October 19, 2013 Ronald M. Powell, Ph.D.

Concerns about Wireless Smart Meters

PEPCO Recently Installed a Wireless Smart Meter on Your Home

The Bad News: You May Not Want One on Your Home

The Good News: You Can Have It Removed by Sending a Letter to PEPCO

PEPCO has replaced all traditional analog mechanical watt-hour meters with wireless digital Smart Meters on all homes in the PEPCO service area. A similar replacement is underway in many other U.S. states, and in other countries, too. Installation of Smart Meters in Montgomery Village was underway in late 2012 and early 2013.

PEPCO's reasons for installing wireless Smart Meters are described here:

http://www.pepco.com/energy/blueprint/smetersmd

Some of the intentions are good. But there are significant concerns, too. The purpose of this document is to describe those concerns so that you can decide for yourself about retaining your Smart Meter. The concerns include health, privacy, security, fire safety, hidden costs and doubtful benefits to the consumer, and possible future reductions in property values.

These concerns have arisen in many states, and in many countries, too. In Maryland these concerns have been sufficiently great that Maryland permits you to have your wireless Smart Meter removed, through what is called an OPT OUT. Many of your neighbors have already OPTED OUT, and more are in the process of doing so. You may wish to do so, too. Maryland's OPT OUT permission is currently temporary and the duration is not known. But a new bill, HB1038, is currently before the Maryland House of Delegates to make the OPT OUT permanent and to provide other protections for Marylanders. All of this is discussed here.

What is a Wireless Smart Meter?

The wireless Smart Meter combines a wireless microwave transmitter and a wireless microwave receiver with a digital watt-hour meter. Smart Meters are made by many different manufacturers and thus can have many different appearances, but they all seem to have digital displays. That is, they display individual numerical digits rather than the round dials, that look like clock faces, of the traditional meter, from which the digits are read. The principal type of wireless Smart Meter that PEPCO is installing in our community is the FOCUS AXR-SD made by Landis+Gyr. It is pictured here.[1] However, some homes in our community are receiving the I-210+c, made by General Electric. It is pictured next.[2] In our community, this GE meter has a gray plastic cover over the top of the meter, so it looks somewhat different from the picture shown.

[1] "Product Specification Sheet - E330 Focus AX + E350 AX-SD Single Phase" found on the web site of the manufacturer, Landis+Gyr: (http://style.landisgyr.com/apps/products/data/pdf1/FOCUS_AX_SDSheet.pdf).

[2] "Residential Electrical Metering, Advanced ANSI metering solutions for the smart grid", GE Digital Energy, found on this web site: (http://gedigitalenergy.com/SmartMetering/brochures/I-210PC.htm).

The basic function of any watt-hour meter is to measure the electrical energy that you use so that you can be billed once a month. But the new Smart Meters have many capabilities that go well beyond this simple function, and the implications of those capabilities have not been well explained to the public. Here are the capabilities that I know about, to date:

The Smart Meters report your power usage to PEPCO, not just once a month, which would be sufficient for the type of billing used until now, but rather periodically throughout the day and the night, every day and every night of the year, for the indefinite future. Each Smart Meter does this by sending wireless microwave signals to PEPCO from a transmitter inside the Smart Meter.

The Smart Meters receive commands that PEPCO sends to them. Each Smart Meter is equipped with a microwave receiver for this purpose and with an internal power switch. The switch in each Smart Meter gives PEPCO the capability to shut off your electric power, remotely, by sending a microwave signal to your home. The Smart Meters can also be remotely programmed to perform new functions by sending microwave signals to them.

New "Smart Appliances" will become available this year. The Smart Appliances will contain microwave transmitters and receivers of their own. The Smart Meters and the Smart Appliances will be able to communicate with each other by sending microwave signals throughout your home. The Smart Meters will enable PEPCO to identify which Smart Appliances you have in your home, when you put them into service, when and how much you use each of them every day and every night, and when you take them out of service. The Smart Meters may also enable PEPCO to send signals to your Smart Appliances to turn them off, but that is less certain at this time.

The wireless Smart Meters can send microwave signals to other wireless Smart Meters. In fact, they are linked together in a so-called mesh network. One purpose of this mesh network is to assure that data about your power consumption and your Smart Appliances reaches PEPCO even if your signal does not reach PEPCO's receivers directly. So your Smart Meter will be busy transmitting and receiving data from your neighbors' Smart Meters. And your neighbors' Smart Meters will be busy transmitting and receiving data from your Smart Meter. These Smart Meters will also be busy sending signals to each other to keep them "synchronized" with each other in the mesh network.

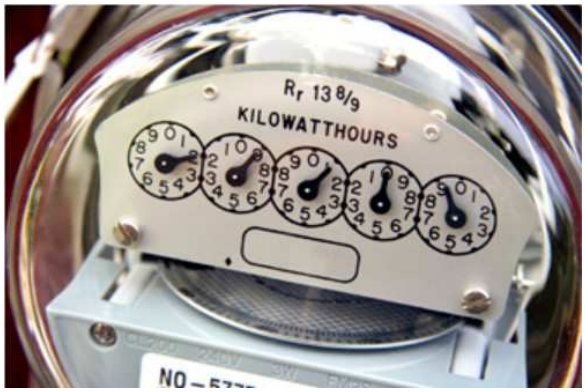
Some Smart Meters play a special role in the mesh network. They are called Collector Smart Meters. These wireless Collector Smart Meters "collect" information from other Smart Meters and thus are especially busy receiving, storing, and transmitting other peoples' data as well as your own. At this time, I do not know if Collector Smart Meters are employed in PEPCO's implementation of Smart Meters in Maryland. If Collector Smart Meters are being employed, I have not heard whether PEPCO is informing homeowners that they have a Collector Smart Meter and thus that their Meter will be even busier sending and receiving microwave signals.

In sum, each Smart Meter performs communications services that are analogous to those performed by a cell tower in a cell-phone system: receiving microwave signals, transmitting microwave signals, and relaying data via microwave signals. In this sense, each Smart Meter functions like a mini cell tower erected on your property. The Smart Meters are very busy. California court documents

indicate that the Smart Meters in use there make an average of 10,000 transmissions per day, and a maximum of 190,000 transmissions per day.[3] The manufacturers of those Smart Meters, and the associated wireless networking equipment, also make the equipment that PEPCO is installing in our area.

How Does a Traditional Analog Mechanical Meter Compare with a Wireless Smart Meter?

A traditional analog mechanical meter, pictured here,[4] serves only one purpose: As noted above, it records the electrical energy consumed for the purpose of billing the customer once a month. It does not transmit wireless signals to remote locations; it does not receive wireless signals; and it is not subject to interference by wireless signals. It does not communicate with Smart Appliances, and it does not generate data about your use of your appliances. These traditional meters have proven their reliability and accuracy over the years, and they are inexpensive to manufacture. These traditional meters are read periodically by a meter reader on foot.



Some variations of the traditional analog mechanical meter do exist, and I am not certain which of these, if any, are present in our community. Some of these variations contain electronic modules that enable PEPCO to read them remotely from the street by interrogating the modules with a wireless signal. There may be other variations that contain electronic modules that report the meter reading more frequently by wireless means. So there may be some meters in service in our community that are part way between the traditional analog mechanical meter with no wireless capability, and a Smart Meter with extensive wireless capability.

What are the Concerns about Wireless Smart Meters?

The new capabilities of Smart Meters have given rise to concerns across Maryland and, indeed, in other states, too. In fact, the residents of half or more of the states are currently engaged in resisting the installation of Smart Meters.[5] A wide variety of concerns have been expressed. Here are six of the concerns.

Concern No 1: HEALTH

The new wireless Smart Meters contain microwave radio transmitters and receivers that transmit and receive bursts of microwave radiation periodically, throughout the day and the night, every day of the year, for the indefinite future. The Smart Meters radiate in every direction, including into, and throughout, your home.

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[3] Pacific Gas and Electric Company's Response to Administrative Law Judge's October 18, 2011 Ruling Directing it to File Clarifying Radio Frequency Information. See Response 2 to Judge's Question 2, shown on page 5. PG&E (serving California) employs Smart Meters and internal microwave transmission/reception electronics made by the same manufacturers as those installed in Montgomery Village (Landis+Gyr and General Electric for the meters, and Silver Springs Network for the modules). The exact numbers, before rounding, are an average of 9981 transmissions per day, and a maximum of 190,396 transmissions per day, for each meter. (http://www.centerforsaferwireless.org/documents/PGERFDataOpt-outResponse2011.pdf)

[4] (http://stopsmartmeters.org/frequently-asked-questions/photos-of-analog-meters)

[5] (http://www.scribd.com/doc/100365955/Actions-Opposing-Smart-Meters-Across-the-United-States) and (http://takebackyourpower.net/worldwide-directory/usa)

They do this to assure that the signals reach PEPCO, no matter where PEPCO's receivers are located, and to detect and communicate with any forthcoming Smart Appliances that will be inside your home. The result is that Smart Meters expose the residents, and their neighbors, to chronic microwave radiation, which is proving an increasing health concern. The amount of microwave radiation in your home will increase further when the new Smart Appliances arrive, as they, too, begin sending microwave radiation throughout your home. In effect, Maryland residents have been enrolled, in a massive medical experiment, *without informed consent, or any consent at all*.

Evidence of Harmful Biological Effects

The full scope of the health hazards of electromagnetic radiation, including microwave radiation, is not yet fully understood and is the subject of intense medical research worldwide. But enough has already been learned to stimulate significant concern. What follows are several indicators of the level of that concern.

In May 2011, the World Health Organization classified electromagnetic radiation as a Class 2B carcinogen ("possible carcinogen"), based on the exposure provided by cell phones.[6]

In April 2012, the American Academy of Environmental Medicine (AAEM) issued a cautionary statement about wireless Smart Meters.[7] A copy of that statement is provided as Attachment No. 1. The AAEM is the Nation's leading organization of medical doctors, addressing the impact of the environment on human health. The AAEM trains medical doctors who wish to become board certified in Environmental Medicine. The doctors in the AAEM indicate that they are already seeing patients with adverse health effects from wireless Smart Meters. Unfortunately, most medical doctors are not trained to recognize the health effects caused by electromagnetic radiation. Further, doctors may not be able to help affected patients until the source of the radiation is removed.

In December 2012, the American Academy of Pediatrics (AAP) wrote to the U.S. House of Representatives to emphasize the vulnerability of children and pregnant women to radiofrequency (RF) radiation, including cell phone radiation. The AAP urged support of a new bill, H.R. 6358, that would support the development of new standards for maximum radiation exposure that would be more protective than the current standards. You can read a summary of the bill on the web site of Maryland Smart Meter Awareness.[8] The AAP is "a non-profit professional organization of 60,000 primary care pediatricians, pediatric medical subspecialists, and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents, and young adults...." The letter from the AAP to the U.S. House of Representatives is provided as Attachment No. 2.

Also, in December 2012, an international group of 29 M.D.s, Ph.D.s, and other professionals in health care, from ten countries, issued a 1479-page report entitled "BioInitiative 2012 - A Rationale for Biologically-based Exposure Standards for Low-Intensity Electromagnetic Radiation".[9] As the basis for this report, the authors considered the "content and implications of about 1800 new studies" since the last BioInitiative Report was published in 2007.[10] A co-editor selected 67 studies for special attention in the summary. Those studies

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[6] You may read the press release of the International Agency for Research on Cancer, of the World Health Organization, on the Internet: (http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf).

[7] (http://aaemonline.org/pressadvisoryemf.pdf)

[8] (http://marylandsmartmeterawareness.org/smart-meter-news/ask-your-congressional-rep-to-co-sponsor-h-r-6358)

[9] BioInitiative Working Group, Cindy Sage and David O. Carpenter, Editors, BioInitiative Report: A Rationale for Biologically-based Public Exposure Standards for Electromagnetic Radiation at www.bioinitiative.org, December 31, 2012. (http://www.bioinitiative.org)

[10] BioInitiative 2012 Report cited in footnote 9 on page 4, Section 1, Summary for the Public and Conclusions, 2012 Supplement:

found biological effects from radiofrequency and microwave radiation at low intensities, of the type emitted by cell towers, Wi-Fi, wireless laptops, and Smart Meters. Those biological effects fell into eight major categories, including:

brain tumors and blood-brain barrier breakdown
cancer (other than brain), cell proliferation
cardiac, heart muscle, blood-pressure, vascular effects
disrupted calcium metabolism
oxidative damage, ROS/DNA damage, DNA repair failure
reproduction and fertility effects
sleep, neuron firing rate, EEG, memory, learning, behavior effects
stress proteins, HSP,[11] and disrupted immune function

All effects occurred at levels below, or far below, the FCC Maximum Permitted Exposure limits currently governing Smart Meters and many other microwave devices, indicating that such high permitted limits provide no protection against these biological effects. And most of the biological effects occurred at levels of radiation easily produced by the presence of just one Smart Meter on or near a home, let alone a whole community of them. The full report can be read on line or downloaded without charge.[12] A discussion of the implications of the 67 studies for Smart Meters and Smart Appliances is provided as Attachment No. 3.

In February 2013, the citizens of Maine presented, to the Maine Public Utilities Commission, both expert and lay testimony about adverse health effects from the microwave radiation from Smart Meters. They explained: "Expert testimony is that of scientists engaged in research on the biological effects of low-level RF or those engaged in public health or policy in this arena. Lay witness testimony is typically from those sensitive to electricity and/or electromagnetic fields, a condition that is often referred to as electromagnetic hypersensitivity (EHS) or electrically sensitive (ES)." You can read that testimony on the web site of the Maine Coalition to STOP "Smart" Meters.[13]

The expert testimony presented in Maine included that of Richard Conrad, Ph.D. (biochemist). He reported on the results of his survey of 210 individuals who had experienced severe and worsened symptoms after the installation of a Smart Meter. Those symptoms are listed below in decreasing order of the number of the 210 individuals reporting each of them:[14]

Symptom	Individuals Reporting Symptom
fatigue	52
insomnia	37
difficulty concentrating	37
headaches	33
agitation	26

Summary for the Public – Ms. Sage, page 3.

[11] HSP stands for Heat Shock Proteins. BioInitiative 2012 Report, cited in footnote 2 on page 1, Section 1, Summary for the Public and Conclusions, Table 1-2 Reported Biological Effects from Radiofrequency Radiation at Low-Intensity Exposure 2012, no page numbers.

[12] BioInitiative 2012 Report cited in footnote 9 on page 4.

[13] See the "Introduction to Our PUC Filings of Expert and Lay Witness Testimony" (http://www.mainecoalitiontostopsmartmeters.org/2013/02/introduction-to-our-puc-filings-of-expert-and-lay-witness-testimony).

[14] See sequential page 134 of 198 in the testimony, Appendix 2 (http://www.mainecoalitiontostopsmartmeters.org/wp-content/uploads/2013/01/Exhibit-9-Conrad-Web.pdf).

ringing, buzzing, tinnitus	22
dizziness	22
heart racing, arrhythmia	18
pressure in head	17
eye/vision problems	12
numbness	12
memory problems	11
tingling, burning skin	11
involuntary muscle contractions	11

Because such symptoms could have other causes, the survey included an extensive list of questions designed to determine whether the Smart Meters were the cause. The findings were highly persuasive of a causal connection to Smart Meters.[15]

I should note, more generally, that the absence of symptoms in a given individual does not mean that the individual is unaffected. The reason is that most of the biological effects found in the BioInitiative 2012 Report cannot be sensed, such as the onset of cancer or a decrease in fertility. So an absence of symptoms does not mean an absence of biological effects.

Role of Federal Communications Commission Maximum Permitted Exposure Limits

You might ask: If Smart Meters are harmful to human health, why hasn't the U.S. Government protected us from them? The answer, at least in part, is that the current Maximum Permitted Exposure (MPE) limits from the Federal Communications Commission, that govern the electromagnetic radiation from Smart Meters and other wireless devices, are based primarily on a 1986 analysis that has not been significantly updated since then. That was 27 years ago, before most of the microwave devices in our environment, including Smart Meters, were created, and before nearly all of the currently available medical research findings on adverse biological effects became available. If you would like to know more about the FCC MPE limits, see Attachment No 4. As an indication of the inadequacy of the FCC MPE limits, there is a bill currently before the U.S. House of Representatives, H.R. 6358. This bill would support research toward new exposure limits to protect the public better from harmful levels of electromagnetic radiation. This is the bill mentioned above as supported by the American Academy of Pediatrics. Again, you can read a summary of the bill on the web site of Maryland Smart Meter Awareness.[16] But even if this bill is made law, the resulting process will take years. In the meantime, the public is on its own.

Alternatives to Wireless Smart Meters

PEPCO could have eliminated the health concern by using a hardwired technology, instead of a wireless technology, for returning the data from Smart Meters to PEPCO. New digital watt-hour meters that employ only hardwired technologies are already commercially available. Examples of hardwired technologies are hardwired telephone lines, hardwired Internet connections, and hardwired cable television lines. A prime example of such an alternative is the new FIOS optical-fiber system recently installed by Verizon in our community. It is very safe. Further, Smart Meters are not mobile devices; so they do not require a wireless approach to achieve mobility.

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[15] See sequential pages 77-79 of 198 in the testimony.
(http://www.mainecoalitiontostopsmartmeters.org/wp-content/uploads/2013/01/Exhibit-9-Conrad-Web.pdf)

[16] (http://marylandsmartmeterawareness.org/smart-meter-news/ask-your-congressional-rep-to-co-sponsor-h-r-6358)

What about Other Wireless Devices in your Home?

There may be other wireless microwave devices in your home, such as cell phones, cordless phones, wireless routers for wireless local area networks (LANs, including Wi-Fi), and microwave ovens. Yes, they, too, emit microwave radiation at power density levels that the findings of the BioInitiative 2012 Report suggest can cause biological effects of concern. Thus, their continued use merits your careful consideration. But there is a difference. These other devices are *under your control*. You can control whether you use them or not, how frequently, and for how long. And you are free to change your mind about such use in the future, as you learn more about the adverse health effects of microwave radiation. But once a wireless Smart Meter has been installed on your home, you have forfeited your control over the microwave exposure provided by that Smart Meter.

It is informative to compare the microwave power output levels of Smart Meters to the microwave power output levels of other microwave devices that may be in your home.

Device	RF Power Output				
Smart Meter[17]	1.115	watts	which is	1115	milliwatts
Typical leakage from a microwave oven[18]	1	watt	which is	1000	milliwatts
Typical cell phone[18]	0.5	watt	which is	500	milliwatts
Wireless LAN (802.11a)[18]	0.251	watt	which is	251	milliwatts
Cordless phone[19]	0.230	watt	which is	230	milliwatts
Wireless LAN (802.11n)[18]	0.200	watt	which is	200	milliwatts
Smart Appliance[20]	0.100	watt	which is	100	milliwatts
Wireless LAN (802.11 b, g)[18]	0.100	watt	which is	100	milliwatts
Bluetooth Class 1[21]	0.100	watt	which is	100	milliwatts
Typical laptop wireless LAN (Wi-Fi)[18]	0.032	watt	which is	32	milliwatts
Bluetooth Class 2[21]	0.003	watt	which is	3	milliwatts
Bluetooth Class 3[21]	0.001	watt	which is	1	milliwatt

So the Smart Meter's microwave power output is comparable to the microwave power output of the most powerful source of microwave radiation in your home: the typical leakage from a microwave oven. Further, each Smart Meter has twice the microwave power output of the typical cell phone; four to eleven times the microwave power output of a wireless local area network (LAN), Bluetooth Class 1 device, and a Smart Appliance; five times the power output of a cordless telephone; and thirty-five times the microwave power output of the LAN in the typical laptop.

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[17] The Landis+Gyr FOCUS AXR-SD and the General Electric I-210+c, being installed in Maryland, have FCC-ID OWS-NIC514 which indicates that they send and receive information in two microwave frequency ranges: (1) 902.3 to 926.9 MHz, and (2) 2405.8 to 2480.9 MHz. The RF power output in the first frequency range is 0.968 watts. The RF power output in the second frequency range is 0.147 watt. These values sum to the 1.115 watts shown here, to provide an indication of the total RF power output capability of a Smart Meter. I have used an approximate value of 1 watt for the RF power output of a Smart Meter throughout this document (http://stopsmartmeters.org/wp-content/uploads/2012/01/OWS-NIC514-FCC-specifications.pdf).

[18] The RF power output levels come from this web site: (http://en.wikipedia.org/wiki/DBm). 1 watt equals 1000 milliwatts.

[19] Panasonic specifies the power output of its DECT 6.0 cordless telephone Model KXTG1061 as 115 milliwatts for the handset and another 115 milliwatts for the base station, for a total capability of 230 milliwatts.

[20] The most likely transmitter/receiver in the Smart Appliances is the so-called ZigBee device. These devices have RF power outputs ranging from 0.001 watt to 0.1 watt, which is equivalent to a range of 1 milliwatt (mW) to 100 milliwatts (mW). (https://en.wikipedia.org/wiki/ZigBee). An RF power output of 100 milliwatts is assumed here in the absence of better evidence.

[21] "Bluetooth" on Wikipedia (http://en.wikipedia.org/wiki/Blue_tooth).

Factors other than power output, such as those below, can be very important to the actual exposure received by an individual. These other factors can be highly variable.

carrier continuity	continuous (analog) versus pulsed (digital)
duty cycle	percent of the time that a digital signal is being transmitted
modulation method	technique used to place information on the basic signal
distance from the source	power density falls off as the inverse square of the distance
structures in the area	
reflectors	reflecting structures can reduce or increase power density
absorbers	absorbing structures can reduce the power density

If you think of microwave safety as staying within a "microwave exposure budget" for your home, then the following question becomes important: Do you value the service that a wireless Smart Meter offers you so highly that it merits being the largest part of your microwave exposure budget?

You may hear proponents of Smart Meters say: "Since there are other sources of microwave radiation in your environment, what does one more source matter?" The response of the opponents of Smart Meters is this: "The fact that there are other sources of microwave radiation in your environment is exactly why you don't want any more, as that only exacerbates the health risks."

If you would like to learn more about the possible adverse health effects of electromagnetic fields, including microwave radiation from Smart Meters, view the 43-minute on-line video made by Dietrich Klinghardt, M.D., Ph.D. Dr. Klinghardt is one of the world's leading experts on the impact of the environment on human health. In particular, he has investigated the connection between microwave radiation and autism in children. You may be interested in his observations.

http://www.youtube.com/watch?v=b_wxM6IAF1I

Concern No. 2: SECURITY

Smart Meters decrease both your personal security and the cyber security of your supply of electrical power.

Personal Security: The Smart Meter broadcasts, to anyone who can receive and decode the signal, a power profile that will be sufficient to determine when you are home, when you are on vacation, when you go to bed at night, and when you rise in the morning, thus raising personal security concerns.

Cyber Security: Because the wireless Smart Meters are, indeed, wireless, they are potentially vulnerable to "hacking" by those who wish to do mischief, or worse. In fact, a wireless Smart Meter network, similar to that in our community, has already been hacked in order to demonstrate its vulnerability.[22] The risk from such hacking is of special concern because a wireless Smart Meter can shut off your electric power and does determine your reported electricity consumption for billing purposes. The Smart Meters may also be able to turn your Smart Appliances off, but that is less certain at this time. By comparison, the traditional analog mechanical power meters, that have served us well for years, are inherently resistant to such hacking, have no shut-off capability, and cannot be tampered with remotely.

[22] The hacking report appears at the following URL on the web site of StopSmartMeters.org: (http://stopsmartmeters.org/2013/01/19/full-speed-toward-an-iceberg-silver-spring-hacked).

If you would like to know more about the impact of Smart Meters on the security of the electrical power grid, view the on-line video of James Woolsey, former Director of the CIA. He calls the supposed "smart grid" (of which Smart Meters are a part) the "stupid grid" because of its vulnerability to cyber attack.

http://www.youtube.com/watch?v=MAid1bS8t9U

Concern No. 3: PRIVACY

The Smart Meters feed data to the electric power company everyday about your usage of electric power and about your ownership and use of Smart Appliances. These data, which are sometimes called your "electric power profile", may be collected and processed by third-party companies on behalf of the electric power companies. There is no legal protection in place to prevent uses of that information which you may not like, including the sale of that information to other parties. And there are an endless number of possible "customers" for that information. For example, sellers of Smart Appliances may want your data to determine which Smart Appliances you own, and whether they should target you with advertising for new Smart Appliances. Data mining companies may want your data for targeted advertising and a host of other applications. And law enforcement authorities and security agencies may want your data for surveillance purposes.

Given that the electronic modules in Smart Meters can be reprogrammed remotely, it is impossible to know, at this time, what additional uses will be found for Smart Meters in the future – uses that can be implemented without your knowledge or your approval.

Thus, once a Smart Meter has been mounted on your home and begins sending microwave signals into your home, and receiving microwave signals from inside your home, it will be difficult to determine what tasks this new type of surveillance device is actually performing.

If you would like to know more about the privacy issue with Smart Meters, consider the following on-line video made my Jerry Day. I do not know much about him, but his message seems correct.[23]

http://www.youtube.com/watch?v=8JNFr_j6kdI&list=UUklG6ilxW_PeYeDSpKSRGZQ

Concern No. 4: FIRE SAFETY

Smart Meters have been implicated in hundreds of house fires across the United States, for reasons that are not yet publicly understood. The Maryland Public Service Commission was sufficiently concerned about the fire hazard that it held a special hearing on this topic in August 2012. I have not yet heard a report of its findings.

Our local fire department, on Montgomery Village Avenue, indicated in early January 2013, that, as of that time, it had not yet seen a Smart Meter fire in Montgomery Village. But the fire department advised that, if an electrical fire of this type should occur, the fire department cannot fight that fire until the electrical power is first turned off by PEPCO. So, if a Smart Meter fire does start, homeowners and their neighbors, after assuring their own personal safety, should call BOTH the fire department and PEPCO, and then await PEPCO's arrival.

[23] Jerry Day's web sites: (http://www.jerryday.com) and (http://www.freedomtaker.com).

If you would like to know more about the fire-safety issue, enter "Smart Meter fires" into your Internet search engine. You will find many responses, some of which contain videos, like the one below, of Smart Meter fires:

http://www.youtube.com/watch?v=Ah3nNo89-NU

Concern No. 5: HIDDEN COSTS AND DOUBTFUL BENEFITS FOR THE CONSUMER

PEPCO is not overtly charging for Smart Meters, in the form of an explicit charge on your electric-power bill. But, clearly there will be a cost for the enormous number of Smart Meters involved, for their installation, for the creation of the extensive wireless microwave mesh network that supports these meters, for the maintenance of all of this microwave equipment, and for the processing of the volumes of data collected by the Smart Meters. I don't have documented figures on the costs, but I have seen an estimate of $1 billion for Maryland alone. The U.S. Government is providing part of the funding through the stimulus bill of 2009. You can guess who is going to repay that cost, and the rest of the costs, in the form of taxes and rate increases for electricity. In fact, PEPCO has already filed, with the Maryland Public Service Commission, for rate increases. Of course, we have to expect some increases in the cost of electricity over time. But, in this case, we can wonder if the costs associated with Smart Meters are a major factor in any increase.

Further, the financial benefits of Smart Meters to customers are in doubt. Three State Attorneys General have objected:

> A study by the Attorney General of Connecticut found that the claimed financial benefits of Smart Meters do NOT justify the costs.[24]
>
> An assessment by the Attorney General of Illinois found that Smart Meters were more about profits for the utilities than about savings for their customers.[25]
>
> The Attorney General of Michigan cited the lack of evidence that Smart Meters "will actually produce a net economic benefit to customers."[26]

Further, many Maryland customers are concerned that PEPCO is spending an enormous amount of money on Smart Meters that would be better spent addressing the real problem of concern to PEPCO's customers: the reliability of the PEPCO power system. Improved reliability might be better achieved by other changes, such as burying power lines that are vulnerable to damaging storms, and improving the control and monitoring systems at key junctions on the electric power grid. It seems doubtful that collecting detailed data on the power usage in every individual home, every day of the year, through wireless Smart Meters, is as important to improving reliability.

Concern No. 6: PROPERTY VALUES

It is early to predict the impact of Smart Meters on entire communities, like Montgomery Village, but perhaps not entirely too early. We have only to look at communities in which Smart Meters were installed much earlier than they were here. California provides a striking example. Smart Meters were installed in parts of

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[24] The statement by the Connecticut Attorney General, George Jepsen, can be found on the Internet in this document: (http://www.ct.gov/ag/lib/ag/press_releases/2011/020811clpmeters.pdf).

[25] The statement by the Illinois Attorney General, Lisa Madigan, can be found on the Internet here: (http://www.lisamadigan.org/Newsroom/lisainthenews/item/2011-06-lisa-madigan-opinion-editorial-comed-experiment-too).

[26] The statement by the Michigan Attorney General, Bill Shuette, can be found on the Internet here: (http://www.annarbor.com/DTE-SMART-METERS_ATTORNEY-GENERAL-OPINION.pdf).

that state beginning several years ago. Since then, 57 counties, cities, and towns in California have opposed mandatory installation of Smart Meters in their jurisdictions. And 15 of the 57 have prohibited Smart Meters altogether.[27] So once residents and governments have had a chance to consider the implications of Smart Meters for their communities, they have often turned against them. This kind of concern is reflected nationwide by the emergence of many groups opposed to Smart Meters in many states.[28]

So it does not require too much insight to realize that more individuals and families, looking for a home, might prefer to live in a community that has already eliminated Smart Meters. This inclination may ultimately depress property values, and the associated tax base, in communities that decide to tolerate Smart Meters. This inclination may also boost property values, and the associated tax base, in communities that eliminate Smart Meters. Looking at this issue another way, I have yet to hear of a single person who finds the presence of Smart Meters a positive factor in determining where to live.

For Further Information about the Concerns

If you would like to know more about the concerns related to Smart Meters, visit the web site below, or the many other web sites on the Internet. The web site below is that of **Maryland Smart Meter Awareness**. There you will find extensive information about Smart Meters. The brochure of this organization is included in this package as Attachment No. 7.

http://marylandsmartmeterawareness.org

This organization is a non-profit, public-spirited group of Maryland volunteers with more than 500 members. They represent many fields, including doctors, scientists, engineers, computer experts, lawyers, and concerned parents broadly. They are not anti-technology; in fact, many of them have spent their careers developing advanced technology. Rather, they recognize an unwise use of technology when they see it. They are working hard to educate Marylanders about the serious consequences of Smart Meters.

You may also wish to monitor the web site of the Maryland Public Service Commission (PSC) for emerging information. The Maryland PSC regulates the electric power utilities for the Maryland State Government. All postings can be found here:

http://webapp.psc.state.md.us/Intranet/Casenum/CaseAction_new.cfm?RequestTimeout=500?

You may have to wait a minute or two for this web site to come up. Then, to see all actions of relevance to PEPCO customers, enter 9207 in the box entitled “Case Search”. When Case Number 9207 comes up, you may wish to see Item 203. Click there on “See more.” to read the temporary Order 84926 that PSC issued to permit Maryland residents to OPT OUT of the installation of Smart Meters and thus to stay with the traditional analog mechanical meters.

If you search the Internet for information on Smart Meters more generally, you will find that there are many organizations, around the nation and in other countries, too, that have been formed to resist Smart Meters, and why those organizations are concerned. Good sets of keywords on which to search are “Smart Meter Opposition” and “Stop Smart Meters”.

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[27] See article “CA Local Governments on Board”.
(http://stopsmartmeters.org/how-you-can-stop-smart-meters/sample-letter-to-local-government/ca-local-governments-on-board)

[28] (http://www.scribd.com/doc/100365955/Actions-Opposing-Smart-Meters-Across-the-United-States) and
(http://takebackyourpower.net/worldwide-directory/usa)

How Can You OPT OUT of Having a Wireless Smart Meter?

So many Maryland residents have objected to the installation of the new wireless Smart Meters that the Maryland Public Service Commission (PSC) has responded. In May 2012, the PSC issued Order 84926, giving Maryland customers the right to OPT OUT of the installation of Smart Meters while the PSC reviews the situation. This right extends both to customers who do not yet have a Smart Meter and to those who already have a Smart Meter and would like it replaced. At the moment, this order is temporary, so those wishing to take advantage of it will want to do so promptly. The PSC cannot tell us, at this time, whether, or when, this order will be revoked or extended. If this order is revoked, Smart Meters could be reimposed on those who have OPTED OUT, whether before or after the installation of a Smart Meter.

Many of your neighbors have already OPTED OUT, to protect themselves and their neighbors. Some of your neighbors OPTED OUT before the Smart Meters were installed and thus avoided the installation of Smart Meters altogether. Other neighbors are OPTING OUT now, after the installation of the Smart Meters. To date, the requests from our neighbors, to OPT OUT after installation, have been honored by PEPCO without incident. The Smart meters have been removed by PEPCO in 4 to 21 days after the requests were received. You may OPT OUT, too, if you wish to do so.

If you decide to OPT OUT, you must notify PEPCO in writing.

PEPCO Smart Grid Deferral
Mail Stop EP7642
701 9th Street NW
Washington, DC 20068

You may write your own letter, following the guidance on the web site MarylandSmartMeterAwareness.org. Or you may use a form letter, designed according to the guidance from MarylandSmartMeterAwareness.org and from the Maryland Public Service Commission. A copy of that form letter is provided as Attachment No. 5. Note that the inclusion of your PEPCO Account Number, from your latest PEPCO bill, is vital. To date, PEPCO has responded to most OPT OUT letters from your neighbors with return letters of its own, documenting that their request to OPT OUT has been received. Keep that return letter on hand, as proof that you have notified PEPCO. When you send your letter to PEPCO, post a sign on your Smart Meter that will remain there until PEPCO's contractor comes to make the replacement. A copy of the sign, prepared for double-sided printing, if desired, is provided as Attachment No. 6.

When you send your letter to PEPCO to OPT OUT, you may wish to keep a copy, and to send your letter by "Certified U.S. Mail, with a Return Receipt Requested". Then, if PEPCO fails to send you a return letter documenting your request to OPT OUT, you can use a copy of the letter you sent to PEPCO, plus the Return Receipt, as evidence that you have properly notified PEPCO that you have OPTED OUT.

If you already have an installed Smart Meter, the Maryland PSC tells me that there are two different actions that PEPCO can take to comply with your request to OPT OUT:

(1) Remove the wireless Smart Meter and replace it with a traditional analog mechanical meter.

OR (2) Remove the wireless Smart Meter and replace it with another Smart Meter that has its transmitter turned off.

However, we have observed a third response by PEPCO, that was not explicitly described to me by the PSC, but that likely complies with the PSC's order:

(3) Remove the wireless Smart Meter and replace it with a digital meter that has no wireless transmission capability.

The first meter of this type that we have seen in our community is the Alpha Plus, A1T+ variation, made by Elster, shown here.[29] This A1T+ variation does support "time-of-use" metering capabilities; that is, it can be set to charge different rates for electricity used at different times of day. However, this meter does not have "load profile recording" capabilities so it probably cannot conduct surveillance. This meter offers several communications options. But all of them, as far as I can tell, are *wired* methods, such as a modem for telephone dial in. So this meter, like (1) above, appears to eliminate any possibility of microwave radiation exposure.

In my view, the relative desirability of the three options above is this:

Option (1) above is the most desirable approach and, thus, it is the best one to specify in the OPT OUT letter to PEPCO, if only because a visual inspection of your meter will be sufficient to determine if PEPCO has complied. Also, specifying a "Traditional Analog Mechanical Meter with no wireless transmission capability" will help assure that you are not given a traditional meter that has been modified by the *addition* of wireless transmission capability, as some have been.

Option (3) is a close second, because it fully protects the residents from microwave radiation exposure, and, presumably, from surveillance. However, as far as I can tell, these new digital meters employ switching power supplies which can add some high-frequency electromagnetic hash to a home's electrical wiring; and that hash can produce electromagnetic fields inside the home. I have heard informal reports that some individuals have proven sensitive to such hash. However, it is quite common these days for a home to contain multiple switching power supplies.

Option (2) is a distant third because a Smart Meter with its transmitter turned off may look no different from a Smart Meter with its transmitter turned on, so you may not know if the transmitter is truly off, and permanently so. Also, it is unclear to me at this time whether PEPCO can turn the transmitter on and off, remotely, just by sending a microwave signal to the receiver in the Smart Meter. Even if the transmitter is permanently off, you may still face some of the other concerns about Smart Meters, as described above. For example, if the receiver is still operational, then PEPCO may still have the capability to turn your power off remotely, and it may still be possible for your Smart Meter to be hacked.

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[29] The Alpha Plus family of meters is described here: (http://www.elstersolutions.com/en/product-detail/107/en/ALPHA_Plus_Meter?fid=4D7D31767CD542AE8B7FF016AEB6ADCF#sbox0=;) and (http://www.elstersolutions.com/assets/products/products_elster_files/ALPHA_Plus_meter_022008.pdf) The variations available for this meter, like the A1T+, are described here: (http://www.support.tikaenergy.com/Elster_info/Elster_ALPHA_Plus_Meter_Variations_and_Specifications_E.pdf),

What Should You Do on the Day PEPCO's Contractor Comes to Replace Your Smart Meter?

The attached form letter asks PEPCO to contact you to set a date and a time for the replacement of your Smart Meter. The principal purpose of this request is to give you, or a family member, the option to be present when your Smart Meter is replaced, which is highly recommended.

If you can be present, you can talk with the PEPCO contractor before the replacement begins, to be certain that the replacement meter will be a "Traditional Analog Mechanical Meter with no wireless transmission capability" as specified in your letter to PEPCO and as stated on the sign you have posted on your Smart Meter. The sign will be especially important if you are not able to be home at the time of the replacement.

Finally, before the PEPCO contractor makes the replacement, turn off all appliances in your home, and, if you are able to do so, all circuit breakers in your electrical load (service) panel, where the electrical power enters your home. This will assure that no electrical current is flowing through the power meters during the replacement. This procedure eliminates any possibility of an electrical flash over that could damage the electrical contacts on the power meter, or the electrical contacts on the power box in which your meter is installed. This procedure is also safer for the PEPCO contractor. Unfortunately, the PEPCO contractors have been installing the Smart Meters "hot", that is, without turning off the power drawn by the home first. After the PEPCO contractor tells you that he or she has completed the exchange of your Smart Meter for a "Traditional Analog Mechanical Meter without wireless transmission capability", you can turn your circuit breakers back on.

What Can You Do if PEPCO Fails to Respond Promptly to Your OPT OUT Request?

To date, PEPCO has complied promptly with our neighbors' written requests for removal of their Smart Meters. However, if PEPCO should fail to respond promptly to your written request for removal, notify the Maryland PSC by letter, so that the PSC can enforce your request. Here is the address for this purpose:

Odogwn Obi Linton, Director
Office of External Relations
Public Service Commission of Maryland
William Donald Schaeffer Tower
6 St. Paul St., 16th Floor
Baltimore, MD 21202-6806

Is There a Possible Downside To Opting Out?

Yes, in this sense: PEPCO wants to charge a fee to Maryland residents who OPT OUT, both a one-time fee and a monthly fee, even though the Maryland PSC currently permits OPTING OUT. PEPCO's OPT-OUT customers view such a fee dimly. To them, this is a fee for the privilege of not being irradiated by PEPCO's Smart Meters. Fortunately, at this time, there is no fee for OPTING OUT. Also a bill, HB1038, has been introduced in the Maryland House of Delegates, by Delegate Glen Glass, with nineteen co-sponsors. If this bill becomes law in the 2014 session, the bill will prevent any fee from being charged for OPTING OUT, ever. You may read that bill here:

http://legiscan.com/gaits/search?state=MD&bill=HB1038

This bill has many provisions, including the following. These provisions are important both for customers who OPT OUT and for customers who don't OPT OUT:

(1) makes your right to OPT OUT permanent, but does not require anyone to OPT OUT
(2) prevents the electric power utilities from charging their customers any fee for OPTING OUT
(3) bars the electric utilities from selling your personal data, collected by your Smart Meter, to others.

What Can You Do to Make the Current Temporary OPT OUT Permanent, and With No Fee?

There are two parts of the Maryland State Government that have the power to make the current temporary OPT OUT permanent: (1) the Maryland Public Service Commission, and (2) the Maryland General Assembly (which is the state's legislature). The first can act sooner than the second, but the second rules in the end.

Here is what you can do to help, if you would like to keep the right to OPT OUT:

(1) Send an e-mail message to the members of the Economic Matters Committee of the Maryland House of Delegates, urging their support for HB1038. As noted above, this bill will make the right to OPT OUT permanent. But this bill must be approved by this committee in order to be sent on to the full House of Delegates for a vote. You can find an Internet form for sending such a message here:

http://actionmail.ksconline.net/md-house-econ-committee.html

The Economic Matters Committee held a meeting to hear testimony from the public, the electric power companies, and the Maryland Public Service Commission about HB1038 on Thursday, March 14, 2013. Marylanders from across the State completely filled the hearing room, and testified in row after row. Both verbal and written testimony from medical doctors and scientists was included. All those testifying received a good hearing in proceedings that lasted for two hours. After the hearing, the Committee decided to study HB1038 further over the summer.

You may view this hearing in its entirety on the Internet on the web site below. The part of the hearing addressing HB1038 begins at time 00:05:11 and ends at time 02:07:00. When you first click on the web site below, a message will alert you that you need to down load the Microsoft Silverlight viewer to see the video, and will give you a button to click on to install it. Thereafter, the video will play.

http://mgahouse.maryland.gov/house/play/1caf8e854c2f430ca06e88e79fbf8ffa/?catalog/03e481c7-8a42-4438-a7da-93ff74bdaa4c&playfrom=311873

(2) If you have already OPTED OUT, send a letter to the Maryland Public Service Commission (PSC), indicating that you have OPTED OUT of the PEPCO Smart Meter installation, and why. The Maryland PSC has the authority to extend the OPT OUT privilege, but needs to know the level of interest of Marylanders. Let the PSC know that you would like to see its TEMPORARY OPT OUT order made permanent, and with no OPT-OUT fee. Otherwise, the PSC may later terminate its temporary order and force you to accept a wireless Smart Meter. Here is the address for such a letter:

Public Service Commission (re: Smart Meter Opt Out)
Attn: David J. Collins, Executive Secretary
William Donald Schaefer Tower
6 St. Paul Street, 16th Floor
Baltimore, MD 21202-6806

(3) Send an e-mail message to Maryland State Delegate Glen Glass, in support of the bill HB1038. He is the author of HB1038, which, as noted above, now has nineteen co-sponsors. Delegate Glass represents State District 34a, which includes Cecil County and Harford County.

State Delegate Glen Glass: glen.glass@house.state.md.us

(4) Send an e-mail message to your Maryland State Senator and to your three Maryland State Delegates, with your views. Encourage these representatives to support the new Maryland House of Delegates bill, HB1038.

Here are the e-mail addresses applicable to Montgomery Village residents in Maryland State District 14 (North Village, East Village, and Eastgate communities):

State Senator Karen Montgomery	karen.montgomery@senate.state.md.us
State Delegate Anne Kaiser	anne.kaiser@house.state.md.us
State Delegate Eric Luedtke	eric.luedtke@house.state.md.us
State Delegate Craig Zucker	craig.zucker@house.state.md.us

Here are the e-mail addresses applicable to Montgomery Village residents in Maryland State District 39 (all other communities in Montgomery Village):

State Senator Nancy J. King	nancy.king@senate.state.md.us
State Delegate Charles Barkley	charles.barkley@house.state.md.us
State Delegate Kirill Reznik	kirill.reznik@house.state.md.us
State Delegate A. Shane Robinson	shane.robinson@house.state.md.us

(5) Send an e-mail message to our representative in the U.S. House of Representatives, John Delaney, seeking his support for House bill H.R. 6358. You can reach him through his contact form on his web site:

https://delaney.house.gov/contact/email-me

This bill will support research toward new exposure limits to protect the public better from harmful levels of electromagnetic radiation, including the microwave radiation from Smart Meters. You can read a summary of the bill on the site of Maryland Smart Meter Awareness:

http://marylandsmartmeterawareness.org/smart-meter-news/ask-your-congressional-rep-to-co-sponsor-h-r-6358

You can read the entire bill on the web site of the U.S. Congress:

http://thomas.loc.gov/home/gpoxmlc112/h6358_ih.xml

If you scan through the bill, you will find a list of specific health problems, arising from exposure to electromagnetic radiation, that need further research.

(6) Support Maryland Smart Meter Awareness (MSMA)

MSMA is a non-profit advocacy group, composed of public-spirited Maryland volunteers from many fields. These individuals are working hard to raise awareness about wireless Smart Meters and to assure that your right to OPT OUT is preserved in the future. MSMA is interacting with Maryland State officials, including the Maryland General Assembly and the Maryland Public Service Commission. You may wish to log in, periodically, to the organization's web site to see what is happening. And you may wish to join the organization and to contribute to its support, as I, too, have done. The brochure of Maryland Smart Meter Awareness is provided as Attachment No. 7.

http://marylandsmartmeterawareness.org

Closing: Smart Meters are a Community Issue, Not Just an Individual Issue

Since the public has not been well informed about the implications of wireless Smart Meters and about the right to OPT OUT, we must rely on each other to spread the word, so that those who wish to OPT OUT may do so. Feel free to speak with your neighbors, family members, and friends about this topic. We are all in this together, for at least two reasons:

(1) We all experience microwave radiation, not only from our own Smart Meter, but also from the Smart Meters of our neighbors, especially our nearest neighbors because they are closest. So Smart Meters are truly a community issue, not just an individual issue.

(2) We need our neighbors' help to write to the Maryland House of Delegates and to the Maryland Public Service Commission in support of a permanent right to OPT OUT, as described above. We have a chance to make our democracy work for us, but only if we participate.

In the meantime, we Marylanders can be grateful that we have a right to OPT OUT, even if it is currently temporary. That right makes OPTING OUT routine for us. Unfortunately, some states offer no OPT-OUT rights to their residents. Our friends in DC and Pennsylvania envy us, because they have no right to OPT OUT; and they are struggling hard to get that right. Our friends in Virginia also have no state-wide OPT-OUT rights. But those residents who are customers of Dominion Virginia Power have just received a limited form of an OPT OUT that addresses several of the major concerns about Smart Meters.[30]

[30] Dominion Virginia Power announced, on April 22, 2013, that its customers may elect a Smart Meter with "both the two way communications and data storage features disabled; the only recording features retained are the minimum needed for monthly billing." (https://www.dom.com/about/conservation/pdf/meter-option-requirements.pdf) Dominion Virginia Power, at 1-866-566-6436, indicated the following (paraphrased): When this option is elected by a customer, Dominion Virginia Power will replace the wireless Smart Meter with a different Smart Meter with the named features disabled. Restoration of the disabled features would require replacement with a different meter. This offer from Dominion Virginia Power is voluntary and was not mandated by the Virginia General Assembly or by the Virginia State Corporation Commission which regulates the electric power companies.

Attachments

Several attachments, referred to in the text above, follow.