FCC 12-152

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Service Rules for the Advanced Wireless Services H Block---Implementing Section 6401 of the Middle Class Tax Relief and Job Creation Act of 2012 Related to the 1915-1920 MHz and 1995-2000 MHz Bands	)	WT Docket No. 12-357 03-137; 12-152; and 12-357

To: Office of the Secretary
Federal Communications Commission
Washington, DC 20554

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February 3, 2013

1. My name is Cindy Sage. My business address is 1396 Danielson Road, Montecito, California, 93108.

2. I have been a professional environmental science consultant since 1972 and am the owner of Sage Associates, an environmental sciences consulting firm in Santa Barbara, California. I hold an M.A. degree in Geology, and a B.A. in Biology from the University of California, Santa Barbara.

3. I am the co-editor of both the 2007 *BioInitiative Report: A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Fields (ELF and RF)*; and the *BioInitiative 2012: A Rationale for Biologically-based Exposure Standards for Low-Intensity Electromagnetic Radiation*. (See: www.bioinitiative.org) My recent

publications are listed. I served as a member of the California Public Utilities Commission EMF Consensus Group, the Keystone Center Dialogue for Transmission Line Siting (a national group developing EMF Policy), and of the International Electric Transmission Perception Project. I am a full member of the Bioelectromagnetics Society.

4. My professional involvement in this area includes development suitability constraint analysis, environmental planning, and impact assessment on EMF issues for more than 25 years. My company has provided professional consulting services to city and county planners, private developers, state agencies and schools with respect to measurement and assessment of EMF and RFR as a part of land planning and environmental constraints analysis since 1972. I have been an expert witness on EMF policy, public perception, transmisson line impacts and land use issues, and have qualified both in state and in federal court proceedings as an expert witness in this area.

It is my professional opinion that the FCC is failing in its duty to protect public health by ignoring wireless health risks while increasing wireless broadband mobile spectrum. The FCC is proposing to approve the rollout of a preventable toxic exposure that has recently been designated as a Possible Human Carcinogen. The FCC has no defensible basis to continue 'business as usual' in selling more spectrum at the same time it has turned a blind eye toward health effects that are internationally recognized to exist. The FCC has a duty to update its public safety standards first. It must first deal with clearly emerging health risks in a safe and responsible way. The FCC must take responsibility for the costs and societal burdens it creates. Whether the economic benefits of more connectivity outweigh the health care costs created has not been discussed, let alone assessed in any responsible way.

"Demand for Mobile Spectrum. Wireless broadband is a key component of economic growth, job creation and global competitiveness because consumers are increasingly using wireless broadband services to assist them in their everyday lives. The rise of wireless broadband reflects a rapid increase in user adoption, the increasing number of devices per user, and the proliferation of uses per device. The explosive growth of wireless broadband services has created increased demand for wireless spectrum, which is expected to continue increasing, despite technological developments that allow for more efficient spectrum use. As a result, licensed mobile networks need to be able to increase their capacity, and unleashing more spectrum for broadband is essential to meeting this challenge." *FCC 12-152 II.9.*

The FCC should develop new, biologically-based public exposure safety regulations for low-intensity, chronic exposure to RFR (radiofrequency radiation) in order to fulfill its duty to "ensure that the public is appropriately protected from any potential adverse effects from RF exposure."

5. The FCC must address and incorporate appropriate measures to take into account the recent World Health Organization International Agency for Research on Cancer (IARC) classification of RFR as a Possible Human Carcinogen before subjecting widespread national populations to a preventable toxic exposure. The WHO IARC classified RF radiation as a Group 2B Possible Human Carcinogen; it joins the IARC classification of ELF-EMF (Extremely Low Frequency Electromagnetic Fields) as a Group 2B Possible Human Carcinogen, which the FCC has also ignored. The evidence for carcinogenicity for RFR was primarily from cell phone/brain tumor studies but IARC applies this classification to all RFR exposures.

6. The evidence in 2012 is greater than in 2007 that RFR is associated with increased risk for cancer, neurological diseases, altered fetal brain development, immune disorders and sleep disruption in humans.

7. In 2012, there are more studies reporting adverse health effects; and more studies implicating even lower "effect" levels on human health than in 2007. Studies on human sperm and cell tower studies implicate "effect" levels in the nanowatt per square centimeter range with chronic exposure to pulsed RFR. This body of scientific evidence must be properly addressed by the FCC. It must become a factor in decision making before the FCC approves plans, projects and rules where the public may be subjected to increased levels of RFR exposures in daily life that are largely unavoidable and involuntary.

8. Exposure to electromagnetic fields has been linked to a variety of adverse health outcomes that may have significant public health consequences (both extremely low-frequency ELF-EMF from power frequency sources like power lines and appliances; and radiofrequency radiation or RFR). The most serious health endpoints that have been reported to be associated with extremely low frequency (ELF) and/or radiofrequency radiation (RFR) include childhood and adult leukemia, childhood and adult brain tumors, and increased risk of the neurodegenerative diseases, Alzheimer's and amyotrophic lateral sclerosis (ALS). In addition, there are reports of increased

risk of breast cancer in both men and women, genotoxic effects (DNA damage, chromatin condensation, micronucleation, impaired repair of DNA damage in human stem cells), pathological leakage of the blood–brain barrier, altered immune function including increased allergic and inflammatory responses, miscarriage and some cardiovascular effects. Insomnia (sleep disruption) is reported in studies of people living in very low- intensity RFR environments with WI-FI and cell tower-level exposures. Short- term effects on cognition, memory and learning, behavior, reaction time, attention and concentration, and altered brainwave activity (altered EEG) are also reported in the scientific literature. EMF and RFR exposures cause bioeffects and adverse health effects consistent with those identified in children with autism spectrum disorders (ASDs) (Section 20, *BioInitiative Report 2012*).

9. Several international laboratories have replicated studies showing adverse effects on sperm quality, motility and pathology in men who use and particularly those who wear a cell phone, PDA or pager on their belt or in a pocket (See Section 18 for references including Agarwal et al, 2008; Agarwal et al, 2009; Wdowiak et al, 2007; De Iuliis et al, 2009; Fejes et al, 2005; Aitken et al, 2005; Kumar, 2012). Other studies conclude that usage of cell phones, exposure to cell phone radiation, or storage of a mobile phone close to the testes of human males affect sperm counts, motility, viability and structure (Aitken et al, 2004; Agarwal et al, 2007; Erogul et al., 2006). Animal studies have demonstrated oxidative and DNA damage, pathological changes in the testes of animals, decreased sperm mobility and viability, and other measures of deleterious damage to the male germ line (Dasdag et al, 1999; Yan et al, 2007; Otitoloju et al, 2010; Salama et al, 2008; Behari et al, 2006; Kumar et al, 2012). There are fewer animal studies that have studied effects of cell phone radiation on female fertility parameters. Panagopoulous et al. 2012 report decreased ovarian development and size of ovaries, and premature cell death of ovarian follicles and nurse cells in *Drosophila melanogaster.* Gul et al (2009) report rats exposed to stand-by level RFR (phones on but not transmitting calls) caused decrease in the number of ovarian follicles in pups born to these exposed dams. Magras and Xenos (1997) reported irreversible infertility in mice after five (5) generations of exposure to RFR at cell phone tower exposure levels of less than one microwatt per centimeter squared (μW/cm2).

10. The National Toxicology Program (NTP) has begun but not completed a study on the potential carcinogenicity of RFR; no further deployment of wireless technologies or

commitment to high-speed broadband should be permitted until the NTP study is completed, circulated for comment and independently reviewed.

11. It is not in the public interest to wait.

12. There are very few studies on the impact on children's health from RFR.

13. Children are more vulnerable to environmental toxins and carcinogens than adults. There is overwhelming evidence that children are more vulnerable than adults to many different exposures (Sly and Carpenter, 2012), including RFR, and that the diseases of greatest concern are cancer and effects on neurodevelopment.

14. Children cannot remove themselves from potentially harmful wireless exposures.

15. The FCC has a duty to protect the health and welfare of children.

16. American families cannot 'opt out' of blanket wireless broadband exposures.

17. Expansion of broadband wireless systems has the potential to expose entire communities to a new, continuous, involuntary source of RF radiation. The RFR signal will be carried into properties and homes of those who do not wish to subscribe.

18. There are thousands of studies on adults in high quality, peer-reviewed scientific and public health journals that report health impacts from exposure to RFR at levels far below existing public safety limits. There are legitimate health concerns regarding exposure to RFR, which has rapidly become one of the most pervasive environmental exposures in modern life.

19. The existence of low-intensity (non-thermal) effects from wireless technologies is established.

20. Existing FCC uncontrolled public safety limits are inadequate to protect public health.

21. New, biologically-based public exposure standards are needed.

22. The presence of wireless antenna facilities and wireless broadband exposures can have negative impacts on the value and utility of land, may pose potential health risks, may result in loss of property value, and in general may be a negative effect on real estate markets. Land that is affected can be more speculative and risky to sell and develop; it is considered environmentally flawed.

23. Wise land use requires that RFR in homes and other sensitive receptors (schools, day-care, pre-schools) be at levels below those associated with increased risk of cancer and neurological diseases that have been reported with chronic exposure to low-intensity RFR and ELF-EMF.

24. Health care costs that will be associated with widespread and unavoidable exposures to low-intensity RFR from wireless broadband will have a negative economic impact on the American economy.

25. There is no informed consent by the American public about wireless health risks.

26. Prudent public health actions are warranted now that are proportionate to the potential health risks and enormous populations at possible risk.

27. Alternatives without health harm are available for high-speed broadband internet connectivity.

28. The US should implement fiber optic, cable and other shielded wire solutions for high-speed broadband internet connectivity and SmartGrid technology instead of wireless broadband.

Respectfully submitted this day of February 3, 2013:

Cindy Sage, MA, Sage Associates
Co-Editor, BioInitiative Report 2012

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