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## The Health Argument against Cell Phones and Cell Towers

The biomedical evidence showing that the radiofrequency radiation emitted by cell phones and cell towers is harmful to health continues to grow. This document summarizes the health argument against cellular technology, whatever the benefits of that technology may be. You may wish to inform yourself about these arguments for any of several reasons:

- You use a cell phone.
- You encourage, or do not discourage, the use of cell phones by family members.
- You live in, or are contemplating moving into, a community close to a cell tower.
- Your school or college is considering permitting the installation of a cell tower on its property.
- Your community is considering permitting the installation of cellular repeaters, small-cell towers, or even full cell towers within its jurisdiction.

Below, I introduce myself, provide evidence of the harmfulness of cellular radiation, and show that government is not protecting us from harm and is unlikely to do so in the near future. That means that we must protect ourselves and our families at the individual and the community levels while working toward protective action by governments at the local, state, and Federal levels.

### Who am I?

I am a retired U.S. Government career scientist (Ph.D., Applied Physics, Harvard University, 1975). During my Government career, I worked for the Executive Office of the President, the National Science Foundation, and the National Institute of Standards and Technology. For those organizations, respectively, I addressed Federal research and development program evaluation, energy policy research, and measurement development in support of the electronics and electrical-equipment industries and the biomedical research community. I currently interact with other scientists and with physicians around the world on the impact of electromagnetic fields on human health.

### Evidence of harm

I present below key evidence, and associated references, that the exposure of humans to radiofrequency radiation, and specifically cellular radiation, is harmful.

### In 2016 the National Toxicology Program, at the National Institutes of Health, linked cellular radiation to brain and heart tumors.

The National Toxicology Program (NTP), at the National Institutes of Health (NIH), just published the "Partial Findings" of a \$25 million multi-year study of the impact of cellular radiation on health. The U.S. Food and Drug Administration "nominated" this NTP study. The NTP indicated that this is the largest and most complex study ever conducted by the NTP.

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The NTP study exposed each of six separate groups of male rats to one of the six possible combinations of three different levels of cellular radiation and two different modulation formats. The modulation format is the method used to impress information on the cellular signal. A separate seventh group of male rats was used as a “control”, that is, for comparison, and was protected from exposure to any cellular radiation.

The NTP study found a “likely” causal relationship between exposure to cellular radiation and the occurrence of malignant brain cancer (glioma) and benign nerve tumors (schwannomas) of the heart in the male rats:

The rates of occurrence of brain glioma in the male rats ranged from 0 to 3.3 percent for the six groups exposed to radiation. The mean rate of occurrence was 2.0 percent across all six groups.<sup>2</sup>

The rates of occurrence of heart schwannoma in the male rats ranged from 1.1 to 6.6 percent for the six groups exposed to radiation. The mean rate of occurrence was 3.5 percent across all six groups.<sup>3</sup>

The seventh group of male rats, which was used as a control and which was protected from exposure to any cellular radiation, experienced no instances of brain glioma or heart schwannoma.

The NTP considered its findings so important to public health that it issued the “Partial Findings” (May 2016) prior to completing the full study. The NTP then presented those findings at an international conference (BioEM2016, June 2016) attended by 300 scientists from 41 countries. The NTP characterized the motivation for the early release of the “Partial Findings” this way:

“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 [radiofrequency radiation] could have broad implications for public health. There is a high level of public and media interest regarding the safety of cell phone RFR and the specific results of these NTP studies.”

The NTP promised further findings from its study for publication through 2017. Included in those further findings will be test results on mice. You can learn more about this study from the following references:

**Reference:** NTP’s brief description of its study. National Toxicology Program: Cell Phones.  
(<http://ntp.niehs.nih.gov/results/areas/cellphones/index.html>)

**Reference:** NTP’s published “Partial Findings” of the study. Michael Wyde, Mark Cesta, Chad Blystone, Susan Elmore, Paul Foster, Michelle Hooth, Grace Kissling, David Malarkey, Robert Sills, Matthew Stout, Nigel Walker, Kristine Witt, Mary Wolfe, and John Bucher, Report of Partial Findings from the National Toxicology Program Carcinogenesis Studies of Cell Phone Radiofrequency Radiation in Hsd: Sprague Dawley® SD rats (Whole Body Exposure), posted June 23, 2016.  
(<http://biorxiv.org/content/biorxiv/early/2016/06/23/055699.full.pdf>)

**Reference:** Informative discussion of the NTP study. Environmental Health Trust, Frequently Asked Questions about the U.S. National Toxicology Program Radiofrequency Rodent Carcinogenicity Research Study.  
(<http://ehtrust.org/science/facts-national-toxicology-program-cellphone-rat-cancer-study>)

<sup>2</sup> In the “Partial Findings” reference cited above, the mean (average) rate of occurrence for malignant glioma in male rats was determined from Table 1 on page 13 as follows:  $(3 + 3 + 2 + 0 + 0 + 3)/(90 + 90 + 90 + 90 + 90 + 90) = 2.0$  percent.

<sup>3</sup> In the “Partial Findings” reference cited above, the mean (average) rate of occurrence for heart schwannoma in male rats was determined from Table 3 on page 15 as follows:  $(2 + 1 + 5 + 2 + 3 + 6)/(90 + 90 + 90 + 90 + 90 + 90) = 3.5$  percent.

**Reference:** Announcement of the BioEM2016 presentation. Results of NIEHS' National Toxicology Program GSM/CDMA phone radiation study to be presented at BioEM2016 Meeting in Ghent, 05 June 2016 — 10 June 2016 Ghent University, Belgium.

(<http://www.alphagalileo.org/ViewItem.aspx?ItemId=164837&CultureCode=en>)

**Reference:** Viewgraphs presented by Michael Wyde, Ph.D., NTP study scientist, at BioEM2016 Meeting, Ghent, Belgium, June 8, 2016. NTP Toxicology and Carcinogenicity Studies of Cell Phone Radiofrequency Radiation.

([http://ntp.niehs.nih.gov/ntp/research/areas/cellphone/slides\\_bioem\\_wyde.pdf](http://ntp.niehs.nih.gov/ntp/research/areas/cellphone/slides_bioem_wyde.pdf))

### **The NTP study reinforces the classification of radiofrequency radiation, including cellular radiation, as a possible human carcinogen, made by the International Agency for Research on Cancer of the World Health Organization in 2011.**

In its "Partial Findings" the NTP noted that its study reinforces a decision made by the International Agency for Research on Cancer (IARC) of the World Health Organization (WHO) in 2011. That decision classified radiofrequency radiation, including specifically cellular radiation, as a Group 2B carcinogen (possible carcinogen for humans). This classification was based on the increased risk of malignant brain cancer (glioma) and acoustic neuroma (a benign tumor of the auditory nerve), which is a form of schwannoma.

**Reference:** Announcement of the IARC classification. International Agency for Research on Cancer, IARC Classifies Radiofrequency Electromagnetic Fields as Possibly Carcinogenic To Humans, Press Release No. 208, 31 May 2011.

([http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208\\_E.pdf](http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf))

**Reference:** Full report on the IARC classification. IARC Monographs: Non-Ionizing Radiation, Part 2: Radiofrequency Electromagnetic Fields, Volume 102, 2013.

(<http://monographs.iarc.fr/ENG/Monographs/vol102/mono102.pdf>)

The findings of the NTP study, in combination with the findings of other studies conducted since 2011, have greatly increased the likelihood that the IARC will raise its classification of radiofrequency radiation to Group 2A (probable carcinogen for humans) or even to Group 1 (known carcinogen for humans) in the near future.

### **In 2015, hundreds of international scientists appealed to the United Nations and the World Health Organization to warn the public about the health risks caused by electromagnetic fields (EMF), including radiofrequency radiation and, specifically, cellular radiation.**

220 scientists from 41 nations have signed an international appeal, first submitted to the United Nations and to the World Health Organization in May 2015. These scientists seek improved protection of the public from harm caused by the radiation produced by many wireless sources, including "cellular and cordless phones and their base stations, Wi-Fi, broadcast antennas, smart meters, and baby monitors" among others. Together, these scientists "have published more than 2000 research papers and studies on EMF." They state the following:

"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 plant and animal life.”

**Reference:** International EMF Scientist Appeal: Scientists call for Protection from Non-ionizing Electromagnetic Field Exposure, May 15, 2015 (updated April 27, 2016).  
(<https://www.emfscientist.org/index.php/emf-scientist-appeal>)

**Reference:** International Scientists Petition U.N. to Protect Humans and Wildlife from Electromagnetic Fields and Wireless Technology.  
([https://www.emfscientist.org/images/docs/International EMF Scientist Appeal Description.pdf](https://www.emfscientist.org/images/docs/International_EMF_Scientist_Appeal_Description.pdf))

**In 2012 the BioInitiative Working Group published the most comprehensive of the recent analyses of the international biomedical research, showing a multitude of biological effects from exposure to radiofrequency radiation, including cellular radiation, at levels below the current exposure guidelines set by the Federal Communications Commission (FCC).**

The health risks posed by the expanding use of radiofrequency radiation in wireless devices are not limited to cancer, as devastating as that consequence is. The broad range of health effects was extensively reviewed in the BioInitiative Report 2012. This 1479-page review considered about 1800 peer-reviewed biomedical research publications, most issued in the previous five years. The BioInitiative Report 2012 was prepared by an international body of 29 experts, heavy in Ph.D.s and M.D.s, from 10 countries, including the USA which contributed the greatest number of experts (10). The report concludes the following:

“The continued rollout of wireless technologies and devices puts global public health at risk from unrestricted wireless commerce unless new, and far lower exposure limits and strong precautionary warnings for their use are implemented.”

**Reference:** BioInitiative Working Group, Cindy Sage, M.A. and David O. Carpenter, M.D., Editors, BioInitiative Report: A Rationale for Biologically-based Public Exposure Standards for Electromagnetic Radiation, December 31, 2012.  
(<http://www.bioinitiative.org>)

The BioInitiative Report 2012 documented, in its “RF Color Charts”, examples of eight categories of biological effects that occurred at levels below the current exposure guidelines set by the FCC:

- stress proteins, heat shock proteins, and disrupted immune function
- reproduction and fertility effects
- oxidative damage, reactive ion species (ROS), DNA damage, and DNA repair failure
- disrupted calcium metabolism
- brain tumors and blood-brain barrier
- cancer (other than brain) and cell proliferation
- sleep, neuron firing rate, electroencephalogram (EEG), memory, learning, and behavior
- cardiac, heart muscle, blood-pressure, and vascular effects.

These biological effects were attributed to “Radiofrequency Radiation at Low Intensity Exposure” from “cell towers, Wi-Fi, wireless laptops, and smart meters”.

**Reference:** See the "RF Color Charts", accessed from the left column of the web page below.  
(<http://www.bioinitiative.org>)

## The U.S. Government is not protecting us.

### The radiation exposure guidelines of the FCC do not protect us because they are outdated and based on a false assumption.

The current radiation exposure guidelines of the FCC were adopted in 1996, 20 years ago. Those guidelines are based primarily on an analysis by the National Council on Radiation Protection and Measurements (NCRP) which was published in 1986, 30 years ago. That was many years before the emergence of nearly all of the digital wireless devices in use today.

"The FCC-adopted limits for Maximum Permissible Exposure (MPE) are generally based on recommended exposure guidelines published by the National Council on Radiation Protection and Measurements (NCRP) in 'Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields,' NCRP Report No. 86, Sections 17.4.1, 17.4.1.1, 17.4.2 and 17.4.3. Copyright NCRP, 1986, Bethesda, Maryland 20814...."

**Reference:** Federal Communications Commission, Office of Engineering & Technology, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, OET Bulletin 65, Edition 97-01 (August 1997). See the last paragraph on page 64.  
([http://transition.fcc.gov/Bureaus/Engineering\\_Technology/Documents/bulletins/oet65/oet65.pdf](http://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65.pdf))

Those exposure guidelines have not been substantially changed since that analysis in 1986. They are based on the *thermal assumption* that the only harm that radiofrequency radiation can cause is due to tissue heating. This thermal assumption has been thoroughly disproved since, as biological effects have been found to occur at levels of radiation below, and even far below, those that cause significant tissue heating. Such lower levels are commonly referred to as *nonthermal* levels. The result is that many authorities now consider the FCC's current exposure guidelines as entirely outdated and much too high (that is, much too permissive) to protect the public.

The evidence disproving the thermal assumption is based on the broadened understanding of the biological effects of radiofrequency radiation made possible by thousands of peer-reviewed papers published by international biomedical scientists since 1986. The BioInitiative Report 2012 is the most recent comprehensive review of that research and provides many examples of bioeffects occurring at nonthermal radiation levels, as described above. Further, the new study by the National Toxicology Program, also described above, added to the evidence disproving the thermal assumption. That study exposed rats to levels of radiation below those that cause significant heating, and both above and below the FCC's current exposure guidelines as well. Yet, even below the FCC's current exposure guidelines, the male rats still developed malignant brain cancer (glioma) and benign tumors (schwannomas) of the nerves of the heart.

The shortcomings of the FCC's exposure guidelines are described in detail in the following reference:

**Reference:** Outdated FCC "Safety" Standards: The Five Fallacies of the Electromagnetic Radiation Exposure Limits.  
(<http://ehtrust.org/policy/fcc-safety-standards/>)

**The FCC is not a credible source for exposure guidelines because it lacks health expertise and because it is too heavily influenced by the wireless industries that it is supposed to regulate.**

The FCC lacks the health expertise required for developing health-related radiation exposure guidelines. Further, the FCC seems more interested in assuring compatibility among electronic systems than in assuring the compatibility of electronic systems with human, animal, and plant life. Since the exposure guidelines relate to health, it would make more sense for them to be developed by an agency with health expertise, such as the Environmental Protection Agency (EPA).

In addition, the FCC lacks the impartiality required to be a source of credible guidelines. The FCC is too heavily influenced by the wireless industries that the FCC is supposed to regulate. The FCC has acted in partnership with the wireless industries by permitting wireless radiation levels far higher than the biomedical research literature indicates are necessary to protect human health. The success of the wireless industries in capturing the FCC, the committees in the U.S. Congress that oversee the FCC, and the Executive Branch is detailed in a recent monograph from the Center for Ethics at Harvard University.

**Reference:** Norm Alster, Captured Agency: How the Federal Communications Commission is Dominated by the Industries It Presumably Regulates (2015).

<http://ethics.harvard.edu/news/new-e-books-edmond-j-safra-research-lab>

As an example of that capture, President Obama, in 2013, appointed Thomas Wheeler, as the Chairman of the FCC. At that time, Mr. Wheeler was the head of the CTIA – The Wireless Association, which is the major lobbying organization for the wireless industries. This is the infamous "revolving door".

**The FCC's decision to fast-track Fifth Generation (5G) cellular technology without prior study of its health impact demonstrates the FCC's disinterest in the public health.**

On July 14, 2016, the FCC adopted new rules that would promote fast-tracking the expansion of cellular service to new and higher frequencies as part of the Fifth Generation (5G) of cellular technology. This decision will open selected frequency bands above 24 gigahertz (GHz) and up to 71 GHz. At the same time, the FCC has requested comment on opening even higher frequencies, possibly above 95 GHz.

**Reference:** FCC Takes Steps to Facilitate Mobile Broadband and Next Generation Wireless Technologies in Spectrum above 24 GHz: New rules will enable rapid development and deployment of next generation 5G technologies and services.

[http://transition.fcc.gov/Daily\\_Releases/Daily\\_Business/2016/db0714/DOC-340301A1.pdf](http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0714/DOC-340301A1.pdf)

**Reference:** Fact Sheet: Spectrum Frontiers Rules Identify, Open Up Vast Amounts of New High-Band Spectrum for Next Generation (5G) Wireless Broadband.

[http://transition.fcc.gov/Daily\\_Releases/Daily\\_Business/2016/db0714/DOC-340310A1.pdf](http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0714/DOC-340310A1.pdf)

All five commissioners of the FCC, including Chairman Wheeler, approved this expedited move to 5G. No commissioner called for evaluating the health impact before proceeding with 5G, despite the recent findings of the National Toxicology Program at NIH that cellular radiation likely causes tumors. Nor did even one commissioner expressed any interest in, or concern about, the impact of this new technology on public health. Rather, the FCC's emphasis was on the billions of dollars to be made by proceeding to implement 5G as rapidly as possible, with a minimum of regulatory interference, to assure an international competitive position.

In contrast to the FCC's disinterest in the impact of 5G on the public health, extensive written comments from individual members of the public and from many interested organizations raised a host of health concerns that were totally ignored in the FCC's presentations.

**Reference:** July 2016 Open Commission Meeting addressing "Spectrum Frontiers" and "Advancing Technology Transitions".

(<https://www.fcc.gov/news-events/events/2016/07/july-2016-open-commission-meeting>)

**Reference:** The FCC Approves 5G Millimeter Wave Spectrum Frontiers. Includes excerpts from selected comments provided to the FCC by individuals and organizations that expressed concern about the health impact of the FCC's plan for 5G.

(<http://ehtrust.org/policy/fcc-approves-5g-millimeter-wave-spectrum-frontiers/>)

**Reference:** Comments on FCC Docket 14-177, Spectrum Bands above 24 GHz. All of the comments submitted to the FCC about the key docket leading to the implementation of 5G.

([https://www.fcc.gov/ecfs/search/filings?proceedings\\_name=14-177&sort=date\\_disseminated,DESC](https://www.fcc.gov/ecfs/search/filings?proceedings_name=14-177&sort=date_disseminated,DESC))

### **U.S. Government agencies, and U.S. medical organizations, have disputed the validity of the FCC's exposure guidelines.**

U.S. Government agencies, as well as U.S. medical organizations, have disputed the validity of the FCC's thermal exposure guidelines, maintaining that they are outdated and need to be updated to provide adequate protection of human beings, including children and seniors as well as other vulnerable groups.

#### **U.S. Environmental Protection Agency**

The Environmental Protection Agency (EPA) would be a better agency than the FCC to entrust with setting radiofrequency radiation exposure guidelines because the EPA has both health expertise and environmental responsibilities. The EPA is often cited by the FCC, and by the wireless industries, as one of the agencies that the FCC has *consulted* about the FCC's exposure guidelines, as if to increase the credibility of those guidelines. However, the fact that the EPA has *explicitly disputed* the validity of those guidelines is consistently omitted from those citations.

Specifically, in 2002, the EPA addressed the limitations of the thermal exposure guidelines of the FCC, and the similar guidelines of private organizations, including the Institute of Electrical and Electronics Engineers and the International Commission on Non-Ionizing Radiation Protection:

"The FCC's current exposure guidelines, as well as those of the Institute of Electrical and Electronics Engineers (IEEE) and the International Commission on Non-ionizing Radiation Protection, are thermally based, and do not apply to chronic, nonthermal exposure situations.... The FCC's exposure guideline is considered protective of effects arising from a thermal mechanism but not from all possible mechanisms. Therefore, the generalization by many that the guidelines protect human beings from harm by any or all mechanisms is not justified."

"Federal health and safety agencies have not yet developed policies concerning possible risk from long-term, nonthermal exposures. When developing exposure standards for other physical agents such as toxic substances, health risk uncertainties, with emphasis given to sensitive populations, are often considered. Incorporating information on exposure scenarios involving repeated short

duration/nonthermal exposures that may continue over very long periods of time (years), with an exposed population that includes children, the elderly, and people with various debilitating physical and medical conditions, could be beneficial in delineating appropriate protective exposure guidelines.”

**Reference:** Letters from Frank Marcinowski, Director, Radiation Protection Division, EPA, and Norbert Hankin, Center for Science and Risk Assessment, Radiation Protection Division, EPA, to Janet Newton, President, the EMR Network, with copies to the FCC and the IEEE, dated July 16, 2002. ([http://www.emrpolicy.org/litigation/case\\_law/docs/noi\\_epa\\_response.pdf](http://www.emrpolicy.org/litigation/case_law/docs/noi_epa_response.pdf))

In summary, the EPA makes the following points: (1) the FCC’s thermal exposure guidelines do *not* protect against all harm, only the harm caused by too much heating; (2) the FCC’s thermal exposure guidelines do *not* apply to “chronic, nonthermal exposure”, which is the type of exposure generated by cell towers and many other wireless devices; and (3) when new FCC guidelines are developed for chronic nonthermal exposures, they must accommodate “children, the elderly, and people with various debilitating physical and medical conditions” because those groups are not accommodated now.

### **U.S. Food and Drug Administration**

The Food and Drug Administration (FDA) is also often cited by the FCC, and by the wireless industries, as one of the agencies that the FCC has consulted. But the FDA is the agency that “nominated” the NTP study of the possible health effects of cellular radiation, in part because of the FDA’s uncertainty about the validity of the FCC’s exposure guidelines:

“Currently cellular phones and other wireless communication devices are required to meet the radio frequency radiation (RFR) exposure guidelines of the Federal Communications Commission (FCC), which were most recently revised in August 1996. The existing exposure guidelines are based on protection from acute injury from thermal effects of RFR exposure, and may not be protective against any non-thermal effects of chronic exposures.”

**Reference:** Nominations from FDA’s Center for Devices and Radiological Health: Radio Frequency Radiation Emissions of Wireless Communication Devices, February 8, 2000. ([http://www.goaegis.com/fda\\_letter0200.html](http://www.goaegis.com/fda_letter0200.html))

The FDA’s wisdom in nominating the NTP study was well justified by NTP’s publication of the “Partial Findings” described above. Those findings demonstrated both that the FCC’s exposure guidelines are not protective and that the thermal assumption on which those guidelines are based is invalid.

### **U.S. Department of the Interior**

In 2014 the Department of the Interior (Fish and Wildlife Service) also addressed the limitations of the FCC’s thermal exposure guidelines. The Department of the Interior was motivated by the multiple adverse effects of electromagnetic radiation on the health, and the life, of birds, particularly in connection with cell towers. The Department of the Interior stated the following:

“However, 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.”

**Reference:** Letter from Willie R. Taylor, Director, Office of Environmental Policy and Compliance, Office of the Secretary, United States Department of the Interior, to Mr. Eli Veenendaal, National Telecommunications and Information Administration, U.S. Department of Commerce, dated February 7, 2014.

([https://www.ntia.doc.gov/files/ntia/us\\_doi\\_comments.pdf](https://www.ntia.doc.gov/files/ntia/us_doi_comments.pdf))

### **American Academy of Environmental Medicine**

The American Academy of Environmental Medicine (AAEM), which trains physicians in preparation for Board Certification in Environmental Medicine, states the following:

“The AAEM strongly supports the use of wired Internet connections, and encourages avoidance of radiofrequency such as from WiFi, cellular and mobile phones and towers, and ‘smart meters’.”

“The peer reviewed, scientific literature demonstrates the correlation between RF [radiofrequency] exposure and neurological, cardiac, and pulmonary disease as well as reproductive and developmental disorders, immune dysfunction, cancer and other health conditions. The evidence is irrefutable.”

“To install WiFi in schools plus public spaces risks a widespread public health hazard that the medical system is not yet prepared to address.”

**Reference:** American Academy of Environmental Medicine, Wireless Radiofrequency Radiation in Schools, November 14, 2013.

(<http://www.aemonline.org/pdf/WiredSchools.pdf>)

### **American Academy of Pediatrics**

The American Academy of Pediatrics (AAP), whose 60,000 doctors care for our children, supports the development of more restrictive standards for radiofrequency radiation exposure in order to better protect the public, particularly the children. In a letter to the Federal Communications Commission (FCC) and the Food and Drug Administration (FDA), dated August 29, 2013, the AAP states the following:

“Children are not little adults and are disproportionately impacted by all environmental exposures, including cell phone radiation. Current FCC standards do not account for the unique vulnerability and use patterns specific to pregnant women and children. It is essential that any new standard for cell phones or other wireless devices be based on protecting the youngest and most vulnerable populations to ensure they are safeguarded throughout their lifetimes.”

**Reference:** American Academy of Pediatrics, letter dated August 29, 2013 addressed to The Honorable Mignon L. Clyburn, Acting Commissioner, Federal Communications Commission and The Honorable Dr. Margaret A. Hamburg, Commissioner, U.S. Food and Drug Administration.

(<http://apps.fcc.gov/ecfs/document/view?id=7520941318>)

**The Telecommunications Act of 1996, in combination with the FCC's exposure guidelines, empowers the wireless industries to mandate the exposure of the public to levels of radiofrequency radiation already found harmful to health.**

The Telecommunications Act of 1996 bars state and local governments from objecting to the placement of cell towers on environmental/health grounds unless the FCC's exposure guidelines would be exceeded. Specifically, the Act provides the following:

"No State or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the Commission's [FCC's] regulations concerning such emissions."

**Reference:** Telecommunications Act of 1996, Section 704 Facilities Siting; Radio Frequency Emission Standards, page 117.

(<http://transition.fcc.gov/Reports/tcom1996.pdf>)

This Act, in combination with the FCC's permissive exposure guidelines, strips state and local governments of the right to protect their own residents from levels of radiofrequency radiation already shown to be harmful to health. In effect, this Act transfers to the wireless industries the right to **mandate** the exposure of the public, including those most vulnerable to harm, to radiofrequency radiation without the need for further governmental action. State and local governments can still resist, but to do so they must confront this Act which is designed to frustrate their success. Even so, some governments do heroically resist and some do succeed.

## Protecting ourselves and our families

**We can act on our own to protect ourselves and our families, but only partially.**

Instead of increasing our exposure to cellular radiation, and to the radiation from other digital wireless devices, we can decrease our exposure and improve our chances for good health. Desirable steps in this direction include the following:

- Reduce or stop the use of cell phones. Reserve them for emergencies or other essential uses.
- Replace cordless telephones with corded telephones.
- Establish wired (Ethernet) interconnections between routers and the wireless devices that the routers support. Then turn off the wireless capabilities, such as Wi-Fi and Bluetooth, of them all.
- "Opt out" of the wireless smart meter on your residence, if your state or local electric power company permits. Many states, but not all, have an opt-out provision.
- Alert family members about the health risks posed by wireless devices, particularly for vulnerable groups such as pregnant mothers, unborn children, young and teenage children, adult males of reproductive age, seniors, the disabled, and anyone with a chronic health condition. Everyone is vulnerable, but these groups are more so.

**Reference:** For more information on reducing radiation at home, please see Ronald M. Powell, Ph.D., How to Reduce the Electromagnetic Radiation in Your Home, which is document (10) on the list.

(<https://www.scribd.com/document/291507610/>)

**We can obtain better protection if we work in concert.**

We can contribute our efforts to the hundreds of new organizations that are emerging nationwide to raise awareness about the health risks posed by the radiation exposure from wireless devices in homes, in the workplace, in schools, and in public places, especially where children are present. Through the Internet, look for organizations that address the intersection of health with cell phones, cordless phones, Wi-Fi, smart meters, and wireless desktop computers, laptops, and tablets. These wireless devices are the principal sources of radiofrequency radiation in the home.

Take care for our children. Today's adults grew up in an environment with much less radiofrequency radiation than exists today. Today's children are not so lucky. To have the same chance at a healthy life, they need a lot of help. Unfortunately, the levels of radiofrequency radiation in our environment are rising exponentially as governments and wireless industries continue to promote, and even mandate, the exposure of the public to ever higher levels of radiofrequency radiation, with no limit in sight. That means that many of our children will become chronically ill, and many will die, while still young adults. This is a tragedy in the making. To stop it will require greatly increased awareness of the problem and serious political action at multiple levels of government. That is no small task, but we all can help. We can join with others to become a part of the solution for ourselves and our families, but especially for our children and our grandchildren.

September 19, 2016,

Mayor and Council of Rockville

Maryland.

Madam Mayor members of the Council good evening.

For the record my name is Nadia Azumi; my family and I reside at 6, Nocturne Court in Rockville.

I am here tonight to oppose the zoning text amendment change, which would allow mini cell towers in residential areas for several reasons.

1. Cell towers do not belong in residential areas, where residents park their cars in the street and where children play basketball and run around for fun. This is not an environment for parents to be always on alert as to "what ifs". What if the cell tower falls and the kids get hurt? What if the kids throw the ball at the pole? What if the lightning strikes the pole, what will happen? What happens if the cell tower falls on our vehicles? What about our property values?

2. Future text amendments and waivers are issues that need to be discussed now and not in the future. We are opening a can of worms here and this could lead to endless future problems, for the residents.

The wording must be done now so that the residents know where this issue will be going in the future. Neighborhood Association Presidents must be informed, so that the entire neighborhood is aware of the proposed changes which would allow the mini cell towers. Specific information should be done in writing, not just via emails, as some association presidents may not use computers.

I have been involved with cell tower issues for over 10 years, and never in my life did I expect that this would eventually happen in our residential areas.

Thank you for your time.

Nadia Azumi

**WECA – TXT2016-244 – Public Hearing – September 19, 2016**

I am Larry Giammo, president of the West End Citizen's Association (WECA). I am here on behalf of the association, and am joined by representatives of other Rockville neighborhood associations. The King Farm Citizens Assembly has indicated I could say they support what I'm about to say, but they weren't able to send anyone this evening.

We are very worried about what the proposed text amendment would make possible, and the negative aesthetic impacts and property value impacts that could result. Verizon and other telecom companies are not concerned with aesthetic impacts or property value impacts. Their job, for their shareholders, is to make as large a profit as possible. It's your job, and our job, to protect the interests of residents, while balancing that with the purported needs and requirements of telecom companies.

What I'd like to do tonight is define the outcome we want to see achieved as a result of any text amendment, then constructively suggest a process for actually achieving that.

First, in regard to outcome, we want a text amendment that will minimize negative aesthetic and property value impacts in residential neighborhoods from antennae, equipment enclosures and poles.

To be clear, when we say "residential neighborhoods" we mean anywhere people live...

- whether it's in single family homes, townhomes, condominiums or apartments,
- whether it's in a neighborhood with public streets or private streets, or
- whether it's in a neighborhood with above-ground or below-ground utilities

Our goal is a text amendment which...

1. Creates a strict tier system such that locations not in or adjacent to residential neighborhoods must be considered first for antennae, equipment enclosures and/or poles. And, if a telecom company insists on the need to install any of these in or adjacent to a residential neighborhood versus elsewhere, they must first substantiate that need, based on technical criteria that have been explicitly defined in the zoning ordinance.
2. Creates a public process for instances where a telecom company desires to place new antennae, equipment enclosures and/or poles in or adjacent to a residential neighborhood, with this process giving residents a) a voice on the proposed location and configuration, and resulting aesthetic impacts, and b) the opportunity to respond to the technical evidence proffered by the telecom

company applicant to support their assertion that alternative locations not in or adjacent to a residential neighborhood would not be sufficient.

3. Establishes maximum antenna sizes and equipment enclosure volumes (both pole-mounted and ground-installed) that are *just big enough* based on the most current technologies currently being deployed. And, these maximum sizes should be explicitly revisited (and revised downward) at least every three years to reflect the continuing advances and miniaturization of telecom technologies.
4. Establishes minimum heights for antennae that minimize their visual impacts from ground level. 15 feet is unacceptable. 25 feet would be significantly better.
5. Establishes a minimum distance from any residential structure for pole-mounted antennae to minimize their visual impacts. At least 100 feet would be essential.
6. Establishes maximum heights for poles and pole-mounted antennae so they can't visually impact a wide area. For example, as proposed, the maximum height in residential medium density zones would be 75 feet. No more than 35 feet *everywhere* would be appropriate.
7. Eliminates the possibility of antennae, equipment enclosures and/or poles from being clustered in the same small area, especially in or adjacent to residential neighborhoods. 500 feet between each might be an appropriate minimum distance. This requires more study.
8. Eliminates any waiver provisions. If you insist on providing any waiver provisions, they must include very explicit criteria that define in what circumstances a waiver can potentially be granted – otherwise there will be no legally defensible grounds for denying any waiver request.
9. Overall, we desire a text amendment that is a) informed by the experience and best practices of other jurisdictions in the US and internationally, and b) developed in collaboration with Rockville's residents in a process that is forward-thinking, systematic, thoughtful and comprehensive.

Regarding the last point, as far as a process, we respectfully ask that you create a task force or working group with the mission to craft a revised text amendment that protects residents' interests while affording telecom companies the ability to expand their services.

This is a very complex issue and, in our view, the process to date isn't moving effectively toward an end product that's comprehensive or protective of residents' interests. To be clear, we do not desire to be obstructionist or to try to block any text amendment from being adopted. Our motivation is to arrive at a text amendment that carefully balances

the interests of residents and telecom companies, in what will hopefully be viewed as a win-win for both.

As for the composition of such a task force or working group, we suggest nine members:

- Two members from the Planning Commission,
- Two members from the Environment Commission, and
- Five representatives of neighborhood/homeowner associations

We envision this task force or working group a) actively seeking input and feedback from Verizon and other telecom providers as well as other stakeholders, to include Rockville residents and businesses, b) being significantly supported by City staff, for technical assistance, best practices research, and for informed legal perspective, and c) delivering a text amendment for review and approval within three months.

Thank you for your consideration.

Larry Giammo  
President, West End Citizen's Association  
[larry@larrygiammo.com](mailto:larry@larrygiammo.com)  
301-213-5678

Dear Madame Mayor, Members of the City Council, Members of the Planning Commission and Rockville City Manager:

Rockville's Resource Coordinator, Hjarman Cordero, has brought to my attention that Verizon Wireless has submitted an application for a Text Amendment to Rockville's Zoning Ordinance to allow small clusters of communication antennas as **permitted uses** in all zones. I am very appreciative of the city's outreach to citizens on this issue. It has given us the opportunity to engage and assess potential impacts to the neighborhoods and the city as a whole.

Because the proposed text amendment would allow small cell antennas in all zones in the city without any reasonable constraints, there are numerous potential adverse impacts to health and the appearance of our community that could result if this text amendment is implemented. Here are some of them:

- The proposed text amendment specifies a maximum size for a "small" antenna, but then allows the Board of Appeals to allow deviations from this size. Effectively, this makes the maximum size flexible rather than fixed.
- The text amendment fails to specify any limit on the number of small antennas that can be mounted as a cluster at one location on a building. For example, if three of these mounted could be mounted vertically making a cluster that would be 13.5 feet or taller or 6 could be mounted to create a cluster that is 27 feet tall.
- The text amendment fails to specify any limit on the density of small antennas and small antenna clusters. This means that in a location such as Town Center it would be allowable to have as many small antenna clusters on individual buildings as communication companies decide to place there. One could imagine stacks of small antenna clusters covering large areas of the facades and roofs of these buildings.
- The text amendment fails to specify the maximum power that may be transmitted per antenna.
- The text amendment fails to specify the maximum power resulting from the aggregation of clusters of small antennas located on neighboring buildings. For example, as the text amendment is written, an unbounded number of antennas could be placed on the buildings surrounding Town Square. Depending on the directionality of the antennas, power could reach high levels at localized spots resulting from the aggregation of the power transmitted by antennas located on east, west, north and south facing sides of the buildings.
- The text amendment fails to specify the maximum size of support structures or equipment enclosures.
- Per the text amendment, the antennas can be placed as low as 15 feet above the ground. This places radiation close to people in the area of the antennas. In enclosed spaces, such as Town Center, which is a gathering place for

children at the ice rink and the fountains this would subject many people to the radiation from these antennas. The text amendment does not discuss or explain the science of the impact of this radiation on people, particularly children.

- In Rockville neighborhoods telephone poles could become collections of unsightly antennas beginning at 15 feet above the ground.

While this list of concerns is likely incomplete, it is sufficient for members of the Executive Board of the West End Citizens Association (WECA) to be seriously concerned that this text amendment could result in serious adverse health impacts to citizens and degradation of the appearance of our community. The demands for wireless data have grown and continue to grow at an enormous rate, so allowing communication companies to install an unrestricted number of antennas in all zones of the city without understanding the consequences would be a perilous risk for Rockville. Most importantly this could be a health risk. Secondarily, having antennas widely scattered on telephone poles, commercial buildings, apartment buildings and retail centers throughout the city could have an adverse impact on the appearance of the community.

At the WECA Executive Board meeting on March 17, 2016 a resolution was adopted requesting that the city:

- Put this text amendment on hold until an independent study of the health and radiation impacts resulting from clusters of small antenna is conducted and the impacts are fully understood. Based on the scientific investigation conducted, the study should recommend allowable maximums for the size of antennas, the number of antennas in a cluster, density of clusters on buildings and telephone poles, power per antenna, and maximum power resulting from all small antennas within a specified location.
- Require Verizon to notify all households in Rockville of the proposed text amendment at least a month in advance of meetings of the Planning Commission and the Mayor and Council and any other applicable Boards and Commissions.

Thank you for your consideration and help with this issue.

Sincerely,  
Noreen Bryan  
President  
West End Citizens Association  
301-762-1256

**Testimony for the Planning Commission  
11 May 2016  
Proposed Text Amendment for "Small" Cell Antennas**

Good Evening, my name is Noreen Bryan and I live at <sup>207</sup>~~2017~~ S. Washington St. Tonight I will be testifying for the West End Citizen's Association (WECA).

There are three concerns that I would like to raise with you this evening.

- Lack of transparency
- Lack of notification of citizens
- Better scientific and technical information is needed prior to review and decisions by the Planning Commission and the Mayor and Council.

**Lack of Transparency**

The proposed text amendment is written for lawyers not citizens. With its many cross references to various sections in the Zoning Ordinance, it is like putting together a jigsaw puzzle hunting for pieces and trying to figure out the picture that is emerging. Unfortunately, when staff reviewed the proposal they have continued this circuitous cross-referencing which makes it impossible to comprehend their recommendations, as well. This not only makes it impossible to understand, but means that trying to have a conversation about it is extraordinarily difficult because everyone is likely to have a different understanding of the proposal. WECA recommends that no further review of the text amendment be performed until a clear delineation of the provisions of the text amendment be prepared in "man-on-the-street" language. This should include a side-by-side comparison of the proposal and staff's recommendations. Clarity and transparency is essential to reach a valid understanding to the proposal.

**Lack of Notification of Citizens**

From my reading of the proposed text amendment it is my understanding that Verizon Wireless is asking to be able to place antennas in all zones as a permitted use. Only detached single family houses are exempted. Said another way Verizon is asking to put antennas anywhere they choose without anyone knowing. This

proposal affects all citizens in Rockville and therefore city-wide notification should be done. Even though the Zoning Ordinance does not require notification for text amendments, citizens should receive notification when a proposal has consequential impact on them. An article in Rockville Reports is not adequate or timely if hearing dates have already been set by city staff. Personally, I would not be aware of the proposal if I had not received information from Hjarman Cordero, Rockville Resource Coordinator. I am appreciative of his efforts and shared the information with the neighborhood, but that is not sufficient notification. As a neighborhood organization we are happy to partner with the City to share information, but, again, that is not notification. WECA recommends that no further reviews be conducted until citizens receive notification. WECA sent a letter you, the Mayor and Council and the City Manager with this request on May 5<sup>th</sup>. A copy is attached.

### **Better Scientific and Technical Information is Needed**

Better scientific and technical information is needed. There is world-wide concern about the adverse health impacts of radiofrequency and microwave radiation. A paper has been submitted to you by Dr. Ronald Powell in opposition to installation of these cell antennas. He has provided you with a list of current studies performed by leaning authorities regarding the adverse impacts of radiation, particularly on children. The body of scientific information needs to be reviewed by experts so that Rockville does not make a decision blindly without understanding the consequences to the health of its citizens. To my knowledge there is no one on city staff who has the scientific expertise needed to evaluate these studies or the health impact of the proposed text amendment. The appropriate experts should be engaged.

In addition to health concerns there are bonafide safety concerns about where and how these antennas are installed around the city. For example, suppose the antenna is attached to an existing pole and the pole falls over and hurts someone. Who is responsible? Did the installation of the antenna damage the pole or cause it to fall over? Was the pole in poor condition when the antenna was installed and a bad decision was made to install an antenna on the pole? What constrains Verizon from erecting poles or support structures wherever it chooses. These issues of liability and safety need to be investigated. Is it reasonable to allow Verizon to attach antennas without the city having any knowledge of their location and the procedures that will be

followed, etc. Nadia Azumi, WECA Committee Chair on Cell Towers, has provided me with an analysis of the engineering and safety problems that can arise when these antennas are installed. A copy is attached.

Lastly, there are the aesthetic concerns associated with too many antennas and poles installed without a plan or oversight.

WECA recommends that expert scientific and technical information be gathered and reviewed by qualified engineers and scientists before further discussion of the proposal continues. At the very least these antennas should not be installed as a permitted use. A resolution to this effect was adopted by WECA and a copy was sent to you by letter on March 25, 2016. (copy attached).

This rusty old physicist knows that I am not sufficiently knowledgeable to evaluate the technical and scientific aspects of the proposal, but I do know that knowledgeable and qualified scientists and engineers are critically important to you and the Mayor and Council. They are essential to helping you make a decision that protects the health and safety of Rockville's residents.

Thank you for listening and considering WECA's views and recommendations.

## Planning Commission

Members of the Planning Commission, ladies and gentlemen, good evening.

For the record my name is Nadia Azumi, and for the last 25 plus years my family and I reside at 6, Nocturne court .

I am here tonight to strongly oppose the mini cell towers in the Town Center, for many reasons, as well as questions with concerns.

- Why does Verizon need a special zoning and why wasn't the public notified ahead of time, by letters?
- Mini cell towers have stronger radiation than the big ones as they are very close to humans.
- Cell tower companies can increase the power of the cells without informing the public, or the community, is the Planning Commission aware of that?
- 
- In addition, I suggest for a reasonable amended language that restricts any small cell attachment and structure modification that would result in a damaged, removed, or a significantly diminished tree. I think that Rockville should grant the amended language on the grounds that damaged/diminished tree cover would, among other things,
  - 1. Have deleterious effects upon the environment and local quality of life;
  - 2. Adversely impact home values and business profits, which in turn would affect the City's tax base; and
  - 3. Especially in the public rights-of-ways adversely impact pedestrian health.
- Just so you know, Verizon Wirelesses' attorneys may claim your requested amendment would be discriminatory against wireless carriers because Verizon owns some of the utility poles to which current telephone wire lines (i.e. functionally equivalent services) are attached, and the utility pole owners do trim/cut trees. Nevertheless, there is enough pro-consumer/City evidence in preserving trees that the City might find a way to make an amendment work.
- 
- See this paper from the U.S. Forest Service for a long list of reasons:  
<http://www.ufmptoolkit.com/pdf/Benefits-of-Urban-Street-Trees.pdf>
- Finally we came across a document from Verizon Communications Inc, addressed to the United States Securities and Exchange Commission for 10-k Annual Report of 2014, in which it states.

"We are subject to a significant amount of litigation, which could require us to pay significant damage or settlements. Also part of the document adds. 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. Nevertheless there can be no assurance that the cost of compliance with existing or future environmental laws will not be a material adverse effect on us."

I think that you have all received the detailed article that Dr. Powell wrote. He agreed to help without attending, and we spoke at length on these issues.

Thank you,

Nadia Azumi

To Whom It May Concern  
**NOTICE**

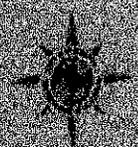
Notice is hereby given that the City has received a request to attach equipment to this pole, as follows:

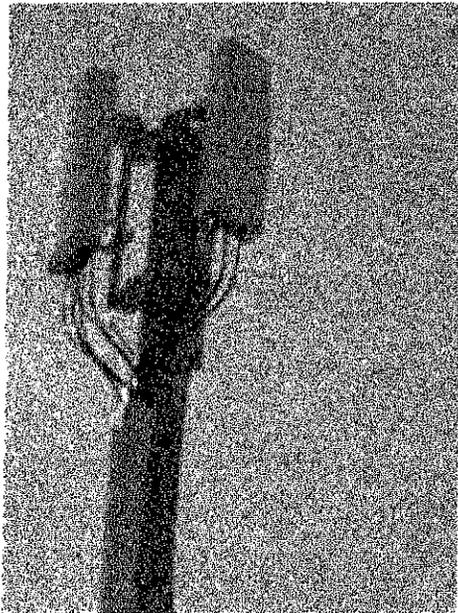
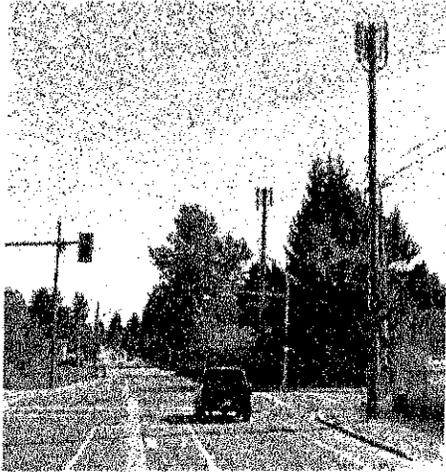
Crown Castle NG Atlantic, LLC (Crown Castle) proposes to install a DAS facility at this location.

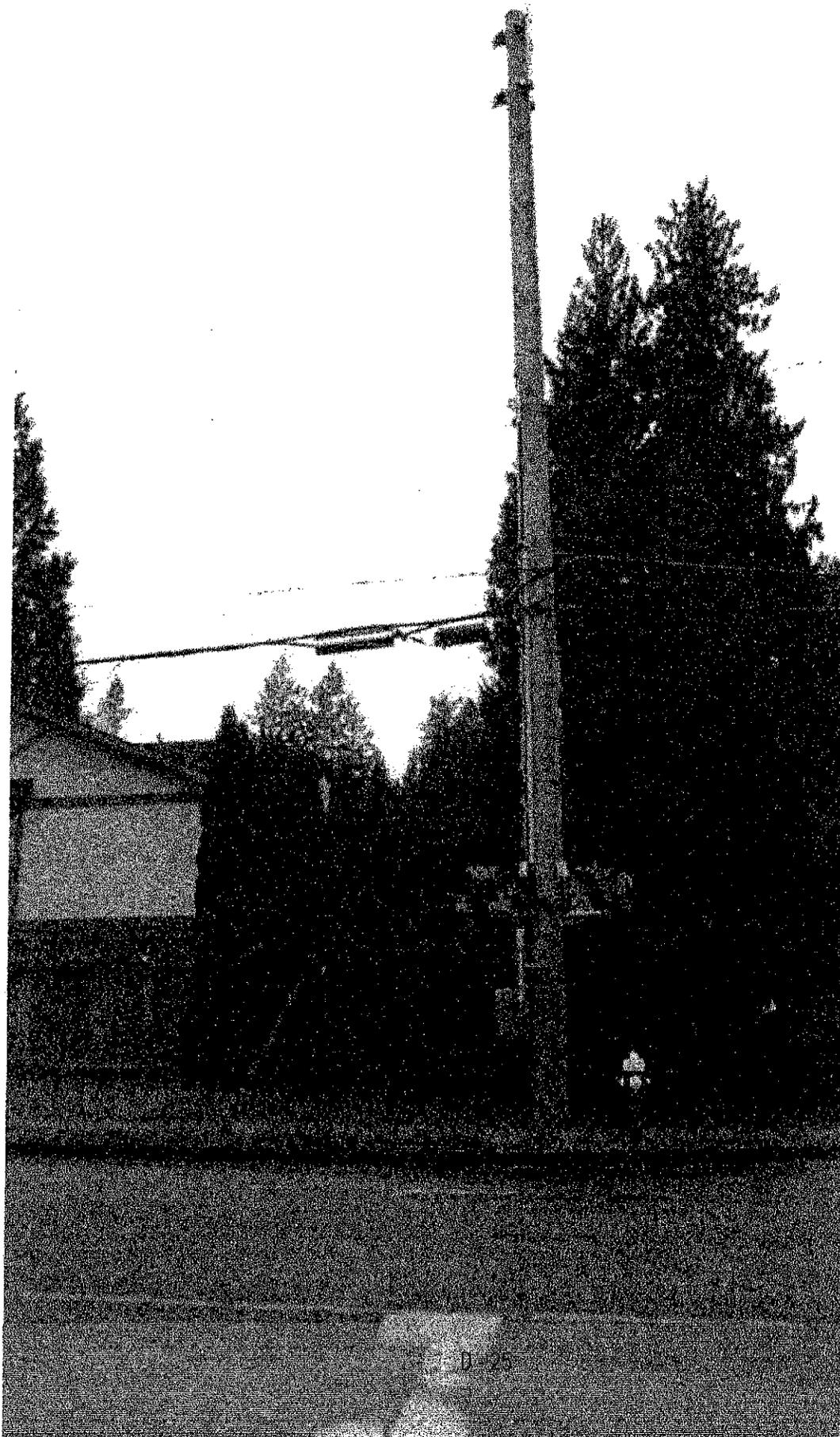
# DBVZW-247

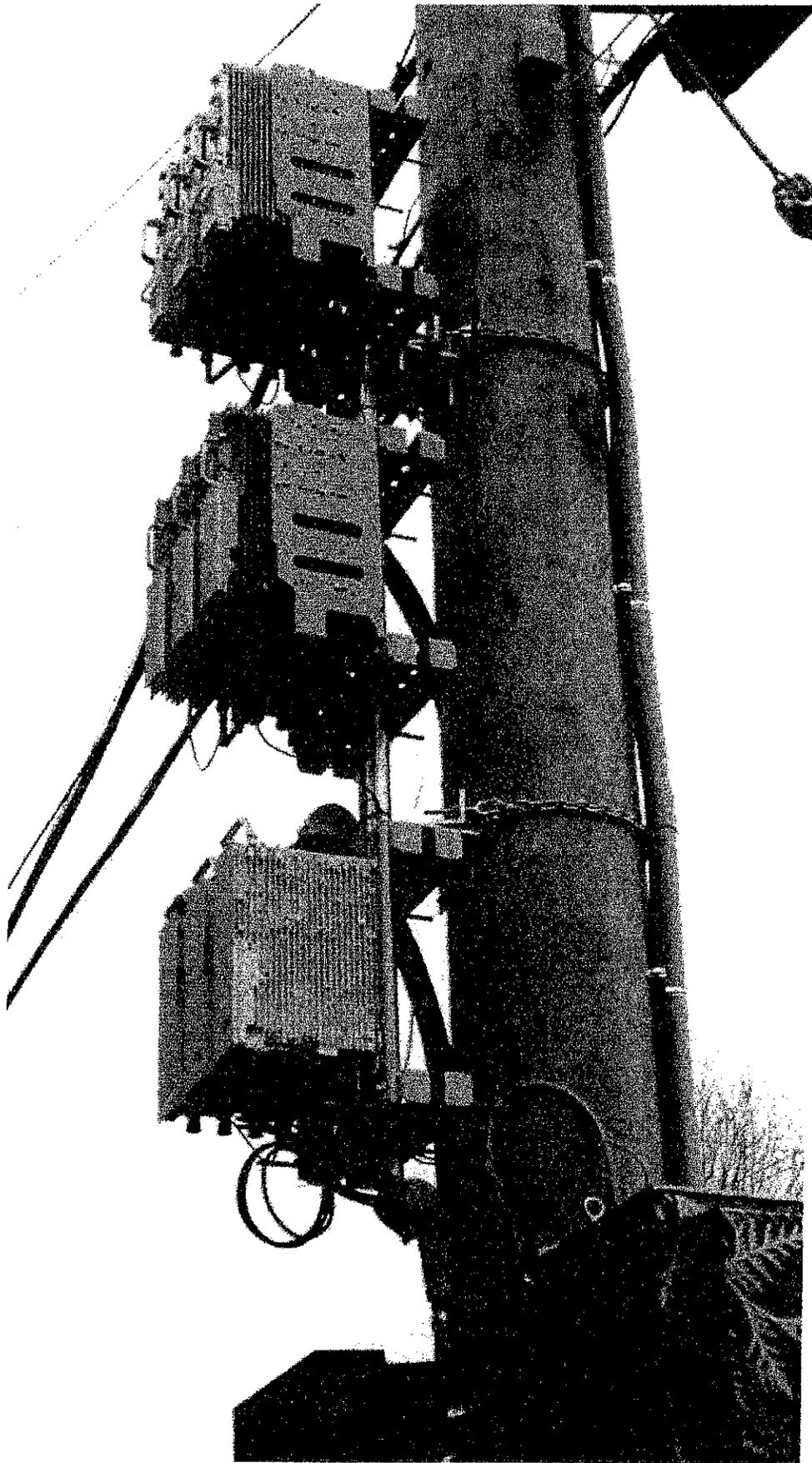
This facility will enable your wireless carrier to deliver faster download speeds and improved access to public safety services like enhanced 911. We will be installing fiber cabling and associated utility and communications equipment. Some existing streetlights and utility poles may need to be replaced with new ones of comparable size and appearance.

For more information, or to provide comment, please contact Eric Tiso in the Department of Planning at either [eric.tiso@baltimorecity.gov](mailto:eric.tiso@baltimorecity.gov) or 410-396-8358.









5 May 2016

City of Rockville  
111 Maryland Avenue  
Rockville, Maryland

Dear Madame Mayor, Members of the City Council and Rockville City Manager:

On Monday, April 25, 2016, I appeared before you at Community Forum to alert you to the fact that Verizon Wireless has proposed a zoning text amendment to allow installation of as many cell antennas as Verizon chooses anywhere in the city without approval of any government body. Only single-family detached residences are exempted. This text amendment would allow Verizon to install the equivalent of an unlimited number of cell tower monopoles in Town Center and along the Rockville Pike. Since these cell antennas have unknown, but potentially adverse safety/health effects and citizens have not been notified, I request that hearings and decision meetings regarding this text amendment be removed from the schedule until credible technical and scientific information can be assembled and citizens have received notification.

Prior to anyone in the public knowing about the proposed text amendment and without seeking approval of the Mayor and Council, city staff scheduled public hearings before the Planning Commission on May 11<sup>th</sup> and before the Mayor and Council on June 6<sup>th</sup>. This appears to have been done without any technical assessment of the impact of the proposed text amendment or scientific investigations. The city needs to assemble essential scientific knowledge to understand or evaluate the impact and potential harm that could result from widespread installation of these antennas on telephone poles, apartments, commercial/office buildings or any other structure that allows the antennas to be 15 feet above the ground. I believe that staff should have notified the public and sought approval from the Mayor and Council before scheduling public hearings. This approach fails to protect the public and prevents citizens from participating because they are not aware of the issue or have insufficient time to understand it. It is not sufficient for the City to use Rockville Reports to communicate with citizens **after** hearings are already scheduled thereby preventing citizens from having time to analyze or discuss the issue.

It is my understanding that the Mayor and Council are allowing these hearings to continue because they have already been advertised. Next Monday, the Mayor and Council have another opportunity to revisit this issue. I strongly recommend that they direct staff:

- to cancel the public hearings;
- to prepare a plan to obtain essential technical, safety and scientific information, subject to the approval of the Mayor and Council; and
- to prepare a plan to notify citizens of the text amendment and the scientific findings.

No further action on the text amendment should be taken until these steps are accomplished.

Thank you for listening and giving consideration to this issue. I believe the recommended steps are tremendously important to the future of Rockville. It is essential to assure that our processes protect the well being of citizens and provide governance of the city in a fair and well-reasoned manner.

Sincerely,

Noreen Bryan  
President, West End Citizen's Association

## Comments Submitted in Strong Opposition to Contemplated Installation of "Small Cell Antennas" in Rockville, MD

May 8, 2016

TO: Rockville City Council

FROM: Ronald M. Powell, Ph.D.  
Montgomery Village, MD  
Background: Ph.D., Applied Physics, Harvard University  
Retired career U.S. Government scientist

Dear Sir or Madam,

According to the "Planning Commission Staff Report: Zoning Text Amendment TXT2016-00244", the City of Rockville is considering wireless industry requests for the installation of small cell antennas. Approving such requests would be immensely unwise for the public health.

### **Please resist the installation of small cell antennas by all means possible to further the public health.**

The reason for resisting the installation of more cell antennas, whether they are cell towers or small cell antennas, is that they all emit electromagnetic fields, in the form of radiofrequency and microwave radiation, that are increasingly being shown to be harmful to human health. Adding more cell antennas further degrades our environment and increases the risk to health of everyone who lives in our community. Scientists and physicians from around the world are increasingly demonstrating that these fields are harmful to human health in multiple ways. See the evidence of this harm, beginning on page 2 of this document.

Do not be intimidated by wireless industry claims that the Telecommunications Act of 1996 prohibits resisting the installation of more cell antennas on health grounds. It is true that this Act is intended to suppress the control of state and local governments over their own environments and to give industry a nearly free hand in locating cell antennas. But that does not mean that yielding to industry pressure for more cell antennas is your only possible response. Rather, activate your legal people to scrutinize the Act for all possible grounds on which you can resist, as other communities in the USA have had to do, until such time as the Act is finally overturned.

Do not be misled by wireless industry claims that cell antennas are safe because they comply with guidelines of the Federal Communications Commission. Those FCC guidelines protect only against radiation levels so high that they threaten to overheat living tissue. Those guidelines DO NOT PROTECT against all possible health effects caused by the radiation, and there are SO MANY of those health effects.

Do not be bribed into accepting more cell antennas by any payments made to the City of Rockville to induce such acceptance. Such inducements are a Faustian bargain, where the City trades the invaluable health and happiness of its community for a comparative pittance.

Know that public awareness about the harm caused by cell radiation is growing, slowly but steadily. As that awareness continues to increase, NO ONE will want to live near cell antennas, work near them, shop near

them, buy property near them, stand near them, or even walk past them, because the radiation that they emit will be highest closest to them, not to mention their appearance. You can imagine what is likely to happen to the value of property located near cell antennas. Unfortunately, making cell antennas less ugly or smaller doesn't make them safer.

If you feel that you do not yet fully understand the health risks presented by cell antennas, and that you need more time to gain that understanding, defer your consideration of the installation of more cell antennas until you have thoroughly investigated those risks by reviewing the work of the international biomedical research community. Do not rely on biased sources that make money by selling products and services that increase the radiation levels in YOUR environment.

The worst mistake that you can make is to proceed with installation now, only to find out later, what an immense mistake you have made. It will cost the City much more to undo that mistake later than to prevent it from occurring now.

## **Evidence of Harm from Exposure to Electromagnetic Fields**

### **International Agency for Research on Cancer (IARC) of the World Health Organization (WHO)**

The World Health Organization, through its International Agency for Research on Cancer, in 2011, classified electromagnetic fields, including those used for cellular communications, as a Class 2B carcinogen (a possible carcinogen). That class of carcinogens includes hundreds of toxic substances like lead, chlordane, and nitrobenzene. Do we really want small cell towers spewing out radiation that is in the same class as these other toxins, right into our community? Do we really want our children walking past them, or standing next to them?

[http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208\\_E.pdf](http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf)

Since 2011, the research supporting a higher risk classification for electromagnetic fields – specifically Class 2A (probable carcinogen) or even Class 1 (known carcinogen) -- has continued to build.

### **International Appeal Signed by the World's Leading Scientists on Health Effects of Electromagnetic Fields**

The world's leading scientists conducting research on the biological effects of the radiation from wireless devices recently issued an appeal to the United Nations and to the World Health Organization to warn the public about the health risks from exposure to the radiation from wireless devices. As of February 10, 2016, 220 scientists from 42 countries have signed that international appeal.

<https://www.emfscientist.org/index.php/emf-scientist-appeal>

The appeal was first introduced in May 2015 and continues to gain support. These scientists seek improved protection of the public from harm from the radiation produced by many wireless sources, including explicitly "cellular and cordless phones and their base stations" among others. Together, these scientists have published over 2000 peer-reviewed research papers on this subject. They state the following:

"Numerous recent scientific publications have shown that EMF [electromagnetic fields] 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 plant and animal life."

### **American Academy of Environmental Medicine**

The American Academy of Environmental Medicine (AAEM), which trains physicians in preparation for Board Certification in Environmental Medicine, states: "The AAEM strongly supports the use of wired Internet connections, and encourages avoidance of radiofrequency such as from WiFi, cellular and mobile phones and towers, and 'smart meters'." AAEM further states that "The peer reviewed, scientific literature demonstrates the correlation between RF [radiofrequency] exposure and neurological, cardiac, and pulmonary disease as well as reproductive and developmental disorders, immune dysfunction, cancer and other health conditions. The evidence is irrefutable."

AAEM, Wireless Radiofrequency Radiation in Schools, November 14, 2013  
<http://www.aaemonline.org/pdf/WiredSchools.pdf>

### **American Academy of Pediatrics**

The American Academy of Pediatrics (AAP), whose 60,000 doctors care for our children, supports the development of more restrictive standards for radiofrequency radiation exposure that would better protect the public, particularly the children. The AAP, in a letter to the Federal Communications Commission (FCC) and the Food and Drug Administration (FDA), dated August 29, 2013, states that

"Children are not little adults and are disproportionately impacted by all environmental exposures, including cell phone radiation. Current FCC standards do not account for the unique vulnerability and use patterns specific to pregnant women and children. It is essential that any new standard for cell phones or other wireless devices be based on protecting the youngest and most vulnerable populations to ensure they are safeguarded throughout their lifetimes."

<http://apps.fcc.gov/ecfs/document/view?id=7520941318>

### **Environmental & Human Health, Inc. (Yale University Faculty)**

A detailed study of the health implications of cellular radiation was published in 2012 by Environmental & Human Health, Inc. This study was funded by a source with no ties to the wireless industry. Nearly all of the principals of this organization are Yale University faculty members, with M.D., Ph.D. or M.P.H. degrees and distinguished backgrounds in multiple fields of relevance including: public health, pediatrics, oncology, toxicology, environmental epidemiology, environmental health, environmental medicine, occupational medicine, obstetrics, gynecology, reproductive sciences, and risk analysis and environmental policy.

In this study of health effects from cellular radiation, the scientists and doctors describe cancer (particularly glioma, a form of brain cancer), effects on the nervous system (including memory, learning, and cognition), effects on reproductive health, genotoxic and DNA damage, and neurodevelopmental and behavioral effects.

John Wargo, Ph.D., Hugh S. Taylor, M.D., and other professionals, The Cell Phone Problem, Cell Phones: Technology, Exposures, Health Effects (2012). See especially Summary, Health Effects, beginning on page 57.

[http://www.ehhi.org/reports/cellphones/cellphone\\_report\\_EHHI\\_Feb2012.pdf](http://www.ehhi.org/reports/cellphones/cellphone_report_EHHI_Feb2012.pdf)

## **Exposure Guidelines of the Federal Communications Commission Do NOT Protect Against All Health Effects**

Do not be impressed when the vendors of small cell towers cite their compliance with the exposure guidelines of the Federal Communications Commission (FCC). The FCC exposure guidelines were designed to protect against so-called "thermal" effects of electromagnetic fields, that is, against effects caused by heating the body too much. Those exposure guidelines were not designed to protect against ALL biological effects (which include non-thermal effects that occur at levels of radiation well below thermal levels).

The FCC exposure guidelines, which are called the Maximum Permissible Exposure (MPE) guidelines, are based on work done in 1986, or 30 years ago, and have not been significantly changed since. Back then, nearly all of the wireless devices that we use today did not exist. Since then the international biomedical research community has published thousands of studies that have added to our knowledge about the biological effects of exposure to electromagnetic fields from modern wireless digital devices. At this point, we know more than enough to take precautionary action against increasing the exposure of the public to harmful radiation from wireless digital devices. Here is what three Federal agencies, including the FCC itself, have said about the exposure guidelines of the Federal Communications Commission.

### **Federal Communications Commission**

The FCC makes no claim that the FCC guidelines constitute a federally developed national standard for safe levels. In fact, the FCC, on its web site, explicitly indicates the contrary:

"While there is no federally developed national standard for safe levels of exposure to radiofrequency (RF) energy, many federal agencies have addressed this important issue."

Federal Communications Commission, "Wireless Devices and Health Concerns", first section "Current Exposure Limits", first sentence.

<https://www.fcc.gov/consumers/guides/wireless-devices-and-health-concerns>

### **U.S. Environmental Protection Agency**

The limitations of the thermal exposure guidelines of the FCC, the IEEE, and the ICNIRP, were described by the Environmental Protection Agency (EPA) in 2002 as follows:

"The FCC's current exposure guidelines, as well as those of the Institute of Electrical and Electronics Engineers (IEEE) and the International Commission on Non-ionizing Radiation Protection [ICNIRP], are thermally based, and do not apply to chronic, nonthermal exposure situations.... The FCC's exposure guideline is considered protective of effects arising from a thermal mechanism but not from all possible mechanisms. Therefore, the generalization by many that the guidelines protect human beings from harm by any or all mechanisms is not justified."

"Federal health and safety agencies have not yet developed policies concerning possible risk from long term, nonthermal exposures. When developing exposure standards for other physical agents such as toxic substances, health risk uncertainties, with emphasis given to sensitive populations, are often considered. Incorporating information on exposure scenarios involving repeated short duration/nonthermal exposures that may continue over very long periods of time (years), with an

exposed population that includes children, the elderly, and people with various debilitating physical and medical conditions, could be beneficial in delineating appropriate protective exposure guidelines.”

Summing up, the EPA makes the following points in the above statements: (1) the FCC thermal exposure guidelines do NOT protect against all harm, only the harm caused by too much heating; (2) the FCC thermal exposure guidelines do not apply to “chronic, nonthermal exposure”, which is the type of exposure generated by cell towers; and (3) when new FCC guidelines are developed for chronic nonthermal exposures, they must accommodate children, the elderly, and other high risk groups because those groups are not accommodated now.

Letter from Frank Marcinowski, Director, Radiation Protection Division, EPA, and Norbert Hankin, Center for Science and Risk Assessment, Radiation Protection Division, EPA, to Janet Newton, President, the EMR Network, with copies to the FCC and the IEEE, and dated July 16, 2002.  
[http://www.emrpolicy.org/litigation/case\\_law/docs/noi\\_epa\\_response.pdf](http://www.emrpolicy.org/litigation/case_law/docs/noi_epa_response.pdf)

### **U.S. Department of the Interior**

The limitations of the FCC thermal exposure guidelines were described in a totally different way by the U.S. Department of the Interior (Fish and Wildlife Service) in 2014. The Interior Department was motivated principally by multiple adverse effects of electromagnetic radiation on the health, and the life, of birds, particularly in connection with cell towers.

“However, 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.”

Letter from Willie R. Taylor, Director, Office of Environmental Policy and Compliance, Office of the Secretary, United States Department of the Interior to Mr. Eli Veenendaal, National Telecommunications and Information Administration, U.S. Department of Commerce, dated February 7, 2014.  
[https://www.ntia.doc.gov/files/ntia/us\\_doi\\_comments.pdf](https://www.ntia.doc.gov/files/ntia/us_doi_comments.pdf)

### **Comparison of the FCC exposure guidelines to those of other countries and jurisdictions**

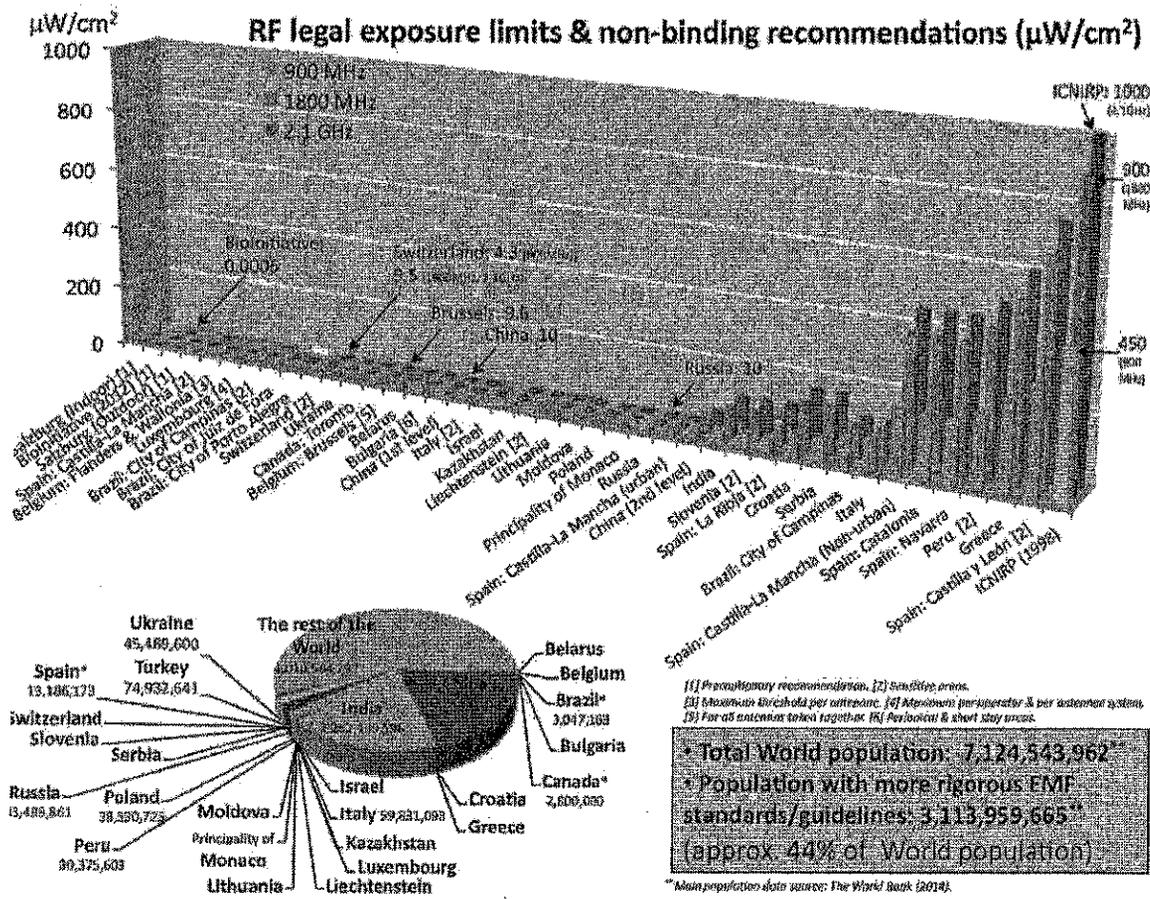
The graph, in Figure 1 on the following page, compares the exposure guidelines of many countries and some cities throughout the world.<sup>1</sup> The highest, that is the most permissive and thus the least protective, of the exposure guidelines shown in Figure 1 are those that of the “ICNIRP”. The ICNIRP is the International Commission on Non-Ionizing Radiation Protection, which is a private organization in Germany. As noted in the insert box in Figure 1, approximately 44 percent of the world’s population now lives in locations with “more rigorous” (that is, lower, and thus more protective) guidelines than those of the ICNIRP.

Figure 1 does not show the FCC guidelines, so I have shown them, in comparison to the ICNIRP guidelines, in Table 1 on the next page. Note that the FCC guidelines are equal to, or higher than, the ICNIRP guidelines at all three frequencies covered by Figure 1 (2.1 GHz, 1800 GHz, and 900 GHz). Therefore, the FCC’s outdated

<sup>1</sup> Figure 1 was prepared by Isaac Jamieson, Ph.D. of the United Kingdom, and was presented by Erica Mallery-Blythe, M.D., also of the United Kingdom, in Electromagnetic Hypersensitivity, A Summary by Dr Erica Mallery-Blythe, Working Draft, Version 1, December 2014, page 6 (<http://www.electronicssilent.spring.com/wp-content/uploads/2014/01/Dr-Erica-Mallery-Blythe-EHS-A-Summary-Working-Draft-Version-1-Dec-2014-for-EESC-Brussels.pdf>)<sup>2</sup> Dr. Jamieson’s website is (<http://www.biosustainabledesign.org/>).

guidelines provide less protection, and in nearly all cases FAR LESS protection, of U.S. citizens than the protection provided for approximately 44 percent of the world's population.

Figure 1



© Dr Isaac Jamieson 2014

By Dr Erica Mallery-Blythe: "EHS A Summary" Dec 2014 Working Draft Version 1

Page 6

Table 1

Frequency		Exposure Guideline/Limit ( $\mu\text{W}/\text{cm}^2$ ) microwatts per square centimeter		Comparison
MHz (megahertz)	GHz (gigahertz)	ICNIRP	FCC <sup>2</sup>	
2100	2.1	1000	1000	FCC = ICNIRP
1800	1.8	900	1000	FCC > ICNIRP
900	0.9	450	600	FCC > ICNIRP

**Can we expect more protective exposure guidelines from the FCC in the near future?**

In a word: No. The reason is that the FCC is too tightly controlled by the wireless industries that the FCC is supposed to regulate. Sadly for all U.S. residents, the FCC has acted in partnership with the wireless industries by permitting wireless radiation levels far higher than the biomedical research literature indicates are causing

<sup>2</sup> Federal Communications Commission, Office of Engineering & Technology, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, OET Bulletin 65, Edition 97-01, Appendix A, Summary of RF Exposure Guidelines, Table 1, Limits for Maximum Permissible Exposure, Part (B), Limits for General Population/Uncontrolled Exposure, page 67, August 1997 ([https://transition.fcc.gov/Bureaus/Engineering\\_Technology/Documents/bulletins/oet65/oet65.pdf](https://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65.pdf)).

biological effects. The success of the wireless industries in capturing the FCC, the committees in the U.S. Congress that oversee the FCC, and the Executive Branch is detailed in a new monograph from the Center for Ethics at Harvard University.<sup>3</sup> As an example of that capture, the President, in 2013, appointed, as head of the FCC, the former head of the CTIA - The Wireless Association, which is the major lobbying organization for the wireless industries. This, of course, is the infamous "revolving door".

## Implication and Conclusion

The implication is of the above information is this: If the City of Rockville wants to protect its residents from exposure to harmful levels of electromagnetic radiation, it will have to act on its own. The good news is that the City of Rockville can do so.

Please resist, by all means possible, the installation of any further cell antennas in Rockville, whether small or large. They degrade our environment by increasing the risk to the health of everyone who lives in our community.

## Who am I?

I am a retired career U.S. Government scientist (Ph.D., Applied Physics, Harvard University, 1975). During my Government career, I worked for the Executive Office of the President, the National Science Foundation, and the National Institute of Standards and Technology in Gaithersburg. For those organizations, respectively, I addressed Federal research and development program evaluation, energy policy research, and measurement development in support of the electronics and electrical-equipment industries and the biomedical research community. I currently interact with other scientists and with physicians around the world on the impact of the environment – including the radiofrequency/microwave environment – on human health.

I have been a resident of the Montgomery Village/Gaithersburg area since 1979. Rockville is an extremely important and supportive community for all of us who live in this area. I want to continue to visit and to shop in Rockville, knowing that the City of Rockville has made every possible effort to assure that it is a safe place for everyone.

Thank you for your attention,

Regards,

Ronald M. Powell, Ph.D.  
20316 Highland Hall Drive  
Montgomery Village, MD 20886-4007  
E-mail: [ronpowell@verizon.net](mailto:ronpowell@verizon.net)  
Tel: (301) 926-7568

<sup>3</sup> Norm Alster, Captured Agency: How the Federal Communications Commission is Dominated by the Industries It Presumably Regulates, 2015 (<http://ethics.harvard.edu/news/new-e-books-edmond-j-safra-research-lab>).

Exhibit No. 9  
 TXT2016-00244  
 Small Cell Wireless Antennas

LAW OFFICES OF M. GREGG DIAMOND, P.C.

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 THE DISTRICT OF COLUMBIA  
 +PRACTICING IN VIRGINIA AND  
 THE DISTRICT OF COLUMBIA

WRITER'S DIRECT DIAL NUMBER  
 (240) 246-1624  
 EMAIL: Cathy.Borten@mgd-law.com

May 10, 2016

City of Rockville Planning Commission  
 Rockville City Hall  
 111 Maryland Avenue  
 Rockville, MD 20850

Re: Zoning Text Amendment  
 Chapter 25, Article 3, Section 25.03.02 and  
 Chapter 25, Article 9, Section 25.09.08

To the Planning Commission:

We represent Verizon Wireless in connection with the proposed Zoning Text Amendment of Chapter 25, Article 3, Section 25.03.02 and Chapter 25, Article 9, Section 25.09.08, specifically the portions of the proposed Zoning Text Amendment addressing small cell antennas. On behalf of Verizon Wireless, we ask that in its consideration of the proposed Zoning Text Amendment, the Planning Commission and Mayor and Council consider the following modifications to the proposed language in order to provide clarity, consistency and flexibility going forward. The suggested modifications to the text, as staff proposes to revise it, are set out below.

*Chapter 25, Article 3, Section 02 – revision to definition of “Antenna, small cell.”*

As originally proposed, a small cell antenna would have the standard dimensions of 4 ½ feet by 2 feet. This is consistent with what was recently adopted by the City of Gaithersburg. Staff has recommended reducing the height to 3 feet, citing an interest in being consistent with the Montgomery County small cell ordinance. It is important to note that the revisions to the Montgomery County Code were originally proposed over 2 years ago. The technology has changed at a rapid clip since that time, and the industry is learning that the 3 foot max height is not workable.

Verizon Wireless proposes that the definition of “Antenna, small cell” be approved with the 4 ½ foot height as originally proposed, and with a more comprehensive list of antenna types, to read as follows (proposed revisions in ***bold italics***):

*City of Rockville Planning Commission*

*May 10, 2016*

*Page 2*

A wireless communication service antenna, whether omni-directional or panel antenna, ***not to exceed 4.5 feet in height and 2 feet in width, or a canister antenna not to exceed 4.5 cubic feet in volume***, used to collect, receive, transmit, or radiate electromagnetic waves.

This further revised language accomplishes several important things.

Functionally, antennas used in small cell installations come in sizes of 2, such that, after a 1 foot antenna, they come in 2 foot, 4 foot, etc. Without a 3 foot antenna to install, a 3 foot height limit only allows a 2 foot antenna in actuality. A 2 foot antenna is simply not as effective for achieving the results intended by small cell installations.

In addition, the use of the slightly larger, 4 foot antenna provides Verizon Wireless with greater control over the signal. That control is absolutely essential to reducing possible interference, and reduced interference allows for fewer actual sites. As a result, a slightly larger antenna is more effective and allows for fewer such sites in the City. The additional ½ foot requested is to allow for connections between equipment and antennas. With regard to being consistent with Montgomery County, note that Verizon Wireless plans to file a text amendment in Montgomery County seeking an increase of that 3 foot height max. Again, this would bring the County code current with what's being done in the City of Gaithersburg, and with the landscape of the technology as it exists today.

**Chapter 25, Article 9, Section 08(e)2(d) – addition of language**

In this section, Staff has recommended a tightening up of the language as it relates to residential zoning. As proposed by staff, in a residential zone small cell antennas could only be placed on an existing nonresidential building. As drafted by staff, the exception would only apply to buildings specifically. However, small cells can be creatively installed on other non-residential structures such as light poles. Verizon Wireless proposes to add language (as shown in ***bold italics*** below) to acknowledge the issue of easements, and to allow small cell antennas in residential zones to be located on an existing OR REPLACEMENT non-residential building OR STRUCTURE, to read as follows:

***With the exception of land covered by a utility easement***, small cell antennas and support equipment are not permitted to be located on any lot or parcel in a residential zone occupied by a single unit detached, semi-detached, single family attached, or townhouse dwelling or on any accessory building or structure associated with the dwelling. In addition, in a residential zone, small cell antennas can only be located on ***a new, an existing or replacement nonresidential building or structure.***

*City of Rockville Planning Commission  
May 10, 2016  
Page 3*

Note that this is not to allow placement on residential buildings. In addition, this language would allow for small cell antennas to be installed on new, existing or replacement light poles that have been structurally strengthened to accommodate the installation. Again, the intent here is to reflect what's functionally possible, while keeping the intent of the pertinent sections intact.

We welcome the opportunity to provide comment on Staff's proposed revisions to the proposed Zoning Text Amendment. Overall, the proposed text amendment is a positive step in meeting the changing technologies and practical applications in the wireless telecommunications arena. With the modifications to the Amendment suggested here, the City will be better poised to meet those needs with the greatest efficiency and flexibility. Thank you for your consideration.

Sincerely,



Cathy G. Borten  
Counsel for Verizon Wireless

cc: Deane Mellander  
David Reinauer  
Jose Espino  
Mike Weiland  
Stephanie Petway  
M.G. Diamond, Esq.



ExteNet Systems, Inc.  
3030 Warrenville Road, Suite 340  
Lisle, IL 60532  
Phone: (630) 505-3800  
Fax: (630) 577-1332  
www.extenetsystems.com

June 15, 2016

Mayor and City Council of Rockville  
City of Rockville Planning Commission  
111 Maryland Avenue  
Rockville, MD 20850

To the Mayor, City Council and Planning Commission:

I have reviewed the proposed Zoning Text Amendment of Chapter 25, Articles 3 and 9, proposed by Cellco Partnership, d/b/a Verizon Wireless, as it relates to the installation of small cell wireless facilities and ask that you consider this letter as general support for the text amendment.

Sincerely,

A handwritten signature in black ink, appearing to read "Tamara Slade", written over a horizontal line.

Tamara Slade  
Director, External Relations

**Nadia Azumi**

---

**From:** Larry Giammo [larry@larrygiammo.com]  
**Sent:** Tuesday, June 21, 2016 5:17 PM  
**To:** planning.commission@rockvillemd.gov  
**Cc:** Nadia Azumi; Andrew Sellman (sellmana@verizon.net); Jane Pontius; Dennis Cain; Dennis Cain (cain.df@gmail.com); Jen Timmick (jentimmick@gmail.com); Noreen Bryan (noreen1945@yahoo.com); Melanie Zaletsky (melanie-zaletsky@stanfordalumni.org)  
**Subject:** Zoning Text Amendment TXT2016-244 - West End Citizen's Association (WECA)  
**Importance:** High

Planning Commissioners,

I am writing in regard to Zoning Text Amendment TXT2016-244 on behalf of the West End Citizen's Association, as the association's president. We have a number of significant concerns about what has been proposed, especially in regard to what could be installed in public rights-of-way in residential neighborhoods.

We looked at this proposed text amendment from the perspective of "what's the worst that could happen?" if it were adopted. As you appreciate, what the applicant for this text amendment says they would or would not do is irrelevant. The text amendment opens up possibilities that any telecom provider in the future could decide to push to the limit.

As such, here are our concerns, along with suggested modifications to address some of those concerns:

1. Antennas could be as large as 2' X 4.5'. For aesthetic reasons, this is too large if installed in front of someone's home. Even 2' X 3' is arguably too large for a residential neighborhood. What is the smallest size for these antennas that is currently being deployed anywhere? And, what is their maximum depth (in addition to height and width)? There should be a depth limit as well.
2. The Board of Appeals can grant a size waiver with no limit on maximum size. There should be a specific size limit. And, there are no criteria for the Board of Appeals to use to determine whether or not to grant a requested waiver, or for how much of a size increase. Without objective criteria, the Board of Appeals would have no legally defensible basis for not granting any/all size waivers that are requested.
3. Antennas could be within 15 feet of ground level. For aesthetic reasons, this is too low for a residential neighborhood. They should be at least 25 feet off the ground, if not 30 feet.
4. The maximum size of equipment enclosures would be up to 36 square feet horizontally and up to 5 feet tall. This could mean a 6' X 6' enclosure that is 5' high. That's nearly the size of a Smart Car. That's far too large to be directly in front of someone's house. You could also end up with a long, rectangular enclosure that is 18' long, 2' wide and 5' high. Imagine that in your front yard. There should be a maximum width, a maximum depth, and a maximum height. To resolve these concerns, for ground-installed equipment enclosures, how about size limits of 2 feet wide, 2 feet deep and 3 feet high? What is the smallest size ground-installed equipment enclosure that is currently being deployed anywhere?
5. Equipment enclosures could be mounted on poles and the maximum size would be the same as if they were on the ground (36 square feet horizontally and 5 feet tall). So, that would be 180 cubic feet of volume – stuck up in the air on the side of a pole. That would be visually hideous. The maximum size of what could be mounted on a pole should be significantly less than what could be installed on the ground. And, the equipment enclosures should be shaped so they're as flush to the pole as possible, so they don't literally stick out like a sore thumb. How about a maximum volume for pole-mounted equipment enclosures of 3 cubic feet plus the requirement that they cannot protrude from the side of the pole by more than 1 foot? What is the smallest size, most flush to the pole, pole-mounted equipment enclosure that is currently being deployed anywhere?
6. New poles would be allowed in residential neighborhoods that have underground utilities (so, no existing poles to mount antennas or equipment enclosures on). City staff indicate these new poles could be as high as the height limit of the residential neighborhood. That would be 35 feet in single family residential zones

and up to 75 in residential medium density zones. That's far too tall. How about a height limit of 25 or 30 feet on any/all new poles?

7. There would be no limit to the number of antennas, equipment enclosures or new poles in the same proximity. Any home owner could theoretically end up with an infinite number of each of these in the public right-of-way directly in front of their property. There needs to be an explicit and strict proximity limit, designed to ensure that a) any such equipment is spread out evenly over a wide area, and, more critically, b) any one property isn't visually impacted by more than one of each type of equipment. So, how about, in residential neighborhoods, no more than 1 antenna or 1 equipment enclosure within any 300 foot radius, and no more than 1 new pole within any 1,000 foot radius?
8. There would be no requirement that antennas, equipment enclosures or poles that are no longer in use be removed. And, the City government would have no means to be aware of or track this. These issues should be addressed, otherwise there is the very real risk of outdated, unused equipment left to linger indefinitely.
9. *Most concerning for us, telecom providers would be able to install antennas, equipment enclosures and, in some case, new poles in public rights-of-way in residential neighborhoods by right.* Residents would have no input on where any new antennas, equipment enclosures or poles would be located. There would be no public process. *Most fundamentally, residential neighborhoods should be a location of last resort for this type of equipment.*

On this last point, we have shared with City staff, based on only a few minutes of cursory research, how other jurisdictions (e.g. Portland, OR) have apparently adopted a more assertive and participatory regulatory approach, to include: a) a strict tier system whereby major arteries must be considered first and residential streets last for cellular communications equipment (*with the burden on a telecom provider to prove that they need to put equipment in the right-of-way of a lower-tier street rather than any nearby higher-tier streets*), and b) a public process in which residents provide input and feedback on any proposed location before any decision is made.

Obviously, there is a steadily growing demand for cellular bandwidth for telecom companies and their customers. The question is how to balance providing that with minimizing potential negative impacts on home owners and residents. The negative impacts of the proposed text amendment could be significant. Verizon's proposed text amendment does everything to give telecom providers carte blanche to basically do whatever they'd like and does nothing to protect home owners' and residents' interests.

One final thought: The City government needs to be proactive on this. We respectfully request that before making a recommendation on this to the Mayor and Council, you ask staff to systematically research/identify best practices for regulating small cell equipment – *that are premised on strongly protecting residents' interests and giving residents a voice in the location of equipment in residential neighborhoods* – that the City might want to proactively adopt, rather than reacting to proposed text amendments, such as this one, that are crafted to maximize telecom providers' interests.

Thank you for your consideration.

Larry Giammo

*PS – Please add this email to the public record on this matter. Nadia Azumi, WECA chair on this issue, plans to speak on this application at the meeting on Wed, Jun 22. She will be speaking on behalf of WECA. Thank you.*

Larry Giammo

President, West End Citizen's Association (WECA)

[larry@larrygiammo.com](mailto:larry@larrygiammo.com)

301-213-5678

Figure 4: Large DAS Antenna for Multiple Frequency Bands



As with conventional cell towers, we have seen individual DAS antenna locations become crowded with equipment as multiple wireless carriers deploy their own DAS antennas on the same well-situated poles.

In our experience, DAS installations also typically replace or expand the utility pole and add cabinets on the pole below the antennas. Fiber-optic cable attached to the utility poles connects the nodes back to the headend.

In underground areas, we have seen surface-mounted cabinets and underground vaults used instead of pole-mounted cabinets. Sometimes node equipment is concealed in stealth structures such as a fake rock. In those installations, the fiber-optic cable is installed underground.

#### Small Cell Technology

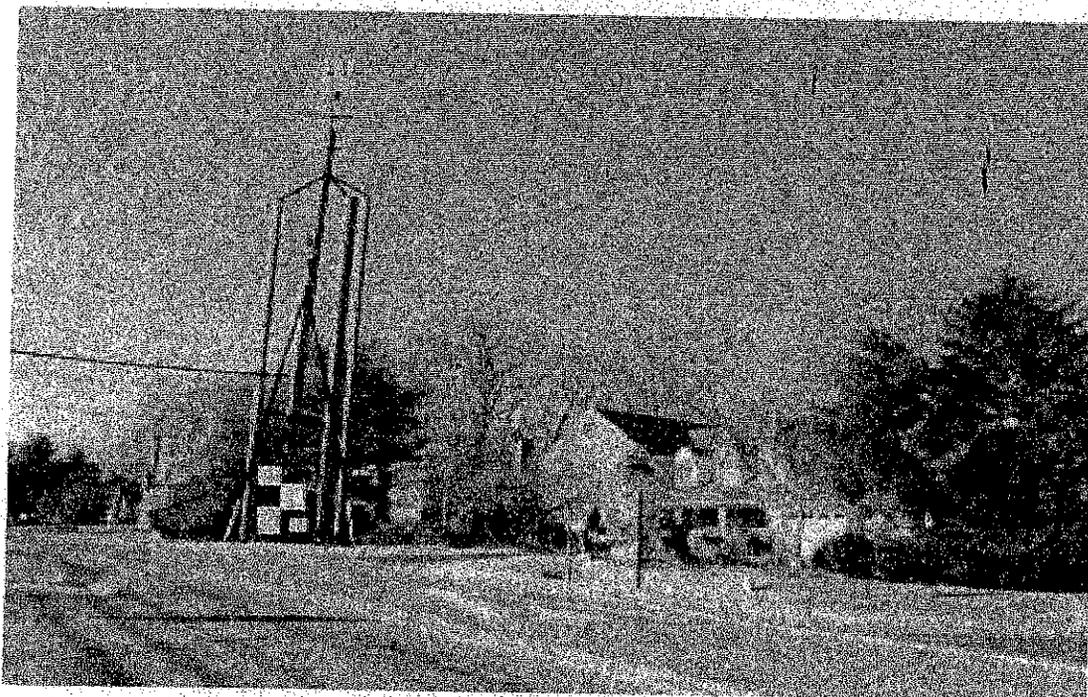
Small cell (also called microcell or picocell) is another new technology that wireless providers are using to add or improve service. Relative to DAS, small cells are even earlier in their

Figure 10: Potential Impact of Uniform Rule, Case 5 – Residential Neighborhood



It is useful to consider the impact of adding 20 feet to ascertain the impact of this type of modification on the structure. We provide in Figure 11 a simulation of adding antennas and the required reinforcing structures and cabinets to the pole in Figure 10. It is clear that a structure that is barely acceptable in this residential setting becomes outrageously large, because in this setting 20 feet is not a minor modification.

Figure 11: Simulated Addition of Antennas and Reinforcing Structure to Case 5 – Residential Neighborhood





June 21, 2016

City of Rockville, MD  
111 Maryland Avenue  
Rockville, Maryland 20850

**RE: Zoning Text Amendment  
Chapter 25, Article 3, Section 25.03.02, entitled "Definitions" and Chapter 25, Article 9,  
Section 25.09.08, entitled "Wireless Communication Facility"**

To the Mayor, City Council, and Planning Commission

T-Mobile has reviewed the proposed changes recommended in the Zoning Text Amendment submitted by Verizon Wireless in reference to small cell facilities. T-Mobile is in support of the suggested changes.

Sincerely,

A handwritten signature in black ink, appearing to read 'B. Bellotte'.

Brendan Bellotte  
Manager, Engineering Development  
T-Mobile  
12050 Baltimore Ave  
Beltsville, MD 20705

T-Mobile USA, Inc.  
Office: (240) 264-8600  
Fax: (240) 264-8610  
12050 Baltimore Avenue  
Beltsville, MD 20705

**Deane Mellander**

---

**From:** Andrew Gunning  
**Sent:** Wednesday, June 22, 2016 12:37 PM  
**To:** Deane Mellander  
**Subject:** FW: Proposed "small cell" zoning change  
**Attachments:** 20160622\_085606-1.jpg

For the record.

---

**From:** Laura Rhodes [mailto:LKR@lkrhodeslaw.com]  
**Sent:** Wednesday, June 22, 2016 9:06 AM  
**To:** Planning Commission <Planning.Commission@rockvillemd.gov>  
**Subject:** Proposed "small cell" zoning change

To The Planning Board -

I urge you to minimize any leeway in the additions of these mini-towers to our neighborhoods. Many are extremely unsightly and will harm the "green" feel of the area.

I've attached a photo of the view out my 1st floor picture window on Harrington. Plenty unsightly already, wouldn't you say? Twelve wires (at least) coming and going, in addition to the boxes, tubes and old milk can (!) attached.

Thank you,  
Laura Kelsey Rhodes

LAURA KELSEY RHODES, LLC  
Sent from my mobile phone.

**Deane Mellander**

---

**From:** Andrew Gunning  
**Sent:** Monday, June 27, 2016 8:44 AM  
**To:** Deane Mellander  
**Subject:** FW: Wireless Communications Zoning Ordinance

For the record.

**From:** Michael Higgs [mailto:mightyterp@gmail.com]  
**Sent:** Saturday, June 25, 2016 8:42 AM  
**To:** Planning Commission <Planning.Commission@rockvillemd.gov>  
**Cc:** hungerfordcivic@yahoogroups.com  
**Subject:** Wireless Communications Zoning Ordinance

Greetings, my name is Michael Higgs, and for 18+ years I practiced law before the Federal Communications Commission. I have represented dozens of state and municipal governments in matters concerning wireless telecom siting and zoning. I am also a long-time resident of the city of Rockville, and I have two children in elementary school.

Wireless communications have progressed far beyond a "luxury" in today's society; it has become an economic necessity. Ubiquitous indoor wireless coverage provides innumerable societal benefits that extend far beyond what some consider to be detrimental to the "aesthetics" of their neighborhood. Many studies have concluded that robust wireless coverage increases property values as the hyper-connected millennial generation become homeowners themselves. In my experience, long-time residents might take notice of new wireless infrastructure placements, but prospective homebuyers and renters almost never notice them.

Much of the opposition to these new proposed zoning regulations stem from veiled concerns over negative health effects. I caution the City that under Section 337(c) of the Communications Act, it is unlawful for any municipality to consider potential health effects of any wireless infrastructure application, as that remains the purview of the federal government. Additionally, no municipality may act in such a manner as to prohibit the provision of personal wireless services. Given the shrinking size of cells in today's network architecture (promoting the efficient reuse of scarce radio spectrum) and reduced power of these cells as they are placed closer to the ground and the receivers, prohibiting new deployments in residential areas will effectively prohibit the provision of personal wireless services to some residents.

I urge the City of Rockville to work with the carriers to craft common sense zoning regulations that promote the provision of robust wireless telecommunications coverage in our neighborhoods. We anchor the "270 Technology Corridor"; we should not erect artificial barriers to progress based on bad science or overwrought fears of small antennas causing neighborhood blight.

Very truly yours,

Michael Higgs, Esq.

**Deane Mellander**

---

**From:** Andrew Gunning  
**Sent:** Monday, June 27, 2016 8:46 AM  
**To:** Deane Mellander  
**Subject:** FW: small cell antennas

For the record.

---

**From:** andrewkass@comcast.net [mailto:andrewkass@comcast.net]  
**Sent:** Sunday, June 26, 2016 1:52 PM  
**To:** Planning Commission <Planning.Commission@rockvillemd.gov>  
**Subject:** small cell antennas

Dear Planning Commission,

My name is Andrew Kass and I live at 816 Cabin John Parkway (20852).

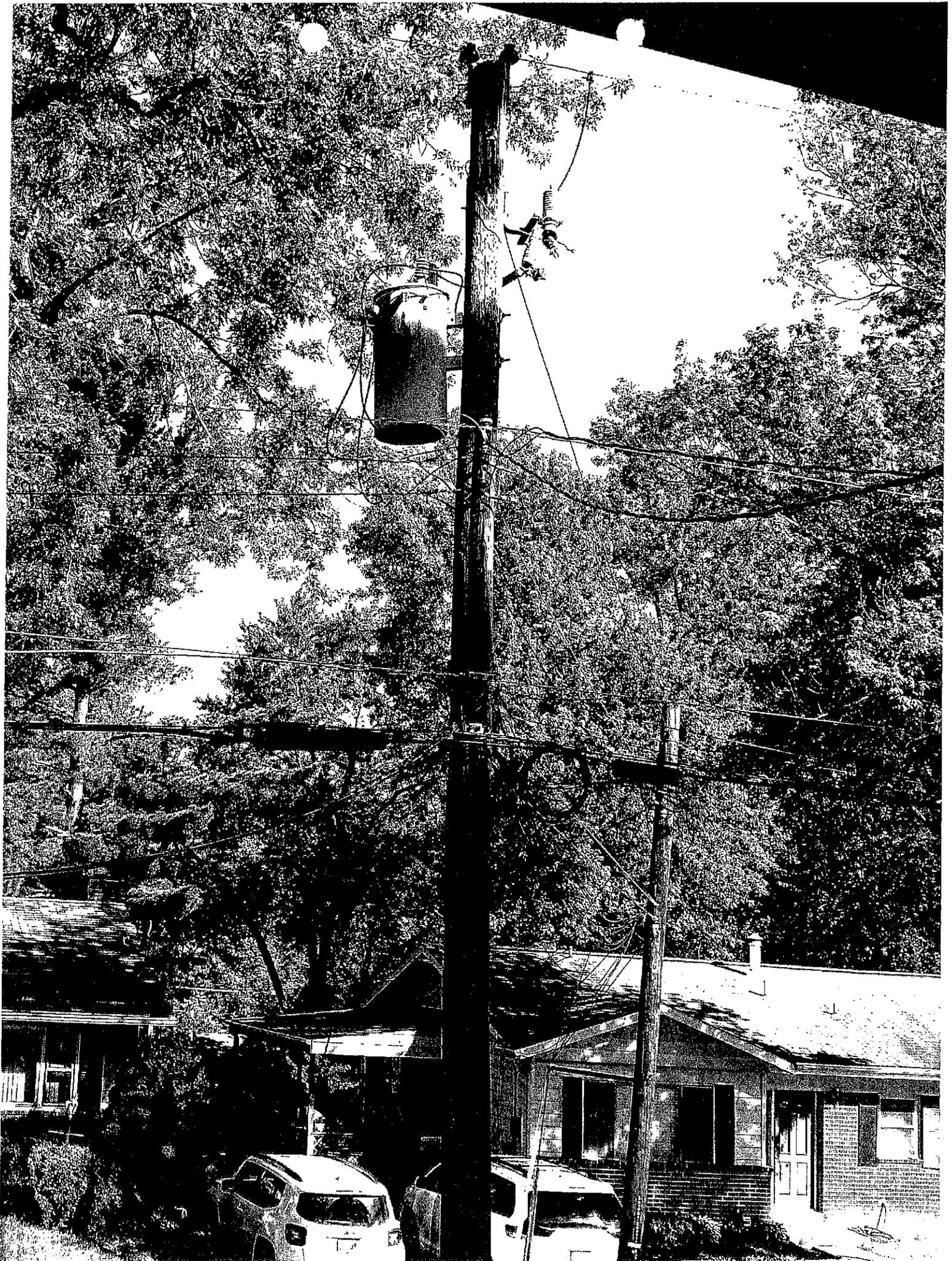
I am writing to express my concern over the carte blanche about to be given to the telecom industry to place small cell antennas within public rights of way.

While I understand the growing demand for wireless bandwidth, we must reasonably restrict the private corporations' ability to do as they please and gain profit off of what is public space. Please consider these recommendations before "giving away the farm" to private companies:

- A strict tier system whereby major arteries must be considered first and residential streets last for cellular communications equipment (with the burden on a telecom provider to prove that they need to use a lower-tier street),
- A public process in which residents are able to provide input and feedback on any proposed location before any decision is made; and
- A reasonable monthly fee to be paid to the City of Rockville for placement of each antenna placed within the public right-of-way.

Please do not sell out our citizens without giving thoughtful consideration to and placing reasonable restrictions upon the private entities that will be benefiting most from this arrangement. Thank you for your time and consideration.

Andrew Kass



**Deane Mellander**

---

**From:** Andrew Gunning  
**Sent:** Monday, June 27, 2016 8:45 AM  
**To:** Deane Mellander  
**Subject:** FW: [hungerfordcivic] Wireless Communications Zoning Ordinance

For the record.

---

**From:** andrewkass@comcast.net [mailto:andrewkass@comcast.net]  
**Sent:** Saturday, June 25, 2016 6:41 PM  
**To:** hungerfordcivic@yahoogroups.com  
**Cc:** Planning Commission <Planning.Commission@rockvillemd.gov>  
**Subject:** Re: [hungerfordcivic] Wireless Communications Zoning Ordinance

I understand the law regarding consideration of the potential health effects of wireless infrastructure implementation, but it is a little premature to paint the concerns people have as based on "bad science". It is a relatively new technology, so the long-term effects are unknown.

Also, the fact that the telecom industry got a law passed that prevents municipalities from considering the health effects of their technology should raise an eyebrow.

Finally, let's not forget that there was a time in this country when concerns over cigarette smoking were brushed aside and materials such as lead and asbestos were allowed to be used in household products because the science proving their hazardous nature was labeled "dubious" by the industries that profited from the production and sales.

So, let's not jump the gun and be so sure of what we do or don't know at this point.

---

**From:** "Michael Higgs [mightyterp@gmail.com](mailto:mightyterp@gmail.com) [hungerfordcivic]"  
<[hungerfordcivic@yahoogroups.com](mailto:hungerfordcivic@yahoogroups.com)>  
**To:** "Planning Commission" <[Planning.Commission@rockvillemd.gov](mailto:Planning.Commission@rockvillemd.gov)>  
**Cc:** [hungerfordcivic@yahoogroups.com](mailto:hungerfordcivic@yahoogroups.com)  
**Sent:** Saturday, June 25, 2016 8:41:37 AM  
**Subject:** [hungerfordcivic] Wireless Communications Zoning Ordinance

Greetings, my name is Michael Higgs, and for 18+ years I practiced law before the Federal Communications Commission. I have represented dozens of state and municipal governments in matters concerning wireless telecom siting and zoning. I am also a long-time resident of the city of Rockville, and I have two children in elementary school.

Wireless communications have progressed far beyond a "luxury" in today's society; it has become an economic necessity. Ubiquitous indoor wireless coverage provides innumerable societal benefits that extend far beyond what some consider to be detrimental to the "aesthetics" of their neighborhood. Many studies have concluded that robust wireless coverage increases property values as the hyper-

connected millennial generation become homeowners themselves. In my experience, long-time residents might take notice of new wireless infrastructure placements, but prospective homebuyers and renters almost never notice them.

Much of the opposition to these new proposed zoning regulations stem from veiled concerns over negative health effects. I caution the City that under Section 337(c) of the Communications Act, it is unlawful for any municipality to consider potential health effects of any wireless infrastructure application, as that remains the purview of the federal government. Additionally, no municipality may act in such a manner as to prohibit the provision of personal wireless services. Given the shrinking size of cells in today's network architecture (promoting the efficient reuse of scarce radio spectrum) and reduced power of these cells as they are placed closer to the ground and the receivers, prohibiting new deployments in residential areas will effectively prohibit the provision of personal wireless services to some residents.

I urge the City of Rockville to work with the carriers to craft common sense zoning regulations that promote the provision of robust wireless telecommunications coverage in our neighborhoods. We anchor the "270 Technology Corridor"; we should not erect artificial barriers to progress based on bad science or overwrought fears of small antennas causing neighborhood blight.

Very truly yours,

Michael Higgs, Esq.

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Posted by: Michael Higgs <[mightyterp@gmail.com](mailto:mightyterp@gmail.com)>

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Reply via web post • Reply to sender • Reply to group • Start a New Topic • Messages in this topic (1)

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Facebook Group: <https://www.facebook.com/groups/HungerfordCivic/>

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Website: <http://www.hungerford.us/>

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**Deane Mellander**

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**From:** Andrew Gunning  
**Sent:** Monday, June 27, 2016 8:46 AM  
**To:** Deane Mellander  
**Subject:** FW: [hungerfordcivic] Wireless Communications Zoning Ordinance

For the record.

**From:** David Poland [mailto:polanddavid@gmail.com]  
**Sent:** Saturday, June 25, 2016 7:12 PM  
**To:** hungerfordcivic@yahoogroups.com  
**Cc:** Planning Commission <Planning.Commission@rockvillemd.gov>  
**Subject:** Re: [hungerfordcivic] Wireless Communications Zoning Ordinance

Andrew's position sounds perfectly rationale. Why should public space be provided free when it cost citizens money to develop that space and make it accessible (ie, streets). Use and benefits of public space by the private sector should be justly compensated. Eyesores are another issue (decrease in a property's value due to an eyesore). Dave Poland, 818 Bowie Rd.

On Jun 25, 2016 6:41 PM, "[andrewkass@comcast.net](mailto:andrewkass@comcast.net) [hungerfordcivic]" <[hungerfordcivic@yahoogroups.com](mailto:hungerfordcivic@yahoogroups.com)> wrote:

I understand the law regarding consideration of the potential health effects of wireless infrastructure implementation, but it is a little premature to paint the concerns people have as based on "bad science". It is a relatively new technology, so the long-term effects are unknown.

Also, the fact that the telecom industry got a law passed that prevents municipalities from considering the health effects of their technology should raise an eyebrow.

Finally, let's not forget that there was a time in this country when concerns over cigarette smoking were brushed aside and materials such as lead and asbestos were allowed to be used in household products because the science proving their hazardous nature was labeled "dubious" by the industries that profited from the production and sales.

So, let's not jump the gun and be so sure of what we do or don't know at this point.

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**From:** "Michael Higgs [mightyterp@gmail.com](mailto:mightyterp@gmail.com) [hungerfordcivic]" <[hungerfordcivic@yahoogroups.com](mailto:hungerfordcivic@yahoogroups.com)>  
**To:** "Planning Commission" <[Planning.Commission@rockvillemd.gov](mailto:Planning.Commission@rockvillemd.gov)>  
**Cc:** [hungerfordcivic@yahoogroups.com](mailto:hungerfordcivic@yahoogroups.com)  
**Sent:** Saturday, June 25, 2016 8:41:37 AM  
**Subject:** [hungerfordcivic] Wireless Communications Zoning Ordinance

Greetings, my name is Michael Higgs, and for 18+ years I practiced law before the Federal Communications Commission. I have represented dozens of state and municipal governments in matters concerning wireless telecom siting and zoning. I am also a long-time resident of the city of Rockville, and I have two children in elementary school.

Wireless communications have progressed far beyond a "luxury" in today's society; it has become an economic necessity. Ubiquitous indoor wireless coverage provides innumerable societal benefits that extend far beyond what some consider to be detrimental to the "aesthetics" of their neighborhood. Many studies have concluded that robust wireless coverage increases property values as the hyper-connected millennial generation become homeowners themselves. In my experience, long-time residents might take notice of new wireless infrastructure placements, but prospective homebuyers and renters almost never notice them.

Much of the opposition to these new proposed zoning regulations stem from veiled concerns over negative health effects. I caution the City that under Section 337(c) of the Communications Act, it is unlawful for any municipality to consider potential health effects of any wireless infrastructure application, as that remains the purview of the federal government. Additionally, no municipality may act in such a manner as to prohibit the provision of personal wireless services. Given the shrinking size of cells in today's network architecture (promoting the efficient reuse of scarce radio spectrum) and reduced power of these cells as they are placed closer to the ground and the receivers, prohibiting new deployments in residential areas will effectively prohibit the provision of personal wireless services to some residents.

I urge the City of Rockville to work with the carriers to craft common sense zoning regulations that promote the provision of robust wireless telecommunications coverage in our neighborhoods. We anchor the "270 Technology Corridor"; we should not erect artificial barriers to progress based on bad science or overwrought fears of small antennas causing neighborhood blight.

Very truly yours,

Michael Higgs, Esq.

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Posted by: [andrewkass@comcast.net](mailto:andrewkass@comcast.net)

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**Deane Mellander**

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**From:** Andrew Gunning  
**Sent:** Monday, June 27, 2016 8:46 AM  
**To:** Deane Mellander  
**Subject:** FW: Proposal to add cell towers

For the record.

-----Original Message-----

**From:** Caren Ginsberg [mailto:ginsbergc@yahoo.com]  
**Sent:** Sunday, June 26, 2016 4:45 PM  
**To:** Planning Commission <Planning.Commission@rockvillemd.gov>  
**Subject:** Proposal to add cell towers

To the planning commission,

I am against the proposal to add cell tower infrastructure particularly in residential neighborhoods. There is no demonstrated need in my neighborhood for such a tower. I am concerned about the esthetics of the neighborhood, the effects of towers in the environment, and health over the long term. I find that arguments by others that we won't notice a tower in the long run, it will increase our property values, and that we are standing in the way of progress to be patronizing, and arguments of people who stand to make money from the towers at the expense of my right to enjoy my neighborhood. These arguments are mere speculation because we don't know what will happen. My enjoyment of my neighborhood and protection against unknown effects of cell towers and whatever they generate are worth a lot more to me than a new tower.

Thank you for your consideration.

Sincerely,  
Caren Ginsberg  
72 Carter Rd  
Rockville

Sent from my iPhone