

Smart Meters—Not so Smart. “I’ve Never Been so Sick in my Life”

How Dangerous and Expensive Became “Smart” An Exposé of the “Smart Grid”

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Electric “smart” meters were installed in Cindy deBac’s Scottsdale, Arizona, neighborhood in 2012. She recalls the day a new meter was mounted on her home as a sort of digital Pearl Harbor attack. “I’ve never been so sick in my life,” she says. “Nausea, a crushing migraine headache, and painful heart palpitations laid me low right away.”

Healthy and exuberant before the installation, deBac became unable to sleep normally. She soon became exhausted and tearfully anxious as she struggled with rashes and a chronically racing heart. For respite she spent nights away in her car. One of her dogs died of cancer within six months of the meter’s installation and the other developed large tumors. Today Cindy leads a global educational crusade to warn others about the myriad devastating health effects that electromagnetic radiation can unleash.

Across the U.S. installers continue to replace comparatively safe analog (mechanical) utility meters with digital “smart” meters for electrical, gas and water services. Most of the new meters are wireless two-way transmitters that pulse signals to communicate continuously between your home, school, or workplace and utility companies miles away. The new meters are part of a nationwide project dubbed Advanced Metering Infrastructure (AMI). Most folks call this evolving make-over the “smart grid.”

The AMI “smart” meter below records electrical consumption data and sends the information wirelessly to energy system managers. “Smart” meters can be programmed to read and transmit data monthly, or up to every fifteen seconds. Data may be relayed by systems similar to mobile phones or Wi-Fi. Or information may be relayed via fiber optics (thin, transparent cables that carry signals by pulsing light). Of these methods, fiber optics may offer the safest transmission.

AMI is nested within the American Recovery and Investment Act of 2009, and the Obama Administration has shoveled an estimated eleven billion dollars into incentive programs for utilities that participate. “Smart” grid advocates insist that the new two-way meters will reduce national energy consumption and allow consumers to make better choices about their energy needs.

The Department of Energy (DOE) and the U.S. Department of Agriculture (USDA) are among federal heavyweights behind the thundering AMI rollout. Several universities and corporations stand to profit hugely by providing AMI equipment, software and expertise. These include General Electric, IBM, Hewlett Packard, Siemens, Toshiba, Microsoft, Cisco,

Verizon, Google, Itron and Tantalus.

With a financial and political engine of this magnitude, the AMI meter replacement project has moved at lightning speed. According to the Institute for Electric Efficiency (IEE), nearly 40 percent of U.S. households had an electric “smart” meter installed by August 2013. A total of sixty-five million “smart” meters are projected to be installed by 2015, covering more than half of all U.S. households.¹ Among states hit hardest so far have been Oregon, Idaho, California, Nevada, Arizona, Texas, Oklahoma, Maryland, Virginia, Indiana, Ohio, Pennsylvania, Michigan, Vermont, Florida, Georgia and Alabama.

PRELIMINARY REPORTS ON “SMART” METERS

Over the last three years, strong-arm installation tactics, fires caused by meters, skyrocketing utility bills, privacy concerns and disabling health effects have given momentum to a broad coalition of “smart” grid opponents. Many, including some government officials, say that the touted benefits of “smart” systems have not materialized, while the negative ramifications have proven disastrous.



The American Academy of Environmental Medicine (AAEM) has proposed a moratorium on “smart” meters as an “issue of the highest importance.” This international association of physicians and public health experts warns that it is unacceptable to implement radiation-emitting technology before serious medical and environmental concerns have been properly addressed.²

AMI is calibrated to expose all Americans to three new and powerful sources of microwave radiation: “smart” meters, “smart” appliances, and a ubiquitous network of antennas on utility poles and cell towers in urban and rural neighborhoods. Neither the federal government nor grid profiteers have undertaken a single public health study about the long-term health effects of exposure to electromagnetic radiation (EMR) from “smart” meters. Yet medical literature is now loaded with peer-reviewed studies about the non-thermal biological effects of exposure to EMR. Peer-reviewed studies report DNA damage, abnormal genetic and hormonal changes, sperm damage, pregnancy complications, weakening of the blood-brain barrier, disturbance of voltage-gated calcium channels (for example, in the heart), degradation of immunity, and certain types of cancers.³

Especially worrisome, says AAEM, is mounting evidence that inescapable electromagnetic fields exposure from smart meters places children at particular risk for altered brain development and for impaired learning and behavior. These concerns are corroborated by the blockbuster BioInitiative Report 2012. Produced by twenty-nine medical and public health experts from ten countries, the BioInitiative Report offers a meta-analysis of over eighteen hundred new scientific studies showing that chronic exposure to both ELF and microwaves poses a serious health hazard. At highest risk are the most vulnerable of our population: children, pregnant mothers, the elderly and the immunocompromised.⁴

Health ramifications aside, AMI technology is good for the corporate bottom line. “Smart” meters eliminate the need for human meter readers. They allow utilities to turn services on and off remotely. The meters identify consumption of a product and automatically send those data to headquarters for monitoring and billing. They allow water utility companies to monitor and control consumer usage closely. Because electricity is delivered most efficiently

in an even, steady flow, “smart” grid enthusiasts aim to encourage residential customers to use less electricity during daytime working hours and more during evenings and weekends. Eventually, customers may be charged by time-of-use. “Smart” grid promoters claim that by 2030, the system will reduce nationwide electricity usage by about four percent.⁵

But at what price? The cost of the “smart” meter program is breathtaking. By some estimates, utility consumers will pay at least two hundred twenty-five billion dollars to blanket the nation with AMI meters. A “smart” electric meter can cost hundreds of dollars per household. The attorney general of Massachusetts projected the cost of each meter in that state at almost three thousand dollars.⁶ Some AMI equipment manufacturers suggest that meters may need to be replaced as often as every three years to keep up with technical innovations.⁷ This would force consumers to continually pay for new hardware that they are coerced to accept. Critics say that when time-of-use pricing goes into effect, utility bills could become insurmountable for many customers (unless they learn to direct their peak energy usage to the middle of the night).

CANARIES ON THE WEST COAST

Pacific Gas and Electric (PG&E) of California was among the first U.S. utilities to deploy AMI meters. Its 2010-2012 “smart” meter rollout caused a state-wide furor. Some older “smart” meter systems (AMR) send their data through existing utility lines. A few newer AMI systems communicate through fiber optics. But like many other utility companies, PG&E has deployed a mesh networking system, which broadcasts pulsed radio frequency signals (microwaves) into homes and across outdoor spaces. PG&E’s “smart” grid emits EMR from the meters and from a state-wide support network including:

- Thousands of new utility antenna communications towers and relay/repeater poles;
- Thousands of new mobile data base stations with fixed and mobile radios for utility workers;
- Thousands of crossband repeater stations, each broadcasting radiation in the 900 megahertz range;
- Thousands of broadband access points emitting the license-exempt Wi-Fi frequency bands of 2.45, 3.65, and 5.8 gigahertz;
- Thousands of point-to-point microwave links providing backhaul for the system;
- Thousands of integrated service routers handling security and network management through wireless signals.⁸

The new smart grid signal infrastructure is a duplication of the massive cellular communications build-out which, over the last thirty years, has spawned over three hundred thousand microwave towers and rooftop antenna arrays from coast to coast. There are at least a dozen published epidemiological studies reporting that populations living within five hundred meters of cellular microwave antennas suffer high rates of adverse health effects including headaches, skin rashes, vision/hearing problems, dizziness, sleep disturbances, hormonal abnormalities and chronic fatigue. There are also many reports of cancer clusters among people living near cell towers or in buildings directly under them.⁹

The “smart” grid network inflicts an incalculable increase in hazardous EMR at a time when

the International Agency for Research on Cancer (IARC) has designated all RF/microwave electromagnetic frequencies as a Group 2B carcinogen (possibly cancer-causing).¹⁰

CANARY SICKNESS AND MEDIA FALLOUT

A group of concerned medical doctors in Eugene, Oregon, reports: “PG&E’s approach to the AMI rollout didn’t involve a lot of public education. They just switched out the meters. And some people found that they were having trouble sleeping, or experiencing headaches, ringing in the ears, vertigo or other symptoms that hadn’t been bothering them before. Soon the Internet was awash with anecdotal reports and commentary about these adverse effects. . . Finally PG&E was served with a court order to provide clearer documentation of what the meters were actually doing. In response to that court order, PG&E provided documentation from the manufacturer of the meters that the average meter in the mesh network transmitted data signals to the utility six times a day, network management signals fifteen times a day, timing signals three hundred sixty times a day and beacon signals to the mesh network nine thousand six hundred times a day....This penciled out to roughly seven transmissions per minute, twenty-four hours a day, coming out of every meter in the community.”¹¹



Left: An EMR-emitting device attached to a telephone pole. Right: A cell tower.

Since microwaves easily flow through most construction materials, “smart” meters attached to the outside of homes (or huge banks of them on multi-unit dwellings) broadcast a perpetual barrage of Group 2B radiation directly into the interior of inhabited buildings and right through all human flesh within range.

In addition, some residents within AMI mesh networks may also have “Medusa” meters on their property. One investigator reports: “A utility whistle blower told us about a special smart meter—a mini cell phone tower. This collection device receives data and more radiation from five hundred to seven hundred surrounding meters and uses the customer’s premises to serve as a relay station to transmit other neighbors’ data along the mesh network to collection points. These Medusa meters are deployed upon properties without the owner’s knowledge or consent. The utilities select a property for this meter based upon easy meter access to the street, no locked gates or dogs and good customer payment history. . . Utilities reward good customers with a Medusa meter and bathe their homes with additional toxic radiation.”¹²

By early 2011, the California Public Utilities Commission had received over two thousand health complaints from PG&E customers and the complaints escalated from there. By the end of 2011, multiple California cities had either banned smart meters or had placed a moratorium on continued installation. Currently, many California communities are still in AMI limbo, while communities in other states also struggle to find their way.

THE PROBLEMS WITH EXPOSURE TO MAN-MADE EMR

“Smart” meters are “hot,” in terms of broadcast power density, and can emit microwaves at levels many times higher than those reported by medical studies to cause serious adverse health effects. Film producer Josh del Sol reported in his documentary *Take Back Your Power* that testing shows a single “smart” meter can produce eight microwatts per centimeter squared (cm²). A bank of smart meters can generate up to 19.8 microwatts/cm² of whole-

body radiation exposure. Meantime, modern medical science confirms that a microwave transmission power of only .05 microwatts/cm² can cause children to suffer headaches, behavioral problems and inability to learn and concentrate.¹³

In a study conducted by chiropractic physician Dr. Frank Springob, “smart” meter radiation exposure quickly produced almost instant blood abnormalities in human test subjects.¹⁴ Volunteers had their blood examined as normal, then stood within one foot of a transmitting “smart” meter for only two minutes. A post-exposure examination with dark field microscopy showed that all volunteers had developed one of these blood pathologies:

- Marked degradation of cells with some cell walls broken;
- Corrugated formation in which blood cells become crimped like bottle caps;
- A rouleaux condition in which the red blood cells clump abnormally together. Dietrich Klinghardt, MD, PhD, who practices medicine in Washington State, says, “It is our experience as doctors that everybody is equally electro-sensitive.” Dr. Klinghardt finds the same inflammatory markers in the blood of every EMR-exposed person, both those who feel bad from exposure and those who notice no preliminary ill effects.¹⁵

“Smart” grid proponents routinely insist that the meters emit RF radiation at levels far below maximum exposure standards set by the Federal Communications Commission (FCC). FCC is the federal agency with sole authority to regulate wireless antennas. But environmental consultant Cindy Sage, co-editor of the BioInitiative Report, has determined that the emissions from “smart” meters installed across California likely exceed FCC’s guidelines.¹⁶

Meanwhile, BioInitiative Report scientists recommend that the FCC reduce allowable emissions by thousands-fold in order to protect public health. Cindy Sage explains that EMR emitted by “smart” meters reaching the interior of a home can be comparable to radiation levels found within two hundred to six hundred feet of a cell tower. She warns: “If you think of a strobe light or a laser in the eyes, it is intermittent but powerfully disabling if you are forced to endure it. [“Smart” meter] signals may be short bursts of RF (this depends on the meter and how utilities choose to operate) but... it is a continual 24/7 battering of the body with cellular insults.”¹⁷

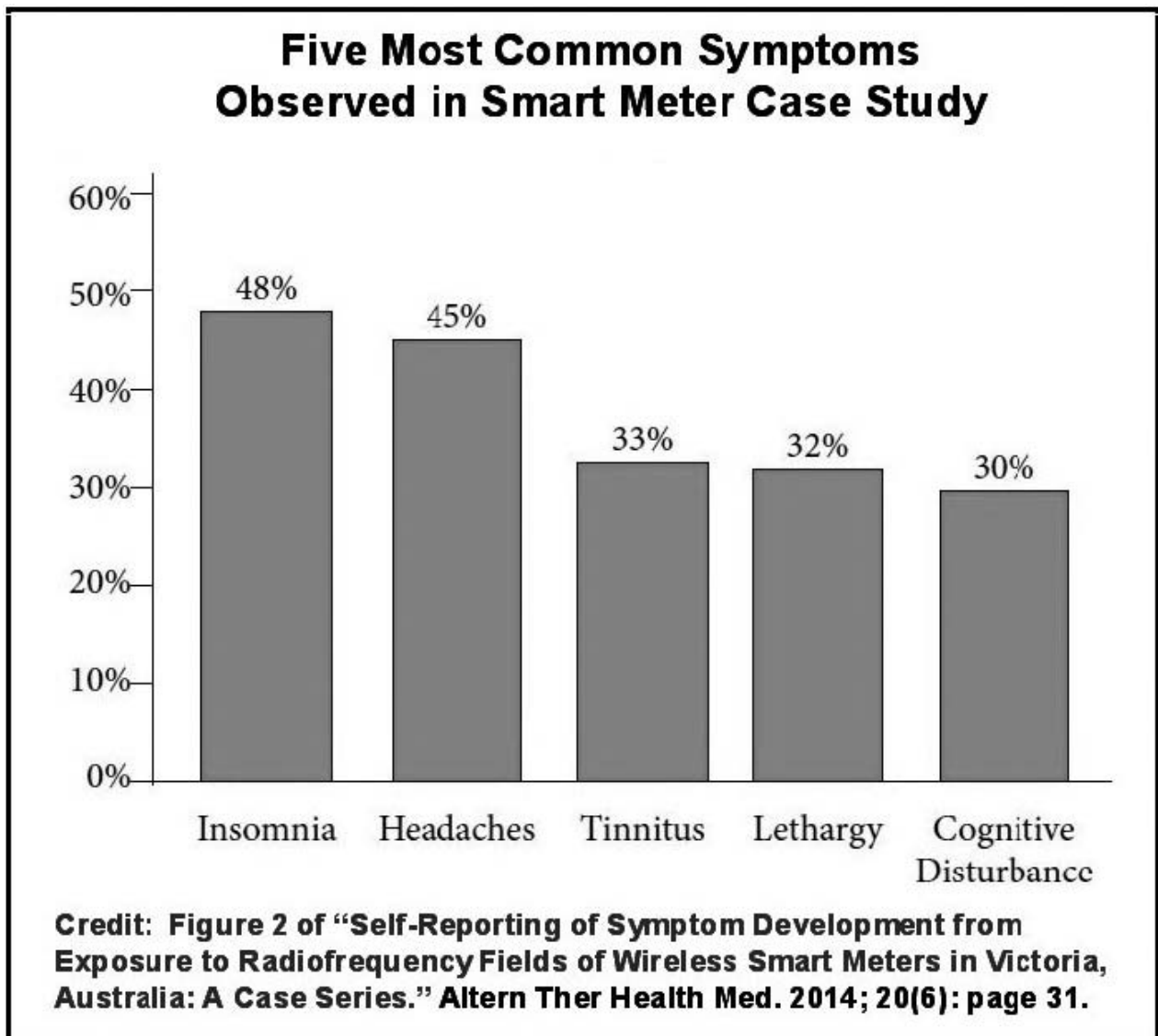
THE PAY-US-NOT-TO-HURT-YOU RACKET

Due to public uproar, some utility companies unleashing “smart” meter systems are offering opt-out programs. Opt-out often requires those who refuse “smart” meters to pay one or more fees for the right to keep their older and safer analog meters. Some complain that the fees are reminiscent of extortion from old-time protection thugs.

Requesting an opt-out is definitely a first step to protecting one’s own home from harmful, microwave emissions. But it does not address exposure to EMR from neighboring meters, or from mesh pole transmitters on the grid. EMR from some meters can be measured over three hundred feet away. A single-family home in a residential community can be well within three hundred feet of several near and next-nearest neighbors. Thus, even at the distance of a football field, EMR from many surrounding meters could prove biologically significant, even for those who retain their analog meters. Residents of townhouses, condos and apartment buildings may be especially vulnerable when ten or twenty meters or more are installed on one wall.

Also, an opt-out does not resolve the hazards of dirty electricity polluting a neighborhood loaded with AMI meters. Nor does it protect people who don't have enough information to request an opt-out, but who may one day develop illnesses from EMR exposure.

Living in rural areas does not solve the problem. Some rural utilities serving mountainous and/or forested areas may choose to deploy AMI metering solutions like those provided by Tantalus Systems Corp. Tantalus creates hybrid "smart" antenna systems, utilizing a variety of frequency signals that can travel through and around obstacles in their quest to "connect."¹⁸ As with other frequency fields deployed by AMI, no studies of the biological effects of such public exposure have been conducted.



BIG BROTHER IN THE CLOTHES DRYER

The smart meter roll-out is only the first phase of a federal master plan that will deeply penetrate American homes with smart radiation. Some appliance manufacturers are now gearing up to market antenna-embedded appliances capable of linking to the "smart" grid through the Internet. Such appliances can transmit and receive data to and from utilities. Such appliances make people vulnerable to hackers.¹⁹

Most upcoming smart appliances will be using the Wi-Fi frequencies of 2.4 or 5 GHz. They will create a wireless home access network (HAN) similar to residential Wi-Fi systems. Smart

appliance HANs will broadcast microwave radiation 100 percent of the time. Within a typical house full of radiating appliances, there will be no location out of broadcast range. It is anticipated that smart appliance turn-off will be available only at the circuit breaker.

The EMF Safety Network says: “Smart meters are a surveillance device. They are a search without a warrant. They collect detailed energy usage, for instance when you cook, watch TV, whether you are at home or not, when you turn on a light or when you have guests. This data is valuable because it can reveal patterns about what you do and when. California utility companies admitted they are providing smart meter data to the government and third parties.”²⁰

Those with access to “smart” meter and “smart” appliance data, including government officials, law enforcement agents, and professional hackers/thieves, can review a permanent history of household activities, then complete a calendar with time-of-day metrics to gain a highly invasive and detailed view of occupants’ lives. Because smart meters can individually identify electrical devices, personal information made obvious to snoopers can include medical conditions, sexual activities, the physical location of persons within the house, and vacancy patterns.

Even the new digitized “smart” water meters can transmit surveillance information. Describing such meters installed in Minnesota, one report notes: “If you stop using water for the night at 10 p.m. the city will know because they will get signals during the night of no water usage. If the city gets a signal at 2 a.m. for 1.5 gallons, the city knows you just flushed your toilet.” For the privilege of involuntarily supplying such data to nameless overseers, the owner of the toilet must endure invasive and continuous exposure to electromagnetic radiation.²¹

A SYSTEM SMACKING OF HACKING

There is a smart grid initiative in almost every industrialized nation. The fact that AMI has been deployed worldwide makes the entire “smart” power grid especially vulnerable to cyber attacks. As AMI progresses, the vulnerability of the Internet is being transferred to entire national grids.

In January 2014, two large utility companies in Massachusetts, known collectively as Northeast Utilities, informed their state Department of Public Utilities that there is no cost justification for implementing a one billion dollar AMI system statewide. They said: “Many customers have a deep aversion to technology that links them to the grid in a way that they perceive as an invasion of their privacy and/or detrimental to their health.” Northeast Utilities also complained: “AMI introduces a brand new portal into the companies’ information systems, significantly increasing the cyber-security risk.”²²

Former CIA director James Woolsey agrees. He said in an interview: “They’re constructing what they call a ‘Smart Grid.’ And they’re going to make it easier for you and me to call our homes on our cell phones and turn down our air conditioning. . . Great, but that may well mean that a hacker in Shanghai with his cell phone could do the same thing or worse. And a so-called Smart Grid that is as vulnerable as we’ve got—it’s not smart at all, it’s a really, really stupid grid.”²³

Individual “smart” meters themselves are vulnerable to hacking because the meters can easily be removed and re-programmed, or hacked into wirelessly from laptops. The

Associated Press reports: "Computer security researchers say new smart meters that are designed to help deliver electricity more efficiently also have flaws that could let hackers tamper with the power grid in previously impossible ways. At the very least, the vulnerabilities open the door for attackers to jack up a stranger's utility bills. These flaws could also move hackers a key step closer to exploiting one of the most dangerous capabilities of the new technology which is the ability to remotely turn someone else's power on and off."²⁴

That scenario is grim enough. But since smart technology may open the door to malicious hacking and cyber-attacks on a national scale, it becomes a critical issue of national security. Woolsey has disclosed that virtually no agency in the federal government has ultimate responsibility for survivability and protection of the U.S. electrical grid as a whole. He says that if a foreign power ever attacks the grid, through either a physical attack or cyber-terrorism, times will be tough: ". . . When it goes down, we are not in the 1970s pre-web, we're in the 1870s pre-grid, and we don't have enough plow horses or pump handles."²⁵

ALTERNATIVE GREEN ENERGY SYSTEMS SUPPRESSED?

The documentary film *Take Back Your Power* introduces evidence that the vested interests coercing the AMI systems upon our nation are the very same forces which are suppressing cleaner and more sustainable energy technologies.

One path to the suppression of competitive technologies is apparently through the U.S. Patent Office. The Commissioner of Patents can order inventions and technologies to be kept secret indefinitely. At his discretion, he can deny any patent or withhold the publication of any patent application. By the end of fiscal year 2011, there were over five thousand Patent Office secrecy orders in effect, according to the Federation of American Scientists.²⁶ It is believed by some scholars that among these many submerged patents are several clean and viable energy technologies which are perceived as a threat by the powerful oil, gas and fracking networks.

Germany is said to be producing almost 50 percent of its energy from solar photovoltaic panels. A large amount of this solar energy is produced by individuals and small businesses who feed their excess energy back into the grid. The German system is reported to be generating clean energy equivalent to that generated by twenty nuclear power stations operating at full capacity. Advanced solar technology has allowed Germany to announce that it may abandon dangerous nuclear energy, a welcome development following the 2011 Fukushima nuclear meltdown.²⁷

Mounting evidence demonstrates that "smart" meter systems will not significantly curtail U.S. electricity use. Several pilot programs across the nation have shown little or no energy reduction or savings. In 2011, Connecticut Attorney General George Jepson announced that "smart" meter pilot results showed no beneficial impact on total energy usage in his state. He said that the benefits of advanced meters would not merit the five hundred million dollar cost of their implementation.²⁸

Ironically, the "smart" meters themselves use considerable energy in order to perpetually signal the mesh system. In addition, millions of "smart" appliances will be always "on" and always communicating with meters, thereby causing more use.

A report in Consumer's Digest muses: "What's discouraging about the all-but-mandatory dynamics of the smart-meter transition is that it's appealing only if you are willing to pay a lot of money to save a little electricity.... If the success of the smart meter transition is based on consumers saving money and energy in the long run, we can't help but imagine that it could take decades for that to happen—if it ever does."²⁹

REFLECTIONS ON OUR PRIORITIES

The formidable challenges presented by AMI smart technology lead back to the dilemma of national priorities. How much money and wellbeing should we sacrifice to achieve a tiny reduction in national energy consumption fifteen years from now?

Media sources continually report on many people suffering from electro-hypersensitivity (EHS) who have fled their smart-metered homes in desperate search of habitation that does not cause heart palpitations, rashes, severe tinnitus and/neurological disabilities. Electro-sensitivity appears to be a sort of auto-immune condition developed by a growing number of victims, usually after acute exposure to electromagnetic radiation.

Sandi Aders of Idaho has been debilitated since a "smart" meter was installed on her home. Unaware of any hazard, she and her husband used a bedroom where a transmitting digital meter was mounted on an outside wall directly opposite their bed. Day by day after the meter's installation they grew sicker and more exhausted. They tried to cope with rashes and odd nerve disorders. Simultaneously they developed the symptoms of glaucoma. They finally hit the road to seek relief from a house that made them cruelly sick, but the damage has proven irreversible. Sandi is now so electrosensitive that she lives without electricity, phones or computers. No physician has found a solution to the low, pulsed radio frequency hum and droning sounds that she hears constantly, especially when she is near electrical power lines. Due to the nerve damage she says she acquired after her "smart" meter exposure, Sandi endures the same audio-torture being reported by many other people nationwide from similar exposures.³⁰

Dr. Andrew Goldsworthy, British biologist and expert on the bio-effects of microwave radiation, explains: "The duration of the radiation seems to be more important than its strength, with the effects being cumulative as more and more cells are damaged. Interestingly, DNA damage from cell phone radiation is greater when the exposure is intermittent (five minutes on, ten minutes off) than when continuous (Diem et al., 2005). This may be because the cells are constantly adapting and using energy to defend themselves; they drop their guard during the off period and are caught unawares when it goes on again...."Smart" meters, which operate 24/7 and radiate modulated microwaves intermittently, can therefore be expected to be particularly harmful to DNA."³¹

The National Institutes of Health confirms the fact that all cancer begins with damaged DNA. In a nation with fourteen million cancer victims and 1.6 million new cancer cases diagnosed each year (not counting millions of skin cancers), exposure to EMR from wireless technologies matters to everyone's health.

Surely the welfare of pregnant women and children is of utmost importance to our society. EMR from "smart" meters and other electronics has the potential to damage the entire human reproductive system. This was already reported in 1971 by the Naval Medical Research Institute (NMRI) at Bethesda, Maryland, which collected over twenty-three hundred studies to document the impacts of non-ionizing radiation on human health. Dr. Zorach R.

Glaser, Ph.D., compiled these studies. Among deleterious effects listed in Dr. Glaser's report are altered menstrual activity, male impotence, altered sex ratio of births (more girls), and decreased lactation in nursing mothers.³²

Today, medical science offers much additional confirmation that EMR emissions from AMI meters and their support infrastructure have the potential to damage ovaries and ova cells, harm the fetus, cause low birth weight, and even induce premature delivery.³³ There is also increasing evidence that EMR emissions may be linked to America's epidemic of autistic spectrum disorders.³⁴

Public awareness is a first step toward forging solutions to the many challenges of the "smart" grid conundrum. We need citizens, legislators and regulators concerned about health. We need "smart" meters recalled and analog mechanical meters restored. We need to stop deploying any new technologies until they are proven harmless.

In its scathing letter to the Massachusetts Department of Public Utilities, Northeast Utilities has stated that achievement of gridmodernization objectives "does not require the implementation of AMI, despite the Department's suggestion that it does." This letter contains sensible alternative recommendations for cost-effective grid modernization, fully achievable without noxious AMI radiation hazards.³⁵

It is truly wise to become educated on all of these vital issues. We must be proactive in order to understand what utility companies are planning for our individual neighborhoods and for our states.

In these challenging times, vigilance and reliable information empower us to prevent suffering and protect everyone's health.

THE 2012 BIOINITIATIVE REPORT OVERVIEW: IMPLICATIONS FOR HEALTH FROM THE ROLLOUT OF "SMART" METERS

BY CINDY SAGE, CO-EDITOR

The BioInitiative Report 2012 updates the last five years (2007-2012) of science, public health, public policy and global response to the growing health issue of chronic exposure to electromagnetic fields and radio frequency radiation in the daily life of billions of people around the world. The Report has been prepared by 29 authors from ten countries, including ten medical doctors, twenty-one PhDs, and three MsC, MA, or MPHs. Among the authors are three former presidents of the Bioelectromagnetics Society (BEMS), and five full members of BEMS. One distinguished author is the chair of the Russian National Committee on Non-ionizing Radiation. Another is a senior advisor to the European Environmental Agency.

The great strength of the BioInitiative Report (www.bioinitiative.org) is that it has been carried out independently of governments, existing bodies and industry professional societies. Precisely because of this, the BioInitiative Report presents a solid scientific and public health policy assessment that is evidence-based.

The global conversation on why public safety limits for electromagnetic and radio frequency fields remain thousands of times higher than exposure levels that health studies consistently show to be associated with serious health impacts has intensified since 2007.

Roughly eighteen new studies have been published in the last five years reporting effects at exposure levels ten to hundreds or thousands of times lower than allowed under safety limits in most countries. Yet no government has instituted comprehensive reforms. Some actions have been taken that highlight partial solutions. The Global Actions chapter presents milestone events that characterize the international “sea change” of opinion that has taken place, and reports on precautionary advice and actions from around the world.

The world’s populations—from children to the general public to scientists and physicians—face an intensifying barrage from corporate marketing propaganda that urges the insertion of the latest wireless devices into their everyday lives. This occurs even while even an elementary understanding of the possible health consequences of using these devices is beyond the ability of most people to grasp. Exposures are invisible and testing meters are expensive and technically difficult to operate. The technology industry promotes new gadgets and generates massive advertising and lobbying campaigns that silence debate, while the reliable, non-wireless versions are discontinued against public will. There is little labeling, and little or no informed choice. In fact, there is often not even the choice to stay with safer, wired solutions, as in the case of the “smart grid” and “smart” wireless utility metering, an extreme example of a failed corporate-governmental partnership strategy, ostensibly initiated for energy conservation.

A collision of the wireless technology rollout and the costs of choosing unwisely has begun and will grow. The groundwork for this collision is being laid as a result of increased exposure, especially to radio frequency fields, in education, housing, commerce, communications and entertainment, medical technologies and imaging, and in public and private transportation by air, bus, train and motor vehicles. Special concerns are the care of the fetus and newborn, the care for children with learning disabilities, and consideration of people under protection of the Americans with Disabilities Act, which includes people who have become sensitized and physiologically intolerant of chronic exposures. The 2012 report now addresses these issues and presents an update of issues previously discussed in the BioInitiative Report 2007.

Why should we care?

The stakes are very high. Human beings are bioelectrical systems. Our hearts and brains are regulated by internal bioelectrical signals. Environmental exposures to artificial EMRs can interact with fundamental biological processes in the human body. In some cases, this may cause discomfort, sleep disruption, loss of wellbeing (impaired mental functioning and impaired metabolism), or sometimes a dread disease like cancer or Alzheimer’s disease. It may interfere with fertility or successful full-term pregnancy, or result in brain development changes that harm the child. It may be these exposures play a role in causing long-term impairments to normal growth and development in children, jeopardizing their futures as healthy, productive adults. We have good evidence that these exposures can damage our health, or that of children of the future who will be born to parents now immersed in wireless exposures.

In the U.S., the deployment of wireless infrastructure (cell tower sites) to support cell phone use has accelerated greatly in the last decades. The spread of cell towers in communities—often placed on preschool, church, daycare, and school campuses—means that young children receive thousands of times higher RF exposures in home and school environments than existed even 20-25 years ago. CTIA estimates that in 1997 there were 36,650 cell sites in the U.S. This number increased rapidly to 131,350 in June 2002, 210,350

in June 2007, and 265,561 in June 2012 (CTIA, 2012).

These wireless antennas for cellular phone voice and data transmission produce whole-body RFR exposures over broad areas in communities—an involuntary and unavoidable sources of radio frequency radiation exposure. Further, the nearly universal switch to cordless and cell phones from corded landline phones means close and repetitive exposures to both EMF and RFR in the home. Other new RFR exposures come from Wi-Fi access points (hotspots) that radiate continuously in cafés, stores, libraries, classrooms, on buses and trains, and from personal Wi-Fi enabled devices (such as iPads, tablets, and PDAs).

The largest single source of community-wide, pervasive RFR yet rolled out is the “smart meter” infrastructure. This program places a wireless device (like a mini-mobile phone base station) on the wall, replacing the electromechanical (spinning dial) meter. They are to be installed on every home and classroom in every building with an electric meter. Utilities from California to Maine have installed tens of millions already, despite the deep alarm of experts and enormous public resistance. The wireless meters produce spikes of pulsed radio frequency radiation continuously, and in typical operation, will saturate living spaces at levels that can be much higher than those already reported to cause bioeffects and adverse health effects (utilities can only say they are compliant with outdated federal safety standards, which may or may not always be true—see <http://sagereports.com/smart-meter-rf>). These meters, depending on where they are placed relative to occupied space in the home or classroom, can produce RFR exposure levels similar to those within the first 100 feet to 600 feet of a mobile phone base station (cell tower).

The cumulative RFR burden within any community is largely unknown. Both involuntary sources (like cell towers, smart meters, and second-hand radiation from the use of wireless devices by others) plus voluntary exposures from personal use of cell and cordless phones, wireless routers, electronic baby surveillance monitors, wireless security systems, wireless hearing aids, and wireless medical devices like implanted insulin pumps, all add up. No one is tallying up these combined exposure levels. Billions of new RFR transmitters from the “smart” meter rollout alone will raise the baseline RFR levels and add significantly to the existing RFR background.

Do we know enough to take action?

There is more evidence than we need. Over the last five years, new scientific studies indicate the situation is much worse than in 2007 and yet people around the world have so much more daily exposure than even five years ago. Exposures are linked to a variety of adverse health outcomes that may have significant public health consequences. When considering billions of people world-wide, no argument to maintain the status quo can be persuasive now. In twenty-one technical chapters of the BioInitiative Report 2012 update, the contributing authors discuss the content and implications of 1800 new studies. Overall, there is reinforced scientific evidence of risk where there is chronic exposure to low-intensity electromagnetic fields and to wireless technologies (radio frequency radiation including microwave radiation).

There is more evidence in 2012 that such exposures damage DNA, interfere with DNA repair, and are hazardous to the nervous system. More and better studies on the effects of mobile phone base stations (wireless antenna facilities or cell towers) report lower RFR levels over time can result in adverse health outcomes. An increasing number of studies

have examined the effects of wireless laptops as well as cell phones worn on the belt or in the pocket of men on sperm quality, motility, and sperm death. A dozen new studies focus on the fetus, infant and young child, and child-in-school.

The levels of exposure we face in 2012 are higher, and have crept into everyday life, even for children. The levels at which undesirable effects on health and well-being are seen is much lower. There is much greater involuntary exposure, and it is nearly unavoidable even for people who choose not to “go wireless” via second-hand radiation effects. Safe forms of communication by land-line telephone are being phased out without general public knowledge or agreement. There is no informed consent for consumers (warning labels on cell phones, for example, have been defeated by telecom industry lobby groups). It is still difficult or impossible for consumers to get reliable information on levels of exposure from wireless devices. It is simply beyond the reach of people to identify where excessively high levels of exposure occur in their communities, and it is very rare for a county or state health department to accommodate requests for information or provide measurements.

The range of possible health effects that are adverse with chronic exposures has broadened. The most serious health endpoints that have been reported to be associated with extremely low frequency (ELF) and/or radio frequency radiation (RFR) include childhood and adult leukemia, childhood and adult brain tumors, and increased risk of Alzheimer’s and amyotrophic lateral sclerosis (ALS). In addition, there are reports of increased risk of breast cancer in both men and women, genotoxic effects, pathological leakage of the blood-brain barrier, altered immune function including increased allergic and inflammatory responses, miscarriage, and some cardiovascular effects. Insomnia is reported in studies of people living in very low-intensity RFR environments with Wi-Fi and cell tower-level exposures.

We could do otherwise. Each wireless version had a wired counterpart with none of the wireless-associated health effects. It is time to re-think the wireless tsunami and educate people about health, privacy and security risks. It is past time to develop new safety standards. Now we must look to less harmful ways to communicate, move ourselves from place to place, shop, sleep, recreate, save energy and educate our children in school.

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ON HOW TO REFUSE A “SMART” METER

Jerry Day posts the following letter on jerryday.com for anyone who chooses to refuse installation of a “smart” meter on their residence or property. He suggests that you consult your attorney to tailor the letter to your specifications, then send your revised version to your utility company’s CEO or president by certified mail.

Keep copies of your letter and your certified mail receipt.

If anyone attempts to install a transmitting meter on your residence, show them the copy of your letter and proof of its delivery (your certified mail receipt). Tell them that installing a transmitting meter on your residence will thereby be a criminal trespass. If they attempt this, you will call the police, request that the installer be taken into custody, and file a criminal complaint with the police.

If the company responds to your letter in writing, Jerry Day suggests that you write back. Remind them that they have not proven that they may lawfully install any radiation-emitting

surveillance device on your residence.

MODEL LETTER

Your Name/Energy Customer's Name

Street Address

City, State Zip Code

Name of Utility's CEO, President, General Manager or Board Chair

Utility Company

Street Address

City, State Zip Code Date

NOTICE OF NO CONSENT TO TRESPASS, SURVEILLANCE OR RADIATION POLLUTION.

NOTICE OF LIABILITY. ADHESION CONTRACT.

Dear (CEO's Name) and All Agents, Officers, Employees, Contractors and Interested Parties:

In regard to your possible intention to install a "smart" or other digital utility meter at the above address, those meters violate the law. They cause endangerment to people in their vicinity due to the following factors:

1. They individually identify electrical devices and record when they are operated, causing invasion of privacy.
2. They monitor household activity and occupancy in violation of rights and domestic privacy.
3. They transmit wireless signals that are interceptable by unauthorized and distant parties.
4. No power company or other individual agency has consent to conduct surveillance or monitoring or to emit radiation (EMR) on our property or residence with a digital meter.
5. Those with access to the data can review a permanent history of household activities taken and viewed unlawfully and without the consent of occupants and subjects of the surveillance.
6. Those databases may be shared with, or fall into the hands of, unauthorized law enforcement, private hackers of wireless transmissions and other unidentified parties for use against the interests of the energy subscribers and the occupants of the structures.
7. "Smart" meters are, by definition, surveillance devices that violate federal and state wiretapping laws by recording and storing databases of private and personal activities and behaviors recorded without the consent or knowledge of those people who are monitored.
8. It is possible, for example, with analysis of certain "smart" meter data, for unauthorized and distant parties to determine medical conditions, sexual activities, vacancy patterns, general affluence, trade secrets and physical locations of occupants.
9. By intentional transmission and/or incidental disruption of house current, digital meters emit cancer-causing electromagnetic radiation, which violates laws against public endangerment, assault and commission of bodily harm.
10. Digital meters are designed to transmit using electromagnetic radiation known to cause cancer and many other diseases, illnesses and symptoms.

For the above reasons, and by right of occupancy and property ownership, I prohibit, and deny consent of, any installation and use of any monitoring, eavesdropping, surveillance and radiation-emitting devices on my property and place of residence, especially in the form of a digital, transmitting utility meter.

Any attempt to install any such device directed at me or other occupants on my property or place of residence will constitute trespass, stalking, wiretapping and assault, all prohibited and punishable by law through criminal and civil actions. All persons, government agencies and private organizations responsible for installing or operating monitoring devices that I consider unlawful will be fully liable for major financial and compliance claims and demands in excess of one million dollars.

This is a legal notice. The liabilities and obligations listed above are true and binding upon all parties upon delivery of this notice. These terms and conditions apply without regard to status or existence of any “opt-out” contract.

Under my authority as owner and/or occupant of the above property, and under your implied or expressed application to enter that property, this is an adhesion contract to which you are now bound until and unless you respond with factual rebuttal in a sworn statement by an authorized and identified party within 21 days of this delivery. Any rebuttal must show your authority to install an unlawful radiation-emitting surveillance device (digital electric “meter”) on my property without my consent. Expect rebuttal to any such claim. Any failure to timely show and prove full and binding authority to install the unlawful and harmful device on my property and/or place of occupancy will be an agreement with all terms and conditions herein. I/we deny and refuse any past, present and future proposal, offer, demand or claim contrary to any terms or conditions herein.

Notice to principal is notice to agent, and notice to agent is notice to principal.

Signature

Name of energy user and/or customer

Note: If a utility company has already installed a transmitting meter on your residence and you want it removed, first find out if the company allows an opt-out. If they do, simply go through the proper channels for having it removed and replaced with a mechanical meter. If opt-outs are not available in your area, Jerry Day offers a letter that demands removal at www.freedomtaker.com.

TEN QUESTIONS FOR YOUR UTILITY COMPANY

Utility companies around the world have been caught lying to their customers about their smart meter programs. The following will allow you to cut to the truth with your local utility and smart meter company.

Note: For additional research and resources, please see Film References and Key Issues & News.

1. Am I legally required to accept a smart meter?

Answer: No. You do not have to accept a smart (or “advanced” or “upgraded”) meter. Any utility company who states this is lying.

2. Can I expect my energy bills to go up with a smart meter?

Answer: Yes. Where smart meters have been deployed, energy bills have consistently risen – sometimes dramatically. The price increases will become even more pronounced once Time-of-Use (TOU) pricing is implemented. You will be charged more for electrical use when you need the electricity the most (i.e. when you come home from work or school). The idea that you will start doing your laundry at 3:00 AM when prices are cheaper is a dystopian

fantasy dreamt up by the same people who think it is safe to put a toxic, microwave radiation emitting spy-device on your home.

3. In the United States, my 4th Amendment rights prevent unlawful search and seizure in my own home. Do smart meters violate these rights?

Answer: Yes. With a smart meter on your home, you can no longer retreat into your own home and expect to have the privacy that is guaranteed by law. Thus, smart meters are unconstitutional and illegal.

“With smart meters, police will have access to data that might be used to track residents’ daily lives and routines while in their homes, including their eating, sleeping, and showering habits, what appliances they use and when, and whether they prefer the television to the treadmill, among a host of other details.”

US Congressional Research Report, “Smart Meter Data: Privacy and Cybersecurity,” p. 7, 3 February 2012

4. Is it true that my energy use information will be sold to third-party vendors in order to market products or track my activities in some way?

Answer: Yes. The California Public Utilities Commission has stated on the record that they look forward to the business opportunities that will come from selling our personal energy use data. Just like Gmail and Facebook data, your privacy will not be preserved if you have a smart meter.

“I support today’s decision because it... expands consumer and third-party access to electricity usage and pricing information.

I hope this decision stimulates market interest.”

Commissioner Timothy Alan Simon, “California Commission Adopts Rules...”, 31 July 2011

5. Will the smart meter program help the environment by reducing energy use?

Answer: No. None of the existing smart meter programs has shown energy savings. In fact, having a wireless smart meter and smart grid mesh system takes more energy because now there are millions of new wireless transmitters on the grid that are constantly using energy and constantly transmitting. They all take additional energy that the grid must produce. Simple energy conservation steps by citizens would have saved much more energy, but would not have been profitable for utility companies, the smart meter industry and governments.

Furthermore, any technology that harms the health of humans, plants and animals like that of microwave radiation emitting smart meters can never be considered environmentally sustainable or “green.” It is the exact opposite – an environmental calamity.

“The pilot results showed no beneficial impact on total energy usage.”

Connecticut Attorney General George Jespen, “Jespen Urges State Regulators...”, 8 February 2011

6. Have there been fires where smart meters have been installed?

Answer: Yes, throughout the world there have been thousands of fires that have occurred once smart meters have been installed. This is happening because of faulty installations, old wiring that cannot handle the new meters and when smart meters have been turned on remotely. In Pennsylvania, PECO/Exelon halted their installation program because of more

than twenty-four documented fires. Property damage has been significant and one man died in California because of a smart meter fire. Notably, the vast majority of smart meters are not approved or listed by UL (Underwriters Laboratories). Because of this, a fire related to a smart meter on your home may not be covered by your insurance.

“For myself, as an adjuster, I believe the Smart Meters are a real threat to the safety of your home, business and property. I have personally worked two large homeowner fires in which the Smart Meters were determined as responsible.”

Norman Lambe, insurance adjuster, “The not so smart meter”, 13 November 2011.

7. Are there any known health effects related to smart meters?

Answer: There are over 6,000 studies showing biological effects from the same form of radiation that smart meters invisibly emit – commonly known as “electro-smog” pollution. Additionally, thousands of people across the United States, Canada and Australia have become ill once smart meters have been installed on their homes. Medical doctors and scientists around the world are speaking out on the dangers of smart meters. Smart meters emit radiation continuously and cannot be turned off at night when radiation is the most dangerous for the body and brain. Comparatively, a cell phone – which emits radiation at levels hundreds of times lower – can be turned off when not in use.

Secondly, smart meters generate what’s known as “dirty electricity” radiation pollution throughout your home, because of the switching-mode power supply that they utilize. An “opt-out” to a wired digital meter still produces dirty electricity. Only a non-digital analog meter does not produce dirty electricity.

An individual opt-out still exposes you to the radiation from the neighbors’ meters and other grid infrastructure. And every smart meter in your neighborhood adds to the dirty electricity in your home, even if you opt out, because all neighboring homes share the same power substation.

“We have noted from previous health hazard histories such as that of lead in petrol, and methyl mercury, that ‘early warning’ scientists frequently suffer from discrimination, from loss of research funds, and from unduly personal attacks on their scientific integrity. It would be surprising if this is not already a feature of the present EMF controversy as it seems to be still a common practice as has been recently reported in Nature.”

Professor Jacquie McGlade, executive director of the European Environment Agency, 15 September 2009

8. How many pulses of radiation does my smart meter emit per day?

Answer: Wireless smart meters around the world have been shown to emit between 5,000 and 190,000 pulses per day. Your utility may state they only transmit 45-60 seconds a day. This is because they are only adding up the millisecond pulses that occur constantly throughout the day. What they are not telling you is that the pulses occur every few seconds, which means that the meters are constantly emitting microwave radiation. Your smart meter is continuously communicating with hundreds of other smart meters, grid infrastructure, and in the future, all appliances in your home.

The levels at which a single smart meter emits radiation can be more than 80 times higher than recommended safety levels based upon current published science. (Examples:

www.BioInitiative.org, and <http://www.baubiologie.de/site/english.php>)

In addition to current health risks, unless the smart meter programs are stopped, you will eventually have 10-20 appliances that each emit a pulse of radiation every few seconds in order to communicate wirelessly with your smart meter. This will fill your home with even more dangerous pulsed microwave radiation affecting your entire family.

“There is no substitute for a roll back of all Smart Meters at the community level, or higher.”
Ronald Powell, PhD Applied Physics, “Biological Effects from RF Radiation at Low-Intensity Exposure, based on the Bio-Initiative 2012 Report, and the Implications for Smart Meters and Smart Appliances”, 2013

9. Have smart meters been proven to be safe?

Answer: No. The smart meter industry has not released one actual study on whether smart meters are safe for human beings. They do not want to look at something that would damage their business. This is the case even though thousands of people have become ill once smart meters were installed on their home and so much science shows that microwave radiation is dangerous.

It is interesting to note that smart meters do meet federal agency “safety” guidelines. However, the FCC and others’ guidelines are not actually meant to protect our health. In fact, they are only meant to protect from acute tissue heating and electrical shock over several minutes. They are not meant to protect humans from the long-term, non-thermal levels of microwave radiation emitted by devices such as smart meters. In fact, there are no true governmental safety standards that govern smart meters. The utility company is misinformed or simply lying when they say they are safe because they meet the FCC guidelines.

“If a manufacturer wants to give a product to a consumer, especially in this case to everybody – imposed on everybody—they are the ones who should carry the burden to prove it’s safe before they can give it to the people. It’s not up to consumers to demonstrate they are unsafe.”

Dr. De Kun Li MD PhD MPH, senior research epidemiologist, Kaiser Permanente Division of Research, in Take Back Your Power

10. Are utilities getting financial kickbacks for forcing smart meters on everyone?

Answer: Yes. As Time Magazine has reported, in the United States eleven billion dollars of taxpayer funds (though there are reports that this is a conservative estimate) were spent as “incentives” for utilities to attempt to force the installation of smart meters upon all of their customers without their consent. As this money is divided amongst all utilities, many energy providers are actually receiving hundreds of millions of dollars in compensation, but first they have to install the meters.

As this sort of incentivizing, perhaps also called bribery, is happening in similar fashion in many other industrialized countries, the multinational smart meter/smart grid initiative could potentially turn out to be the largest attempted financial scam in modern history.

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