Martha Alvarez

From: Bruce Moe
Sent: Monday, April 15, 2019 8:24 AM
To: Martha Alvarez
Subject: FW: Support of Ordinance No 19-0012-U, 19-0012, 19-0044

Bruce Moe
City Manager
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Office Hours: M - Th 7:30AM - 5:30 PM | Alternate Open Fridays 8:00AM - 5:00 PM | Closed Alternate Fridays | Not Applicable to Public Safety

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From: bill@sunshinefam.com <bill@sunshinefam.com>
Sent: Sunday, April 14, 2019 2:42 PM
To: List - City Council <CityCouncil@citymb.info>
Cc: Bruce Moe <bmoe@citymb.info>
Subject: Support of Ordinance No 19-0012-U, 19-0012, 19-0044

Dear City Council,

Thank you for discussing the issue of a more thoughtful and deliberate roll-out of wireless tower/antenna infrastructure.

Unfortunately, I will be out of town this Tuesday, but here are some of my initial thoughts.

While understanding that the 1996 Telecommunications Act continues to tie the city's hands, it turns out this is not as open and shut as it would first appear. The first two minutes of this city council meeting in Montgomery County cltes a former US State Department and industry attorney that refutes the city is helpless:

https://www.youtube.com/watch?v=EG-yLfIczjc

We all want to have faster connections, but if we really believe in this, a fiber infrastructure is superior and would benefit both residents and business owners. Yes, a significant investment, but think of the ROI. Heck, we could even redevelop Sepulveda corridor to attract business that would pay a significant premium for this. How cool would it be to enter into a private/public partnership to offset the cost and have the ability to attract multiple corporate headquarters that put a premium on this technology and would bring jobs, tax revenue, and consumer spending. Proof: http://chattanoogagig.com/

Finally, I have three growing children and clearly understand how, not unlike a peanut allergy, electrosensitivity does effect some part of the population. There should be nothing wrong with considering proper placement for future wireless infrastructure in wake of:
1. What has happened to this California school: https://www.newsweek.com/can-cell-phone-tower-cause-cancer-children-1362314
2. What the LA Fire Department learned: http://www.iaff.org/hs/Resi/CellTowerFinal.htm

We can all support the future of technology, but, the roll out of 5g will set precedent for 6g, 7g, etc. and support these ordinances as the responsible next step to consider the longer term implications for Manhattan Beach.

Regards,

Bill Hory
MB Homeowner

Your gig is here

right here, in Chattanooga.

Only in Chattanooga, Tennessee is 1 Gigabit-per-second Internet speed available to every home and business - over 150,000 of them - throughout the entire community. Urban or rural, business or residence, Internet speeds that are unsurpassed in the Western Hemisphere – from 50 Megabits-per-second all the way up to one gigabit-per-second are accessible here. Today.

About

Thanks to the Gig, STEM students in Chattanooga are experiencing biology and STEM like never before. Researchers at USC place live biological specimens under a Digital Cinema Microscope and capture ultra-high resolution (4k) movies of the microorganisms while simultaneously transmitting live, HD images from the microscope to students in the STEM class.

Learn More >

Chattanooga? As in, the Choo-Choo?

Why did we do it? In Chattanooga, we have a legacy of taking bold steps that benefit our community. When Volkswagen announced Chattanooga as its headquarters for North American manufacturing, and Amazon.com chose our city for their new distribution centers, it was a nice confirmation that we're on the right track.

But we're just getting started. Because everything we create - from infrastructure to opportunity - we build of, by and for our community.

And we are looking for people to join us. We're open for business.

100% Fiber turns Possibilities into Potential.

Chattanooga's community-owned electric utility EPB is installing a 100% fiber to the premises network. Built to run America's first true Smart Grid and offer residential high speed Internet, video and telephone services, the network was also built to empower our community in new ways.

Because bandwidth is no problem, Chattanooga's Fiber Optic network enables upload and download speeds 200 times faster than the current national average, and 10 times faster than the FCC's National Broadband Plan (a decade ahead of

B Fiber

Skeptical? That might make you the kind of person we're looking for…

Skepticism of such claims is healthy and smart. But you know progress when you see it. And you want to be part of creating change that is real, meaningful and sustainable.

We believe that people matter even more than ideas, and smart people with relevant experience will take full advantage of what we've built. In ways we haven't yet imagined.

Our success depends entirely on those who get involved. It is that simple, and that powerful.

An open platform for creating transformative products and services.

We have built an expansive, powerful, 100% fiber network. But the power isn't in the platform. The real power is in how we use it.

Our infrastructure spurs research and development of new technologies right here in the United States, and preserves American jobs.

This is the ultimate tool for entrepreneurs. For established companies looking to become game-changers. For anyone needing a system that can help test and prove ideas.

Instead of trying to guess what products and services the market will demand, we are inviting talented people to use our network to work on complex challenges.

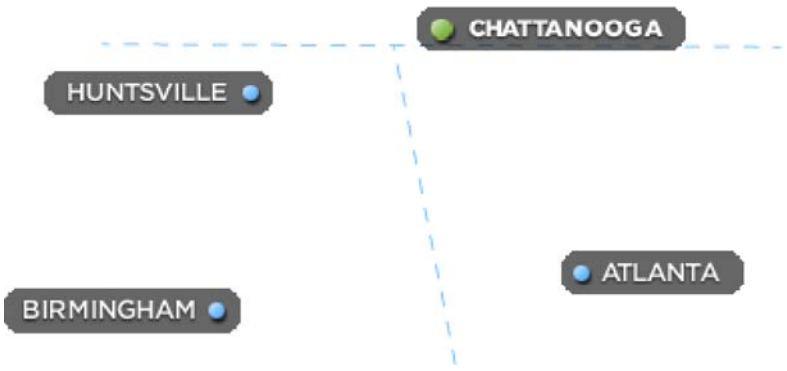
Not one size fits all, but one platform for mass innovation, accelerated R&D, broad testing and deep creativity.

THE SMARTER SMALL CITY

A vibrant city of the Southeast, we are centrally located between Atlanta, Nashville and Knoxville, with easy access to Birmingham, Huntsville, Greenville, Augusta and Asheville.

THE SMARTER SMART GRID

We began formulating plans for a Smart Grid network more than a decade ago, and received a stimulus grant of $111 million from the Department of Energy to accelerate our project.



Chattanooga - the Scenic City - offers a full cultural calendar, museums and theater companies, semi-pro and state university sports teams. Innovative programs in the arts, sustainability and food economy. A heritage rich in charitable work. And the best outdoor recreation East of the Mississippi.

Your dollars go farther here. The cost of living in Chattanooga is well below the national average. And in Chattanooga, you join not only Volkswagen but a network of other companies, local government, grantmaking foundations, and public interest developers who work together to support economic development, for the common good.

Chattanooga. A city without limitations. The best of big city connectivity and lifestyle, without the hassle. With Chattanooga broadband at your fingertips, you can work from anywhere. Why not choose to live in the most connected city in America?

Because Chattanooga's Smart Grid runs on our 100% fiber optic network, we are adding two-way communications not only at the smart meter on every home and business - but all along the grid.

"Next-generation energy system promises industry improved power quality and reliability."

– Industry Week

Read the Full Article

In Other Press

Smart Cities: It's More Than Broadband

Look to the States on Broadband

With Gigabit Connectivity, Chattanooga Could Be the Next Tech Hub

Chattanooga's fast Internet service racks up another win

Obama praises Chattanooga as 'a tornado of innovation'

Why Entrepreneurs Are Heading to Chattanooga

1 Gig + a true Smart Grid =A Test Bed for Next Generation Technology

""The Smart Grid as we talk about it is not the smart grid [EPB is] pioneering. They're pioneering something that could be revolutionary in terms of electric generation and distribution, and that is going to become a center of excellence."" – *Robert Bell, Co-founder of the Intelligent Community Forum*

[Fastest Internet service in U.S. found in an unlikely city]

[Chattanooga's Gig: how one city's super-fast internet is driving a tech boom]

[You Might Be Living In The Next Silicon Valley]

[The need for speed]

[Obama's Moment]

[Gig City becomes partner in White House initiative to promote, utilize high-speed Internet]

[How do you use 1Gbps Internet links? Chattanooga residents find out]

[What a Gigabit Network Can Do? Find Out]

[Why Chattanooga Represents Broadband's Future]

[Chattanooga Gigabit Fiber To Every Building]

[EPB grid attracts Cisco Systems to Chattanooga]

[Electric Energy T&D: EPB Deploys America's Fastest Fiber-optic Smart Grid]

[Wired: Where High Speed Internet Meets Smart Grid]

[CTFP: Grid upgrades put EPB in national spotlight]

[Area Development: Broadband - The Base for New Business]

[Energybiz: Business staying Productive with Smart Grid Investments]

[EPB Announces 1 Gig to 170,000 Homes, Businesses By 2011]

[Fastest Net Service in U.S. Coming to Chattanooga]

Real world Opportunities. With real time results.

With our true Smart Grid, data is received in real time. So it can be instantly used to create a self-healing grid with new levels in power quality and reliability.

This means greatly reduced outage times. Security and efficiency measures beyond anything in the industry. Mitigating the rising cost of energy generation. Opening up new opportunities for people to manage their own energy use. And much, much more.

The Smart Grid vs. the Tornado

In the Spring of 2011, the largest tornadic storm in US history hit the Southeast, leaving tragic devastation in its path. Even though EPB's Smart Grid has only been activated across half of the system, it demonstrated the benefits that it will bring to our community.

From every part of the system where our Smart Grid equipment has already been activated, we were able to access data that helped us determine whether there were outages.

And in many cases, the Smart Grid was able to reroute power around problems. Isolating outages and routing around it, so that companies experienced zero down time. So their business functions could remain fully operational – and so EPB could focus resources on bringing power back to other areas on the system, that needed help the most.

Fiber Means Business

Major corporations, technology firms and call centers are using our fiber to build their business. Benefiting from unlimited

[Fastest and Cheapest US Broadband Systems are City Run in the South]

[Smart Grid Inches Its Way toward Reality]

bandwidth, incredible speeds and local, Chattanooga-focused customer service.

Some are taking it even farther. Venture capital firm Lamp Post Group is investing in small start-up companies that have big vision, that are innovating the future. For LPG, fiber is powering smart investment by attracting creative entrepreneurs who are eager to explore what is possible with so much bandwidth. In 2012, they are launching Lamp Post Lab, bringing bright undergraduates from around the country together to explore what can be built using the world's fastest Internet – with a $50,000 prize for the best idea to get started.

Here in Chattanooga, we've built an amazing platform. And it's yours to use.

We want your business. Learn more here.	**Have questions about our 100% fiber optic network?** We have Answers.	**Tell The Chattanooga Story.** Contact us for any general or media inquiries.	**Join the discussion and help share the good news!**

U.S.

PARENTS CONCERNED AS FOURTH CHILD DIAGNOSED WITH CANCER WHILE ATTENDING CALIFORNIA SCHOOL WITH CELL PHONE TOWER ON CAMPUS

BY ANNA GIBBS ON 3/13/19 AT 10:23 PM EDT

U.S.

Parents in Ripon, California say a cell phone tower in a local schoolyard is to blame for the cancer diagnoses of four students in the last three years.

The tower, which is located at Weston Elementary, is the same as others scattered throughout the town. However, one parent told CBS Sacramento that its proximity to her son led to his 2017 brain cancer diagnosis.

“We had a doctor tell us that it’s 100 percent environmental, the kind of tumor that he has,” Monica Ferrulli said in the interview. “It’s indescribable, it’s really tough.”

Ferrulli’s son Mason was the second child to be diagnosed with cancer in just three years at the school. Mason walked by the cell phone tower daily.

She also told the *Modesto Bee* that when questioned, the school district cited an "obsolete American Cancer Society study" as the reasoning for keeping the tower in its current location. Ferrulli told the newspaper that parents will continue to fight and keep their children out of the school.

On Tuesday, more than 200 children were absent from Weston Elementary as a form of protest. Tuesday night, the children’s parents attended a meeting of the Ripon Unified School District.

Richard Rex, whose family lives across the street from Weston School, said a bump appeared on his 11-year-old son’s abdomen a month ago. He said his son’s classroom is near the tower.

Rex’s son was taken to doctors for examinations and tests that found a tumor wrapped around his liver. The boy now has a portal for starting cancer treatment, his parents told the *Bee*.

“They said they can shrink it and cut it out. They’re also talking liver transplant. It is very scary,” Rex said.

In a statement to *Newsweek* from RUSD said the school board and administration "empathizes with and support these children and their families in their recovery." The statement also said independent tests shown the tower is performing within the guidelines established as safe by current government and global standards.

RUSD is 10 years into a 25-year contract with the tower's owner, Sprint, which requires it to honor the lease for this tower location.

"There is no legal contractual basis on which the district can demand the cell phone company remove the tower, however, we are working together with them to come to a mutual resolution," the statement said.

Adrienne Norton, a Sprint representative, indicated that the company’s goal is to provide wireless service to Ripon residents.

“When it comes to the deployment of network infrastructure, we always strive to achieve a win/win process with local municipalities and residents,” Norton wrote.

The school district is working with Sprint to address the concerns of the community, the statement said.

A group of parents were unconvinced by the district's reassurances and hired Eric Windheim, an electromagnetic radiation specialist.

“I wouldn’t send my kids there at all, it absolutely is dangerous,” Windheim said in an interview with CBS Sacramento. “Children are still developing and their cells are still being divided. It’s the worst possible time in their life to be exposed.”

The Cochran Firm of Los Angeles has been hired to look at health effects of the cell tower and water contamination as a possible source.

According to the American Cancer Society, very few studies have focused on cell phone towers and the risk of cancer connected to them.

RELATED STORIES

California Guidelines Raise Concerns About Cellphones

Parents Worry Devices May Have Mental Health Effects

Childhood Cancer Survivors Face Lifelong Challenges

In one study, researchers compared a group of more than 2,600 children with cancer to a group of similar children without cancer. The results indicated that children who lived in a town with "higher than average RF radiation" from cell towers had a slightly increased chance of developing cancer. However, there was no limit to the type of cancer found in those children.

This study estimated the children's possible exposure based on the number of towers in their town and how strong the signals were from the towers. It did not look at actual exposure of any individual child based on how far their home or school was from a tower.

"This limitation reduces confidence in the results of the study," the American Cancer Society article said.

INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS

DIVISION OF OCCUPATIONAL HEALTH, SAFETY AND MEDICINE

Position on the Health Effects from Radio Frequency/Microwave (RF/MW) Radiation in Fire Department Facilities from Base Stations for Antennas and Towers for the Conduction of Cell Phone Transmissions

The International Association of Fire Fighters' position on locating cell towers commercial wireless infrastructure on fire department facilities, as adopted by its membership in August 2004 [(1)], is that the IAFF oppose the use of fire stations as base stations for towers and/or antennas for the conduction of cell phone transmissions until a study with the highest scientific merit and integrity on health effects of exposure to low-intensity RF/MW radiation is conducted and it is proven that such sitings are not hazardous to the health of our members.

Further, the IAFF is investigating funding for a U.S. and Canadian study that would characterize exposures from RF/MW radiation in fire houses with and without cellular antennae, and examine the health status of the fire fighters as a function of their assignment in exposed or unexposed fire houses. Specifically, there is concern for the effects of radio frequency radiation on the central nervous system (CNS) and the immune system, as well as other metabolic effects observed in preliminary studies.

It is the belief of some international governments and regulatory bodies and of the wireless telecommunications industry that no consistent increases in health risk exist from exposure to RF/MW radiation unless the intensity of the radiation is sufficient to heat body tissue. However, it is important to note that these positions are based on non-continuous exposures to the general public to low intensity RF/MW radiation emitted from wireless telecommunications base stations. Furthermore, most studies that are the basis of this position are at least five years old and generally look at the safety of the phone itself. IAFF members are concerned about the effects of living directly under these antenna base stations for a considerable stationary period of time and on a daily basis. There are established biological effects from exposure to low-level RF/MW radiation. Such biological effects are recognized as markers of adverse health effects when they arise from exposure to toxic chemicals for example. The IAFF's efforts will attempt to establish whether there is a correlation between such biological effects and a health risk to fire fighters and emergency medical personnel due to the siting of cell phone antennas and base stations at fire stations and facilities where they work.

Background

Critical questions concerning the health effects and safety of RF/MW radiation remain. Accordingly, should we allow exposure of our fire fighters and emergency medical personnel to this radiation to continue for the next twenty years when there is ongoing controversy over many aspects of RF/MW health effects? While no one disagrees that serious health hazards occur when living cells in the body are heated, as happens with high intensity RF/MW exposure (just like in a microwave oven), scientists are currently investigating the health hazards of low intensity RF/MW exposure. Low intensity RF/MW exposure is exposure which does not raise the temperature of the living cells in the body.

Additionally, a National Institute of Environmental Health Sciences panel designated power frequency electromagnetic fields (ELF/EMF) as "possible human carcinogens." [(2)] In March 2002 The International Association on Research on Cancer of the World Health Organization also assigned this designation to ELF/EMF in Volume 80 of its *IARC Monographs on the*

Evaluation of Carcinogenic Risks to Humans. [3]

Fixed antennas used for wireless telecommunications are referred to as cellular base stations, cell stations, PCS ("Personal Communications Service") stations or telephone transmission towers. These base stations consist of antennas and electronic equipment. Because the antennas need to be high in the air, they are often located on towers, poles, water tanks, or rooftops. Typical heights for freestanding base station towers are 50-200 feet.

Some base stations use antennas that look like poles, 10 to 15 feet in length, that are referred to as "omni-directional" antennas. These types of antennas are usually found in rural areas. In urban and suburban areas, wireless providers now more commonly use panel or sector antennas for their base stations. These antennas consist of rectangular panels, about 1 by 4 feet in dimension. The antennas are usually arranged in three groups of three antennas each. One antenna in each group is used to transmit signals to wireless phones, and the other two antennas in each group are used to receive signals from wireless phones.

At any base station site, the amount of RF/MW radiation produced depends on the number of radio channels (transmitters) per antenna and the power of each transmitter. Typically, 21 channels per antenna sector are available. For a typical cell site using sector antennas, each of the three transmitting antennas could be connected to up to 21 transmitters for a total of 63 transmitters. When omni-directional antennas are used, a cellular base station could theoretically use up to 96 transmitters. Base stations used for PCS communications generally require fewer transmitters than those used for cellular radio transmissions, since PCS carriers usually have a higher density of base station antenna sites.

The electromagnetic RF/MW radiation transmitted from base station antennas travel toward the horizon in relatively narrow paths. The individual pattern for a single array of sector antennas is wedge-shaped, like a piece of pie. Cellular and PCS base stations in the United States are required to comply with limits for exposure recommended by expert organizations and endorsed by government agencies responsible for health and safety. When cellular and PCS antennas are mounted on rooftops, RF/MW radiation levels on that roof or on others near by would be greater than those typically encountered on the ground.

The telecommunications industry claims cellular antennas are safe because the RF/MW radiation they produce is too weak to cause heating, i.e., a "thermal effect." They point to "safety standards" from groups such as ANSI/IEEE or ICNIRP to support their claims. But these groups have explicitly stated that their claims of “safe RF/MW radiation exposure is harmless” rest on the fact that it is too weak to produce a rise in body temperature, a "thermal effect."[4]

There is a large body of internationally accepted scientific evidence which points to the existence of non-thermal effects of RF/MW radiation. The issue at the present time is not whether such evidence exists, but rather what weight to give it.

Internationally acknowledged experts in the field of RF/MW radiation research have shown that RF/MW transmissions of the type used in digital cellular antennas and phones can have critical effects on cell cultures, animals, and people in laboratories and have also found epidemiological evidence (studies of communities, not in the laboratory) of serious health effects at "non-thermal levels," where the intensity of the RF/MW radiation was too low to cause heating. They have found:

- Increased cell growth of brain cancer cells [5]
- A doubling of the rate of lymphoma in mice [6]
- Changes in tumor growth in rats [7]
- An increased number of tumors in rats [8]
- Increased single- and double-strand breaks in DNA, our genetic material [9]
- 2 to 4 times as many cancers in Polish soldiers exposed to RF [10]
- More childhood leukemia in children exposed to RF [11]
- Changes in sleep patterns and REM type sleep [12]
- Headaches caused by RF/MW radiation exposure [13]
- Neurologic changes [14] including:
    - Changes in the blood-brain-barrier [15]
    - Changes in cellular morphology (including cell death) [16]
    - Changes in neural electrophysiology (EEG) [17]
    - Changes in neurotransmitters (which affect motivation and pain perception) [18]
    - Metabolic changes (of calcium ions, for instance) [19]
    - Cytogenetic effects (which can affect cancer, Alzheimer's, neurodegenerative diseases) [20]
- Decreased memory, attention, and slower reaction time in school children [21]
- Retarded learning in rats indicating a deficit in spatial "working memory" [22]

[23]

Increased blood pressure in healthy men
- Damage to eye cells when combined with commonly used glaucoma medications [24]

Many national and international organizations have recognized the need to define the true risk of low intensity, non-thermal RF/MW radiation exposure, calling for intensive scientific investigation to answer the open questions. These include:

- The World Health Organization, noting reports of "cancer, reduced fertility, memory loss, and adverse changes in the behavior and development of children." [25]
- The U. S. Food and Drug Administration (FDA) [26]
- The International Agency for Research on Cancer (IARC) [27]
- The Swedish Work Environmental Fund [28]
- The National Cancer Institute (NCI) [29]
- The European Commission (EC) [30]
- New Zealand's Ministry of Health [31]
- National Health and Medical Research Council of Australia [32]
- Commonwealth Scientific Industrial Research Organization of Australia (CSIRO) [33]
- The Royal Society of Canada expert group report prepared for Health Canada [34]
- European Union's REFLEX Project (Risk Evaluation of Potential Environmental Hazards from Low Frequency Electromagnetic Field Exposure Using Sensitive *in vitro* Methods) [35]
- The Independent Group on Electromagnetic Fields of the Swedish Radiation Protection Board (SSI) [36]
- The United Kingdom's National Radiological Protection Board (NRPB) [37]
- The EMF-Team Finland's Helsinki Appeal 2005 [38]

Non-thermal effects are recognized by experts on RF/MW radiation and health to be potential health hazards. Safe levels of RF/MW exposure for these low intensity, non-thermal effects have not yet been established.

The FDA has explicitly rejected claims that cellular phones are "safe." [39]

The Environmental Protection Agency (EPA) has stated repeatedly that the current (ANSI/IEEE) RF/MW safety standards protect only against thermal effects. [40]

Many scientists and physicians question the safety of exposure to RF/MW radiation. The CSIRO study, for example, notes that there are no clear cutoff levels at which low intensity RF/MW exposure has no effect, and that the results of ongoing studies will take years to analyze. [41]

Internationally, researchers and physicians have issued statements that biological effects from low-intensity RF/MW radiation exposure are scientifically established:

- The 1998 Vienna-EMF Resolution [42]
- The 2000 Salzburg Resolution on Mobile Telecommunication Base Stations [43]
- The 2002 Catania Resolution [44]
- The 2002 Freiburger Appeal [45]
- The 2004 Report of the European Union's REFLEX Project (Risk Evaluation of Potential Environmental Hazards from Low Frequency Electromagnetic Field Exposure Using Sensitive *in vitro* Methods) [46]
- The 2004 Second Annual Report from Sweden's Radiation Protection Board (SSI) Independent Expert Group on Electromagnetic Fields Recent Research on Mobile Telephony and Health Risks [47]
- [48]Mobile Phones and Health 2004: Report by the Board of NRPB (The UK's National Radiological Protection Board)

The county of Palm Beach, Florida, the City of Los Angeles, California, and the country of New Zealand have all prohibited cell phone base stations and antennas near schools due to safety concerns. The British Columbia Confederation of Parent Advisory Councils [BCCPAC] passed a resolution in 2003 banning cellular antennae from schools and school grounds. This organization is comparable to the Parent Teachers Association (PTA) in the United States. The resolution was directed to B.C. Ministry of Education, B.C. Ministry of Children and Family Development, B.C. School Trustees Association, and B.C. Association of Municipalities.

US Government Information

In the United States, the Federal Communications Commission (FCC) has used safety guidelines for RF/MW radiation environmental exposure since 1985.

The FCC guidelines for human exposure to RF/MW radiation are derived from the recommendations of two organizations,

the National Council on Radiation Protection and Measurements (NCRP) and the Institute of Electrical and Electronics Engineers (IEEE). In both cases, the recommendations were developed by scientific and engineering experts drawn from industry, government, and academia after extensive reviews of the scientific literature related to the biological effects of RF/MW radiation.

Many countries in Europe and elsewhere use exposure guidelines developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). The ICNIRP safety limits are generally similar to those of the NCRP and IEEE, with a few exceptions. For example, ICNIRP recommends different exposure levels in the lower and upper frequency ranges and for localized exposure from certain products such as hand-held wireless telephones. Currently, the World Health Organization is working to provide a framework for international harmonization of RF/MW radiation safety standards.

In order to affirm conformity to standards regarding heating of tissue, measurements are time averaged over 0.1 hours [6 minutes]. This method eliminates any spikes in the readings. Computer power bars have surge protectors to prevent damage to computers. **Fire fighters and emergency medical personnel do not!**

The NCRP, IEEE, and ICNIRP all have identified a whole-body Specific Absorption Rate (SAR) value of 4 watts per kilogram (4 W/kg) as a threshold level of exposure at which harmful biological thermal effects due to tissue heating may occur. Exposure guidelines in terms of field strength, power density and localized SAR were then derived from this threshold value. In addition, the NCRP, IEEE, and ICNIRP guidelines vary depending on the frequency of the RF/MW radiation exposure. This is due to the finding that whole-body human absorption of RF/MW radiation varies with the frequency of the RF signal. The most restrictive limits on whole-body exposure are in the frequency range of 30-300 MHz where the human body absorbs RF/MW energy most efficiently. For products that only expose part of the body, such as wireless phones, exposure limits in terms of SAR only are specified.

Similarly, the exposure limits used by the FCC are expressed in terms of SAR, electric and magnetic field strength, and power density for transmitters operating at frequencies from 300 kHz to 100 GHz. The specific values can be found in two FCC bulletins, OET Bulletins 56 and 65.

OET Bulletin 56, *"Questions and Answers about Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields"* was designed to provide factual information to the public by answering some of the most commonly asked questions. It includes the latest information on FCC guidelines for human exposure to RF/MW radiation. Further information and a downloadable version of Bulletin 56 can be found at: http://new.iaff.org/HS/PDF/FCC%20Bulletin%2056%20-%20EMF.pdf

OET Bulletin 65, *"Evaluating Compliance With FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields"* was prepared to provide assistance in determining whether proposed or existing transmitting facilities, operations or devices comply with limits for human exposure to RF/MW radiation adopted by the Federal Communications Commission (FCC). Further information and a downloadable version of Bulletin 65 can be found at: http://new.iaff.org/HS/PDF/FCC%20Bulletin%2065%20-%20Cell%20Towers.pdf

The FCC authorizes and licenses products, transmitters, and facilities that generate RF and microwave radiation. It has jurisdiction over all transmitting services in the U.S. except those specifically operated by the Federal Government. Under the National Environmental Policy Act of 1969 (NEPA), the FCC has certain responsibilities to consider whether its actions will significantly affect the quality of the human environment. Therefore, FCC approval and licensing of transmitters and facilities must be evaluated for significant impact on the environment. Human exposure to RF radiation emitted by FCC-regulated transmitters is one of several factors that must be considered in such environmental evaluations. In 1996, the FCC revised its guidelines for RF/MW radiation exposure as a result of a multi-year proceeding and as required by the Telecommunications Act of 1996.

For further information and answers to questions about the safety of RF/MW radiation from transmitters and facilities regulated by the FCC go to http://www.fcc.gov/oet/rfsafety/rf-faqs.html.

Canadian Government Information

Industry Canada is the organization that sets regulatory requirements for electromagnetic spectrum management and radio equipment in Canada. Industry Canada establishes standards for equipment certification and, as part of these standards, developed RSS-102, which specifies permissible radiofrequency RF/MW radiation levels. For this purpose, Industry Canada adopted the limits outlined in Health Canada's Safety-Code 6, which is a guideline document for limiting RF exposure. A downloadable version of *"RSS-102 - Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields"*, as well as additional information can be found at: http://new.iaff.org/HS/PDF/Safety%20Code%206.pdf

Safety Code 6 specifies the requirements for the use of radiation emitting devices. This Code replaces the previous Safety Code 6 - EHD-TR-160. A downloadable version of "Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz TO 300 GHz – Safety Code 6", as well as further detailed information can be found at .http://new.iaff.org/HS/PDF/Non-Ionizing%20Radiation%20Volume%2080.pdf

US and Canadian Legal Issues

Although some local and state governments have enacted rules and regulations about human exposure to RF/MW radiation in the past, the Telecommunications Act of 1996 requires the United States Federal Government to control human exposure to RF/MW radiation. In particular, Section 704 of the Act states that, "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." Further information on federal authority and FCC policy is available in a fact sheet from the FCC's Wireless Telecommunications Bureau at www.fcc.gov/wtb.

In a recent opinion filed by Senior Circuit Judge Stephen F. Williams, No. 03-1336 *EMR Network v. Federal Communications Commission and United States of America*, the Court upheld the FCC's decision not to initiate an inquiry on the need to revise its regulations to address non-thermal effects of radiofrequency (RF) radiation from the facilities and products subject to FCC regulation as EMR Network had requested in its September 2001 Petition for Inquiry.

At the request of the EMR Network, the EMR Policy Institute provided legal and research support for this appeal. On January 13, 2005, a Petition for Rehearing *en banc* by the full panel of judges at the DC Circuit Court of Appeals was filed. Briefs, background documents and the DC Circuit decision are found at: http://www.emrpolicy.org/litigation/case_law/index.htm.

The Toronto Medical Officer of Health for the Toronto Board of Health recommended to Health Canada that public exposure limits for RF/MW radiation be made 100 times stricter; however the recommendation was not allowed, since, as in the US, only the Canadian federal government can regulate RF/MW radiation exposure level.

World Health Organization Efforts

In 1996, the World Health Organization (WHO) established the International EMF Project to review the scientific literature and work towards resolution of health concerns over the use of RF/MW technology. WHO maintains a Web site that provides addition information on this project and about RF/MW biological effects and research. For further information go to http://www.who.int/peh-emf/en/.

Conclusion

For decades, the International Association of Fire Fighters has been directly involved in protecting and promoting the health and safety of our membership. However, we simply don't know at this time what the possible health consequences of long-term-exposure to low-intensity RF/MW radiation of the type used by the cell phone base stations and antennas will be. No one knows--the data just aren't there. The chairman of the International Commission on Non-Ionizing Radiation Protection ICNIRP), one of the leading international organizations which formulated the current RF/MW radiation exposure guidelines, has stated that the guidelines include "no consideration regarding prudent avoidance" for health effects for which evidence is less than conclusive [(49)]

Again, fire department facilities, where fire fighters and emergency response personnel live and work are not the proper place for a technology which could endanger their health and safety

The only reasonable and responsible course is to conduct a study of the highest scientific merit and integrity on the RF/MW radiation health effects to our membership and, in the interim, oppose the use of fire stations as base stations for towers and/or antennas for the conduction of cell phone transmissions until it is proven that such sitings are not hazardous to the health of our members.

Footnotes

[back] 1. **Revised and Amended IAFF Resolution No. 15; August 2004**

Study of Firefighters Exposed to Radio Frequency (RF) Radiation from Cell Towers/Masts

WHEREAS, fire stations across the United States and Canada are being sought by wireless companies as base stations for the antennas and towers for the conduction of cell phone transmissions; and

WHEREAS, many firefighters who are living with cell towers on or adjacent to their stations are paying a substantial price in terms of physical and mental health. As first responders and protectors of the general public, it is crucial that firefighters are functioning at optimal cognitive and physical capacity at all times; and

WHEREAS, the brain is the first organ to be affected by RF radiation and symptoms manifest in a multitude of neurological conditions including migraine headaches, extreme fatigue, disorientation, slowed reaction time, vertigo, vital memory loss

and attention deficit amidst life threatening emergencies; and

WHEREAS, most of the firefighters who are experiencing symptoms can attribute the onset to the first week(s) these towers/antennas were activated; and

WHEREAS, RF radiation is emitted by these cellular antennas and RF radiation can penetrate every living cell, including plants, animals and humans; and

WHEREAS, both the U. S. and Canadian governments established regulatory limits for RF radiation based on thermal (heat) measurements with no regard for the adverse health effects from non-thermal radiation which is proven to harm the human brain and immune system; and

WHEREAS, the U. S. Environmental Protection Agency stated in a July 16, 2002, letter, "Federal health and safety agencies have not yet developed policies concerning possible risk from long-term, non-thermal exposures. The FCC's exposure guideline is considered protective of effects arising from a thermal mechanism (RF radiation from cell towers is non-thermal) but not from all possible mechanisms. Therefore, the generalization by many that the guidelines protecting human beings from harm by any or all mechanisms is not justified"; and

WHEREAS, an Expert Panel Report requested by the Royal Society of Canada prepared for Health Canada (1999) stated that, "Exposure to RF fields at intensities far less than levels required to produce measurable heating can cause effects in cells and tissues. These biological effects include alterations in the activity of the enzyme ornithine decarboxylase, in calcium regulation, and in the permeability of the blood-brain barrier. Some of these biological effects brought about by non-thermal exposure levels of RF could potentially be associated with adverse health effects"; and

WHEREAS, based on concerns over growing scientific evidence of dangers from RF radiation, an international conference was convened in Salzburg, Austria, in the summer of 2000 where renowned scientists declared the upper-most RF radiation exposure limit from a tower-mast should be 1/10th of 1 microwatt (Note that 1/10th of 1 microwatt is 10,000 times lower than the uppermost limit allowed by the U. S. or Canada.); and it should be noted this limit was set because of study results showing brain wave changes at 1/10th of 1 microwatt; and

WHEREAS, in a recently cleared paper by Dr. Richard A. Albanese of the U. S. Air Force, a highly recognized physician in the area of the impact of radiation on the human body, Dr. Albanese states, "I would ask a good faith effort in achieving as low exposure rates as are possible within reasonable financial constraints. Also I would fund targeted studies using animal subjects and human groups living or working in high radiation settings or heavy cellular phone users, emphasizing disease causations. I urge acceptance of the ideal that there should be no unmonitored occupational or environmental exposures whose associated disease rates are unknown." (The opinions expressed herein are those of Dr. Albanese, and do not reflect the policies of the United States Air Force.); and

WHEREAS, recently a study, not affiliated with the wireless industry, was conducted of firefighters exposed to RF radiation from cell towers/antennas affixed to their stations.** The study revealed brain damage that can be differentiated from chemical causation (such as inhalation of toxic smoke) suggesting RF radiation as the cause of the brain damage found on SPECT scans; and

WHEREAS, firefighters are the protectors of people and property and should be protected under the Precautionary Principle of Science and therefore, unless radiation is proven safe and harmless, cellular antennas should not be placed on or near fire stations; therefore be it

RESOLVED, That the IAFF shall seek funding for an initial U. S. and Canadian study with the highest scientific merit and integrity, contrasting firefighters with residence in stations with towers to firefighters without similar exposure; and be it further

RESOLVED, That in accordance with the results of the study, the IAFF will establish protective policy measures with the health and safety of all firefighters as the paramount objective; and be it further

RESOLVED, That the IAFF oppose the use of fire stations as base stations for antennas and towers for the conduction of cell phone transmissions until such installations are proven not to be hazardous to the health of our members.

**Note: A pilot study was conducted in 2004 of six California fire fighters working and sleeping in stations with towers. The study, conducted by Gunnar Heuser, M.D., PhD. of Agoura Hills, CA, focused on neurological symptoms of six fire fighters who had been working for up to five years in stations with cell towers. Those symptoms included slowed reaction time, lack of focus, lack of impulse control, severe headaches, anesthesia-like sleep, sleep deprivation, depression, and tremors. Dr. Heuser used functional brain scans - SPECT scans - to assess any changes in the brains of the six fire fighters as compared to healthy brains of men of the same age. Computerized psychological testing known as TOVA was used to study reaction time, impulse control, and attention span. The SPECT scans revealed a pattern of abnormal change which was concentrated over a wider area than would normally be seen in brains of individuals exposed to toxic inhalation, as might be expected from fighting fires. Dr. Heuser concluded the only plausible explanation at this time would be RF radiation exposure. Additionally, the TOVA testing revealed among the six fire fighters delayed reaction time, lack of impulse control, and difficulty in maintaining mental focus.

[back] 2. An international blue ribbon panel assembled by the National Institute of Environmental Health Sciences (NIEHS) designated power frequency electromagnetic fields (EMF) as "possible human carcinogens" on June 24, 1998. The panel's decision was based largely on the results of epidemiological studies of children exposed at home and workers exposed on the job. The evaluation of the EMF literature followed procedures developed by the International Agency for Research on Cancer (IARC), based in Lyon, France. The working group's report will be the basis for the NIEHS report to Congress on the EMF Research and Public Information Dissemination program (EMF RAPID). The National Radiological Protection Board (NRPB) of the United Kingdom noted that the views of its Advisory Group on Non-Ionizing Radiation are "consistent with those of the NIEHS expert panel."

June 26, 1998 statement of the National Radiological Protection Board, sited in Microwave News, July/August 1998

[back] 3. *World Health Organization; International Agency for Research on Cancer; IARC Monographs on the Evaluation of Carcinogenic Risks to Humans; Volume 80 Non-Ionizing Radiation, Part 1: Static and Extremely Low-Frequency (ELF) Electric and Magnetic Fields; 2002; 429 pages; ISBN 92 832 1280 0;* See http://monographs.iarc.fr/ENG/Monographs/vol80/volume80.pdf This IARC Monograph provides the rationale for its designation of ELF/EMF as a possible human carcinogen. It states that:

A few studies on genetic effects have examined chromosomal aberrations and micronuclei in lymphocytes from workers exposed to ELF electric and magnetic fields. In these studies, confounding by genotoxic agents (tobacco, solvents) and comparability between the exposed and control groups are of concern. Thus, the studies reporting an increased frequency of chromosomal aberrations and micronuclei are difficult to interpret.

Many studies have been conducted to investigate the effects of ELF magnetic fields on various genetic end-points. Although increased DNA strand breaks have been reported in brain cells of exposed rodents, the results are inconclusive; most of the studies show no effects in mammalian cells exposed to magnetic fields alone at levels below 50 μT. However, extremely strong ELF magnetic fields have caused adverse genetic effects in some studies. In addition, several groups have reported that ELF magnetic fields enhance the effects of known DNA- and chromosome-damaging agents such as ionizing radiation.

The few animal studies on cancer-related non-genetic effects are inconclusive. Results on the effects on in-vitro cell proliferation and malignant transformation are inconsistent, but some studies suggest that ELF magnetic fields affect cell proliferation and modify cellular responses to other factors such as melatonin. An increase in apoptosis following exposure of various cell lines to ELF electric and magnetic fields has been reported in several studies with different exposure conditions. Numerous studies have investigated effects of ELF magnetic fields on cellular end-points associated with signal transduction, but the results are not consistent.

[back] 4. The International Commission on Non-Ionizing Radiation Protection (ICNIRP) statement "Health Issues Related to the Use of Hand-Held Radiotelephones and Base Transmitters" of 1996 reads:

"Thermally mediated effects of RF fields have been studied in animals, including primates. These data suggest effects that will probably occur in humans subjected to whole body or localized heating sufficient to increase tissue temperatures by greater than 1C. They include the induction of opacities of the lens of the eye, possible effects on development and male fertility, various physiological and thermoregulatory responses to heat, and a decreased ability to perform mental tasks as body temperature increases. Similar effects have been reported in people subject to heat stress, for example while working in hot environments or by fever. The various effects are well established and form the biological basis for restricting occupational and public exposure to radiofrequency fields. In contrast, non-thermal effects are not well established and currently do not form a scientifically acceptable basis for restricting human exposure for frequencies used by hand-held radiotelephones and base stations."

International Commission on Non-Ionizing Radiation Protection, "Health Issues Related to the Use of Hand-Held Radiotelephones and Base Transmitters," Health Physics 70:587-593, 1996

The ANSI/IEEE Standard for Safety Levels of 1992 similarly states:

"An extensive review of the literature revealed once again that the most sensitive measurements of potentially harmful biological effects were based on the disruption of ongoing behavior associated with an increase of body temperature in the presence of electromagnetic fields. Because of the paucity of reliable data on chronic exposures, IEEE Subcommittee IV focused on evidence of behavioral disruption under acute exposures, even disruption of a transient and fully reversible nature."

IEEE Standards Coordinating committee 28 on Non-Ionizing Radiation Hazards: Standard for Safe Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 KHz to 300 GHz (ANSI/IEEE C95.1-1991), The Institute of Electrical and Electronics Engineers, New York, 1992.

[back] 5. Drs. Czerska, Casamento, Ning, and Davis (working for the Food and Drug Administration in 1997) using "a waveform identical to that used in digital cellular phones" at a power level within our current standards (SAR of 1.6 W/Kg, the

maximum spatial peak exposure level recommended for the general population in the ANSI C95.1-1991 standard) found increases in cellular proliferation in human glioblastoma cells. This shows that "acceptable" levels of radiation can cause human cancer cells to multiply faster. The authors note that "because of reported associations between cellular phone exposure and the occurrence of a brain tumor, glioblastoma, a human glioblastoma cell line was used" in their research.

E.M. Czerska, J. Casamento, J. T. Ning, and C. Davis, "Effects of Radiofrequency Electromagnetic Radiation on Cell Proliferation," [Abstract presented on February 7, 1997 at the workshop 'Physical Characteristics and Possible Biological Effects of Microwaves Applied in Wireless Communication, Rockville, MD] E. M. Czerska, J. Casamento Centers for Devices and Radiological Health, Food and Drug Administration, Rockville, Maryland 20857, USA; H. T. Ning, Indian Health Service, Rockville, Maryland 20857, USA; C. Davis, Electrical Engineering Dept., Univ. of Maryland, College Park, Maryland 20742, USA

[back] 6. Dr. Michael Repacholi (in 1997, currently the director of the International Electromagnetic Fields Project at the World Health Organization) took one hundred transgenic mice and exposed some to radiation for two 30 minute periods a day for up to 18 months. He found that the exposed mice developed lymphomas (a type of cancer) at twice the rate of the unexposed mice. While telecommunications industry spokespersons criticized the experiment for using mice with a mutation which predisposed them to cancer (transgenic) the researchers pointed out that "some individuals inherit mutations in other genes...that predispose them to develop cancer, and these individuals may comprise a subpopulation at special risk from agents that would pose an otherwise insignificant risk of cancer."

Dr. Repacholi stated "I believe this is the first animal study showing a true non-thermal effect." He repeated the experiment in 1998 using 50 Hz fields instead of the 900 MHz pulsed radiation (the type used by cellular phones) used in the original experiment and found no cancer risk. He stated that this new data had implications for his original cellular phone study: "the control groups for both our RF and 50 Hz field studies showed no statistical differences, which lessens the possibility that the RF/MW radiation study result was a chance event or due to errors in methodology."

It is extremely important to note that Dr. Michael Repacholi was Chairman of the ICNIRP at the time its Statement on Health Issues Related to the Use of Hand-Held Radiotelephones and Base Transmitters was developed in 1996.

M. Repacholi et al., "Lymphomas in Eμ-Pim1 Transgenic Mice Exposed to Pulsed 900 MHz Electromagnetic Fields," Radiation Research, 147, pp.631-640, May 1997

[back] 7. Dr. Ross Adey (Veterans Administration Hospital at Loma Linda University in 1996) found what appeared to be a protective effect in rats exposed to the type of radiation used in digital cellular phones. The rats were exposed to an SAR of 0.58-0.75 W/Kg 836 MHz pulsed radiation of the TDMA type two hours a day, four days a week for 23 months, with the signals turned on and off every 7.5 minutes, so total exposure was 4 hours a week. Interestingly this effect was not present when a non-digital, analog signal was used. Rats exposed developed cancer less often. This study shows that low power fields of the digital cellular frequency can influence cancer development. Whether they would protect or promote in our children is a question for further study.

Ross Adey of the Veterans Administration Hospital at Loma Linda University, CA presented the results of pulsed (digital cellular) radiation on June 13, 1996 at the 18th Annual Meeting of the Bioelectromagnetics Society in Victoria, Canada. He presented the findings of the analog cellular phone radiation effect at the June 1997 2nd World Congress for Electricity and Magnetism in Biology and Medicine in Bologna, Italy. Reviews can be found in Microwave News issues July/August, 1996 and March/April 1997.

In recognition of his more than three decades of "fundamental contributions to the emerging science of the biological effects of electromagnetic fields," the authors of the November 2004 Report of the European Union's REFLEX Project (*Risk Evaluation of Potential Environmental Hazards From Low Frequency Electromagnetic Field Exposure Using Sensitive in vitro Methods*) chose to include Dr. Adey's personal views on Electromagnetic Field Exposure research as the Foreword to that report. To view the entire report, see: REFLEX Final Report.pdf

The following is taken from Dr. Adey's Foreword found on pages 1-3 of the REFLEX Report:

The Future of Fundamental Research in a Society Seeking Categoric Answers to Health Risks of New Technologies

In summary, we have become superstitious users of an ever-growing range of technologies, but we are now unable to escape the web that they have woven around us.

Media reporters in general are no better informed. Lacking either responsibility or accountability, they have created feeding frenzies from the tiniest snippets of information gleaned from scientific meetings or from their own inaccurate interpretation of published research. In consequence, the public has turned with pleading voices to government legislatures and bureaucracies for guidance . . .

We face the problem brought on by the blind leading the blind. Because of public pressure for rapid answers to very complex

biological and physical issues, short-term research programs have been funded to answer specific questions about certain health risks.

In many countries, and particularly in the USA, the effects of such harassing and troublesome tactics on independent, careful fundamental research have been near tragic. Beguiled by health hazard research as the only source of funding, accomplished basic scientists have diverted from a completely new frontier in physical regulation of biological mechanisms at the atomic level. Not only have governments permitted corporate interests in the communications industry to fund this research, they have even permitted them to determine the research questions to be addressed and to select the institutions performing the research.

[back] 8. Dr. A. W. Guy reported an extensive investigation on rats chronically exposed from 2 up to 27 months of age to low-level pulsed microwaves at SARs up to 0.4 W/Kg. The exposed group was found to have a significantly higher incidence of primary cancers.

A. W. Guy, C. K. Chou, L. Kunz, L, Crowley, and J. Krupp, "Effects of Long-Term Low-Level Radiofrequency Radiation Exposure on Rats." Volume 9. Summary. Brooks Air Force Base, Texas, USAF School of Aerospace Medicine, USF-SAM-TR-85-11; 1985

[back] 9. Drs. Henry Lai and N. P. Singh of the University of Washington in Seattle have reported both single- and double-strand DNA breaks in the brains of rats exposed to radiofrequency electromagnetic radiation at an SAR of 1.2 W/Kg. DNA is the carrier of the genetic information in all living cells. Cumulated DNA strand breaks in brain cells can lead to cancer or neurodegenerative diseases.

H. Lai and N. P. Singh, "Single- and Double-Strand DNA Breaks in Rat Brain Cells After Acute Exposure to Radiofrequency Electromagnetic Radiation," International Journal of Radiation Biology, Vol 69, No. 4, 513-521, 1996

[back] 10. Dr. Stanislaw Szmigielski has studied many thousands of Polish soldiers. He has found that those exposed to radiofrequency and microwave radiation in the workplace had more than double the cancer rate of the unexposed servicemen analyzing data from 1971-1985. He has presented further data suggesting a dose-response relationship with soldiers exposed to 100-200 W/cm^2 suffering 1.69 times as many cancers as the unexposed, and those exposed to 600-1000 W/cm^2 suffering 4.63 times as many cancers. The level considered safe for the public according to FCC regulations is 1000 W/cm^2. Occupational exposure up to 5000 W/cm^2 is allowed.

S. Szmigielski, "Cancer Morbidity in Subjects Occupationally Exposed to High Frequency (Radiofrequency and Microwave) Electromagnetic Radiation," The Science of the Total Environment 180:9-17, 1996

[back] 11. Dr. Bruce Hocking found an association between increased childhood leukemia incidence and mortality in the proximity of television towers. The power density ranged from 0.2-8.0 W/cm^2 nearer and 0.02 W/cm^2 farther from the towers.

B. Hocking, I. R. Gordon, H. L. Grain, and G. E. Hatfield, "Cancer Incidence and Mortality and Proximity to TV Towers," Medical Journal of Australia 165: 601-605; 1996

[back] 12. Drs. Mann and Röschke investigated the influence of pulsed high-frequency RF/MW radiation of digital mobile radio telephones on sleep in healthy humans. They found a hypnotic effect with shortening of sleep onset latency and a REM (Rapid Eye Movement) suppressive effect with reduction of duration and percentage of REM sleep. "REM sleep plays a special physiological role for information processing in the brain, especially concerning consolidation of new experiences. Thus the effects observed possibly could be associated with alterations of memory and learning functions."

K. Mann and J. Röschke, "Effects of Pulsed High-Frequency Electromagnetic Fields on Human Sleep," Neuropsychobiology 33:41-47, 1996

[back] 13. Dr. Allen Frey has been researching RF/MW radiation for over 3 decades. Here is the abstract on a paper concerning headaches and cellular phone radiation. "There have been numerous recent reports of headaches occurring in association with the use of hand-held cellular telephones. Are these reported headaches real? Are they due to emissions from telephones? There is reason to believe that the answer is "yes" to both questions. There are several lines of evidence to support this conclusion. First, headaches as a consequence of exposure to low intensity microwaves were reported in the literature 30 years ago. These were observed during the course of microwave hearing research before there were cellular telephones. Second, the blood-brain barrier appears to be involved in headaches, and low intensity microwave energy exposure affects the barrier. Third, the dopamine-opiate systems of the brain appear to be involved in headaches, and low intensity electromagnetic energy exposure affects those systems. In all three lines of research, the microwave energy used was approximately the same--in frequencies, modulations, and incident energies--as those emitted by present day cellular telephones, Could the current reports of headaches be the canary in the coal mine, warning of biologically significant effects?"

A. H. Frey, "Headaches from Cellular Telephones: Are they Real and What Are the Implications?" Environmental Health

Perspectives Volume 106, Number 3, pp.101-103, March 1998

[back] 14. Henry Lai's review of the literature concerning neurological effects of RF/MW radiation: Existing data indicate that RF/MW radiation of relatively low intensity can affect the nervous system. Changes in blood-brain barrier, morphology, electrophysiology, neurotransmitter functions, cellular metabolism, and calcium efflux, and genetic effects have been reported in the brain of animals after exposure to RF. These changes can lead to functional changes in the nervous system. Behavioral changes in animals after exposure to RR have been reported.

Even a temporary change in neural functions after RF/MW radiation exposure could lead to adverse consequences. For example, a transient loss of memory function or concentration could result in an accident when a person is driving. Loss of short term working memory has indeed been observed in rats after acute exposure to RF/MW radiation.

Research has also shown that the effects of RF/MW radiation on the nervous system can cumulate with repeated exposure. The important question is, after repeated exposure, will the nervous system adapt to the perturbation and when will homeostasis break down? Related to this is that various lines of evidence suggest that responses of the central nervous system to RF/MW radiation could be a stress response. Stress effects are well known to cumulate over time and involve first adaptation and then an eventual break down of homeostatic processes.

H. Lai, "Neurological Effects of Radiofrequency Electromagnetic Radiation Relating to Wireless Communication Technology," Paper presentation at the IBC-UK Conference: "Mobile Phones-Is There a Health Risk?" September 16-17, 1997, Brussels, Belgium

[back] 15. Blood-Brain-Barrier: The blood-brain-barrier (BBB) is primarily a continuous layer of cells lining the blood vessels of the brain. It is critical for regulation of the brain's activity. Lai notes that "Even though most studies indicate that changes in the BBB occurs only after exposure to RF/MW radiation of high intensities with significant increase in tissue temperature, several studies have reported increases in permeability after exposure to RF/MW radiation of relatively low intensities...Pulsed RF seems to be more potent than continuous wave RF." Pulsed RF/MW is the type used in digital cellular systems. Effects on the BBB were noted at the 0.2 W/cm^2 level, and even at SAR of 0.016-5 W/kg. These effects could lead to local changes in brain function.

H. Lai, Ibid

[back] 16. Cellular Morphology: RF/MW radiation induced morphological changes of the central nervous system cells and tissues have been shown to occur under relatively high intensity or prolonged exposure to the RF/MW radiation. However, there are several studies which show that repeated exposure at relatively low power intensities caused morphological changes in the central nervous system. Again here pulsed (as in digital phone use) RF/MW radiation produced more pronounced effects. Certain drugs given to nonhuman primates sensitized them, for instance allowing eye damage to occur at very low power intensities. Dr Lai notes "Changes in morphology, especially cell death, could have an important implication on health. Injury-induced cell proliferation has been hypothesized as a cause of cancer." Some of these experiments were in the range of SAR 0.53 W/kg or even 0.26 W/kg.

H. Lai, Ibid

[back] 17. Neural Electrophysiology: Changes in neuronal electrophysiology, evoked potentials, and EEG have been reported. Some effects were observed at low intensities and after repeated exposure, suggesting cumulative effect. Energy density levels were as low as 50 W/cm^2.

H. Lai, Ibid

[back] 18. Neurotransmitters: Neurotransmitters are molecules which transmit information from one nerve cell to another. Early studies have reported changes in various neurotransmitters (catecholamines, serotonin, and acetylcholine) in the brain of animals only after exposure to high intensities of RF/MW radiation. However, there are more recent studies that show changes in neurotransmitter functions after exposure to low intensities of RF radiation. For example, effects were seen at 50 μW/cm^2 in one experiment. U.S. and Canadian RF/MW radiation safety policies allow exposures of 1000 μW/cm^2 at that frequency.

RF/MW radiation activates endogenous opioids in the brain. Endogenous opioids are neurotransmitters with morphine-like properties and are involved in many important physiological and behavioral functions, such as pain perception and motivation.

The response to RF/MW radiation depends on the area of the brain studied and on the duration of exposure. Exposure to RF/MW radiation has been shown to affect the behavioral actions of benzodiazepines (these are drugs such as Valium).

H. Lai, Ibid

[back] 19. Metabolic Changes in Neural Tissue: Several studies investigated the effects of RF/MW radiation exposure on

energy metabolism in the rat brain. Surprisingly, changes were reported after exposure to relatively low intensity RF/MW radiation for a short duration of time (minutes). The effects depended on the frequency and modulation characteristics of the RF/MW radiation and did not seem to be related to temperature changes in the tissue.

Calcium ions play important roles in the functions of the nervous system, such as the release of neurotransmitters and the actions of some neurotransmitter receptors. Thus changes in calcium ion concentration could lead to alterations in neural functions. This is an area of considerable controversy because some researchers have also reported no significant effects of RF/MW radiation exposure on calcium efflux. However, when positive effects were observed, they occurred after exposure to RF/MW radiation of relatively low intensities and were dependent on the modulation and intensity of the RF/MW radiation studied (window effects). Some studies had SARs as low as 0.05-0.005 W/Kg.

H. Lai, Ibid

[back] 20. Cytogenetic effects have been reported in various types of cells after exposure to RF/MW radiation. Recently, several studies have reported cytogenetic changes in brain cells by RF/MW radiation , and these results could have important implication for the health effects of RF/MW radiation . Genetic damage to glial cells can result in carcinogenesis. However, since neurons do not undergo mitosis, a more likely consequence of neuronal genetic damage is changes in functions and cell death, which could either lead to or accelerate the development of neurodegenerative diseases. Power densities of 1 mW/cm^2 were employed, a level considered safe for the public by the FCC.

RF/MW radiation -induced increases in single and double strand DNA breaks in rats can be blocked by treating the rats with melatonin or the spin-trap compound N-t-butyl--phenylnitrone. Since both compounds are potent free radical scavengers, these data suggest that free radicals may play a role in the genetic effect of RF. If free radicals are involved in the RF-induced DNA strand breaks in brain cells, results from this study could have an important implication on the health effects of RF exposure. Involvement of free radicals in human diseases, such as cancer and atherosclerosis, has been suggested. Free radicals also play an important role in the aging process, which has been ascribed to be a consequence of accumulated oxidative damage to body tissues, and involvement of free radicals in neurodegenerative diseases, such as Alzheimer's, Huntington, and Parkinson, has also been suggested. One can also speculate that some individuals may be more susceptible to the effects of RF/MW radiation exposure.

H. Lai, Ibid

[back] 21. Dr. A. A. Kolodynski and V. V. Kolodynska of the Institute of Biology, Latvian Academy of Sciences, presented the results of experiments on school children living in the area of the Skrunda Radio Location Station in Latvia. Motor function, memory, and attention significantly differed between the exposed and control groups. The children living in front of the station had less developed memory and attention and their reaction time was slower.

A. A. Kolodynski, V. V. Kolodynska, "Motor and Psychological Functions of School Children Living in the Area of the Skrunda Radio Location Station in Latvia," The Science of the Total Environment 180:87-93, 1996

[back] 22. Dr. H. Lai and colleagues in 1993 exposed rats to 45 minutes of pulsed high frequency RF/MW radiation at low intensity and found that the rats showed retarded learning, indicating a deficit in spatial "working memory" function.

H Lai, A. Horita, and A. W. Guy, "Microwave Irradiation Affects Radial-Arm Maze Performance in the Rat," Bioelectromagnetics 15:95-104, 1994

NOTE: *Dr. Lai's January 2005 compilation of published RF/MW radiation studies demonstrating biological effects of exposure to low-intensity RF/MW radiation is included as a Reference section at the end of this report.*

[back] 23. Dr. Stefan Braune reported a 5-10 mm Hg resting blood pressure rise during exposure to RF/MW radiation of the sort used by cellular phones in Europe. The Lancet, the British medical journal where the report appeared, stated that "Such an increase could have adverse effects on people with high blood pressure."

S. Braune, "Resting Blood Pressure Increase During Exposure to a Radio-Frequency Electromagnetic Field," The Lancet 351, pp. 1,857-1,858, 1998

[back] 24. Dr. Kues and colleagues (of Johns Hopkins University and the Food and Drug Administration) found that placing timolol and pilocarpine into the eyes of monkeys and then exposing them to low power density pulsed RF/MW radiation caused a significant reduction in the power-density threshold for causing damage to the cells covering the eye and the iris. In fact the power was reduced by a factor of 10, so that it entered the "acceptable, safe" level of the FCC, 1 mW/cm^2! Timolol and pilocarpine are commonly used by people suffering from glaucoma. This is a very important study, as it points to the fact that laboratory experiments under "ideal" conditions are rarely what one finds in real life. The "safe" level of RF/MW radiation exposure for healthy people is likely to be very different than for those of us who suffer from illness, take medications, or are perhaps simply younger or older than those in the experiments.

H. A. Kues, J. C. Monahan, S. A. D'Anna, D. S. McLeod, G. A. Lutty, and S. Koslov, "Increased Sensitivity of the Non-Human

Primate Eye to Microwave Radiation Following Ophthalmic Drug Pretreatment," Bioelectromagnetics 13:379-393, 1992

[back] 25. The World Health Organization states that "concerns have been raised about the safety of cellular mobile telephones, electric power lines and police speed-control 'radar guns.' Scientific reports have suggested that exposure to electromagnetic fields emitted from these devices could have adverse health effects, such as cancer, reduced fertility, memory loss, and adverse changes in the behaviour and development of children." Therefore, "In May 1996, in response to growing public health concerns in many Member States over possible health effects from exposure to an ever-increasing number and diversity of EMF sources, the World Health Organization launched an international project to assess health and environmental effects of exposure to electric and magnetic fields, which became known as the International EMF Project. The International EMF Project will last for five years." "A number of studies at [frequencies above about 1 MHz] suggest that exposure to RF fields too weak to cause heating may have adverse health consequences, including cancer and memory loss. Identifying and encouraging coordinated research into these open questions is one of the major objectives of the International EMF Project."

World Health Organization Fact Sheet N181, "Electromagnetic Fields and Public Health, The International EMF Project," reviewed May 1998 and World Health Organization Fact Sheet N182, "Electromagnetic Fields and Public Health, Physical Properties and Effects on Biological Systems," reviewed May 1998,

[back] 26. The U. S. Food and Drug Administration in a January 14, 1998 letter to the House Telecommunications Subcommittee stated it "believes additional research in the area of RF is needed." In 1997 the FDA established the following priorities:

- Chronic (lifetime) animal exposures should be given the highest priority.
- Chronic animal exposures should be performed both with and without the application of chemical initiating agents to investigate tumor promotion in addition to tumorigenesis.
- Identification of potential risks should include end points other than brain cancer (e.g. ocular effects of RF radiation exposure).
- Replication of prior studies demonstrating positive biological effects work is needed. A careful replication of the Chou and Guy study (*Bioelectromagnetics, 13,* pp.469-496, 1992) which suggests that chronic exposure of rats to microwaves is associated with an increase in tumors, would contribute a great deal to the risk identification process for wireless communication products.
- Genetic toxicology studies should focus on single cell gel studies of DNA strand breakage and on induction of micronuclei.
- Epidemiology studies focused on approaches optimized for hazard identification are warranted.

Food and Drug Administration Recommendations quoted in Microwave News, March/April, 1997

[back] 27. The International Agency for Research on Cancer (IARC) is planning a multi-country, multi-million dollar study of cancer among users of wireless phones, beginning 1998. *Microwave News, January/February, 1998*

[back] 28. The Swedish Work Environmental Fund initiated a new epidemiological study on cellular phone radiation and brain tumors in 1997. *Microwave News, November/December, 1997*

[back] 29. The National Cancer Institute announced plans for a 5 year study of brain tumors and RF/MW radiation in 1993. *Microwave News, January/February, 1993*

[back] 30. The European Commission (EC) Expert Group on health effects of wireless phones called for a 5 year research program with a $20 million budget, reported 1997. *Microwave News , January/February, 1997*

[back] 31. A report commissioned by New Zealand's Ministry of Health stated that "It is imperative that the scientific issues be clarified as soon as possible, as there is much at stake." It called for more research to examine the potential health effects of RF radiation. *Microwave News, November/December, 1996*

[back] 32. The National Health and Medical Research Council of Australia announced its sponsorship of a 5 year, $3.5 million project on potential health effects of mobile phone technology in 1996. *Microwave News, November/December, 1996*

[back] 33. The Commonwealth Scientific Industrial Research Organization (CSIRO) of Australia concluded in 1995 that the safety of cellular telephones cannot be resolved "in the near future." Dr. Stan Barnett, a principal researcher of CSIRO, states that "My goal is to establish a national committee to approach this problem by coordinating relevant and focused research." He estimated a budget of $3 million over a 3 year period would be necessary.

Commonwealth Scientific Industrial Research Organization, "Status of Research on Biological Effects and Safety of

Electromagnetic Radiation: Telecommunications Frequencies," a report prepared by Dr. Stan Barnett, as sited in Microwave News, September/October, 1995

[back] 34. In Canada, Expert Panels are formed in response to requests from governments and other organizations for guidance on public policy issues where specialized knowledge is required. The Royal Society of Canada (RSC) is the only national academic organization, encompassing all fields of study in the sciences, arts and humanities that provides, through its Committee on Expert Panels, a service to Canadians by convening Expert Panels that produce publicly disseminated, arms-length, third party reviews. The most recent Expert Panel report addressing RF/MW radiation examines new data on dosimetry and exposure assessment, thermoregulation, biological effects such as enzyme induction, and toxicological effects, including genotoxicity, carcinogenicity, and testicular and reproductive outcomes. Epidemiological studies of mobile phone users and occupationally exposed populations are examined, along with human and animal studies of neurological and behavioural effects. All of the authoritative reviews completed within the last two years have supported the need for further research to clarify the possible associations between RF fields and adverse health outcomes that have appeared in some reports. See: http://www.rsc.ca//index.php?lang_id=1&page_id=120.

Recent Advances in Research on Radiofrequency Fields and Health: 2001-2003; A Follow-up to The Royal Society of Canada, Report on the Potential Health Risks of Radiofrequency Fields from Wireless Telecommunication Devices, 1999

[back] 35. The European Union effort to address this issue is in the study *Risk Evaluation of Potential Environmental Hazards from Low Energy Electromagnetic Field Exposure Using Sensitive in vitro Methods* (REFLEX). Exposure to electromagnetic fields (EMF) in relation to health is a controversial topic throughout the industrial world. So far epidemiological and animal studies have generated conflicting data and thus uncertainty regarding possible adverse health effects. This situation has triggered controversies in communities especially in Europe with its high density of population and industry and the omnipresence of EMF in infrastructures and consumer products. These controversies are affecting the siting of facilities, leading people to relocate, schools to close or power lines to be re-sited, all at great expense. The European Union believes that causality between EMF exposure and disease can never be regarded as proven without knowledge and understanding of the basic mechanisms possibly triggered by EMF. To search for those basic mechanisms powerful technologies developed in toxicology and molecular biology were to be employed in the REFLEX project to investigate cellular and sub-cellular responses of living cells exposed to EMF in vitro.

The REFLEX data have made a substantial addition to the data base relating to genotoxic and phenotypic effects of both ELF-EMF and RF-EMF on *in vitro* cellular systems. While the data neither precludes nor confirms a health risk due to EMF exposure nor was the project designed for this purpose, the value lies in providing new data that will enable mechanisms of EMF effects to be studied more effectively than in the past. Furthermore, the REFLEX data provide new information that will be used for risk evaluation by WHO, IARC and ICNIRP. For further information on REFLEX see: http://europa.eu.int/comm/research/quality-of-life/ka4/ka4_electromagnetic_en.html

[back] 36. The Swedish Radiation Protections Institute (SSI) endeavors to ensure that human beings and the environment are protected from the harmful effects of radiation, both in the present and in the future. SSI has focused on epidemiological research on cancer and exposure from mobile phones and transmitters as well as experimental cancer research. In addition three selected topics were also discussed, namely blood-brain barrier, heat shock proteins, and precautionary framework. For further information on SSI see: http://www.ssi.se/forfattning/eng_forfattlista.html

[back] 37. In the United Kingdom, the National Radiological Protection Board (NRPB) was created by the Radiological Protection Act 1970. The statutory functions of NRPB are to advance the acquisition of knowledge about the protection of mankind from radiation hazards through research and to provide information and advice to persons (including Government Departments) with responsibilities in the United Kingdom in relation to the protection from radiation hazards either of the community as a whole or of particular sections of the community. The NFPB believes that there is a need for better occupational studies rather than simply for more. In particular, the studies need to be of occupational groups for whom measurements show that there is genuinely a substantially raised exposure to RF fields. If the studies are to be more informative than those so far, a key requirement will be for improved exposure measurement (or improved estimation of exposure) for individuals, or at least for occupational groups. It would be desirable, as far as practical, that the studies should measure the intensity and timing of RF field exposures, and also that they should include some assessment of major RF field exposures from sources other than the current occupation. Ideally, exposure assessment needs to be anatomical site (organ)-specific, because some sources result in greatly differing doses to different parts of the body. It is a difficulty in these prescriptions, of course, that the appropriate exposure metric is unknown. For further information on NRPB see: http://www.hpa.org.uk/radiation/

[back] 38. On January 5, 2005, the EMF-Team Finland issued the Helsinki Appeal 2005 to members of the European Parliament. In it physicians and researchers call on the European Parliament to apply the Precautionary Principle to electromagnetic fields, especially in the radio- and microwave- frequency bands. They criticize the present RF/MW radiation safety standards that do not recognize the biological effects caused by non-thermal exposures to non-ionizing radiation [i.e., RF/MW radiation.] They also call for continued refunding of the REFLEX EMF research program. The text of the Helsinke

Appeal 2005 is found at: http://www.emrpolicy.org/news/headlines/index.htm

[back] 39. On July 19, 1993 Dr. Elizabeth Jacobson, Deputy Director for Science, Center for Devices and Radiological Health, Food and Drug Administration criticized Thomas Wheeler, President of the Cellular Telecommunications Industry Association:

"I am writing to let you know that we were concerned about two important aspects of your press conference of July 16 concerning the safety of cellular phones, and to ask that you carefully consider the following comments when you make future statements to the press. First, both the written press statements and your verbal comments during the conference seemed to display an unwarranted confidence that these products will be found absolutely safe. In fact, the unremittingly upbeat tone of the press packet strongly implies that there can be no hazard, leading the reader to wonder why any further research would be needed at all.....More specifically, your press packet selectively quotes from our Talk Paper of February 4 in order to imply that FDA believes that cellular phones are "safe." ("There is no proof at this point that cellular phones are harmful.") In fact, the same Talk Paper also states, "There is not enough evidence to know for sure, either way." Our position, as we have stated it before, is this: Although there is no direct evidence linking cellular phones with harmful effects in humans, a few animal studies suggest that such effects could exist. It is simply too soon to assume that cellular phones are perfectly safe, or that they are hazardous--either assumption would be premature. This is precisely why more research is needed."

Full text of letter can be found in Microwave News, July/August, 1993

[back] 40. In 1993 the Director of the Office of Radiation and Indoor Air of the Environmental Protection Agency suggested that the FCC not adopt the 1992 ANSI/IEEE standard "due to serious flaws," among them (1) "the ANSI/IEEE conclusion that there is no scientific data indicating that certain subgroups of the population are more at risk than others is not supported by NCRP and EPA reports" and (2) "the thesis that ANSI/IEEE recommendations are protective of all mechanisms of interaction is unwarranted because the adverse effects level in the 1992 ANSI/IEEE standard are based on a thermal effect."

Letter from Margo T. Oge, Director, Office of Radiation and Indoor Air to Thomas Stanley, Chief Engineer, Office of engineering and Technology, FCC, dated Nov 9, 1993

[back] 41. A brief sampling of the CSIRO report:

Problems in studies of human populations published to date include imprecise estimates of exposure. As a result, such epidemiological studies may underestimate any real risk. The likelihood of epidemiological studies providing useful information is questionable, particularly if the biological end point cannot be predicted. Its value in the short term (less than 10 years) must be negligible unless there was an enormous increase in the rate of cancer growth. Interestingly, the incidence of brain tumors in the EC countries has increased substantially in recent years.

RF safety cannot be assessed in the absence of reported serious effects when so little research has been aimed at the problem. It is somewhat surprising, and rather disappointing, to find that although the literature contains many hundreds of publications, there are very few areas of consensus....At low levels the absence of clear thresholds and [the] presence of intensity and frequency windows have created questions rather than provided answers.

There is no doubt that the interpretation of bioeffects data has been clouded by a preoccupation with thermally mediated processes. In fact, development of the ANSI/IEEE standard is based only on well-established thermal effects, and ignores the more subtle non-thermal processes that are more difficult to interpret and apply to human health.

Commonwealth Scientific Industrial Research Organization, "Status of Research on Biological Effects and Safety of Electromagnetic Radiation: Telecommunications Frequencies," a report prepared by Dr. Stan Barnett, as sited in Microwave News, September/October, 1995

[back] 42. Statement from the October 25-28, 1998 "*Symposium of Mobile Phones and Health - Workshop on Possible Biological and Health Effects of RF Electromagnetic Fields*" held at the University of Vienna, Austria.

The preferred terminology to be used in public communication: Instead of using the terms "athermal", "non-thermal" or "microthermal" effects, the term "low intensity biological effects" is more appropriate.

Preamble: The participants agreed that biological effects from low-intensity exposures are scientifically established. However, the current state of scientific consensus is inadequate to derive reliable exposure standards. The existing evidence demands an increase in the research efforts on the possible health impact and on an adequate exposure and dose assessment.

Base stations: How could satisfactory Public Participation be ensured: The public should be given timely participation in the process. This should include information on technical and exposure data as well as information on the status of the health debate. Public participation in the decision (limits, siting, etc.) should be enabled.

Cellular phones: How could the situation of the users be improved: Technical data should be made available to the users to

allow comparison with respect to EMF-exposure. In order to promote prudent usage, sufficient information on the health debate should be provided. This procedure should offer opportunities for the users to manage reduction in EMF-exposure. In addition, this process could stimulate further developments of low-intensity emission devices.

[back] 43. Statement from the June 7-8, 2000 International Conference on Cell Tower Siting Linking Science and Public Health, Salzburg, Austria. The full report can be found at: http://new.iaff.org/HS/PDF/cell_tower_measurements.pdf

- It is recommended that development rights for the erection and for operation of a base station should be subject to a permission procedure. The protocol should include the following aspects:
  - Information ahead and active involvement of the local public
  - Inspection of alternative locations for the siting
  - Protection of health and wellbeing
  - Considerations on conservation of land- and townscape
  - Computation and measurement of exposure
  - Considerations on existing sources of HF-EMF exposure
  - Inspection and monitoring after installation
- It is recommended that a national database be set up on a governmental level giving details of all base stations and their emissions.
- It is recommended for existing and new base stations to exploit all technical possibilities to ensure exposure is as low as achievable (ALATA-principle) and that new base stations are planned to guarantee that the exposure at places where people spend longer periods of time is as low as possible, but within the strict public health guidelines.
- Presently the assessment of biological effects of exposures from base stations in the low-dose range is difficult but indispensable for protection of public health. There is at present evidence of no threshold for adverse health effects.
  - Recommendations of specific exposure limits are prone to considerable uncertainties and should be considered preliminary. For the total of all high frequency irradiation a limit value of 100 mW/m² (10 µW/cm²) is recommended.
  - For preventive public health protection a preliminary guideline level for the sum total of exposures from all ELF pulse modulated high-frequency facilities such as GSM base stations of 1 mW/m² (0.1 µW/cm²) is recommended.

[back] 44. Scientists attending the September 13-14, 2002 International Conference “State of the Research on Electromagnetic Fields – Scientific and Legal Issues,” organized by ISPESL (National Institute for Prevention and Work Safety, Italy), the University of Vienna, and the City of Catania, held in Catania, Italy, agreed to the following:

- Epidemiological and *in vivo* and *in vitro* experimental evidence demonstrates the existence for electromagnetic field (EMF) induced effects, some of which can be adverse to health.
- We take exception to arguments suggesting that weak (low intensity) EMF cannot interact with tissue.
- There are plausible mechanistic explanations for EMF-induced effects which occur below present ICNIRP and IEEE guidelines and exposure recommendations by the EU.
- The weight of evidence calls for preventive strategies based on the precautionary principle. At times the precautionary principle may involve prudent avoidance and prudent use.
- We are aware that there are gaps in knowledge on biological and physical effects, and health risks related to EMF, which require additional independent research.

[back] 45. The Freiburger Appeal is a German based appeal by mainly medical practitioners who are concerned about the effects, they believe, from mobile phone technology including masts that are appearing in their patients. It started in Oct 2002 and with very little international publicity has got 50,000 signatories with at least 2000 medical signatures from across the world. Mast These physicians and scientists agreed to establish an international scientific commission to promote research for the protection of public health from EMF and to develop the scientific basis and strategies for assessment, prevention, management and communication of risk, based on the precautionary principle.

Excerpt:

On the basis of our daily experiences, we hold the current mobile communications technology (introduced in 1992 and since then globally extensive) and cordless digital telephones (DECT standard) to be among the fundamental triggers for this fatal development. One can no longer evade these pulsed microwaves. They heighten the risk of already-present chemical/physical influences, stress the body–immune system, and can bring the body–still-functioning regulatory mechanisms to a halt. Pregnant women, children, adolescents, elderly and sick people are especially at risk.

Statement of the physicians and researchers of Interdisziplinäre Gesellschaft für Umweltmedizin e. V. (Interdisciplinary Association for Environmental Medicine) IGUMED, Sackingen, Germany, September 19, 2002. The Freiburger Appeal can be found at: http://www.mastsanity.org/doctors-appeals.html.

[back] 46. Report of the European Union's REFLEX Project (Risk Evaluation of Potential Environmental Hazards from Low Frequency Electromagnetic Field Exposure Using Sensitive *in vitro* Methods), November 2004. The Project studied ELF and RF exposures to various animal cell types. The report is found at: http://new.iaff.org/HS/PDF/REFLEX%20Final%20Report.pdf

From the Summary: *[t]he omnipresence of EMF's in infrastructures and consumer products have become a topic of public concern. This is due to the fear of people that based on the many conflicting research data a risk to their health cannot be excluded with some certainty. Therefore, the overall objective of REFLEX was to find out whether or not the fundamental biological processes at the cellular and molecular level support such an assumption. For this purpose, possible effects of EMF's on cellular events controlling key functions, including those involved in carcinogenesis and in the pathogenesis of neurodegenerative disorders, were studied through focused research. Failure to observe the occurrence of such key critical events in living cells after EMF exposure would have suggested that further research efforts in this field could be suspended and financial resources be reallocated to the investigation of more important issues. But as clearly demonstrated, the results of the REFLEX project show the way into the opposite direction.*

[back] 47. From the Discussion section of the December 20, 2004 Second Annual Report of Sweden's Radiation Protection Board (SSI) entitled: *Recent Research on Mobile Telephony and Health Risks: Second Annual Report from SSI's Independent Expert Group on Electromagnetic Fields*. The complete report is available at: http://new.iaff.org/HS/PDF/EMF_exp_Eng_2004.pdf

To date, little is known about the levels of radiofrequency radiation exposure in the general population from sources such as mobile phones being used by oneself or other people, mobile phone base stations, and radio and television transmitters. Measurements that have been performed have usually been made as a result of public concern about base station exposures or other specific sources, and have therefore been made at locations that could be assumed to have higher fields than would be the case if measurement locations were selected randomly. Furthermore, all measurements have been stationary, and there is today no knowledge about the level of exposure that an individual will have throughout the day.

There is need for information about the personal exposure to RF fields in the general population, to enhance the understanding of the relative importance of exposure from base stations close to the home, from radio and television transmitters, and from the use of mobile phones . . . Studies with personal RF exposure measurements of randomly selected samples of the general population are strongly encouraged.

[back] 48. Released January 11, 2005, Mobile Phones and Health 2004: Report by the Board of NRPB Documents of the NRPB: Volume 15, No. 5. See: Mobile Phones and Health 2004

From the Executive Summary:

The Board notes that a central recommendation in the Stewart Report was that a precautionary approach to the use of mobile phone technologies be adopted until much more detailed and scientifically robust information on any health effects becomes available.

The Board considers that it is important to understand the signal characteristics and field strengths arising from new telecommunications systems and related technologies, to assess the RF exposure of people, and to understand the potential biological effects on the human body.

[back] 49. The ICNIRP exposure guidelines are only designed to protect against "known adverse health impacts," according to Dr. Jürgen Bernhardt, ICNIRP's chairman. Bernhardt reviewed the updated limits, which cover the spectrum from 1 Hz to 300 GHz, in a presentation at the *20th Annual Meeting of the Bioelectromagnetics Society* in St. Pete Beach, FL, on June 10. The limits protect against "short-term, immediate health effects" such as nerve stimulation, contact shocks and thermal insults, according to the guidelines, which appear in the April issue of *Health Physics* (*74*, pp.494-522, 1998). Despite "suggestive" evidence that power frequency magnetic fields can be carcinogenic, ICNIRP has concluded that this and other non-thermal health effects have not been "established." ICNIRP has long followed this approach to standard-setting. In his talk, Bernhardt noted that the guidelines include "no consideration regarding prudent avoidance" for health effects for which

evidence is less than conclusive.

Microwave News, July/August 1998

Additional References and Studies

The following references reporting biological effects of radiofrequency radiation (RFR) at low intensities through January 2005 were compiled on 12/27/04 by Henry C. Lai PhD, Research Professor of Bioengineering, University of Washington, Seattle, WA

Balode *Sci Total Environ* 180(1):81-85, 1996 - blood cells from cows from a farm close and in front of a radar installation showed significantly higher level of severe genetic damage.

Boscol et al. *Sci Total Environ* 273(1-3):1-10, 2001 - RFR from radio transmission stations (0.005 mW/cm^2) affects immune system in women.

Chiang et al. *J. Bioelectricity* 8:127-131, 1989 - people who lived and worked near radio antennae and radar installations showed deficits in psychological and short-term memory tests.

de Pomerai et al. *Nature* 405:417-418, 2000. *Enzyme Microbial Tech* 30:73-79, 2002 - reported an increase in a molecular stress response in cells after exposure to a RFR at a SAR of 0.001 W/kg. This stress response is a basic biological process that is present in almost all animals - including humans.

de Pomerai et al. (*FEBS Lett* 22;543(1-3):93-97, 2003 - RFR damages proteins at 0.015-0.020 W/kg.

D'Inzeo et al. *Bioelectromagnetics* 9(4):363-372, 1988 - very low intensity RFR (0.002 – 0.004 mW/cm^2) affects the operation of acetylcholine-related ion-channels in cells. These channels play important roles in physiological and behavioral functions.

Dolk et al. *Am J Epidemiol* 145(1):1-91997- a significant increase in adult leukemias was found in residents who lived near the Sutton Coldfield television (TV) and frequency modulation (FM) radio transmitter in England.

Dutta et al.*Bioelectromagnetics* 10(2):197-202 1989 - reported an increase in calcium efflux in cells after exposure to RFR at 0.005 W/kg. Calcium is an important component of normal cellular functions.

Fesenko et al. *Bioelectrochem Bioenerg* 49(1):29-35, 1999 - reported a change in immunological functions in mice after exposure to RFR at a power density of 0.001 mW/cm^2.

Hallberg O, Johansson O, (2004) concluded that continuous disturbance of cell repair mechanisms by body-resonant FM electromagnetic fields seems to amplify the carcinogenic effects resulting from cell damage caused e.g. by UV-radiation.

Hjollund et al. *Reprod Toxicol* 11(6):897, 1997 - sperm counts of Danish military personnel, who operated mobile ground-to-air missile units that use several RFR emitting radar systems (maximal mean exposure 0.01 mW/cm^2), were significantly lower compared to references.

Hocking et al. *Med J Aust* 165(11-12):601-605, 1996 - an association was found between increased childhood leukemia incidence and mortality and proximity to TV towers.

Ivaschuk et al. *Bioelectromagnetics* 18(3):223-229, 1999 - short-term exposure to cellular phone RFR of very low SAR (26 mW/kg) affected a gene related to cancer.

Kolodynski and Kolodynska, *Sci Total Environ* 180(1):87-93, 1996 - school children who lived in front of a radio station had less developed memory and attention, their reaction time was slower, and their neuromuscular apparatus endurance was decreased.

Kwee et al. *Electro- and Magnetobiology* 20: 141-152, 2001 - 20 minutes of cell phone RFR exposure at 0.0021 W/kg increased stress protein in human cells.

Lebedeva et al. *Crit Rev Biomed Eng* 28(1-2):323-337, 2000 - brain wave activation was observed in human subjects exposed to cellular phone RFR at 0.06 mW/cm^2.

Magras and Xenos *Bioelectromagnetics* 18(6):455-461, 1999 - reported a decrease in reproductive function in mice exposed to RFR at power densities of 0.000168 - 0.001053 mW/cm^2. Irreversible sterility was found in the fifth generation of offspring.

Mann et al. *Neuroendocrinology* 67(2):139-144, 1998 - a transient increase in blood cortisol was observed in human subjects

exposed to cellular phone RFR at 0.02 mW/cm^2. Cortisol is a hormone involved in stress reaction.

Marinelli et al. *J Cell Physiol.* 198(2):324-332, 2004 - exposure to 900-MHz RFR at 0.0035 W/kg affected cell's self-defense responses.

Michelozzi et al. *Epidemiology* 9 (Suppl) 354p, 1998 - leukemia mortality within 3.5 km (5,863 inhabitants) near a high power radio-transmitter in a peripheral area of Rome was higher than expected.

Michelozzi et al. *Am J Epidemiol* 155(12):1096-1103, 2002 - childhood leukemia higher at a distance up to 6 km from a radio station.

Navakatikian and Tomashevskaya "Biological Effects of Electric and Magnetic Fields, Volume 1," D.O. Carpenter (ed) Academic Press, San Diego, CA, pp.333-342. 1994 - RFR at low intensities (0.01 - 0.1 mW/cm^2; 0.0027- 0.027 W/kg) induced behavioral and endocrine changes in rats. Decreases in blood concentrations of testosterone and insulin were reported.

Novoselova et al. *Bioelectrochem Bioenerg* 49(1):37-41, 1999 -low intensity RFR (0.001 mW/cm^2) affects functions of the immune system.

Park et al. *International Archives of Occupational and Environmental Health* 77(6):387-394, 2004 - higher mortality rates for all cancers and leukemia in some age groups in the area near the AM radio broadcasting towers.

Persson et al. *Wireless Network* 3:455-461, 1997 - reported an increase in the permeability of the blood-brain barrier in mice exposed to RFR at 0.0004 - 0.008 W/kg. The blood-brain barrier envelops the brain and protects it from toxic substances.

Phillips et al. *Bioelectrochem. Bioenerg.* 45:103-110, 1998 - reported DNA damage in cells exposed to RFR at SAR of 0.0024 - 0.024 W/kg.

Polonga-Moraru et al. *Bioelectrochemistry* 56(1-2):223-225, 2002 - change in membrane of cells in the retina (eye) after exposure to RFR at 15 µW/cm^2.

Pyrpasopoulou et al. *Bioelectromagnetics* 25(3):216-227, 2004 - exposure to cell phone radiation during early gestation at SAR of 0.0005 W/kg (5 µW/cm^2) affected kidney development in rats.

Salford et al. *Environ Health Persp* Online January 29, 2003 - Nerve cell damage in mammalian brain after exposure to microwaves from GSM mobile phones signal at 0.02 W/kg.

Santini et al. *Pathol Biol* (Paris) 50(6):369-373, 2002 - increase in complaint frequencies for tiredness, headache, sleep disturbance, discomfort, irritability, depression, loss of memory, dizziness, libido decrease, in people who lived within 300 m of mobile phone base stations.

Sarimov et al. *IEEE Trans Plasma Sci* 32:1600-1608, 2004 - GSM microwaves affect human lymphocyte chromatin similar to stress response at 0.0054 W/kg.

Schwartz et al. *Bioelectromagnetics* 11(4):349-358, 1990 - calcium movement in the heart affected by RFR at SAR of 0.00015 W/kg. Calcium is important in muscle contraction. Changes in calcium can affect heart functions.

Somosy et al. *Scanning Microsc* 5(4):1145-1155, 1991 - RFR at 0.024 W/kg caused molecular and structural changes in cells of mouse embryos.

Stagg et al. *Bioelectromagnetics* 18(3):230-236, 1997- glioma cells exposed to cellular phone RFR at 0.0059 W/kg showed significant increases in thymidine incorporation, which may be an indication of an increase in cell division.

Stark et al. *J Pineal Res* 22(4):171-176, 1997 - a two- to seven-fold increase of salivary melatonin concentration was observed in dairy cattle exposed to RFR from a radio transmitter antenna.

Tattersall et al. *Brain Res* 904(1):43-53, 2001 - low-intensity RFR (0.0016 - 0.0044 W/kg) can modulate the function of a part of the brain called the hippocampus, in the absence of gross thermal effects. The changes in excitability may be consistent with reported behavioral effects of RFR, since the hippocampus is involved in learning and memory.

Vangelova et al. *Cent Eur J Public Health* 10(1-2):24-28, 2002 - operators of satellite station exposed to low dose (0.1127 J/kg) of RFR over a 24-hr shift showed an increased excretion of stress hormones.

Velizarov et al. *Bioelectrochem Bioenerg* 48(1):177-180, 1999 - showed a decrease in cell proliferation (division) after

exposure to RFR of 0.000021 - 0.0021 W/kg.

Veyret et al. *Bioelectromagnetics* 12(1):47-56, 1991 - low intensity RFR at SAR of 0.015 W/kg affects functions of the immune system.

Wolke et al. *Bioelectromagnetics* 17(2):144-153, 1996 - RFR at 0.001W/kg affects calcium concentration in heart muscle cells of guinea pigs.

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The International Association of Fire Fighters recognizes IAFF Local 3368, Carpinteria-Summerland, California, who brought this issue to the attention of our membership through the Resolution 15, submitted through our biennial convention in August 2004. Additionally, the following local affiliates provided support for the passage of the resolution: Brookline, Massachusetts, San Diego, California, San Francisco, California and Vancouver, British Columbia. We also acknowledge the efforts of Dr. Henry C. Lai, University of Washington, Seattle, Washington; Dr. Magda Havas of Trent University, Peterborough, Ontario; Janet Newton, President of the EMR Policy Institute; and Susan Foster Ambrose for their technical support and continued passion to protect the health and safety of fire fighters and emergency medical personnel. Finally, we thank Dr. Leslie Plachta and the Safe Ossining Schools for their research efforts and their battle to stop siting cell towers on Ossining, New York schools.

RMD; 3/2005

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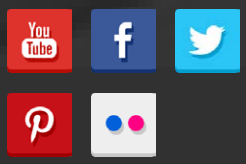

Martha Alvarez

From: Bruce Moe
Sent: Monday, April 15, 2019 7:49 AM
To: Martha Alvarez
Subject: FW: Support of Ordinance No 19-0012-U, 19-0012, 19-0044 and Ordinance No. 19-0007

Bruce Moe
City Manager
P: (310) 802-5053
E: bmoe@citymb.info

City of Manhattan Beach
1400 Highland Avenue, Manhattan Beach, CA 90266
www.citymb.info

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From: johnwilcoxrealty@gmail.com <johnwilcoxrealty@gmail.com>
Sent: Sunday, April 14, 2019 9:32 PM
To: List - City Council <CityCouncil@citymb.info>
Cc: johnwilcoxrealty@gmail.com
Subject: Support of Ordinance No 19-0012-U, 19-0012, 19-0044 and Ordinance No. 19-0007

Dear Council Members,

I am unable to attend Tuesday's meeting, but would like to express my support of Ordinance No 19-0012-U, 19-0012, 19-0044 and Ordinance No. 19-0007.

Regarding Ordinance No 19-0012-U, 19-0012, 19-0044, I feel we as a city need to exercise our right to determine the best path forward as it relates to wireless facilities. There are many factors that need to be taken into consideration including health effects, negative visual impact, and negative property value impact to name a few.

With regard to Ordinance No. 19-0007, we need to Reinforce the Prohibition on Renting Residential Property for Less Than 30 days. The owner of the property next to mine illegally rented his home less than 30 days on numerous occasions for approximately a year until he tore the home down and rebuilt. During that time, my daughters were 8 and 6 years of age. Needless to say, it was extremely unsettling not knowing if the strangers inhabiting the home less than 10

meet from ours were child molesters, rapists, or suffering from a mental illness that might cause them to do harm to my family.

Thank you for all you do for our great community, and I am hopeful you will support the aforementioned ordinances.

Kind regards,

John Wilcox
MB homeowner/resident for 17 years

Martha Alvarez

From: Bruce Moe
Sent: Saturday, April 13, 2019 4:29 PM
To: Martha Alvarez
Subject: Fw: AT&T antenna. Part 2 from Brian Neitz

Bruce Moe
City Manager
P: (310) 802-5053
E: bmoe@citymb.info

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1400 Highland Avenue, Manhattan Beach, CA 90266
www.citymb.info

From: srfnsgr8@yahoo.com <srfnsgr8@yahoo.com>
Sent: Thursday, April 11, 2019 10:27 PM
To: julieneitz@gmail.com
Cc: Steve Napolitano; Nancy Hersman; Richard Montgomery; Suzanne Hadley; Hildy Stern; Jason Masters; Anne McIntosh; Bruce Moe; Beverley Best; Betsy McGregor (neighbor cell); gbeef1964@yahoo.com; dmgcal@aol.com; paigenicolebaker@gmail.com
Subject: AT&T antenna. Part 2 from Brian Neitz

Mr. Mayor members of the city council and other concerned parties.

Hello my name is Richard Neitz (Brian). I appeared before the city council 18 months ago when AT&T first attempted to put a cell phone installation at our location, 19th Street and Highland. It was denied unanimously then.

It is understood that:

1) These installations may not be denied despite obvious health consequences.

2) We support more than our fair share of infrastructure for the public good.

3) There is a vacant lot a half block away. I was told it may not support an AT&T installation because they are part of an underground district. Only west of Highland paid the $20,000+ for undergrounding. How is a lot who was not part of the undergrounding district (note power pole) is exempt and we are not? Below (pictured) is a proposal I put forth as an alternate location last time I appeared before you.

I submit that AT&T is not willing to put extra effort to use this location. It is true that there is an underground vault in sidewalk in front of that lot but we also already have an underground vault in front of our house as well. Again why is that lot exempt and we are not?

4) It has been stated that these installations maybe inevitable. Governor Brown vetoed senate bill 649 Which was to ease permitting of cell phone towers despite what MB city attorney may think. https://www.mercurynews.com/2017/10/16/california-gov-jerry-brown-vetoes-bill-easing-permits-on-cell-phone-towers/. This was done to maintain rights of local governments and to keep these decisions local.

The last time AT&T proposed these installations the city council approved many of AT&T's request yet they have not installed any of them. How can we reasonably know what their coverage actually is when they will not bother to install what has been approved? I have an AT&T cell phone and my coverage is fine in my house. Yes, the strand has issues so why not put towers there? Why not put the towers at the top of the hill where they would have even greater coverage like Live Oak Park? There are power poles that are well above any dwellings near by, but AT&T wants the easy solution. My understanding is that only 3 of the locations that were denied last time were resubmitted again. If these locations were so vital why were not all resubmitted again? AT&T believes dealing with Edison is harder than trying to push this through the council. They put a cell phone installation on a power pole at the corner of Valley and Pacific so it can be done. The real reason is we are the unimproved property. So people who have been here since 1965 will be disenfranchised. My wife (Julie Neitz) has already told you about what burdens we have for the public good. How can we / you justify this too?

I understand the hard job you have in managing the public welfare. I ask you to please hold AT&T accountable. What about Verizon, T-mobile, and all the other cell phone companies when they want space in front of my house? Palos Verdes denied their request are we less than them?

Lastly I would like to address the idea that we need to pay $500.00 to appeal a decision by a public employees to approve installation by private corporations. How is that fair? I understand the need to prevent nuisance appeals but these are life impacting issues. These will also adversely impact our property value (a reason this installation maybe denied). The last time this went before the city council it is my understanding that because this was added to the council agenda it did not require the $500 appeal fee.

Lastly I am going to use an emotional appeal while it might be inappropriate it illustrates my concern and what we are really talking about. See picture below.

This will be the view (simulated) from my daughter's room. We are planning to add additional space to our second floor bringing this installation even closer. Mr Masters has told us if it is too close AT&T will have to remove it. Trust me it will be, so why don't they move it now? See vacant lot in background?

Thank you for your time. Please see the logic, and fight with us. We will not let this go in an easy way.

Respectfully submitted
Brian Neitz

Sent from my iPad

On Apr 10, 2019, at 17:07, julieneitz@gmail.com wrote:

> Mayor Napolitano, Council Member Hersman, Council Member Montgomery, Council Member Hadley, Council Member Stern, Mr. Masters, Ms. McIntosh, Mr. Moe and neighbors near 19th St & Highland Ave,
>
> Why does a formal appeal against the AT&T antenna proposal cost $500? For our family, $500 is grocery and gas money for the month. We live in Manhattan Beach because my father-in-law bought the house in 1965, not because we can afford a multi-million dollar house. We ask that you accept this email as our formal appeal. Please notify us if we must pay $500 to formally appeal the AT&T proposal, but please be mindful that not everyone around here has money to throw at a problem.
>
> We are very disappointed to be notified that AT&T's proposal for a telecom antenna was approved by Ms. McIntosh. We, once again, ask that you reconsider the placement of the AT&T antenna on the light pole on the southwest corner of 19th St & Highland Ave. We have fought this proposal in November 2017 and will continue to be vocal opponents.
>
> Our arguments are:
>
> 1. We live at 232 19th St. On our southwest corner of 19th St & Highland Ave, we already have more than one home's fair share of public infrastructure. (Please see picture below). We maintain two city trees, have a Verizon manhole cover and underground vault on the Highland Ave sidewalk, a sewer manhole cover on the 19th St walk street side, a light pole with signage and a 15 foot crosswalk pole with solar panel and battery box.
>
> 2. Adding two, four feet antennas, a prism cabinet and underground pull box, will decrease the property value of our home. We do not want additional unsightly antennas outside of our home along in addition to the previously mentioned public infrastructure. Also, at the city council meeting I attended on March 19, there was a plan to integrate the crosswalk signage & accessories onto the light pole. Adding all of this plus AT&T's proposal will be an eye sore on one pole, assuming that the pole can accommodate all of this.
>
> 3. Have the antennas that were approved in November 2017 all been installed? If yes, have there been studies to check for coverage? Was a coverage study done before approving AT&T's latest proposal? We have AT&T mobile and know that coverage can be spotty, but we would rather deal with spotty coverage than have an antenna in front of our house.
>
> 4. The west side of Highland Ave has paid to underground all utilities. We paid over $20,000 to underground our half lot. Why do we need to bear the brunt of more above ground structures being added to our side of Highland Ave? Line of sight to enjoy the ocean view people pay for will be obstructed and diminish the beauty of the city.
>
> 5. Now that the city of Manhattan Beach owns the light posts, how much money is AT&T paying to "rent" the space for their antennas? Where is this money going? Are there other

telecom companies lined up to add their antennas? We would hope that maintaining the beauty of Manhattan Beach would be a priority.

6. Health is a big concern to us. At age four, our daughter was diagnosed with an auto-immune disease. We draw attention to her health because it is a life-long disease. We do not RF signals emitting next to our house 24 hours a day, 365 days a year. Please take the opportunity to read the articles below.

Links to Studies of Electrosensitivity and Cancer Risks Near Antennas
https://manhattanneighbors.org/cell-towers-and-antennas-have-health-and-cancer-risks-how-close-is-too-close/

Cell Tower to be Removed from Ripon, CA School After 4 kids Diagnosed with Cancer
https://www.google.com/amp/s/www.kcra.com/amp/article/cell-tower-to-be-removed-from-ripon-school-amid-cancer-concerns/26937925

Firefighters Living Next to Cell Towers Suffer Neurological Damage
http://scientists4wiredtech.com/2018/07/firefighters-living-next-to-cell-towers-suffer-neurological-damage/

We will be at the city council meeting on June 18 when the antenna proposal is on the agenda. We also plan to attend all city council meetings, when we are in town, to voice our opposition leading up to June 18.

Thank you for your time and please email for further discussion. Again PLEASE notify us if we must pay $500 to formally appeal the AT&T antenna proposal.

Please see the 5 captioned pictures below.

Best,
Julie Neitz
julieneitz@gmail.com

1. Picture below: address of our home, 232 19th St. Please note 2 city trees, 2 manhole covers, light pole and crosswalk pole & accessories.
<image1.jpeg>

2. Picture below: proposed AT&T antenna, prism cabinet & underground pull vault. (15 foot crosswalk pole, solar panel and battery box not in proposed picture).
<image4.jpeg>

3. Picture below: unsightly antenna at Pacific & Ardmore. We do not see any signage that RF signals are being emitted posted anywhere.
<image2.jpeg>

4. Picture below: RF signage that should be on the post.
<image3.png>

5. Picture below: antenna on Marine Ave (not in Manhattan Beach). Notice very small signage for RF emission below rectangular box.
<image5.jpeg>

Sent from my iPhone


PROPOSE POLE
VAULT

Martha Alvarez

From: Bruce Moe
Sent: Saturday, April 13, 2019 4:24 PM
To: Martha Alvarez
Subject: Fw: Institute and Enforce Ban on STRs

Bruce Moe
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From: Debra Geist <citegeist@gmail.com>
Sent: Friday, April 12, 2019 9:50 AM
To: List - City Council
Subject: Institute and Enforce Ban on STRs

Dear Manhattan Beach City Council,

Manhattan Beach just had an election where all seven candidates said they were in favor of continuing the short term rental ban in recognition of the overwhelming residential support for the ban. For residents the preservation of our community and enforcement of the ban were their two most important values. A total ban is clear cut and would be the easiest and least costly for the city to enforce. Airbnb has a well deserved reputation for deep pockets and lawyers who are quick to file lawsuits. In the past large numbers of non-local Airbnb supporters have attended Council Meetings. We must be prepared for Airbnb to do everything in their power to change the community priorities. Please remain steadfast against this last minute power grab by Airbnb to take over our City.

Sincerely Debra Geist

Sent from my iPhone

Martha Alvarez

From: Bruce Moe
Sent: Saturday, April 13, 2019 4:23 PM
To: Martha Alvarez
Subject: Fw: Regarding Urgency Ordinance No. 19-19-0012-U 16 April 19 Council meeting

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From: srfnsgr8@yahoo.com <srfnsgr8@yahoo.com>
Sent: Friday, April 12, 2019 10:51 AM
To: julieneitz@gmail.com
Cc: Steve Napolitano; Nancy Hersman; Richard Montgomery; Suzanne Hadley; Hildy Stern; Jason Masters; Anne McIntosh; Bruce Moe; Beverley Best; Betsy McGregor (neighbor cell); gbeef1964@yahoo.com; dmgcal@aol.com; paigenicolebaker@gmail.com
Subject: Regarding Urgency Ordinance No. 19-19-0012-U 16 April 19 Council meeting

Again Hello, Mr Major, council members and concerned parties.
Brian Neitz here regarding this item on the agenda.

I was wondering if the city has reached out to the "The Center for Municipal Solutions" regarding this proposed ordinance? https://www.telecomsol.com/www2/node/23

Below is a long article referencing what we as a city are dealing with**.**

Read though it as you wish but there a few things I think are worth noting.

I have pick a few key points out.

AUTHORITY

1) **Contrary to what many local officials and staff have been [mis]led to believe, under current federal law and FCC rules, local governments still retain most of their regulatory authority over these issues, including compliance with operational safety regulations.**

APPEARANCE

2) **There has been a new development in support structures specifically for use in the PROW (Public Right of Way) These new structures allow accommodation of multiple carriers, with all antennas housed internally, and they do not exceed the height of the adjacent utility or light poles. They can function as a utility pole for incumbent utilities and others such as a fiber transport company, and can also be designed as a light pole, or both. However, before local governments can effectively promote these structures as alternatives to tall monopoles, the owner(s) of the existing utility or light poles must be on board with the concept, and there must be someone on staff, or available to staff, who truly knows the applicable laws that allow local governments to achieve their goals. That person also needs to know and understand the new technology and its true siting needs, as opposed to the merely asserted need. Then the two areas of knowledge can be "married" to create a win-win regulatory situation**.

3) Rather than just accepting another [ugly] new array of antennas attached to an existing utility pole or light standard, and notwithstanding 6409(a), there are communities who require that, instead of just co-locating on an existing utility or light pole with the antennas mounted on the outside around the pole, an applicant must arrange to have the pole replaced with one that houses the antenna(s) inside. They may still locate in the PROW, but they must do it in accordance with this 'stealth' or 'camouflaging' policy in the community's tower and wireless facilities siting regulation

4) The rise in applications for wireless facilities in the PROW is a classic NIMBY (Not In My Back Yard) situation, but in this case it's one that actually has solutions. In spite of what many local officials and their staff and attorneys have been erroneously led to believe, for the most part communities can create win-win situations without giving up rights or regulatory control. Permitting can be done so that carriers can get what they need technically, but with a minimum of public controversy and with minimal visual intrusion (virtually undetectable) and impact on property values.

The industry often tries to get Planning staff and local officials to believe that if they have the type of regulations they really need and should have, it will discourage and slow down deployment by the industry. History has shown this to not to be factually accurate. One need only compare the situation in communities that have strict regulations crafted with an in-depth knowledge of the industry and the law, to the situation in communities with minimal or even no regulation. Arguably, some of the best wireless service in the Nation is found in communities with strict regulations and less stringent regulations often lead to less than desired service in the community.

Officials, staff, and municipal attorneys should never make assumptions, unless they know for a fact that their assumptions are correct. Communities should consider retaining an expert consultant (who has no ties

with the industry) and discuss with that person their objectives and the several options they have to achieve their policy goals

REFERS TO BUILDING STANDARDS / HEALTH SAFETY

5) Contrary to what many local officials and staff have been [mis]led to believe, under current federal law and FCC rules, local governments still retain most of their regulatory authority over these issues, including compliance with operational safety regulations. These include compliance with the FCC's OET 65 EMF radiation standards and TIA ANSI 222. TIA ANSI 222 is part of the ANSI Code and expressly deals with the issue of tower safety, including the design and the ongoing physical state or condition of a tower and the equipment attached to it. Compliance with TIA 222, or in a few states' the functional equivalent, is the elephant in the room that few applicants are addressing. In handling hundreds of applications for modifications or co-locations for communities in just the last 24 months, we've found it to be the exception rather than the rule when a wireless facility passes a TIA 222 safety inspection (done by a third party). It's largely a matter of how that authority is implemented and administered, rather than the existence of the authority itself. The authority exists, but as with all things it must be implemented and administered in accordance with the law.

I recommend visiting the website for https://www.telecomsol.com/www2/node/23
The Center for Municipal Solutions. The website is a little better if viewed on a PC.

Regarding the installation proposal at 19th and Highland it is apparent from an aesthetic view point and referencing the above website that AT@T could be doing far more than just slapping a couple of antennas and a cabinet on pole with a support vault. It is obvious that AT@T will need to put up a new pole. Why not install it at a different location to share burden of public infrastructure rather than abusing the unimproved home owners?

At the above mentioned website it has an good read on PROPAGATION MAPS that support proposals by applicants. It discusses how applicants may adjust maps to support their requested installations. How can we know what AT&Ts coverage actually is when they have not installed already approved applications like at Marine and Highland? A mere 4 blocks away!

I know, I know you are in the crosshairs. Julie and I appreciate all you do but the more we dig the more we find this application suspect. As much as the probable health concerns, decrease in property value and destruction of the aesthetic is the idea we are already supporting more than our fair share of infrastructure for the public good.

We respectfully ask that a solution be found to relieve us of this burden and holding companies like AT&T accountable. It is my hope the Tuesday April 16 we will get some relief in the way of comprehensive regulations.

Thank you for your time.

Brian Neitz

Regulating Wireless Facilities <u>in Public Rights-of-Way</u>

(Written at the Request of the American Planning Association – Original Draft)

By L.S. (Rusty) Monroe

In virtually every state across the nation there is a new type of player who wants to place support structures (monopoles) ranging in height from **60 to 180 feet in the public-right-of-way (PROW).** The primary purpose of these installations is to provide backhaul service to carriers.

Communities, nationwide, are being faced with a new wireless facility siting issue: applicants claiming the need and right to locate new 60' to 180' tall communications support structures, and related equipment in public rights-of-way (PROW). When first discussing the issue of new support structures and wireless facilities in the public right-of-way (PROW), all-too-frequently we hear comments such as these from local officials and staff:

- "No one ever told us the law allowed . . ."
- "We were told most of this issue was preempted and we had little to say about it anymore."
- "With all the changes in the law and technology, we don't even know what policy choices we have."
- "Why weren't we told about this and how to do it before?"
- "We just took the company's word as regards limitations on our rights."
- "How are we expected to deal with the number of applications the FCC and other experts say to expect?"
- "No one ever explained it like this from our perspective before . . ."

As one can imagine, it's disheartening to hear such comments, and to hear the frustration in their voices. This article is intended to end that frustration and enable local officials to better understand the issue in context, appreciate the significant regulatory rights communities still have in most states, and make informed decisions related to the issue of siting wireless facilities and support structures in the PROW.

Understanding the Matter in Context

The wireless carriers face a demand by the consuming public for ever-increasing capacity, speed and reliability. The challenge to meet this multi-faceted demand is brought about by the seemingly endless number of new wireless services being offered, coupled with the new myriad uses of the internet, many of which seemed like mere pipe dreams less than a decade ago. Because of this, carriers are having to reduce the traffic on each original 'macro' site by building a number of smaller sites, each serving only a portion of the original area and thus reducing the amount of traffic on any given site. This in turn, coupled with the shorter

transmission and receive distances involved, is intended to result in the increased capacity, speed and reliability demanded by the public. This means that communities will be faced with the challenge of finding ways to accommodate the number of new facilities needed to meet the public's demand, but without upsetting a large segment of the same public by allowing structures that change the nature and character of their neighborhood and the community in general, negatively impact property values for residences in the immediate vicinity of a facility and that do not present a threat to the public safety. It's the classic NIMBY (not-in-my-backyard) situation.

What's Coming?

The wireless industry has (finally) acknowledged that the number of new sites it needs over the next several years is a magnitude greater than currently exists. Currently there are slightly more than 300,000 wireless facilities, nationally. However, going forward (make sure you're sitting down) *each carrier is going to need (at a minimum) a site to serve no more than 50 to 75 of its customers.* (You can do the arithmetic for your community.) In some communities it may be twice as many sites as that, depending upon the number of living units and the demand/traffic in a particular area of the community. Of course, in densely populated areas containing large apartment and/or condominium complexes, the density of sites will be significantly greater, as many complexes will need multiple sites to serve that complex.

The need for the number of new sites is because of the [exponentially] ever-increasing demand for bandwidth, the very limited range of the newly available higher frequencies, the emergence of the Internet of Things (IoT), and the desire to use the most economical means of "backhauling" the signal to the local or network switch. Experts estimate the demand for bandwidth may be as much as 1,000 times the bandwidth used three years ago. Meanwhile, the higher the frequency of the transmission, the less robust the signal, meaning higher frequency signals have a maximum useable range that is significantly less than has historically been the case. Most experts agree that the amount of traffic on the IoT— the demand created by Internet-enabled appliances, vehicles, buildings, and other objects—is expected to exceed that of the entire Internet today. Combined, this situation is creating a sea change, both for the industry and for those charged with regulating wireless facilities.

The area served by a typical macrocell site today covers an area of about one mile radius or two miles in diameter. Going forward **this same service area could require a half-dozen or more sites (for each carrier), with each site covering a few hundred yards in each direction.** In most instances this will be done using DAS (distributed antenna system) or "small cell" technologies. DAS is a system that accommodates multiple carriers using a single smaller and lower powered antenna and a single central base station, with all antenna sites (nodes) connected via optical fiber cables, thus creating a (local or regional) network. Small cell is another newer technology employing smaller, lower-powered antennas, but serving only a single carrier and the sites are not connected via fiber.

In most communities, these new sites will need to be located in all zoning designations, and frequently the request will be to locate in the PROW, often attaching to existing utility poles, light standards, signs, and similar structures.

A New Type of Player

The new player on the block wants to place support structures (monopoles) ranging in height from **60 to 180 feet in the public-right-of-way (PROW).** The primary purpose of these installations is to provide backhaul service to carriers. Backhaul refers to the links between cell sites, controllers, and switches. Generally, the traffic arriving at a cell site is backhauled to a central location, which is the local switch or the operator's mobile switch. This new player typically wants to use microwave transmissions to provide this function, but microwave is not the only way to accomplish backhaul. In many instances it's simply the least costly and can often allow the wireless signals of multiple carriers to be aggregated.

The companies who want to install these taller support structures may claim to have all the rights of a regulated utility. In fact, many communities have received a letter from one of these companies that makes certain assertions regarding who they are, what they do, and what rights they have, as well as implicitly what rights communities do not have with respect to the siting of their facilities. Based on the letters and proposals to communities we have seen (coast-to-coast), and those we have dealt with in the context of applications, the visual and physical impact of such facilities can be significant. However, **in most cases, most of the negative effects can be prevented and still allow for a win-win situation** . . . if the community knows how.

It's important to understand that **these entities are not wireless carriers or Internet Access Providers (IAP), and without a specifically identified carrier or IAP as a joint applicant, they have no standing (i.e., benefits) under federal law or Federal Communications Commission (FCC) rules.** They're tower/wireless support structure companies and nothing more and the structure is erected on **speculation**, i.e. in hopes that some carrier or IAP will someday use it. The problem is that they often claim, and convince communities, that they are exempt from local zoning, land-use, or similar regulations, simply because they have a "Certificate of Necessity and Convenience" (or the functional equivalent) from the applicable state's utility regulatory agency. This assertion is not factually correct and in most states is an example of putting a self-serving "spin" on the law.

These companies are not utilities in the traditional sense. They do not provide a retail service to the consuming public as do utilities, and their operations, rates, rate-of-return on invested capital, and customer service standards are not regulated by the state's utility regulatory agency, as is the case with utilities. **We have spoken with several state utility regulatory agencies and not one could explain how or in what manner they were regulated by the agency.** They are simply the holder of a certificate that effectively gives them the right to locate in the public rights-of-way (if permitted under local law and regulation), and in a few states (e.g., New York) enables them to be subject to somewhat less stringent zoning variance or waiver standards. However, **they are still subject to local regulations**, including but not limited to zoning, construction, land-use, and safety regulations (FCC 14-153§(A)(249,259)&(B)(3)). In no state that we know of does the certificate they hold exempt them from properly adopted local regulations dealing with the location, size/height, aesthetics/appearance, physical design, construction, safety, and maintenance of the facility.

Contrary to what many local officials and staff have been [mis]led to believe, under current federal law and FCC rules, local governments still retain most of their regulatory authority over these issues, including compliance with operational safety regulations. These include compliance with the FCC's OET 65 EMF radiation standards and TIA ANSI 222. TIA ANSI 222 is part of the ANSI Code and expressly deals with the issue

of tower safety, including the design and the ongoing physical state or condition of a tower and the equipment attached to it. Compliance with TIA 222, or in a few states' the functional equivalent, is the elephant in the room that few applicants are addressing. In handling hundreds of applications for modifications or co-locations for communities in just the last 24 months, we've found it to be the exception rather than the rule when a wireless facility passes a TIA 222 safety inspection (done by a third party). It's largely a matter of how that authority is implemented and administered, rather than the existence of the authority itself. The authority exists, but as with all things it must be implemented and administered in accordance with the law.

Backhauling Options

While the new player's business model involves erecting (tall) monopoles in the PROW to enable carriers and IAP's to use microwave to backhaul the signal to the switch, **microwaving is not a technical necessity**, but rather simply an alternative means of backhauling the signal. The alternative is fiber. Consequently, a community that prohibits new, separate wireless communications support structures in the PROW that are taller than the existing poles or light standards should not run afoul of the federal prohibition against communities acting in a manner that has the effect of "prohibiting" the provision of service (47 U.S.C. §332(c)(7,B,II).

A New Type of Support Structure

There has been a new development in support structures specifically for use in the PROW. These new structures allow accommodation of multiple carriers, with all antennas housed internally, and they do not exceed the height of the adjacent utility or light poles. They can function as a utility pole for incumbent utilities and others such as a fiber transport company, and can also be designed as a light pole, or both. However, before local governments can effectively promote these structures as alternatives to tall monopoles, the owner(s) of the existing utility or light poles must be on board with the concept, and there must be someone on staff, or available to staff, who truly knows the applicable laws that allow local governments to achieve their goals. That person also needs to know and understand the new technology and its true siting needs, as opposed to the merely asserted need. Then the two areas of knowledge can be "married" to create a win-win regulatory situation.

HR 6409 and FCC Rulemaking 14-153

In addition to the 1996 Telecommunications Act, the federal legislation and FCC rules that are most directly applicable to the deployment of new facilities and the modification of existing facilities today are HR 6409 (of the Middle Class Tax Relief and Job Creation Act of 2012), the FCC Declaratory Ruling 09-99, and the FCC Report and Order 14-153 (clarifying HR 6409 and Declaratory Ruling 09-99).

With regard to the process for reviewing an application for an "eligible" facility under Section 6409(a), the legislation establishes two categories of wireless-related applications: an "eligible" facility and a "substantial" modification. Notably, it does not do anything as regards permitting new support structures/towers or "substantial" modifications of existing facilities. There have been numerous articles published that discuss in detail the specifics of what constitutes an "eligible" facility, so that is not addressed in this article. Notably, Section 6409(a) applies only to state and local governments acting in their role as land-use regulators and does not apply to them acting in their proprietary capacities (i.e., as the owners of public property,

including the PROW vis-à-vis franchise or encroachment agreements). These remain contractual in nature and are not encumbered by the new regulations.

What's Preempted Under 6409 and 14-153?

The FCC Report and Order 14-153 expressly protects and reconfirms local authority to enforce and condition approval on compliance with generally applicable building, structural, electrical, and safety codes and with other laws codifying objective standards reasonably related to health and safety, including local zoning and wireless siting, design, and construction regulations. However, 6409 and 14-153 do preempt the following:

- The definitions of what constitute an "eligible facility" and a "substantial modification" of a facility, both inside the PROW and outside the PROW.
- The maximum time allowed for determination of completeness/incompleteness and action on an application (i.e., the "Shot Clock" requirement). The allowed time periods are 60 days for an "eligible facility" and 150 days for a "substantial modification" or for a new support structure/tower (unless a longer period of time is mutually agreeable).
- Certain NEPA requirements, under certain conditions, for an "eligible facility" application.
- Proof-of-technical- need for 'eligible' facilities.

Attaching Conditions to Eligible Facilities Permits

Given that a community must permit an eligible facility application, and may not deny it, a key issue is that of being able to attach conditions. We are not aware of any FCC rule or case law that prohibits attaching conditions to a wireless facility permit, including eligible facility applications. However, for an eligible facility application on an existing structure, the law does prohibit attaching any condition(s) in excess of, or that are more stringent, than are needed to assure compliance with the permit issued for the original facility.

Handling Today's Situation

The current situation, as it has developed, is a game-changer for planners and local officials. Regrettably, in our experience many, if not most, municipalities are unprepared for what will be the large number of applications, often submitted simultaneously, for small cell sites, DAS nodes, and microwave backhaul installations, especially in the public rights-of-way. We have seen communities as small as 1,500 residential units have as many as a half dozen applications filed simultaneously by a single carrier. In other larger communities as many as 20 applications, or notices of intent for as many, if not more, applications have been filed simultaneously by a single applicant. Both of these situations place an unreasonable burden on staff and, because of the Shot Clock requirement, often force them to place these applications ahead of other types of applications awaiting action. Consequently, staff is often forced to "rubber stamp" the applications (as submitted), rather than having the time to review the applications in the detail needed, and intended by both Congress and the FCC.

Because the requests to place new [tall] wireless facilities in the PROW is new territory for many municipalities, we recommend that they start immediately thinking carefully about the end result(s) they want to achieve. This includes what they want to prevent, what they want to encourage, and what they want to

assure happens, as well as the policies needed to achieve those results. As examples, does the community want to regulate any of the following vis-à-vis the PROW?

- The maximum allowable height of facilities in the PROW.
- The minimum separation distances between wireless facilities.
- The location in the PROW, e.g. in front of residences.
- Appearance/aesthetics (e.g., camouflaging to make it unrecognizable as a wireless facility to a layperson and thus minimize the impact on the nature and character of the area).
- Setback distances.
- Placement and appearance of ancillary equipment (e.g., equipment enclosures).
- The amount of rent charged for the private, commercial use of the PROW.

Since these facilities will likely be needed throughout most communities, and are often attempted to be placed directly in front of residences and in sensitive historic preservation and view shed areas, planners and local officials should be very careful in making the necessary new policy decisions regarding placement, size, and appearance in or near the PROW. In doing so, it is critical to keep in mind the law of unintended or unforeseen consequences. A reasonably in-depth knowledge of the industry, and especially what it considers its confidential and proprietary plans and goals, is the key to preventing this! To attempt to do this without an intimate knowledge of the industry can be dangerous and can have both short and long term undesired consequences.

Recommendations

The following are recommended for consideration by planners and local officials and are based upon what have to date been unchallenged policies and practices.

Priority of Types of Permits

Make sure the community's wireless/tower regulations expressly state that even though a new structure may be proposed to go in the PROW, and notwithstanding anything else to the contrary, such a new structure, regardless of its location, height, or appearance, should be defined as first, foremost, and always a [wireless] communications tower or facility, and is subject to the local wireless/tower regulations. Any other permitting regulations should be secondary to this and should require a zoning or land-use permit under the local wireless/tower regulations before obtaining any other permit.

Maximum Permitted Height

We recommend that communities establish a maximum permitted height for wireless facilities in the PROW. Communities may want to consider different height limits for different zoning districts, or different geographic parts of the community regardless of the zoning district. For taller facilities proposed in less restrictively zoned districts, such as industrial or commercial districts, but near more restrictively zoned districts, such as residential districts, there is an easy way to mitigate the impact and hopefully prevent a good deal of political dissatisfaction from the public. A community may want to require that, within a given distance of the boundary of an adjacent zoning district that is more restrictive (e.g., within 1,000 feet of an R-1 zoning

district), the height limit is the same as the more restrictive district. Otherwise, residents living on or near the district border will likely have to live the effects of a facility only a short distance from their home that would not otherwise be allowed in the residential district. In many states, if a structure is allowed in a zoning district there is a presumption that it is in harmony with the area, so it is critical that the local regulations place restrictions on facilities that are in keeping with the nature and character of the particular zoning district. By the same token, the PROW can be deemed a separate de facto 'district' with its own requirements and restrictions.

An example could be that the maximum permitted height in the PROW (or within reasonable proximity to the PROW) may be no taller than the existing, immediately adjacent utility poles or light standards. This is not an unreasonable limit, since the vast majority of the new wireless facilities going in the PROW are for capacity and are not primarily to increase coverage. They are intended to serve only a portion of the area currently served, and thus increased coverage is not normally an issue, other than to hopefully improve service to residents in some small areas on the border of the current service area. The goal is to have no service 'borders'. Since they're generally going to be serving only a portion of the area currently served, these sites seldom need to be taller than the existing adjacent utility poles. Providers may need to construct two shorter facilities, rather than a single taller facility or one shorter facility in combination with a co-location on an existing structure, but most communities would prefer either of these situations to a single tall facility (that's really not needed technically).

Something that is seldom known or understood is that federal law does not require a community to grant a permit for a single (tall) facility if two or more smaller/shorter facilities can achieve substantially the same result, or better; nor does it require a community to take into account the capital cost to a carrier to achieve what it desires while complying with land use and zoning regulations. Notably, under federal law those costs are allowed to be capitalized under an accelerated depreciation schedule. This has significant tax benefits to a business.

Minimizing Visual Impact in the PROW

To minimize the visual impact and control the appearance of a specific facility in the PROW, as the number one siting priority communities might want to consider requiring that any proposed [new] array of antennas be mounted on a structure that enables the antennas to be placed inside the support structure, unless the applicant can prove (by clear and convincing technical evidence) that doing so would serve to "prohibit" the provision of service to at least a substantial portion of the area intended to be served by the new facility (47 U.S.C. §332(c)(7,B,II). This is a very high bar that Congress intentionally set, and in most instances it is extremely difficult to prove technically that doing so would serve to "prohibit: the provision of service, assuming that one knows and understands the technical intricacies and nuances involved. Another slightly different approach would be to prohibit any new antenna array from being visibly identifiable as such to the average person—different wording, but the same effect. An example of the extent to which the visual impact can be controlled, and that has been complied with by the industry, is the Adirondack Park Agency's policy (in upstate New York) that new towers and wireless facilities be "substantially invisible".

Rather than just accepting another [ugly] new array of antennas attached to an existing utility pole or light standard, and notwithstanding 6409(a), there are communities who require that, instead of just co-locating on

an existing utility or light pole with the antennas mounted on the outside around the pole, an applicant must arrange to have the pole replaced with one that houses the antenna(s) inside. They may still locate in the PROW, but they must do it in accordance with this 'stealth' or 'camouflaging' policy in the community's tower and wireless facilities siting regulations.

Revenue/Rent

For reasons of generating revenue for the community, a community may prefer new wireless facilities to be located in the PROW as the #1 siting priority. The rent for the commercial use of the PROW can be deemed an encroachment fee, a franchise fee, or any functional equivalent. In most states this can be accomplished easily in the local regulations. This rent can be significantly more than many communities realize they may demand and regrettably all-too-many undervalue this asset or are convinced that charging less will gain them something or prevent some negative effect. In more than four decades assisting hundreds of communities, we do not recall a single instance when a community gained something significant or prevented something negative by charging a low rent. Rent for the private commercial use of the PROW should be a set amount, which could potentially be dependent upon the location. IF done for legitimate purposes, this could be a significant tool to incent or dis-incent specific types of locations. On a related note, think outside the box when negotiating lease agreements and pay particular attention to the often seemingly innocuous and detailed language of the less "sexy" issues in the proposed agreement. A number of issues are buried there to avoid scrutiny, and seldom is the language in the lessor's favor.

One example of this is the industry preference to slip in what seems a 'reasonable' requirement for a periodic rent escalator to be a percent increase, e.g. fifteen percent, over the initial rent every five years. If this every-five-year approach is accepted for the common twenty to thirty year lease, the community (unknowingly) gives up more than half the revenue it would otherwise have realized from the rent.

Another example is the trap of tying the initial rent to the 'prevailing' rent paid in the area. That sounds reasonable, doesn't it? But most current as well as older leases, for both towers and antennas attached to other structures, were signed for significantly less rent than the landlord could have obtained, commonly as much as two-thirds less. In such instances, If all the rents in the area are based on the 'prevailing' amount at the time the first leases were signed, by definition that base amount never changes, not unlike with rent controlled apartments. This creates a 'Catch-22' situation until the lease expires and comes up for renewal and the landlord has hopefully either learned what it gave up originally or has hired someone experienced in negotiating leases for towers and co-located antennas. Caution: One should never attempt to negotiate something that they don't the true value of to both parties. Not what the lessee says the value is or isn't, but what you know the true value to be. Also, unless required to do so by state law, do not negotiate these leases as real estate deals, as that can limit a community's options and even its rights. They should be negotiated as arms-length business deals, and not tied or related to any 'comparables'.

When the State Prohibits Requiring the Use of the Community's Property

Some states, such as North Carolina, prohibit communities from requiring the use of their property. However, there are almost always multiple owners of the PROW in a community (e.g., the municipality, the county or

the state). Simply requiring that the PROW in general (not just the ones owned by the community) are deemed to be the number one siting priority should steer clear of state prohibitions against requiring the use of "the community's" property. It then becomes a general land use issue which is permissible, not substantially any different than designations for industrial, commercial or residential property, and is not tied to the ownership of the land.

For those preferring that these facilities be located on the PROW, the community could require that for a facility to be located outside the PROW, but within a given distance of the PROW, the applicant must provide "clear and convincing" (technical) evidence of the inability to locate in the PROW, perhaps even using a couple of sites instead of just one, and still accommodate the need or goal of the carrier, and likely provide even better service. In this scenario there would be no "prohibition" of the provision of service vis-a-vis federal law. Conversely, if the community wants to minimize the location of new facilities in the PROW, the PROW can be placed further down in the list of siting priorities, perhaps even last.

Conclusion

The rise in applications for wireless facilities in the PROW is a classic NIMBY situation, but in this case it's one that actually has solutions. In spite of what many local officials and their staff and attorneys have been erroneously led to believe, for the most part communities can create win-win situations without giving up rights or regulatory control. Permitting can be done so that carriers can get what they need technically, but with a minimum of public controversy and with minimal visual intrusion (virtually undetectable) and impact on property values.

The industry often tries to get Planning staff and local officials to believe that if they have the type of regulations they really need and should have, it will discourage and slow down deployment by the industry. History has shown this to not to be factually accurate. One need only compare the situation in communities that have strict regulations crafted with an in-depth knowledge of the industry and the law, to the situation in communities with minimal or even no regulation. Arguably, some of the best wireless service in the Nation is found in communities with strict regulations and less stringent regulations often lead to less than desired service in the community.

Officials, staff, and municipal attorneys should never make assumptions, unless they know for a fact that their assumptions are correct. Communities should consider retaining an expert consultant (who has no ties with the industry) and discuss with that person their objectives and the several options they have to achieve their policy goals. However, be careful of people with just several FCC licenses and a bunch of acronyms after their name, as that doesn't not make them knowledgeable of the industry or technical experts. Be equally cautious with those holding a PE license, but with only a single specialty area of practice such as 'structural'. Many times such persons are not qualified to proffer 'expert' opinion or testimony outside their specialty, especially as regards proof-of-technical-need for what's requested. Conversely, there are those with no engineering degree, but who are quite experienced with analyzing technical date and can be qualified as 'experts' based on practice and experience, similar to a 'Mustang' NCO in the military.

The industry sees a large part of its job as being to avoid regulations, and is constantly looking for ways around, or inherent legal problems with, regulations, whether the regulations are federal, state, or local. That

doesn't necessarily make them bad actors, though. They're simply not charged with protecting the public interest as are local officials. They're charged with maximizing the company's bottom line. However, if handled carefully, both sides can end up on the same page. It's up to the local officials to see that they and their staff know, or have access to, an expert who knows how to assure that both the public and the public interest are protected. The industry representatives need to be shown that abiding by local regulations can still get them what they need technically, in a timely manner, and that they can discuss issues with people who are knowledgeable and informed and who understand their needs and limitations and various ways of achieving their goal. With all the new developments that require different approaches, there is little benefit to be derived from limiting one's approach to thinking 'inside' the traditional box.

In the meantime, the best advice we can proffer is to not make assumptions and trust only those who are proven experts, and those who do not work both sides of the street, and whose primary duty and obligation is to serve you, and not a member of the industry.

About the Author

L.S. (Rusty) Monroe is an owner of Monroe Telecom Associates, LLC and a co-owner of The Center for Municipal Solutions (CMS), both of which for 20 years have assisted local governments in dealing with the regulation of towers and wireless facilities. These entities currently represent approximately 900 communities in 38 states. Mr. Monroe has conducted workshops and seminars for more than thirty local and national government organizations on the regulation of towers and wireless facilities, including multiple times for a number of them. Questions may be sent to **lmonroe8@nc.rr.com**.

Sent from my iPad

Martha Alvarez

From: Mary Kirchwehm on behalf of Bruce Moe
Sent: Tuesday, March 26, 2019 3:59 PM
To: Martha Alvarez
Subject: FW: Cell Phone Tower

Bruce Moe
City Manager
(310) 802-5053
bmoe@citymb.info
City of Manhattan Beach, CA

Office Hours: M - Th 7:30AM - 5:30 PM | Alternate Open Fridays 8:00AM - 5:00 PM | Closed Alternate Fridays | Not Applicable to Public Safety

Here for you 24/7, use our click and fix it app www.citymb.info/reachmanhattanbeach

-----Original Message-----
From: MARE Brokers <marebrokers@aol.com>
Sent: Monday, March 25, 2019 6:47 AM
To: List - City Council <CityCouncil@citymb.info>
Subject: Cell Phone Tower

Hi,

I am a resident of MB for quite a few years now. I love our community because of its beauty, small town feel, people, and location. I also love how family-friendly it is with all its public spaces for kids.

It came to my attention that MB is considering putting a cell tower by American Martys school/church. I hope it is just a rumor, but in case it's not, I ask that the city PLEASE refrain from doing so.

A cell phone tower, besides the obvious ugliness of it (I don't care if they try to look like trees), is also a health-risk factor that really concerns me and all parents who may have homes around the area or have kids that attend AM. There are so many open spaces outside of the small, tight-space community of MB that putting it right in the middle of it seems very illogical, and seems like the community leaders would be approving it regardless of the people's will - and THaT is not a good thing at all, not for the city council, and not for the people.

Please listen to the community and refrain from allowing a cell phone tower by the school/church. Look elsewhere in open areas outside of our MB community to do so.

Best,
Sonia Haendel
A concerned citizen

Sent from my iPhone

Martha Alvarez

From: Mary Kirchwehm on behalf of Bruce Moe
Sent: Tuesday, March 26, 2019 3:14 PM
To: Martha Alvarez
Subject: FW: More and more keeps coming out.....

From: Gino Nucci <ginonucci@gmail.com>
Sent: Tuesday, March 26, 2019 10:16 AM
To: Britney Nucci <britney.loren@gmail.com>; List - City Council <CityCouncil@citymb.info>
Cc: Nancy Hersman <nhersman@citymb.info>; David Lesser <dlesser@citymb.info>; Steve Napolitano <snapolitano@citymb.info>; Richard Montgomery <rmontgomery@citymb.info>; Amy Thomas Howorth <ahoworth@citymb.info>
Subject: Re: More and more keeps coming out.....

FYI - Cell tower will be removed due to pending litigation fears against the school.

https://sacramento.cbslocal.com/2019/03/25/ripon-cell-tower-school-removal-cancer/

On Wed, Mar 13, 2019 at 3:17 PM Britney Nucci <britney.loren@gmail.com> wrote:

> Please help protect your residents!
>
> https://sacramento.cbslocal.com/2019/03/12/school-cell-tower-causing-cancer/

Bruce Moe
City Manager
P: (310) 802-5053
E: bmoe@citymb.info

City of Manhattan Beach
1400 Highland Avenue, Manhattan Beach, CA 90266
www.citymb.info

Office Hours: M - Th 7:30AM - 5:30 PM | Alternate Open Fridays 8:00AM - 5:00 PM | Closed Alternate Fridays | Not Applicable to Public Safety

Martha Alvarez

From: Bruce Moe
Sent: Monday, March 18, 2019 7:49 AM
To: Martha Alvarez
Subject: FW: Cell towers

Bruce Moe
City Manager
(310) 802-5053
bmoe@citymb.info
City of Manhattan Beach, CA

Office Hours: M - Th 7:30AM - 5:30 PM | Alternate Open Fridays 8:00AM - 5:00 PM | Closed Alternate Fridays | Not Applicable to Public Safety

Here for you 24/7, use our click and fix it app www.citymb.info/reachmanhattanbeach

-----Original Message-----
From: Mary Anne Doms <domsclan@gmail.com>
Sent: Monday, March 18, 2019 6:48 AM
To: Jason Masters <jmasters@citymb.info>; List - City Council <CityCouncil@citymb.info>
Subject: Cell towers

I am completely opposed to the proposal to erect cell towers in MB neighborhoods. The closest proposed to tower to my home is the one proposed for Ardmore and Second Street, but I am against all cell towers in residential neighborhoods.
Thank you,
Mary Anne Doms

Sent from my iPad