

Tahoe Regional Planning Agency

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FROM: ALAN MILLER, PE

DATE: October 12, 2021

SUBJECT: Comments Opposing Project Approval; Verizon/Guilliam New Cellular Monopine Cellular Tower; 1360 Ski Run Boulevard, City of South Lake Tahoe, El Dorado County, CA; Assessor's Parcel Number 025-580-07, TRPA File Number ERSP2019-0389

Honorable Chairman Bruce and Board Members,

These are just my opinions as a scientist, with over 18 years as a former senior engineer with the Lahontan Water Board as a regulator and permit preparer, based on readily available information. I wrote a letter concerning this matter to you and TRPA in April 2020 (see Exhibit 1) I submit to include in the record here. That letter failed to elicit a response which I consider unacceptable for a public agency. I guess that is standard protocol these days, because I understand from my associates in the community that TRPA has essentially stone-walled on any issues related to community concerns with the proliferation of wireless technology in the Lake Tahoe Region. Meanwhile, TRPA has taken a head-in-the sand approach to the issue of regulating impacts on the environment from wireless facilities and installations. I know that everyone is in love with their wireless devices, which are damaging their health, their immune systems, and their environment, whether they are aware of it or not. However, the

scientific record on the significant adverse environmental and health effects of radio frequency (RF) radiation is clear, beyond dispute, and becoming clearer as the large body of scientific evidence grows ever larger. Substantial scientific and social evidence of harms was attached to my letter, and additional information in the form of Exhibits will be attached to this letter for the Hearing record.

A. TRPA IS UNSCIENTIFIC WITH REGARD TO WIRELESS RADIATION

The TRPA Bi-State Compact (citation omitted) Article VII concerns Environmental Impact Statements, in relevant part:

ARTICLE VII. – ENVIRONMENTAL IMPACT STATEMENTS

(a) The Tahoe Regional Planning Agency when acting upon matters that have a significant effect on the environment shall:

- (1) Utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment;
- (2) Prepare and consider a detailed environmental impact statement before deciding to approve or carry out any project. The detailed environmental impact statement shall include the following:
 - (A) The significant environmental impacts of the proposed project;
 - (B) Any significant adverse environmental effects which cannot be avoided should the project be implemented;
 - (C) Alternatives to the proposed project;
 - (D) Mitigation measures which must be implemented to assure meeting standards of the region;
 - (E) The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity;
 - (F) Any significant irreversible and irretrievable commitments or resources which would be involved in the proposed project should it be implemented; and
 - (G) The growth-inducing impact of the proposed project;
- (3) Study, develop and describe appropriate alternatives to recommended courses of action for any project which involves unresolved conflicts concerning alternative uses of available resources;
- (4) Make available to States, counties, municipalities, institutions and individuals, advice and information useful in restoring, maintaining and enhancing the quality of the region's environment; and
- (5) Initiate and utilize ecological information in the planning and development of resource-oriented projects.

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(f) The agency shall adopt by ordinance a list of classes of projects which the agency has determined will not have a significant effect on the environment and therefore will be exempt from the requirement for

the preparation of an environmental impact statement under this article. Prior to adopting the list, the agency shall make a written finding supported by substantial evidence in the record that each class of projects will not have a significant effect on the environment.

1. I understand this project is classified as part of a Class that has been considered exempt, citing section (f), above, because FIVE DECADES ago, when the Compact and subsequent ordinance was adopted, TRPA was unconcerned with the harmful biological effects of RF radiation, not much was known about the harmful biological effects with the notable exception of within the various U.S. military services (Navy, Air Force, etc.), wireless had not proliferated regionally as in the past decade, and TRPA had other concerns. I don't know when the current exemption for wireless facilities was first adopted (the Staff Analysis doesn't provide that information), but I'd be willing to bet it was a long time ago.
2. The time is now to put a halt to the unfettered proliferation of wireless facilities in the Lake Tahoe Basin and I again call for a moratorium on new and expanded wireless communications facilities until TRPA has developed and approved an appropriate Environmental Impact Statement (EIS). I write TRPA IS UNSCIENTIFIC here because science is about forming and testing hypotheses, refining understandings, setting in order the facts of experience, and exploring ever-greater levels of truth—not once-and-done, ignoring any subsequent new credible information. It is also not about cherry-picking scientific studies and data to prop up a pseudo-scientific policy, in this case claiming no significant effects to support a pre-defined *agenda to avoid the significant issues*. I understand the difficulties of EIS preparation, but to turn a blind eye to substantial credible scientific information concerning the impacts of RF radiation on the environment TRPA is uniquely charged by Congress to protect just lays out nakedly that TRPA IS UNSCIENTIFIC.
3. Quoting the Staff Analysis at letter G, in relevant part:

G. Radio Frequency Emissions: Congress gave the Federal Communications Commission ("FCC") "comprehensive powers" over radio communications, and the FCC has exercised "federal primacy" over the technical aspects of such communications. See *Cohen v. Apple, Inc.*, 2020 WL 6342922, at *3, *10 (N.D. Cal. 2020). Congress determined that "it is in the national interest that uniform, consistent requirements, with adequate safeguards of the public health and safety" be established, and it tasked the FCC with adopting regulations for radio frequency ("RF") emissions. *Id.* at *10; 47 C.F.R. §§ 1.1307(b), 1.1310, 2.1091, 2.1093. . . .

Thus, the proposed Verizon Wireless tower is required to comply with the FCC limits on RF Emissions. . . .

TRPA, having been created by an interstate compact, is a creature of federal law, and the

application of the TCA to its permitting process is not a matter of preemption. Rather, one must reconcile the intent of Congress in passing both the TCA [Telecommunications Act] and the Compact and give meaning to both statutes should there be any conflict in implementation. In furtherance of that standard, the agency position to date is this: TRPA will defer to the FCC regulations over general issues of human health and environmental impacts. However, TRPA could choose to regulate RF in the region should cellular facilities be proven to have a particular adverse effect on the unique environment of the Tahoe Region. TRPA has not received any such proof of adverse impacts of RF particular to Tahoe and therefore will not reexamine the determinations of the FCC. (underline added)

4. Again, we see here not a scientific spirit of inquiry as shall be undertaken per the Compact, Article VII(A)(1): “Utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man’s environment;” No. What we have is a “position” that TRPA takes which is UNSCIENTIFIC. We agree that TRPA could regulate the environmental effects of RF radiation, and is not pre-empted by the FCC from doing so. So let’s be very clear that this is a legal position, and not a scientific finding of any sort; it does not rest on valid science. And while the powers of the FCC may be “comprehensive” they are not above the rights of the people guaranteed by the U.S. Constitution.

5. Let me further expose this for what it is: This is the TRPA hiding behind the corrupt FCC and its UNSCIENTIFIC regulations, siding with its own associates and work-mates here locally in the wireless industry, and those in the community pushing a wireless expansion agenda, namely the Tahoe Prosperity Center, working hand in hand across conflict-of-interest lines with Verizon and other wireless interests while ignoring the interests of any project detractors. This is not just my opinion, as legal documents for the Eisenstecken case and my own experience show. Concerning the FCC, Harvard University’s Edmond J. Safra Center for Ethics published an ebook, an extensive expose’ which laid bare the facts: how the FCC is a regulatory agency “captured by” one of the most powerful lobbying and corporate industries in the nation, the telecommunications and wireless industry, which has extended its influence and corruption to certain members of Congress (see Exhibit 2, titled Captured Agency). Despite that, nothing has changed. That’s the influence of money. The FCC is further pushing for the unfettered and reckless rollout of the “5G” infrastructure that will further significantly degrade the environment with poisonous RF radiation nationwide, despite the outcry from the public in the millions, and scientific experts around the nation and world in the thousands. So TRPA hiding behind the FCC and its outdated RF radiation emissions guidelines is just more of the same. If you stand behind a NOTORIOUSLY corrupt agency like the FCC when you have the opportunity, if not the sworn duty, to do otherwise, then what does that make you?

6. I can remember when TRPA instituted a ban on two-stroke marine engines upon Lake Tahoe waters back in the late 1990s, requiring less-polluting four-stroke marine engines. It was controversial. Of course, that was based on science and reports of harm from Lake Tahoe and waters elsewhere from those exhaust and oil-spewing engines. TRPA could have “deferred” to federal USEPA regulations, but TRPA was a leader and paved the way for bans in other States on two-stroke engines where sensitive waters were concerned, reforming the industry. TRPA could be a leader here as well in how to safely manage wireless technology, and phase in the safer wired and wireless alternatives, at least in the region. The wired alternatives are nearly or completely safe from a FIRE standpoint, as discussed below, and can aid to preserve and restore our degraded environment while providing greater bandwidth.
7. TRPA could change its position: Among other things, the FCC was recently blocked by a Federal U.S. Court of Appeals in D.C. from essentially recertifying that its guidelines promulgated for RF radiation exposure in 1996 are safe. The FCC and the wireless industry can no longer claim the current RF radiation emission guidelines and products designed to meet them are safe. They aren’t. Wireless damages, disables, maims and kills. And the guidelines originate from questionable science that well pre-dated 1996. The judge rejected the FCC’s case because it provided no new findings to support their action, ruling the FCC acted “arbitrarily and capriciously” in certifying the guidelines as safe for humans—especially children, who are most vulnerable due to a number of factors. The FCC’s failure was in ignoring the harms presented to them in the record. Mr. Marshall’s a capable attorney and I assume he knows all this, but the word is always slow in getting out to the public (by design); the wireless industry has powerful friends and allies in the media, of course. The TRPA received a letter from Mr. Gresser, Esq., citing numerous conflict-of-interest concerns with appointing Mr. Andrew Strain to be the TRPA Hearing Officer in this matter and requesting his replacement. I support that letter and don’t know if Mr. Strain will be replaced. That would be a good start, and I hope he is replaced.
8. Will you, Board member, support the staff “position,” and thereby be standing up for corruption, and unsafe environmental conditions, or will you stand up for the Region and its people you are charged to protect using the best available science? We will at least know where you stand and what you stand for as individuals and collectively at the end of this. The thing I don’t get is why TRPA is willing to turn its back on its mission, science, the Compact, to ally with a corrupt and unsafe wireless industry. Why act as the shill for a reckless and unsafe industry now that you know, especially when there are many ways to mitigate wireless harms and completely safe alternatives with wired connections?
9. Do you really think people come to visit Lake Tahoe so they can be surrounded by towers and blanketed in electro-smog? I certainly hope not! If we saw smoke we would ask, “Where’s the fire? Let’s put it out.” But because we can’t see, taste, or smell RF radiation it’s easy to assume it’s not there, and do nothing to mitigate the potential and significant harms. But those towers aren’t out of sight, aren’t out of mind. Some people really suffer acutely from them. They cause

and contribute to chronic disease. The public is catching on and I expect that more will in time. The industry is hoping it will be too late for the public to stop their agenda to bathe the whole planet in microwaves, with no choice in the matter, but that doesn't matter. Towers can be torn down later after better alternatives are developed, and we'll all just throw away our cell phones and other wireless devices unless they are *independently* proven safe, because the dangers will be much clearer. Want cancer?

10. TRPA is UNSCIENTIFIC in another way, also. Referring to the Staff Analysis again, “. . . TRPA could choose to regulate RF in the region should cellular facilities be proven to have a particular adverse effect on the unique environment of the Tahoe Region. TRPA has not received any such proof of adverse impacts . . .” Science proceeds on general principles, repeatable experiments and effects from one place to another, seeking out the principles that hold true in every case. It doesn't matter if centuries of wrong equations and theories and hypotheses come before: all it takes is one right, true equation or theory to make all others wrong and obsolete. That's how science is supposed to work. This TRPA statement of “position” goes beyond being merely unscientific, but is actually quite cynical in my view, by ignoring ALL the evidence of harm previously submitted. By their statement, TRPA has not received any “proof of any such impacts” so it is unclear just what kind of scientific proof would meet their position. Clearly, substantial evidence has been provided of biological effects and harms well below FCC exposure limits, but TRPA refuses to see it. I'm no lawyer; I am a scientist and again, TRPA is UNSCIENTIFIC here because that isn't how science works.
11. The position is like saying, “you know that general principle we call gravity. The scientists say it works the same on either side of the ridge between Carson Valley and Lake Tahoe. But they only have studies to show it affects the Carson City side, so we can ignore gravity and pretend we have no proof of it in our unique Lake Tahoe environment.” Nope. The affects are the same either side, it's been shown in enough places to establish a general principle we call gravity. It even works on the moon. Similarly, other researchers have tested scientific hypotheses for answers to questions such as: what are the levels at which biological effects from RF radiation can be detected? What are the mechanisms by which tissues are affected? And they've outlined and proven a number of generalized principles that are applicable under similar conditions and repeatable, and therefore do not exclude the Lake Tahoe region in that regard because of its uniqueness. There are no findings of fact to support this position of TRPA's either, which I can only characterize as arbitrary and capricious with regard to what scientific or other information the TRPA will consider. No science here, honorable Board members.
12. And you know what else? Pretty soon Tahoe's environment won't be so “unique.” It will be just like everywhere else where the bees and other insects, birds and amphibians, and the plant community have been significantly affected, reduced and eliminated by RF radiation, and the residents and visitors will be surrounded by towers and bathed in electro-smog as poisonous as in any big city. No thanks. No thanks to you TRPA for failing to uphold those “unique” values

with regard to wireless emissions so far, but there is still time to change your position, reconsider a return to science and give up your position advocating to do nothing about the effects of wireless poison.

B. THREATS DUE TO FIRE ASSOCIATED WITH THE TOWER MUST BE MITIGATED

1. After what our community just went through with the Caldor Fire coming to the Basin, it is almost unbelievable to me that TRPA has no apparent sensitivity to the issues surrounding the multiple fire hazards associated with towers. Within the Staff Report and its attachments I could find no discussion of any potentially significant effects or mitigation requirements relative to a tower fire, tower collapse and/or fire, increased effects on the flammability of the surrounding trees, and fuel transportation, handling and storage for the emergency back-up generator. Such a discussion could have been provided at 2.b., for instance, which only discusses generator noise and visual impacts, opining without support that: “The project to which the use pertains, will not be injurious or disturbing to the health, safety, enjoyment of property, or general welfare of persons or property in the neighborhood, or general welfare of the region, and the applicant has taken reasonable steps to protect against any such injury and to protect the land, water, and air resources of both the applicant’s property and that of surrounding property owners.”
2. That the applicant has “taken reasonable steps” is a subjective statement. It’s unqualified and certainly falls short of “all reasonable steps” to mitigate reasonably anticipated multiple harms in my view. What I would like to focus your attention on here is the industry’s track record with regard to tower fires, which may occur due to a variety of causes. With every tower that goes up, the potential risks of a tower fire increase. See Exhibit 3, titled Tower Fires and Collapses, which contains dated photographs and other information from around the nation on the literally dozens and dozens of tower fires and collapses that have occurred, most often from mechanical defects like improper welding and faulty design or construction. Towers are shown that collapsed due to high winds, which are experienced frequently in our environment. Cell towers have increasingly become the target of arsonists, and while I can think of few things more misguided than exposing the region to the threat of fire by burning down a tower, I think to ignore this potential risk is naive, wishful thinking. I will add that wired cable and phone connections do not present any of these risks.
3. Some of you may recall a time when the Basin was completely without wireless. Look at those photos of towers on fire and contrast the fire risks then compared to now, with all these sparkplugs scattered throughout the community. All it would take is one tower fire to start a crown-fire in the trees under adverse fire conditions to destroy the whole region by fire and cause potentially disastrous adverse affects on water quality and Lake Tahoe’s troubled clarity. That would certainly make the above statement of “no significant effect” ludicrous on its face. A tower fire of some sort is reasonably foreseeable: TRPA is setting the entire Lake Tahoe Basin up for a disastrous wireless-caused fire event with the current regulatory approach, approving project after project piece-meal, with no evaluation of the immediate and cumulative potential

adverse effects on the forests and fire dangers, and therefore no mitigation requirements. The record shows the TRPA has a blindness to wireless FIRE dangers.

4. This blindness is evident in the Alternatives Analysis provided. Fire risk was not analyzed as part of the siting criteria. Verizon's preferred site sits at the bottom of very steep slopes leading up to Heavenly Ski Resort and the multi-million dollar homes and condos on Kingsbury Grade (TRPA's office) and the Ridge, and near the Stateline casino corridor, with U.S. Highway 50 and Pioneer Trail as essentially the only escape routes from the tower neighborhoods. Add to this the potential for high winds with an uninterrupted wind fetch from the north, across the Lake and funneled up the broad Ski Run Blvd. If such winds were to cause a tower collapse and fire in the basin there could be very great loss of life and property, as in the 2007 Angora Fire. That fire seems very small compared to what we were faced with during the 2021 Caldor Fire. Only with the aid of a tremendous assembled fire-fighting force, did we miraculously escape extensive destruction in 2021. I sat in traffic for nearly three hours, not moving, after the evacuation order was issued for South Lake Tahoe in 2021.
5. The Staff Analysis mentions that 125 gallons of fuel will be maintained on the project site for a back-up emergency generator. Many fires have been associated with use of emergency generators and fuel transportation, handling and storage. 125 gallons of liquid fuel seems like quite a lot of fire-power to be stored in a shed beneath the tower, but contrary to the Staff Analysis, the included Verizon plans actually specify a generator with a 132-gallon diesel tank. The simulations make the shed appear wooden, which is flammable, but no actual information on the materials to be employed is provided. So is it 125 or 132 gallons, and how will the 7-gallon discrepancy be accounted for? What storage, fire prevention, spill and leak countermeasures will be employed? The Staff Analysis doesn't say there are any, so I can't assume there are.
6. TRPA likes to trumpet its achievements in permit streamlining to assist others in their local, State and Federal efforts at fire management, and I applaud that effort, but I stress that the risks from cell towers and associated fires must be recognized and mitigated or TRPA is working at cross purposes with our fire-fighting heroes and other government agencies who have provided millions and millions of dollars to abate and fight fire threats in the Lake Tahoe Basin. The Staff Analysis claims the tower will aid in emergency response, the very type of fire emergency the TRPA is setting the stage for with the approval of this tower and those before it. (I'll add that wired alternatives (fiber optic cable and telephone lines) are nearly or completely safe from a FIRE standpoint, as discussed below, and can aid to preserve and restore our degraded environment while providing greater bandwidth and connectivity—and safety from RF radiation exposures.)

C. COMMENTS ON INSURANCE NEEDS

1. Lest anyone think the wireless provider Verizon is going to step up and insure against these substantial fire and collapse risks, my understanding is the only insurance required was by the City (per the permit it issued approving the tower) stating the following, in relevant part:

17. Insurance. At all times relevant to this permit, the permittee shall obtain and maintain insurance policies as follows:

a. Commercial General Liability. Insurance Services Office Form CG 00 01 covering Commercial General Liability (“CGL”) on an “occurrence” basis, with limits not less than \$1,000,000 per occurrence or \$2,000,000 in the aggregate. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit. CGL insurance must include coverage for the following: Bodily Injury and Property Damage; Personal Injury/Advertising Injury; Premises/Operations Liability; Products/Completed Operations Liability; Aggregate Limits that Apply per Project; Explosion, Collapse and Underground (“UCX”) exclusion deleted; Contractual Liability with respect to the permit; Broad Form Property Damage; and Independent Consultants Coverage. The policy shall contain no endorsements or provisions limiting coverage for (i) contractual liability; (ii) cross liability exclusion for claims or suits by one insured against another; (iii) products/completed operations liability; or (iv) contain any other exclusion contrary to the conditions in this permit.

2. Some of you Board members have extensive experience with insurance. Maybe you understand the meaning of the above clause, “Explosion, Collapse, and Underground . . . exclusion deleted;” it appears the insurer attempted to exclude these but was blocked from doing so? The Commercial General Liability (GCL) Insurance “in the aggregate” seems far too small at \$2M, especially if the facilities cause or contribute to a major fire. That amount will probably offset losses to the wireless provider and little more. The \$2M will barely pay for a few houses, let alone a neighborhood of housing and business losses, a ski resort or a significant part of the community. The aggregate insurance amount should be raised and the risks being insured against should be made specific rather than general. TRPA should require appropriate insurance and not leave it to the various localities and their limited various interests and patchwork of regulations that could affect the entire basin. My feeling is if the insurers had a greater payout due to fire events, the industry would be encouraged to improve its fire safety record. Currently there is no such pressure. This is critical to our communities!
3. Any meaningful discussion of insurance has to include the discussion of risk. What are you insuring for? What are you insuring against? What liability are you protecting the public from by requiring insurance, including issues of community health and risks to the environment. These

potential requirements for insurance are clearly NOT against FCC rules, which do not limit the ability of a government agency to protect itself and its public with insurance.

4. The TRPA must recognize potential liability exposure not only from electromagnetic frequencies (EMF), but it's also from falling objects, including falling snow and ice, and trees falling on the facilities. Trees do fall, and such falling should not be considered an "act of god" but rather a virtual certainty in time. Trees falling do not generally cause fires, but hitting an energized tower is another matter, and a great risk of fire. As stated above, I believe the insurance amount required for the permittee is FAR TOO LOW. If TRPA can require a bond or insurance for wireless permittees I strongly recommend it. Also, the insured permittee should never be allowed to list a "shell" company, other than the telecom itself as a licensee for insurance purposes. For example no "doing business as" some other entity with another name than, say, AT&T or Verizon Wireless to avoid exposure, and certainly NOT by promising indemnity instead of insurance.
5. Concerning limitations at the end of the quoted section, General Liability Insurance must be issued without a pollution or pollutant exclusion, because EMF is a pollutant (recognized under law) and should not be excluded or the approving agency could bear the liability for any harm that is done, which could be very substantial. Such harm may arise, for examples, in the event that EMF radiation occurs above allowable levels (e.g., per FCC guidelines) and/or is not detected timely and someone is harmed, or if the permittee or permit issuer fails to require the indicated testing or follow up in a timely manner due to any number of reasons. Such scenarios are not far-fetched and have occurred as I understand the issue. The Policy above does not clearly specify that pollutants and pollution must not be excluded and this should be added to all such policies.

D. RF RADIATION STRESSES TREES AND OTHER VEGETATION AND INCREASE FIRE RISKS

1. There are numerous reports in the scientific literature documenting the adverse effects of RF radiation on vegetation. See Exhibit 4 titled Environmental Health Trust Literature Summary, Plant Stress. Briefly summarizing the things I would like to point out to you, I provide here this excerpt:

"Electromagnetic (EMF) frequencies have been found to alter the growth and development of plants. Studies on wireless EMF frequencies have found [physiological and morphological changes](#), [increased micronuclei formation](#), [altered growth](#) as well as [adverse cell characteristics](#) such as thinner cell walls and smaller mitochondria. Electromagnetic exposure results in biochemical changes. Research shows that plants [perceive](#) and respond to electromagnetic fields and are a good model to study the biological effects of exposure. . . ."

2. Think about your home microwave oven. It works by energizing water molecules in the food, causing heating. RF radiation is microwave radiation. We are told that the FCC guidelines for human exposure prevent thermal effects in humans. I don't believe that, because of the way the testing was done and industry influence at the time, but setting that aside, the fact remains that microwaves agitate water molecules in the environment, causing heating of water vapor in the atmosphere and on the ground, and in the tissues of living organisms, subtle or pronounced as it may be. The vegetation around cell towers and other sources of RF radiation has been studied and shows stresses with slower growth rates, damage to tissues, excessive dryness, and increased formation of flammable terpenes and terpenoids, in the case of Pine trees.

Terpenes

3. Pine trees emit a class of chemical hydrocarbons which are highly flammable called terpenes—providing the sticky resin and pine scent. Terpenes are used to produce turpentine and furniture varnishes, which you may know are highly flammable.
4. Dr. Martin Pall, PhD, has studied RF radiation and literature extensively and has put forth information that shows mechanisms for increased fire risks in vegetation exposed to RF radiation which I will briefly summarize (see Exhibit 5 titled Wildfires, EMF, Terpenes and More). Excerpting:

Terpenes

The first mechanism, expounded by Dr. Martin Pall, relies on research showing that electromagnetic fields (EMFs) from microwave radiation causes plants to produce excessive amounts [of] intracellular calcium, which in turn causes the plants to produce high levels of substances called terpenes/terpenoids. Terpenes/terpenoids are usually produced by plants to repel insect predators and can also be emitted to warn other plants that insect predators are present—but in normal circumstances, this response is limited to one species at a time. When high levels of EMFs are present, as happens near cell towers or under power lines, all the plants will start producing high levels of terpenes/terpenoids, which are both highly combustible and highly volatile, and which can pool at ground level. **If a fire starts, it will burn more fiercely and be much harder to put out.**

Many people think that Dr. Pall's mechanism applies exclusively to 5G, but this is not so. The EMFs of 4G and 3G infrastructure, of Wi-Fi and of power lines, produce the same effects in plants. . . .

5. That same article discusses the work of Dr. Alsonfo Balmori:

EMFs Cause Soil Acidification

A second mechanism which explains how microwaves may make forest fires much worse is explained very clearly by Dr. Alfonso Balmori in his short paper, ["The Effects of Microwaves on the Trees and Other Plants"](#). In it, Dr. Balmori explains how EMFs cause soil acidification and create conditions in which trees are unable to absorb ground water, thus drying up.

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Dr. Balmori cites the work of German scientist Wolfgang Vokrodt, whose pioneering work on dying trees near radar installations showed that microwaves interrupt the ability of trees to absorb water, thus drying them out, and create soil acidification, which further dries them out. Balmori also cites Swiss scientist Ulrich Hertel, who says that "a causal chain of electrical smog/stunted growth/damage to soil/dying trees is established." Hertel explains that EMFs cause trees to lose the hair roots which absorb water from the soil, while capillaries shrink and become unable to pull water upward into the tops of the trees. "The delicate absorbent hair roots are missing, the trees are standing in water and yet die of thirst."

Dry trees will burn easily. And sadly, most cell towers are placed on hills and mountains because this increases the range of each "cell." Between the increased production of terpenes/terpenoids and the lack of moisture in the trees themselves due to the action of microwaves in the atmosphere, it is not surprising if forests are burning as never before.

6. So if we combine the heating of the atmosphere (water vapor) and vegetation with trees stressed due to lack of water, with dead needle-leaves/branches, and producing excessive, highly flammable terpenes from the remainder, we've got a recipe for fire, and increased chances that a stressed tree could fall on the tower and create a fire. None of these potential risks are evaluated or mitigated by the proposed permit.
7. In addition, species of aspen trees have been studied and show stress and susceptibility to damage and impairment by RF radiation. Aspen groves have been declining in the Lake Tahoe Basin, and State and federal agencies have spent substantial sums on projects to slow the decline. The tower is situated near a prized, scenic aspen grove along the westerly side of Ski Run Boulevard north of the tower, and diagonally across Ski Run Blvd to the SW of the tower. This area is most-likely classed as Stream Environment Zone (SEZ), which is one of the most severely impacted aquatic and habitat resource types in the Lake Tahoe Basin, and is afforded special protections under the TRPA regulations. I do not believe the TRPA thresholds concerning

SEZ are met, stemming largely from historic impacts. Nonetheless, every new significant or potentially significant impact or effect should be managed and mitigated to prevent the further loss and degradation of critical SEZ resources. The TRPA staff should examine the scientific evidence concerning impacts on aspen trees and associated species in the subject aspen grove and make a scientific determination on whether they could be reasonably expected to be adversely affected by emissions from the proposed tower, together with other known RF-radiation sources in the area. The current Staff Analysis does not consider any potential impacts to these offsite aquatic resources and SEZs due to RF radiation emissions within a short distance (with the SEZ margins perhaps only 200 feet or so from the tower) and within line-of-sight of the emitters, and is thus deficient in this regard. See Exhibit 6 titled Effects on Aspen and other Trees near Wireless Towers, in particular the two articles within titled, “Adverse Influence of Radio Frequency Background on Trembling Aspen Seedlings: Preliminary Observations” and “Radiofrequency Radiation Injures Trees Around Mobile Phone Base Stations,” as scientific evidence of these effects at levels below current FCC emission guidelines.

E. TRPA EMPLOYS A DEFICIENT PUBLIC PARTICIPATION PROCESS

1. The *Initial Environmental Checklist for Determination of Environmental Impact* (Checklist) is a form completed by the Applicant, Verizon wireless. As I understand it, subject to review by TRPA staff, the permit must address any shortcomings, requiring revisions to the application as necessary. The Checklist reportedly serves to document and support the evaluation of a variety of potential impacts and informs a Finding of No Significant Effect (FONSI, exemption from preparing an EIS), according to the Staff Analysis. The Checklist was not provided with the Hearing agenda materials for public comment posted on October 7, which seemed improper to me. Since it is part of the documentation for the FONSI, why was it not published in the Hearing Record for public review and comment? The Staff Analysis, letter A., says, “. . . A copy of the completed checklists will be made available at the Hearings Officer hearing and at TRPA.” How can the public meaningfully be expected to comment on the assertions in the document without it being provided prior to the meeting/hearing, which the TRPA does not allow the public to attend in person? I thought, why isn’t it standard procedure to post the document with the Staff Report, when that presumably forms the basis for the findings summarized in the Staff Analysis? So I went back to the TRPA website to see if I’d missed it. No, it wasn’t there when I first looked on or after October 7 or 8. I happened to return to the webpage for the Hearing Officer on Monday, October 11, and found it had been added as a new link sometime after October 7. I know this because I keep the old webpage up from the prior week, and the link wasn’t there — and then on Oct. 11 (3 days before the hearing) there it appeared, though the Oct 7, 2021 post date was not revised. (The posted document shows TRPA had it in their possession since June 2019.)
2. In addition I could find no provisions for, or description of, public participation in the lead-up to this matter, other than to testify at the hearing online. Were nearby property owners and interested parties like me notified? I certainly wasn’t, though I’d provided in 2020 the written

comments in Exhibit 1. No call for written comments or due date was mentioned in any of the written material associated with the Hearing. TRPA didn't post its Hearing agenda materials more than about a week or less in advance of its proposed action. The only opportunity for public participation noted at the website for TRPA related to this item was to sign up to attend the meeting online, and opportunity to testify for 3 minutes online. How is the public supposed to know whether written comments will even be considered?

3. To contrast, I worked as a State of California regulator for over 25 years and we always endeavored, wherever possible, to give the public at least three weeks to provide comments and input, and submit their comments and information 10 days in advance of a meeting or hearing, and often more if the matter was controversial, so that the Board members would have time to read and consider the information. TRPA's process just seems like going through the motions to minimize and avoid meaningful public involvement, while meeting the minimal administrative review requirements, if those are even being met. Was TRPA rushing this matter to meet FCC permit processing timeline concerns? This contrasts markedly with my experience in this very Basin, including many years work with TRPA staff and management; when they were more interested in public input, schedules could be adjusted and things could take a very long time, so I see this process as a very deliberate attempt to discourage meaningful public involvement due to a host of conflicting interests.

F. COMMENTS ON THE CHECKLIST

1. The Checklist document from Verizon is so deficient in my view that I don't want to spend a lot of time critiquing it in detail. I think doing so here would trivialize the unaddressed matters of life and death I have commented on above. I will summarize that it provides no substantive information to identify address the concerns I've stated above, and provides no substantive information beyond the Staff Report on which to base a FONSI. I've provided additional comments in **a separate attachment**.
2. However, I must point out here that I consider the entire Checklist to be invalid. The Declaration at the end says in bold letters "**original signature required**," beside what appears to be an obvious paste-up or form-fill of a typed man's name, "Joseph Sharp, SAC Wireless obo Verizon Wireless"; there is no signature on the page other than a digital signature (also not original) from the preparer for Mr. Sharp. This seems improper for a certification that I've reproduced below from the Checklist:

DECLARATION:

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this initial evaluation to the best of my ability, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Signature: (Original signature required.) Joseph Sharp, SAC Wireless obo Verizon Wireless

3. I would say, in fact, there is no certification; the document has no original signature as clearly and properly required, and Mr. Sharp, assuming he exists, could easily claim that the paste-up, or whatever it is, is not his signature. Convenient, when to the best of my knowledge and belief I have pointed out many incomplete, untrue and dangerously incorrect claims in the Checklist (see **attachment**). I further presume that the controversies and science concerning the effects of RF radiation on living things are broadly and widely known to those in the wireless industry, particularly those in positions of authority such as Mr. Sharp. To claim otherwise lacks plausibility in my view. I therefore would expect that these effects are known at some level to Mr. Sharp, and that's why the certification was not printed and signed in Mr. Sharp's hand before being provided to TRPA, to avoid any possibility of perjuring himself. The Staff Report provides no comment on this matter, or when the application was provided, accepted and deemed complete. If TRPA accepts this paste-up as legally valid, I would sure like to know the basis; otherwise the Checklist should have been rejected by TRPA back in 2019 as constituting an invalid, incomplete application, and it should be rejected now, in 2021, as a basis for Project/Permit approval.

CONCLUSION

In view of the above, I strongly urge you to deny this approval and Special Use Permit on the basis of unaddressed significant and potentially significant effects, until such time that the effects are fully addressed. I further pray for reform of your regulatory program for wireless installations through conducting a thorough programmatic analysis and EIS development, informed by science, with full public participation, meeting the requirements of law. Despite my comments and strong feelings, I welcome a dialogue on this matter in the spirit of science and good public policy.

I understand some of the Board members support philanthropic organizations for children, and bless you for that. You should understand that what we are dealing with here is a telecom industry whose product is always delivered with a dose of poison, telecom and computer industries that don't care who is injured in any way in their pursuit of profit, an industry that has a business model that frequently targets siting their wireless facilities on schools and playgrounds (and ski slopes) for children, those most vulnerable to the adverse health effects of RF radiation. The microwaves are invisible but the money isn't so the schools and others are attracted, to fill their accounts. Same goes for hospitals, another

siting target. Disgraceful. If the proposed Verizon tower is approved and built at Mr. Guillian's sledding hill for children, I suspect only uniformed parents will bring their children there in time. Woe be unto him and his business.

The California firefighters, God bless them, fought the telecoms off like the fighters they are after their health and cognition was impaired by RF radiation—no towers on our fire stations! No more towers in the Lake Tahoe Basin absent an approved EIS! This is about respecting freedom, the right to be free to enjoy our homes and communities free of poisonous assaults on our bodies, injecting RF radiation into our very cells and our environment from big-money industry sources we have no control over. It's a time for choosing: which side are you on?

Sincerely,

Alan Miller, Professional Engineer
South Lake Tahoe

List of Exhibits (pdf format):

1. E-mailed Letter from Alan Miller, PE to TRPA, dated April 16, 2020, and its Attachment 2
2. Captured Agency
3. Tower Fires and Collapses
4. Environmental Health Trust Literature Summary, Plant Stress
5. Wildfires, EMF, Terpenes, and More
6. Effects on Aspen Trees and other Trees near Wireless Towers
7. Comments on the Checklist

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW MEXICO**

SANTA FE ALLIANCE FOR PUBLIC HEALTH
AND SAFETY, ARTHUR FIRSTENBERG, and
MONIKA STEINHOFF,

Plaintiffs,

vs.

No. 1:18-cv-01209-LF-JHR

CITY OF SANTA FE, NEW MEXICO;
HECTOR BALDERAS, Attorney General of New
Mexico; and the UNITED STATES OF AMERICA,

Defendants.

**FIRST AMENDED COMPLAINT FOR DECLARATORY JUDGMENT
AND INJUNCTIVE RELIEF**

COME NOW the SANTA FE ALLIANCE FOR PUBLIC HEALTH AND SAFETY
("ALLIANCE") and MONIKA STEINHOFF by and through their attorneys, and ARTHUR
FIRSTENBERG, pro se, and in their Complaint against the CITY OF SANTA FE ("CITY"),
NEW MEXICO ATTORNEY GENERAL HECTOR BALDERAS, and the UNITED STATES OF
AMERICA ("UNITED STATES"), state as follows:

INTRODUCTION

1. For at least fifty years, the United States of America has known that
radio frequency ("RF") radiation, even at extremely low levels of exposure, is
injurious to human health and the environment, and that the continuous expansion
of wireless telecommunications would endanger its population, including Plaintiffs,

and the ecosystems and natural resources upon which they depend for their wellbeing and survival. Despite this knowledge, the United States enacted a law *prohibiting* States and municipalities from regulating wireless telecommunications on the basis of the environmental effects of RF radiation, which has been assumed to include health effects. This law is Section 704 of the Telecommunications Act of 1996, 47 U.S.C. § 332(c)(7)(B)(iv) and (v) (“Section 704”).

2. For at least twenty years, the City of Santa Fe has known that RF radiation, even at extremely low levels of exposure, is injurious to health and environment, and that the continuous expansion of wireless telecommunications would endanger Plaintiffs and the ecosystems and natural resources upon which they depend for their wellbeing and survival. Despite this knowledge, the City has repealed all of the protections it previously put in place to protect its residents from harm. It has repealed all land use regulations that previously ensured that RF radiation-emitting antennas could not be placed on sidewalks in front of homes and businesses, and it has repealed all notice requirements and all means of public participation in decisions that endanger Plaintiffs’ health and their environment. The ordinances by which these protections were repealed are Ordinances No. 2016-42 and 2017-18. Further, on November 21, 2017, the Mayor of Santa Fe issued the first of three executive Proclamations, which suspended the Land Development Code, including public notice requirements, with respect to telecommunications facilities on City-owned property. Seven short cell towers have been built on City

land with no public process at all under the Proclamations.

3. For at least forty years, the State of New Mexico has known that RF radiation, even at extremely low levels of exposure, is injurious to health and environment, and that the continuous expansion of wireless telecommunications would endanger Plaintiffs and the ecosystems and natural resources upon which they depend for their wellbeing and survival. Despite this knowledge, the State of New Mexico passed a law providing that RF radiation-emitting antennas in the public rights-of-way are a permitted use, not subject to land use review, throughout New Mexico. This law, which went into effect on September 1, 2018, is the Wireless Consumer Advanced Infrastructure Investment Act (“WCAIIA”). Sections 4(C) and 5(B) of WCAIIA exempt both new antennas and new supporting structures for antennas from land use review. NMSA 1978 §§ 63-9I-4(C) and 63-9I-5(B).

4. Telecommunications companies, enabled by laws prohibiting the public from participating in decisions affecting their health, environment, and survival, are poised right now to roll out the fifth-generation wireless network (5G). This is acknowledged and advertised to bring unprecedented societal change on a global scale. We will have “smart” homes, “smart” businesses, “smart” highways, “smart” cities and self-driving cars. Virtually everything we own and buy, from refrigerators and washing machines to milk cartons, hairbrushes and infants’ diapers, will contain antennas and microchips and will be connected wirelessly to the Internet. Every person on Earth will have instant access to super-high-speed,

low-latency wireless communications from any point on the planet, even in rainforests, mid-ocean and the Antarctic.

5. What is known to governments and to scientists working in the field of bioelectromagnetics, but is not widely known to the general public, is that this will also result in unprecedented *environmental* change on a global scale. The planned density of radio frequency (“RF”) transmitters is extraordinary. In addition to millions of new 5G base stations on Earth and 20,000 new satellites in space, 200 billion transmitting objects, according to estimates, will be part of the Internet of Things by 2020, and one *trillion* objects a few years later.

6. In order to transmit the enormous amounts of data required for the Internet of Things, 5G technology, when fully deployed, will use millimeter waves, which are poorly transmitted through solid material. This will require every carrier to install base stations (also referred to herein as “cell towers”) every 100 meters in every urban area in the world. The existence of multiple competing carriers means there will be a base station in front of every third to fifth house. Unlike previous generations of wireless technology, in which a single antenna broadcasts over a wide area, 5G base stations and 5G devices will have multiple antennas arranged in “phased arrays,” that work together to emit focused, steerable, laser-like beams that track each other.

7. Each 5G phone will contain dozens of tiny antennas, all working together to track and aim a narrowly focused beam at the nearest base station. The

Federal Communications Commission (“FCC”) has adopted rules permitting the effective power of those beams to be as much as 20 watts, ten times more powerful than the levels permitted for current phones. 47 C.F.R. § 30.202(b).

8. Each 5G base station will contain hundreds or thousands of antennas aiming multiple laser-like beams simultaneously at all cell phones and user devices in its service area. This technology is called “multiple input multiple output” or MIMO. FCC rules permit the effective radiated power of a 5G base station’s beams to be as much as 30,000 watts per 100 MHz of spectrum, or equivalently 300,000 watts per GHz of spectrum, tens to hundreds of times more powerful than the levels permitted for current base stations. 47 C.F.R. § 30.202(a).

9. The FCC regulates the technical aspects of telecommunications only, has no statutory authority over health, and has repeatedly disclaimed any expertise or authority over health or environment. “[W]e have no expertise in the area of public health...” *Far East Broadcasting Company, Inc.*, 65 F.C.C.2d 496, 502 (1977). “The Commission’s position is that it has neither the responsibility nor the authority to establish health and safety radiation standards.” *Inquiry Concerning Biological Effects of Radio Frequency Radiation When the Use of Radio Frequency Devices is Authorized*, FCC 79-364, ¶ 20, 44 Fed. Reg. 37008, 37011 (1979). “[T]he commission has neither the expertise nor the primary jurisdiction to promulgate health and safety standards for RF and microwave radiation.” *Biological Effects of Radiofrequency Radiation When Authorizing the Use of Radiofrequency Devices*,

FCC 82-47, ¶ 183, 47 Fed. Reg. 8214. 8228 (1982). “The Commission... is not the expert agency for evaluating the effects of RF radiation on human health and safety.” *In re Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, Notice of Proposed Rulemaking, FCC 93-142, ¶ 8, 8 FCC Rcd 2849 (1993). The sole purpose of the guidelines the FCC adopted in 1996 is “[t]o meet its responsibilities under NEPA.” *Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, Report and Order, FCC 96-326, ¶ 5, ET Docket No. 93-62 (1996). “[T]he Commission... is not a health and safety agency...” *Id.* ¶ 28.

10. In the FCC’s authorizing statute, the Communications Act of 1934, as amended, the word “health” does not appear anywhere in connection with RF radiation. The FCC’s RF exposure guidelines are neither mandatory nor enforceable. They are procedural only and serve only as cutoff values to define “Actions for which Environmental Assessments (EAs) must be prepared.” *Id.*, Appendix C, Part 1, § 1.1307; 47 C.F.R. § 1.1307. Health and safety are State functions, and as a zoning authority the City is obligated to safeguard the health of its citizens and may not abdicate this responsibility.

11. Even before 5G was proposed, scientists working in this field globally have presented at least 60 declarations, petitions and appeals to their governments calling for a halt to the expansion of wireless technology and a moratorium on new base stations. Already in 2002, the Freiburger Appeal, signed by over 3,000

physicians, warned that radiation from cell phones and cell towers was causing serious health impacts including “heart attacks and strokes among an increasingly younger population.”

12. On May 11, 2015, 215 scientists from 41 countries, all of them researchers engaged in the study of biological and health effects of electromagnetic fields, addressed an International Appeal to Ban Ki-moon, the Secretary-General of the United Nations; to Margaret Chan, the Director-General of the World Health Organization; and to U.N. Member States. They stated that “numerous recent scientific publications have shown that EMF [electromagnetic fields] affects living organisms at levels well below most international and national guidelines.”

13. More than 10,000 peer-reviewed scientific studies demonstrate harm to human health from low-level RF radiation. Effects include:

- Alteration of heart rhythm
- Altered gene expression
- Altered metabolism
- Altered stem cell development
- Cancers
- Cardiovascular disease
- Cataracts
- Cognitive impairment
- Diabetes

- DNA damage
- Impacts on general well-being
- Increased free radicals
- Learning and memory deficits
- Impaired sperm function and male infertility
- Miscarriage
- Neurological damage
- Obesity and diabetes
- Oxidative stress

14. Effects in children include autism, attention deficit hyperactivity disorder (“ADHD”) and asthma.

15. Damage goes well beyond the human race, as there is abundant evidence of harm to diverse plant- and wildlife and laboratory animals, including:

- **Ants.** *Exposure to cell phones, cordless phones, or WiFi in the laboratory causes behavioral disturbances and mortality.*
- **Birds.** *Proximity to cell towers impairs reproduction and diminishes populations.*
- **Forests.** *RF radiation causes forest dieback, mimicking the effects of acid rain.*
- **Amphibians.** *Proximity to a cell tower in an urban laboratory caused 95 percent mortality; RF radiation has contributed to the*

extinction of scores of species worldwide.

- **Fruit flies.** *Exposure to a cell phone in the laboratory impairs reproduction and causes mortality and genetic abnormalities.*
- **Honey bees.** *A ten-minute exposure to a cell phone in the laboratory causes digestion of food to come to a complete halt at the cellular level; RF radiation causes swarming and is a primary cause of colony collapse disorder.*
- **Insects.** *Insect populations in nature preserves and rainforests plummeted when cell towers were erected nearby.*
- **Farm Animals.** *Proximity to cell towers causes heart and circulatory failure and internal bleeding in cows, and abortions and reproductive failure in cows and pigs.*
- **Mice.** *Proximity to a cell tower in an urban laboratory impaired reproduction and caused irreversible sterility within five generations.*
- **Plants.** *RF radiation shortens life-span, impairs growth, and causes developmental abnormalities in duckweed plants.*
- **Rats.** *A two-hour exposure to a cell phone causes permanent brain damage.*
- **Trees.** *Aspen trees throughout Colorado no longer grow normally; only when shielded from RF radiation do they display the fall colors they were once famous for.*

16. These studies on humans, animals and plants, have been performed by the following:

- United States Army
- United States Navy
- United States Air Force
- United States Environmental Protection Agency (“EPA”)
- Governments of other nations
- Thousands of scientists and researchers worldwide

17. The results of this medical and scientific research are publicly available and may be found in the following Senate Reports:

- *Oversight of Radiation Health and Safety*, Hearings before the Committee on Commerce, Science, and Transportation, United States Senate, Ninety-Fifth Congress, First Session, Serial No. 95-49 (June 16, 17, 27, 28, and 29, 1977);
- *The Health Effects of Cell Phone Use*, Hearing before the Committee on Appropriations, Subcommittee on Labor, Health and Human Services, and Education, and Related Agencies, United States Senate, One Hundred Eleventh Congress, Second Session, Senate Hearing 111-348 (September 14, 2009);

and in the following House of Representative Reports:

- *Research on Health Effects of Nonionizing Radiation*, Hearing Before the Subcommittee on Natural Resources and Environment of the Committee on Science and Technology, United States House of Representatives, Ninety-sixth Congress, First Session (July 12, 1979);
- *Potential Health Effects of Video Display Terminals and Radio Frequency Heaters and Sealers*, Hearings before the Subcommittee on Investigations and Oversight of the Committee on Science and

Technology, United States House of Representatives, Ninety-seventh Congress, First Session (May 12 and 13, 1981);

- *Tumors and Cell Phone Use: What the Science Says*, Hearing before the Subcommittee on Domestic Policy, U.S. House of Representatives, One Hundred Tenth Congress, Second Session (September 25, 2008);

and in the following EPA Reports:

- *Environmental Protection Agency's Role in Protecting the Public and the Environment from Nonionizing Radiation Exposure*, Document No. CED-77-95, B-166506 (July 6, 1977);
- *Efforts by the Environmental Protection Agency to Protect the Public from Environmental Nonionizing Radiation Exposures*, CED-78-79, B-166506 (March 29, 1978);
- *Biological Effects of Radiofrequency Radiation*, Joe A. Elder and Daniel F. Cahill, editors, Health Effects Research Laboratory, EPA-600/8-83-026F (276 pages, September 1984);
- Notice of Proposed Recommendations, *Federal Register*, Vol. 51, No. 146, pp. 27318-27339 (July 30, 1986). On page 27318, the EPA states: **"Effects occur in test animals exposed at RF radiation intensities found in the environment"** (emphasis added);
- *Health Effects of Transmission Lines*, Oversight Hearing before the Subcommittee on Water and Power Resources of the Committee on Insular and Insular Affairs, House of Representatives, One Hundredth Congress, First Session, Serial No. 11-22 (October 6, 1987). The "Summary of research performed by EPA scientists on low frequency modulation of RF radiation" appears on pages 166-168. It states on page 166 that **"it is not possible to assign a low intensity limit or threshold below which the exposures are without effect"** (emphasis added);
- *Evaluation of the Potential Carcinogenicity of Electromagnetic Fields: Review Draft*, Office of Research and Development, EPA/600/6-90/005B (393 pages, October 1990);
- EPA Science Advisory Board, Electric and Magnetic Fields Subcommittee, Report of the First Subcommittee Meeting (Washington, DC, January 14-16, 1991);

- EPA Science Advisory Board, Electric and Magnetic Fields Subcommittee, Report of the Second Subcommittee Meeting (Washington, DC, April 12-13, 1991);
- EPA Science Advisory Board, Electric and Magnetic Fields Subcommittee, Report of the Third Subcommittee Meeting (Washington, DC, July 23-25, 1991);
- *An SAB Report: Potential Carcinogenicity of Electric and Magnetic Fields*, Radiation Advisory Committee's Nonionizing Electric and Magnetic Fields Subcommittee, EPA-SAB-RAC-92-013 (January 1992);
- *The Effects of Traffic Radar Guns on Law Enforcement Officers*, Senate Hearing 102-1024 (August 10, 1992);
- *Summary and Results of the April 26-27, 1993 Radiofrequency Radiation Conference*, EPA Office of Air and Radiation & Office of Research and Development, 402-R-95-011 (2 volumes, March 1995);

and in the following Food and Drug Administration Reports:

- Research into absorption of microwave radiation by DNA by Mays Swicord and Jose-Louis Sagripanti, National Center for Devices and Radiological Health, Food and Drug Administration, papers published in *Biopolymers* 21: 2453-2460 (1982); *Biopolymers* 22: 2513-16 (1983); *Bioelectromagnetics* 4: 21-42 (1983); *Physical Review Letters* 53: 1283-87 (1984); *International Journal of Radiation Biology* 50(1): 47-50 (1986); *Biophysical Journal* 47(6):799-807 (1985); and *Radiation Research* 110(2): 219-31 (1987);

and in peer-reviewed scientific journals published worldwide.

18. The EPA has stated repeatedly that the human exposure guidelines that were adopted by the FCC on August 6, 1996 are protective only against shocks, burns, and gross heating and do not protect against chronic and low-level exposure. In a letter dated October 8, 1996 and addressed to David Fichtenberg, Norbert Hankin (Indoor Environments Divison, Office of Radiation and Indoor Air, Environmental Protection Agency) stated that the guidelines "are thermally based,

and do not apply to chronic, nonthermal exposure situations.” Again on March 8, 2002, in a letter addressed to Janet Newton (President, The EMR Network, Marshfield, Vermont), Mr. Hankin stated that “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.”

19. A June 17, 1999 letter, addressed to Richard Tell (Chair, IEEE Standards Coordinating Committee 28 (Subcommittee 4) Risk Assessment Work Group), stated that the FCC’s guidelines are based on “thermal effects” and “acute exposures” and do not consider “chronic exposure to RF radiation, including exposures having a range of carrier frequencies, modulation characteristics, peak intensities, exposure duration, etc., that does not elevate tissue temperature on a macroscopic scale.” The letter was signed by the entire Radiofrequency Interagency Work Group (“RFLAWG”), consisting of W. Gregory Lotz (Chief, Physical Agents Effects Branch, National Institute of Occupational Safety and Health), Robert Cleveland (Senior Scientist, Office of Engineering and Technology, FCC), Larry Cress (Radiation Biology Branch, Center for Devices and Radiological Health, Food and Drug Administration), Robert A. Curtis (Director, OSHA Health Response Team, Occupational Safety and Health Administration), Joseph A. Elder (EPA), Norbert N. Hankin (EPA), and Russell D. Owen (Radiation Biology Branch, Center for Devices and Radiological Health, Food and Drug Administration). The letter

was faxed to Plaintiff Firstenberg by Norbert Hankin (EPA) on September 9, 1999.

20. Peer-reviewed studies have recently been published, predicting thermal skin burns in humans from 5G radiation (Nasim I, Kim S, Human exposure to RF fields in 5G downlink, arXiv:1711.03683v1 (2017)) and resonant absorption by insects (Thielens A, Bell D, Mortimore DB, Exposure of insects to radio-frequency electromagnetic fields from 2 to 120 GHz, *Nature/Scientific Reports* 8:3924 (2018), reporting that insects absorb up to 100 times as much radiation at millimeter wavelengths as they do at wavelengths presently in use). Since insect populations have declined by 75 to 98 percent since the 1970s, even in protected nature areas, 5G radiation could have catastrophic effects on insect populations as well as on birds and other species that depend on them. A 1986 study by Om Gandhi at the University of Utah warned that millimeter waves are strongly absorbed by the cornea of the eye, and that ordinary clothing, being of millimeter-size thickness, increases the absorption of energy by the skin by a resonance-type effect.

21. Together, the new City ordinances, the new State Act, and Section 704 remove all public protection from injurious facilities in the public rights-of-way, infringe on the public's right to speak about a danger to their own health, eliminate all public participation into the siting of such facilities, and deprive injured parties of any remedy for their injuries. Plaintiffs are such injured parties. Plaintiffs and Plaintiff's members have been previously injured by RF radiation from cell towers, have been deprived of any remedy for their injuries, and have been deprived of any

means of preventing further injury. They have been deprived of their right to due process guaranteed to them under the Fifth and Fourteenth Amendments to the United States Constitution. Additionally they have been deprived of their right to free speech and their right to petition the government for redress of grievances, guaranteed to them under the First Amendment. This Court is Plaintiffs' last resort to ensure their safety and their future from the harm perpetrated by Defendants.

22. Plaintiffs hereby seek a declaration that these laws, and any other laws that may be enacted by their City, their State, or the United States, that would deprive them of any means of protecting themselves from RF radiation and of any remedy for injury by such radiation, are unconstitutional, and to enjoin the enforcement of these laws.

PARTIES

23. Plaintiff **Alliance** is an organization of physicians, health care practitioners, psychotherapists, educators, artists and other citizens who reside and/or do business in the City of Santa Fe, and who have been personally and financially injured by wireless telecommunications facilities. The Alliance was formed in 2005 to educate the public about the health and environmental effects of electromagnetic radiation (EMR) from telecommunications facilities, and to advocate for policies and laws that protect the public health and environment from such radiation. Many of its members are environmental refugees, having fled

homes that they had to abandon when a cell tower was erected nearby.

24. **Alliance member Janice R. Olch** is an architect. She and her daughter were injured by cell phone antennas on a water tank near her home in Hondo Hills. She sold her home and they moved to a more remote area in Santa Fe County where cell phone reception is poor and the lots are large enough that they are not exposed to WiFi signals from the neighbors. **Alliance member John McPhee** is an official with the New Mexico Department of Health. He and his wife were injured by a community wireless transmitter in 2005 while residing in the Eldorado Subdivision south of Santa Fe. They moved back into the City in 2007 and took up residence on West Alameda Street. When the cell towers on the hill above their house were upgraded to 4G, they both began to experience headaches, nausea, chronic insomnia and loud ringing in their ears, and his wife started having seizures. Finally they purchased and moved into a house near Santa Fe High School, which gave them both relief and immediately reduced both the frequency and severity of his wife's seizures. **Alliance member Forrest Reed** is a civil engineer and environmental planner who used to work for the City of Santa Fe. She was injured in 2005 when Verizon Wireless concealed a cell tower, for which it had neither a building permit nor zoning permission, on the roof of a one-story building. The building was and is just a few houses away from Ms. Reed, and four of the cell tower's antennas are aimed toward at her home. Ms. Reed, who still lives in her home and cannot afford to move, hears the radiation, developed respiratory,

neurological and cardiac problems after that cell tower was erected, and more recently has developed an unusual form of lung cancer. **Alliance member Lynn Jacob** was a caseworker for the City of New York for 22 years. She becomes irritable, tired and weak if she spends time in the vicinity of a cell tower or is exposed to WiFi. She has thyroid cancer which is presently stable and is afraid that any increase in radiation will encourage the growth and spread of her cancer.

Alliance member Nina Zelevansky is a retired psychotherapist and an artist who has lived in the City for many years. Like most of the members of the Alliance, she is unable to use a cell phone because when she does, her face feels like it is on fire and she cannot think. She is presently homeless because she has not been able to finding housing which is not exposed to WiFi and/or a cell tower. **The Alliance also includes** a psychologist and author who was homeless for the same reason for five years, a world class athlete who was homeless for the same reason for eight years who now lives in a remote area south of the City, a physicist who lives in the City who had to leave his job at Los Alamos National Laboratory and almost became homeless for the same reason, and many others. The Alliance also includes physicians who have patients who were injured and/or made homeless by cell towers. Most members of the Alliance have had their mobility and access to City services and functions restricted by the new towers that have been erected pursuant to the Mayor's Proclamations.

25. Plaintiff **Arthur Firstenberg** is the president of the Alliance and a homeowner and taxpayer within the City. He is a refugee from cell tower radiation. Until 1996 he lived in an apartment on the top floor of a six-story building in Brooklyn, New York. On November 14, 1996, Omnipoint Communications (now T-Mobile) began offering the first ever digital cell phone service in the city, provided by 600 newly erected cell towers, one of which was on the roof of a neighboring building. Immediately he was in agony and after November 18, 1996 was completely unable to eat or sleep. During the night of November 21, 1996, he experienced paroxysmal laryngospasm: his vocal cords went into spasm three times so that he could not take a breath in or out. The next morning he left his apartment and the city to save his life. His relief was immediate. He moved upstate to Norwich, New York and lived there for two years. When a cell tower was built near his home in Norwich he moved to the village of Mendocino, California, where he lived from 1999-2004. When cell phone antennas were installed across Mendocino Bay, aimed directly at the village, he had to move back into his car. He arrived in Santa Fe in the summer of 2004 and rented a room in a house on Camino Principe. One year later Verizon Wireless added antennas to an existing cell tower a few blocks away at 1214 Camino Carlos Rey and he was forced into his car again. He lived in his car in Santa Fe for the next three years while searching for a place to live that did not threaten his life. His physician will testify that in addition to the aforementioned laryngospasm, his life-threatening injuries include cardiac

arrhythmia and elevated cardiac enzymes, indicative of damage to cardiac and/or skeletal muscle. His physician will testify that RF radiation is the primary cause of the aforementioned injuries. He purchased his present home in 2008. Several of the towers built under the Mayor's Proclamations have now restricted his mobility and his access to City services and functions: the new tower on the roof of the Convention Center denies him access to that building, and the new antenna aimed at Council Chambers restricts his access to City government; the new tower between the Water Division and the Chocolate Maven denies him access to City offices and a popular restaurant; the new tower at Fort Marcy Park denies him access to that park and the recreation facilities therein; the new tower in front of the Genoveva Chavez Community Center denies him access to that recreation center as well as government functions and public meetings held therein.

26. Firstenberg is president of the nonprofit organization Cellular Phone Task Force, which he co-founded in 1996 to call attention to the problem that had cost him his home and almost cost him his life. Today he communicates with ten thousand individuals and five hundred organizations representing refugees from wireless telecommunications facilities.

27. Plaintiff **Monika Steinhoff** is a homeowner and taxpayer within the City and an artist and owner of an art gallery. She was first injured by wireless technology when her cell phone started causing her hand to become numb and gave her an odd discomfort in her ear. In August 2010 she moved her art gallery to the

Arcade on the Plaza but often was dizzy and nauseous there. She was well at home, where there was no cell phone service, but at work, where she was exposed to more than 20 WiFi signals from neighbors, she was exhausted at the end of the day, had migraines, heart palpitations, internal bleeding, and severe insomnia. She left in October 2010, moving the gallery to her house for several months. In the spring of 2011, she moved her gallery to Guadalupe Street in the Railyard district, one block from Hotel Santa Fe. Business and sales were good, but a cell tower was erected on the roof of Hotel Santa Fe in 2013. She shielded the roof of her gallery as well as the large windows, which measurably reduced the radiation. But she still felt unwell inside, and worse outside in the street, and was forced to find yet another location for her gallery, on Canyon Road. Her doctor will testify that RF radiation is the primary cause of the aforementioned diagnoses, as well as the cause of her more recently elevated blood pressure. Several of the towers built under the Mayor's Proclamations have now restricted her mobility and her access to City services and functions: the new tower on the Convention Center denies her access to City Hall; she used to swim and work out at the Fort Marcy Complex but the new tower there denies her access; she is used to frequenting the Lensic Performing Arts Center for cultural and civic events at least once a month, but the new antennas across the street on the Sandoval Street Parking Garage have now made that impossible.

28. Defendant **City of Santa Fe** is a home rule municipality organized and incorporated pursuant to the laws of the State of New Mexico. Under these laws, the City is a zoning authority that controls all land uses within its borders and is obligated to protect the public health, safety and welfare. As a result of both its exercise of control over land use and its failure to exercise control over land use, the City has caused injurious levels of RF radiation to blanket its population and has failed in its duty to protect the public health, safety and welfare as well as in its duty to protect the rights of its citizens under the New Mexico and United States Constitutions.

29. Defendant **Hector Balderas** is the Attorney General of the State of New Mexico and is responsible for enforcing its laws. Because the Wireless Consumer Advanced Infrastructure Investment Act, NMSA 1978 § 63-9I (2018) (“WCAIIA”) contains no enforcement provisions, failure of the City to comply with its provisions could only be remedied by a mandamus action or other enforcement action by the Attorney General. WCAIIA contravenes the obligation of the State of New Mexico under its Constitution to operate for the public good, to control pollution and to protect the public health, safety and general welfare. As a result of WCAIIA, the State is causing injurious levels of RF radiation to blanket New Mexico and its beautiful environment, and is failing in its duty to protect the public health, safety and welfare as well as in its duty to protect the rights of its citizens under the New Mexico and United States Constitutions.

30. Defendant **United States of America** is the sovereign trustee of natural national resources, including forests and wildlife. Under its Constitution, the United States regulates interstate commerce. Under its Constitution, the United States is obligated to promote the public welfare. As a result of both its exercise of control over interstate commerce and its failure to exercise control over interstate commerce, the United States has caused injurious levels of RF radiation to blanket the nation, has substantially impaired its natural resources, has failed in its duty to promote the public welfare, and has deprived Plaintiffs of fundamental constitutional rights. Plaintiffs may not be deprived of their life, liberty and property without due process of law. U.S. Constitution, Amendment Five.

JURISDICTION AND VENUE

31. This action is brought pursuant to the United States Constitution. It is authorized by Article III, Section 2, which extends the federal judicial power to all cases arising in equity under the Constitution and to controversies to which the United States is a party. A controversy exists between Plaintiffs and Defendants because Defendants have placed Plaintiffs in a dangerous situation, continue to infringe upon Plaintiffs' constitutional rights, and have abrogated their duty of care to ensure Plaintiffs' reasonable safety, among other violations of law. Plaintiffs have no adequate remedy at law to redress the harms herein.

32. This Court has jurisdiction under 28 U.S.C., § 1331 (federal question); 28 U.S.C. §§ 2201 and 2202 (the Declaratory Judgment Act); 28 U.S.C. § 1343(a)(3),

giving the federal district courts original jurisdiction of any civil action to redress the deprivation, under color of any State law, statute, ordinance, regulation, custom or usage, of any right, privilege or immunity secured by the Constitution of the United States; and 28 U.S.C. § 1367 (supplemental jurisdiction). Plaintiffs' federal claims raise questions under the Telecommunications Act of 1996, Pub. L. No. 104-104, and Amendments One, Five, and Fourteen of the United States Constitution.

33. Venue is proper in this judicial district by virtue of 28 U.S.C. § 1391(b). All Plaintiffs reside in this judicial district, all Defendants have offices in this judicial district, and the events, omissions and harms giving rise to this action arise in substantial part in this judicial district.

STATEMENT OF FACTS

34. RF radiation is in the part of the electromagnetic spectrum that is called "nonionizing radiation." Frequencies higher than about a million billion times per second are called "ionizing radiation." That includes part of the ultraviolet spectrum, and all X-rays and gamma rays. It is called "ionizing" because it contains enough energy to knock electrons off of atoms and create ions. Nonionizing radiation is generally not energetic enough to create ions. Radio frequency ("RF") radiation includes microwave radiation as well as lower frequencies that are also used in wireless telecommunications systems.

35. There is virtually no natural RF radiation. Ambient levels of RF radiation in most cities today, from cell phones, WiFi, cell towers, and other

wireless technologies, are roughly ten million times as high as natural RF radiation from the Sun, and roughly one hundred billion times as high as RF radiation from a typical star. All RF signals used in telecommunications carry information in the form of low-frequency modulation, and almost all RF signals used today are digital, i.e. rapidly pulsed. No natural RF signals are modulated, and none are rapidly pulsed. The biological effects of RF radiation used in wireless technologies are caused not only by the high frequency carrier wave but also by the low frequency modulation and the pulsations.

36. RF radiation penetrates into houses and into our bodies. More than 10,000 peer-reviewed studies on humans, animals and plants have found one or more biological and health effects of RF radiation. *See* ¶¶ 13-17, *supra*. The effects are both acute and chronic. The acute effects include headaches, dizziness, nausea, eye pain, insomnia, tachycardia, hypertension, irregular heartbeat, anxiety, depression, memory loss, nosebleeds, digestive problems, and ringing in the ears. The chronic effects include diabetes, cancer, and heart disease. The acute effects have driven an estimated 20 million people from their homes worldwide, based on government surveys and data from 500 organizations with whom Plaintiffs here correspond, and have created a large class of environmental refugees.

37. When the City drafted its first Telecommunications Facilities Ordinance in 1998, it included protections from the dangers of cell towers. It required that the City:

- a. “ameliorate any impacts upon residents of the city of Santa Fe and the municipality of expanding needs for telecommunications facilities”;
- b. “minimize any adverse impacts of towers and antennas on residential areas and land uses”;
- c. “encourage the location of towers in non-residential areas”;
- d. “minimize the total number of towers throughout the community”;
- e. “gather information and provide remedies for the public health and safety impacts of communication towers”;
- f. “avoid potential damage to adjacent properties from tower[s];”

Santa Fe City Ord. No. 1998-16, § 15(F), (H), (I), (J), (N), and (O) (*see* Exhibit L, p. 15, lines 4-5, 8-9, 10, 11, and 23).

38. The 1998 ordinance applied to “[a]ll towers or antennas located within the city limits whether upon private or public lands,” Santa Fe City Ord. No. 1998-16, § 17. All towers and antennas in residential or historic districts required a Special Exception and new towers were not a permitted use in any zoning district. (*See* Exhibit J). There were application requirements, notice requirements, noise requirements, height limitations, and setback requirements. A new tower had to be a minimum distance of one thousand feet from any existing tower. Santa Fe City Ord. No. 1998-16, § 21(D) (Exhibit L, p. 35, lines 23-25).

39. The ordinance provided that antennas and towers in the public rights-of-way had to comply with all of the same land use requirements as antennas and

towers on private land, except there was an additional requirement that the applicant had to obtain a lease from the City, and that in deciding whether to grant or deny the lease the City had to consider “[t]he effect... on public health, safety and welfare,” *Id.*, § 41(E) (Exhibit L, p. 51, line 1).

40. The Santa Fe Task Force on Microwave Antennas, formed in February 2000, worked with the City for several years to minimize the impact of cell towers on public health. The Santa Fe Alliance for Public Health and Safety, a Plaintiff in this case, formed in 2005; its members, many of whom have been injured by cell towers and have previously lost homes and businesses due to the proximity of antennas, have participated in every approval process and have testified to their injuries and losses at every public hearing for every proposed telecommunications ordinance and every proposed telecommunications facility in Santa Fe from 2005 until the present day. Arthur Firstenberg, a Plaintiff in this case, was appointed by the Mayor in 2007 to a steering committee to advise the Information Technology and Telecommunications Department of the City of Santa Fe on the health effects of wireless Internet.

41. Despite knowing that RF radiation is hazardous, and despite additional knowledge about these hazards being supplied to the City by a succession of citizens’ groups and their experts, the City began in 2010 to deliberately repeal the protections of the public health, safety and welfare that it had encoded in the 1998 ordinance and to systematically eliminate every reference to the health effects

of RF radiation from the City Code. It revised Chapter 27 of the Santa Fe City Code (“Chapter 27”) to exempt telecommunications facilities in the public rights-of-way from the land use regulations of Santa Fe City Code, Chapter 14 (“Chapter 14”) (*see* Exhibit B, § 27-2.2(A)). It revised Chapter 14 to eliminate the requirements that the City “gather information and provide remedies for the health and safety impacts of communication towers” (former § 14-6.2(E)(1)(n), *see* Exhibit J; provision deleted in current land development code, SFCC § 14-6.2(E)(1), *see* Exhibit K). The requirement to minimize “*any* adverse impacts of antennas and towers” (former § 14-6.2(E)(1)(h), *see* Exhibit J) was changed to “*land use* impacts of antennas and towers” (current § 14-6.2(E)(1)(d), *see* Exhibit K). New towers, which previously required a Special Exception in all zoning district (previous Table 14-6.1-1, *see* Exhibit J), were now made a permitted use in all zoning districts (current Table 14-6.1-1 and § 14-6.2(E)(5)(a), *see* Exhibit K). Leases were replaced with franchises, and franchisees no longer had to get approval of antennas on a site-by-site basis.

42. Chapter 27, as revised in 2010, still required that applicants for wireless telecommunications facilities in the public rights-of-way provide specific information about their RF emissions; required that any subsequent increase in RF emissions be subject to approval by the City; required applicants to certify compliance with the FCC’s RF exposure guidelines; and authorized the City to retain an independent radio frequency engineer to verify such compliance. (Exhibit B, attached hereto, §§ 27-2.13(F)(1)(c) and 27-2.13(O) (2010)). However, in a pair of

ordinances, adopted November 9, 2016 and August 30, 2017, the City repealed every one of those requirements, along with almost all notice, hearing, and application requirements, for telecommunications facilities in the public rights-of-way.

- New wireless facilities no longer require submittal of an application at all if they conform to existing design standards;
- New facilities no longer require review by the Planning commission;
- Facilities in historic districts no longer require review by the Historic Districts Review Board;
- Information regarding radio frequency emission is no longer required;
- Proof, or even self-certification, of compliance with the FCC's radio-frequency exposure guidelines is no longer required;
- Public notice is no longer required;
- Notice to neighbors of planned facilities is no longer required.

Santa Fe City Ordinances No. 2016-42 and 2017-18 (attached hereto as Exhibits C and D).

43. The only requirement left for putting telecommunications facilities on Santa Fe's streets and sidewalks is the possession of a franchise. Franchises will be awarded to all telecommunications providers on a non-discriminatory basis, and franchisees will be permitted to erect unlimited numbers of antennas and towers

wherever they please in the public rights-of-way with no public hearings, no public comment, no public notice, no notice to neighbors, no setback requirements, no certification of compliance with the FCC's safety regulations, and without even submitting an application to the City. The only remaining requirement besides possession of a franchise is for telecommunications providers to comply with design guidelines that the City will have adopted. Santa Fe City Code § 27-2.19(C)(1)(a) (2018). (*See* Exhibit D, pp. 2-3). But even this minimal requirement is no longer being enforced because under the new State law, WCAIIA, such facilities are exempt from *all* land use requirements. NMSA 1978 §§ 63-9I-4(C) and 5(B) (2018) (*See* Exhibit H, pp. 12 and 19-20). City residents will have no warning before cell tower transmitters suddenly appear in front of their homes and businesses or outside their children's bedroom windows and school classrooms, and they will have no recourse.

44. The preponderance of the public testimony at the hearings held on Ordinances Nos. 2016-42 and 2017-18 was about health. However, the public was told that none of this testimony would be considered, and in fact none of it was considered.

COUNCILOR HARRIS: ... As we know, the whole health issue is not allowed to be a criteria.

November 9, 2016 City Council Minutes, page 66.

COUNCILOR IVES: ... the City's hands are tied by federal law, which prohibits us from prohibiting folks from being able to

provide such services and from considering the health effects in the decisions we make...

Id., page 71.

CITY ATTORNEY BRENNAN [before the public testimony]: ... As you know, we cannot regulate construction, placement, modification of facilities, based on environmental effects.

August 30, 2017 City Council Minutes, page 46.

CITY ATTORNEY BRENNAN [after the public testimony]: ... a large percentage of the commentary tonight was about health ... I can only reiterate the federal law is very clear on the point that in these cases, with the modification, placement or construction of wireless facilities, the decision cannot be made based on environmental effects, include health effects of EMFs.

Id., pages 60-61.

45. At the present time, almost all wireless telecommunications facilities in Santa Fe are on private property or City-owned property, and not in the public rights-of-way where people walk. ***None are located in front of homes and businesses.*** Because of previous litigation and the invalidation of successive versions of Chapter 27 by successive court decisions, no applications for telecommunications facilities in the public rights-of-way were processed by the City until 2018.

PRIOR LITIGATION

46. On December 8, 2016, Plaintiffs here, Alliance and Firstenberg, filed a Complaint for Declaratory Relief in state court, Case No. D-101-CV-2016-02801 in the First Judicial District of New Mexico, asking the court to issue an order

declaring Chapter 27 as amended by Ordinance No. 2016-42 void and unenforceable and asking for injunctive relief. The Complaint was dismissed by the court as not ripe for review because no franchises had yet been awarded.

47. On November 21, 2017, the threat to Plaintiffs' lives was made more immediate when Mayor Javier Gonzales signed the first of three Proclamations (*see* Exhibit E, F and G) declaring a "State of Emergency" due to bad cell phone service. The Proclamations suspended the *entire* Land Development Code, including public notice requirements, with respect to telecommunications facilities on City-owned property. Seven cell towers have been built under the Proclamations: one at Fire Station 4 at 1130 Arroyo Chamiso Road; one at the City's Water Division at 801 West San Mateo Road in the driveway between the Water Division and the Chocolate Maven; one at Fort Marcy Park next to the Fort Marcy Complex recreation center; one in the parking lot in front of the Genoveva Chavez Community Center, 3221 Rodeo Road; one on the roof of the Sandoval Street Parking Garage at 220 West San Francisco Street; one at the City's water treatment plant at 1780 Upper Canyon Road; and one at 201 West Marcy Street on the roof of the elevator structure of the Santa Fe Community Convention Center's parking garage, next to City Hall. One of the antennas on top of the elevator structure is aimed directly at Council Chambers, endangering the health of everyone who wants to participate in City government. Chapter 14 of the Santa Fe City Code—the Land Development Code—applies to "[a]ll towers or antennas

located within the City's jurisdiction, whether upon private or public lands" with the exception of the public rights-of-way. Santa Fe City Code § 14-6.2(E)(2)(a) and (b)(1). None of the new towers erected pursuant to the Mayor's Proclamations are in the public rights-of-way. All land use regulations were suspended to build these towers.

48. The Mayor's First Proclamation of Emergency was issued and signed by the Mayor and City Clerk three weeks before other City officials or the public learned of it. The Proclamation was announced to the public on December 11, 2017. On December 12, 2017, the *Santa Fe New Mexican* ran a front-page story quoting Fire Chief Erik Litzenberg and Deputy Police Chiefs Andrew Padilla and Mario Salbidrez as stating that they knew of no instances of residents being unable to reach emergency services, or any compromise of police or fire service due to insufficient telecommunications facilities.

49. On January 11, 2018, Plaintiffs filed a complaint in this Court, Case No. 1:18-cv-00032, asking the Court to intervene to protect their homes and properties and to protect the public health, safety, and welfare that was immediately endangered.

50. On April 6, 2018, the Court dismissed the complaint without prejudice for lack of jurisdiction. The Court ruled that Plaintiffs had not alleged sufficient facts to support standing.

51. On May 7, 2018, Plaintiffs filed an amended complaint and a Rule 59 motion asking the Court to reconsider and reopen its judgment of April 6, 2018, having added additional allegations and greater detail to remedy the deficiencies pointed out by the Court.

52. On May 9, 2018, the factual and legal situation changed. The City awarded franchises to five telecommunications companies under the new City ordinances: Plateau Telecommunications, Inc.; Cyber Mesa Computer Systems, Inc.; Conterra Ultra Broadband, LLC; Computer Network Service Professional, Inc. dba NMSURF; and Mobilitie, LLC dba Broadband Network of New Mexico, LLC. At the public hearing, City officials discussed the implications of the new State law, the Wireless Consumer Advanced Infrastructure Investment Act, NMSA 1978 § 63-9I (“WCAIIA”), which was signed on March 2, 2018 and was due to go into effect on September 1, 2018. Large portions of the City’s new ordinances, they said, were being preempted. At the same time, a number of bills were being introduced into Congress at the Federal level, whose purpose was to prohibit States and municipalities nationwide from regulating wireless telecommunications facilities in the public rights-of-way at all.

53. On May 23, 2018, since the Court had dismissed their complaint without prejudice, and because either the State of New Mexico *or* its Attorney General was now a necessary party, Plaintiffs withdrew their Rule 59 motion and prepared to draft this fresh complaint, incorporating the new set of facts and laws

and adding both the New Mexico Attorney General and the United States as defendants.

54. The installation of 5G throughout Santa Fe is imminent. Cyber Mesa, one of the new franchisees, is preparing right now to install antennas mounted on lamp posts in front of businesses at the four corners of Santa Fe Plaza. Cyber Mesa had announced they would be installed by December 31, 2018 but were delayed by the weather. NMSURF, another of the new franchisees, is preparing to install three antennas mounted on lamp posts along Saint Francis Drive, and one on a lamp post on Saint Michael's Drive. Mobilitie, another of the new franchisees and contractor for Sprint, is preparing to install the first four of hundreds of lamp post installations on the sidewalks of Santa Fe; and the City is right now processing additional applications for franchises from additional telecommunications providers.

55. Plaintiffs file this amended complaint today against the City of Santa Fe, the New Mexico Attorney General, and the United States of America. Since both the City and the State have now passed laws removing all public protection, all public process, and all notice requirements for injurious facilities in the public rights-of-way, both the City and the State or its Attorney General are necessary parties defendant. In addition, Section 704 of the Telecommunications Act of 1996, 47 U.S.C. § 332(c)(7)(B)(iv) and (v) prohibits states and municipalities from regulating telecommunications facilities on the basis of environmental effects,

which has been interpreted as meaning health effects. Injured parties, such as Plaintiffs here, have been foreclosed from filing state tort actions for injury by such facilities, *see Farina v. Nokia*, 625 F.3d 97 (3rd Cir. 2010); *Murray v. Motorola*, 982 A.2d 764 (D.C.App. 2009), and no substitute federal remedy has been provided. Moreover, several bills have been introduced into Congress that would deprive states and local governments nationwide of the power to apply land use regulations to wireless facilities in the public rights-of-way at all, and the FCC has adopted regulations exempting wireless facilities in the public rights-of-way nationwide from the National Environmental Policy Act and the National Historic Preservation Act.

56. Together, the new City Ordinances (No. 2016-42 and No. 2017-18), the new State Act (WCAIIA), and Section 704 remove all public protection from injurious facilities in the public rights-of-way and deprive injured parties of any remedy for their injuries. The new FCC regulations compound this denial of constitutional rights, and the introduced Congressional bills would compound it even more. Plaintiffs are such injured parties. Plaintiffs ask the Court to issue an emergency injunction preventing the construction of an entirely new generation of radiating facilities on the sidewalks throughout Santa Fe, directly in front of homes and businesses, while this case goes to trial. Plaintiffs will prove, through the testimony of experts in various fields of medicine and science, that these facilities

pose an immediate threat to the health, wellbeing and future of all Santa Fe residents.

57. Attached hereto for the Court's convenience are Chapter 27 as adopted in 1998 (Exhibit A); Chapter 27 as revised in 2010 (Exhibit B); City Ordinance No. 2016-42 (Exhibit C); City Ordinance No. 2017-18 (Exhibit D); the Mayor's first proclamation of emergency (Exhibit E); the Mayor's second proclamation of emergency (Exhibit F); the Mayor's third proclamation of emergency (Exhibit G); the Wireless Consumer Advanced Infrastructure Investment Act (Exhibit H); and 47 U.S.C. § 332(c)(7)(B)(iv) and (v) (Exhibit I). Also attached are relevant sections of Chapter 14 as adopted in 1998 (Exhibit J) and as codified today (Exhibit K), and Ordinance No. 1998-16 (Exhibit L).

LEGAL CLAIMS

58. The City, as a zoning authority, has the responsibility to regulate telecommunications facilities for the public good. In fulfilling this responsibility, the City may not violate the fundamental Constitutional rights of its citizens. Any State law or federal law that requires the City to violate the Constitution, is itself unconstitutional, and therefore is not a bar to any of Plaintiffs' claims against the City.

FIRST CAUSE OF ACTION

(U.S. Constitution, Amendment Fourteen,
and New Mexico Constitution, Article II, Section 18)

**CHAPTER 27 AS AMENDED, AND WCAIIA, VIOLATE
PROCEDURAL AND SUBSTANTIVE DUE PROCESS**

59. All previous paragraphs are incorporated herein by reference.

60. Under Chapter 27 as amended by Ordinances 2016-42 and 2017-18, and also under WCAIIA, the construction of wireless telecommunications facilities on private property in all zoning districts is subject to at least notice and comment prior to construction, and an appeals process afterwards, but the construction of most wireless telecommunications facilities in the public rights-of-way in the same districts are not subject to notice, comment, or an appeals process. Notice and an opportunity to be heard are the minimum requirements for Procedural Due Process.

61. Chapter 27 as amended, and WCAIIA, also violate Substantive Due Process. The U.S. Constitution and the New Mexico Constitution guarantee the fundamental right of citizens to be free from government actions that harm life, liberty, and property. These inherent and inalienable rights reflect a basic societal contract. The rights to life, liberty, and property have evolved and continue to evolve as technological advances pose new threats to these fundamental rights.

62. Plaintiffs and Plaintiff's members are already refugees from cell towers. They have already been injured by towers and antennas and have previously lost homes and businesses due to their proximity.

63. In enacting Ordinances Nos. 2016-42 and 2017-18, and in enacting WCAIIA, the City has determined to authorize, and the State has determined to require, the unrestrained and unprotected siting of wireless telecommunications facilities in front of thousands of residences and businesses despite knowing that the results of their acts endanger Plaintiffs' lives, liberties, and properties. Plaintiffs will no longer be safe at home or work or while traveling on the public streets.

64. For at least the past twenty years, the City has known about the danger to Plaintiffs' health and safety created by RF radiation, yet has repealed all protections from that danger. For at least the past forty years, the State has known about the danger. These deliberate actions by the City and State have resulted in injurious levels of RF radiation, which deprive Plaintiffs of their fundamental rights to life, liberty and property, their capacity to earn a living, safely raise families, and provide for their basic human needs. The City and State have each acted with deliberate indifference to the known danger. Given that the dangers are so substantial, the City's and State's deliberate indifference shocks the conscience.

65. The actions of the City and the State, separately and jointly, have deprived Plaintiffs of the reasonable expectation of a home without radiation. These acts of the City and State cannot and do not operate to secure a more compelling state interest than Plaintiffs' fundamental, constitutionally guaranteed rights to life, liberty, and property.

66. Ordinances 2016-42 and 2017-18, and WCAIIA, are unconstitutional and therefore void.

SECOND CAUSE OF ACTION

(U.S. Constitution, Amendment Fourteen,
and New Mexico Constitution, Article II, Section 18)

THE MAYOR'S PROCLAMATIONS OF EMERGENCY VIOLATED DUE PROCESS

67. All previous paragraphs are incorporated herein by reference.

68. Under the Mayor's Proclamations of Emergency, the City suspended all land use regulations for cell towers on City-owned land for six months, regardless of height, aesthetics, zoning district, proximity to homes or businesses, or anything else, and regardless of whether they conformed to design standards or not. Under the Proclamations of Emergency, the City not only suspended land use regulations but signed a contract with Verizon Wireless for the erection of wireless telecommunications facilities on City-owned land without notice to anyone or an opportunity for anyone to be heard, as required by City zoning regulations and the U.S. and New Mexico Constitutions.

69. The Mayor acted with deliberate indifference to the known danger. Given that the dangers are so substantial, the Mayor's deliberate indifference shocks the conscience.

70. The actions of the Mayor, as enforced by the City, have deprived Plaintiffs of the reasonable expectation of a home without radiation. These acts

cannot and do not operate to secure a more compelling state interest than Plaintiffs' fundamental, constitutionally guaranteed rights to life, liberty, and property.

71. The Proclamations of Emergency violate the U.S. and New Mexico Constitutions and are therefore void.

THIRD CAUSE OF ACTION
(U.S. Constitution, Amendments Five and Fourteen)

**CHAPTER 27 AS AMENDED AND WCAIIA
ARE AN UNCONSTITUTIONAL TAKING**

72. All previous paragraphs are incorporated herein by reference.

73. In enacting Ordinances Nos. 2016-42 and 2017-18, and in enacting WCAIIA, the City has determined to authorize, and the State has determined to require, the placement of wireless telecommunications facilities anywhere on the streets and sidewalks of Santa Fe without regard to their proximity to homes and businesses.

74. Plaintiffs and Plaintiff's members are already refugees from cell towers and antennas and have already lost previous homes and businesses due to their proximity. The award of franchises by the City, and their exemption from land use regulations by the State, for the placement of wireless telecommunications facilities on the sidewalk directly in front of Plaintiffs' homes and businesses will render their present homes and businesses similarly uninhabitable and unusable and is an unlawful confiscation of property without compensation.

75. These actions by the City and State, separately and jointly, constitute a taking without just compensation, in violation of the Fifth and Fourteenth Amendments.

FOURTH CAUSE OF ACTION
(U.S. Constitution, Amendment One)

CHAPTER 27 AS AMENDED, WCAIIA, AND SECTION 704
VIOLATE THE RIGHT TO PETITION

76. All previous paragraphs are incorporated herein by reference.

77. Section 27 as amended and WCAIIA each deprive people threatened with injury by RF radiation from wireless telecommunications facilities of the right to protest such facilities, receive notice before such facilities are erected, or exercise their due process rights before such facilities are erected.

78. Section 704 deprives people of the right to testify about such injury, and deprives their local governments of the power to protect them from the injurious effects of RF radiation. Section 704 deprives people injured, sickened, and/or killed by such radiation of access to state courts for redress for their injuries, and provides them no substitute federal remedy.

79. Plaintiffs and Plaintiff's members are such injured persons and are imminently threatened with further injury by the City's actions.

80. Section 704 is not a bar to Plaintiffs' claim against the City because the City may not violate the First Amendment.

81. Separately and collectively, Section 27 as amended, WCAIIA, and Section 704 violate the First Amendment's guarantee of the Right to Petition the Government for Redress of Grievances.

FIFTH CAUSE OF ACTION
(NMSA 1978 § 3-21-1(A) (2007))

THE CITY HAS ABDICATED ITS RESPONSIBILITIES AS A ZONING AUTHORITY

82. All previous paragraphs are incorporated herein by reference.

83. Cities have traditionally regulated utilities that occupy their rights-of-way in two ways: either by site-specific leases, by which the city retains control over the location of proposed facilities, or by franchises, by which cities give up that control.

84. In amending Chapter 27 by Ordinances 2016-42 and 2017-18, the City of Santa Fe not only has chosen franchises over leases, but has effectively eliminated all other land use regulations, such that an application for a franchise is the only requirement before a telecommunications company can begin erecting unlimited numbers of telecommunications facilities in the City's public rights-of-way. The City has enacted an all-or-nothing ordinance. If the City grants a franchise, the applicant can erect unlimited numbers of antennas and towers without further interference. If the City denies a franchise, the applicant cannot operate in the City.

85. Under the federal Telecommunications Act, 47 U.S.C. §§ 253 and 332(c)(7)(B)(i)(I) and (II), a municipality's regulations may not (a) have the effect of

denying telecommunications service, and (b) may not discriminate between providers of functionally equivalent services. Therefore, the way Chapter 27 is now structured, the denial of any franchise to any telecommunications company would violate federal law. With respect to telecommunications facilities, the City has given up all control over its streets and sidewalks.

86. State law provides that the City “is a zoning authority” for the purpose of “promoting health, safety, morals or the general welfare.” NMSA 1978, § 3-21-1(A) (2007). Furthermore, the City Code states as follows: “The purposes of Chapter 14 are to: (A) implement the purposes of the general plan, including guiding and accomplishing a coordinated, adjusted and harmonious development of Santa Fe that will best promote health, safety, order, convenience, prosperity and the general welfare” Santa Fe City Code § 14-1.3(A) (2011). In addition, the City Code provides that “[t]he provisions of Chapter 14 apply to all land, buildings and other structures, and their uses, located within the corporate limits of Santa Fe, including land owned by local, county, state or federal agencies to the extent allowed by law.” Santa Fe City Code § 14-1.6 (2011).

87. The public rights of way in Santa Fe are enjoyed by all residents, and nearly every home or business has frontage on one or more public rights of way. The evisceration of land use regulations and zoning regarding public rights-of-way renders meaningless laws intended to protect the public health and safety.

88. In amending chapter 27, the City has breached its duty as a zoning authority to protect Plaintiffs' health and safety.

SIXTH CAUSE OF ACTION
(NMSA 1978, Section 3-21-1(B)(2) (2007))

**CHAPTER 27 AS AMENDED PROVIDES FOR
NON-UNIFORM ZONING REGULATIONS**

89. All previous paragraphs are incorporated herein by reference.

90. State law provides that the City as a zoning authority may “regulate or restrict the erection, construction, reconstruction, alteration, repair or use of buildings, structures or land in each district. *All such regulations shall be uniform for each class or kind of buildings within each district....*” NMSA 1978, Section 3-21-1(B)(2) (2007). (Emphasis added).

91. The purpose of uniform zoning laws is to protect private property and maintain order. Therefore “industries and structures likely to create nuisances” are excluded from residential districts. *Euclid v. Amber Realty Co.*, 272 U.S. 365, 388 (1926). A person who purchases a home in a residential district has the right to rely on a single, uniform set of zoning regulations that apply throughout that district, not just on three sides of his or her property but on *all* sides. Setback requirements, for example, that were enacted for reasons of health and safety would become meaningless if they applied only on three sides of a person's property and did not apply on the side abutting the public right-of-way.

92. Under Chapter 27 as amended by Ordinances Nos. 2016-42 and 2017-18 and under WCAIIA, telecommunications facilities in the public rights-of-way are exempt from the zoning regulations in SFCC 1987, Section 14-6.2(E) (2011) that apply to all other telecommunications facilities, as well as from the zoning regulations in SFCC 1987, Section 14-5.2 that apply to all other buildings and structures in historic districts. Chapter 27 as amended therefore provides two-tier zoning regulations for every district in Santa Fe: one set of regulations that apply to structures on private property, and a second, more relaxed set of regulations that apply to structures in the public rights-of-way.

93. Under Chapter 27 as amended, a tower or antenna on private land abutting one's property requires a site-specific application containing all the elements required by Section 14-6.2(E) including: notification of all neighbors within 200 feet of the antenna or tower; compliance with setback requirements from property lines; for new towers in a residential district, an early neighborhood notification meeting and a public hearing before the planning commission; and for towers and antennas in a historic district, a public hearing before the historic districts review board. A tower or antenna in the public right-of-way in the same district abutting the same property requires neither a separate application, notification of neighbors, setback requirements from property lines, early neighborhood notification meeting, nor public hearing.

94. In amending Chapter 27, the City has breached its duty as a zoning authority to protect Plaintiffs' property as required by NMSA 1978, Section 3-21-1(B)(2) (2007).

SEVENTH CAUSE OF ACTION
(N.M. Const., Article II, Section 4)

95. All previous paragraphs are incorporated herein by reference.

96. Article II, Section 4 of the New Mexico Constitution states: "All persons are born equally free, and have certain natural, inherent and inalienable rights, among which are the rights of enjoying and defending life and liberty, of acquiring, possessing and protecting property, and of seeking and obtaining safety and happiness."

THE RIGHT TO PROTECTION OF PROPERTY

97. Ordinances Nos. 2016-42 and 2017-18 and WCAIIA deprive property owners of prior notice, an opportunity to comment and/or testify at a public hearing, a minimum setback distance from their property lines, and other protections from dangerous facilities being built on the sidewalk in front of their house.

98. Plaintiffs and Plaintiff's members are already refugees from cell towers and antennas and have lost previous homes and businesses due to their proximity. *See ¶¶ 23-27, supra.* The award of franchises by the City, and their exemption from land use regulations by the State, for the placement of wireless telecommunications facilities on the sidewalk directly in front of Plaintiffs' homes and businesses will render their present homes and businesses similarly uninhabitable and unusable.

99. Chapter 27 as amended by Ordinances Nos. 2016-42 and 2017-18 and WCAIIA, separately and jointly, violate the inalienable right to protect property possessed by **Plaintiffs** under Article II, Section 4 of the New Mexico Constitution.

THE RIGHT TO SAFETY AND THE RIGHT TO DEFEND LIFE

100. Chapter 27 as amended and WCAIIA repeal all previous restraints on the pollution of private property with radiation from cell towers and antennas. Such radiation has been proven harmful to life in over 10,000 peer-reviewed studies. *See* ¶¶ 13-20, *supra*.

101. Plaintiffs and Plaintiff's members have already been injured and driven out of their homes by cell towers and antennas, and some have barely escaped with their lives. *See* ¶¶ 23-27, *supra*. Their health, safety, and survival depend on their being able to avoid RF radiation.

102. Chapter 27 as amended by Ordinances Nos. 2016-42 and 2017-18 and WCAIIA, separately and jointly, violate the inalienable rights to safety and to defend life possessed by **Plaintiffs** under Article II, Section 4 of the New Mexico Constitution.

EIGHTH CAUSE OF ACTION
(N.M. Const., Article XX, Section 21)

**CHAPTER 27 AS AMENDED AND WCAIIA
VIOLATE POLLUTION CONTROL REQUIREMENTS**

103. All previous paragraphs are incorporated herein by reference.

104. Article XX, section 21 of the New Mexico Constitution is titled “Pollution control” and states: “The protection of the state's beautiful and healthful environment is hereby declared to be of fundamental importance to the public interest, health, safety and the general welfare. The legislature shall provide for control of pollution and control of despoilment of the air, water and other natural resources of this state, consistent with the use and development of these resources for the maximum benefit of the people.”

105. The State of New Mexico has known for at least 40 years that non-ionizing radiation can pose a danger to humans and the environment. In the New Mexico Statutes, the definition of “pollution” includes “radiation,” NMSA 1978 § 4-60-2 (1978), and the definition of “radiation” in the Radiation Protection Act includes, without restriction, “electromagnetic radiation.” NMSA 1978 § 74-3-4(D). Moreover, “[i]t is unlawful, unless licensed by the department [of environment] as a medical imaging professional or radiation therapist, for any person to use ionizing or non-ionizing radiation on humans” (emphasis added). NMSA 1978 § 61-14E-7(A)(1).

106. Thousands of peer-reviewed studies have proven specific harm, caused by cell towers and other sources of RF radiation, to ants, birds, forests, amphibians, fruit flies, honey bees, other insects, farm animals, mice, rats, and trees. See ¶ 15, *supra*.

107. Ordinances No. 2016-42 and 2017-18 and WCAIIA repeal all previous restraints on the pollution of the environment with types of radiation proven to be harmful to humans, animals and plants. Ordinance 2017-18 even repeals self-certification of compliance with the non-mandatory safety guidelines set by the FCC for human exposure to RF radiation.

108. Chapter 27 as amended and WCAIIA, separately and jointly, abdicate the responsibility of government under Article XX, section 21 of the New Mexico Constitution to control pollution.

NINTH CAUSE OF ACTION
(NMSA 1978, §§ 3-21-1(A) and 3-21-5(A)(3) (1970)
SFCC §§ 14-1.3 and 14-4.1(A)(2)

CHAPTER 27 AS AMENDED
DAMAGES HEALTH AND THE GENERAL WELFARE

109. All previous paragraphs are incorporated herein by reference.

110. The protection of health and welfare is so fundamental to the function of government that this function is encoded in numerous provisions of law at every government level.

111. Section 3-21-1(A) of the New Mexico Statutes states: For the purpose of promoting health, safety, morals or the general welfare, a county or municipality is a zoning authority....”

112. Section 3-21-5(A)(3) of the New Mexico Statutes states: “The regulations and restrictions of the county or municipal zoning authority are to be in

accordance with a comprehensive plan and be designed to... (3) promote health and the general welfare.”

113. Section 14-1.3 of the Santa Fe City Code states that “[T]he purposes of chapter 14 are to: (A) implement the purposes of the general plan, including guiding and accomplishing a coordinated, adjusted and harmonious development of Santa Fe that will best promote health, safety, order, convenience, prosperity and the general welfare....”

114. Section 14-4.1(A)(2) of the Code states that the “regulations for the development and use of structures and land” in the City’s zoning districts “are made in accordance with the general plan and are designed to ... promote health and the general welfare...”

115. However, instead of promoting health and the general welfare, Ordinances 2016-42 and 2017-18 have removed all previous protection from harmful technology and all ability of the Plaintiffs, who have already been injured severely by such technology, to protect themselves from it.

116. Chapter 27 as amended damages health, safety, and the general welfare, in violation of numerous State and City laws.

TENTH CAUSE OF ACTION
(NMSA 1978 § 3-21-6(B) (1970))

ORDINANCES 2016-42 AND 2017-18
ADOPTED ZONING CHANGES WITHOUT NOTICE TO NEIGHBORS

117. All previous paragraphs are incorporated herein by reference.

118. Section 3-21-6(B) of the New Mexico Statutes requires that “[w]henEVER a change in zoning is proposed for an area of more than one block, notice of the public hearing shall be mailed by first class mail to the owners, as shown by the records of the county treasurer, of lots or [of] land within the area proposed to be changed by a zoning regulation and within one hundred feet, excluding public right-of-way, of the area proposed to be changed by zoning regulation.”

119. Ordinances 2016-42 and 2017-18 effected changes in zoning for public rights-of-way without any notice to Plaintiffs, most of whom own land within one hundred feet of such rights of way, in violation of NMSA 1978, § 3-21-6(B) (1970).

ELEVENTH CAUSE OF ACTION
(Santa Fe City Charter, § 2.02)

CHAPTER 27 AS AMENDED
VIOLATES THE HUMAN RIGHTS AND HUMAN DIGNITY
OF THE RESIDENTS OF SANTA FE

120. All previous paragraphs are incorporated herein by reference.

121. Chapter 27 as amended deprives the residents of Santa Fe of the ability to protect themselves against types of radiation proven to be harmful to life and safety, contrary to Section 2.02 of the Santa Fe City Charter, which states that “[t]he human and civil rights of the residents of Santa Fe ***are inviolate*** and ***shall not be diminished or otherwise infringed...*** The governing body shall preserve, protect and promote human rights and human dignity...” (Emphasis added).

122. Many residents of Santa Fe, including Plaintiffs and their members, are refugees from RF radiation elsewhere, having previously been injured by towers and antennas, and having lost homes and businesses due to their proximity. Plaintiffs' ability to remain healthy, earn a living, raise their families, provide for their needs, and continue to live in Santa Fe is dependent on non-exposure to RF radiation.

123. Chapter 27 as amended deprives Plaintiffs of their human rights and human dignity in violation of section 2.02 of the Santa Fe City Charter.

TWELFTH CAUSE OF ACTION
(Santa Fe City Charter, § 2.03)

CHAPTER 27 AS AMENDED
DAMAGES THE CITY'S ENVIRONMENT

124. All previous paragraphs are incorporated herein by reference.

125. Section 2.03 of the Santa Fe City Charter, titled "Environmental protection," requires that "the governing body shall protect, preserve and enhance the city's natural endowments... and promote and maintain an aesthetic and humane urban environment."

126. Thousands of peer-reviewed studies have proven specific harm, caused by cell towers and other sources of RF radiation, to ants, birds, forests, amphibians, fruit flies, honey bees, other insects, farm animals, mice, rats, and trees. *See* § 15, *supra*.

127. Ordinances No. 2016-42 and 2017-18 and WCAIIA repeal all previous restraints on the pollution of the environment with types of radiation proven to be harmful to humans, animals and plants. Ordinance 2017-18 even repeals self-certification of compliance with the non-mandatory safety guidelines set by the FCC for human exposure to RF radiation.

128. Chapter 27 as amended damages the City's environment, in violation of section 2.03 of the Santa Fe City Charter.

THIRTEENTH CAUSE OF ACTION
(NMSA 1978, § 30-8-1 (1963) and SFCC §§ 10-9.3 and 23-1.2(B)(3))

CHAPTER 27 AS AMENDED
PROVIDES FOR THE CREATION OF PUBLIC NUISANCES

129. All previous paragraphs are incorporated herein by reference.

130. The amendments to Chapter 27 were adopted without lawful authority.

131. Under NMSA 1978, § 30-8-1, a public nuisance is a misdemeanor that consists of "knowingly creating, performing or maintaining anything affecting any number of citizens without lawful authority which is either: A. injurious to public health, safety, morals or welfare; or B. interferes with the exercise and enjoyment of public rights, including the right to use public property."

132. Under Section 10-9.3(E) of the Santa Fe City Code, a public nuisance is "knowingly creating, performing or maintaining anything affecting any number of citizens without lawful authority which is either (1) Injurious to public health,

safety, morals or welfare; or (2) Interferes with the exercise and enjoyment of public rights, including the right to use public or private property.”

133. Under Section 23-1.2(B)(3) of the Santa Fe City Code, a public nuisance is “any activity, function, status, or the result of such activity, function, or status whether participated in by one person or several, whether caused by machines, persons, or other devices, which affects the health, safety, and welfare of an individual, a neighborhood or community and degrades the quality of life for such individual, neighborhood or community,” without regard for whether the nuisance was created by lawful authority.

134. Section 10-9.2 of the Santa Fe City Code requires “[t]he abatement of public nuisances for the protection of public health, safety, and welfare....”

135. Chapter 27 as amended provides for the creation of public nuisances, not their abatement, in violation of State and City law.

FOURTEENTH CAUSE OF ACTION (Ultra Vires)

MAYOR’S PROCLAMATIONS

136. All previous paragraphs are incorporated herein by reference.

137. The Mayor’s Proclamations fall beyond the scope of his authority under the City Code, the City Charter, and State law.

138. The Mayor may proclaim a state of emergency pursuant to Section 20-1 of the City Code, the Riot Control Ordinance, if he “determines that a public disorder, riot, disaster or emergency exists in the municipality.” Once an

emergency is declared, the Mayor is authorized to “prohibit ... activities the mayor reasonably believes should be prohibited to help maintain life, property or the public peace.” Acts that may be so prohibited include being on the street after curfew, § 20-1.2(A); any designated number of people from assembling or gathering, § 20-1.2(B); the manufacture, use, or transportation of explosives, § 20-1.2(C); the transportation, possession or use of combustible materials except for normal home or commercial use, § 20-1.2(D); the possession of firearms in public, § 20-1.2(E); the sale of alcoholic beverages, § 20-1.2(F); or the use of designated streets of highways. § 20-1.2(G). This authority does not include ordering the installation of wireless telecommunications facilities in public rights of way while land use regulations are suspended. The fire chief and two deputy police chiefs stated to the media that there was no emergency and no interruption of police or fire service due to insufficient telecommunications facilities. Section 20-1.4 of the Santa Fe City Code provides that a state of emergency “terminates automatically at noon on the third day after it becomes effective unless sooner terminated by proclamation of the mayor.” The Mayor is not authorized to declare that any state of emergency will last for six months.

139. Section 5.01 of the City Charter and Section 2-1.3 of the City Code command the mayor to “cause the ordinances and regulations of the city to be faithfully and constantly obeyed,” not to unilaterally suspend them. They allow the mayor to “perform other duties compatible with the nature of the office as the

governing body may from time to time require,” not as he unilaterally may decide. They give the mayor “the power conferred on the sheriffs of counties to suppress disorders and keep the peace”; the sheriffs are not conferred with the authority to order cell towers to be built.

140. The Proclamations are null and void.

141. Plaintiffs have standing to challenge the Proclamations because they have been injured by them. The Proclamations have caused them physical injury, deprived them of access to public facilities, and deprived them of access to City Hall and public hearings held therein.

FIFTEENTH CAUSE OF ACTION
(Injunctive Relief)

CHAPTER 27 AND WCAIIA

142. All previous paragraphs are incorporated herein by reference.

143. The enforcement of Chapter 27 as amended and WCAIIA should be preliminarily and permanently enjoined because of violations of City, State, and Federal laws, charter, and constitutions.

144. Plaintiffs and their members include persons previously physically injured and/or deprived of their homes and businesses by RF radiation from wireless telecommunications facilities. Until now they have enjoyed protection from further injury because such facilities have not been permitted in the public rights-of-way close to homes and businesses. Plaintiffs have already been further injured by the seven towers erected under the unlawful mayoral proclamations, and are

threatened with more serious injury by the imminent erection of such facilities on the streets and sidewalks of Santa Fe in front of or in close proximity to their homes and businesses pursuant to chapter 27 as amended and WCAIIA.

145. Absent injunctive relief, citizens will have close-range RF radiation coming into their homes and bodies without notice, resulting in irreparable harm that is not remediable by monetary damages.

SIXTEENTH CAUSE OF ACTION
(Injunctive relief)

MAYOR'S PROCLAMATIONS

146. All previous paragraphs are incorporated herein by reference.

147. Under the Mayor's Proclamations of Emergency, without any public process and in total disregard of the Land Development Code, a contract was signed with Verizon Wireless, under which seven towers were erected on public property. The fact that the City subsequently conducted *pro forma* public proceedings on those seven towers does not legitimize a contract entered into illegally, nor legalize the seven towers erected without due process.

148. The contract with Verizon should be declared void, and operation of the seven towers built under that contract, or their replacements, should be preliminarily and permanently enjoined.

SEVENTEENTH CAUSE OF ACTION

“ENVIRONMENT” DOES NOT MEAN “HEALTH” IN SECTION 704 OF THE TELECOMMUNICATIONS ACT OF 1996

149. All previous paragraphs are incorporated herein by reference.

150. Section 704 of the Telecommunications Act of 1996, 47 U.S.C. § 332(c)(7)(B)(iv) (“Section 704”), prohibits states from adopting stricter regulations than the FCC regarding “the environmental effects of RF radiation.”

151. If Congress had meant health it would have said so plainly.

152. The question of whether “environment” means health in Section 704 has never been litigated.

When, as is the case here, a term is not defined by the statute, it is appropriate for the court to interpret the word in accordance with its ordinary, everyday meaning.

United States v. State of New Mexico, 536 F.2d 1324, 1327-28 (10th Cir.

1976). According to the common meaning of the words, “environment” does not mean or include “health.”

environment 1a. The totality of the natural world, often excluding humans.

environmental 1. Relating to or associated with the environment.
2. Relating to or concerned with the impact of human activities on the natural world.

The American Heritage Dictionary, Fifth Edition 596 (2011);

health 1. The overall condition of an organism at a given time.

Id. at p. 810. If “environment” is interpreted to mean “health” in Section 704, this raises serious questions as to the constitutionality of Section 704. *See* Eighteenth, Nineteenth, and Twenty-First Causes of Action, *infra*. Therefore the Court should interpret “environment” *not* to mean “health” per the dictionary definition so as to avoid the serious questions as to the constitutionality of Section 704.¹

153. Section 704 is not a bar to any of Plaintiffs’ Claims for Relief against the City because by plain language “environment” does not mean “health.”

EIGHTEENTH CAUSE OF ACTION
(U.S. Constitution, Amendment Five – Due Process)

**SECTION 704 OF THE TELECOMMUNICATIONS ACT OF 1996,
47 U.S.C. § 332(C)(7)(B)(IV) AND (V)**

154. All previous paragraphs are incorporated herein by reference.

155. The FCC has no statutory authority over human health and its RF exposure guidelines are neither mandatory nor enforceable.

156. The FCC has stated repeatedly that its RF exposure guidelines are procedural only and serve only to determine whether an FCC licensee must file an

¹ Even though Plaintiffs’ position is that the plain meaning of the word “environment”—which does not include “health”—is applicable to Section 704, this in no way is to be construed to mean that destroying the environment survives constitutional scrutiny. *See Juliana v. United States*, 217 F. Supp. 3d 1224, 1261 (D. Or. 2016):

This action is of a different order than the typical environmental case. It alleges that defendants’ actions and inactions—whether or not they violate any specific statutory duty—have so profoundly damaged our home planet that they threaten plaintiffs’ fundamental constitutional rights to life and liberty.

Environmental Assessment or not. See ¶¶ 9 and 10, *supra*. Non-mandatory regulations cannot have preemptive effect.

Because these standards are merely advisory guidelines, they cannot constitute paramount federal law that preempts state law.

Sierra Pacific Holdings v. County of Ventura, 204 Cal.App.4th 509, 517 (Cal.App. 2012). Yet, Section 704 gives these regulations preemptive authority, prohibiting States and local governments from adopting any regulations more stringent than those adopted by the FCC.

157. Section 704 prohibits States and local governments, including State and local courts, from providing any remedy for Plaintiffs' injuries by RF radiation without providing a substitute federal remedy. This prohibition violates Substantive Due Process because it forecloses any and all remedies for injury by RF radiation.

158. Section 704 is not a bar to any of Plaintiffs' Claims for Relief against the City because the City may not violate the Fifth Amendment.

NINETEENTH CAUSE OF ACTION

(U.S. Constitution, Amendment One – Freedom of Speech)

SECTION 704 OF THE TELECOMMUNICATIONS ACT OF 1996, 47 U.S.C. § 332(c)(7)(B)(IV) AND (V)

159. All previous paragraphs are incorporated herein by reference.

160. Section 704 prohibits States and local governments from regulating wireless telecommunications facilities *on the basis of* their environmental effects.

161. If the public speaks about RF radiation from a proposed telecommunications facility or testifies to their injuries by RF radiation, or says that they are refugees from towers and antennas, or even if scientists testify about their research on RF radiation, or doctors testify about their RF-injured patients, and their city council subsequently denies the application, Section 704 provides that the applicant can “commence an action in any court of competent jurisdiction.” 47 U.S.C. § 332(c)(7)(B)(v). *See Cellular Telephone Company v. Town of Oyster Bay*, 166 F.3d 490, 495 (2d Cir. 1999) (“A review of the record before us of the two hearings reveals that the bulk of the testimony addressed citizens’ fears of adverse health effects from the cell sites...”).

162. If a city councilor gives voice to his or her concerns about RF radiation, the telecommunications company can likewise sue the city in any court of competent jurisdiction. *See T-Mobile Northeast LLC v. Town of Ramapo*, 701 F.Supp.2d 446, 460 (S.D.N.Y. 2009):

“[T]he Town has now admitted that one of the Planning Board’s three stated reasons for denying T-Mobile’s application was that the proposal raised health concerns... In Planning Board hearings on July 11, September 12, and October 17, 2006, town residents repeatedly spoke of their concern that T-Mobile’s proposed facility would create a health hazard... The Court has no trouble concluding that the Town’s decision was at least partly based on the environmental effects of the proposed tower’s radio frequency emissions.

163. Section 704 is nothing more than a burden on the content of speech, and is therefore unconstitutional and void.

164. Plaintiffs have standing to challenge the constitutionality of Section 704 because for more than two decades, in Santa Fe and elsewhere, Plaintiffs and Plaintiff's members have been repeatedly instructed by their public officials and their city attorneys not to speak about health in public hearings about proposed wireless telecommunications facilities; have further been instructed that if they do speak about health, their speech will be disregarded; and their speech about health, including their own injuries and losses, has in fact always been disregarded. *See* Santa Fe City Council Minutes of November 9, 2016, pp. 66 and 71; Minutes of August 30, 2017, pp. 46 and 60-61.

165. Section 704 is not a bar to any of Plaintiffs' Claims for Relief against the City because the City may not violate the First Amendment.

TWENTIETH CAUSE OF ACTION
(U.S. Constitution, Amendment One)

CHAPTER 27 AS AMENDED VIOLATES FREE SPEECH

166. All previous paragraphs are incorporated herein by reference.

167. At the public hearings at which Ordinances 2016-42 and 2017-18 were adopted, Plaintiffs and Plaintiff's members were instructed by their City Attorney and their City Councilors not to speak about health; were further instructed that if they did speak about health, their speech would be disregarded; and their speech about health was in fact disregarded. *See* ¶ 44, *supra*.

168. Ordinance 2017-18 added the following clause to chapter 27:

The planning commission may not regulate the placement of telecommunications facilities on the basis of the environmental effects of radio frequency emissions where such telecommunications facilities comply with 47 C.F.R. 1.1310 et seq.

SFCC 1987 § 27-2.19(E)(3) (2017). *See* Exhibit D, p. 5, lines 3-5.

169. Chapter 27 as amended violates the First Amendment Right to Free Speech, and also the process by which it was amended violated the First Amendment Right to Free Speech.

170. Chapter 27 as amended both contains unconstitutional language and was adopted by an unconstitutional process and is therefore void.

TWENTY-FIRST CAUSE OF ACTION
(Injunctive Relief)

171. All previous paragraphs are incorporated herein by reference.

172. A number of bills were introduced in the 115th Congress, including Senate Bill 3157, the STREAMLINE Small Cell Deployment Act, designed to streamline the deployment of 5G by exempting wireless facilities in the public rights-of-way from land use regulations nationwide.

173. The passage of any such federal bill would work the same violations of Free Speech, Due Process and the Right to Petition as the amended Chapter 27, WCAIIA, and Section 704.

174. The United States should be enjoined from passing or enforcing any bill that declares that local land use regulations do not apply to all wireless telecommunications facilities located in the public rights-of-way.

TWENTY-SECOND CAUSE OF ACTION
(Injunctive Relief)

**SECTION 704 OF THE TELECOMMUNICATIONS ACT OF 1996,
47 U.S.C. § 332(c)(7)(B)(IV) AND (V)**

175. All previous paragraphs are incorporated herein by reference.

176. For 23 years, Plaintiffs and all other parties similarly situated throughout the United States have been shut out of State and local governmental decisions authorizing the placement and construction of telecommunications facilities. They have been prohibited even from speaking about the damage to their health and the property. They have been injured, exiled from their homes and their cities, and denied any recourse or recompense for their injuries. The root cause of these violations of their fundamental rights is Section 704 of the Telecommunications Act of 1996, which purports to authorize States and local governments to violate the Constitution.

177. The operation of 47 U.S.C. § 332(c)(7)(B)(iv), which prohibits the consideration by State and local governments of the environmental and health effects of RF radiation, should be temporarily and permanently enjoined.

178. The operation of 47 U.S.C. § 332(c)(7)(B)(v), which provides that any telecommunications company that is adversely affected by a local government's regulation of cell towers on the basis of health may be heard in any court of competent jurisdiction on an expedited basis—but that any citizen who is adversely affected by a local government's decision *not* to regulate cell towers on the basis of

health may not be heard in any court whatsoever—should be temporarily and permanently enjoined.

REQUESTS FOR RELIEF

WHEREFORE, Plaintiffs respectfully request that this Court issue an Order and Judgment:

1. Declaring that Chapter 27 as amended by Ordinances Nos. 2016-42 and 2017-18, and WCAIIA, individually and jointly, violate the Procedural and Substantive Due Process requirements of the United States and New Mexico Constitutions.

2. Declaring that the Mayor's Proclamations of Emergency violated Procedural and Substantive Due Process.

3. Declaring that Chapter 27 as amended and WCAIIA, individually and jointly, are a taking without just compensation, in violation of the Fifth and Fourteenth Amendments.

4. Declaring that Chapter 27 as amended, WCAIIA, and Section 704, individually and jointly, violate the Right to Petition guaranteed by the First Amendment of the United States Constitution.

5. Declaring that by requiring franchises instead of leases, the City has unlawfully abdicated its responsibilities as a zoning authority.

6. Declaring that Chapter 27 as amended provides non-uniform zoning regulations for every zoning district, in violation of state law.

7. Declaring that Chapter 27 as amended and WCAIIA, individually and jointly, violate the inalienable right to safety guaranteed in New Mexico's Constitution.

8. Declaring that Chapter 27 as amended and WCAIIA, individually and jointly, violate the inalienable right to protect property guaranteed in New Mexico's Constitution.

9. Declaring that Chapter 27 as amended and WCAIIA, individually and jointly, violate the inalienable right to defend life guaranteed in New Mexico's Constitution.

10. Declaring that Chapter 27 as amended and WCAIIA, individually and jointly, damage the health, safety, general welfare, and environment in violation of Article XX, section 21 of New Mexico's Constitution.

11. Declaring that Chapter 27 as amended and WCAIIA, individually and jointly, abdicate the responsibility of government under Article XX, section 21 of the New Mexico Constitution to control pollution.

12. Declaring that Chapter 27 as amended damages health, safety and the general welfare in violation of NMSA 1978, section 3-21-1(A) and 3-21-5(A)(3), as well as sections 14-1.3 and 14-4.1(A)(2) of the Santa Fe City Code.

13. Declaring that Ordinances 2016-42 and 2017-18 unlawfully adopted zoning changes without notice to neighbors.

14. Declaring that Chapter 27 as amended violates the human rights and human dignity of the residents of Santa Fe in violation of the Santa Fe City Charter.

15. Declaring that Chapter 27 as amended damages the City's environment in violation of the Santa Fe City Charter.

16. Declaring that Chapter 27 provides for the creation of public nuisances in violation of City and State law.

17. Declaring that the Mayor's Proclamations, and the contract with Verizon Wireless entered into thereunder, are null and void.

18. Declaring that "environment" does not mean "health" in Section 704 of the Telecommunications Act of 1996.

19. Declaring that Section 704 violates the right to Due Process guaranteed by the Fifth Amendment of the United States Constitution.

20. Declaring that Section 704 violates the right to Free Speech guaranteed by the First Amendment of the United States Constitution.

21. Declaring that Chapter 27 as amended violates the right to Free Speech guaranteed by the First Amendment of the United States Constitution.

22. Declaring that the process by which Chapter 27 was amended violated the First Amendment Right to Free Speech.

23. Preliminarily and permanently enjoining the City, its officers, agents, servants, employees, and attorneys and those persons in active concert or

participation with it who receive actual notice of the Order by personal service or otherwise, from enforcing Chapter 27 SFCC 1987 as amended by Ordinances 2016-42 and 2017-18; prohibiting the granting of any additional franchises pending the outcome of this lawsuit; and prohibiting the operation of any cell towers or antennas erected under existing franchises pending the outcome of this lawsuit.

24. Preliminarily and permanently enjoining the operation of any and all cell towers erected pursuant to the Mayor's Proclamations and the contract with Verizon Wireless entered into thereunder pending the outcome of this lawsuit.

25. Preliminarily and permanently enjoining Attorney General Balderas from enforcing WCAIIA pending the outcome of this lawsuit.

26. Preliminarily and permanently enjoining the United States, its officers, agents, servants, employees, and attorneys and those persons in active concert or participation with it who receive actual notice of the Order by personal service or otherwise, from enforcing 47 U.S.C. §§ 332(c)(7)(B)(iv) and (v) pending the outcome of this lawsuit.

27. Preliminarily and permanently enjoining the United States, its officers, agents, servants, employees, and attorneys and those persons in active concert or participation with it who receive actual notice of the Order by personal service or otherwise, from adopting or enforcing any law that prohibits States or local governments, with respect to wireless telecommunications facilities, from

enforcing land use regulations in the public rights-of-way that would otherwise apply pending the outcome of this lawsuit.

28. Awarding costs, and reasonable attorneys' fees as provided under law.
29. Awarding such other relief as this Court considers just and proper.

Respectfully submitted,

/s/ Kathleen M. Prlich

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CERTIFICATE OF SERVICE

I hereby certify that on January 29, 2019, I filed the foregoing First Amended Complaint electronically through the CM/ECF system, and also sent it by First Class U.S. mail to the following:

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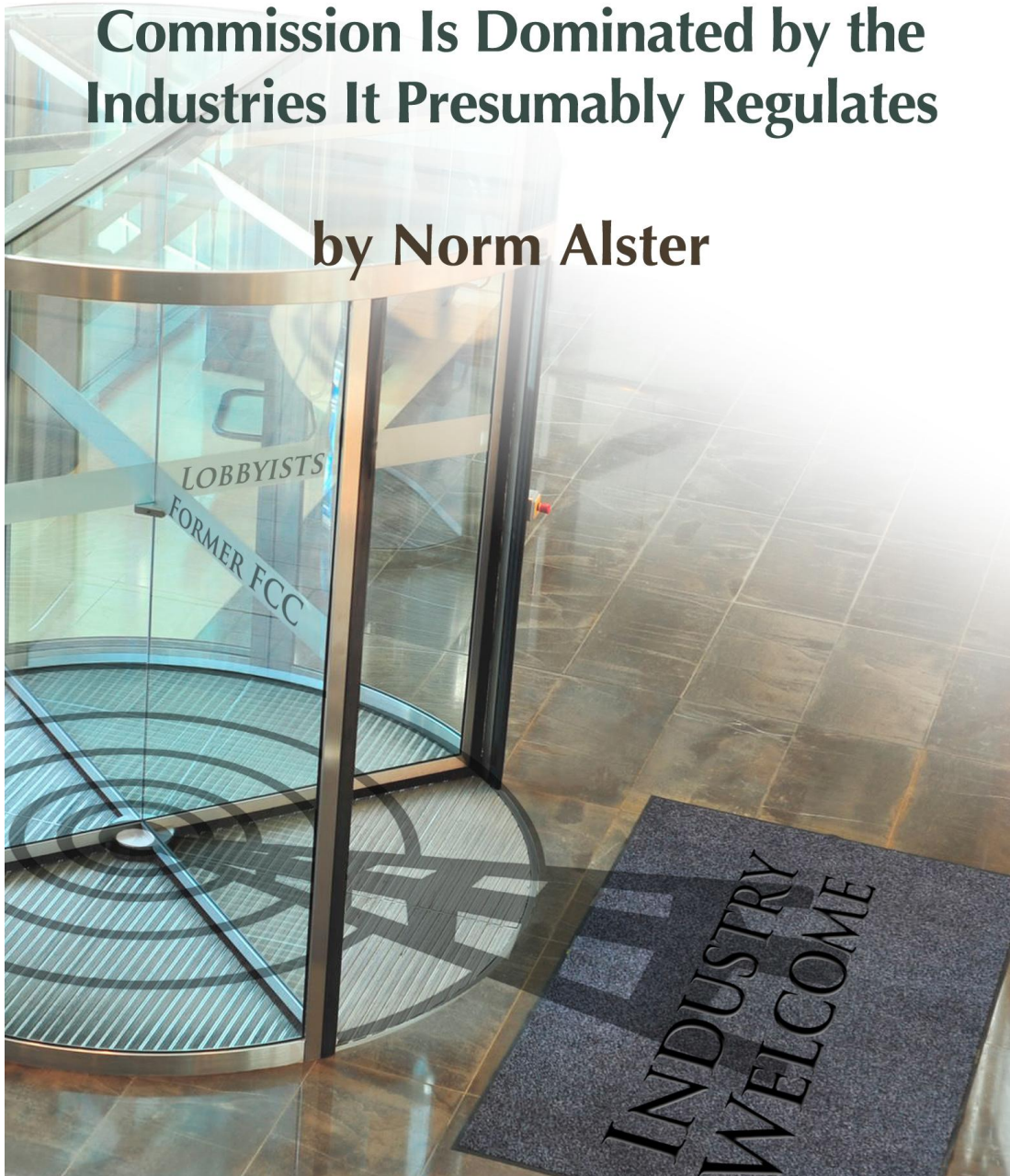
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Captured Agency:

How the Federal Communications
Commission Is Dominated by the
Industries It Presumably Regulates

by Norm Alster



www.ethics.harvard.edu

Captured Agency

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by the Industries It Presumably Regulates

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Chapter One: The Corrupted Network

Renee Sharp seemed proud to discuss her spring 2014 meeting with the Federal Communications Commission.

As research director for the non-profit Environmental Working Group, Sharp doesn't get many chances to visit with the FCC. But on this occasion she was able to express her concerns that lax FCC standards on radiation from wireless technologies were especially hazardous for children.

The FCC, however, should have little trouble dismissing those concerns.

Arguing that current standards are more than sufficient and that children are at no elevated risk from microwave radiation, wireless industry lobbyists don't generally have to set up appointments months in advance. They are at the FCC's door night and day.

Indeed, a former executive with the Cellular Telecommunications Industry Association (CTIA), the industry's main lobbying group, has boasted that the CTIA meets with FCC officials "500 times a year."¹

Sharp does not seem surprised. "There's no question that the government has been under the influence of industry. The FCC is a captured agency," she said.²

Captured agency.

That's a term that comes up time and time again with the FCC. Captured agencies are essentially controlled by the industries they are supposed to regulate. A detailed look at FCC actions—and non-actions—shows that over the years the FCC has granted the wireless industry pretty much what it has wanted. Until very recently it has also granted cable what it wants. More broadly, the FCC has again and again echoed the lobbying points of major technology interests.

Money—and lots of it—has played a part. The National Cable and Telecommunications Association (NCTA) and CTIA have annually been among Washington's top lobbying spenders. CTIA alone lobbied on at least 35 different Congressional bills through the first half of 2014. Wireless market leaders AT&T and Verizon work through CTIA. But they also do their own lobbying, spending nearly \$15 million through June of 2014, according to data from the Center for Responsive Politics (CRP). In all, CTIA, Verizon, AT&T, T-Mobile USA, and Sprint spent roughly \$45 million lobbying in 2013. Overall, the Communications/Electronics sector is one of Washington's super heavyweight lobbyists, spending nearly \$800 million in 2013-2014, according to CRP data.

But direct lobbying by industry is just one of many worms in a rotting apple. The FCC sits at the core of a network that has allowed powerful moneyed interests with limitless access a variety of ways to shape its policies, often at the expense of fundamental public interests.

As a result, consumer safety, health, and privacy, along with consumer wallets, have all been overlooked, sacrificed, or raided due to unchecked industry influence. The cable industry has consolidated into giant local monopolies that control pricing while leaving consumers little choice over content selection. Though the FCC has only partial responsibility, federal regulators have allowed the Internet to grow into a vast hunting grounds for criminals and commercial interests: the go-to destination for the surrender of personal information, privacy and identity. Most insidious of all, the wireless industry has been allowed to grow unchecked and virtually unregulated, with fundamental questions on public health impact routinely ignored.

Industry controls the FCC through a soup-to-nuts stranglehold that extends from its well-placed campaign spending in Congress through its control of the FCC's Congressional oversight committees to its persistent agency lobbying. "If you're on a committee that regulates industry you'll be a major target for industry," said Twaun Samuel, chief of staff for Congresswoman Maxine Waters.³ Samuel several years ago helped write a bill aimed at slowing the revolving door. But with Congress getting its marching orders from industry, the bill never gained any traction.

Industry control, in the case of wireless health issues, extends beyond Congress and regulators to basic scientific research. And in an obvious echo of the hardball tactics of the tobacco industry, the wireless industry has backed up its economic and political power by stonewalling on public relations and bullying potential threats into submission with its huge standing army of lawyers. In this way, a coddled wireless industry intimidated and silenced the City of San Francisco, while running roughshod over local opponents of its expansionary infrastructure.

On a personal level, the entire system is greased by the free flow of executive leadership between the FCC and the industries it presumably oversees. Currently presiding over the FCC is Tom Wheeler, a man who has led the two most powerful industry lobbying groups: CTIA and NCTA. It is Wheeler who once supervised a \$25 million industry-funded research effort on wireless health effects. But when handpicked research leader George Carlo concluded that wireless radiation did raise the risk of brain tumors, Wheeler's CTIA allegedly rushed to muffle the message. "You do the science. I'll take care of the politics," Carlo recalls Wheeler saying.⁴

Wheeler over time has proved a masterful politician. President Obama overlooked Wheeler's lobbyist past to nominate him as FCC chairman in 2013. He had, after all, raised more than \$700,000 for Obama's presidential campaigns. Wheeler had little trouble earning confirmation from a Senate whose Democrats toed the Presidential line and whose Republicans understood Wheeler was as industry-friendly a nominee as they could get. And while Wheeler, at the behest of his Presidential sponsor, has taken on cable giants with his plans for net neutrality and shown some openness on other issues, he has dug in his heels on wireless.

Newly ensconced as chairman of the agency he once blitzed with partisan pitches, Wheeler sees familiar faces heading the industry lobbying groups that ceaselessly petition the FCC. At CTIA, which now calls itself CTIA - The Wireless Association, former FCC commissioner Meredith Atwell Baker is in charge.

Wireless and Cable Industries Have the FCC Covered



And while cell phone manufacturers like Apple and Samsung, along with wireless service behemoths like Verizon and AT&T, are prominent CTIA members, the infrastructure of 300,000 or more cellular base stations and antenna sites has its own lobbying group: PCIA, the Wireless Infrastructure Association. The President and CEO of PCIA is Jonathan Adelstein, another former FCC commissioner. Meanwhile, the cable industry's NCTA employs former FCC chairman Michael Powell as its president and CEO. Cozy, isn't it?

FCC commissioners in 2014 received invitations to the Wireless Foundation's May 19th Achievement Awards Dinner. Sounds harmless, but for the fact that the chief honoree at the dinner was none other than former wireless lobbyist but current FCC Chairman Tom Wheeler. Is this the man who will act to look impartially at the growing body of evidence pointing to health and safety issues?

The revolving door also reinforces the clout at another node on the industry-controlled influence network. Members of congressional oversight committees are prime targets of

industry. The cable industry, for example, knows that key legislation must move through the Communications and Technology Subcommittee of the House Energy and Commerce Committee. Little wonder then that subcommittee chairman Greg Walden was the second leading recipient (after Speaker John Boehner) of cable industry contributions in the last six years (through June 30, 2014). In all, Walden, an Oregon Republican, has taken over \$108,000 from cable and satellite production and distribution companies.⁵ But he is not alone. Six of the top ten recipients of cable and satellite contributions sit on the industry's House oversight committee. The same is true of senators on the cable oversight committee. Committee members were six of the ten top recipients of campaign cash from the industry.⁶

Cable & Satellite Campaign Contributions

Top House Recipients Funded

Recipient	Amount
John A. Boehner	\$135,425
Greg Walden	\$108,750
Bob Goodlatte	\$93,200
John Conyers Jr.	\$84,000
Mike Coffman	\$82,137
Fred Upton	\$73,500
Lee Terry	\$65,916
Henry A. Waxman	\$65,000
Cory Gardner	\$64,500
Anna G. Eshoo	\$60,500

Cellular Industry Campaign Contributions

Top House Recipients Funded

Recipient	Amount
Henry A. Waxman	\$41,500
Scott H. Peters	\$40,300
Greg Walden	\$35,750
Fred Upton	\$32,250
Bob Goodlatte	\$31,250
Lee Terry	\$29,600
Anna G. Eshoo	\$27,000
Doris O. Matsui	\$25,500
John Shimkus	\$24,000
Peter J. Roskam	\$21,100

Cable & Satellite Campaign Contributions

Top Senate Recipients Funded

Recipient	Amount
Edward J. Markey	\$320,500
Kirsten E. Gillibrand	\$194,125
Mitch McConnell	\$177,125
Harry Reid	\$175,600
Charles E. Schumer	\$175,450
Mark L. Pryor	\$172,950
Michael F. Bennet	\$159,000
Richard Blumenthal	\$148,800
Claire McCaskill	\$138,185
Mark Udall	\$136,625

Cellular Industry Campaign Contributions

Top Senate Recipients Funded

Recipient	Amount
Edward J. Markey	\$155,150
Mark R. Warner	\$74,800
Harry Reid	\$73,600
Mark L. Pryor	\$71,900
Roy Blunt	\$57,400
John McCain	\$56,261
Charles E. Schumer	\$53,300
Roger F. Wicker	\$51,300
Barbara Boxer	\$49,578
Kelly Ayotte	\$43,333

The compromised FCC network goes well beyond the revolving door and congressional oversight committees. The Washington social scene is one where money sets the tone and throws the parties. A look at the recent calendar of one current FCC commissioner shows it would take very disciplined and almost saintly behavior on the part of government officials to resist the lure of lavishly catered dinners and cocktail events. To paraphrase iconic investigative journalist I.F. Stone, if you're going to work in Washington, bring your chastity belt.

All that free liquor, food and conviviality translates into the lobbyist's ultimate goal: access. "They have disproportionate access," notes former FCC commissioner Michael Copps. "When you are in a town where most people you see socially are in industry, you don't have to ascribe malevolent behavior to it," he added.⁷

Not malevolent in motive. But the results can be toxic. And blame does not lie solely at the feet of current commissioners. The FCC's problems predate Tom Wheeler and go back a long way.

Indeed, former Chairman Newton Minow, enduringly famous for his 1961 description of television as a "vast wasteland," recalls that industry manipulation of regulators was an issue even back then. "When I arrived, the FCC and the communications industry were both regarded as cesspools. Part of my job was to try to clean it up."⁸

More than 50 years later, the mess continues to pile up.

Chapter Two: Just Don't Bring Up Health

Perhaps the best example of how the FCC is tangled in a chain of corruption is the cell tower and antenna infrastructure that lies at the heart of the phenomenally successful wireless industry.

It all begins with passage of the Telecommunications Act of 1996, legislation once described by South Dakota Republican senator Larry Pressler as “the most lobbied bill in history.” Late lobbying won the wireless industry enormous concessions from lawmakers, many of them major recipients of industry hard and soft dollar contributions. Congressional staffers who helped lobbyists write the new law did not go unrewarded. Thirteen of fifteen staffers later became lobbyists themselves.⁹

Section 332(c)(7)(B)(iv) of the Act remarkably—and that adverb seems inescapably best here—wrests zoning authority from local governments. Specifically, they cannot cite health concerns about the effects of tower radiation to deny tower licenses so long as the towers comply with FCC regulations.

Congress Silences Public

Section 332(c)(7)(B)(iv) of the Communications Act provides:

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 regulations concerning such emissions.

In preempting local zoning authority—along with the public's right to guard its own safety and health—Congress unleashed an orgy of infrastructure build-out. Emboldened by the government green light and the vast consumer appetite for wireless technology, industry has had a free hand in installing more than 300,000 sites. Church steeples, schoolyards, school rooftops, even trees can house these facilities.

Is there any reason to believe that the relatively low level radiofrequency emissions of these facilities constitute a public health threat? Certainly, cell phones themselves, held close to the head, have been the focus of most concern on RF emissions. Since the impact of RF diminishes with distance, industry advocates and many scientists dismiss the possibility that such structures pose health risks.

But it's not really that simple. A troubling body of evidence suggests exposure to even low emission levels at typical cellular frequencies between 300 MHz and 3 GHz can have a wide range of negative effects.

In a 2010 review of research on the biological effects of exposure to radiation from cell tower base stations, B. Blake Levitt and Henry Lai found that “some research does exist to warrant caution in infrastructure siting.”¹⁰ They summarized the results on one 2002 study that compared the health of 530 people living at various distances within 300 meters of cell towers with a control group living more than 300 meters away. “Results indicated increased symptoms and complaints the closer a person lived to a tower. At <10 m, symptoms included nausea, loss of appetite, visual disruptions, and difficulties in moving. Significant differences were observed up through 100 m for irritability, depressive tendencies, concentration difficulties, memory loss, dizziness, and lower libido.”¹¹

A 2007 study conducted in Egypt found similar results. Levitt and Lai report, “Headaches, memory changes, dizziness, tremors, depressive symptoms, and sleep disturbance were significantly higher among exposed inhabitants than controls.”¹²

Beyond epidemiological studies, research on a wide range of living things raises further red flags. A 2013 study by the Indian scientists S. Sivani and D. Sudarsanam reports: “Based on current available literature, it is justified to conclude that RF-EMF [electro magnetic fields] radiation exposure can change neurotransmitter functions, blood-brain barrier, morphology, electrophysiology, cellular metabolism, calcium efflux, and gene and protein expression in certain types of cells even at lower intensities.”¹³

The article goes on to detail the effects of mobile tower emissions on a wide range of living organisms: “Tops of trees tend to dry up when they directly face the cell tower antennas. . . . A study by the Centre for Environment and Vocational Studies of Punjab University noted that embryos of 50 eggs of house sparrows were damaged after being exposed to mobile tower radiation for 5-30 minutes. . . . In a study on cows and calves on the effects of exposure from mobile phone base stations, it was noted that 32% of calves developed nuclear cataracts, 3.6% severely.”¹⁴

Does any of this constitute the conclusive evidence that would mandate much tighter control of the wireless infrastructure? Not in the estimation of industry and its captured agency. Citing other studies—often industry-funded—that fail to establish health effects, the wireless industry has dismissed such concerns. The FCC has typically echoed that position.

Keep in mind that light regulation has been one factor in the extraordinary growth of wireless—CTIA says exactly that in a Web post that credits the Clinton Administrations light regulatory touch.

July 25, 2013



CTIA is an international nonprofit trade association that has represented the wireless communications industry since 1984.

But our position as the world's leader was no accident. It started with the Clinton Administration that had the foresight to place a "light regulatory touch" on the wireless industry, which was in its infancy at the time. That light touch has continued through multiple Administrations.

Obviously, cellular technology is wildly popular because it offers many benefits to consumers. But even allowing for that popularity and for the incomplete state of science, don't some of these findings raise enough concern to warrant some backtracking on the ham-fisted federal preemption of local zoning rights?

In reality, since the passage of the 1996 law, the very opposite has occurred. Again and again both Congress and the FCC have opted to stiffen—rather than loosen—federal preemption over local zoning authority. In 2009, for example, the wireless industry convinced the FCC to impose a "shot clock" that requires action within 90 days on many zoning applications. "My sense is that it was an industry request," said Robert Weller, who headed up the FCC's Office of Engineering and Technology when the shot clock was considered and imposed.¹⁵

And just last November, the FCC voted to further curb the rights of local zoning officials to control the expansion of antenna sites. Again and again, Congress and the FCC have extended the wireless industry carte blanche to build out infrastructure no matter the consequences to local communities.

The question that hangs over all this: would consumers' embrace of cell phones and Wi-Fi be quite so ardent if the wireless industry, enabled by its Washington errand boys, hadn't so consistently stonewalled on evidence and substituted legal intimidation for honest inquiry? (See Appendix for online study of consumer attitudes on wireless health and safety.)

Document searches under the Freedom of Information Act reveal the central role of Tom Wheeler and the FCC in the tower siting issue. As both lobbyist and FCC chairman, Wheeler has proved himself a good friend of the wireless industry.

In January of 1997, CTIA chieftain Wheeler wrote FCC Wireless Telecommunications Bureau Chief Michele C. Farquhar citing several municipal efforts to assert control over siting. Wheeler, for example, asserted that one New England state had enacted a law requiring its Public Service Commissioner to issue a report on health risks posed by wireless facilities.¹⁶ He

questions whether such a study—and regulations based on its results—would infringe on FCC preemption authority.

FCC bureau chief Farquhar hastily reassured Wheeler that no such study could be consulted in zoning decisions. “Therefore, based on the facts as you have presented them, that portion of the statute that directs the State Commissioner to recommend regulations based upon the study’s findings would appear to be preempted,”¹⁷ the FCC official wrote to Wheeler. She emphasized that the state had the right to do the study. It just couldn’t deny a siting application based on anything it might learn.

The FCC in 1997 sent the message it has implicitly endorsed and conveyed ever since: study health effects all you want. It doesn’t matter what you find. The build-out of wireless cannot be blocked or slowed by health issues.

Now let’s fast forward to see Wheeler on the other side of the revolving door, interacting as FCC chairman with a former FCC commissioner who is now an industry lobbyist.

A March 14, 2014 letter¹⁸ reveals the chummy relationship between Wheeler and former commissioner Jonathan Adelstein, now head of PCIA, the cellular infrastructure lobbying group. It also references FCC Chairman Wheeler seeking policy counsel from lobbyist Adelstein:

Wheeler Still Willing to Help

From: Jonathan Adelstein [mailto:adelstein@pcia.com]
Sent: Friday, March 14, 2014 12:24 PM
To: [REDACTED]
Cc: Renee Gregory; Jonathan Campbell
Subject: How to Spur Wireless Broadband Deployment

Tom – It was great to see you the other night at the FCBA event, and wonderful to see how much fun you’re having (if that’s the right word). I know I enjoyed my time there (thanks to your help with Daschle in getting me that role in the first place!).

Thanks for asking how we think the FCC can help spur wireless broadband deployment. The infrastructure proceeding perfectly tees up many of the top issues the FCC needs to address. As you requested, I’ve summarized briefly in the attached letter some of the key steps you can take now.

“Tom – It was great to see you the other night at the FCBA event, and wonderful to see how much fun you’re having (if that’s the right word). I know I enjoyed my time there (thanks to your help with Daschle in getting me that role in the first place!).”

“Thanks for asking how we think the FCC can help spur wireless broadband deployment,” the wireless lobbyist writes to the ex-wireless lobbyist, now running the FCC.

Adelstein's first recommendation for FCC action: "*Amend its rules to categorically exclude DAS and small deployments* [Ed. note: these are compact tower add-ons currently being widely deployed] *from environmental and historic review.*" Adelstein outlined other suggestions for further limiting local antenna zoning authority and the FCC soon did its part. Late last year, the agency proposed new rules that largely (though not entirely) complied with the antenna industry's wish list.

James R. Hobson is an attorney who has represented municipalities in zoning issues involving the FCC. He is also a former FCC official, who is now of counsel at Best, Best and Krieger, a Washington-based municipal law practice. "The FCC has been the ally of industry," says Hobson. Lobbyist pressure at the FCC was intense even back in the 70s, when he was a bureau chief there. "When I was at the FCC, a lot of my day was taken up with appointments with industry lobbyists." He says of the CTIA that Wheeler once headed: "Their reason for being is promoting the wireless industry. And they've been successful at it."¹⁹

The FCC's deferential compliance has allowed industry to regularly bypass and if necessary steamroll local authorities. Violation of the FCC-imposed "shot clock," for example, allows the wireless license applicant to sue.

The FCC's service to the industry it is supposed to regulate is evidently appreciated. The CTIA web site, typically overflowing with self-congratulation, spreads the praise around in acknowledging the enabling contributions of a cooperative FCC. In one brief summation of its own glorious accomplishments, CTIA twice uses the word "thankfully" in describing favorable FCC actions.

In advancing the industry agenda, the FCC can claim that it is merely reflecting the will of Congress. But the agency may not be doing even that.

Remember the key clause in the 96 Telecom Act that disallowed denial of zoning permits based on health concerns? Well, federal preemption is granted to pretty much any wireless outfit on just one simple condition: its installations must comply with FCC radiation emission standards. In view of this generous carte blanche to move radiation equipment into neighborhoods, schoolyards and home rooftops, one would think the FCC would at the very least diligently enforce its own emission standards. But that does not appear to be the case.

Indeed, one RF engineer who has worked on more than 3,000 rooftop sites found vast evidence of non-compliance. Marvin Wessel estimates that "10 to 20% exceed allowed radiation standards."²⁰ With 30,000 rooftop antenna sites across the U.S. that would mean that as many as 6,000 are emitting radiation in violation of FCC standards. Often, these emissions can be 600% or more of allowed exposure levels, according to Wessel.

Antenna standards allow for higher exposure to workers. In the case of rooftop sites, such workers could be roofers, painters, testers and installers of heating and air conditioning

equipment, to cite just a few examples. But many sites, according to Wessel, emit radiation at much higher levels than those permitted in occupational standards. This is especially true of sites where service providers keep adding new antenna units to expand their coverage. “Some of these new sites will exceed ten times the allowable occupational radiation level,” said Wessel.²¹ Essentially, he adds, this means that nobody should be stepping on the roof.

“The FCC is not enforcing its own standard,” noted Janet Newton, who runs the EMF Policy Institute, a Vermont-based non-profit. That group several years ago filed 101 complaints on specific rooftop sites where radiation emissions exceeded allowable levels. “We did this as an exercise to hold the FCC’s feet to the fire,” she said. But the 101 complaints resulted in few responsive actions, according to Newton.²²

Former FCC official Bob Weller confirms the lax—perhaps negligible is the more appropriate word—FCC activity in enforcing antenna standards. “To my knowledge, the enforcement bureau has never done a targeted inspection effort around RF exposure,” he said.²³ Budget cuts at the agency have hurt, limiting the FCC’s ability to perform field inspections, he added. But enforcement, he adds, would do wonders to insure industry compliance with its limited regulatory compliance requirements. “If there were targeted enforcement and fines issued the industry would pay greater attention to ensuring compliance and self-regulation,” he allowed.

Insurance is where the rubber hits the road on risk. So it is interesting to note that the rating agency A.M. Best, which advises insurers on risk, in 2013 topped its list of “emerging technology-based risks” with RF Radiation:

“The risks associated with long-term use of cell phones, although much studied over the past 10 years, remain unclear. Dangers to the estimated 250,000 workers per year who come in close contact with cell phone antennas, however, are now more clearly established. Thermal effects of the cellular antennas, which act at close range essentially as open microwave ovens can include eye damage, sterility and cognitive impairments. While workers of cellular companies are well trained on the potential dangers, other workers exposed to the antennas are often unaware of the health risks. The continued exponential growth of cellular towers will significantly increase exposure of these workers and others coming into close contact with high-energy cell phone antenna radiation,” A.M. Best wrote.²⁴

So what has the FCC done to tighten enforcement? Apparently, not very much. Though it does follow up on many of the complaints filed against sites alleged to be in violation of standards it takes punitive actions very rarely. (The FCC did not provide answers to written questions on details of its tower enforcement policies.)

The best ally of industry and the FCC on this (and other) issues may be public ignorance.

An online poll conducted for this project asked 202 respondents to rate the likelihood of a series of statements.²⁵ Most of the statements were subject to dispute. Cell phones raise the risk of certain health effects and brain cancer, two said. There is no proof that cell phones are harmful, another declared. But among the six statements there was one statement of indisputable fact: “The U.S. Congress forbids local communities from considering health effects when deciding whether to issue zoning permits for wireless antennae,” the statement said.

Though this is a stone cold fact that the wireless industry, the FCC and the courts have all turned into hard and inescapable reality for local authorities, just 1.5% of all poll respondents replied that it was “definitely true.”

Public ignorance didn’t take much cultivation by the wireless industry on the issue of local zoning. And maybe it doesn’t matter much, considering the enormous popularity of wireless devices. But let’s see how public ignorance has been cultivated and secured—with the FCC’s passive support—on the potentially more disruptive issue of mobile phone health effects.

Chapter Three: Wireless Bullies and the Tobacco Analogy

Issues of cable and net neutrality have recently attracted wide public attention (more on that in Chapter Six). Still, the bet here remains that future judgment of the FCC will hinge on its handling of wireless health and safety issues.

And while the tower siting issue is an egregious example of an industry-dominated political process run amuck, the stronger health risks appear to reside in the phones themselves. This is an issue that has flared up several times in recent years. Each time, industry has managed to beat back such concerns. But it's worth noting that the scientific roots of concern have not disappeared. If anything, they've thickened as new research substantiates older concerns.

The story of an FCC passively echoing an industry determined to play hardball with its critics is worth a further look. The CTIA's own website acknowledges the helpful hand of government's "light regulatory touch" in allowing the industry to grow.²⁶

Former congressman Dennis Kucinich ventures one explanation for the wireless industry's success in dodging regulation: "The industry has grown so fast its growth has overtaken any health concerns that may have gained attention in a slow growth environment. The proliferation of technology has overwhelmed all institutions that would have attempted safety testing and standards," Kucinich said.²⁷

But the core questions remain: Is there really credible evidence that cell phones emit harmful radiation that can cause human health problems and disease? Has the FCC done an adequate job in protecting consumers from health risks? Or has it simply aped industry stonewalling on health and safety issues?

Before wading into these questions, some perspective is in order.

First, there's simply no denying the usefulness and immense popularity of wireless technology. People depend on it for safety, information, entertainment and communication. It doesn't take a keen social observer to know that wireless has thoroughly insinuated itself into daily life and culture.

The unanswered question, though, is whether consumers would embrace the technology quite so fervently if health and safety information was not spun, filtered and clouded by a variety of industry tactics.

To gain some insight into this question, we conducted an online survey of 202 respondents, nearly all of whom own cell phones, on Amazon's Mechanical Turk Web platform (see [Appendix](#)). One striking set of findings: many respondents claim they would change behavior—reduce wireless use, restore landline service, protect their children—if claims on health dangers of wireless are true.

It is not the purpose of this reporter to establish that heavy cell phone usage is dangerous. This remains an extremely controversial scientific issue with new findings and revised scientific conclusions repeatedly popping up. Just months ago, a German scientist who had been outspoken in denouncing the view that cell phones pose health risks reversed course. In an April 2015 publication, Alexander Lerchl reported results confirming previous research on the tumor-promoting effects of electromagnetic fields well below human exposure limits for mobile phones. “Our findings may help to understand the repeatedly reported increased incidences of brain tumors in heavy users of mobile phones,” the Lerchl team concluded.²⁸ And in May 2015, more than 200 scientists boasting over 2,000 publications on wireless effects called on global institutions to address the health risks posed by this technology.

But the National Cancer Institute still contends that no cell phone dangers have been established. A representative of NCI was the sole known dissenter among the 30 members of the World Health Organization’s International Agency for Research on Cancer (IARC) when it voted to declare wireless RF “possibly carcinogenic.”²⁹ If leading scientists still can’t agree, I will not presume to reach a scientific conclusion on my own.

IARC RF working group: Official press release



International Agency for Research on Cancer



PRESS RELEASE N° 208

31 May 2011

IARC CLASSIFIES RADIOFREQUENCY ELECTROMAGNETIC FIELDS AS POSSIBLY CARCINOGENIC TO HUMANS

Lyon, France, May 31, 2011 -- The WHO/International Agency for Research on Cancer (IARC) has classified radiofrequency electromagnetic fields as **possibly carcinogenic to humans (Group 2B)**, based on an increased risk for **glioma**, a malignant type of brain cancer, associated with wireless phone use.

But let's at least look at some of the incriminating clues that health and biology research has revealed to date. And let's look at the responses of both industry and the FCC.

The most widely cited evidence implicating wireless phones concerns gliomas, a very serious type of brain tumor. The evidence of elevated risk for such tumors among heavy cell phone users comes from several sources.

Gliomas account for roughly half of all malignant brain tumors, which are relatively rare. The annual incidence of primary malignant brain tumors in the U.S. is only 8.2 per 100,000 people, according to the International Radio Surgery Association.

Still, when projected over the entire U.S. population, the public health impact is potentially very significant.

Assuming roughly four new glioma cases annually in the U.S. per 100,000 people, yields over 13,000 new cases per year over a total U.S. population of 330 million. Even a doubling of that rate would mean 13,000 new gliomas, often deadly, per year. A tripling, as some studies have found, could mean as many as 26,000 more new cases annually. Indeed, the respected online site Medscape in January 2015 reported results of Swedish research under the headline: *Risk for Glioma Triples With Long-Term Cell Phone Use*.³⁰

And here's some eye-opening quantitative perspective: the wars in Iraq and Afghanistan, waged now for more than a decade each, have together resulted in roughly 7,000 U.S. deaths.

Preliminary—though still inconclusive—research has suggested other potential negative health effects. Swedish, Danish and Israeli scientists have all found elevated risk of salivary gland tumors. One Israeli study suggested elevated thyroid cancer risk. Some research has found that men who carry their phones in their pockets may suffer sperm count damage. One small study even suggests that young women who carry wireless devices in their bras are unusually vulnerable to breast cancer.

And while industry and government have never accepted that some portion of the population is unusually sensitive to electromagnetic fields, many people continue to complain of a broad range of symptoms that include general weakness, headaches, nausea and dizziness from exposure to wireless.

Some have suggested that the health situation with wireless is analogous to that of tobacco before court decisions finally forced Big Tobacco to admit guilt and pay up. In some ways, the analogy is unfair. Wireless research is not as conclusively incriminating as tobacco research was. And the identified health risks with wireless, significant as they are, still pale compared with those of tobacco.

But let's not dismiss the analogy outright. There is actually a very significant sense in which the tobacco-wireless analogy is uncannily valid.

People tend to forget that the tobacco industry—like the wireless industry—also adopted a policy of tone-deaf denial. As recently as 1998, even as evidence of tobacco toxicity grew overwhelming, cigarette maker Phillip Morris was writing newspaper advertorials insisting there was no proof smoking caused cancer.

It seems significant that the responses of wireless and its captured agency—the FCC—feature the same obtuse refusal to examine the evidence. The wireless industry reaction features stonewalling public relations and hyper aggressive legal action. It can also involve undermining the credibility and cutting off the funding for researchers who do not endorse cellular safety. It is these hardball tactics that look a lot like 20th century Big Tobacco tactics. It is these hardball tactics—along with consistently supportive FCC policies—that heighten suspicion the wireless industry does indeed have something to hide.

Begin with some simple facts issuing from meta-analysis of cellular research. Dr. Henry Lai, emeritus professor of bioengineering at the University of Washington, has reviewed hundreds of published scientific papers on the subject. He wanted to see how many studies demonstrated that non-ionizing radiation produces biological effects beyond the heating of tissue. This is critical since the FCC emission standards protect only against heating. The assumption behind these standards is that there are no biological effects beyond heating.

But Dr. Lai found that just over half—actually 56%—of 326 studies identified biological effects. And the results were far more striking when Dr. Lai divided the studies between those that were industry-funded and those that were independently funded. Industry-funded research identified biological effects in just 28% of studies. But fully 67% of non-industry funded studies found biological effects (Insert Slide—Cell Phone Biological Studies).

A study conducted by Swiss and British scientists also looked at how funding sources affected scientific conclusions on the possible health effects of cell phone usage. They found that of studies privately funded, publicly funded and funded with mixed sponsorship, industry-funded studies were “least likely to report a statistically significant result.”³¹ “The interpretation of results from studies of health effects of radiofrequency radiation should take sponsorship into account,” the scientists concluded.³²

So how does the FCC handle a scientific split that seems to suggest bias in industry-sponsored research?

In a posting on its Web site that reads like it was written by wireless lobbyists, the FCC chooses strikingly patronizing language to slight and trivialize the many scientists and health and safety experts who’ve found cause for concern. In a two page Web post titled “Wireless Devices and Health Concerns,” the FCC four times refers to either “some health and safety interest groups,” “some parties,” or “some consumers” before in each case rebutting their presumably groundless concerns about wireless risk.³³ Additionally, the FCC site references the World Health Organization as among those organizations who’ve found that “the weight of scientific

evidence” has not linked exposure to radiofrequency from mobile devices with “any known health problems.”

Yes, it’s true that the World Health organization remains bitterly divided on the subject. But it’s also true that a 30 member unit of the WHO called the International Agency for Research on Cancer (IARC) was near unanimous in pronouncing cell phones “possibly carcinogenic” in 2011. How can the FCC omit any reference to such a pronouncement? Even if it finds reason to side with pro-industry scientists, shouldn’t this government agency also mention that cell phones are currently in the same potential carcinogen class as lead paint?

Now let’s look a bit more closely at the troublesome but presumably clueless crowd of “some parties” that the FCC so cavalierly hastens to dismiss? Let’s begin with **Lennart Hardell**, professor of Oncology and Cancer Epidemiology at the University Hospital in Orebro, Sweden.

Until recently it was impossible to gain any real sense of brain tumor risk from wireless since brain tumors often take 20 or more years to develop. But the cohort of long-term users has been growing. In a study published in the *International Journal of Oncology* in 2013, Dr. Hardell and Dr. Michael Carlberg found that the risk of glioma—the most deadly type of brain cancer—rose with cell phone usage. The risk was highest among heavy cell phone users and those who began to use cell phones before the age of 20.³⁴

Indeed, those who used their phones at least 1640 hours (which would be roughly 30 minutes a day for nine years) had nearly three times the glioma incidence. Drs. Hardell and Carlberg also found that gliomas tend to be more deadly among heavy wireless callers.³⁵

Perhaps of greatest long-term relevance, glioma risk was found to be four times higher among those who began to use mobile phones as teenagers or earlier. These findings, along with the established fact that it generally takes decades for tumors induced by environmental agents to appear, suggest that the worst consequences of omnipresent wireless devices have yet to be seen.

In a 2013 paper published in *Reviews on Environmental Health*, Drs. Hardell and Carlberg argued that the 2011 finding of the IARC that identified cell phones as a “possibly carcinogenic” needs to be revised. The conclusion on radiofrequency electromagnetic fields from cell phones should now be “cell phones are not just a possible carcinogen.” They can now be “regarded as carcinogenic to humans” and the direct cause of gliomas (as well as acoustic neuromas, a less serious type of tumor).³⁶ Of course, these views are not universally accepted.

The usual spin among industry supporters when presented with research that produces troubling results is along the lines of: “We might pay attention if the results are duplicated.” In fact, the Hardell results were echoed in the French CERENAT study, reported in May of 2014. The CERENAT study also found higher risk among heavy users, defined as those using their phones at least 896 hours (just 30 minutes a day for five years). “These additional data support

previous findings concerning a possible association between heavy mobile phone use and brain tumors,” the study concluded.³⁷

Cell phones are not the only wireless suspects. Asked what he would do if he had policy-making authority, Dr. Hardell swiftly replied that he would “ban wireless use in schools and pre-schools. You don’t need Wi-Fi,” he noted.³⁸ This is especially interesting in view of the FCC’s sharply hiked spending to promote and extend Wi-Fi usage, as well as its consistent refusal to set more stringent standards for children (more on all this later). But for now let’s further fill out the roster of the FCC’s unnamed “some parties.”

Martin Blank is a Special Lecturer in Physiology and Cellular Biophysics at Columbia University. Unlike Dr. Hardell, who looks at broad epidemiological effects over time, Dr. Blank sees cause for concern in research showing there is biological response at the cellular level to the type of radiation emitted by wireless devices. “The biology tells you unequivocally that the cell treats radiation as a potentially damaging influence,” Dr. Blank said in a late 2014 interview.³⁹

“The biology tells you it’s dangerous at a low level,” he added. Though some results have been difficult to replicate, researchers have identified a wide range of cellular responses including genetic damage and penetration of the blood brain barrier. Dr. Blank specifically cited the “cellular stress response” in which cells exposed to radiation start to make proteins.

It is still not clear whether biological responses at the cellular level translate into human health effects. But the research seems to invalidate the basic premise of FCC standards that the only biological effect of the type of radiation produced by wireless devices is tissue heating at very high power levels. But the standards-setting agencies “ignore the biology,” according to Dr. Blank. He describes the FCC as being “in industry’s pocket.”⁴⁰

Sweden’s Lund University is annually ranked among the top 100 universities in the world. **Leif Salford** has been chairman of the Department of Neurosurgery at Lund since 1996. He is also a former president of the European Association for Neuro-Oncology. In the spring of 2000, Professor Salford told me that wireless usage constituted “the world’s largest biological experiment ever.”⁴¹

He has conducted numerous experiments exposing rats to cellular-type radiation. Individual experiments have shown the radiation to penetrate the blood-brain barrier, essential to protecting the brain from bloodstream toxins. Professor Salford also found that rats exposed to radiation suffered loss of brain cells. “A rat’s brain is very much the same as a human’s. They have the same blood-brain barrier and neurons. We have good reason to believe that what happens in rat’s brains also happens in humans,” he told the BBC in 2003. Dr. Salford has also speculated that mobile radiation could trigger Alzheimer’s disease in some cases but emphasized that much more research would be needed to establish any such causal relationship. Does this man deserve to be dismissed as one of a nameless and discredited group of “some parties?”

And what about the **American Academy of Pediatrics (AAP)**, which represents 60,000 American doctors who care for children? In a December 12, 2012 letter to former Ohio Congressman Dennis Kucinich, AAP President Dr. Thomas McInerny writes: “Children are disproportionately affected by environmental exposures, including cell phone radiation. The differences in bone density and the amount of fluid in a child’s brain compared to an adult’s brain could allow children to absorb greater quantities of RF energy deeper into their brains than adults.”⁴²

In a subsequent letter to FCC officials dated August 29, 2013, Dr. McInerny points out that “children, however, are not little adults and are disproportionately impacted by all environmental exposures, including cell phone radiation.” Current FCC exposure standards, set back in 1996, “do not account for the unique vulnerability and use patterns specific to pregnant women and children,” he wrote. (Insert slide: A Plea from Pediatricians). Does an organization representing 60,000 practitioners who care for children deserve to be brushed off along with “some health and safety interest groups?”

So what is the FCC doing in response to what at the very least is a troubling chain of clues to cellular danger? As it has done with wireless infrastructure, the FCC has to this point largely relied on industry “self-regulation.” Though it set standards for device radiation emissions back in 1996, the agency doesn’t generally test devices itself. Despite its responsibility for the safety of cell phones, the FCC relies on manufacturers’ good-faith efforts to test them. Critics contend that this has allowed manufacturers undue latitude in testing their devices.

Critics further contend that current standards, in place since cell phones were barely in use, are far too lax and do not reflect the heavy usage patterns that have evolved. Worse still, industry is allowed to test its own devices using an imprecise system that makes no special provision for protecting children and pregnant women. One 2012 study noted that the procedure widely used by manufacturers to test their phones “substantially underestimates” the amount of RF energy absorbed by 97% of the population, “especially children.” A child’s head can absorb over two times as much RF energy. Other persons with smaller heads, including women, are also more vulnerable. The authors recommend an alternative computer simulation technique that would provide greater insight into the impact of cellular radiation on children and on to the specific RF absorption rates of different tissues, which vary greatly.⁴³

Acting on recommendations of the General Accounting Office, the FCC is now reconsidering its standards for wireless testing and allowed emissions. On the surface, this may seem to represent an effort to tighten standards to promote consumer health and safety. But many believe the FCC’s eventual new standard will actually be weaker, intensifying any health risk from industry’s self-reported emission levels. “They’re under great pressure from industry to loosen the criteria,” notes Joel Moskowitz, director of the Center for Family and Community Health at UC Berkeley’s School of Public Health.⁴⁴ One fear is that the FCC could measure the allowed radiation absorption level (SAR) over a wider sample of tissue, effectively loosening the

standard allowable energy absorption. One FCC official, who asked that his name not be used, contended that a decision had not yet been made to loosen the standard.

But to this point, there is little evidence the FCC is listening to anyone beyond its familiar friends in the wireless industry. Carl Blackman, a scientist at the Environmental Protection agency until retiring in 2014, notes that the FCC does rely to some degree on an inter-agency governmental group for advice on health matters. The group includes, for example, representatives from the EPA and the FDA.

Blackman served on that advisory group and he says that it has been divided. Though some government advisers to the FCC find evidence of wireless health risks convincing, others remain skeptical, said Blackman. Root of the skepticism: even though numerous researchers have found biological and health effects, the mechanism for action by non-ionizing radiation on the human body has still not been identified. “I don’t think there’s enough of a consensus within the Radio Frequency Inter-agency Working Group for them to come out with stricter standards,” he says.⁴⁵

But political pressures also figure mightily in all this. The EPA, notably, was once a hub of research on RF effects, employing as many as 35 scientists. However, the research program was cut off in the late 80s during the Regan presidency. Blackman says he was personally “forbidden” to study health effects by his “supervisory structure.”⁴⁶ He termed it “a political decision” but recognized that if he wanted to continue to work at the EPA he would have to do research in another area.

Blackman is cautious in imputing motives to the high government officials who wanted his work at EPA stopped. But he does say that political pressure has been a factor at both the EPA and FCC: “The FCC people were quite responsive to the biological point of view. But there are also pressures on the FCC from industry.” The FCC, he suggests, may not just be looking at the scientific evidence “The FCC’s position—like the EPA’s—is influenced by political considerations as well.”⁴⁷

Still, the FCC has ultimate regulatory responsibility and cannot indefinitely pass the buck on an issue of fundamental public health. Remarkably, it has not changed course despite the IARC classification of cell phones as possibly carcinogenic, despite the recent studies showing triple the glioma risk for heavy users, despite the floodtide of research showing biological effects, and despite even the recent defection of core industry booster Alex Lerchl. It is the refusal of both industry and the FCC to even acknowledge this cascade of warning signs that seems most incriminating.

Of course, industry behavior goes well beyond pushing for the FCC’s willful ignorance and inaction. Industry behavior also includes self-serving public relations and hyper aggressive legal action. It can also involve undermining the credibility of and cutting off the funding for researchers who do not endorse cellular safety. It is these hardball tactics that recall 20th century Big Tobacco tactics. It is these tactics that heighten suspicion that the wireless industry does

indeed have a dirty secret. And it is those tactics that intensify the spotlight on an FCC that so timidly follows the script of the fabulously wealthy, bullying, billion-dollar beneficiaries of wireless.

Chapter Four: You Don't Need Wires To Tie People Up

So let's look a little more deeply at some of the actions of an industry group that boasts of 500 meetings a year with the FCC. Lobbying is one thing. Intimidation is another. CTIA has shown its skill at—and willingness to use—both.

Outright legal bullying is a favored tactic. The City of San Francisco passed an ordinance in 2010 that required cell phone manufacturers to display more prominently information on the emissions from their devices. This information was already disclosed—but often buried—in operator manuals and on manufacturer websites. The idea was to ensure that consumers saw information already mandated and provided.

Seeing this as a threat to its floodtide of business, the industry sued the City of San Francisco. The City, fearing a prolonged legal fight with an industry that generates hundreds of billions of dollars in annual revenue, backed down.

On May 12, 2015, Berkeley, California's City Council unanimously passed a similar ordinance. Joel Moskowitz, director of the Center for Family and Community Health at the University of California-Berkeley's School of Public Health, has been involved in the effort. Berkeley, he says, didn't want to run into the same legal threats that paralyzed San Francisco. So it tried to draft the most inoffensive and mild language possible. The proposed Cell Phone Right to Know ordinance: "To assure safety, the Federal Government requires that cell phones meet radio frequency (RF) exposure guidelines. If you carry or use your phone in a pants or shirt pocket or tucked into a bra when the phone is ON and connected to a wireless network, you may exceed the federal guidelines for exposure to RF radiation. This potential risk is greater for children. Refer to the instructions in your phone or user manual for information about how to use your phone safely."⁴⁸

Sounds pretty inoffensive, no? Not to the CTIA, which indicated that it was prepared to sue, according to Berkeley City Attorney Zach Cowan.⁴⁹ (On June 8th, CTIA did indeed sue the City of Berkeley.)

Well, from the industry point of view, why not throw around your weight? Smash mouth legal tactics have been highly successful thus far as industry has managed to throttle several efforts to implicate manufacturers in cases where heavy users suffered brain tumors.

But one current case has advanced in district court in Washington to the point where the judge allowed plaintiffs to present expert witness testimony. The industry response: file a legal action seeking to invalidate long-held court methods for qualifying expert witnesses.

This is a very rich industry that does not hesitate to outspend and bully challengers into submission. Meanwhile, amidst the legal smoke and medical confusion, the industry has

managed to make the entire world dependent on its products. Even tobacco never had so many hooked users.

Such sustained success in the face of medical doubt has required industry to keep a lid on critics and detractors. Many scientists who've found real or potential risk from the sort of microwave radiation emanating from wireless devices have learned there is a price to be paid for standing up to the industry juggernaut. A few prominent examples:

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In 1994, University of Washington researchers Henry Lai and N.P. Singh found that rats exposed to microwave radiation suffered DNA damage to their brain cells. This was a scary finding since DNA damage can lead to mutations and possibly cancer.

The reaction from industry was swift. Motorola was at that time the U.S. market leader in cell phones. In a memorandum obtained by the journal *Microwave News*, Motorola PR honcho Norm Sandler outlined how the company could "downplay the significance of the Lai study." One step: "We have developed a list of independent experts in this field and are in the process of recruiting individuals willing and able to reassure the public on these matters," Sandler wrote. After outlining such measures, he concluded that Motorola had "sufficiently war-gamed" the issue. The practices of lining up industry-friendly testimony and "war-gaming" researchers who come up with unfavorable results have been persistent themes with this industry.

Motorola "War-Games" Bad News

Motorola, Microwaves and DNA Breaks: "War-Gaming" the Lai-Singh Experiments

"We have developed a list of independent experts in this field and are in the process of recruiting individuals willing and able to reassure the public on these matters."

"I think we have sufficiently war-gamed the Lai-Singh issue..."

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After Lai's results were published, Motorola decided to sponsor further research on microwaves and DNA damage. Oftentimes, lab results cannot be reproduced by other

researchers, particularly if experiments are tweaked and performed a bit differently. Non-confirming studies raise doubt, of course, on the original work.

Motorola lined up Jerry Phillips, a scientist at the Veteran's Administration Medical Center in Loma Linda, California, and Phillips tested the effect of radiation at different frequencies from those tested by Lai and Singh. Nevertheless, Phillips found that at some levels of exposure, DNA damage increased, while at other levels it decreased. Such findings were "consistent" with the sorts of effects produced by chemical agents, Phillips said in an interview.⁵⁰ In some cases, the radiation may have activated DNA repair mechanisms, reducing the overall microwave effect. But what was important, Phillips explained, is that there were *any* biological effects at all. The wireless industry has long contended—and the FCC has agreed—that there is no evidence that non-ionizing radiation at the frequencies and power levels used by cell phones is biologically active.

Understanding the potential impact of "biological effect" findings, Motorola again turned to damage control, said Phillips. He recalls receiving a phone call from a Motorola R&D executive. "I don't think you've done enough research," Phillips recalls being told. The study wasn't ready for publication, according to the Motorola executive. Phillips was offered more money to do further research without publishing the results of what he'd done.

But Phillips felt he'd done enough. Despite warnings for his own boss to "give Motorola what it wants," Phillips went ahead and published his findings in 1998. Since then, Phillips' industry funding has dried up. Meanwhile, as many other researchers report, government funding to do independent research on microwave radiation has dried up, leaving the field at least in the U.S. to industry-funded scientists. "There is no money to do the research," Said Phillips. "It's not going to come from government because government is controlled by industry."⁵¹

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Om P. Gandhi is Professor of Electrical and Computer Engineering at the University of Utah and a leading expert in dosimetry—measurement of non-ionizing radiation absorbed by the human body. Even before cell phones were in wide use, Professor Gandhi had concluded that children absorb more emitted microwave radiation. "The concentration of absorbed energy is 50 to 80% greater," he explained.⁵²

These conclusions were not acceptable to Professor Gandhi's industrial sponsors. In 1998, he recalls, an executive from a cell phone manufacturer—which he did not want to identify—told him directly that if he did not discontinue his research on children his funding would be cut off. Professor Gandhi recalled replying: "I will not stop. I am a tenured professor at the University of Utah and I will not reject my academic freedom." Professor Gandhi also recalled some of his thought process: "I wasn't going to order my students to alter their results so that I can get funding." His industry sponsors cancelled his contract and asked for a return of funds.

Professor Gandhi believes that some cell phone users require extra protection because their heads are smaller and more absorptive. “Children, as well as women and other individuals with smaller heads absorb more concentrated energy because of the proximity of the radiating antenna to the brain tissue,” he said. And yet the FCC has not acted to provide special protection for these groups. Asked why not, Professor Gandhi conceded that he doesn’t know. He does note, however, that recent standards-setting has been dominated by industry representatives.⁵³

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While the mobile industry refuses to admit to even the possibility that there is danger in RF radiation, giant insurance companies see things differently. Several insurers have in recent years issued reports highlighting product liability risk with cell phones. This is important because it is evidence that where money is on the line professionals outside the industry see the risk of legal liability.

Legal exposure could be one reason—perhaps the central one—the industry continues to stonewall. Should legal liability be established, one key question will be how much wireless executives knew—and at what point in time. Meanwhile, the combination of public relations denials, legal intimidation and the selective application of pressure on research follows a familiar pattern. “The industry is basically using the tobacco industry playbook,” UC Berkeley’s Moskowitz said in a recent radio interview.⁵⁴

That playbook has thus far been highly successful in warding off attention, regulation and legal incrimination.

Chapter Five: \$270 Billion . . . and Looking for Handouts

The FCC's network of corruption doesn't just shield industry from needed scrutiny and regulation on matters of public health and safety. Sometimes it just puts its hand directly into the public pocket and redistributes that cash to industry supplicants.

Such is arguably the case with the Universal Service Fund. Originally established to extend telephone service to rural and urban areas that industry would find difficult or uneconomical to wire, the USF is now shifting from subsidizing landline phone service to subsidizing the extension of broadband Internet. USF monies also support the Lifeline program, which subsidizes cell phone service to low-income consumers, and the E-Rate program, which subsidizes Internet infrastructure and service to schools and libraries.

Since 1998, more than \$110 billion has been allocated to Universal Service programs, notes Charles Davidson, director of the Advanced Communications Law & Policy Institute at New York Law School. The FCC has allocated over \$40 billion to the E-Rate program alone.

Who pays the freight for these high-cost programs? You do.

Technically, landline and wireless phone companies are assessed for the Universal Service fund's expenditures. But the FCC also allows those companies to pass on such charges to their subscribers, which they do. Both landline and wireless subscribers pay a monthly Universal Service charge that is tacked on to their phone bills. That charge has been rising and recently amounted to a 16% surcharge on interstate calls.

Consumers who pay for these programs might be interested to learn that both the E-Rate and Lifeline programs have been riddled with fraud. Government watchdogs have repeatedly found the programs to be inefficient and prone to inflated and fraudulent claims. But the programs have been a windfall for tech and telecom industry beneficiaries. Wherever the FCC presides, it seems, these industries reap a windfall.

The General Accounting Office (GAO) has issued several reports citing fraud, waste and mismanagement, along with inadequate FCC oversight of the subsidy program. Bribery, kickbacks and false documentation can perhaps be expected in a handout program mandated by Congress and only indirectly supervised by the FCC.

But the scope of fraud has been impressive. The most striking corruption has marred the E-Rate program, which subsidizes Internet hardware, software and service for schools and libraries, and the Lifeline cell phone subsidies.

In recent years, several school districts have paid fines to settle fraud cases involving bribery, kickbacks, non-competitive bidding of contracts and false documentation in the E-Rate

program. More eye opening perhaps are the settlements of fraud claims by tech giants like IBM, Hewlett Packard and AT&T. The HP case, for example, involved some colorful bribery allegations, including gifts of yachts and Super Bowl tickets. HP settled for \$16 million. An HP official and a Dallas Independent School District official both received jail sentences.

The Lifeline program has also been riddled with fraud. A Wall Street Journal investigation of the five top corporate beneficiaries of Lifeline showed that 41% of more than 6 million subsidy claimants “couldn’t demonstrate their eligibility or didn’t respond to requests for certification.”⁵⁵ AT&T, Verizon, and Sprint Nextel were three of the major Lifeline beneficiaries.

The FCC has initiated several efforts to clean up USF programs and seems honestly determined to bring greater accountability and efficiency to its subsidy efforts. Nevertheless, problems with fraud persist, as reported recently by the FCC’s own top investigator.

Congress established the FCC’s Office of Inspector General in 1989 to “provide objective and independent investigations, audits and reviews of the FCC’s programs and operations.” Here’s what the FCC’s internal investigative unit said in a September 30, 2014 report to Congress about its Office of Investigation (OI): “*The bulk of the work of OI involves investigating and supporting civil and criminal investigations/prosecutions of fraud in the FCC’s federal universal service program.*”⁵⁶



OFFICE OF INVESTIGATION

The bulk of the work of OI involves investigating and supporting civil and criminal investigations/prosecutions of fraud in the FCC’s federal universal service program.

Fraud—as pervasive and troubling as it has been—is just one of the problems with the programs of universal service. It may not even be the fundamental problem. More fundamental issues concern the very aim, logic and efficiency of programs to extend broadband and wireless technology at public expense. Though the aims of extending service to distant impoverished areas seem worthy on the surface, there are many reasons to think the major beneficiaries of these programs are the technology companies that win the contracts.

Lobbyists have long swarmed over the FCC looking to get an ever-growing piece of the USF honeypot. An FCC report on meetings with registered lobbyists details a 2010 meeting with representatives of the International Society for Technology in Education and other education lobbyists. Topics discussed, according to the FCC report, included “the need to raise the E-Rate’s annual cap.”⁵⁷

The CTIA, leaving no stone unturned in its efforts to pump up member revenues, last year responded to a House hearing on the USF by grouching that “current USF-supported programs skew heavily toward support of wireline services. . . . The concentration of USF monies to support wireline services is inconsistent with technological neutrality principles and demonstrated consumer preferences,” CTIA wrote.⁵⁸ An industry that generates hundreds of billions of dollars in equipment and service revenues annually bellies up for a bigger slice of the \$8 billion a year USF.

The grouching has paid off. The FCC recently announced that it will raise spending on E-Rate from what had been a cap of \$2.4 billion a year to \$3.9 billion. A significant portion of new outlays will go to Wi-Fi—yet another wireless industry victory at the FCC. But the CTIA is by no means the only industry group pressing the FCC.

Leading the roster of active lobbyists on E-Rate issues is the Software and Information Industry Association. Beginning in 2006, SIAA led all lobbyists with 54 mentions of E-Rate in its filings, according to the Center for Responsive Politics. SIAA board members include executives from tech heavyweights Google, Oracle and Adobe Systems.

Tech business leaders—many of them direct beneficiaries of FCC programs—made a direct pitch to FCC Chairman Wheeler last year to hike E-Rate funding. “The FCC must act boldly to modernize the E-Rate program to provide the capital needed to upgrade our K-12 broadband connectivity and Wi-Fi infrastructure within the next five years,” the executives wrote.⁵⁹

There were dozens of corporate executive signees to this letter, including the CEOs of many Fortune 500 giants. But let’s just consider the participation of three: top executives of Microsoft, Google and HP all joined the call to expand E-Rate subsidies. Consider the simple fact that these three tech giants alone had revenues of \$270 billion—more than a quarter of a trillion dollars—in a recent four-quarter period. Together, they produced nearly \$40 billion in net income. And yet their top executives still thought it necessary to dun the FCC—and really, they were surreptitiously hitting up the public—for ramped-up spending on what was then a \$2.4 billion a year program.

Is that greed? Arrogance? Or is it simply behavior conditioned by success in repeatedly getting what they want at the public trough? Almost never mentioned in these pleas for higher subsidies is the fact that ordinary American phone subscribers are the ones footing the bill for the E-Rate program—not the FCC or the telecom industry.

Much of the added spending, as noted, will go towards the installation of wireless networks. And yet Wi-Fi does not have a clean bill of health. When Lennart Hardell, professor of Oncology and Cancer Epidemiology at the University Hospital in Orebro, Sweden, was asked what he would do if given policy authority over wireless health issues, he replied swiftly that he would “ban wireless use in schools and pre-school.” Noting that there are wired alternatives, Professor Hardell flatly stated: “You don’t need Wi-Fi.”⁶⁰ And yet the FCC, prodded by an industry ever on the lookout for incremental growth opportunities, is ignoring the health of youngsters to promote expanded Wi-Fi subsidies in schools across the U.S.

And what about the merit of the program itself? Overlooking the fraud and lobbying and Wi-Fi safety issues for a moment, shouldn’t schools and libraries across the country be equipped with the best electronic gear, accessing the Internet at the fastest speeds? Doesn’t the government owe that to its younger citizens, especially those disadvantaged by the long-referenced digital divide?

Well, maybe. But answers to these questions hinge on even more fundamental question: Do students actually learn more or better with access to the latest high-speed electronic gadgetry?

It would be foolish to argue that nobody benefits from access to high-speed Internet. But the benefits are nowhere near as broad or rich as corporate beneficiaries claim. Some researchers, for example, have concluded that computers don’t seem to have positive educational impact—they may even have negative impact—when introduced into the home or freely distributed to kids from low income backgrounds.

Duke University researchers Jacob Vigdor and Helen Ladd studied the introduction of computers into North Carolina homes. They found that the academic performance of youngsters given computers actually declined. “*The introduction of home computer technology is associated with modest but statistically significant and persistent negative impacts on student math and reading test scores,*” the authors wrote in a National Bureau of Economic Research Working Paper.⁶¹ The impact was actually most negative on the poorer students.

A study in the *Journal of International Affairs* examined the impact of the global One Laptop Per Child Program (OLPC), which has distributed millions of computers to children around the world. Researchers Mark Warschauer and Morgan Ames conclude: “*The analysis reveals that provision of individual laptops is a utopian vision for the children in the poorest countries, whose educational and social futures could be more effectively improved if the same investments were instead made on more proven and sustainable interventions. Middle- and high-income countries may have a stronger rationale for providing individual laptops to children, but will still want to eschew OLPC’s technocratic vision. In summary, OLPC represents the latest in a long line of technologically utopian schemes that have unsuccessfully attempted to solve complex social problems with overly simplistic solutions.*”⁶²

Can One Laptop Per Child Save the World's Poor?

"...In summary, One Laptop Per Child represents the latest in a long line of technologically utopian development schemes that have unsuccessfully attempted to solve complex social problems with overly simplistic solutions."

Access to computers in the home may not work educational magic. But what about computers in the classroom? Don't they have educational value there?

The anecdotal evidence is mixed at best. Consider how students in Los Angeles, newly equipped with flashy iPads at a mind-boggling taxpayer cost of more than \$1 billion, went about using the new tools to improve their educational performance. "Instead of solving math problems or doing English homework, as administrators envisioned, more than 300 Los Angeles Unified School District students promptly cracked the security setting and started tweeting, posting to Facebook and playing video games."⁶³

But let's cut through the self-serving corporate claims and the troubling anecdotes to hear from someone who actually has had extensive and unique field experience. Kentaro Toyama was co-founder of Microsoft's research lab in India. Over more than five years he oversaw at least a dozen projects that sought to address educational problems with the introduction of computer technology. His conclusion: "The value of technology has been over-hyped and over-sold."

The most important factor in improving schools, says Toyama, now the W.K Kellogg Associate Professor of Community Information at the University of Michigan, is good teachers. Without good, well-trained teachers, adequate budgets and solid school administration, technology does little good. "Technology by itself never has any kind of positive impact," he said.⁶⁴

The only schools in his experience that benefited from increased technology investment were those where "the teachers were very good, the budgets adequate." The richer schools, in essence. But as both Vigdor and Warschauer found, the introduction of technology has by itself little if any positive effect. For a public conditioned to believe in the virtues of new technology, such testimony is a bracing dose of cold reality.

But what about cost? Doesn't technology in the schools more efficiently replace alternative investments? Cost reductions are often the most persuasive argument for technology, Toyama agrees. But even these have been overstated. The costs of introducing new technology run far beyond initial hardware and software investments, said Toyama. In reality, the total costs of ownership—including maintenance, training, and repair—typically run to five or ten times the initial cost, according to Toyama. He said of the investment in technology for cost benefits: "I would say that in the long run—and even in the medium run and the short-run—that's probably the worst and most misguided conclusion to come to."⁶⁵

He adds: "The inescapable conclusion is that significant investments in computers, mobile phones and other electronic gadgets in education are neither necessary nor warranted for most school systems. In particular, the attempt to use technology to fix underperforming class rooms . . . is futile. And for all but wealthy, well-run schools, one-to-one computer programs cannot be recommended in good conscience."⁶⁶

But that doesn't keep industry lobbyists from recommending them. And it hasn't kept the FCC for spending scores of billions subsidizing technology to the very groups least likely to benefit from it.

Unmoved by the arguments of researchers and educators like Vigdor, Warschauer, and Toyama, the FCC keeps moving to increase technology subsidies. Ignoring research that disputes the value of technology in closing the so-called "digital divide," the FCC has even pioneered a new slogan: "the Wi-Fi gap."

In announcing that it was lifting E-Rate's annual budget from \$2.4 billion to \$3.9 billion and stepping up investment in wireless networking, FCC chairman Wheeler exulted that "10 million students are going to experience new and better opportunities."⁶⁷ The impact on consumer pocketbooks (and potentially on youngsters' health from daily Wi-Fi exposure) were not mentioned.

The two Republican members of the FCC did at least recognize the pocketbook impact. "It always seems easier for some people to take more money from the American people via higher taxes and fees rather than do the hard work," said Commissioner Michael O'Reilly.⁶⁸

The subsidized provision of high-speed Internet service is yet another pet project of the FCC. Julius Genachowski, chairman from 2009 to 2013, championed the transition of the USF from landline phone service to broadband. Universal broadband Internet connections would begin to absorb the monies collected from consumers to extend basic phone service.

As with government subsidies for cell phone service, classroom technology, and Wi-Fi, there are basic questions about the wisdom of subsidizing broadband. Charles Davidson and Michael Santorelli of the New York Law School found that spending billions to extend broadband is a flawed approach since there are many largely ignored reasons people choose not to adopt

broadband. “Everybody is pushing broadband non-stop,” noted Davidson, director of the Law School’s Advanced Communications Law and Policy Institute. “I think the FCC is focused on the wrong set of issues,” he said.⁶⁹

Already, he explained, over 98% of Americans have access to wired or wireless broadband. The issue is not one of supply. It’s one of demand. Many people—for a variety of reasons—don’t really care about broadband, he contends. Price is one issue. Also powerful factors—but given almost no attention—are privacy and security concerns. “In our view, they should be focused on barriers to meaningful broadband utilization: privacy and security,” said Davidson.⁷⁰

But consumer privacy (more on this subject in Chapter Seven) has no well-funded lobby with limitless access to the FCC.

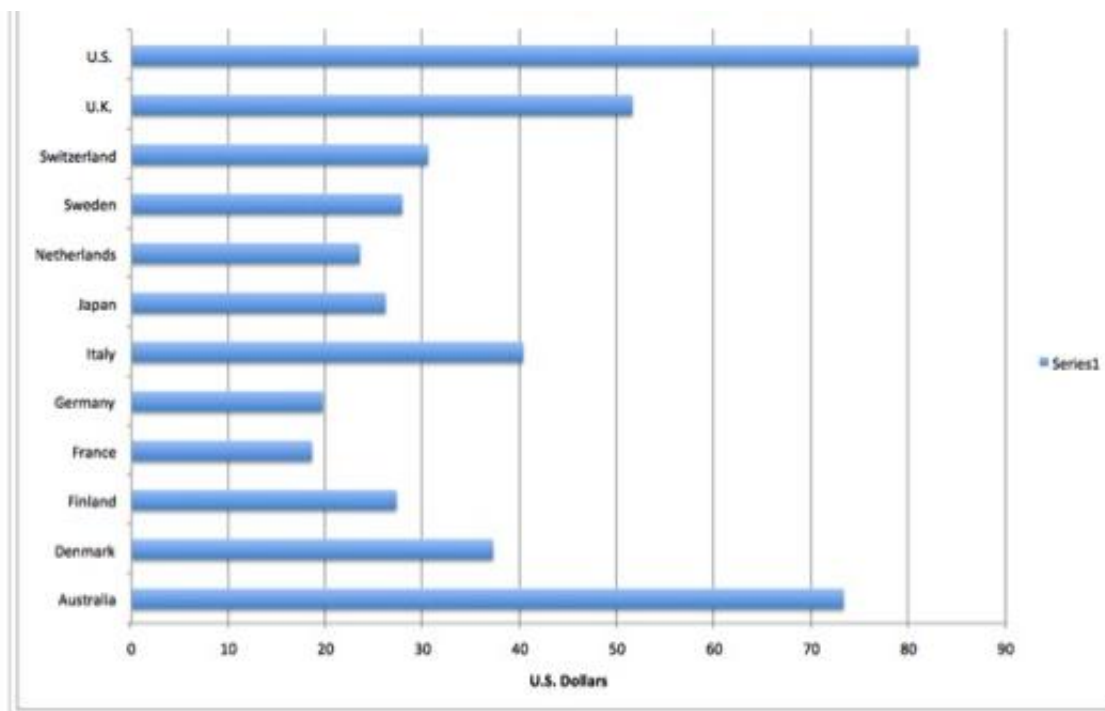
Chapter Six: The Cable Connection

The network has also been active in diluting FCC control of the cable television industry. Over the years, cable has devolved into major de facto local monopolies. Comcast and Time Warner Cable, whose merger proposal was dropped in April, are dominant forces in both cable television and broadband Internet subscriptions. Somehow, though, they have managed to steer clear of one another in specific markets, giving each pricing power where it faces little local competition.

It's interesting that cable companies annually rank in consumer polls among the “most hated” or “most disliked” American corporations. Indeed, Comcast and Time Warner Cable often top the “most hated” list.⁷¹ Why would these companies—providers of the TV programming that has so expanded consumer options in recent decades—be so widely scorned? After all, the U.S. has been a leader in developing both cable technology and diverse television programming.

The problem is that it hasn't been anything close to a leader in bringing down subscriber prices. Industry consultants typically measure pricing by the metric of average revenue per subscriber. Industry trackers at IHS compared the price of U.S. pay television (which includes satellite services) to those in more than 60 other countries. U.S. prices were the highest, with only Australia even coming close. The average revenue per subscriber in the U.S. in 2013 was \$81. But in France it was just \$18.55. In Germany it was \$19.68. In Japan it was just over \$26.

Pay TV Monthly Revenue Per Person:



And U.S. cable prices have risen in recent years at rates three or more times the rate of inflation. This has been going on for some time. From 1995 to 2013 cable rates increased at a 6.1% annual clip. The Consumer Price Index, by contrast, rose by just 2.4% annually. Former FCC commissioner Michael Copps says the FCC shares a major part of the blame. “The FCC is as culpable for allowing that as much as the companies for imposing it,” he said.⁷²

One area where the FCC has contributed to the problem is in its traditional rubber-stamping of merger agreements. The proposed Comcast/Time Warner Cable deal has been shelved, largely because of Justice Department reservations. But a long run of earlier FCC-sanctioned deals allowed Comcast and Time Warner Cable to grow to the market dominance—and attendant pricing power—they currently command.

Lofty monthly cable bills pinch consumers. But it’s more than that. Subscribers paying \$80 a month are often paying for a lot of channels they don’t watch and don’t want. The FCC has never required cable operators to charge for what consumers actually want to watch. Kevin Martin, who chaired the FCC from 2005 to 2009, pushed to “debundle” programming in hopes of lowering bills. But the issue was never resolved. Only recently have viable competitive alternatives to cable’s “bundled” packages become available. The satellite service Dish, for example, months ago introduced its Sling offering that enables consumers to opt for smaller and cheaper packages.

In fairness to cable operators, it should be pointed that programmers often require operators to take unwanted or fledgling channels along with their stars. New York cable operator Cablevision Systems filed suit against Viacom in 2013, charging that in order to get popular channels like MTV and Nickelodeon it was also forced to take low-rated channels like Nicktoons and VH1 Soul. But the simple truth is that no matter who is to blame, the cable consumer pays high prices, typically for some programming he doesn’t want. As it often does when powerful interests pursue dubious practices, the FCC has for the most part idly stood by.

Still, the FCC isn’t entirely to blame. Some factors in the growth of the cable giants cannot be laid at its doorstep. Local municipalities often granted monopoly or duopoly status in granting franchises to cable network builders. With the huge capital investments required to cable metropolitan areas, this once seemed to make sense.

And over the years, the cable giants have used a variety of tactics to weaken what little local competition they may have had. Active lobbyists on the local level, the cable giants have managed to convince a growing number of states to outlaw municipal systems that could threaten private corporate incumbents. The FCC for many years declined to tangle with the states in this matter, partly due to the opposition of Republican commissioners. But the Wheeler-led Commission did vote recently to override state laws that limit the build-out of municipal cable systems.

Still, many years of industry subservience will be difficult to swiftly undo. One linchpin merger shows how FCC decision-making has been thoroughly undermined by the revolving door, lobbying, and carefully targeted campaign contributions. All conspired in Comcast's pivotal 2011 buyout of NBC Universal, a deal which reinforced Comcast's domination of both cable and broadband access. This deal also set the stage for the recent headline-grabbing acrimony over the issue of net neutrality.

In 2011, mighty Comcast proposed to acquire NBC Universal. A series of mergers including the 1986 acquisition of Group W assets and the 2002 acquisition of AT&T's cable assets had already vaulted Comcast into cable market leadership. In bidding for NBC Universal, a huge step towards vertical integration, Comcast was once again raising the stakes. NBC Universal would give Comcast a treasure trove of programming, including valued sports content like NFL football and the Olympics.

Suddenly, the issue was not just cable subscriber base size—where Comcast had already bought its way to dominance. NBC Universal would also allow Comcast to consolidate its growing power as a broadband Internet provider. And with NBC Universal's programming assets, Comcast would gain new leverage when negotiating prices to carry the competing programming content of rivals. This would prompt a new round of debate over net neutrality. Couldn't a programming-rich Comcast slow down rival services—or charge them more to carry their programming?

To short-circuit any potential opposition to the merger, Comcast assembled a superstar cast of lobbyists. As Susan Crawford reports in her 2013 book, “Comcast hired almost eighty former government employees to help lobby for approval of the merger, including several former chiefs of staff for key legislators on congressional antitrust committees, former FCC staffers and Antitrust Division lawyers, and at least four former members of Congress.”⁷³ Such “profligate hiring,” Crawford observes, pretty much silenced the opposition to the deal. If Comcast had already retained one member of a lobbying firm, the firm could not under conflict of interest rules object to the deal. And Comcast had locked up key lobbying shops. Money was both weapon and silencer.

Of course, Comcast had always been a big spender on lobbying, with outlays exceeding \$12 million every year since 2008. Lobbying costs peaked in 2011 at \$19.6 million, according to the Center for Responsive Politics.

For its part, the FCC had a long history of approving most media mergers. So it was hardly a great surprise when the agency, after exacting some relatively minor concessions from Comcast, rubber-stamped the deal. Comcast would thus broaden its footprint as local monopoly distributor of cable. And with its new programming assets, it would enhance its leverage in negotiating deals to carry its rivals' programming. It would also fortify its position of growing strength as broadband Internet gatekeeper.

The most telling footnote to the deal would come just four months later. FCC Commissioner Meredith Atwell Baker, who voted to approve the merger in January 2011, left the FCC to become a top-tier Comcast lobbyist in May. It was the ultimate—and perhaps most telling—glide of the revolving door.

Baker's was a high-profile defection. But it was neither the first nor the last. Comcast had successfully convinced other FCC officials to take their expertise and government contacts to the cable giant. Comcast has long been a master at spinning the revolving door to its own advantage. "Comcast has been very good at hiring everyone who is very smart," said Crawford.⁷⁴

Approval of the NBC Universal deal was another in the long string of FCC merger approvals that made Comcast a nationwide monopolist that could dictate both pricing and viewer programming choice.

But the deal may have had another unintended consequence. It set the stage for Comcast's subsequent battles on net neutrality. "Those mergers gave additional oomph to the issue of net neutrality," noted former commissioner Copps. Speaking specifically of Comcast's buyout of NBC Universal, IHS senior analyst Eric Brannon agreed. "That merger laid the grounds for net neutrality."

In allowing Comcast to acquire major programming assets, the deal would sharpen questions about the power of gatekeepers like Comcast to control the flow of traffic from rival Web services. So in bowing to lobbyist pressure, the FCC would bring on itself a whole new set of pressures by focusing public attention on the issue of net neutrality.

With activists rounding up comments from the public and hip TV personalities like HBO's John Oliver also beating the drums, net neutrality quickly grew into a popular issue that won the support of President Obama, and by proxy, his hand-picked appointee Tom Wheeler. When the FCC ruled in February of 2015 that it would seek Title II authority to regulate the Internet and presumably block any favoritism by broadband gatekeepers, it seemed to finally cast its lot with the public against steamrolling corporate interests

The issue had simmered for years but reached full boil when movie purveyor Netflix, which had argued that its service was slowed down by Comcast, signed a side deal ensuring better download speeds for its wares. This triggered an outburst of public concern that Comcast was now in position to operate "fast" and "slow" lanes, depending on whether a rival programmer could afford to ensure that Comcast provide adequate download speed.

With nearly 4 million comments—many supplied or encouraged by public interest groups—filed to the FCC, net neutrality was a bankable political issue. And there's no question, net neutrality attracted public interest because it gave cable viewers—long furious at the treatment by the monopolists who send them monthly bills—issues of both viewing pleasure and economics.

But it also fed into the longstanding sentimental but increasingly unrealistic view of the Internet as the last bastion of intellectual freedom. Internet romanticists have long seen the Web as a place that somehow deserves special rules for breaking the stranglehold of traditional media and offering exciting new communications, information retrieval and shopping efficiencies.

Yes, the Internet is a modern marvel. This is beyond dispute. But some of the favors it has won from government over the years have had unfortunate unintended consequences.

In the 1990s, for example, net access providers were repeatedly exempted as an “infant industry” from paying access charges to the Baby Bells even though they had to connect users through local phone networks. The long distance companies were then paying as much as \$30 billion a year for the privilege. But the Internet was exempted.

As the late 90s approached, the Internet was no longer an infant industry. Still, the exemption from access charges was extended. That exemption essentially allowed AOL in the late 90s to offer unlimited unmetered online time, a key factor in boosting usage and siphoning advertisers from print media. Why buy an ad in print that might get viewed with the transitory flip of a page when you can get round-the-clock attention online?⁷⁵ FCC decisions to grant the Internet access-charge exemptions arguably accelerated the decline of print media and much of the quality journalism print advertising could once support.

Meanwhile, retailers on the Internet were making inroads into brick and mortar retail business with the help of a Supreme Court-sanctioned exemption from collecting sales tax.⁷⁶ This judicial coddling of the Internet was the death knell for many smaller mom and pop local businesses, already challenged to match online pricing. And that’s not all. The special favors continue virtually every year, as Congress proposes and/or passes legislation to extend special tax exemptions to Internet services.

Well, maybe tax breaks aren’t such a bad idea for such an innovative and transformational emerging technology. For all its faults, the Internet—gateway to all goods, repository of all things, wizardly guide to all knowledge, enabler of universal self-expression—is undeniably cool.

But let’s not deny that the combination of tax advantages and deregulation was toxic. Allow an industry to emerge with advantages over useful existing industries that largely play by the rules—well, maybe that can be rationalized. But then fail to hold the upstart industry to the same rules, allowing it more leeway to trample fundamental rights because it has the technical capacity to do so. Well, then you have a cruel Faustian bargain.

With the see-no-evil deregulatory gospel loosing all constraints, the Web would devolve into a playground for corporate snoops and criminals. For all its wonders, the Internet comes at a cost: the loss of control over personal data, the surrender of personal privacy, sometimes even the confiscation of identity.

Perhaps the most favorable consequence of net neutrality—and one that has gotten surprisingly little attention—is that it could set the stage for privacy reform. (More on this in Chapter Seven). The FCC can now choose to exercise its Title II powers to enforce privacy standards over broadband Internet. Privacy is one area where the FCC has done a pretty good job in the past.

Worth remembering, though, is that the hard-fought public victory over Net Neutrality may be transitory. AT&T and others have threatened to go to court to upend the FCC rules. And there's a fair chance a Republican Congress will legislate against Title II.

Meanwhile, though, one supreme irony has begun to unfold in the marketplace.

Modern-day laissez fair ideologues love to invoke the wisdom of markets as represented by the “mysterious hand” of Adam Smith. Unfortunately, in the absence of effective regulation, the putatively wise “mysterious hand” generally seems to work its magic for those with huge financial resources and the political access it buys.

In the current cable situation, however, the mysterious hand may actually be working in consumer-friendly ways. Years of regulation that favored the cable companies have now backfired as the market reacts to monopolistic pricing and content control.

Whereas cable giants have commanded premium monthly subscriber prices to deliver packages of largely unwatched channels, the market is now beginning to burst with new “debundled” options that are whittling away at cable's vast subscriber base.

Satellite service Direct TV, as noted, now offers its streaming video Sling TV package of popular networks that includes live sports and news. Amazon, Apple, CBS, HBO, Netflix, Sony, and others offer a variety of streaming video options that allow viewers to cut the cable cord. Suddenly, consumers have the cherry-picking capability that bundled—and expensive—cable packages have never allowed.

In this case, at least, the unintended consequences of the FCC's pro-industry policies may be producing an unexpected pro-consumer twist.

Chapter Seven: What about Privacy?

Has any issue gotten as much lip service—and as little meaningful action?

For all the various congressional bills, corporate self-regulatory schemes and presidential Privacy Bill of Rights proposals, the simple truth remains that no personal information is safe on the Internet. Data brokers have built a multi-billion dollar business exchanging information used to build profiles of Net users. Your shopping and surfing habits, your health history, your banking data, your network of social ties, perhaps even your tax filings are all potentially exposed online. Both legal and criminal enterprises amass this information. And it doesn't go away.

At any given moment people you don't know somehow know where you are. They may very well know when you made your last bank deposit, when you had your last asthma attack or menstrual period. Corporations encourage and pay for every bit of information they can use or sell. Creepy? Perhaps, but as Jeff Chester, president of the Center for Digital Democracy points out: "The basic business model that drives online is advertising."⁷⁷

The FCC largely escapes blame on this one. It is the Federal Trade Commission that has had primary responsibility for protecting Internet privacy. The FCC does have some limited authority, which, some critics say, could have been exercised more vigorously. But for the most part the FCC is not to blame for the rampant online abuse of personal privacy and identity.

The FCC does however have privacy authority over the phone, cable and satellite industries. Until recently, at least, the FCC has kept privacy issues at bay among the companies in these industries. "The FCC has generally taken privacy very seriously," noted Harold Feld, a senior vice president at the non-profit Public Knowledge.⁷⁸

But dynamics now in place suggest that privacy may be the next great testing ground for the FCC. A new chance, perhaps, to champion public interest. Even before the opportunity for privacy enforcement under Title II regulatory powers, the FCC faces new challenges from phone companies, now itching to monetize their vast consumer data stashes the way Net companies have. The commonly used term is "Google envy."

"Until now, ISPs (Internet Service Providers) have mostly not gotten into hot water on privacy—but that's changing," observed Jonathan Mayer, a fellow at the Center for Internet and Society.⁷⁹ Verizon and AT&T, major providers of mobile Internet access, have each introduced "super cookies" that track consumer behavior even if they try to delete older, less powerful, forms of cookies. AT&T is actually charging its customers an extra \$30 a month *not* to be tracked.

Showdowns loom.

In adopting Title II to enforce net neutrality, the FCC has made broadband Internet access a telecom service subject to regulation as a “common carrier.” This reclassification means that the FCC could choose to invoke privacy authority under Title II’s Section 222. That section, previously applied to phone and cable companies, mandates the protection of consumer information. Such information—called CPNI for Customer Proprietary Network Information—has kept phone companies from selling data on whom you call, from where you call and how long you spend on the phone. Consumers may have taken such protection for granted on their phone calls. But they have no such protection on their Internet activity—which, as noted, has been a multi-billion dollar safe house hideaway for corporate and criminal abusers of personal privacy.

Now, though, the FCC could put broadband Internet communications under Section 222 protection. To Scott Cleland, a telecom industry consultant who has often been ahead of the analytic pack, this would be a momentous decision.

When the smoke clears—and it hasn’t yet—the FCC could make consumer identifiers like IP addresses the equivalent of phone numbers. Suddenly, the Internet companies that have trafficked in all that personal data would be subject to the same controls as the phone and cable companies.

Cleland argues that the risk for privacy abuses extends beyond broadband access providers like Comcast and Verizon to Internet giants like Google and Facebook that have until now flourished with all that personal data. “They are at risk and they are going to live under the uncertainty their business model could be ruled illegal by the FCC,” Cleland said.⁸⁰

Much has been written about the legal challenges broadband access providers intend to mount against the FCC’s new rules. But Cleland argues that a very different type of legal action could engulf companies that have benefited from the use and sale of private data. Trial lawyers, he argues, will see opportunity in rounding up massive class action suits of Internet users whose privacy has been violated. What sorts of privacy abusers face legal action? Anyone who has “collected CPNI via some type of cookie,” according to Cleland.

“Right now, edge providers like Google, Facebook and Twitter are at risk of being sued by trial lawyers,” he said.⁸¹

Sounds great for consumers who care about privacy on the Internet and how it has been abused. But the FCC, Cleland was reminded, has never been a consumer advocate. “Bingo,” replied Cleland. That’s what makes the FCC’s potential move into privacy protection so important and so surprising, he suggests.

There are other signs that the FCC under Tom Wheeler might actually become more consumer-friendly on the issue of data privacy. While Wheeler has brought some former associates from lobbying groups to the FCC, he has also peppered his staff with respected

privacy advocates. Indeed, he named Gigi Sohn, longtime president of the non-profit Public Knowledge, as Counsellor to the Chairman in April.

Another appointee with a privacy background is Travis LeBlanc, head of the FCC's Enforcement Bureau. In previous employment in California's Office of the Attorney General, LeBlanc was active in enforcing online privacy. LeBlanc has stated an interest in privacy and has already taken action against two firms that exposed personal information—including social security numbers—on unprotected Internet servers.

But many aspects of LeBlanc's approach to regulating Internet privacy under Title II remain unclear. Unfortunately, the FCC declined repeated requests to make LeBlanc available for an interview. (It also declined to answer written questions on its enforcement intentions in both privacy and cell tower infrastructure emissions.)

It remains to be seen if LeBlanc and his superiors at the FCC are really willing to take on privacy enforcement. Such a stance would require great courage as the entire Internet infrastructure is built around privacy abuse. It is also questionable whether the FCC would have the courage to challenge Google—a rare corporate ally in the battles over Net Neutrality.

Chapter Eight: Dependencies Power the Network of Corruption

As a captured agency, the FCC is a prime example of institutional corruption. Officials in such institutions do not need to receive envelopes bulging with cash. But even their most well-intentioned efforts are often overwhelmed by a system that favors powerful private influences, typically at the expense of public interest.

Where there is institutional corruption, there are often underlying dependencies that undermine the autonomy and integrity of that institution. Such is the case with the FCC and its broader network of institutional corruption.

As noted earlier, the FCC is a single node on a corrupt network that embraces Congress, congressional oversight committees and Washington social life. The network ties the public sector to the private through a frictionless revolving door—really no door at all.

Temptation is everywhere in Washington, where moneyed lobbyists and industry representatives throw the best parties and dinners. Money also allows industry to control other important factors, like the research agenda. All of this works together to industry's advantage because—as with other instances of institutional corruption—there are compromising dependencies. Policy makers, political candidates and legislators, as well as scientific researchers are all compromised by their dependence on industry money.

Dependency #1 – So much of the trouble here comes back to the core issue of campaign finance. Cable, cellular and educational tech interests know where to target their funds for maximum policy impact. And the contributions work, seemingly buying the silence of key committee congressmen—even those with past records as progressives. Key recipients of industry dollars include Massachusetts Senator Ed Markey and, until he retired, California Democrat Henry Waxman. Though they have intermittently raised their voices on such issues as data privacy and cellular health and safety, neither has shown any great inclination to follow through and take up what would have to be a long and tough fight on these issues.

Dependency #2 – Democrats might be expected to challenge industry now and then. They traditionally have done so, after all. But this is the post-*Citizens United* era where the Supreme Court has turned government into a giant auction house.

Bid the highest price and you walk home with the prize—your personal congressman, legislative loophole, even an entire political party.

Such is the case with technology industries and the Democrats. The communications/electronics industry is the third largest industry group in both lobbying and campaign contributions, according to the Center for Responsive Politics. In just 2013 and 2014, this industry sector spent well over \$750 million on lobbying.⁸²

Only the finance/insurance/real estate and health industries outspend the tech sector on lobbying. But those industry groups lean Republican. Over 62% of the finance/insurance/real estate campaign contributions go to the GOP. Health contributions lean Republican 57% to 43%. But the technology group leans sharply to Democrats, who got 60% of contributions in the 2013-2014 election cycle.⁸³ The two next largest industry groups—energy/natural resources and agribusiness—also lean heavily Republican. So of the top five industry groups whose money fuels and often tilts elections four are strongly Republican. The Democrats need the tech industry—and they show that dependence with consistent support, rarely raising such public interest issues as wireless health and safety and Internet privacy.

Dependency #3 – Spectrum auctions give the wireless industry a money-making aura. In recent Congressional testimony, an FCC official reminded legislators that the FCC has over the years been a budget-balancing revenue-making force.⁸⁴ Indeed, the auctions of electromagnetic spectrum, used by all wireless communications companies to send their signals, have yielded nearly \$100 billion in recent years. The most recent auction to wireless providers produced the unexpectedly high total of \$43 billion. No matter that the sale of spectrum is contributing to a pea soup of electromagnetic “smog” whose health consequences are largely unknown. The government needs money and Congress shows its appreciation with consistently pro-wireless policies.

Dependency #4 – Science is often the catalyst for meaningful regulation. But what happens when scientists are dependent on industry for research funding? Under pressure from budget cutters and deregulators, government funding for research on RF health effects has dried up. The EPA, which once had 35 investigators in the area, has long since abandoned its efforts.⁸⁵ Numerous scientists have told me there’s simply no independent research funding in the U.S. They are left with a simple choice: work on industry-sponsored research or abandon the field.

Chapter Nine: A Modest Agenda for the FCC

Nobody is proposing that cell phones be banned. Nor does anyone propose the elimination of the Universal Service program or other radical reforms. But there are some steps—and most are modest—that the FCC can take now to right some of the wrongs that result from long years of inordinate industry access and influence:

1. Acknowledge that there may be health risks in wireless communications. Take down the dismissive language. Maturely and independently discuss the research and ongoing debate on the safety of this technology.

2. In recognition of this scientific uncertainty, adopt a precautionary view on use of wireless technology. Require prominent point-of-sale notices suggesting that users who want to reduce health risks can adopt a variety of measures, including headphones, more limited usage and storage away from at-risk body parts.

3. Back off the promotion of Wi-Fi. As Professor Lennart Hardell has noted, there are wired alternatives that do not expose children to wireless risk.

4. Petition Congress for the budgetary additions needed to expand testing of emissions on antenna sites. It was Congress after all that gave industry carte blanche for tower expansion so long as they comply with FCC standards. But there is evidence of vast non-compliance and Congress needs to ensure that tower infrastructure is operating within the law.

5. Acknowledge that children and pregnant women may be more vulnerable to the effects of RF emissions and require special protection.

6. Promote cable debundling as a way to lighten consumer cable bills, especially for those customers who don't care about high-cost sports programming.

7. Apply more rigorous analysis to properly assess the value of technology in education. Evidence continues to pile up that technology in education is not as valuable as tech companies claim. Pay less attention to tech CEOs—pay more attention to the researchers who've actually studied the impact of trendy technology fixes on learning

8. Take over enforcement of personal privacy rights on the Internet. Of all the basic suggestions here, this would require the most courage as it would involve challenging many of the entrenched powers of the Internet.

Chapter Ten: Stray Thoughts

Some concluding thoughts:

Why do so many of the most dubious FCC policies involve technology?

In large part, of course, because the FCC has authority over communications and that is a sector that has been radically transformed—along with so many others—by technology.

Let's be clear, though. The problem is not technology, which unarguably brings countless benefits to modern life. The problem is with the over-extension of claims for technology's usefulness and the worshipful adulation of technology even where it has fearful consequences. Most fundamentally, the problem is the willingness in Washington—for reasons of both venality and naïveté—to give technology a free pass.

Personally, I don't believe that just because something can be done it should heedlessly be allowed. Murder, rape and Ponzi schemes are all doable—but subject to prohibition and regulation. Government regulators have the responsibility to examine the consequences of new technologies and act to at least contain some of the worst. Beyond legislators and regulators, public outrage and the courts can also play a role—but these can be muffled indefinitely by misinformation and bullying.

There are precedents for industries (belatedly perhaps) acting to offset the most onerous consequences of their products. In responding to a mix of litigation, public demand and regulatory requirement, the auto industry, for example, has in the last 50 years substantially improved the safety and environmental footprint of its products.

Padded instrument panels, seat belts, air bags, and crumple zones have all addressed safety issues. Environmental concerns have been addressed with tightened emissions and fuel consumption standards. The response to new safety challenges is ongoing. Before side air bags were widely deployed, sedan drivers side-swiped by much larger SUVs were at vastly disproportionate risk of death and dismemberment.⁸⁶ But the deployment of side air bags has “substantially” reduced the risk of collision deaths.⁸⁷ Overall, auto fatality rates per 100,000 persons have dropped by nearly 60% in the U.S. since 1966.⁸⁸ Today, automakers continue to work on advanced safety features like collision avoidance.

It can be argued that most of these safety improvements came decades after autos were in wide usage and only in response to outrage at Ralph Nader's 1965 revelations on the auto industry.⁸⁹ No matter the catalysts. The simple truth remains that the auto industry—and its regulators—have for the last half-century been addressing safety and environmental issues.

But with the overwhelming application of money and influence, information and communications technologies have almost totally escaped political scrutiny, regulatory control, and legal discipline.

Should the Internet have been allowed to develop into an ultra-efficient tool for lifting personal information that includes financial records, health histories and social security numbers? Should wireless communications be blindly promoted even as new clues keep suggesting there may be toxic effects? Should local zoning authorities and American citizens be stripped of the right to protect their own health? Should education be digitized and imposed just because technology companies want to develop a new market and lock in a younger customer base?

All these questions can perhaps be rolled up in one: do we all just play dead for the corporate lobbyists and spinners who promote the unexamined and unregulated application of their products?

Finally, a word about the structure of the FCC. With five commissioners—no more than three from the same party—the structure seems to make some kind of sense.

But in practice, it works out poorly. The identification of commissioners by party tends to bring out the worst in both Republicans and Democrats. Instead of examining issues with clear-sighted independence, the commissioners seem to retreat into the worst caricatures of their parties. The Republicans spout free market and deregulatory ideology that is most often a transparent cover for support of business interests. The Democrats seems satisfied if they can implement their pet spending programs—extension of broadband wireless to depressed urban and rural schools, cell phone subsidies for low income clients. The result is a Commission that fulminates about ideology and spends heavily to subsidize powerful interests.

Perhaps one solution would be to expand the Commission to seven by adding two public interest Commissioners. The public interest only rarely prevails at the FCC. So it would represent vast improvement if both Republican and Democrat commissioners had to vie for support of public interest representatives in order to forge a majority. The public interest, in other words, would sometimes carry the swing votes.

It's very hard to believe, though, that Congress would ever approve such a plan. It simply represents too much of a threat to the entrenched political power of the two parties. Why would they ever agree to a plan that dilutes that power?

It's also worth noting that the public interest is not always easy to define. Sometimes there are arguably conflicting definitions. Still, an FCC with public interest commissioners is an idea worth consideration. It would at least require party apologists to defend how they so consistently champion the moneyed interests that have purchased disproportionate access and power in Washington.

Appendix—Survey of Consumer Attitudes

What does the public believe about the science and politics of wireless health research? Under what conditions would people change wireless usage patterns? Is the FCC currently trusted to protect public health? How would confirmation of health risks affect trust in the FCC?

These are some of the questions Ann-Christin Posten⁹⁰ and Norm Alster⁹¹ hoped to answer with an April 2015 online survey of 202 respondents. Participants were recruited through Amazon's Mechanical Turk online platform. All were U.S. residents and had achieved qualifying approval rates in prior Mechanical Turk surveys.

Participants were asked how likely they believed the following statements to be true:

Statement 1. Prolonged and heavy cell phone use can have a variety of damaging effects on health.

Statement 2. Prolonged and heavy cell phone use triples the risk of brain tumors.

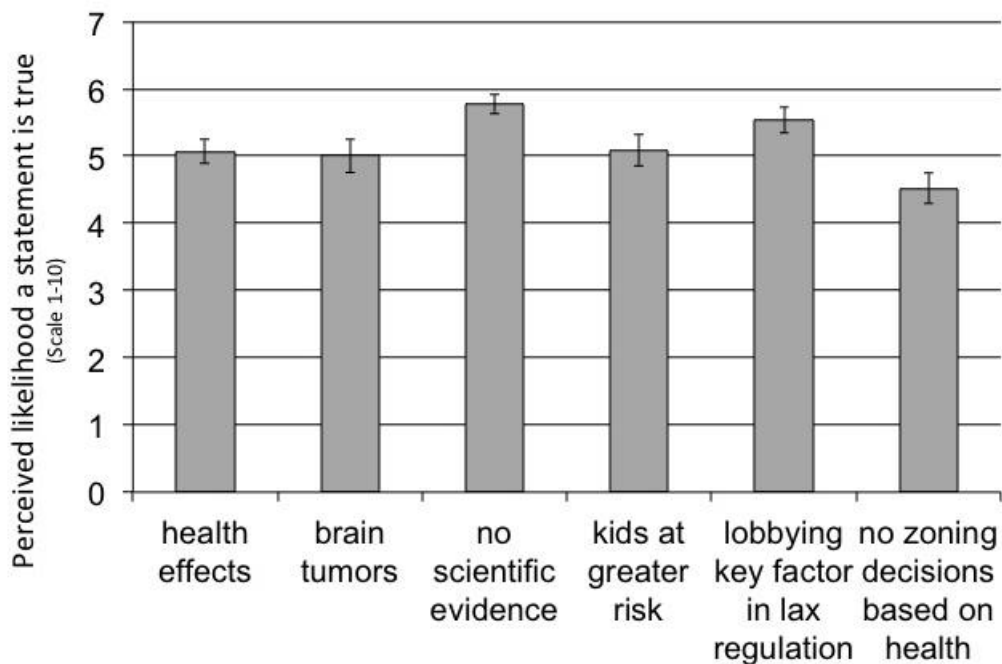
Statement 3. There is no scientific evidence that proves that wireless phone usage can lead to cancer or a variety of other problems.

Statement 4. Children and pregnant women are especially vulnerable to radiation from wireless phones, cell towers and Wi-Fi

Statement 5. Lobbying and campaign contributions have been key factors in keeping the government from acknowledging wireless hazards and adopting more stringent regulation.

Statement 6. The U.S. Congress forbids local communities from considering health concerns when deciding whether to issue zoning permits for wireless antennae.

How likely is it that each of the statements is true?

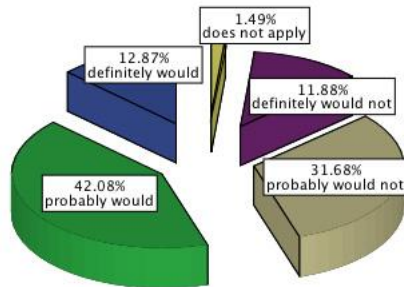


Two findings seem especially interesting:

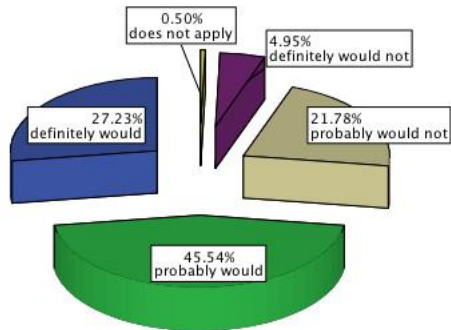
1. Statement 3 received a higher credibility rating than Statements 1 and 2. The different credibility levels are statistically significant. Respondents are more likely to trust in wireless safety than to believe there are general or specific health risks.

2. The only statement that is a matter of uncontested fact is Statement 6 on the outlawing of opposition to antenna sites on health grounds. (All other statements have been both proclaimed and denied.) And yet Statement 6 was least likely to be believed. Just 1.5% of respondents recognized this as an “absolutely true” statement. Over 14% thought this statement was “not true at all.” Answers to this question would seem to reflect public ignorance on the political background to wireless health issues.

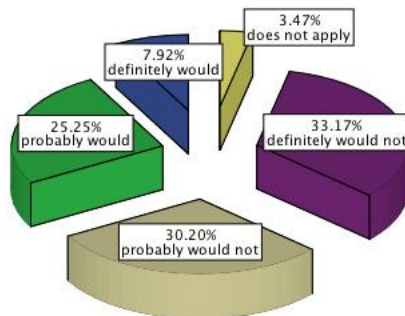
Participants were also asked how they would change behavior if claims of wireless health risks were established as true:



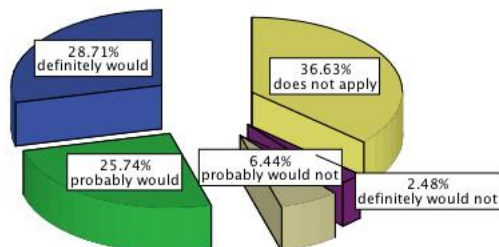
**If statement 1 was true,
I would start using headphones.**



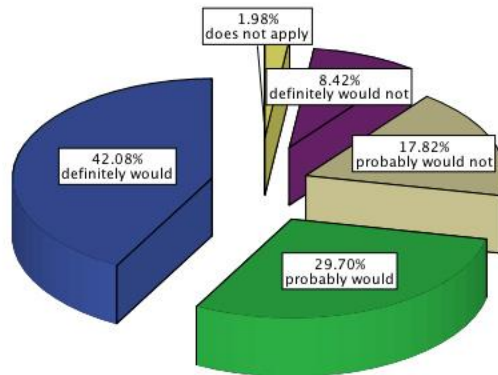
**If statement 1 was true,
I would restrict the amount of time
I spend on the phone.**



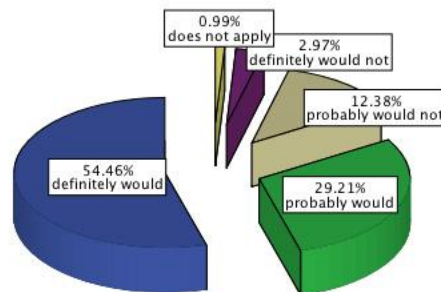
**If statement 1 was true,
I would start up a new land line
account for home use.**



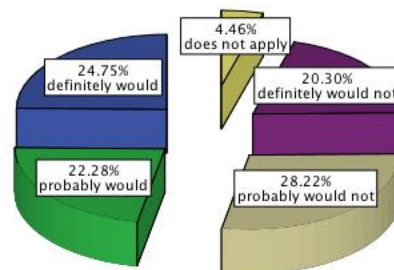
**If statement 1 was true,
I would restrict my children's cell phone use.**



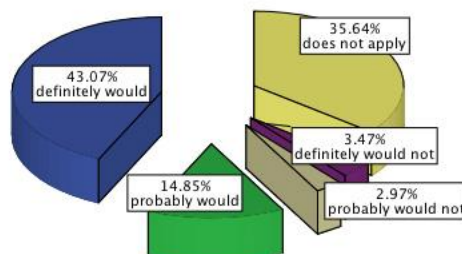
**If statement 2 was true,
I would start using headphones.**



**If statement 2 was true,
I would restrict the amount of time
I spend on the phone.**



**If statement 2 was true,
I would start up a new land line
account for home use.**



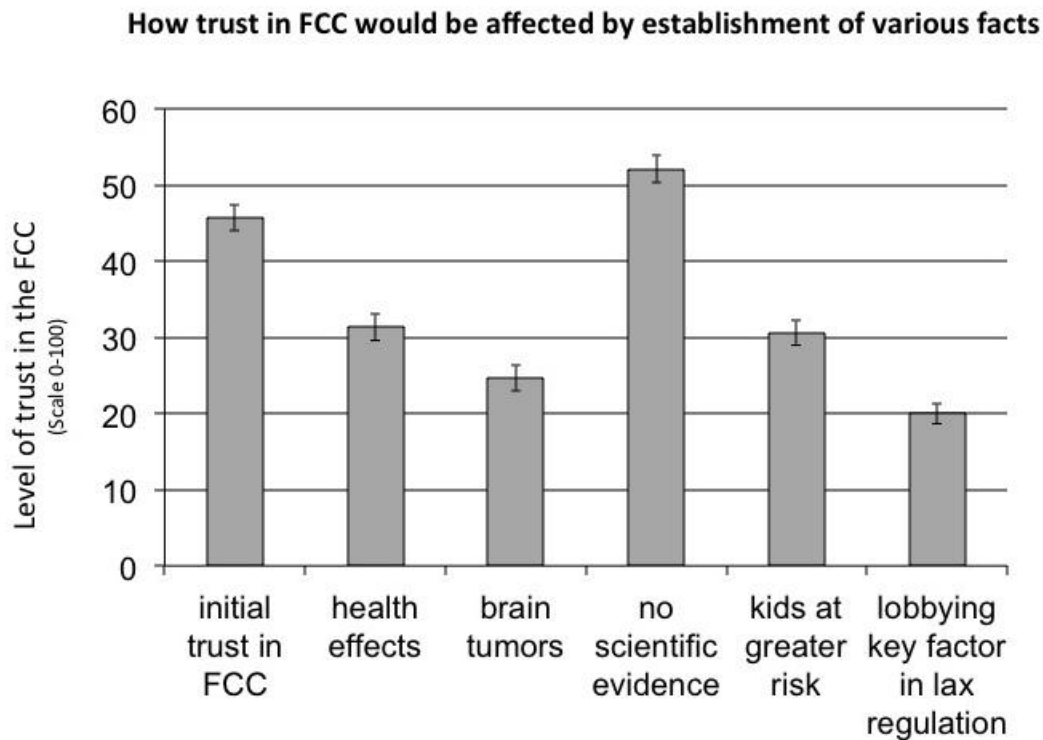
**If statement 2 was true,
I would restrict my children's cell phone use.**

The greatest impact on behavior came when respondents were asked to assume it is true that prolonged and heavy cell phone use triples the risk of brain tumors. More than half said they would “definitely” restrict the amount of time spent on the phone. Just over 43% would “definitely” restrict their children’s phone use. Perhaps most surprisingly, close to 25% would “definitely” start up a new landline phone account. (This last response suggests it may be foolishly premature for the phone giants to exit the landline business just yet.)

The inclination of consumers to change behavior should negative health effects be confirmed suggests the stakes are enormous for all companies that derive revenue from wireless usage.

This survey points to—but cannot answer—some critical questions: Do wireless companies better protect themselves legally by continuing to deny the validity of all troublesome research? Or should they instead be positioning themselves to maintain consumer trust? Perhaps there is greater financial wisdom in listening to the lawyers right now and denying all chance of harm. If so, however, why would anyone seriously concerned about health listen to the industry—or to its captured agency? That’s a question the FCC will eventually need to answer.

Trust could eventually become a central issue. Respondents were initially asked to describe their level of trust in the wireless industry and in the FCC as its regulator. Not surprisingly, establishment of any of the presumed health risks—or confirmation of inordinate industry pressure—resulted in statistically significant diminution of trust in both the industry and the FCC.



On a scale of 1 to 100, the FCC had a mean baseline trust level of 45.66. But if the tripling of brain tumor risk is established as definitely true, that number falls all the way to 24.68. If “lobbying and campaign contributions” have been “key factors” in keeping the government from acknowledging wireless hazards, the trust level in the FCC plummets to 20.02. All results were statistically significant.

It’s clear that at this point confirmation of health dangers—or even of behind-the-scenes political pressures—from wireless will substantially diminish public trust in the FCC. Skeptics might argue that this gives the FCC motive to continue to downplay and dismiss further evidence of biological and human health effects. Those of a more optimistic bent might see in these findings reason to encourage an FCC concerned about public trust to shake itself loose from special interests.

Endnotes

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- ⁷⁹ March 2015 interview with Jonathan Mayer.
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- ⁹¹ Investigative Journalism Fellow, Project on Public Narrative at Harvard Law School.

Cell tower fires. <https://www.ourwebofinconvenienttruths.com/fires-and-collapses/>

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Cell Tower Fires Collapses & Falling

Debris

Worker Deaths & Accidents

Cell Site Safety Protocol

TWO QUESTIONS

- 1) Did a professional engineer (PE) evaluate and certify any of these projects' safety before they went live?
- 2) Who carries liability for damages—the landowner, the telecom corporation and/or the municipality?

THIS GALLERY SHOWS IMAGES of CELL TOWER FIRES & COLLAPSES
for longer lists, click the links above... or go below the photo gallery



Cell phone tower fire
caused by electrical/mechanical issues.

Hanover, VA, June 26, 2020

<https://www.nbc12.com/2020/06/26/cell-phone-tower-hanover-catches-fire/>

Source: Hanover Fire and EMS



Electrical malfunction causes fire
with rooftop cellular antennas
Brooklyn, NY, April 18, 2021

<https://ehtrust.org/firecell-tower-brooklyn-new-york/>

<https://anash.org/fire-extinguished-on-roof-of-crown-heights-apartment-building/>

Photo credit: Berel Meyers/Anash.org



Tornado damages tower array

Moore, OK, March 25, 2015

<http://qrznow.com/tornado-damage-to-legendary-koma-tower-array/>

Source: qrznow.com



Cell tower fire
caused by improper welding
near Heritage High School.
Newport News, VA, Jun 16, 2015
<http://wtkr.com/2015/06/16/cell-phone-tower-near-heritage-high-school-catches-fire/>
Source: WTKR3



Cell tower fire
caused by improper welding.
Greeneville, TN, Nov 4, 2014
https://www.greenevillesun.com/xml/nitf/flames-damage-verizon-wireless-tower/article_1619f00e-5383-530a-a69e-0dbd2acc3c6a.html
Photo credit: Kristen Buckles



Cell tower fire
caused by improper welding.
Bensalem, PA, June 21, 2013

<https://www.csmonitor.com/USA/Latest-News-Wires/2013/0624/Bensalem-tower-fire-Crews-dismantle-cell-tower-that-caught-fire-in-Pa>

Photo credit: Jo Ciavaglia/Bucks County Courier Times/AP



Cell tower fire
during routine maintenance.
Tinton Falls, NJ, Jan 24, 2011

<https://patch.com/new-jersey/longbranch/parkway-cell-tower-fire-saturday-set-off-by-routine->

[maintenance](#)

Source: The Patch



Cell tower collapse in high winds.

Broken Arrow, OK, Dec 9, 2009

http://wirelessestimator.com/content/articles/?pagename=Cell_Tower_News_12.09

Source: <http://wirelessestimator.com>



High winds topple cell tower,
crushing Chief's vehicle
Oswego, NY, Nov 14th, 2003

<https://www.firehouse.com/home/news/10530195/oswego-new-york-cellular-tower-crushes-chiefs-vehicle>

Photo credit: Steve Yablonski/Oswego Bureau Chief

A large fire is burning at night, with thick, dark smoke billowing upwards and a bright orange flame visible in the center. The fire appears to be consuming a large structure, possibly a stadium light fixture.

NEW TONIGHT

STADIUM LIGHT CATCHES FIRE
OTAY RANCH HIGH SCHOOL

SINCE 473 NEW CORONAVIRUS CASES. T

A light pole holding cellular antennas
at Otay Ranch High School caught fire,
damaging the stadium

Chula Vista, CA, March 9, 2021

<https://fox5sandiego.com/news/local-news/stadium-light-catches-fire-at-south-bay-high-school/>

Source: fox5sandiego.com



Cell tower felled by tornado
across U.S. Route 280.

Smiths Station, Lee County, AL, March 3, 2019

<https://www.nytimes.com/2019/03/03/us/tornado-alabama-georgia-deaths.html>

Photo credit: Mike Haskey/Ledger-Enquirer, via Associated Press



Paper lanterns caught in cell tower
at Lantern Fest cause fire
in Gaston County, NC, May 2, 2015
<https://www.gastongazette.com/article/20150602/News/306029947>
Source: Gaston Gazette



Welding causes cell tower fire.

Sanford, FL, August 24, 2013

<https://insidetowers.com/sanford-florida-cell-tower-no-longer-a-risk/>

Source: insidetowers.com



Welding causes cell tower fire.
Bensalem, Pa, June 21, 2013

<http://levittownnow.com/2013/06/21/nearby-cell-tower-on-fire-may-collapse/>

Photo credit: Twitter.com/Mz_Erica7801



Welding causes cell tower fire
near daycare center.

Lilburn, GA, Dec 1, 2011

https://www.gwinnettdailypost.com/archive/cell-tower-fire-closes-rockbridge-road-evacuates-day-care/article_c799bdd9-1162-52a6-8cd7-7784653883ae.html

Source: Gwinnett Daily Post



Cell tower collapses in high winds.
Ruidoso, NM, Dec 18, 2009
[http://wirelessestimator.com/content/articles
/?pagename=Cell_Tower_News_12.09](http://wirelessestimator.com/content/articles/?pagename=Cell_Tower_News_12.09)
Photo credit: Steve Kitchens



Cell tower collapses during construction.
La Mirada, March 18, 2008
<https://www.ocregister.com/2008/03/18/kfi-tower-topples/>
Source: Orange County Register



Malibu Canyon fire, 2007
Overburdened with weighty telecom gear,
the pole collapsed. 14 houses burned.

http://www.malibutimes.com/news/article_7ace05ac-c1eb-11e2-8303-0019bb2963f4.html

Photo by Teresa Gelbman



Cell tower collapses during maintenance,
killing three workers.

Cedar Hill, TX, October 12, 1996

https://www.osha.gov/doc/engineering/1997_r_05.html

Source: U.S. Department of Labor, Occupational Safety and Health Administration

Cell Tower Fires: The Longer List

4/18/21 Electrical malfunction causes fire with rooftop cellular antennas in Brooklyn

<https://ehtrust.org/firecell-tower-brooklyn-new-york/>

<https://anash.org/fire-extinguished-on-roof-of-crown-heights-apartment-building/>



Hanover, VA, June 26, 2020

<https://www.nbc12.com/2020/06/26/cell-phone-tower-hanover-catches-fire/>

Source: Hanover Fire and EMS

3/9/2021 A light pole holding cellular antennas at Otay Ranch High School caught fire, damaging the stadium in Chula Vista, CA

<https://fox5sandiego.com/news/local-news/stadium-light-catches-fire-at-south-bay-high-school/>

11/25/2020 Cell Tower Fire Causes Structural Damage in Lapeer County, MI

<https://www.aglmediagroup.com/cell-tower-fire-causes-structural-damage/>

6/26/2020 Cell Tower in Hanover County, Va.

<https://www.nbc12.com/2020/06/26/cell-phone-tower-hanover-catches-fire/>

5/1/2018 Cell Tower Fire in Philadelphia, PA

<https://6abc.com/cell-phone-tower-fire-philadelphia-schuylkill-expressway/3412963/>

6/16/2015 Cell phone tower near Virginia Heritage High School catches fire. Now it is leaning over.

<http://wtkr.com/2015/06/16/cell-phone-tower-near-heritage-high-school-catches-fire/>

5/2/2015 Several paper lanterns caused fire in a cell tower at Lantern Fest in Gaston County, NC

<https://www.gastongazette.com/article/20150602/News/306029947>

11/4/2014 Cell Tower Fire in Greeneville, TN

https://www.greenevillesun.com/xml/nitf/flames-damage-verizon-wireless-tower/article_1619f00e-5383-530a-a69e-0dbd2acc3c6a.html

9/13/2014 Cell tower fire at Thurston High sends up smoky plume.

<https://kval.com/news/local/cell-tower-fire-near-thurston-high-sends-up-smoky-plume>

7/15/2014 School Football Field Cell phone tower catches fire in Grandview, Ohio.

<https://www.dispatch.com/article/20140715/NEWS/307159836>

2/4/2014 Cell tower fire closes U.S. 95 exit ramp in Las Vegas, NV

<https://lasvegassun.com/news/2013/feb/04/cell-tower-fire-closes-us-95-exit-ramp-jones-boulevard/>

8/21/2013 Cell Tower Fire in Sanford, FL

<https://www.wftv.com/news/local/cell-phone-tower-catches-fire-seminole-co/271605586/>

6/21/2013 Pennsylvania Fire results in Collapse Fears: Collapse Zone created at base and they vacated the buildings.

<http://levittownnow.com/2013/06/21/nearby-cell-tower-on-fire-may-collapse/>

<https://www.csmonitor.com/USA/Latest-News-Wires/2013/0624/Bensalem-tower-fire-Crews-dismantle-cell-tower-that-caught-fire-in-Pa>

<https://www.nbcphiladelphia.com/news/local/cell-phone-tower-on-fire-in-bucks-county/1984967/>

5/16/2013 Cell Tower Fire in Middletown, NJ Video:

<https://www.youtube.com/watch?v=baUNlzbJt5I>

<https://www.nbcnewyork.com/news/local/cell-tower-lean-new-jersey-police-monmouth-county/2079578/>

5/16/2013 New Jersey Cell Tower Fire.

https://www.nj.com/monmouth/2013/05/cell_tower_fire_knocks_out_main_middletown_police_communications.html

2/4/2013 Cell phone tower catches fire near U.S. 95 Las Vegas

<https://www.reviewjournal.com/news/cell-tower-catches-fire-closes-u-s-95-ramps/>

8/10/2012 Cell tower at Risk of Falling after Fire Atlanta Georgia.

<https://www.ajc.com/news/local/cell-phone-tower-taken-down-following-fire/eRLICZmYOeUNeoCzskHGRJ/>

8/10/2012 Cell phone tower to be taken down following fire, Georgia.

<https://www.ajc.com/news/local/cell-phone-tower-taken-down-following-fire/eRLICZmYOeUNeoCzskHGRJ/>

6/11/2012 Explosion near cell tower likely caused by propane leak, Iowa

<https://www.lemarssentinel.com/story/1641878.html>

12/1/2011 Cell tower fire closes Rockbridge Road, evacuates day care.

https://www.gwinnettdailynews.com/archive/cell-tower-fire-closes-rockbridge-road-evacuates-day-care/article_c799bdd9-1162-52a6-8cd7-7784653883ae.html

6/21/2011 Osprey nest, electrical problem sparked Poulsbo cell tower fire Washington State

<https://www.kitsapdailynews.com/news/osprey-nest-electrical-problem-sparked-poulsbo-cell-tower-fire/>

5/26/2011 Kansas City Cell Tower Fire closes Interstate 435

<https://www.youtube.com/watch?v=PiiXBnbBl8o>

1/22/2011 Cell Tower Fire in New Jersey

<https://patch.com/new-jersey/longbranch/parkway-cell-tower-fire-saturday-set-off-by-routine-maintenance>

1/13/2011 Cell Tower Fire at Rancho Cucamonga, CA fire station

<https://www.redlandsdailyfacts.com/2011/01/13/cell-tower-reportedly-burning-at-rancho-cucamonga-fire-station/>

5/10/2010 Water Tower Fire Wipes Out WiMAX and Cell Phone Service on Madison, Wisconsin's West Side

<https://stopthecap.com/2010/05/20/water-tower-fire-wipes-out-wimax-and-cell-phone-service-on-madison-wisconsins-west-side/>

10/1/2007 Sprint, Verizon, AT&T sign \$12 million settlement over 2007 Malibu Canyon wild fire

<https://www.scpr.org/blogs/environment/2012/09/13/9969/sprint-verizon-t-sign-12-million-settlement-over-2/>

7/4/2007 Cell Tower Fire in Howell, MI

https://www.mlive.com/annarbornews/2007/07/updated_cell_phone_tower_fire.html

4/14/2006 Cell Tower Fire in Prince George County, MD

<https://www.washingtonpost.com/wp-dyn/content/article/2006/04/14/AR2006041400981.html>

8/24/2001 Burning Cell Tower at Risk of Falling in Seminole County, Oregon

<https://insidetowers.com/sanford-florida-cell-tower-no-longer-a-risk/>

Cell Tower Collapses & Falling Debris: The Longer List

2/28/2020 Cell tower crashes into a building at St.Johns (Canada).

<https://www.cbc.ca/news/canada/newfoundland-labrador/cell-phone-tower-st-pats-bowling-lane-1.5480854>



A fallen cell tower lies across U.S. Route 280
after tornadoes touched down in Alabama, Georgia and Florida.
Smiths Station, Lee County, AL, March 3, 2019

<https://www.nytimes.com/2019/03/03/us/tornado-alabama-georgia-deaths.html>

Photo credit: Mike Haskey/Ledger-Enquirer, via Associated Press

10/17/2019 A famous antenna tower has collapsed near Tucson. It was probably 1,000 feet tall. It was a local landmark.

<https://kvoa.com/news/local-news/2019/10/18/480-feet-tower-collapses-near-three-points/>

<https://www.kold.com/2019/10/18/toppled-tower-triggers-trouble/>

3/3/2019 A cell tower falls across U.S. Route 280 highway in Lee County, Ala., after a tornado

<https://www.nytimes.com/2019/03/03/us/tornado-alabama-georgia-deaths.html>

3/25/15 Tornado damage to legendary KOMA tower array in Moore, OK

<http://qrznow.com/tornado-damage-to-legendary-koma-tower-array/>

5/1/14 Arkansas Tornadoes Take Down Two Towers in Mayflower and Vilonia, AR
<https://www.aglmediagroup.com/restoration-efforts-ensue-after-arkansas-tornado-takes-down-2-towers/>

3/26/2014 Tower Collapse in Blaine, KS
<https://fox2now.com/news/two-men-who-died-in-kansas-tower-collapse-from-st-charles/>

3/14/2014 Tower Collapse in North Adams, MA
https://www.masslive.com/news/2014/03/heavy_wind_and_rain_causes_col.html

2/20/2014 Crescenta CAAT&T Withdraws Cell Tower Application: Debris fall off cell tower onto residence.
<https://www.crescentvalleyweekly.com/news/02/20/2014/att-withdraws-cell-tower-application/>

2/2/2014 “Firefighter and two contractors dead after two cell phone towers collapse during maintenance in Clarksburg, WV
<https://www.dailymail.co.uk/news/article-2550553/Firefighter-two-contractors-dead-two-cell-phone-towers-collapse-maintenance.html>
OSHA Investigation: https://www.osha.gov/doc/engineering/pdf/2014_r_06.pdf

2/2/2014 Cell phone towers collapse in West Virginia, killing 3
<https://www.foxnews.com/us/cell-phone-towers-collapse-in-west-virginia-killing-3>

1/13/2014 Tower Collapse in Chewelah, WA
<https://www.spokesman.com/stories/2014/jan/13/in-brief-cell-tower-near-ski-resort-collapses-in/>

10/1/2013 Tower Collapse in Willow, AK
<https://www.adn.com/alaska-news/article/willow-cell-tower-collapses-mat-su-drafts-new-rules/2013/11/15/>

7/20/2013 Tower Collapse in San Ramon, CA
<https://patch.com/california/sanramon/update-police-suspect-vandals-in-radio-tower-collapse>

5/28/2013 Two killed in cell tower collapse in Copiah County, MS.
<https://www.wlbt.com/story/22439997/2-killed-in-cell-phone-tower-fall/>

3/30/2013 Tower collapse: Heavy wind and rain blamed for downing ‘major communications’ equipment in Berkshires, knocking out police, fire radio service, Massachusetts
https://www.masslive.com/news/2014/03/heavy_wind_and_rain_causes_col.html

3/6/2013 Tower Collapse in St. Louis, MO
<https://fox2now.com/news/cell-tower-collapse-could-have-been-prevented/>

1/16/2013 Tower Ice Falling Video
<https://www.youtube.com/watch?v=aqy32tzTRkA>

10/31/2012 Associated Press – Hurricane Sandy takes out 25% of cell towers in U.S.
<https://gadgets.ndtv.com/telecom/news/hurricane-sandy-takes-out-25-percent-of-cell-towers-in-us-286624>

2/13/2012 El Paso Texas, Decorative Frond Falls From Palm Tree Cell Phone Tower, slices through man's car.
<https://www.pinterest.at/pin/388224430380184160/>

6/20/2011 A cell tower, damaged by fire, has been taken down after it hung precariously over Highway 305. Washington State.
<http://archive.kitsapsun.com/news/code-911/highway-305-reopened-following-cell-tower-fire-ep-418436358-357191651.html>

4/4/2011 Cell Tower Collapse in Ballard County, KY
<https://www.kfvs12.com/story/14380276/afternoon-update-cell-tower-2-homes-collapse-in-ballard-county/>

2/18/2011 High winds likely cause in cell tower collapse in Clinton, PA
https://www.lehighvalleylive.com/hunterdon-county/express-times/2011/02/high_winds_likely_cause_in_cel.html

1/12/2011 Giant Icicles Fall From Sky, Smash Cars
<https://www.theblaze.com/news/2011/01/12/giant-icicles-fall-from-sky-smash-cars>

12/18/2009 Cell Tower Collapse in Ruidoso, NM
http://wirelessestimator.com/content/articles/?pagename=Cell_Tower_News_12.09

12/15/2009 One dead following New York tower collapse
http://wirelessestimator.com/content/articles/?pagename=Cell_Tower_News_12.09

12/14/2009 Worker Dies in Cell Tower Collapse in Tulsa, OK
<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjmk7209O7tAhU7GFkFHZBkCxoQFjADegQIBRAC&url=https%3A%2F%2Fdownloads.regulations.gov%2FOSHA-2014-0018-0002%2Fcontent.pdf&usg=AOvVaw1kmCWXvB9oOHUX3TQfGEOv>

12/12/2009 Tower ice buildup seen as culprit for collapse in Dawson County, TX.
http://wirelessestimator.com/content/articles/?pagename=Cell_Tower_News_12.09

12/9/2009 High winds collapse tower in Oklahoma
http://wirelessestimator.com/content/articles/?pagename=Cell_Tower_News_12.09

1/24/2009 Cell Tower Collapse in Wellesley, MA
<https://www.metrowestdailynews.com/article/20090124/News/301249964>

5/29/2008 Cell Tower Collapse in Browns Summit, NC

<https://www.wfmynews2.com/article/news/local/cell-phone-tower-falls-over-in-guilford-county/83-402796410>

5/7/2008 Internet tower falls on tanker truck in Shawnee, OK

<https://www.news-star.com/article/20080507/NEWS/305079925>

3/18/2008 Cell Tower Collapse in La Merida, CA

<https://www.oregister.com/2008/03/18/kfi-tower-topples/>

10/2007 Overburdened with weighty telecom gear, the pole collapsed. 14 houses burned in Malibu Canyon, CA

http://www.malibutimes.com/news/article_7ace05ac-c1eb-11e2-8303-0019bb2963f4.html

11/14/2003 Oswego, New York Cellular Tower Crushes Chief's Vehicle

<https://www.firehouse.com/home/news/10530195/oswego-new-york-cellular-tower-crushes-chiefs-vehicle>

10/12/1996 Tower Collapse in Cedar Hill, TX Kills Three

https://www.osha.gov/doc/engineering/1997_r_05.html

List of catastrophic collapses of broadcast masts and towers from Wikipedia

https://en.wikipedia.org/wiki/List_of_catastrophic_collapses_of_broadcast_masts_and_towers

This video does not have a date, but I think it is important to include

Tower ice falling

<http://www.youtube.com/watch?v=aqy32tzTRkA>

Telecom Worker Deaths & Accidents: The Longer List

List of Incident Investigations from the Occupational Safety and Health Administration (OSHA)

<https://www.osha.gov/communication-towers/incident-investigations>



Tulsa, OK, August 30th 2013

A man latched to a cell phone tower, 10-stories off the ground, is knocked out by a falling antenna.

<https://www.newson6.com/story/5e363a9c2f69d76f62057bfe/tulsa-fire-department-rescues-worker-from-top-of-cell-phone-tower>

Source: newson6.com

4/11/2014 Worker rescued after hanging from Charlotte cell phone tower, Charlotte, NC.

<https://www.wbtv.com/story/25218063/man-trapped-at-top-of-cell-tower-in-east-charlotte/>

4/1/2014 A Deadly Surge in Tower Climber Accidents

<https://projects.propublica.org/graphics/cell-tower-accidents>

8/30/2013 Tulsa Fire Department Rescues Worker From Top Of Cell Phone Tower

<https://www.newson6.com/story/5e363a9c2f69d76f62057bfe/tulsa-fire-department-rescues-worker-from-top-of-cell-phone-tower>

1/23/2013 Gaithersburg Maryland: Trapped Worker is rescued after freezing.

<https://www.nbcwashington.com/news/local/crews-work-to-rescue-man-from-cell-phone-tower/1950256/>

12/24/2012 Spokane fire department rescues dangling cell tower worker, Spokane Washington.

<https://komonews.com/news/local/spokane-fire-department-rescues-dangling-cell-tower-worker-11-20-2015>

6/27/2012 Cell Tower Climber Falls 153 Feet, Dies on Impact, Minnesota

<https://www.grandforksherald.com/news/man-who-died-after-falling-cell-tower-identified-1>

12/23/2011 Worker hurt in 80-ft. fall from cell tower in Marcy New York.

https://www.syracuse.com/news/2011/12/worker_hurt_in_80-ft_fall_from.html

8/5/2011 Texas: Six Hour Rescue for Tower Worker

<https://www.statter911.com/2011/08/05/more-than-six-hour-rescue-to-get-man-from-760-foot-level-of-tower-firefighters-in-burleson-texas-tell-their-story/>

8/4/2011 Burleson fire dept. rescues man from cell tower, Texas

<https://www.wfaa.com/article/news/local/burleson-fire-dept-rescues-man-from-cell-tower/287-337687816>

11/21/2008 Worker who fell 65 feet from cell tower dies: Arizona

https://tucson.com/news/local/crime/worker-who-fell-feet-from-cell-tower-dies/article_c0932089-a4e0-5c14-9ce4-bb2cd8be86c1.html

5/28/2008 Fatal bandwidth: 6 cell tower deaths in 5 weeks: Indiana, Nebraska, Georgia.

<https://fortune.com/2008/05/28/fatal-bandwidth-6-cell-tower-deaths-in-5-weeks/>

<https://scienceblogs.com/thepumphandle/2008/05/30/april-may-2008-deadly-for-antenna-tower-workers>

Other Concerning Situations: The Longer List

6/28/2014 Teen Talked Down From Cell Tower

<http://www.nbcchicago.com/news/local/Suburban-Teen-Rescued-From-Cell-Tower-265033731.html>

CELL SITE SAFETY PROTOCOL

by Katie Singer

Around 1750 B.C., Babylon's King Hammurabi wrote a code to protect people from new technologies' hazards, and to hold builders liable for any harms caused by their projects.

Hammurabi's principles still stand. Before any condo building, bridge, water treatment facility, electrical system, highway or cell site goes live, the corporation that builds it has a duty to ensure that the technology will not imperil life, health or property. Within their discipline, independent, state-licensed professional engineers (PEs) evaluate and mitigate hazards of new technologies or building projects. With his or her seal, a professional engineer assumes full responsibility for a project's design. If a building collapses because of its design, the PE is liable. If a builder doesn't follow correct design, the builder holds liability.

All cellular sites are electrical equipment. The National Fire Protection Association recognizes five hazards associated with using electricity: electrical contact, thermal effects, overcurrent, fault current and overvoltage. During a cell site's design, to ensure that the new project will not imperil life, health or property, a state-licensed professional electrical engineer must evaluate each hazard and certify that it has been mitigated. A state-licensed professional structural engineer must certify the structural integrity of each pole that holds telecom equipment. To honor their professional obligations, city councilors and county commissioners should not issue a building permit until they have PE-certified documents that prove that each proposed cellular site is safe.

Before permitting installation of any new cell sites in NAME YOUR CITY OR COUNTY, to protect health, life and property from cellular sites' potential fire hazards, collapses and other hazards, we therefore require comprehensive documentation prepared under the responsible charge of and certified by an independent, state-licensed professional engineer demonstrating that hazards at each cell site have been evaluated and mitigated.

To address their liability, every property owner (a municipality, corporation or homeowner whose property holds the cell site) has a duty to require that telecom corporations provide sealed engineering documents demonstrating that the hazards have been mitigated. Sealed engineering documents prove that the property owner has not been negligent.

To view cell towers that have collapsed and/or caught fire, visit www.OurWeb.tech/fires-and-collapses.

Addendum: In the past, people concerned about telecommunications' harms have focused on proving that the electromagnetic radiation emitted by devices and infrastructure harms living creatures. Despite thousands of studies demonstrating such harm (www.saferemr.com; www.bioinitiative.org), these efforts have largely failed. They've failed because telecom proponents are merchants of doubt. Repeatedly, the corporations promote the idea that research is inconclusive or unavailable. (See Mark Hertsgaard and Mark Dowie's 2018 article in *the Nation*, "How Big Wireless Made Us Think That Cell Phones are Safe." <https://www.thenation.com/article/archive/how-big-wireless-made-us-think-that-cell-phones-are-safe-a-special-investigation/>)

The Cell Site Protocol shifts the paradigm: it requires telecom corporations to prove that their proposed installation meets the safety standards of the National Fire Protection Association before it goes live. It requires city officials to require a professional engineer's sealed documents

that prove that the proposed equipment is safe...before they issue a permit to install the equipment. Most states have statutes that require these protocols.

Every concerned citizen should assume (as engineers do) that electricity—and the electronic devices and infrastructure that depend on electricity—are not safe until they're proven safe.

To begin raising questions of safety about proposed telecom equipment, ask whether or not your city authorities are properly trained to evaluate documents proving that electrical hazards of telecom infrastructure have been evaluated and mitigated. Ask for documentation that verifies such training.

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<https://ehtrust.org/electromagnetic-fields-impact-tree-plant-growth/>

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Electromagnetic Fields Impact Tree and Plant Growth

Feb 17, 2018

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Electromagnetic Fields, Tree & Plant Growth

Electromagnetic (EMF) frequencies have been found to alter the growth and development of plants. Studies on wireless EMF frequencies have found [physiological and morphological changes](#), [increased micronuclei formation](#), [altered growth](#) as well as [adverse cell characteristics](#) such as thinner cell walls and smaller mitochondria. Electromagnetic exposure results in biochemical changes. Research shows that plants [perceive](#) and respond to electromagnetic fields and are a good model to study the biological effects of exposure.

Documentation of tree damage from base stations is made visible in the Report “Tree Damage Caused by Mobile phone base stations” in which he states, “RF radiation effects on plants have not been considered. In the Explosive Proliferation of the diverse wireless communication technologies across the entire environment and almost all areas of life, this represents an uncovered risk” ([Breunig, 2017](#)).

Note: EMFs also have been shown to alter the behavior of bees and [birds](#).

Austrian Telecom Giant Telstra is Aware

“Telstra is also funding research into whether uniquely Australian obstacles – including flora – will disrupt 5G signals, which occupy a higher frequency and don’t travel as far as other mobile signals. “Something that seems to be unique to Australia, and we found with earlier standards, is how gumtrees impact those radio signals and the way they get from the radio tower to the end user,” – ‘Telstra pushes for 5G that Works in Australia,’ [The Sydney Morning Herald, January 9, 2017](#).

Research Studies:

Breunig, Helmut. [“Tree Damage Caused By Mobile Phone Base Stations An Observation Guide.”](#) (2017).

You can also download the Observation Guide at: [Competence Initiative for the Protection of Humanity, the Environment and Democracy](#)

Waldmann-Selsam, C., et al. [“Radiofrequency radiation injures trees around mobile phone base stations.”](#) *Science of the Total Environment* 572 (2016): 554-69.

- “In the last two decades, the deployment of phone masts around the world has taken place and, for many years, there has been a discussion in the scientific community about the possible environmental impact from mobile phone base stations. Trees have several advantages over animals as experimental subjects and the aim of this study was to verify whether there is a connection between unusual (generally unilateral) tree damage and radiofrequency exposure.
- To achieve this, a detailed long-term (2006-2015) field monitoring study was performed in the cities of Bamberg and Hallstadt (Germany).
- The measurements of all trees revealed significant differences between the damaged side facing a phone mast and the opposite side, as well as differences between the exposed side of damaged trees and all other groups of trees in both sides. Thus, we found that side differences in measured values of power flux density corresponded to side differences in damage. The 30 selected trees in low radiation areas (no visual contact to any phone mast and power flux density under 50µW/m(2)) showed no damage. Statistical analysis demonstrated that electromagnetic radiation from mobile phone masts is harmful for trees. These results are consistent with the fact that damage afflicted on trees by mobile phone towers usually start on one side, extending to the whole tree over time.”

Martin Pall. [“Electromagnetic Fields Act Similarly in Plants as in Animals: Probable Activation of Calcium Channels via Their Voltage Sensor”](#) *Current Chemical Biology*, Volume 10 , Issue 1 , 2016

- It has been shown that low intensity microwave/lower frequency electromagnetic fields (EMFs) act in animals via activation of voltage-gated calcium channels (VGCCs) in the plasma membrane, producing excessive intracellular calcium $[Ca^{2+}]_i$, with excessive $[Ca^{2+}]_i$ leading to both pathophysiological and also in some cases therapeutic effects. The pathophysiological effects are produced largely through excessive $[Ca^{2+}]_i$ signaling including excessive nitric oxide (NO), superoxide, peroxynitrite, free radical formation and consequent oxidative stress. The activation of the VGCCs is thought to be produced via EMF impact on the VGCC voltage sensor, with the physical properties of that voltage sensor predicting that it is extraordinarily sensitive to these EMFs.
- It is shown here that the action of EMFs in terrestrial, multicellular (embryophyte) plants is probably similar to the action in animals in most but not all respects, with calcium channel activation in the plasma membrane leading to excessive $[Ca^{2+}]_i$, leading in turn to most if not all of the biological effects. A number of studies in plants are briefly reviewed which are consistent with and supportive of such a mechanism. Plant channels most plausibly to be involved, are the so-called two pore channels (TPCs), which have a voltage sensor similar to those found in the animal VGCCs.

Halgamuge, M.N. ["Weak radiofrequency radiation exposure from mobile phone radiation on plants."](#) *Electromagnetic Biology and Medicine* 36.2 (2017): 213-235.

- "Our analysis demonstrates that the data from a substantial amount of the studies on RF-EMFs from mobile phones show physiological and/or morphological effects (89.9%, $p < 0.001$). Additionally, our analysis of the results from these reported studies demonstrates that the maize, roselle, pea, fenugreek, duckweeds, tomato, onions and mungbean plants seem to be very sensitive to RF-EMFs. Our findings also suggest that plants seem to be more responsive to certain frequencies..."

Shikha Chandel, et al. ["Exposure to 2100 MHz electromagnetic field radiations induces reactive oxygen species generation in Allium cepa roots."](#) *Journal of Microscopy and Ultrastructure* 5.4 (2017): 225-229.

- "The present study investigated the role of cell phone EMF-r in inciting oxidative damage in onion (*Allium cepa*) roots at a frequency of 2100 MHz. Onion roots were exposed to continuous wave homogenous EMF-r for 1, 2 and 4 h for single day. The results showed that EMF-r exposure enhanced the content of MDA, H_2O_2 and O_2^- . Also, there was an upregulation in the activity of antioxidant enzymes– SOD and CAT– in onion roots. The study concluded that 2100 MHz cell phone EMF-r incite oxidative damage in onion roots by altering the oxidative metabolism."

Gustavino, B., et al. ["Exposure to 915 MHz radiation induces micronuclei in Vicia faba root tips."](#) *Mutagenesis* 31.2 (2016): 187-92.

- The increasing use of mobile phones and wireless networks raised a great debate about the real carcinogenic potential of radiofrequency-electromagnetic field (RF-EMF) exposure associated with these devices. Conflicting results are reported by the great majority of in vivo and in vitro studies on the capability of RF-EMF exposure to induce DNA damage and mutations in mammalian systems. Aimed at understanding whether less ambiguous responses to RF-EMF exposure might be evidenced in plant systems with respect to mammalian ones, in the present work the mutagenic effect of RF-EMF has been studied through the micronucleus (MN) test in secondary roots of *Vicia faba* seedlings exposed to mobile phone transmission in controlled conditions, inside a transverse electro magnetic (TEM) cell.
- Results of three independent experiments show the induction of a significant increase of MN frequency after exposure, ranging from a 2.3-fold increase above the sham value, at the lowest SAR level, up to a 7-fold increase at the highest SAR. These findings are in agreement with the limited number of data on cytogenetic effects detected in other plant systems exposed to mobile phone RF-EMF frequencies and clearly show the capability of radiofrequency exposure to induce DNA damage in this eukaryotic cell system.
- It is worth noticing that this range of SAR values is well below the international limits for localised exposure (head, trunk), according to the ICNIRP guidelines (35) and IEEE std C95.1 (38), which are 10 (8.0) W/kg for occupational exposure and 2.0 (1.6) W/kg for general public exposure respectively.

Halgamuge, Malka N., See Kye Yak and Jacob L. Eberhardt. ["Reduced growth of soybean seedlings after exposure to weak microwave radiation from GSM 900 mobile phone and base station."](#) *Bioelectromagnetics* 36.2 (2015): 87-95.

- The aim of this work was to study possible effects of environmental radiation pollution on plants. The association between cellular telephone (short duration, higher amplitude) and base station (long duration, very low amplitude) radiation exposure and the growth rate of soybean (*Glycine max*) seedlings was investigated.
- The exposure to higher amplitude (41 V m^{-1}) GSM radiation resulted in diminished outgrowth of the epicotyl. The exposure to lower amplitude (5.7 V m^{-1}) GSM radiation did not influence outgrowth of epicotyl, hypocotyls, or roots. The exposure to higher amplitude CW radiation resulted in reduced outgrowth of the roots whereas lower CW exposure resulted in a reduced outgrowth of the hypocotyl. Soybean seedlings were also exposed for 5 days to an extremely low level of radiation (GSM 900 MHz, 0.56 V m^{-1}) and outgrowth was studied 2 days later. Growth of epicotyl and hypocotyl was found to be reduced, whereas the outgrowth of roots was stimulated.
- Our findings indicate that the observed effects were significantly dependent on field strength as well as amplitude modulation of the applied field.

Senavirathna, M.D., et al. ["Nanometer-scale elongation rate fluctuations in the *Myriophyllum aquaticum* \(Parrot feather\) stem were altered by radio-frequency electromagnetic radiation."](#) *Plant Signal Behav* 9.3 (2014).

- Statistically significant changes to this plant from a non thermal effect.

Soran, M.L., et al. [“Influence of microwave frequency electromagnetic radiation on terpene emission and content in aromatic plants.”](#) *Journal of Plant Physiology* 171.15 (2014): 1436-43.

- Microwave irradiation resulted in thinner cell walls, smaller chloroplasts and mitochondria, and enhanced emissions of volatile compounds, in particular, monoterpenes and green leaf volatiles (GLV). These data collectively demonstrate that human-generated microwave pollution can potentially constitute a stress to the plants.
- The above is only a small sampling of the research showing biological effects at non thermal levels on living organisms.

Waldmann-Selsam, C., et al. [“Radiofrequency radiation injures trees around mobile phone base stations.”](#) *Science of the Total Environment*, vol. 572, 2016, pp. 554-69.

- In the last two decades, the deployment of phone masts around the world has taken place and, for many years, there has been a discussion in the scientific community about the possible environmental impact from mobile phone base stations. Trees have several advantages over animals as experimental subjects and the aim of this study was to verify whether there is a connection between unusual (generally unilateral) tree damage and radiofrequency exposure. To achieve this, a detailed long-term (2006-2015) field monitoring study was performed in the cities of Bamberg and Hallstadt (Germany). During monitoring, observations and photographic recordings of unusual or unexplainable tree damage were taken, alongside the measurement of electromagnetic radiation. In 2015 measurements of RF-EMF (Radiofrequency Electromagnetic Fields) were carried out. A polygon spanning both cities was chosen as the study site, where 144 measurements of the radiofrequency of electromagnetic fields were taken at a height of 1.5m in streets and parks at different locations. By interpolation of the 144 measurement points, we were able to compile an electromagnetic map of the power flux density in Bamberg and Hallstadt. We selected 60 damaged trees, in addition to 30 randomly selected trees and 30 trees in low radiation areas (n=120) in this polygon. The measurements of all trees revealed significant differences between the damaged side facing a phone mast and the opposite side, as well as differences between the exposed side of damaged trees and all other groups of trees in both sides. Thus, we found that side differences in measured values of power flux density corresponded to side differences in damage. The 30 selected trees in low radiation areas (no visual contact to any phone mast and power flux density under $50\mu\text{W}/\text{m}^2$) showed no damage. Statistical analysis demonstrated that electromagnetic radiation from mobile phone masts is harmful for trees. These results are consistent with the fact that damage afflicted on trees by mobile phone towers usually start on one side, extending to the whole tree over time.

Haggerty, Katie. [“Adverse Influence of Radio Frequency Background on Trembling Aspen Seedlings.”](#) *International Journal of Forestry Research* 2010.836278 (2010).

- “This study suggests that the RF background may have strong adverse effects on growth rate and fall anthocyanin production in aspen, and may be an underlying factor in aspen decline.”

Kouzmanova, M., et al. [“Alterations in enzyme activities in leaves after exposure of Plectranthus sp. plants to 900 MHz electromagnetic field.”](#) *Biotechnology & Biotechnological Equipment* 23.sup1 (2009): 611-615.

- “The purpose of our study was to investigate the alterations in enzyme activities in leaves after exposure of plants Plectranthus sp. to 900 MHz EMF and their dependence on the time elapsed after exposure.
- Alterations in activity of isocitrate dehydrogenase, malate dehydrogenase and glucose-6-phosphate dehydrogenase in leaves were registered immediately after the end of the exposure and 1, 2 and 24 hours later. Irradiation of plants induced different alterations in enzyme activities depending on the time elapsed after irradiation. Immediately after exposure the activity of the three investigated enzymes decreased, but increased at 24th hour.
- In conclusion, the data provide evidence that plants perceive and respond to electromagnetic fields and are a good model to study the effects of mobile phone radiation.”

Trebbi, Grazia, et al. [“Extremely low frequency weak magnetic fields enhance resistance of NN tobacco plants to tobacco mosaic virus and elicit stress-related biochemical activities.”](#) *Bioelectromagnetics* 28.3 (2007): 214-223.

- “Increasing evidence has accumulated concerning the biological effects of extremely low frequency magnetic fields (ELF-MFs) in different plant models.
- Following ELF-MFs exposure, an increased resistance was detected, particularly after an 8-h treatment, as shown by the decrease in lesion area and number. Moreover, two enzyme activities involved in resistance mechanisms were analyzed: ornithine decarboxylase (ODC) and phenylalanine ammonia-lyase (PAL). Uninoculated leaves previously exposed to ELF-MFs in general showed a significant increase relative to controls in ODC and PAL activities, in particular for 13 microT static MF plus 28.9 microT, 10 Hz sinusoidal MF (24 h) treatment.
- In conclusion, ELF-MFs seem to influence the HR of tobacco to TMV, as shown by the increased resistance and changes in ODC and PAL activities, indicating the reliability of the present plant model in the study of bioelectromagnetic interactions.”

International Conference on EMF Impacts to Trees

“The effect of electromagnetic radiation on trees” The Groene Paviljoen, Baarn, 2

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Tree Damage from Chronic High Frequency Exposure

Volker Schorpp; physicist [Lecture](#) (about 31 MB)

Unknown Tree Diseases in Urban Surroundings and the Possible Effects of WiFi Access Points on Ash Trees (in the lab) – Dr. André van Lammeren

Unexpected Effects on Changing Environmental Factors – Dr. Ing. Rein Roos

Innovative Assessments of Tree Health – Ir. Lies Steel

Visible Damage on Free-standing Trees – Dr. ing. Dipl. Phys. Volker Schorpp

Click here to see a PDF of one of the presentations “[Tree Damage from Chronic High Frequency Exposure Mobile Telecommunications, Wi-Fi, Radar, Radio Relay Systems, Terrestrial Radio, TV etc.](#)” by Dr. Volker Schorpp

Effects of Electromagnetic Stress on Trees – BSc PhD. Andrew Goldsworthy

Call for Support for Further Study – Hans Groen in 't Wout

[“Trees Under High Frequency” PDF German](#)

[On vimeo treedamage by electromagnetic radiation](#) from [Boomaantastingen](#) on [Vimeo](#).

[“Trees are Affected by Electromagnetic Radiation” 2010 Laboratory testing Negative Impact on Plant Health](#)

- “An initial lab tests of the effects of electromagnetic radiation on the growth of plants, indicates that the radiation might negatively affect the health of plants. The research was carried out by Wageningen University, part of Wageningen UR. Ash trees in the urban environment are increasingly suffering from growth disturbances were found in a growing cell with so-called WiFi access points discoloration and dieback of leaves changing. Although the effects of multiple radiation sources and several trees were found, the researchers found it desirable to repeat the test and preferably for a longer period and on a larger scale. In other reports erroneously reported that TU Delft and TNO in this research involved. Trees in urban areas in recent years show an increasing number of damage such as cracks, bumps, discoloration and various forms of tissue necrosis. In the past, whether these phenomena are caused by biological factors such as pests and diseases. To date, that investigation no clear cause identified. Wageningen University was commissioned by the municipality of Alphen aan den Rijn how the increasing number of sources of electromagnetic radiation, such as masts, could play a role in the deteriorating health

of the trees. It was a growing cell the effect of radiation of known WiFi access points on small Esboompjes investigated.”

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5G/EMF/RF: What's Causing All the Terrible Forest Fires?

September 30, 2021



by [naturalistactivist](#) (Greece)

Have you ever been to the scene of a recent forest fire? It is a vision from hell—all those charred tree trunks pointing black, accusing fingers at the sky, the piles of drifting grey ash. But the worst thing is the smell. It is not the pleasant smell of burned wood but of rotten flesh, as all the things which have died in the fire decompose.

A forest fire does not just burn trees. It burns all the creatures who live in it and cannot escape, the ones who cannot run or fly fast enough or far enough, the ones trapped between two fronts or encircled by flames. It burns boar and deer, foxes and jackals, hedgehogs and mice, polecats and weasels. And it burns birds, whose flaming feathers blaze more brightly as they flap their wings.

That tiny lump of rotting flesh was a robin. That was a nightingale. That was an owl. That was a tree rat. That thing over there was a fox cub. That little mound was a tortoise. The insects? Well, they're just ash.

In your mind you can still hear them scream. They all screamed as the fire caught them. Even the birds screamed. I have seen too many forest fires in recent years and they fill me with horror because I know it is not just trees that are burning, but whole ecosystems. They will not come back as before because the lack of trees to hold rainwater diminishes the water table. Places that were once thriving forests are changed forever.

I don't need to tell you that our planet is suffering many more, bigger, hotter and more terrible fires in recent years than ever before. All summer long, the news has been full of fires in Greece, Turkey, and California. Last winter fires burned across Australia and the Amazon. Why are there so many fires, such big fires, even in unlikely places such as the Pantanal wetlands in Brazil?

The usual explanation is global warming/climate change—call it what you like. According to this theory, it's all because we are burning too any fossil fuels and releasing too much carbon into the atmosphere, which in turn is making our planet warmer and more combustible.

I have never been persuaded by the global warming/climate change argument, though the mainstream media (and many people) refer to it as accepted fact. For one thing, I could never understand how a planet on which every life form is carbon-based should be, as it were, “allergic” to carbon. But a great many scientists have jumped on this particular bandwagon (that's where all the research grants are) and voices of dissent are mocked or stifled by lack of funding. It is worth remembering that we have no accurate climate data from any but the recent past.

Michael Crichton, in his excellent but much criticized novel, *State of Fear*, points out that atmospheric carbon is nothing new: peat bogs and wetlands traditionally emitted huge amounts of carbon dioxide without warming the planet. We have now drained around 70% of these bogs and wetlands, so all that carbon that is no longer going into the atmosphere. Maybe carbon isn't the problem?

Where the climate change theory really falls down, though, is in its inability to explain the mechanism by which burning fossil fuels/atmospheric carbon causes forest fires. How does it do this? Vague phrases such as “complex interactions we don't fully understand” simply beg the question. Either there is a mechanism or there isn't. The climate change theory cannot explain the number and intensity of recent forest fires because it cannot identify how and why carbon causes them.

On the other hand, there is a strong correlation between increasing numbers, and severity, of forest fires with the proliferation of wireless infrastructure. Thirty years ago there were very few cell towers, and correspondingly fewer forest fires. Now cell towers are everywhere, along with other types of wireless infrastructure such as smart meters, and serious fires that resist being put out are increasing, engulfing ever-larger areas. Several mechanisms exist to explain why microwave radiation causes and prolongs fires. Taken together, they make a coherent argument which the climate change theory does not.

Terpenes

The first mechanism, expounded by Dr. Martin Pall, relies on research showing that electromagnetic fields (EMFs) from microwave radiation causes plants to produce excessive amounts intracellular calcium, which in turn causes the plants to produce high levels of substances called terpenes/terpenoids. Terpenes/terpenoids are usually produced by plants to repel insect predators and can also be emitted to warn other plants that insect predators are present—but in normal circumstances, this response is limited to one species at a time. When high levels of EMFs are present, as happens near cell towers or under power lines, all the plants will start producing high levels of terpenes/terpenoids, which are both highly combustible and highly volatile, and which can pool at ground level. **If a fire starts, it will burn more fiercely and be much harder to put out.***

Many people think that Dr. Pall's mechanism applies exclusively to 5G, but this is not so. The EMFs of 4G and 3G infrastructure, of Wi-Fi and of power lines, produce the same effects in plants. Greece did not have 5G in 2018, yet the fires at the seaside town of Mati that year were so hot they melted the glass and metal of cars. However, Dr. Pall thinks that 5G will make fires much worse.

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Dr. Pall also thinks that when terpene/terpenoid vapours accumulate, trees may spontaneously combust. It is possible that my husband and I actually witnessed spontaneous combustion in a fire this summer. The fire started halfway up a mountain, near a cell tower, at the base of a V-shaped gorge, with high cliffs and no exit by road. One moment it wasn't there; then suddenly trees were engulfed in flames. It is hard to see how anyone could have caused such a fire in such a place without getting burned alive. However, we were miles away across a bay and cannot prove it. Accusations that someone deliberately set the fire have not been proved either.

EMFs Cause Soil Acidification

A second mechanism which explains how microwaves may make forest fires much worse is explained very clearly by Dr. Alfonso Balmori in his short paper, [“The Effects of Microwaves on the Trees and Other Plants”](#). In it, Dr. Balmori explains how EMFs cause soil acidification and create conditions in which trees are unable to absorb ground water, thus drying up.

THE EFFECTS OF MICROWAVES ON THE TREES AND OTHER PLANTS

© Alfonso Balmori Martínez. Biologist.
Valladolid. Spain.
December, 2003

Plants and electromagnetic fields

In several germination rehearsals realized in laboratory subjecting the seeds to a static magnetic field, it has been proven a increase in the speed and in the number of germinations. In experiments of growth, it has been proven that the exposed plants develops bigger longitude and weight (Martínez *et al.*, 2003). In a study realized under a high tension line between Austria and the Czech Republic, its effect on wheat and corn cultivations was evaluated. The results indicated a reduction in the production of wheat of 7% in the next fields to the electric line during the 5 years that the investigation lasted (Soya *et al.*, 2003). It is usually corroborated a stimulating effect on the growth and development of plants subjected to static magnetic fields, but inhibitory action in the case of variable magnetic fields (Martínez *et al.*, 2003).

Effects in the balance of calcium in meristem cells of the pea roots subjected to magnetic fields were observed (Belyavskaya, 2001). Another study realized with microwaves also checked a long term descent in the levels of calcium and sulfur in the leaves of beech tree directly related with the power of the broadcast radiation (Schmutz *et al.*, 1996). In animal cells has been proven the same thing, the microwaves can affect the intercellular communication and that can affect the functioning to the calcium channels (Dutta *et al.*, 1989).

30 years ago two Canadian Investigators observed a deterioration that was unpredictable on the plants subjected to microwaves (Tanner & Romero-Sierra, 1974). More recently other authors have notified cytogenetical changes (micronuclei, interchromosomal bridges and chromosomal fragments) induced in wheat exposed to a source of microwaves. They conclude that those effects are not thermal (Pavel *et al.*, 1998). An Ukrainian investigator has also observed alterations in condensed chromatin distribution of meristem cells exposed to low magnetic fields (Belyavskaya, 2001).

Dr. Balmori was, at the time of writing, more concerned with tree and forest death than forest fires, but recent events make this a very pertinent paper indeed because the same mechanism that causes trees to die also makes them very combustible.

In California this past summer, two major fires burned their way right across the Sierra Nevadas, something which has never happened before. There has always been enough moisture in the trees and soil of these mountains to stop or slow fires down, but [not this year](#): “the California Bay Area’s live fuel-moisture content (FMC), a metric which measures the ratio of moisture to natural combustible material, was historically low...the fuel-moisture content at higher elevations is extremely low, too.” So what caused this?

Dr. Balmori cites the work of German scientist Wolfgang Vokrodt, whose pioneering work on dying trees near radar installations showed that microwaves interrupt the ability of trees to absorb water, thus drying them out, and create soil acidification, which further dries them out. Balmori also cites Swiss scientist Ulrich Hertel, who says that “a causal chain of electrical smog/stunted growth/damage to soil/dying trees is established”. Hertel explains that EMFs cause trees to lose the hair roots which absorb water from the soil, while capillaries shrink and become

unable to pull water upward into the tops of the trees. “The delicate absorbent hair roots are missing, the trees are standing in water and yet die of thirst.”

Dry trees will burn easily. And sadly, most cell towers are placed on hills and mountains because this increases the range of each “cell”. Between the increased production of terpenes/terpenoids and the lack of moisture in the trees themselves due to the action of microwaves in the atmosphere, it is not surprising if forests are burning as never before.

Heating

There is a third mechanism which will also make fires worse: heating from EMFs. A recent paper by Arno Thielens, “[Environmental Impacts of 5G](#)”, states that microwaves are causing an increase in temperature in all wildlife including plants. (This happens to us too). This heating is continuous because we are always surrounded by microwaves, which heat anything containing water molecules. In nature the sun sets, or there is shade, but man-made microwaves continue to irradiate everything and everyone 24/7. Even a tiny increase in temperature will have effects if it goes on long enough. If trees and plants are warmer than they should be, this too will contribute to forest fires.



Trees producing flammable terpenes and terpenoids, trees that are drying out because they cannot absorb water, trees that are warmer than they should be: these three mechanisms, all caused by EMFs from wireless technology, explain why forest fires are becoming both more common and much worse. The climate change theory cannot explain the number and intensity of recent forest fires. Microwave theory can, and does. The price of wireless technology will be a global desert.

* Dr. Pall's work is based on many studies that show how EMFs cause plants to produce excessive intracellular calcium and terpenes/terpenoids. The database <https://emf-portal.org/en> contains many of them.

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Aspen Adverse Effects of EMF_RF-radiation

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Adverse Influence of Radio Frequency Background on Trembling Aspen Seedlings: Preliminary Observations

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Abstract

Numerous incidents of aspen decline have been recorded in North America over the past half century, and incidents of very rapid mortality of aspen clones have been observed in Colorado since 2004. The radio frequency (RF) environment of the earth has undergone major changes in the past two centuries due to the development and use of electricity in power and communications applications, and the anthropogenic RF background continues to increase in intensity and complexity. This study suggests that the RF background may have strong adverse effects on growth rate and fall anthocyanin production in aspen, and may be an underlying factor in aspen decline.

1. Introduction

Incidents of aspen decline in North America have been observed since the mid-20th Century [1–3]. Stands at the limits of aspen's lower elevation range, on sites with poor drainage, with limited water [4] or nutrient supply [5], are more susceptible to decline. Stand age and clonal differences are also factors in susceptibility to decline [6]. Factors initiating decline include: defoliation by insects, damage caused by wildlife, severe drought, and extreme weather incidents [7]. Damage caused by these factors can diminish the vigor of affected clones and make them vulnerable to opportunistic fungal pathogens and insects [8]. The concept of forest decline has been used to

describe the interaction of these various factors; however, the underlying causes of aspen decline are not well understood [9]. Since 2004, incidents of very rapid aspen clone mortality have been seen in Colorado [10]. Because the electromagnetic (EM) environment of the earth has changed radically in the past two centuries, this study investigates the possibility that anthropogenic changes in this environment, particularly in the radio frequency (RF) spectrum, are adversely affecting growth and health of aspen populations, making them vulnerable to decline.

Electromagnetic energy from the sun is essential for life on earth. Plants rely on inputs of EM energy for photosynthesis and for regulation of periodic functions (flowering, shoot and root growth, respiration, and dormancy). A plant's response to EM energy is dependant on frequency, timing, and intensity of the signal. The source of the EM input, however, makes no difference. Timing of plant processes is an important mechanism for plant protection and efficient functioning in changing day/night and seasonal environmental conditions [11]. Although photosynthesis requires fairly strong energy input in the blue and red visual frequencies (full sun/shade) [12], photoperiodic responses in plants are typically triggered by energy inputs in the red and far-red frequencies that are in the range of 10^{-4} times the energy required for photosynthesis, and even a brief flash of light during a plant's subjective night can be enough to trigger a short night response, strongly affecting plant behavior and morphology [13]. The radio frequencies, lower than 300 gigahertz, are below visual and infrared frequencies in the electromagnetic spectrum. The earth's natural RF environment has a complex periodicity that has been more or less the same within the lifespan of modern tree taxa. Before 1800, the major components of this environment were broadband radio noise from space (galactic noise), from lightning (atmospheric noise), and a smaller RF component from the sun [14]. Because of the periodic nature of the naturally occurring RF background, plants may have evolved to use those environmental signals, as well as visible light, to regulate periodic functions, and therefore they may be sensitive to anthropogenic RF input. The intensity of the human-generated RF environment has increased gradually since about 1800. This background of RF pollution is now many times stronger than the naturally occurring RF environment. From the perspective of evolutionary time, the change can be considered sudden and dramatic [14, 15].

Many experiments have been conducted investigating possible effects of RF exposure on plants and animals. Generally, exposures to particular single frequencies at particular, usually fairly high intensities, have been used in these previous experiments [16]. However, the assumption seems to have been made that the low-level background of RF pollution has no effect on biological systems. Therefore, not only has this particular phenomenon not been studied, but it has been generally disregarded in earlier experiments designed to look for effects of RF exposure. Results of those previous experiments are often difficult to duplicate, and it may be that the anthropogenic RF background has been a confounding factor. However, for some RF effects on biological systems, consistent results have been documented in previous experiments: growth rates of plants [17] and fungi [18] can be increased or decreased by RF exposure. Exposure to RF signals can induce plants to produce more meristems [19], affect root cell structure [20, 21], and induce stress response in plant species, causing biochemical changes [22]. Effects on circadian rhythms in several animal species have been documented [23]. Some possible mechanisms of effect have been identified [24]. This experiment investigates the effects of the radio frequency background on aspen seedlings. The objective of this preliminary study

was to determine if aspens respond to the current RF background in ways that result in reduced growth, or in increased susceptibility to pathogens.

1.1. Study Area

The experiment was conducted in a rural area near Lyons, Colorado: at 40.29

Latitude and -105.28 Longitude, at an altitude of 1,700 meters, and on a north-facing slope. The ecological system in the area of the experiment is Rocky Mountain Lower Montane. The site was about 400 meters below the lower elevation of aspen's natural range in Colorado. The north-facing slope was chosen as a somewhat cooler microclimate than other aspects. Vegetation included various grasses, which were mowed on the 8×10 m experimental plot. Vegetation in the east, south, and west directions from the experiment included: wild grasses and various low shrubs, rabbit brush (*Chrysothamnus nauseosus*), sage (*Artemisia tridentata*), wild currant (*Ribes cereum*), chokecherry (*Prunus virginiana*), yucca (*Yucca angustifolia*), and skunkbush (*Rhus trilobata*). North of the experiment, there were large cottonwood trees along the river, with grass and chokecherry undergrowth.

1.2. Materials and Methods

In order to create an environment free of RF signals, a Faraday cage was built, using two layers of aluminum window screen supported by a bamboo frame. Cage dimensions were 75 cm by 75 cm by 120 cm. The aluminum screen material in the configuration used for this experiment was tested at a laboratory of the National Institute of Standards and Technology (NIST) in Boulder, CO. From 1.0 MHz to 3.0 GHz, its effectiveness in attenuating RF signals was found to vary from 40 dB to 73 dB across the entire range of frequencies (Figure 1). Theoretically, an enclosure made of this material would reduce signal intensity by a factor of 10^{-4} to $10^{-7.3}$, blocking essentially all ambient RF energy, including the naturally occurring RF background. In practice, the shielding effectiveness of a Faraday cage made of this material could be somewhat less than that of the material itself due to gaps or imperfect electrical contact at seams and closures, and to the internal RF acoustical properties of the cage. A similar cage was constructed as a control, with fiberglass screen, which is not conductive and which does not block RF signals, instead of aluminum. A transistor radio was used to test the effectiveness of the cages to block the RF background. No radio stations could be picked up inside the Faraday cage. In both the mock-Faraday cage and the uncaged area, numerous stations were received in the AM and FM bands. A sweep of RF background at the site, June 6, 2009, using an *Anritsu* spectrum analyzer, showed that field intensity ranged from -117 dBm to -87 dBm at frequencies from 1 to 1,000 MHz. Mean field intensity was -109 dBm.

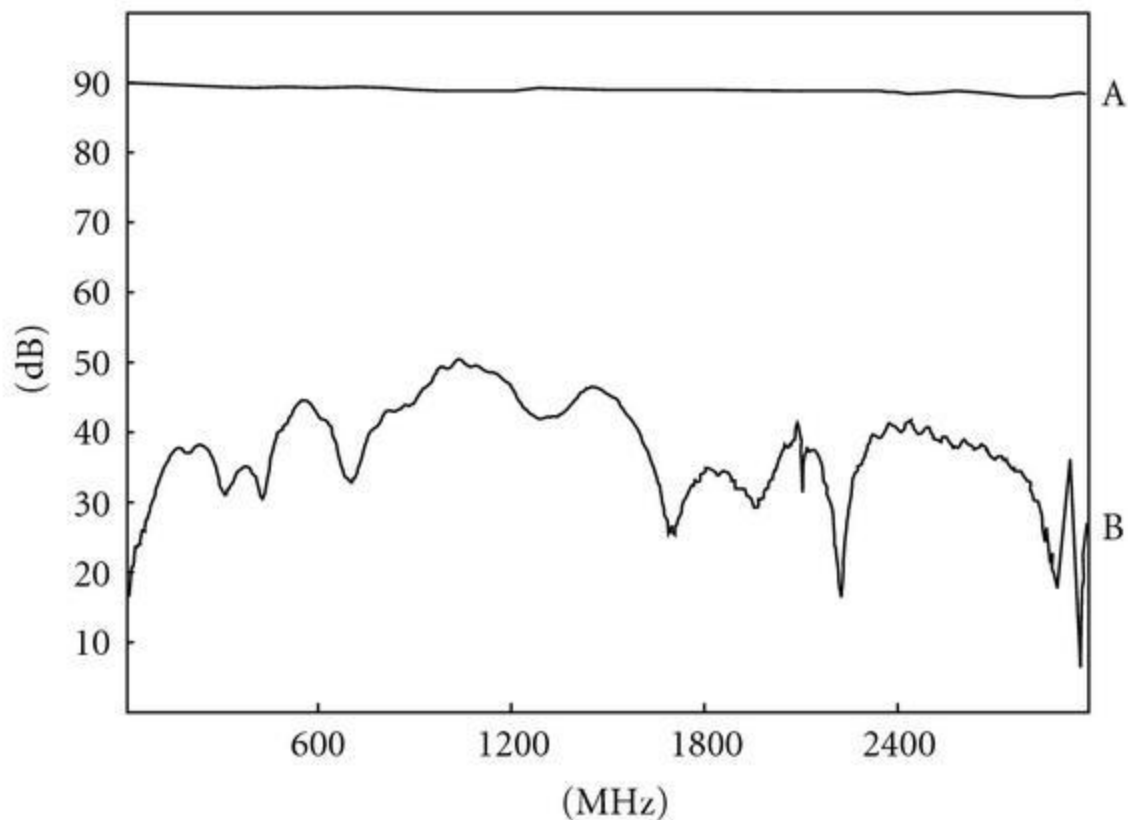


Figure 1.

The aluminum screen material in the configuration used for this experiment was tested at NIST in Boulder, CO. From 1.0 MHz to 3.0 GHz, its effectiveness in blocking RF signals was found to vary from 40 dB to 73 dB across the entire range of frequencies.

axis = Radio frequency from 1.000 MHz to 3000.000 MHz in increments of 300.000 MHz left to right.

axis = Decibel scale. Reference signal level was 90 dB. A = Reference signal. B = Attenuated signal.

On May 28, 2007, 30 aspen seedling plugs were obtained from the Colorado State Forest Service (CSFS) nursery in Fort Collins, Colorado. Seed for these seedlings came from Caffey County near Salida Colorado, approximately 195 km SSW of the experiment site, at an elevation of about 2,100 meters. The seeds were germinated in June 2006 at the CSFS Nursery, and the resulting seedlings were grown in a shade house in a Styrofoam planter-block of 30 seedling plugs. The seedlings had leafed out in early spring and, when purchased on May 28, 2007, were not producing new leaves. Seedlings were transplanted into no. 1 black gallon plastic pots on June 5, 2007 using a commercial potting medium, Black Gold, composed of: 45–55% Canadian sphagnum peat moss, compost, pumice, perlite, and composted worm castings (N .05%: water soluble .006%, water insoluble .044%). Since only 27 seedlings were needed for the experiment,

due to space restrictions, the three smallest seedlings were discarded. The remaining seedlings were relatively uniform in height, stem diameter, and leaf development, and the leaves appeared healthy and green. The 27 seedlings were assigned to 3 groups of 9 seedlings each, with variation in size distribution distributed equally among the 3 groups. After potting, the three groups were photographed and randomly assigned to the mock-shielded cage, the shielded cage, or to the unshielded area. The experiment began June 6, 2007. All treatments in the experiment were exposed to full sun from sunrise to late afternoon. There was a distance of three meters between treatment enclosures. All seedlings in the experiment were watered at the same time 1-2× per week, depending on the weather, using Lyons water. Seedlings were watered with a weak solution of fertilizer (5-10-5) on July 29, 2007, and otherwise were not fertilized.

Two sets of a calibrated thermometer and humidity gauge were used to compare temperature and humidity readings between cages under various weather conditions and times of day and night. The monitoring devices were placed in the middle of the monitored treatment enclosure, just above the top of the pots. A board was placed south of the devices to provide shade. A lux meter was used to measure light intensity in the treatment areas. Shielding reduced light intensity by 35% for the mock-shielded enclosure and 40% for the RF-shielded enclosure. Naturally occurring sunlight intensity was not reduced for the group that was not shielded. Except for the difference in RF background intensity, conditions in the shielded and mock-shielded enclosures were very similar. The unshielded seedlings were exposed to higher light levels (full sun), higher airflow, and generally lower humidity than the shielded and mock-shielded treatments since they were not in a screened enclosure.

1.3. Measurements

After seedlings were transplanted and placed in the three treatment enclosures in early June, they began to grow again. Because of that, there was a shoot node dividing spring growth from the summer growth phase that was easy to identify. Measurement of active leader (shoot) length was taken from the tip of the shoot down to that first shoot node, so leader length measured was only that produced after the experiment began on June 6, 2007. For leaves emerging directly from a main stem, leader length was recorded as 0.00 cm.

On July 28-29, 2007, measurements of active leader length and width of each leaf on each active leader were made on all seedlings in the experiment. Leaves had not begun to drop at that time, and the great majority of them in all treatment groups appeared healthy and green. Leaf width was converted into estimated leaf area using an algorithm (Leaf Area (cm

) = 0.637 * Leaf Diameter (cm)

) developed by W.D. Shepperd of the USDA forest Service's Rocky Mountain Research Station [25]. After measurements were taken, all seedlings were returned to their cages. October 5-6 photos were taken showing differences in leaf coloration, and relative leaf area affected by necrotic lesions.

2. Results

Seven seedlings in each RF-exposed group and eight seedlings in the shielded group produced active leaders and new leaves during the experiment. The RF shielded group evidenced more vigorous growth, producing 74% more total leader length and 60% more leaf area than the mock-shielded group, though the number of leaves produced by both groups was nearly the same (Table 1). The two RF-exposed groups' morphology and behavior were very similar and within the current norm for aspen, including absence of fall anthocyanin production, and extensive leaf area affected by necrotic lesions in fall senescing leaves. On active leaders, the shielded group showed fall production of anthocyanins far outside the norm, absence of fall leaf tissue necrotic lesions, and a wide range of fall colors: bright orange, yellow, green, dark red, and black (a combination of dark green leaf tissue with red veins). Shielded leaves produced in the spring flush (before treatment), however, were similar in appearance to leaves in the two exposed groups in color, size, and incidence of lesions. All of the shielded leaves on active leaders had dark to bright red veins and petioles indicating strong anthocyanin production (Figure 2). On October 5, 2007, unshielded and mock-shielded seedlings had leaf tissue ranging in color from yellow to green, and a high percentage of leaf tissue in both exposed groups displayed necrotic lesions (Figures 3 and 4). Shielded seedlings had larger leaves, petioles and leaf veins were red, and tissue colors varied from yellow to dark green (Figure 5). Some shielded leaves looked black because of the combination of red veins and dark green tissue (Figure 6). Leaves on active leaders in the shielded group were substantially free of leaf tissue lesions (Figure 7), but unshielded and mock-shielded leaves were all affected to some extent by leaf tissue necrosis (Figure 8).

Table 1_

Various characteristics of aspen seedlings following one of three RF treatments.



Figure 2_

October 6, 2007. Mock-shielded seedlings on the left and shielded seedlings on the right, the latter showing more total leaf area, stronger fall leaf coloration, and minimal leaf necrosis symptoms.



Figure 3_

Unshielded seedling, showing green to yellow leaf coloration and gray to brown necrotic leaf tissue, Oct. 6, 2007.



Figure 4_

Mock-shielded seedling, exhibiting yellow leaf coloration and brown lesions, Oct. 6, 2007.



Figure 5_

Shielded seedling, showing red petioles and veins on light green leaf tissue, and very little leaf tissue affected by necrosis. Oct. 6, 2007.



Figure 6_

Shielded seedling. Combination of red veins and green leaf tissue makes leaves look black (left side of photo), Oct. 6, 2007.



Figure 7_

Shielded seedling, with leaves on active leaders mainly free of necrotic lesions, and leaf veins and petioles red, Oct. 6, 2007.



Figure 8

Mock-shielded seedling, showing all leaves affected by necrotic lesions to some extent, leaf veins yellow or green, and petioles light red to pink, Oct. 6, 2007.

3. Discussion

Because only one treatment enclosure was established for each treatment, differences among groups could not be analyzed statistically. Results of this experiment do, however, suggest several possible effects of RF exposure on aspen. Those effects include reduction of shoot length and leaf area, suppression of fall anthocyanin production, and increased incidence of necrotic leaf tissue in fall senescing leaves. Reduced vigor in the two RF-exposed groups is demonstrated

by lower total leader length and diminished production of leaf area relative to the shielded group. A study [26] comparing mutant nonanthocyanin-producing strains of fall anthocyanin-producing species, *Cornus sericea*, *Vaccinium elliotii*, and *Viburnum sargentii*, showed very similar results to this experiment with regard to fall color in that extensive necrotic leaf tissue was seen in nonanthocyanin-producing mutants during fall leaf senescence and leaves dropped while still green. Wild-type strains of those species, which produced anthocyanins, did not exhibit necrotic lesions. In that study, leaf tissue damage in mutant strains was shown to be caused by photooxidative stress. During fall leaf senescence photosynthetic mechanisms become vulnerable to damage by visible light. Anthocyanins shield the photosynthetic apparatus from high light levels, preventing photoinhibition and damage to leaf tissue due to light stress. Transport of foliar nutrients requires energy provided by photosynthesis [27], and since the majority of nutrients in overwintering deciduous trees are derived from foliar nutrient transport during autumn leaf senescence, differences in anthocyanin production could have major effects on plant fitness [28].

Since all leaves on active leaders in the shielded aspen group showed striking fall coloration, and since each of the seedlings was genetically distinct, it appears that the Faraday cage environment favored strong production of anthocyanins during fall leaf senescence. Five bright sunny days, Sept. 30–Oct. 4, accompanied by cool nights ($\sim 5^{\circ}\text{C}$) preceding the appearance of red leaf coloration, provided optimal conditions for anthocyanin production. Although shielding materials substantially reduced light levels in the two caged groups (mock-shielded and shielded), the behavior and appearance of the two RF-exposed groups (mock-shielded and unshielded) were most similar, both showing no apparent anthocyanin production, leaf tissue remaining light green or yellow, and a high percentage of leaf tissue affected by necrotic lesions.

3.1. Radio Frequency Environment

Beginning around 1800, EM experimentation, establishment of electrical telegraph systems, generation and distribution of electricity, and the use of broadcast signals gradually began to fill the region of the electromagnetic spectrum below 300 GHz. Currently, the RF spectrum is quite crowded, and new technologies are constantly being developed to allow more information to be transmitted on the available frequencies [29]. Unintended broadband RF noise is created as a by-product of electrical power generation, transmission, and use. These human-made RF sources create a background noise (as differentiated from signal) level generally 10 to 100 times stronger than the naturally occurring background of galactic noise and atmospheric noise at frequencies below 30 MHz [14]. Human-generated signal intensities in large regions of the RF spectrum are in the range of 10^3 – 10^6 times stronger than the naturally occurring RF background in urban areas [15]. Because terrestrial and satellite RF sources are numerous and widely dispersed globally, and since below 30 MHz radio signals can travel great distances around the earth by bouncing between the ionosphere and the earth's surface [14], currently a strong human-generated RF background exists at every point on the earth's surface, although radio field strength is relatively greater in the most populous and urbanized areas. Globally, the highest field strengths occur in central Europe, the eastern United States, and in China (Figure 9). Forest decline was first recognized and defined based on observed events in central Europe and the eastern US, and China, at this time, is experiencing rapid desertification.

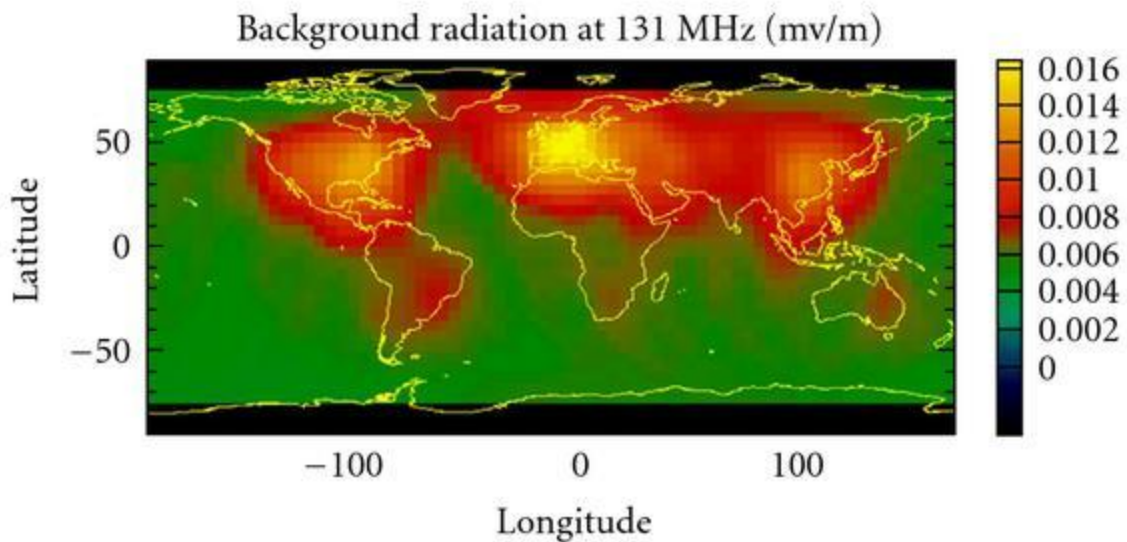


Figure 9

Forte Satellite: 131 MHz RF background 2000. Areas of highest radio background intensity occur in the eastern United States, central Europe, and China. Acquired by the Los Alamos National Laboratory FORTE spacecraft. Principal investigator A.R. Jacobson.

3.2. Forest Decline

The first widely recognized incidents of forest decline [30] began in the late 1970s. In a European study [31], stress factors related to forest defoliation were found to be age, altitude, drought, and various types of air pollution, in descending order of importance. Although the statistical correlation was high for some of these effects, because the number of samples was large, the effects documented were quite small and altogether could account for only 15–55% of the observed decline, depending on species. No temperature variables were found to have significant effects. In several studies, climate change was found not to be a causal agent in forest decline [32, 33]. There is evidence, however, that trees involved in forest decline are less tolerant of extreme weather conditions. Freeze damage, possibly indicating disrupted dormancy, for instance, has been noted as one symptom of forest decline where temperature and/or precipitation pattern changes were not evident [32, 34]. More recently, it has been shown that mortality rates of all dominant tree species in the western United States have been doubling every 17–29 years in old growth forests, and that recruitment of new trees is now occurring at a lower rate than mortality [35]. Since aspen decline and other tree decline incidents worldwide have similar symptoms, and since no definitive explanation has been found for those events, it seems plausible that their decline may be related to RF exposure.

Changes in health and growth rates of aspen and other plants, due to increasing RF exposure, would have been difficult to detect for two reasons: first, because the RF background is widely dispersed globally, comparisons between plant populations, even over great distances, would

always have been between RF-exposed groups, even though exposure levels would vary with relative proximity to RF sources. Second, it is difficult to compare the health and appearance of plants living today to those living 200 years ago, though some comparisons can be made from previous research data, tree ring data, and pollen samples, for instance. Changes would have occurred very slowly over time, from the human perspective, and would have been widely dispersed geographically so that, at any particular time, RF-altered plant morphology and behavior would have been normal, the norm, by definition. Plants and animals have in previous experiments been shown to respond in various ways to RF exposure. Growth of organisms may be inhibited or accelerated by RF exposure, thus possibly affecting interactions at the level of communities and ecosystems from microscopic to global scales. In the case of aspen, reduced plant vigor and adverse effects on fall storage of nutrients due to RF exposure could leave seedlings vulnerable to pathogens and less able to accommodate other environmental stress.

4. Conclusions

The results of this preliminary experiment indicate that the RF background may be adversely affecting leaf and shoot growth and inhibiting fall production of anthocyanins associated with leaf senescence in trembling aspen seedlings. These effects suggest that exposure to the RF background may be an underlying factor in the recent rapid decline of aspen populations. Further studies are underway to test this hypothesis in a more rigorous way.

Acknowledgments

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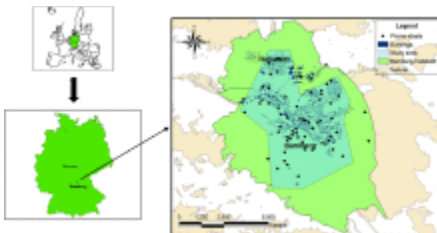
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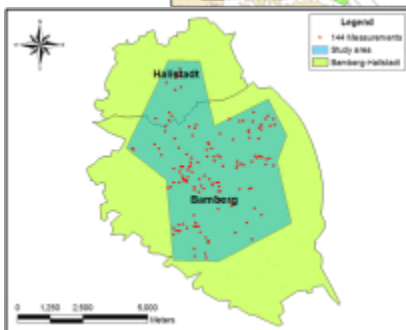
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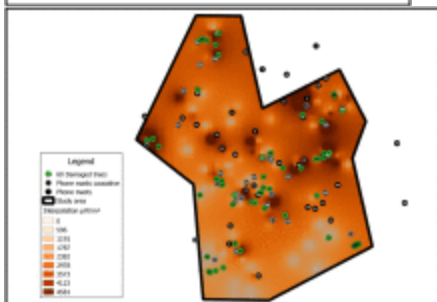
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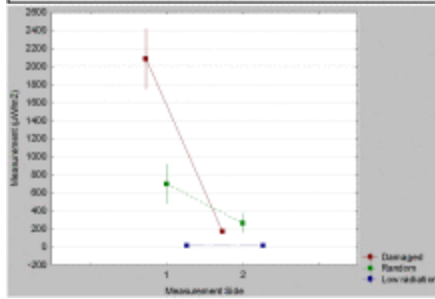
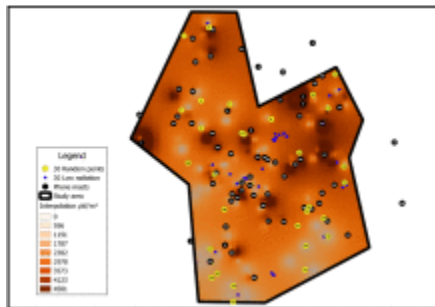


3.



4.





1.

- Table 1
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6. • Table 6



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Radiofrequency radiation injures trees around mobile phone base stations

Author links open overlay panel [Cornelia Waldmann-Selsam^a](#) [Alfonso Balmori-de la Puente^b](#) [Helmut Breunig^c](#) [Alfonso Balmori^d](#)

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Highlights

- High frequency nonionizing radiation is becoming increasingly common.
- This study found a high level of damage to trees in the vicinity of phone masts.
- Deployment has been continued without consideration of environmental impact.

Abstract

In the last two decades, the deployment of phone masts around the world has taken place and, for many years, there has been a discussion in the scientific community about the possible environmental impact from mobile phone base stations. Trees have several advantages over animals as experimental subjects and the aim of this study was to verify whether there is a connection between unusual (generally unilateral) tree damage and radiofrequency exposure. To achieve this, a detailed long-term (2006–2015) field monitoring study was performed in the cities of Bamberg and Hallstadt (Germany). During monitoring, observations and [photographic recordings](#) of unusual or unexplainable tree damage were taken, alongside the measurement of [electromagnetic radiation](#). In 2015 measurements of RF-EMF (Radiofrequency Electromagnetic Fields) were carried out. A polygon spanning both cities was chosen as the study site, where 144

measurements of the radiofrequency of electromagnetic fields were taken at a height of 1.5 m in streets and parks at different locations. By interpolation of the 144 measurement points, we were able to compile an electromagnetic map of the power [flux density](#) in Bamberg and Hallstadt. We selected 60 damaged trees, in addition to 30 randomly selected trees and 30 trees in low radiation areas ($n = 120$) in this polygon. The measurements of all trees revealed significant differences between the damaged side facing a phone mast and the opposite side, as well as differences between the exposed side of damaged trees and all other groups of trees in both sides. Thus, we found that side differences in measured values of power flux density corresponded to side differences in damage. The 30 selected trees in low radiation areas (no visual contact to any phone mast and power flux density under $50 \mu\text{W}/\text{m}^2$) showed no damage. Statistical analysis demonstrated that electromagnetic radiation from mobile phone masts is harmful for trees. These results are consistent with the fact that damage afflicted on trees by mobile phone towers usually start on one side, extending to the whole tree over time.

Graphical abstract

Bernartzky (1986), revisited:



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Comments on the Checklist

The *Initial Environmental Checklist for Determination of Environmental Impact* (Checklist) is a form completed by the Applicant, Verizon wireless. Subject to review by TRPA staff, the permit must address any shortcomings, requiring revisions to the application as necessary. Thus, more than two years after submittal we come to the Special Use Permit and its provisions. Are adverse effects addressed? (Note, bold headers and numbering below corresponds to Checklist Sections.)

Project Description: The first thing to note is that the proposal is to use the existing shed, with minor expansion. The plans provided for the SUP approval indicate the shed is to be removed. Its replacement is not specified, other than in drawings for visual simulations. (See my emailed letter for comments on fuel storage in a flammable shed.)

4. Vegetation letters a.-h.:

Focusing on letters a.-e., the Applicant indicates, in essence, no effects on vegetation other than the direct removal of five trees less than 12 inches in diameter at breast height. I refer you to my letter's comments on the potentially significant adverse effects on pine and aspen trees. The tower will be in close proximity to a number of existing pine trees, and will emit radiation directly into the pine tree canopy, stressing the trees and increasing likelihood of tree mortality over time. The appearance of sickly or dying/dead trees in the vicinity of the tower, and the loss and potential losses of mature pine trees, will further degrade the scenic quality and resources of the viewshed.

The scenic aspen grove on Ski Run Blvd. is in potentially subject to RF radiation effects, as discussed in my letter, as it is in close proximity to, and within line of sight of the tower, and the potential direct-but-non-removal impacts on this sensitive resource should be evaluated and avoided or mitigated. The Staff Analysis and Permit do not address these potentially significant effects on vegetation. With regard to letter h., is this aspen grove considered a "natural old-growth ecosystem" and, if not, why not? I assume it has been there a long, long time, though individual trees may not survive more than 60-80 years, which is "old-growth" for that plant community. Any change to this sensitive ecosystem should be considered potentially significant, at a minimum.

The TRPA Staff Analysis, section F., informs us, "The proposed project is visible form Pioneer Trail, along Scenic Roadway Unit #45, currently in non-attainment, and from portions of the Heavenly Valley Ski Resort recreation area. . . " indicating the project area is not meeting current scenic thresholds. This should raise the potential significance of ANY new, proposed scenic impact, such as loss of existing trees by direct removal (to erect an additional highest-height-allowable and highly-visible tower) but that seems not to matter here based on the documentation provided.

5. Wildlife: This section indicates there will be no changes to wildlife habitats and species diversity, or adverse effects on, or reductions of, the animals that inhabit them, or impede their movements. This is telecom industry corruption, simply ignoring impacts disclosed in the science, hiding behind the FCC guidelines. However, the assumptions are unchallenged by TRA, and that is TRPA being UNSCIENTIFIC,

seeing no impacts where the scientific record is replete with evidence of very significant impacts: on bees, in particular, but also other insects, migrating birds, amphibians, and threatened species such as our majestic bald eagles, to name only a few.

7. Light and Glare: Letter a. indicates there will be exterior lighting: “4 service lights with 6-hour timers” and then goes on to answer “No” to questions of whether these lights will be brighter than the surroundings, or cast light off the project site, or onto public lands. No further explanation is provided. As I pointed out previously, the Staff Analysis in section F. indicates, “The proposed project is visible from Pioneer Trail, along Scenic Roadway Unit #45, currently in non-attainment, and from portions of the Heavenly Valley Ski Resort recreation area. . .” So how are these lights not visible? Consulting the Staff Analysis at letter H. 2.b., the tower will not contain lights. . .” so there is an inconsistency with the project Application. It is possible the Application was changed or lighting was removed as a condition of the Special Use Permit, but the truth about lighting remains in the dark. My opinion is no lights should be allowed other than for the utility shed, downcast and appropriate to the setting. Tower lights set high above the ground would be a glaring eyesore and detract from enjoyment of the night skies.

10: Risk of Upset: This is where the Applicant drags a red-herring across the form to divert attention from the facts concerning explosions and “the release of hazardous substances, including . . . radiation . . .” preferring to focus attention only on fuel storage for a diesel generator. I’ve already written of my concerns with the generator, and of the substantial risks due to explosions and fire, and resulting evacuation concerns, in my letter. None of the matters of explosions, tower collapses, or radiation releases due to accident or upset, are addressed as they should be in the Staff Report or Permit. I would add concerns with ice-fall from the tower, also, on children and others in the sledding/access areas. Any warning signs for ice fall?

15. Energy: The question is whether the proposed project will use “substantial” amounts of power or energy. “Substantial” is not defined, so no point arguing. What I will note is that that project will require power, and the power used for non-mobile wireless uses (i.e., connecting to internet) is substantially more than required for connection through fiber optic cable or phone line, with generally lesser bandwidth. Power needs for all the existing towers and the proposed tower are not disclosed, evaluated or compared, probably because there is no baseline for comparison.

17. Human Health: No impacts or potential impacts are identified by the Applicant or TRPA. Refer to my letter where significant adverse impacts, including death, are addressed.

18. Scenic Resources/Community Design:

The Applicant indicates the tower can be seen from Pioneer Trail, and answers “No” to whether it can be seen from a scenic vista seen from a public area. The TRPA Staff Analysis, section F., informs us, “The proposed project is visible from Pioneer Trail, along Scenic Roadway Unit #45, currently in non-attainment, and from portions of the Heavenly Valley Ski Resort recreation area. . .” indicating the project area is not meeting current scenic thresholds. Heavenly Ski Resort is located primarily on public lands of the U.S Dept. of Agriculture, U.S. Forest Service, and therefore is a “public area.” The Checklist

indicates “No” inconsistencies with TRPA’s Scenic Quality Improvement Program. The Staff Analysis (in Project Description, in Letter F., in letter H.1.(a), and in letter H.2.(a) and (b)) opines little more than because the tower is a monopine design to simulate a pine tree in an existing pine forest it won’t detract from scenic quality. I disagree. The monopine tower will stand out from the surrounding vegetation because it is the largest tree-like thing on the parcel both in terms of trunk diameter and height. The simulations show the branching patterns do not match the surrounding Jeffrey pines, being more compact. I see all these efforts in the writings to attempt to overcome these issues and make it blend in. I guarantee, no matter what, I and others will be able to spot this tower without any problem.

This is how TRPA nicks away our scenic resources with their FONSI and ignoring cumulative effects. There is no explanation about what the non-attainment of the scenic thresholds is all about, no discussion of why this should be approved given that this is an avoidable impact to scenic resources in an area currently in non-attainment, no findings to support allowing the impact, just a dismissal of any significant impacts because it looks like a fake tree. The mind boggles.

21. Findings of Significance:

Letter a. is checked “No” and should be checked “Yes” or “Data Insufficient” in light of my comments. Letter b. should be checked “No” because the short-term goal of Verizon to erect an unsightly and dangerous tower to close a purported gap in their area of coverage conflicts with the long unmet, and therefore long-term, TRPA goal to improve the environment to abate the VERY significant threats from FIRE facing our Lake and regional community, and to meet scenic thresholds in non-attainment. TRPA gets farther from these goals with this tower, and the others towers they’ve allowed in the Ski Run scenic area under their FONSI.