



# County of Santa Cruz

## COUNTY ADMINISTRATIVE OFFICE

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SUSAN MAURIELLO, J.D., COUNTY ADMINISTRATIVE OFFICER

January 18, 2012

AGENDA: January 24, 2012

Board of Supervisors  
County of Santa Cruz  
701 Ocean Street  
Santa Cruz, California 95060

### SmartMeter Moratorium

Dear Members of the Board:

On December 13, 2011, your Board directed this office to return today with a report on issues associated with the current SmartMeter moratorium ordinance, and information on the possible extension of the moratorium for an additional year. Your Board also directed the Public Health Officer to return with an analysis of the research on the health effects of SmartMeters, and directed County Counsel to return with a report regarding the legality of a public utility refusing service to customers who are willing to pay for service and are willing to have an analog meter.

As your Board is aware, the California Public Utility Commission is considering PG&E's application for modification to PG&E's SmartMeter proposal to include an option for residential customers who do not wish to have a wireless SmartMeter. The item was scheduled on the January 12, 2012 agenda, but the commission anticipates that a vote on the proposal will not happen prior to February 1, 2012.

### Moratorium Ordinance

Your Board has heard significant amounts of testimony regarding SmartMeters and concerns about their possible impact on health, questions about their accuracy, their inability to recover real-time data, privacy concerns, and the lack of safety standards for chronic long-term exposure to electromagnetic frequency radiation. In addition, PG&E has not presented studies to support their primary justification that the SmartMeter program will encourage customers to more effectively manage their utilization of electricity.

Given the broad concern about SmartMeter technology and your Board's desire to go on record, this office and County Counsel believe that notwithstanding the enforcement challenges, that it is in the best interest of public health, safety, and welfare for your Board to adopt the attached ordinance (Attachment A) implementing a temporary moratorium on the installation of SmartMeters in or on any home, apartment, condominium or business within the unincorporated area of the County. The purpose of the moratorium is to allow additional time to educate the CPUC about these concerns and allow time for adequate study of the impacts resulting from the SmartMeter technology.

PG&E, asserting that local governments do not have jurisdiction on the installation of the meters, has ignored the previous Santa Cruz County ordinance as well as similar ordinances adopted in other jurisdictions. PG&E believes that only the California Public Utilities Commission (CPUC) has the authority to stop installation of the meters. Elected representatives, including the Board of Supervisors of Marin County, have acknowledged the limits of their ordinances to actually stop the installation of the meters. However, jurisdictions have adopted their ordinances with statements that such ordinances play an important role by informing the CPUC of significant community concerns.

#### Health Officer Report

The Public Health Officer's report is provided as Attachment B. The report discusses the health risks associated with SmartMeters, the scientific reports and actions the public might take to mitigate potential harm.

#### PG&E Shutoff Update

At the December 13, 2011, meeting, your Board questioned the PG&E representative about the utility company's decision to shut off power to the homes of residents who removed their SmartMeters. Subsequent to that meeting, PG&E restored power to those residences with the intent of charging them based on past electrical bills.

#### Petition

At your January 10, 2012 meeting, your Board was presented with a petition to the California Public Utilities Commission regarding PG&E SmartMeter Opt-out Application, (Petition A.11-03-014). The petition provides the opportunity for local elected officials to urge the Commission to continue Petition A.11-03-014 for further public hearings. The petition is provided as Attachment C. It is recommended that your Board direct the Chair to sign the petition on behalf of the Board and submit it to the PUC.

#### IT IS THEREFORE RECOMMENDED THAT YOUR BOARD:

- (1) Direct the Chair to send a letter to the PUC calling for independent testing and monitoring of SmartMeters in place to determine duty cycles and frequency, especially in the following circumstances
  - Where both gas and electric meters are located closely together
  - Where there is a bank of SmartMeters such as on a multi-family residential building or apartment building
  - Where there is a collector meter on a home that serves the home, plus as many as 5000 other residential units in the area
  - Where a SmartMeter on a home acts as a relay for other local neighborhood meters

- (2) Direct the Chair to send a letter to the PUC and PG&E allowing any Santa Cruz County resident to request removal of a previously installed SmartMeter and the replacement with an analog meter
- (3) Accept and file the report from the Public Health Officer
- (4) Direct the Chair to sign the petition to the California Public Utilities Commission on behalf of the Board urging the Commission to delay consideration of a preliminary decision on PG&E's SmartMeter application until further public hearing and input are completed, and
- (5) Adopt the attached ordinance imposing a temporary moratorium on the installation of SmartMeters within the unincorporated area of Santa Cruz County and direct the Clerk of the Board to place the ordinance on the February 7, 2012 agenda for final consideration.

Very truly yours,



SUSAN A. MAURIELLO  
County Administrative Officer  
Attachments:

- A. Proposed Ordinance
- B. Report from Public Health Officer
- C. Petition to CPUC

cc: PG&E  
California Public Utilities Commission

**ORDINANCE NO. \_\_\_\_\_**

**AN UNCODIFIED ORDINANCE OF THE COUNTY OF SANTA CRUZ  
IMPOSING A TEMPORARY MORATORIUM ON THE INSTALLATION  
OF SMARTMETERS AND RELATED EQUIPMENT IN, ALONG,  
ACROSS, UPON, UNDER AND OVER THE PUBLIC STREETS AND  
OTHER PLACES WITHIN THE UNINCORPORATED AREA OF SANTA  
CRUZ COUNTY**

The Board of Supervisors of the County of Santa Cruz find as follows:

**WHEREAS**, the County of Santa Cruz (the “County”), through its police powers granted by Article XI of the California Constitution, retains broad discretion to legislate for public purposes and for the general welfare, including but not limited to matters of public health, safety and consumer protection; and

**WHEREAS**, the County of Santa Cruz has a franchise agreement with PG&E that has been in effect since 1955; and

**WHEREAS**, in addition, the County retains authority under Article XII, Section 8 of the Constitution to grant franchises for public utilities, and pursuant to California Public Utilities Code section 6203, “may in such a franchise impose such other and additional terms and conditions..., whether governmental or contractual in character, as in the judgment of the legislative body are to the public interest;” and

**WHEREAS**, Public Utilities Code section 2902 reserves the County’s right to supervise and regulate public utilities in matters affecting the health, convenience and safety of the general public, “such as the use and repair of public streets by any public utility, the location of the poles, wires, mains, or conduits of any public utility, on, under, or above any public streets, and the speed of common carriers operating within the limits of the municipal corporation;” and

**WHEREAS**, Pacific Gas & Electric Company (“PG&E”) is now installing SmartMeters in Central and Northern California and is installing these meters within the County of Santa Cruz; and

**WHEREAS**, concerns about the impact and accuracy of SmartMeters have been raised nationwide, leading the Maryland Public Service Commission to deny permission on June 21, 2010 for the deployment of SmartMeters in that state. The State of Hawaii Public Utility Commission also recently declined to adopt a smart grid system in that state. The CPUC currently has pending before it a petition from the City and County of San Francisco, and other municipalities, seeking to delay

the implementation of SmartMeters until the questions about their accuracy can be evaluated; and

**WHEREAS**, major problems and deficiencies with SmartMeters in California have been brought to the attention of the Board of Supervisors of the County of Santa Cruz, including PG&E's confirmation that SmartMeters have provided incorrect readings costing ratepayers untold thousands of dollars in overcharges and PG&E's records outlined "risks" and "issues" including an ongoing inability to recover real-time data because of faulty hardware originating with PG&E vendors; and

**WHEREAS**, the ebb and flow of gas and electricity into homes discloses detailed information about private details of daily life. Energy usage data, measured moment by moment, allows the reconstruction of a household's activities: when people wake up, when they come home, when they go on vacation, and even when they take a hot bath. SmartMeters represent a new form of technology that relays detailed hitherto confidential information reflecting the times and amounts of the use of electrical power without adequately protecting that data from being accessed by unauthorized persons or entities and as such pose an unreasonable intrusion of utility customers' privacy rights and security interests. Indeed, the fact that the CPUC has not established safeguards for privacy in its regulatory approvals may violate the principles set forth by the U.S. Supreme Court in *Kyllo v. United States* (2001), 533 U.S. 27; and

**WHEREAS**, significant health questions have been raised concerning the increased electromagnetic frequency radiation (EMF) emitted by the wireless technology in SmartMeters, which will be in every house, apartment and business, thereby adding additional human-made EMF to our environment around the clock to the already existing EMF from utility poles, individual meters and telephone poles; and

**WHEREAS**, FCC safety standards do not exist for chronic long-term exposure to EMF or from multiple sources, and reported adverse health effects from electromagnetic pollution include sleep disorders, irritability, short term memory loss, headaches, anxiety, nausea, DNA breaks, abnormal cell growth, cancer, premature aging, etc. Because of untested technology, international scientists, environmental agencies, advocacy groups and doctors are calling for the use of caution in wireless technologies; and

**WHEREAS**, the primary justification given for the SmartMeters program is the assertion that it will encourage customers to move some of their electricity usage from daytime to evening hours; however, PG&E has conducted no actual pilot projects to determine whether this assumption is in fact correct. Non-transmitting time-of-day meters are already available for customers who desire

them, and enhanced customer education is a viable non-technological alternative to encourage electricity use time shifting. Further, some engineers and energy conservation experts believe that the SmartMeters program--in totality--could well actually increase total electricity consumption and therefore the carbon footprint; and

**WHEREAS**, this Board of Supervisors sent a letter to the CPUC on September 15, 2010 expressing concern about reports that SmartMeter technology was interfering with the proper functioning of common household devices and requesting a response from the CPUC; and

**WHEREAS**, there has been no response by the CPUC to the letter sent by the Board of Supervisors; and

**WHEREAS**, because the potential risks to the health, safety and welfare of County residents are so great, the Board of Supervisors wishes to adopt a moratorium on the installation of SmartMeters and related equipment within the unincorporated area of the County of Santa Cruz. The moratorium period will allow the Council on Science and Technology and legislative process referenced above to be completed and for additional information to be collected and analyzed regarding potential problems with SmartMeters; and

**WHEREAS**, there is a current and immediate threat to public health, safety and welfare because, without this urgency ordinance, SmartMeters or supporting equipment will be installed or constructed or modified in the County without PG&E's complying with the CPUC process for consultation with the local jurisdiction, the County's Code requirements, and subjecting residents of Santa Cruz County to the privacy, security, health, accuracy and consumer fraud risks of the unproven SmartMeter technology; and

**WHEREAS**, the Board of Supervisors hereby finds that it can be seen with certainty that there is no possibility that the adoption and implementation of this Ordinance may have a significant effect on the environment. This Ordinance does not authorize construction or installation of any facilities and, in fact, imposes greater restrictions on such construction and installation in order to protect the public health, safety and general welfare. This Ordinance is therefore exempt from the environmental review requirements of the California Environmental Quality Act (CEQA) pursuant to Section 15061(b)(3) of Title 14 of the California Code of Regulations; and

**WHEREAS**, there is no feasible alternative to satisfactorily study the potential impact identified above as well or better with a less burdensome or restrictive effect than the adoption of this interim urgency moratorium ordinance; and

**WHEREAS**, based on the foregoing it is in the best interest of public health, safety and welfare to allow adequate study of the impacts resulting from the SmartMeter technology; therefore it is appropriate to adopt a temporary moratorium that would remain in effect from the date of its adoption until December 31, 2012, unless your Board acts to repeal it prior to that date.

**NOW, THEREFORE BE IT ORDAINED** by the Board of Supervisors of the County of Santa Cruz as follows:

### **SECTION I**

Moratorium. From and after the effective date of this Ordinance, no SmartMeter may be installed in or on any home, apartment, condominium or business of any type within the unincorporated area of the County of Santa Cruz, and no equipment related to SmartMeters may be installed in, on, under, or above any public street or public right of way within the unincorporated area of the County of Santa Cruz.

### **SECTION II**

Violations of the Moratorium may be charged as infractions or misdemeanors as set forth in Chapter 1.12 of the Santa Cruz County Code. In addition, violations may be deemed public nuisances, with enforcement by injunction or any other remedy authorized by law.

### **SECTION III**

This Board of Supervisors finds and determines that: (a) there is a current and immediate threat to the public peace, health, or safety; (b) the moratorium must be imposed in order to protect and preserve the public interest, health, safety, comfort and convenience and to preserve the public welfare; and (c) it is necessary to preserve the public health and safety of all residents or landowners adjacent to such uses as are affected by this interim ordinance as well as to protect all of the citizens of Santa Cruz County by preserving and improving the aesthetic and economic conditions of the County.

### **SECTION IV**

If any provision of this interim ordinance is held to be unconstitutional, it is the intent of the Board of Supervisors that such portions of such ordinance are severable from the remainder and the remainder is given full force and effect.

**SECTION V**

This interim ordinance is not subject to the California Environmental Quality Act (CEQA) pursuant to Section 15060(c) (2) – the activity will not result in a direct or reasonably foreseeable indirect physical change in the environment and Section 15060(c) (3) – the activity is not a project as defined in Section 15378 of the CEQA Guidelines, because it has no potential for resulting in physical change to the environment, directly or indirectly.

**SECTION VI**

This ordinance shall take effect on the 31<sup>st</sup> day after the date of final passage.

PASSED AND ADOPTED THIS \_\_\_\_\_ day of \_\_\_\_\_, 2012, by the Board of Supervisors of the County of Santa Cruz by the following vote:

- AYES: SUPERVISORS
- NOES: SUPERVISORS
- ABSENT: SUPERVISORS
- ABSTAIN: SUPERVISORS

\_\_\_\_\_  
Chairperson of the Board of Supervisors

Attest: \_\_\_\_\_  
Clerk of the Board

APPROVED AS TO FORM:

  
\_\_\_\_\_  
County Counsel



# County of Santa Cruz 0257

## HEALTH SERVICES AGENCY

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**Poki Stewart Namkung, M.D., M.P.H.**  
**Health Officer**  
**Public Health Division**

### Memorandum

Date: January 13, 2012  
 To: Santa Cruz County Board of Supervisors  
 From: Poki Stewart Namkung, M.D., M.P.H. *PON*  
 Health Officer  
 Subject: Health Risks Associated With SmartMeters

### Overview

On December 13, 2011, Santa Cruz County Board of Supervisors directed the Public Health Officer to return on January 24, 2012, with an analysis of the research on the health effects of SmartMeters.

### **Background**

In order to analyze the potential health risks associated with SmartMeters, the following questions should be asked:

- 1) What is the SmartMeter system and what is the potential radiation exposure from the system?
- 2) What scientific evidence exists about the potential health risks associated with SmartMeters?
- 3) Are there actions that the public might take to mitigate any potential harm from SmartMeters?

SmartMeters are a new type of electrical meter that will measure consumer energy usage and send the information back to the utility by a wireless signal in the form of pulsed frequencies within the 800 MHz to 2400MHz range, contained in the microwave portion of the electromagnetic spectrum. SmartMeters are considered part of 'smart grid' technology that includes: a) a mesh network or series of pole-mounted wireless antennas at the neighborhood level to collect and transmit wireless information from all SmartMeters in that area back to the utility; b) collector meters, which are a special type of SmartMeter that collects the radiofrequency or microwave radiation signals from many surrounding

buildings (500-5000 homes or buildings) and sends the information back to the utility; and c) proposed for the future, a power transmitter to measure the energy use of individual appliances (e.g. washing machines, clothes dryers, dishwasher, etc) and send information via wireless radio frequency signal back to the SmartMeter. The primary rationale for SmartMeters and grid networks is to more accurately monitor and direct energy usage.

The public health issue of concern in regard to SmartMeters is the involuntary exposure of individuals and households to electromagnetic field (EMF) radiation. EMFs are everywhere, coming from both natural and man-made sources. The three broad classes of EMF are:

- extremely low frequency, ELF (from the sun or powerlines)
- radio frequency, RF (from communication devices, wireless devices, and SmartMeters)
- extremely high frequency, known as ionizing radiation (x-rays and gamma rays)

Much of this exposure is beyond our control and is a matter of personal choice; however, public exposure to RF fields is growing exponentially due to the proliferation of cell phones, and wireless fidelity (Wi-Fi) technology. To understand the relationship between EMF from SmartMeters and other sources, it is helpful to view the electromagnetic spectrum:

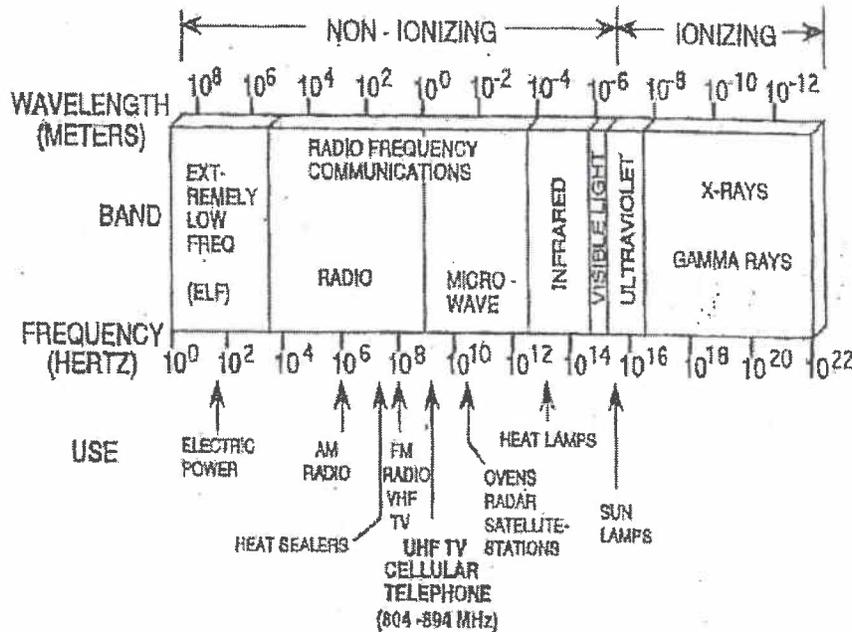


Fig. 1: The electromagnetic spectrum, showing the relations between ELF and RF fields, wavelength and frequency, and the ionizing and non-ionizing portions of the spectrum.

The Federal Communications Commission (FCC) has adopted limits for Maximum Permissible Exposure (MPE) that are based on exposure guidelines published by the National Council on Radiation Protection and Measurements (NCRP). The limits vary with

the frequency of the electromagnetic radiation and are expressed in units of microwatts per centimeter squared. A SmartMeter contains two antennas whose combined time-averaged public safety limit of exposure is  $655\mu\text{W}/\text{cm}^2$  (Sage, 2011). According to the California Council on Science and Technology (CCST) Report (2011), within distances of three to ten feet, SmartMeters would not exceed this limit. However, CCST did not account for the frequency of transmissions, reflection factors, banks of SmartMeters firing simultaneously, and distances closer than three feet. There are numerous situations in which the distance between the SmartMeters and humans is less than three feet on an ongoing basis, e.g. a SmartMeter mounted on the external wall to a bedroom with the bed placed adjacent to that mounting next to the internal wall. That distance is estimated to be one foot. The CCST Report also states that SmartMeters will generally transmit data once every four hours, and once the grid is fully functional, may transmit "more frequently." It has been aptly demonstrated by computer modeling and real measurement of existing meters that SmartMeters emit frequencies almost continuously, day and night, seven days a week. Furthermore, it is not possible to program them to not operate at 100% of a duty cycle (continuously) and therefore it should not be possible to state that SmartMeters do not exceed the time-averaged exposure limit. Additionally, exposure is additive and consumers may have already increased their exposures to radiofrequency radiation in the home through the voluntary use of wireless devices such as cell and cordless phones, personal digital assistants (PDAs), routers for internet access, home security systems, wireless baby surveillance (baby monitors) and other emerging devices. It would be impossible to know how close a consumer might be to their limit, making safety a uncertainty with the installation of a mandatory SmartMeter.

This report will focus on the documented health risks of EMF in general, the relevance of that data to SmartMeters exposure, the established guidelines for RF safety to the public at large, and then provide recommendations to ameliorate the risk to the public's health.

### **Evidence-based Health Risks of EMFs**

There is no scientific literature on the health risks of SmartMeters in particular as they are a new technology. However, there is a large body of research on the health risks of EMFs. Much of the data is concentrated on cell phone usage and as SmartMeters occupy the same energy spectrum as cell phones and depending on conditions, can exceed the whole body radiation exposure of cell phones (see Attachment B1, Figure 4). In terms of health risks, the causal factor under study is RF radiation whether it be from cell phones, Wi-Fi routers, cordless phones, or SmartMeters. Therefore all available, peer-reviewed, scientific research data can be extrapolated to apply to SmartMeters, taking into consideration the magnitude and the intensity of the exposure.

Since the mid-1990's the use of cellular and wireless devices has increased exponentially exposing the public to massively increased levels of RF. There is however, debate regarding the health risks posed to the public given these increased levels of radiation. It must be noted that there is little basic science funding for this type of research and it is largely funded by industry. An intriguing divide, noted by Genuis, 2011 is that most

research carried out by independent non-government or non-industry affiliated researchers suggests potentially serious effects from many non-ionizing radiation exposures; most research carried out by independent non-government or non-industry affiliated researchers suggests potentially serious effects from many non-ionizing radiation exposures research funded by industry and some governments seems to cast doubt on the potential for harm. Elements of the controversy stem from inability to replicate findings consistently in laboratory animal studies. However, analysis of many of the conflicting studies is not valid as the methodology used is not comparable. Despite this controversy, evidence is accumulating on the results of exposure to RF at non-thermal levels including increased permeability of the blood-brain barrier in the head (Eberhardt, 2008), harmful effects on sperm, double strand breaks in DNA which could lead to cancer genesis (Phillips, 2011), stress gene activation indicating an exposure to a toxin (Blank, 2011), and alterations in brain glucose metabolism (Volkow, 2011).

In terms of meta-analyzed epidemiological studies, all case-control epidemiological studies covering >10 years of cell phone use have reported an increased risk of brain tumors from the use of mobile phones (Hallberg, 2011). Other studies have pointed to an increasing risk of acoustic neuroma, salivary gland tumors, and eye cancer after several years of cell phone use and the tumors occur predominantly on the same side of the head as the phone is used. The analysis of brain cancer statistics since the mid 20<sup>th</sup> century in several countries reveals that brain tumor formation has a long latency time, an average of over 30 years to develop from initial damage.(Hallberg, 2011). Therefore using studies such as the Interphone Study which looked at shorter latency periods for the development of specific brain cancers will result in inconclusive data.

Another potential health risk related to EMF exposure, whose legitimacy as a phenomenon remains contentious, is electromagnetic hypersensitivity (EHS). In the 1950's, various centers in Eastern Europe began to describe and treat thousands of workers, generally employed in jobs involving microwave transmission. The afflicted individuals often presented with symptoms such as headaches, weakness, sleep disturbance, emotional instability, dizziness, memory impairment, fatigue, and heart palpitations. Clinical research to verify the physiological nature of this condition did not begin in earnest until the 1990's and found that the EMF involved was usually within the non-ionizing range of the electromagnetic spectrum. In the early 2000's, estimates of the occurrence of EHS began to swell with studies estimating the prevalence of this condition to be about 1.5% of the population of Sweden (Hilleert et al., 2002), 3.2% in California (Levallios et al., 2002), and 8% in Germany (infas Institut für angewandte Sozialwissenschaft GmbH, 2003).

In 2004, WHO declared EHS "a phenomenon where individuals experience adverse health effect while using or being in the vicinity of devices emanating electric, magnetic, or electromagnetic fields (EMFs)...Whatever its cause, EHS is a real and sometimes debilitating problem for the affected persons (Mild et al., 2004)."

Currently, research has demonstrated objective evidence to support the EHS diagnosis, defining pathophysiological mechanisms including immune dysregulation in vitro, with

increased production of selected cytokines and disruption and dysregulation of catecholamine physiology (Genuis, 2011).

Until recently, the diagnosis of EHS has not received much support from the medical community due to lack of objective evidence. In an effort to determine the legitimacy of EHS as a neurological disorder, however, a collection of scientists and physicians recently conducted a double-blinded research study that concluded that "EMF hypersensitivity can occur as a bona fide environmentally-inducible neurological syndrome (McCarty et al., 2011).

### **Safety Guidelines**

The guidelines currently used by the FCC were adopted in 1996, are thermally based, and are believed to protect against injury that may be caused by acute exposures that result in tissue heating or electric shock. FCC guidelines have a much lower certainty of safety than standards. Meeting the current FCC guidelines only assures that one should not have heat damage from SmartMeter exposure. It says nothing about safety from the risk of many chronic diseases that the public is most concerned about such as cancer, miscarriage, birth defects, semen quality, autoimmune diseases, etc. Therefore, when it comes to nonthermal effects of RF, FCC guidelines are irrelevant and cannot be used for any claims of SmartMeter safety unless heat damage is involved (Li, 2011).

There are no current, relevant public safety standards for pulsed RF involving chronic exposure of the public, nor of sensitive populations, nor of people with metal and medical implants that can be affected both by localized heating and by electromagnetic interference (EMI) for medical wireless implanted devices. Many other countries (9) have significantly lower RF/MW exposure standards ranging from 0.001 to 50  $\mu\text{W}/\text{cm}^2$  as compared with the US guideline of 200-1000  $\mu\text{W}/\text{cm}^2$ . Note that these recommended levels are considerably lower than the approximately 600  $\mu\text{W}/\text{cm}^2$ . (time-averaged) allowed for the RFR from SmartMeters operating in the low 900 MHz band mandated by the FCC based on only thermal consideration.

In summary, there is no scientific data to determine if there is a safe RF exposure level regarding its non-thermal effects. The question for governmental agencies is that given the uncertainty of safety, the evidence of existing and potential harm, should we err on the side of safety and take the precautionary avoidance measures? The two unique features of SmartMeter exposure are: 1) universal exposure thus far because of mandatory installation ensuring that virtually every household is exposed; 2) involuntary exposure whether one has a SmartMeter on their home or not due to the already ubiquitous saturation of installation in Santa Cruz County. Governmental agencies for protecting public health and safety should be much more vigilant towards involuntary environmental exposures because governmental agencies are the only defense against such involuntary exposure. Examples of actions that the public might take to limit exposure to electromagnetic radiation can be found in Attachment B2.

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Schüz, Joachim et., al. "Cellular Phones and the Risks of Glioma and Meningioma." American Journal of Epidemiology (2006): doi: 10.1093 .

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Techology, California Council on Science and. "Health Impact of Radio Frequency Exposure from Smart Meters." (2011).

Tell, richard. "Summary Discussion of RF Fields and the PG&E SmartMeter System (2005 report and 2008 report)." (2009).

Volkow, N. D et al.,. "Effects of cell phone radiofrequency signal exposure on brain glucose metabolism." JAMA (2011): 305:808-13.

Yakemenko, I et al.,. "Long Term Exposure to Microwaves Provokes Cancer Growth: Evidences from Radar and Mobile Communications systems." Experiental Oncology (2011).

Figure 4 from Hirsch; 2011

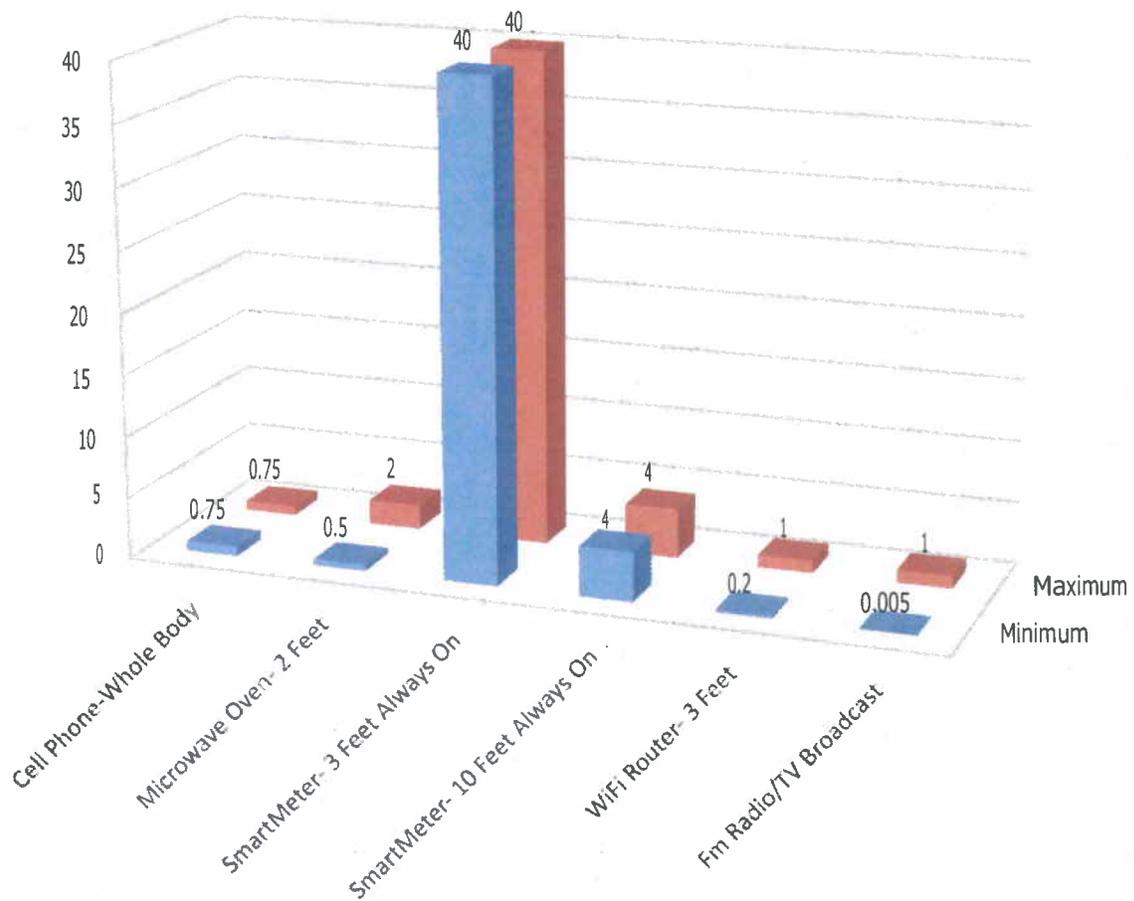


Figure 4. Comparison of Radio-Frequency Levels to the Whole Body from Various Sources in  $\mu$  W/cm<sup>2</sup> over time [corrected for assumed duty cycle and whole body exposure extrapolated from EPRI/CCST SmartMeter estimated levels at 3 feet].

Examples of strategies to reduce electromagnetic radiation.

(Genuis SJ, 2011)

Sources of adverse EMR	Considerations to reduce EMR exposure
Cell phones and cordless phones	<ul style="list-style-type: none"> <li>• Minimize use of cell and cordless phones and use speaker phones when possible</li> <li>• Leave cell or cordless phone away from the body rather than in pocket or attached at the hip.</li> </ul>
Wireless internet	<ul style="list-style-type: none"> <li>• Use wired internet</li> <li>• Turn off the internet router when not in use (e.g. night-time)</li> <li>• Use power line network kits to achieve internet access by using existing wiring and avoiding wireless emissions.</li> </ul>
Computers releasing high EMR	<ul style="list-style-type: none"> <li>• Limit the amount of time spent working on a computer</li> <li>• Avoid setting a laptop computer on the lap</li> <li>• Increase the distance from the transformer.</li> <li>• Stay a reasonable distance away from the computer</li> </ul>
Handheld electronics (electric toothbrush, hair dryer, Smart phone, electronic tablets, etc.)	<ul style="list-style-type: none"> <li>• Limit the use of electronics and/or revert to using power-free devices</li> <li>• Turn devices off before going to sleep</li> <li>• Minimize electronics in bedrooms</li> </ul>
Fluorescent lights	<ul style="list-style-type: none"> <li>• Consider using alternate lighting such as incandescent (Uncertainty exists about the safety of LED lights)</li> <li>• Rely on natural sunlight for reading</li> </ul>
Household power	<ul style="list-style-type: none"> <li>• Measure levels of EMR and modify exposures as possible</li> <li>• Avoid sleeping near sites of elevated EMR</li> <li>• Filters can be used to mitigate dirty power</li> </ul>
High voltage power lines substations, transmission towers, and emitters (cell phone tower, radar, etc.)	<ul style="list-style-type: none"> <li>• Consider relocating to an area not in close proximity to high voltage power lines</li> <li>• Maintain considerable distance from emitters</li> <li>• Consider forms of shielding (shielding paints; grounded metal sheets)</li> </ul>
Utility neutral-to-ground bonded to water pipes	<ul style="list-style-type: none"> <li>• Increase size of neutral-wire to substation and install dielectric coupling in water pipe.</li> </ul>

Petition to the California Public Utilities Commission Re: PG&E SmartMeter Opt-out Application, A.11-03-014

We the undersigned elected officials urge the Commission to delay consideration of President Peevey's preliminary decision until further public hearing and input are completed. The decision, which calls for charging fees to customers who elect to opt out of the SmartMeter program, conflicts with local planning authority, does not protect the health or safety of all residents and imposes a prejudicial financial burden on ratepayers who chose to opt out of the program. We therefore urge the Commission to continue consideration of this matter until further public hearings are completed to ensure the due process rights of all stakeholders.

The order does not provide an empirical basis for the amount of the fees to be charged to opt out customers nor does it consider the net financial impact of PG&E's latest proposal to permit customer retention of analogue meters. Hence the order effectively eliminates a full and fair hearing process for these contested issues of fact to be considered and resolved.

Historically, telecommunications carriers throughout this state have complied with local planning codes which provide notice to residents as to the construction of transmission facilities. Pacific Gas and Electric Company ignored such codes in the deployment of the Smart Meter telecommunications network. Currently many of our jurisdictions have passed ordinances which impose a moratorium on wireless SmartMeters and have petitioned to opt out on a jurisdictional basis. The current order is silent on these issues and effectively discards them without consideration.

The decision also ignores the longstanding controversy and concern about the health impacts associated with electro-magnetic fields. A 1998 California Department of Health Services study commissioned by the California Public Utility Commission itself found that 3.2% of Californians reported hypersensitivity to electro-magnetic fields. A May 2011 study released by the World Health Organization/International Agency for Research on Cancer reclassified RF radiation of the type emitted by wireless equipment throughout the Smart Meter system as "possibly carcinogenic" to humans. President Peevey's order effectively imposes a different rate on many utility customers who need to avoid exposure in violation of California Public Utilities Code section 453(b) which states in pertinent part that "No public utility shall prejudice, disadvantage, or require different rates or deposit amounts from a person because of ancestry, medical condition, marital status or change in marital status, occupation..."

President Peevey's decision does not address these concerns nor does it the financial viability of wired equipment alternatives. In so doing, it eliminates a much anticipated public hearing process.

For all of the foregoing reasons, we respectfully urge the Commission to continue Petition A.11-03-014 matter for further hearings.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Jurisdiction

**From:** Mark Stone [BDS050@co.santa-cruz.ca.us]  
**Sent:** Monday, January 09, 2012 1:30 PM  
**To:** Maureen McCarty  
**Subject:** FW: smart meter opt-out letter and moratorium on smart meters

-----  
**From:** theodora kerry[SMTP:THEKERRY@COMCAST.NET]  
**Sent:** Monday, January 09, 2012 1:30:14 PM  
**To:** Mark Stone  
**Subject:** re: smart meter opt-out letter and moratorium on smart meters  
**Auto forwarded by a Rule**

This letter is directed to the whole Board of Supervisors, and, as such, should be included in the public record.

Dear Chairperson Stone,

Having attended the board meeting on Dec. 13, and witnessed the Board's active interrogation of the P.G.&E. rep's woeful defense of her employer's shutting off of electricity to customers who dared to protect their health and that of their children by removing their smart meters, I'm very disappointed to read the agenda for tomorrow's meeting only to find that the expected follow-through re: smart meters was no where to be found. While you did approve a letter to the CPUC expressing your opposition to opt-out charges, many of us need you to go further and protect our right to analog meters, as many health problems have been linked to smart meters that have their wireless component turned off. Despite PG&E's crying "public safety concerns", the analog meters have proven to be safe for decades, unlike the recently installed smart meters which have already been linked to health problems, fires, and overcharging. Unfortunately, the CPUC is supposed to decide this issue as early as Jan.12, leaving you no time to write a stronger letter to the CPUC given that the issue is not on the agenda. While I applaud the strong stance you took with the PG&E's rep at the last meeting, that in itself does little to protect us, your constituents. Even the smart meter moratorium as been little more than window dressing as the Sheriff continues to use his power to protect PG&E contractors, instead of the local citizenry. I reiterate my call for you, the Board of Supervisors, to use your power of the purse strings to make it clear to the Sheriff that he is expected to support the moratorium/citizens, not the profiteering corporations.

Regardless of what you eventually decide, you, like the rest of us, are equally at the mercy of these meters. What you allow to be done unto us by PG&E is also being done unto you.

Theodora Kerry  
Santa Cruz, CA 95060

## Neal Coonerty

---

**From:** Angela Flynn [angelaflynn80@msn.com]  
**Sent:** Wednesday, January 18, 2012 11:49 AM  
**To:** Neal Coonerty  
**Subject:** Submitted material for upcoming agenda item on SmartMeters for 1/24/12 Board of Supervisors meeting

Please include this material with the agenda item related to SmartMeters on the January 24th meeting.

Submitted by:

Angela Flynn  
351 Redwood Heights Road  
Aptos, CA 95003  
831-684-1401  
angelaflynn80@msn.com

**1. "Smart Meters - Smarter Practices" by Dr. Jamieson (commissioned by the UK EM Radiation Research Trust), comprises 265 pages of research & current knowledge of health & environmental effects from the smart meters.** This work is a highly recommended read and can be downloaded (for free) on:

Part 1 of the book "Smart Meters - Smarter Practices":

[http://www.electromagneticman.co.uk/images/stories/downloads/051211\\_SM\\_Brussels\\_pt\\_1\\_v3.pdf](http://www.electromagneticman.co.uk/images/stories/downloads/051211_SM_Brussels_pt_1_v3.pdf)

Part 2 of the book "Smart Meters - Smarter Practices":

[http://www.electromagneticman.co.uk/images/stories/downloads/051211\\_SM\\_Brussels\\_pt\\_2\\_v4.pdf](http://www.electromagneticman.co.uk/images/stories/downloads/051211_SM_Brussels_pt_2_v4.pdf)

**2. ICEMS Monograph: "Non-Thermal Effects and Mechanisms of Interaction Between Electromagnetic Fields and Living Matter"**  
**23.11.2010 by emily Category Electromagnetic Health Blog**

"Non-Thermal Effects and Mechanisms of Interaction Between Electromagnetic Fields and Living Matter", a monograph edited by Livio Giuliani and Morando Soffritti for the "European Journal of Oncology" – Library Vol. 5 of the National Institute for the Study and Control of Cancer and Environmental Diseases "Bernardo Ramazzini", Bologna, Italy, 2010, Part I and Part II.

Download Part I

[http://electromagnetichealth.org/wp-content/uploads/2010/11/ramazzini\\_library5\\_part1.pdf](http://electromagnetichealth.org/wp-content/uploads/2010/11/ramazzini_library5_part1.pdf)

Download Part II

[http://electromagnetichealth.org/wp-content/uploads/2010/11/ramazzini\\_library5\\_part2.pdf](http://electromagnetichealth.org/wp-content/uploads/2010/11/ramazzini_library5_part2.pdf)

**3. Electromagnetic intolerance elucidated**

<http://www.emfacts.com/2012/01/electromagnetic-intolerance-elucidated/>

By André Fauteux, Editor

(Translated from La Maison du 21e siècle magazine, Quebec (Canada), January 2011) <http://21esiecle.qc.ca/lintolerance-électromagnétique-éluclidée>

In 2002, World Health Organization (WHO) Director General Gro Harlem Brundtland told journalists that microwaves emitted by cellphones made her sick, even if the phone only turned on and hidden in a pocket or purse located up to four meters away. Nonetheless, the World Health Organization stated in 2005 that electrosensitivity symptoms may be of psychosomatic origin, a claim French oncologist Dominique Belpomme says is refuted recent discoveries.

French researchers recently demonstrated that electromagnetic fields (EMFs) substantially alter the physiology of the blood and brain of electrosensitive people and that the impact on these biological markers increases and decreases according to the intensity of EMF exposure.

“We know with certainty that electromagnetic hypersensitivity is not psychosomatic”, Dr Dominique Belpomme stated in a [November 2010] telephone interview. “EMFs provoke major effects in the brain. The most important of these is the opening of the blood-brain barrier. This allows mercury, organochlorines and other pollutants to enter in the brain, where they cause various neurodegenerative diseases.”

### **20 new patients per week**

A professor of oncology at Paris-Descartes University, Dr. Belpomme is President of the French Association for Research in Therapeutics Against Cancer ([www.artac.info](http://www.artac.info)), which has shifted in the prevention from 2004. Since May 2008, his team has studied what he coined the Electromagnetic Intolerance Syndrome (SICEM in French). “I have 450 patients and see up to 20 new cases every week, including children who have headaches, impaired memory, concentration or language. We have the largest European cohort of electrosensitive patients. This is a major public health concern.”

The SICEM is an extreme reaction to low-level exposure to 50/60 Hz electric and magnetic fields emitted by electrical cables and devices as well as radio frequencies (10 MHz to 300 GHz including microwave) from wireless devices and antennas.

“In Sweden, electrohypersensitivity (EHS) is an officially fully recognized functional impairment (i.e., it is not regarded as a disease, thus no diagnosis exists), explains Swedish dermatologist and EHS expert Olle Johannson. <http://iopscience.iop.org/1755-1315/10/1/012005> Thus, the first step for a person in Sweden with a functional impairment is to contact the municipality’s special civil servant for disability issues, as well as the various handicap organizations and authorities, to achieve accessibility measures of various types with the sole aim to have an equal life in a society based on equality according to the The UN Convention on Human Rights for Persons with Functional Impairments, [www.un.org](http://www.un.org).”

People with EHS are often incorrectly referred in psychiatry while many experts such as Belpomme say the first treatment they require is reducing or eliminating their exposure to EMFS. Their symptoms (neurological, cardiovascular, dermatological, muscular, etc.) are sometimes so serious that they must shield themselves with special clothing, curtains as well as grounded paints and vapor barriers. Others move into forests, caves or other remote locations if they are unable to find a low-EMF environment where their symptoms can recede or disappear.

Dr. Belpomme’s team has developed a diagnostic method based on blood tests and a special brain scan (pulsed Doppler echography) to visualize blood flow. “These patients clearly have vascular disorders in the brain, said the oncologist. In addition, our biological tests show that 30% of them have high levels of histamine, 50% have too much stress proteins, most have low levels of melatonin (an potent anti-cancer hormone), and 30% have levels of antibodies and proteins that are tell-tale signs of thermal shock and brain damage.” He adds that half of his patients suffer from Multiple Chemical Sensitivity (MCS) and that MCS and EHS share the same brain abnormalities.

The oncologist explained that there are three distinct levels of sensitivity to pollutants. First, there is intolerance, caused by polymorphism. “This means that we are all different. For example, 30% of the population is most at risk of developing cancer.” Second, there is the susceptibility factor demonstrated by Swedish oncologist Lennart Hardell who studied 16 families who were electrosensitive because of shared genetic factors. There are also active susceptibility factors, “such as dental amalgam that behave like antennas capturing airwaves”, explains Belpomme.

Finally, electromagnetic hypersensitivity appears in two stages. “The first phase is induced by exposure to a specific EMF frequency, either an acute or chronic exposure, such as talking on a cell phone 20 minutes every day. The first signs of hypersensitivity are pain and a heat sensation in the ear. In the second phase, the disease sets in. That’s when you become intolerant at all frequencies.”

### **Experienced researchers**

ARTAC’s scientific council is chaired by virologist Luc Montagnier, 2008 co-recipient of the Nobel Prize in medicine as co-discoverer of the Human Immunodeficiency Virus (HIV) believed to cause AIDS. And its research coordinator is doctor of nutrition Philippe Irigaray, one of five international experts recently appointed by Quebec’s Health Research Fund to select the most promising research projects in environmental cancer prevention. Dr Irigaray stresses that the human brain contains magnetosomes, iron oxides that behave like magnets. Electrosensitivity may depend on their quantity, which varies from one individual to another.

ARTAC researchers are currently preparing five scientific papers on electrosensitivity. “It takes a lot of time, said Dr Belpomme. They will be published in a year or two. But action is needed immediately to reduce people’s overexposure to EMFs.”

In France, an estimated 5% of the population is already electrosensitive, and the proportion is constantly increasing with the ever-growing popularity of wireless technologies. “Studies show that 10 to 50% of the population may become very intolerant to EMFs over the next 25 to 50 years, Dr Belpomme said. I have two cases of multiple sclerosis triggered after prolonged use of a cell phone, three cases of breast cancer – two recurrences after exposure to EMFs and one case related to the use of computers – and anecdotal evidence also for autism and Alzheimer’s disease whose risk is much higher than for cancer. Causal links with electromagnetic fields are highly possible.”

Dr Belpomme said he has relieved some EHS patients by administering medication to tone-up the nervous system and antihistamines to close the blood-brain barrier.

### **No causal link, says WHO**

In 2005, the World Health Organization published Fact Sheet No 296 entitled Electromagnetic hypersensitivity <http://www.who.int/mediacentre/factsheets/fs296/en/index.html> It stated : “Well controlled and conducted double-blind studies have shown that symptoms were not correlated with EMF exposure... The symptoms are certainly real and can vary widely in their severity... Further, EHS is not a medical diagnosis, nor is it clear that it represents a single medical problem.

Physicians: Treatment of affected individuals should focus on the health symptoms and the clinical picture, and not on the person's perceived need for reducing or eliminating EMF in the workplace or home. This requires:

- a medical evaluation to identify and treat any specific conditions that may be responsible for the symptoms,
- a psychological evaluation to identify alternative psychiatric/psychological conditions that may be responsible for the symptoms,
- an assessment of the workplace and home for factors that might contribute to the presented symptoms. These could include indoor air pollution, excessive noise, poor lighting (flickering light) or ergonomic factors. A reduction of stress and other improvements in the work situation might be appropriate."

Bull, said Dr. Dominique Belpomme. "This setback is of a political nature that has nothing to do with science. WHO will be forced to revise its decision in the coming months. It is a societal denial that does not take account of current knowledge which is constantly evolving." [read Microwave News's coverage of conflicts of interest at WHO] <http://www.microwavenews.com/CT.html>

The oncologist argues the causal link between exposure to magnetic fields and leukemia is no longer in doubt. "When we increase the dose, it increases the rate of leukemia. Dozens of laboratory toxicological studies have demonstrated this most clearly, in vitro as well as in animals."

For her part, Ontario researcher Magda Havas of Trent University <http://www.magdahavas.com/> said EHS studies with negative results have major biases. "The researchers assumed that reactions to EMFs are immediate, while there is often a delay between exposure and response. People are not switches that can be turned on and off. These studies incorrectly insinuate that if you can not feel anything, it can't harm you. We know very well that we can't detect the taste of arsenic, lead, DDT nor asbestos, but they are all toxic."

Further reading:

Research Studies into Electrical Sensitivity

<http://www.es-uk.info/info/research.asp>

Radiofrequency/Microwave Radiation and the International Agency for Research on Cancer (IARC)

[www.powerwatch.org.uk/pdfs/20110520-iarc-maisch.pdf](http://www.powerwatch.org.uk/pdfs/20110520-iarc-maisch.pdf)

The problem of conflict of interest & commercial influence in WHO agencies and the need for public interest representation

<http://www.scribd.com/doc/57404194/The-problem-of-conflict-of-interest-commercial-influence-in-WHO-agencies-and-the-need-for-public-interest-representation-Iarc-May-5>

Petition to the World Health Organization to remove Dr. Mike Repacholi immediately from his position as General Coordinator "International Electromagnetic Fields Project"

[http://www.omega-news.info/petition\\_to\\_the\\_w.h.o\\_remove\\_dr\\_mike\\_repacholi.htm](http://www.omega-news.info/petition_to_the_w.h.o_remove_dr_mike_repacholi.htm)

Mystery in the skin : Screen dermatitis, the effect of computer work on human skin. (Interview with Dr Olle Johansson)

<http://www.feb.se/ARTICLES/OlleJ.html>

André Fauteux, Publisher/Editor

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[www.21esiecle.qc.ca](http://www.21esiecle.qc.ca)

Read the full story here <http://www.emfacts.com/2012/01/electromagnetic-intolerance-elucidated/>

**Alicia Murillo**

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**From:** cdbosmail@co.santa-cruz.ca.us  
**Sent:** Sunday, January 22, 2012 11:58 PM  
**To:** CBD BOSMAIL  
**Subject:** Agenda Comments

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**Meeting Date :** 1/24/2012

**Item Number :** 41

**Name :** Angela Flynn

**Email :** angelaflynn80@msn.com

**Address :** 351 Redwood Heights Road  
Aptos, CA 95003

**Phone :** 831-684-1401

**Comments :**

Please continue the County Ordinance banning the installation of SmartMeters and accept the reports from the County Administrative Officer and from the Chief Public Health Officer as well as signing on to the petition to the CPUC.

Please add this testimony to the public record for Agenda Item 41 for the January 24, 2012 Santa Cruz County Board of Supervisors.

I thank the Supervisors and Dr. Poki Namkung for pursuing this issue in spite of the misinformation of PG&E and ultimately of the FCC. The Federal Communications Commission is at the heart of what is wrong. Long ago decisions were made to subvert the evidence that life, down to DNA, communicates with subtle electrical signals. The FCCs exposure guidelines to electric and magnetic fields and to radio frequency microwave radiation deny this because it would cut into profits if we had safe rational exposure guidelines. Our lives are deemed expendable and functional impairment is on the rise correlating to corporate profits.

In 2011, Dr. Belpomme, professor of oncology at Paris-Descartes University, and President of the French Association for Research in Therapeutics Against Cancer reported that they have the largest cohort of electro sensitive patients and the numbers are growing - with up to 20 new cases every week, including children with headaches and impaired memory and concentration. Patients have vascular disorders in the brain, said the oncologist. Tests show that 30% of them have high levels of histamine, 50% have too much stress proteins, most have low levels of melatonin, and 30% have levels of antibodies and proteins that are signs of thermal shock and brain damage. (See <http://www.emfacts.com/2012/01/electromagnetic-intolerance-elucidated/>)

A Smart Grid is needed. I advocate for SmartMeters that will aid us in lowering our energy usage. But there should be no wireless aspect. The only SmartMeter system that meets future energy reduction needs is a fiber optic grid. And as with all digital devices SmartMeters must have filters and transistors to keep them from injecting high frequencies onto a home's wiring.

But business as usual, where profits trump reason, dictates that we have a wireless mesh network, and that each SmartMeter is made as cheaply as possible. PG&E knows that fiber is the solution for our energy wise future, but they chose a wireless mesh because it is cheaper to implement. We know that their digital SmartMeters have not been UL certified and we know, from whistle blower, Don Baker an engineer hired as Project Manager for Southern Company's Smart Grid that the SmartMeters deployed in Alabama are

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defective causing fires and inaccurate bills. Over 1 million of these defective meters were installed. Baker was fired for reporting the safety failures of the meters and is suing Southern Company for violating the False Claims Act by receiving \$165 million in federal funding and endangering millions of lives. We are all being harmed from these microwave emitting cancer-promoting devices. The real question in my mind is not why am I here, but why we aren't we all here protesting this assault? When did we agree to be lab rats in the Machiavellian experiment of turning our environment into a microwave oven?

Please, get active. Get involved. Don't become a statistic paving the road to corporate profits. The Supervisors are moving in the right direction today, but we have to force the hand of the federal government to face the truth. It is hard to change course when lies were told long ago. But enough is enough. Go to <http://www.Stopsmartmeters.org> and get educated and activated.

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1/23/2012

**Alicia Murillo**

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**From:** cdbosmail@co.santa-cruz.ca.us  
**Sent:** Sunday, January 22, 2012 10:20 PM  
**To:** CBD BOSMAIL  
**Subject:** Agenda Comments

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**Meeting Date :** 1/24/2012

**Item Number :** 41

**Name :** Lois Robin

**Email :** robin@baymoon.com

**Address :** 4701 Nova Dr.  
Santa Cruz, CA 95062

**Phone :** 831 464-3939

**Comments :**

Please extend the moratorium on SmartMeters. I still have my original analog meter and want to keep it. I should not have to pay fees to PG&E for keeping the analog in support of my health and the health of my neighbors.

I use no EMF at my house: no cell phone, no wireless anything as I was advised to do years ago by a biochemist.

I will welcome County support on this issue.

**Alicia Murillo**

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**From:** cdbosmail@co.santa-cruz.ca.us  
**Sent:** Sunday, January 22, 2012 8:57 PM  
**To:** CBD BOSMAIL  
**Subject:** Agenda Comments

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**Meeting Date :** 1/24/2012

**Item Number :** 41

**Name :** Rick Hyman

**Email :** bikerick@att.net

**Address :** 138 Coulson Ave.  
Santa Cruz, CA 95060

**Phone :** Not Supplied

**Comments :**

I urge the Board to adopt the ordinance about Smart Meters and to follow your staff's other recommendations. Furthermore, I would request that you ask the PUC not to require a Smart Meter opt-out fee for those who do not yet have Smart Meters and/or use minimal amounts of gas or electricity, where having a Smart Meter will accomplish nothing. Thank you.

**Alicia Murillo**

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**From:** cdbosmail@co.santa-cruz.ca.us  
**Sent:** Sunday, January 22, 2012 4:54 PM  
**To:** CBD BOSMAIL  
**Subject:** Agenda Comments

---

**Meeting Date :** 1/24/2012

**Item Number :** 41

**Name :** John & Nancy Morris

**Email :** aptos2@yahoo.com

**Address :** 3366 S. Polo Dr., Aptos, CA 95003

**Phone :** 831-688-1078

**Comments :**

Please consider continuing the County Ordinance banning the installation of SmartMeters as well as signing on to a petition to the CPUC.

buildings (500-5000 homes or buildings) and sends the information back to the utility; and c) proposed for the future, a power transmitter to measure the energy use of individual appliances (e.g. washing machines, clothes dryers, dishwasher, etc) and send information via wireless radio frequency signal back to the SmartMeter. The primary rationale for SmartMeters and grid networks is to more accurately monitor and direct energy usage.

The public health issue of concern in regard to SmartMeters is the involuntary exposure of individuals and households to electromagnetic field (EMF) radiation. EMFs are everywhere, coming from both natural and man-made sources. The three broad classes of EMF are:

- extremely low frequency, ELF (from the sun or powerlines)
- radio frequency, RF (from communication devices, wireless devices, and SmartMeters)
- extremely high frequency, known as ionizing radiation (x-rays and gamma rays)

Much of this exposure is beyond our control and is a matter of personal choice; however, public exposure to RF fields is growing exponentially due to the proliferation of cell phones, and wireless fidelity (Wi-Fi) technology. To understand the relationship between EMF from SmartMeters and other sources, it is helpful to view the electromagnetic spectrum:

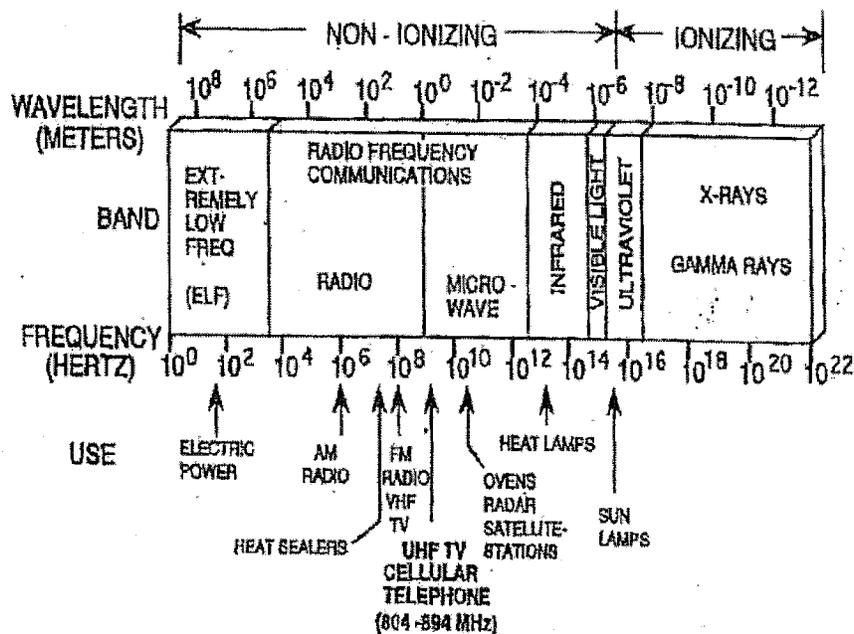


Fig. 1: The electromagnetic spectrum, showing the relations between ELF and RF fields, wavelength and frequency, and the ionizing and non-ionizing portions of the spectrum.

The Federal Communications Commission (FCC) has adopted limits for Maximum Permissible Exposure (MPE) that are based on exposure guidelines published by the National Council on Radiation Protection and Measurements (NCRP). The limits vary with

## Health Risks Associated With SmartMeters

Attachment B

Agenda: January 24, 2012

REVISED

Page 2 of 8

buildings (500-5000 homes or buildings) and sends the information back to the utility; and c) proposed for the future, a power transmitter to measure the energy use of individual appliances (e.g. washing machines, clothes dryers, dishwasher, etc) and send information via wireless radio frequency signal back to the SmartMeter. The primary rationale for SmartMeters and grid networks is to more accurately monitor and direct energy usage.

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- radio frequency, RF (from communication devices, wireless devices, and SmartMeters)
- extremely high frequency, known as ionizing radiation (x-rays and gamma rays)

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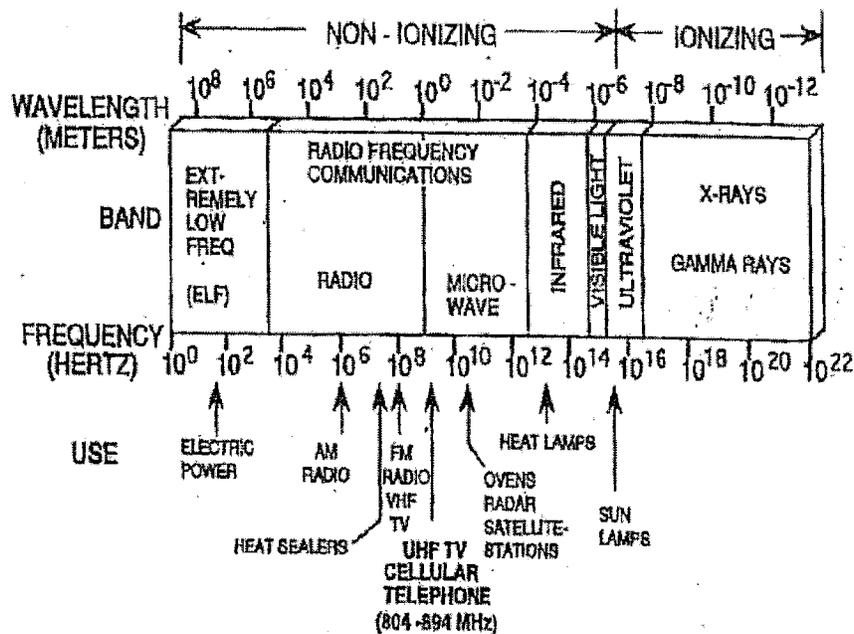


Fig. 1: The electromagnetic spectrum, showing the relations between ELF and RF fields, wavelength and frequency, and the ionizing and non-ionizing portions of the spectrum.

The Federal Communications Commission (FCC) has adopted limits for Maximum Permissible Exposure (MPE) that are based on exposure guidelines published by the National Council on Radiation Protection and Measurements (NCRP). The limits vary with

research carried out by independent non-government or non-industry affiliated researchers suggests potentially serious effects from many non-ionizing radiation exposures; research funded by industry and some governments seems to cast doubt on the potential for harm. Elements of the controversy stem from inability to replicate findings consistently in laboratory animal studies. However analysis of many of the conflicting studies is not valid as methodology used is not comparable. Despite this controversy, evidence is accumulating on the results of exposure to RF at non-thermal levels including increased permeability of the blood-brain barrier in the head (Eberhardt, 2008), harmful effects on sperm, double strand breaks in DNA which could lead to cancer genesis (Phillips, 2011), stress gene activation indicating an exposure to a toxin (Blank, 2011), and alterations in brain glucose metabolism (Volkow, 2011).

In terms of meta-analyzed epidemiological studies, all case-control epidemiological studies covering >10 years of cell phone use have reported an increased risk of brain tumors from the use of mobile phones (Hallberg, 2011). Other studies have pointed to an increasing risk of acoustic neuroma, salivary gland tumors, and eye cancer after several years of cell phone use and the tumors occur predominantly on the same side of the head as the phone is used. The analysis of brain cancer statistics since the mid 20<sup>th</sup> century in several countries reveals that brain tumor formation has a long latency time, an average of over 30 years to develop from initial damage. (Hallberg, 2011). Therefore using studies such as the Interphone Study which looked at shorter latency periods for the development of specific brain cancers will result in inconclusive data.

Another potential health risk related to EMF exposure, whose legitimacy as a phenomenon remains contentious, is electromagnetic hypersensitivity (EHS). In the 1950's, various centers in Eastern Europe began to describe and treat thousands of workers, generally employed in jobs involving microwave transmission. The afflicted individuals often presented with symptoms such as headaches, weakness, sleep disturbance, emotional instability, dizziness, memory impairment, fatigue, and heart palpitations. Clinical research to verify the physiological nature of this condition did not begin in earnest until the 1990's and found that the EMF involved was usually within the non-ionizing range of the electromagnetic spectrum. In the early 2000's, estimates of the occurrence of EHS began to swell with studies estimating the prevalence of this condition to be about 1.5% of the population of Sweden (Hilleert et al., 2002), 3.2% in California (Levallios et al., 2002), and 8% in Germany (infas Institut für angewandte Sozialwissenschaft GmbH, 2003).

In 2004, WHO declared EHS "a phenomenon where individuals experience adverse health effect while using or being in the vicinity of devices emanating electric, magnetic, or electromagnetic fields (EMFs)... Whatever its cause, EHS is a real and sometimes debilitating problem for the affected persons (Mild et al., 2004)."

Currently, research has demonstrated objective evidence to support the EHS diagnosis, defining pathophysiological mechanisms including immune dysregulation in vitro, with increased production of selected cytokines and disruption and dysregulation of catecholamine physiology (Genuis, 2011).

research carried out by independent non-government or non-industry affiliated researchers suggests potentially serious effects from many non-ionizing radiation exposures; ~~most research carried out by independent non-government or non-industry affiliated researchers suggests potentially serious effects from many non-ionizing radiation exposures;~~ research funded by industry and some governments seems to cast doubt on the potential for harm. Elements of the controversy stem from inability to replicate findings consistently in laboratory animal studies. However analysis of many of the conflicting studies is not valid as the methodology used is not comparable. Despite this controversy, evidence is accumulating on the results of exposure to RF at non-thermal levels including increased permeability of the blood-brain barrier in the head (Eberhardt, 2008), harmful effects on sperm, double strand breaks in DNA which could lead to cancer genesis (Phillips, 2011), stress gene activation indicating an exposure to a toxin (Blank, 2011), and alterations in brain glucose metabolism (Volkow, 2011).

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**Alicia Murillo**

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**From:** cdbbosmail@co.santa-cruz.ca.us  
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**Meeting Date :** 1/24/2012

**Item Number :** 41

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**Comments :**

Dear Board of Supervisors,

Local Government is responsible for the fact that over the decades they have "grandfathered-in" housing stock that cannot safely carry 60 Hz standard electricity throughout the buildings. Many of the buildings with substandard electrical systems are rentals that fall under Warranties of Safety and Habitability.

Tenancy Law in California specifies 60 Hz electrical wiring; Code Enforcement is up to local authorities. PG&E is required to deliver 60 Hz and then safely return it to the substation where they then are required to clean it up before sending out 60 Hz again. Properties that do not meet that standard are considered electrically unsafe and therefore health- and life-threatening.

This substandard housing has often been allocated to low-income tenants who have little choice - and little knowledge-- about safe electricity in their rentals. Often they have been chronically exposed to unsafe and health-damaging dirty electricity from ungrounded electrical conditions, twisted-pair or knob-and-tube wiring, or non-linear electrical loads imposed on wiring designed for linear loads - all without their knowledge or consent for years on end.

PG&E has imposed one-size-fits-all microwave-emitting devices to virtually all building wiring in Santa Cruz County. Due to lax Code enforcement, housing stock here needs to be evaluated and inspected one-at-a-time for adequate wiring prior to installation of a device that pulses high frequencies through inadequate wiring. Due to lax Code enforcement, faults in PG&E's electrical infrastructure from any building back to the substation has not been assessed or repaired.

Lax Code enforcement over the decades has created a culture of buck-passing that falls heaviest on Tenants - and they are simply not responsible for any part of this situation. PG&E affixed defective microwave pulsing devices to inadequate building wiring on Private Property belonging to the Property Owner.

Each of PG&E's defective devices pulse frequencies in the microwave range [800 MHz to 5+ GHz] over existing 60 Hz electrical wiring up to 190,000 times a day. These microwave pulses are de facto intended to penetrate into all rooms of buildings -- as do all wireless devices - and can have a transmission range of 500 feet or more.

Tenants who have properly requested the assistance of the Property Owner to restore the electrical wiring to at least the condition of safe 60 Hz electrical delivery have often been harassed and threatened by those

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same Property Owners who have profited from rents paid on substandard housing for decades on end. Turning to PG&E for a restoration to safe metering, Tenants find threats, harassment and stonewalling there as well. Looking for assistance from Local Government and local Agencies, they find no agency or person who admits to any responsibility for this deplorable and potentially life-threatening situation.

PG&E voided existing Rental Contracts in the State of California from the time they affixed devices to electrical wiring specified only to carry only 60 Hz electrical current. There is no provision in Safety and Habitability Standards for converting 60 Hz Alternating Current electrical wiring to other uses that pulse far-higher microwave-range radio frequencies within feet of Legal Occupants.

PG&E has provoked a situation that has clouded legal issues of Liability and Insurability for Tenants in relation to Property Owners and for Property Owners in relation to PG&E.

Who, for instance, owns and/or controls the use of the electrical wiring inside the walls?

Who is responsible for damage to Tenants health from near-field microwave exposure coming from electrical wiring inside the walls?

If Tenants have given proper notice of an unsafe electrical condition to Property Owners and they are not responsive to requests for replacement and restoration of safe electrical conditions, who is then responsible?

Or, if Property Owners make a proper request for replacement based on unsafe conditions and PG&E refuses their request, who is then responsible?

In addition, PG&E has precipitated a situation in which they have demanded private health information as a condition for making a request for replacement of their defective devices. They have followed this with proposing a differential rate amounting to potentially thousands of dollars a year from each utility customer who needs analog metering. Each of these demands on the part of PG&E threatens to overturn settled Tenancy Law in California.

Property Management cannot, under settled law, require health information as a condition prior to approving legal occupancy or during legal occupancy. Tenants ought not be compelled to provide that information. To exclude people from housing because they require safe electrical conditions -- and are guaranteed that safe electricity under Property Habitability and Safety Standards -- calls into question settled law and common usage.

Demands for private health information in violation of the ADA and HIPA and/or differential pricing could have profound consequences for local Housing Authorities and could very well either set back their efforts to house low- or fixed-income residents, or bankrupt these Agencies entirely and in short order.

In the meantime, literally hundreds of people are experiencing unremitting physical electromagnetic shock and radiowave sickness. Some are aware of what happened and the parties that caused it to happen. Many other residents do not yet know, but are being harmed just the same. Some have evacuated the area; some are wireless refugees seeking a safe spot to sleep day by day; some are attempting to learn how to shield their residences; some are insisting that Property Owners remove these devices; some are requesting assistance from local commissions, agencies and non-profits; and some are seeking medical attention for sleeplessness, depression, heart palpitations, rapid onset dementia, and many other symptoms related to microwave exposure. Many residents are trying anything and everything with little or no success.

Tenants are expected to shift for themselves in a rental environment with no available housing guaranteed safe from ground-level pulsing microwave exposure anywhere in Santa Cruz County. This County has been at crisis-level vacancy rates since the 1970s.

So many people are affected in so many different ways that the longer this situation persists the deeper the legal, financial and social quagmire will become.

PG&E's actions have caused the Board of Supervisors to be out of compliance with both their own Moratoria and the Safety and Habitability Standards for buildings in California. PG&E has affixed these defective products to government buildings. The Board will begin to show that they understand the seriousness of this situation when they take steps to comply with their own Moratoria.

The simplest and most direct decision the Board of Supervisors can take is:

To rely on their own Moratorium;

To Red Tag the entire County and all the buildings and electrical infrastructure therein with the goal being compliance with the 60 Hz Standard already in effect;

To institute an immediate Defective Product Recall under the Consumer Laws available;

To remove and replace all defective microwave emitting non-conforming "meters" and repeaters located on public buildings beginning with schools, public libraries and other buildings where children spend their time, and then progressing to public health facilities, public buildings, and public meeting rooms as soon as possible;

To insure an orderly method for removing and replacing ground-level microwave emitting "meters" with standard analog meters from Private Property with as little risk to Legal Occupants as can be managed;

To properly Notify and properly Inform Property Owners and concerned Residents so as to minimize confusion and distress among residents and their families;

Many Tenants fervently hope that the County Board of Supervisors and City Council will begin to address issues of profound consequence to their lives, their well-being, their futures and those of their families, friends, and fellow Santa Cruzans.

**Alicia Murillo**

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**Meeting Date :** 1/24/2012

**Item Number :** 41

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Proposed Decision of Commissioner Peevey (Mailed 1/22/2012) BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA, On the proposed decision 11-03-014

Dear Commissioners:

The Board of the American Academy of Environmental Medicine opposes the installation of wireless "smart meters" in homes and schools based on a scientific assessment of the current medical literature (references available on request). Chronic exposure to wireless radiofrequency radiation is a preventable environmental hazard that is sufficiently well documented to warrant immediate preventative public health action.

As representatives of physician specialists in the field of environmental medicine, we have an obligation to urge precaution when sufficient scientific and medical evidence suggests health risks which can potentially affect large populations. The literature raises serious concern regarding the levels of radio frequency (RF - 3 KHz - 300 GHz) or extremely low frequency (ELF - o- 300 Hz) exposures produced by "smart meters" to warrant an immediate and complete moratorium on their use and deployment until further study can be performed. The board of the American Board of Environmental Medicine wishes to point out that existing FCC guidelines for RF safety that have been used to justify installation of "smart meters" only look at thermal tissue damage and are obsolete, since many modern studies show metabolic and genomic damage from RF and ELF exposures below the level of intensity which heats tissues. The FCC guidelines are therefore inadequate for use in establishing public health standards. More modern literature shows medically and biologically significant effects of RF and ELF at lower energy densities. These effects accumulate over time, which is an important consideration given the chronic nature of exposure from "smart meters". The current medical literature raises credible questions about genetic and cellular effects, hormonal effects, male fertility, blood/brain barrier damage and increased risk of certain types of cancers from RF or ELF levels similar to those emitted from "smart meters". Children are placed at particular risk for altered brain development, and impaired learning and behavior. Further EMF/RF adds synergistic effects to the damage observed from a range of toxic chemicals. Given the widespread, chronic and essentially inescapable ELF/RF exposure of everyone living near a "smart meter", the Board of the American Academy of Environmental Medicine finds it unacceptable from a public health standpoint to implement this

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technology until these serious medical concerns are resolved. We consider a moratorium on installation of wireless "smart meters" to be an issue of the highest importance.

The Board of the American Academy of Environmental Medicine also wishes to note that the US NIEHS National Toxicology Program in 1999 cited radiofrequency radiation as a potential carcinogen. Existing safety limits for pulsed RF were termed "not protective of public health" by the Radiofrequency Interagency Working Group (a federal interagency working group including the FDA, FCC, OSHA, the EPA and others). Emissions given off by "smart meters" have been classified by the World Health Organization International Agency for Research on Cancer (IARC) as a Possible Human Carcinogen.

Hence, we call for:

.An immediate moratorium on "smart meter" installation until these serious public health issues are resolved. Continuing with their installation would be extremely irresponsible.

. Modify the revised proposed decision to include hearings on health impact in the second proceedings, along with cost evaluation and community wide opt-out.

. Provide immediate relief to those requesting it and restore the analog meters.