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New Critical Problem with 'Smart' Meters: The Switching-Mode Power Supply (SMPS)

[Left: Warning label on side of a typical 'smart' meter.]

by Mary Beth Brangan and James Heddle

Just When You Thought It Was Safe to Opt-Out

Ironically, now that PG&E is offering to disable the wireless RF function (for a hefty price) in their smart meters, we find that there's an another extremely critical problem with the meters.

Just when you thought you had mastered all the esoteric acronyms, and all the problems with 'smart' meters, here's one more: Switching-Mode Power Supply or SMPS. This new element in the 'smart' meter controversy deserves immediate full official and public attention.

In our on-going investigation into why so-called 'smart' meters being installed by PG&E against rising public opposition are causing so many people to be sick, and so many problems with other electric and electronic equipment, we have been fortunate to obtain the advice of electrical engineers.

On examination of typical meters, including ABB, GE, and Landis Gyr, they report that, in addition to its RF transmitter, each wireless digital meter also has a component called the 'switching-mode power supply' (SMPS) – switching power supply for short. Its function is to 'step down' the 240v alternating current (AC) coming in from the utility pole power lines to the 2 to 10 volts of direct current (DC) required to run the meter's digital electronics which record the electricity usage data.

The SMPS function emits sharp spikes of millisecond bursts constantly, 24/7. The SMPS on the OWS 514 NIC model, for instance, which is the smart meter model widely installed by PG&E throughout its territory, has been measured to emit spikes of up to 50,000 hz and higher. This constant pulsing of high frequencies, in addition to the RF function, is causing not only interference with other electric and electronic equipment in many homes with smart meters installed, but also is causing havoc with biological systems in its field of exposure. (see wikipedia and Prevention Magazine articles below)

Dirty Electricity

When current flows through the wiring of a building it generates a surrounding electro-magnetic field that radiates outward all around the wires at right angles to the direction of the current's flow and reaches out into the room.

It is well known that switching power supplies can generate spikes of so-called electromagnetic interference (EMI), or high frequency transients, which then travel along the wiring in the walls, radiating outward in the wiring's electromagnetic field.

Such spikes are known as 'dirty electricity' and can be conducted to a human body that is within the range of the radiating field. This function is on all smart meters used by all utilities and is on constantly, 24/7.
[For more on dirty electricity check out Dr. Sam Milham's **website** and his new book, **DIRTY ELECTRICITY: Electrification and the Diseases of Civilization** and watch this blog for our in depth interview with Dr. Milham – coming soon.]

One of the engineers explains it this way:
"Extensive measurements have demonstrated that all of the meters measured so far, including ABB, GE, and Landis Gyr, emit noise on the customer's electric wiring in the form of high frequency voltage spikes, typically with an amplitude of 2 volts, but a frequency anywhere from 4,000 Hertz, up to 60,000 Hz. The actual frequency of the phenomena is influenced by the devices that are plugged into the customer's power. Some houses are much worse than others, and this observation has been confirmed by PG&E installers that have talked to us."

Wikipedia agrees that SMPSs have this drawback:
"Disadvantages include greater complexity, the generation of high-amplitude, high-frequency energy that the low-pass filter must block to avoid electromagnetic interference (EMI), and a ripple voltage at the switching frequency and the harmonic frequencies thereof.
Very low cost SMPSs may couple electrical switching noise back onto the mains power line, causing interference with A/V equipment connected to the same phase. Non-power-factor-corrected SMPSs also cause harmonic distortion.' "

Another Fatal Flaw in 'Smart' Meters

Our consultants believe that it is this 'dirty electricity' generated by the e-meters' switching power supplies that is a major contributor to the symptoms being reported by growing numbers of people in association

with the e-meters thus far installed.

The 'opt-out-for-a-price' arrangement put forward by PG&E, in which the wireless meters would, at the ratepayer's expense, have its RF transmitting function turned off, would still not eliminate the 'dirty electricity' flowing into the buildings wiring, and so would not prevent negative health effects in the buildings's occupants.

This is further reason for the CPUC to declare a moratorium on e-meter deployment, and schedule a fully transparent public hearing on all aspects of the meters' operation.

From Alexander Binik
Director, DE-Toxics Institute, Fairfax, CA

What follows are a few quotes on this subject from a pair of 2009 Prevention Magazine articles. (I however highly recommend your reading the entire articles, as they are extremely informative.) (You may need to paste these links into your browsers URL field.) **https://www.prevention.com/health/health/healthy-lifestyle/electromagnetic-fields-and-your-health/article/9e60d47569225210VgnVCM10000030281eac**

... a particular kind of EMF, a relatively new suspected carcinogen known as high-frequency voltage transients, or "dirty electricity." Transients are largely by-products of modern energy-efficient electronics and appliances–from computers, refrigerators, and plasma TVs to compact fluorescent lightbulbs and dimmer switches–which tamp down the electricity they use. This manipulation of current creates a wildly fluctuating and potentially dangerous electromagnetic field that not only radiates into the immediate environment but also can back up along home or office wiring all the way to the utility, infecting every energy customer in between...

... "Opposite charges attract, and like charges repel. When a transient is going positive, the negatively charged electrons in your body move toward that positive charge. When the transient flips to negative, the body's electrons are pushed back. Remember, these positive-negative shifts are occurring many thousands of times per second, so the electrons in your body are oscillating to that tune. Your body becomes charged up
because you're basically coupled to the transient's electric field."...

And, from the second article, at **https://www.prevention.com/electroshocker/index.shtml**:
"A report that cited more than 2,000 studies found that chronic exposure to even low-level radiation (like that from cell phones) can cause a variety of cancers, impair immunity, and contribute to Alzheimer's disease and dementia, heart disease, and many other ailments.

One likely way: EMFs open the blood-brain barrier, causing blood vessels to leak fluid into the brain and damage neurons. What's more, a less–well known kind of EMF, known as "dirty" or transient electricity, may

play an even more damaging role. Transients are largely by-products of modern energy-efficient electronics and appliances—from computers, refrigerators, and plasma TVs to compact fluorescent lightbulbs and dimmer switches—which tamp down the electricity they use.

This manipulation of current creates a wildly fluctuating and potentially dangerous electromagnetic field that essentially charges up the electrons in every cell of your body. Some research suggests that by overlapping the body's signaling mechanisms, transients may interfere with the secretion of insulin, drown out the call and response of the immune system, and cause other physical havoc."

Here is a letter recently sent to the CPUC by engineer Rob States:
*[To view a video of a recent presentation by Rob, click **here**.]*

Two engineers have been diligently working on Smart Meter dirty power and RF issues – the combined team possess two MS degrees from MIT, a California P.E. license (Professional Engineer's License), and a PhD from Stanford in Electrical Engineering, Magna Cum Laude. They have been working on this nearly continuously for the last four months.

The scientific data tells us that 5% of the population will get sick immediately from RF disease, and another 10% will develop the disease over time. This means about 4.5 million people in California are potential victims.

Since individuals with no history of RF disease are experiencing symptoms the first day the meter is installed, we can assume the meter's RF emissions are not the only problem. The RF network is activated months after initial meter installation.

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Since 85% of the population is not immediately effected by this phenomena, the knowledge about what is causing symptoms in PG&E's customers will be slow to evolve. We expect word of mouth to be the primary information source since the media is so disconnected from this phenomena.

The scientific literature has studied microwave illness since the 1930's when radar operators became ill. Radar equipment emits radiation that is intermittent, and recent scientific papers have increasingly reported that pulsed radiation is significantly worse than continuous radiation. Humans have been exposed to

continuous microwave transmissions from radio for decades. Exposure that Smart Meters present to California citizens is new and unlike previous electromagnetic emissions.

PG&E has published none of the functional specifications of the meters now being installed, including their BLOCK DIAGRAMS, SCHEMATICS, or BILL OF MATERIALS. The scientific community has been prevented from identifying any of the design problems prior to their installations.

The decisions by PG&E and the CPUC to conduct NO SAFETY STUDIES has forced them to discover the current problem after the meters have been installed and after significant capital has been invested in this project. Even a rudimentary safety test with 100 randomly selected people would have probably uncovered this problem long before its appearance in PG&E's customer base.

The fix for preventing dirty power disease in PG&E customers is expensive. Because the dirty power must be stopped in the customer's LOW IMPEDANCE house wiring, all of the filter components must handle high power, and therefore are expensive. Current estimates put the end customer cost at $500, and that does not include fixing dirty power interactions that Smart Meter causes with devices already in the customer's home, such as computers, FAX machines, copiers, plasma TV's, and the like. Merely treating 15% of the California households puts the total liability for after market problems at $2B, approximately equal to the entire cost of the existing program's roll out.

Though 15% of the population has early and obvious symptoms, a large number of microwave disease related health problems will not surface for some time. As science advances, the links between microwave disease and its sources will only improve, causing ever increasing liability for societal institutions that are responsible for the offending emissions. Though the cell phone industry has purchased immunity from liability through their extensive lobbying efforts, the experience of the tobacco and chemical industries has shown that this immunity can fade as priorities of the general population affects the political process.

Though microwave disease is not directly observed in 85% of the population, the asymptomatic effects (meaning effects that have no apparent symptoms) are well published in the scientific literature, and span a wide variety of lethal and debilitating diseases, including cancers, auto immune diseases, suicide risk, depression, tinnitus (ringing in the ears), and a host of others. Steve Job's pancreas and liver problems are particularly conspicuous when manifested in a life long vegetarian who was chronically exposed to pulsed microwave emissions from wifi, computer power supplies, and the like. Liability for microwave diseases could explode in the future, as data in the cell phone industry already suggests.

Among the population of affected individuals, there are sure to be attorneys who are experienced in class actions suits, and who clearly recognize a $2B avoidable cost has been imposed on an unwilling public. This type of law suit has been responsible for some of the largest corporate liabilities in our civilization's history, and has already affected PG&E and the CPUC in the past (i.e. hexavalent chromium in Hinkley CA).

Once the California real estate community becomes aware that 15% of the general population will no longer

be able to live, work, or shop in their properties, the potential liability will be in the trillions of dollars, and will effect a population of wealthy individuals who have significant political influence in Sacramento. These entrepreneurs have been particularly skilled at legally punishing institutions that are responsible for declines in their asset values. In fact, the asset base of the retirement trust of California's state employees is significantly exposed to California's real estate market.

A reasonable person could conclude that the potential liability PG&E currently faces, both immediately and in the evolving future, could be significantly larger than their asset base. Their long term survival as a corporation could be at risk, and a potential outcome could include the wholesale transfer of their asset base into receivership pending settlement of outstanding liabilities.

Legal liability could force PG&E to approach the CPUC for a doubling of the existing utility rate. This would be a politically untenable request, and could result in the dissolution of the CPUC's existing regulator authority.

The future for both the CPUC and PG&E is uncertain, and potentially disastrous. A prudent course would be to treat the entire Smart Grid project in California as a major risk, and to aggressively engage in damage control. Since the technology that is actively being dismantled by the CPUC and PG&E has previously demonstrated none of the current risks, an aggressive plan to offer an analog meter opt out is a prudent option. Since so much damage has already been done, there are no guarantees that even this measure will prevail.

PG&E's current course of relying on PR spin has little chance of stemming the trends that have already been set in motion.

Rob States, M.S., P.E.
Chief Engineer, Wave Dry, LLC.
415-927-2739 Office
415-596-2718 Cell
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