied included House Sparrows, White Storks, Collared Doves, and other species. Studies in laboratories of chick embryos documented heart attacks and death.<sup>15</sup>

Scientists in Germany studied tree damage in relation to wireless radiation from 2006-2015. They monitored, observed and photographed unusual or unexplainable tree damage, and measured the radiation which the trees were exposed. “*The aim of this study was to verify whether there is a connection between unusual (generally unilateral) tree damage and radiofrequency exposure.*” They found significant differences between the damaged side of a tree facing a phone mast and the opposite side, as well as differences between the exposed side of damaged trees and all other groups of trees in both sides. The scientists concluded, “*Statistical analysis demonstrated that electromagnetic radiation from mobile phone masts is harmful for trees.*”<sup>16</sup> The following studies show insects are harmed by radiation:

- Food collection and response to pheromones in an ant species exposed to electromagnetic radiation found exposure to radiation caused colony deterioration and affected social

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<sup>13</sup> Neurobehavioral effects among inhabitants around mobile phone base stations <https://www.ncbi.nlm.nih.gov/pubmed/16962663>

<sup>14</sup> Epidemiological Evidence for a Health Risk from Mobile Phone Base Stations <https://goo.gl/Zz6dhk>

<sup>15</sup> US Department of Interior letter and background: [http://www.ntia.doc.gov/files/ntia/us\\_doi\\_comments.pdf](http://www.ntia.doc.gov/files/ntia/us_doi_comments.pdf)

<sup>16</sup> Radiofrequency radiation injures trees around mobile phone base stations. <https://www.ncbi.nlm.nih.gov/pubmed/27552133?dopt=Abstract#>

insects' behavior and physiology.<sup>17</sup>

- Oxidative and genotoxic effects of 900 MHz electromagnetic fields in the earthworm concluded radiation caused genotoxic effects and DNA damage in earthworms<sup>18</sup>.
- Mobile Phone Induced Honey Bee Worker Piping. The study abstract states, "*The worldwide maintenance of the honeybee has major ecological, economic, and political implications.*" Cell phone RFR was tested for potential effects on honeybee behavior. Handsets were placed in the close vicinity of honeybees and the sound made by the bees was recorded and analyzed. The information revealed that active cell phone handsets induced the bees worker piping signal. "*In natural conditions, worker piping either announces the swarming process of the bee colony or is a signal of a disturbed bee colony.*"<sup>19</sup>

The following are observations by International scientists of RFR effects on nature<sup>20</sup> :

- "*Migratory birds -- incredibly important to the global economy and for the ecological services they provide -- now appear to be negatively affected by non-ionizing radiation.*" Dr. Albert Manville, Adjunct Professor, Johns Hopkins University; Senior Wildlife Biologist, U.S. Fish & Wildlife Service (FWS), Emeritus/Retired
- "*Man-made electromagnetic fields impact all living organisms, acting first on the unit membrane. We must reduce our dependence on 'wireless' technologies, reduce the numbers of masts (i.e., cell towers), of Wi-Fi apparatus, of cordless phones and so on, and clearly indicate, in public spaces, the intensity of the ambient electromagnetic field.*" Prof. Marie-Claire Cammaerts, PhD., Free University of Brussels, Faculty of Science, Belgium.

### **5G millimeter waves are harmful**

Peer-reviewed published science shows millimeter waves penetrate the skin and affect human health.<sup>21</sup> A meta-analysis of studies on millimeter waves (MMWs) "State of knowledge on biological effects at 40–60 GHz"<sup>22</sup> states, "*At the cellular level, it stands out from the literature*

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<sup>17</sup> Food collection and response to pheromones in an ant species exposed to electromagnetic radiation <https://www.ncbi.nlm.nih.gov/pubmed/23320633>

<sup>18</sup> Oxidative and genotoxic effects of 900 MHz electromagnetic fields in the earthworm *Eisenia fetida*. <https://www.ncbi.nlm.nih.gov/pubmed/?term=23352129>

<sup>19</sup> <https://link.springer.com/article/10.1007/s13592-011-0016-x>

<sup>20</sup> <https://www.emfscientist.org/index.php/science-policy/expert-emf-scientist-quotations>

<sup>21</sup> State of knowledge on biological effects at 40–60 GHz <https://goo.gl/gbBKHL>

<sup>22</sup> C. R. Physique 14 (2013) 402–411

*that skin nerve endings are probably the main targets of MMWs and the possible starting point of numerous biological effects.*” Effects reviewed include effects on capillaries and nerve endings, protein insults, epigenetic regulation, and the risk of homeostasis disruption, which would have dramatic consequences. In addition, millimeter wave technology has been developed as a crowd control weapon which causes acute burning pain, as if the body is on fire.<sup>23</sup>

International independent scientists have called for a moratorium on the deployment of 5G<sup>24</sup>. They state, *“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.”*

### **The FCC is not protecting public health, safety or the environment**

FCC proceedings 13-84 and 03-137 remain incomplete by the FCC since 2013. The FCC has not updated its wireless exposure guidelines since 1996. Meanwhile the United States has seen an explosion of wireless devices in homes, and a forced deployment of RFR on the general population. For example: cell towers, cell and cordless phones, wi-fi, wireless computers and printers, ipads in schools, smart meters, and smart grid. This rampant wireless radiation explosion is set to get much worse with 5G, Internet of Things, Smart Cities, and radar in cars. The federal government has taken sole responsibility for the radiation safety of personal wireless service deployment<sup>25</sup>, however, no federal agency is acting responsibly, or being accountable for protecting the public and the environment from the health effects of wireless radiation exposure.

The FCC is criticized by investigative journalist Norm Alster in a report published by Harvard University: [Captured Agency: How the Federal Communications Commission is dominated by the industries it presumably regulates](#).<sup>26</sup> Alster calls on the FCC to acknowledge there may be wireless health risks, to back off wi-fi promotion, to acknowledge children and pregnant women may be especially vulnerable, and more. He writes, *“Personally, I don’t believe that just because something can be done it should heedlessly be allowed. Murder, rape and Ponzi schemes are all doable but subject to prohibition and regulation. Government regulators have the responsibility*

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<sup>23</sup> US Military Active Denial System <http://jnlwp.defense.gov/About/Frequently-Asked-Questions/Active-Denial-System-FAQs/>

<sup>24</sup> <http://emfsafetynetwork.org/wp-content/uploads/2017/11/Scientist-5G-appeal.pdf>

<sup>25</sup> 47 U.S.C. § 332(c)(7); 47 C.F.R. 1.1307(b) and 1.1310, which are based on perceived harm of overheating of human tissues by RFR.

<sup>26</sup> [http://ethics.harvard.edu/files/center-for-ethics/files/capturedagency\\_alster.pdf](http://ethics.harvard.edu/files/center-for-ethics/files/capturedagency_alster.pdf)

*to examine the consequences of new technologies and act to at least contain some of the worst. Beyond legislators and regulators, public outrage and the courts can also play a role but these can be muffled indefinitely by misinformation and bullying.”*

## **Conclusion**

Not all Americans want their homes, neighborhoods, towns, and rural country-sides polluted with RFR. There is a growing movement of educated Americans who are aware of the health impacts and risk of cancer associated with RFR. Across the nation hundreds of thousands of utility customers have refused, or opted out of utility smart meters. Around the world people have reported harm from exposure to wireless radiation. Those already sickened, and those trying to avoid being injured, adamantly oppose being involuntarily exposed to more radiation. The telecommunication industry’s unbounded profit motive should never outweigh local authority and jurisdiction.

Wireless is not an essential public service. Communications are safer using wired and corded connections. It is in the best public and environmental interest to avoid unnecessary wireless radiation exposures.

***Please oppose any and all bills related to 5G and wireless radiation expansion.***

Respectfully submitted on November 13, 2017:

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This Letter to Congress is posted online at: <http://emfsafetynetwork.org/letter-to-congress/>  
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