

Dumb and Dangerous

The Problems with Smart Grids

by B. BLAKE LEVITT And CHELLIS GLENDINNING

How is it that so many intelligent, inside-the-beltway environmentalists are buying into an eco-health-safety-finance debacle with the potential to increase energy consumption, endanger the environment, harm public health, diminish privacy, make the national utility grid more insecure, cause job losses, and make energy markets more speculative?

Answer: by not doing their homework.

Welcome to the Smart Grid – a government-funded money machine capable of intruding into every aspect of our lives. Smart Grid technologies – initially funded to the tune of \$3.4 billion through the American Recovery and Reinvestment Act of 2009 and slated to cost \$11 billion through 2011 – are enough to make even diehard liberals demand a claw back of misspent tax dollars.

On the surface, Smart Grids sound ‘green’ – with promises of saving energy, creating new power-line corridors run on wind and solar, way-stations to power-up electric vehicles, energy-efficient upgrades to an aging power infrastructure, and real-time customer knowledge of electricity use.

And there’s the enticing communications factor: a nationwide high-speed broadband information technology barreling down high-tension electric corridors called Broadband-Over-Power-Lines (BPL). What could be more perfect for communicating facts about the planet, funding enviro-candidates, pushing legislation, and organizing Earth Days?

But few who actually study how these new systems function want anything to do with them. Other than those who stand to make enormous profits and the physicists or engineers who dream up such stuff, Smart Grids are giving knowledgeable people the willies.

What Is a Smart Grid?

These days the word “smart” is attached to anything even marginally digital – and indeed it’s an effective marketing tool because who wants anything dumb?

But is the Smart Grid really smart?

The problem: smart metering will turn every single appliance into the equivalent of a transmitting cell phone, and this at a time when public concern about the safety of exposure to the radiofrequency radiation (RF) of wireless technologies is on the rise. Heads up: that's every dishwasher, microwave oven, stove, washing machine, clothes dryer, air conditioner, furnace, refrigerator, freezer, coffee maker, TV, computer, printer, and fax machine.

The average U.S. home has over 15 such appliances, each of which would be equipped with a transmitting antenna. While older models can be retrofitted, General Electric (GE) and other appliance manufacturers are already putting transmitters into their latest designs, and the U.S. Department of Energy (DOE) is already giving out tax credits.

Meanwhile, people who don't want to use such appliances won't be able to deactivate the wireless component without disabling it and voiding warranties. Citing "electricity theft," it could also be illegal to do so.

Yet, not one safety concern regarding the cumulative effects of 24/7 exposure to RF radiation seems to have occurred to the backers of Smart Grids. And this is despite the fact that all appliances will transmit wireless data with peak power bursts far above current safety standards – at frequencies between 917 MHz and 3.65 GHz in the ultra-high frequency/microwave ranges of the electromagnetic spectrum, several times a minute.

And that's just the indoor part. All transmitters inside your home or office will communicate with a Smart Meter attached to the outside of each building. (1) That meter, in turn, will transmit at an even higher frequency to a central hub installed in local neighborhoods. In what are called "mesh networks," signals can also be bounced from house-meter to house-meter before reaching the final hub. So exposures will not just be from your own meter, but accumulating from possibly 100-to-500 of your neighbors' as well.

That's a hefty barrage of radiation.

Some gas, water, and electric utilities are now using such smart networks, each with its own metering system and separate exposures – creating a multi-frequency wall of radiation that, in the history of living creatures, is unheard of.

In addition, the meters and the antennas will act as transceivers, allowing both you via mobile phone or computer – and take note: your utility company – to remotely control your appliances. According to Jenny Anderson and Julie Creswell writing in the New York Times, one such system in the Midwest already allows the utility to cycle furnaces

and air conditioners on and off every 15 minutes, with the stated purpose to reduce peak-loads on electric grids.

On closer scrutiny, Smart Grids look like another Build-It-Now-Deal-With-The-Consequences-Later fiasco. At a time when health concerns about the safety of cell phones, antennas, and Wi-Fi hotspots are mounting around the globe, Smart Grids will require literally billions of new transmitters, each pumping “electrosmog” into the environment – for which there will be no mitigation, no conscientious objection, and no escape.

We Already Know a Lot about RF and the Environment

Living creatures are fantastically sensitive to low-level, non-ionizing radiation that includes everything from visible light to the earth’s natural electromagnetic fields.

Birds, butterflies, fish, marine mammals, bees, and other insects are particularly sensitive to the earth’s natural electromagnetic background, using it to guide their migrations, sense of direction, circadian rhythms, food-finding, and reproductive activities. Soil bacteria are also tuned to the natural currents of the planet.

But human-made radiation creates different exposures – with unusual signaling characteristics like digital pulsing, phased array and saw-tooth waveforms, and at much higher power intensities than anything found in nature. RF is actually a form of energetic air pollution – and if air were legally considered “habitat” like water and land, RF might be regulated differently.

Studies show that myriad wildlife abandons terrain when cell towers are installed. Cows have increased cancers, lower milk production, agitation, immune system disorders, more mastitis, miscarriages, and birth defects in offspring near cell towers. Birds with nests near antennas display lower reproductive rates, and chicks are born with birth defects. In simulations of whole colony collapse disorder, bees have disappeared entirely when transmitting cell phones were placed next to their hives. It is thought that RF interferes with their navigational abilities by coupling with a natural magnetic material called magnetite in bee abdomens.

Meanwhile, hundreds of studies done with laboratory animals found numerous cancers, immune disorders, and increased mortality from chronic, low-level exposures. This body of work should make us ponder the accuracy of the data – and humaneness – when biologists attach RF transmitters to elk, marine mammals, big cats, and other species to study them.

Trees also endure die-back near towers. Whole forests near broadcast antennas in Europe have suffered. Military-weapons designers have long used treetops with high moisture content as waveguides for missiles.

Some of this work goes back six decades in bioelectromagnetics and biophysics journals – and is available for any curious environmentalist to see.

... and We Know about RF and Humans

Research on RF and human health dates to the 1940's when World War II's radar revealed infertility and cataracts in military personnel.

David O. Carpenter, MD, MPH, is the director of the Institute for Health and the Environment at the State University of New York at Albany, School of Public Health. Along with EMF/RF consultant Cindy Sage in California, he co-edited the 2007 BioInitiative Report, which calls for significantly more stringent RF exposure standards than now exist.

Environmentalists may know Dr. Carpenter, who blew the whistle on PCB contamination in farm-raised salmon. He is also an expert on the biological effects of electromagnetic fields. To him, the decade-long, 13-country World Health Organization's 2010 Interphone Study confirms what previous reports and many experts have been saying all along: RF exposures at current levels are already unsafe.

According to Interphone, talking on a cell phone for 1,640 hours over a 10-year period – the equivalent of 30 minutes a day – increases an adult's risk of malignant glioma brain cancer by 40%.

“While this [Interphone] study is not perfect,” Dr. Carpenter said, “it should serve as a warning to governments that the deployment of new wireless technologies may bring risks to the public that are widespread, involuntary, and increase long-term health care costs.”

His assessment ipso facto includes Smart Grids.

Over 70 studies have found effects at frequencies with very low-power intensity, many with implications for human health. Fifteen studies report effects among people living 50-to-1500 feet from a cell tower – including cancers, immune system effects, fertility problems, heart arrhythmias, miscarriages, sleeplessness, dizziness, concentration difficulties, memory loss, headaches, skin rashes, lowered libido, fatigue, and malaise.

And many of these symptoms mirror what some people are reporting within days of Smart Meters installed at their homes.

In addition, several studies report increases in the permeability of the blood-brain barrier, which protects brain tissue from bacteria, viruses, and toxins. One study found increases in stress markers in human saliva near cell towers. Also reported are calcium ion changes in cells – with implications for the ability to metabolize. Other studies link exposures to Alzheimer's, Lou Gehrig Disease, and Parkinson's.

In fact, every system of the body appears to be sensitive to low-level electromagnetic fields – and why not? Living cells are electromagnetic systems.

Research by Magda Havas, Ph.D., of Trent University in Canada, and U.S. epidemiologist Samuel Milham, M.D., links something called “dirty electricity” with diabetes, malignant melanoma, and cancers of the breast, thyroid, uterus and lung. Dirty electricity is an industry term that describes a multi-frequency exposure when higher frequencies like RF couple with the lower frequencies running along power lines. BPL is 100% dirty electricity – that's how it functions – and people barraged by it can now measure RF radiation emanating from their light sockets.

Of special concern are people with implanted medical devices like deep-brain stimulators for Parkinson's, some pacemakers, insulin pumps, and in-home hospital equipment. The radiofrequency interference (RFI) inherent to Smart Grids can cause such equipment to go haywire, or even to stop. And RFI from ambient exposures has caused wheelchairs to go off peers or into traffic; automatic ignition switches in cars refuse to start until cars are towed to RF-free blocks; and surgical beds have jumped during operations.

RFI is also suspected in sudden acceleration of automobiles.

Low I.Q. for Smart Grids and Government

Think of the static on your radio. Now imagine Smart Grid's multiple frequencies overlapping with animate objects ... like your brain. The UHF used in Smart Grids couples best with brain tissue.

Several federal agencies actually do have a stake in RF safety, but the Federal Communications Commission's (FCC) standards are the only ones in effect in the U.S. A major problem is that the FCC regulates only short-term, acute, high-intensity, thermal effects in humans, while no criteria exist to protect wildlife.

And there's more. FCC standards only regulate for whole-body exposure, not for specific organs – like brain tissue which absorbs energy differently. Plus, FCC allowances are averaged over 30 minutes. With Smart Grids such time-averaging makes the peak pulses that blast for a fraction of a second when first activated vanish on paper.

These are holes through which the Queen Mary could sail.

According to Richard Tell, an electrical engineer formerly with the U.S. Environmental Protection Agency (EPA) – in a 2008 report on Smart Grids for Hydro One Networks, Inc./Toronto – antennas on appliances may transmit at a density of .18watts, each at ballpark 4.5 seconds per hour. But external meters on houses transmit at around 1 watt at less than 2 minutes per hour.

Such figures may sound low – until the use of many appliances at the same time and exposures from the neighbors’ meters is lumped in. Nowhere in utility estimates are such peak pulses factored – which, Tell has said, can be 20 times higher or more.

Still, he notes, the radiation from Smart Meters is 15,000 times lower than what FCC ultra-high standards.

Too, the industry claims that meters transmit every four hours – but engineers like Stephen Scott of EMF Services/California measure spikes every few seconds, especially from banks of meters attached to housing and office complexes, while others have measured firing between 9-and-15 times a minute.

Utilities don’t release numbers for peak pulses, but one estimate by Southern California Edison – since voided for P.R. reasons – puts peak pulses at 229,000 microwatts per square centimeter at eight inches from the transmitter. That means if you sleep next to a wall with a smart appliance on the other side, strong UHF signals could be spiking several times a minute all night long – right into your brain.

Compare that to cell phones that emit approximately 250-to-300 microwatts per square centimeter when placed directly against the head.

Vampires and Cyber Attackers Make the Honor Roll

For decades, knowledgeable environmentalists have advised people with remote-control appliances to unplug them because of “vampire” energy. Plugged-in remotes are never completely “OFF”; otherwise they wouldn’t be able to receive the signal to turn back “ON.”

So what will happen to our aggregate energy use when all appliances become smart vampires? No proponents thought to ask that question.

Though supposedly “secure,” Smart Grids can be penetrated by both wired and wireless networks. In August of 2009, hackers robbed 179,000 Toronto Hydro customers’ names, addresses, and billing information from their e-billing accounts. Security consultant Mike Davis of IOActive, Inc/Seattle has shown how easy it is to install

computer worms that can take over the whole grid, and such worms can be programmed to alter billing information, gather information on electricity use for sale to third parties, or shut down hundreds of thousands of households.

Ross Anderson and Shailendra Fuloria at Cambridge University's Computer Laboratory note that hostile government agencies or terrorist organizations could bring whole countries to their knees by interrupting electrical generation. More so than traditional grids, they stress that Smart Grids create a new strategic vulnerability as the cyber equivalent of a nuclear attack. Smart Grids are also easy to sabotage with simple jamming devices.

And if the problems aren't human-created, nature could step in. The sun's normal 11-year sunspot cycle – ramping up right now, promising to pump sporadic blasts of electromagnetic energy toward earth – could wreak chaos upon Smart Grids.

Dumb: Privacy Gone, Liability Shifted, Billing Errors Galore

Privacy is an issue as well. When the utility company records home energy use in real time – with data held at a central hub, potentially accessible from a hacker's laptop – the knowledge that you are not home becomes available.

Plus, do you really want the utilities remotely-controlling your appliances?

And what about liability? Although grid engineers claim the systems are encrypted, encryption often fails. Imagine the utility – or even a passing cell-phone user – inadvertently turning on your oven when you're on vacation. Or shutting off the furnace on a subzero night. For insurance purposes, who is liable? What about civil rights violations? Or the legal ramifications of a utility partnering with the police?

In the purest sense, Smart Grids offer new opportunities for electronic trespass.

Then there are the billing errors. Some customers in California have seen their bills triple – from \$200/month to \$600 – when Smart Meters were installed. After a class action suit was filed against Pacific Gas & Electric (PG&E), that utility admitted that 23,000 of their Smart Meters “might” be defective, though they denied they were responsible for the billing errors.

Dumb is as Dumb Does

Smart systems can wreak havoc with electronics too. People are complaining of ceiling fans turning on in the middle of the night, speeds spontaneously changing, paddles reversing direction, and circuit boards burning up. A few meters have exploded. Others

have fried electronics. Fires have started. In New Zealand firefighters report 422 fires in 2010 involved with Smart Meters.

Oddly, given such dire safety issues, neither U.S. utilities nor their experts seem capable of answering simple questions. At a public forum in Sebastopol in 2010, PG&E pulled its speakers when they didn't get the format they wanted – all questions in writing and in advance. Then, at a subsequent gathering, PG&E sent two experts – Michael Herz and Leeka Kheifets – neither of whom knew how often meters send or repeat RF signals, called the “duty cycle.” The two could not answer what the exposure would be for an apartment complex with banks of multiple meters, nor answer technical questions about peak-signal strength. And they didn't know the make or model of the meters so that people in the audience could look up the information.

One Sebastopol activist, Sandi Maurer, said in frustration: “How can we trust a company to deploy such a massive RF installation on every home, if they can't even answer basic safety questions?”

But not all utilities are rushing forward. In 2010 Dominion Virginia Power delayed a \$600-million program because Virginia's State Corporation Commission questioned its economic wisdom, noting that the savings to ratepayers would be less than the rate increases needed to pay for the build-out. Hydro One/Canada came to the same conclusion in 2007, and last year lawmakers in the Netherlands struck down a bill that would have made Smart Meters mandatory. The U.K. is reconsidering a smart metering system as well, and in 2009 the European Parliament ordered member states to study the economic feasibility of Smart Grids.

Electricity = Big Bucks

All the while private, largely unregulated hedge funds have been entering energy markets, betting on the potential financial bonanza. It's the big players who stand to profit, of course – with your tax dollars going to the likes of GE, IBM, Siemens, Intel, Texas Instruments, AT&T, Verizon, Motorola, and other behemoths.

GE is the largest manufacturer of Smart Meters in the world. It has signed contracts with CenterPoint Energy and Grid Net to deploy WiMax-enabled radios for use in Smart Meters. WiMax is the fourth generation network that was earmarked by the FCC and the Obama administration to bring wireless Internet to rural areas – so clearly the technologies are moveable pieces, depending on who owns the chessboard.

But it's the taxpayer-customer who gets the double whammy: underwriting the infrastructure via tax dollars; enduring rate hikes and medical bills – and then there's the burden of having to buy new appliances.

Plus, for citizens, real-time metering reveals when you wake up, go to work, make dinner, do the laundry, use the computer, go on vacation. While proponents see real-time knowledge in the hands of consumers as a form of empowerment, they ignore the gorilla-in-the-room: tiered pricing. Today, many utilities set flat, state-regulated rates for kilowatt hours, but tiered pricing will change that.

Critics say that tiered pricing penalizes the elderly, self-employed, unemployed, homemakers, and those with small children – all of whom use more energy during the day. But a darker possibility exists: a utility could create special billing tiers just for you. In other words, if you work the evening shift and cook dinner at midnight, your rate could be highest when everyone else's is lowest.

Then there's mandatory shut-offs for people who don't pay their utility bills – after which the unfortunate customer will have to buy a prepaid wireless-enacted electric meter like a prepaid phone card. Fantasy? Such a system was enacted in South Africa in the 1990's.

Inside-the-Beltway Enviros

Before the Obama administration even took office, their pre-transition coordinator for climate and energy policy, Carol Browner, met with IBM CEO Sam Palmisano.

Browner was the director of the U.S. Environmental Protection Agency (EPA) under Clinton and is now Obama's coordinator for climate and energy policy, while IBM works with the Information Technology and Innovation Foundation think-tank in DC to develop three focus areas: increased broadband access, digitized medical records, and Smart Grids.

According to The Wall Street Journal, Palmisano told Browner that a \$10 billion investment was needed to jumpstart Smart Grids. Palmisano also claimed that Smart Grids would create 239,000 new jobs – with half of those resulting from start-up businesses. But his promise was not computed against the jobs lost, such as hundreds of thousands of unemployed meter readers. Nor did he consider the fact that new information technologies are typically seen as a way to consolidate through fewer employees.

Other former Clinton Administration officials on board for Smart Grids include Al Gore – because of supposed lower carbon emissions – and Reed Hundt, chairman of the FCC in the 1990's when that agency championed massive auctions of the public airwaves for cell-phone technology.

Hundt went on to become co-founder of Frontline Wireless and Sigma Networks. Sitting on several corporate communications company boards, including Intel and China

Telecom, he is also co-chairman of the Coalition for the Green Bank, a capital-raising nonprofit that is lobbying Congress for more Smart Grid money — through environment committees.

The Food and Drug Administration and FCC have a stake in Smart Grids, as do the EPA and U.S. Fish and Wildlife Service (FWS). But neither EPA nor FWS has the funding or manpower to address the RF effects of Smart Grids or consider the effects of a new infusion of radiation into the environment.

U.S. Secretary of the Interior Ken Salazar has oversight over FWS. Salazar was a U.S. Senator (D-CO, 2005-to-2009) before he left to join Obama. He was also Colorado's Attorney General from 1999 to 2005 and gets low grades from environmentalists as one of a handful of Democrats to vote against setting limits on offshore drilling and global warming.

And he is no stranger to RF politics. A go-around on RF's health and environmental effects raged from 2000 to 2006 in Colorado. At issue was a high-definition TV tower to be erected on Lookout Mountain near Denver, overlooking a community already burdened by one of the country's largest antenna farms. After rancorous public hearings, the county board voted against the new tower. But Salazar attached a midnight rider to another bill right – pre-empting local decision makers.

Steven Chu He is former director of the DOE's Lawrence Livermore National Laboratory and professor of Physics and Molecular Cell Biology at the University of California. He has also held positions at Stanford University and AT&T Bell Laboratories – all of which develop/deploy RF technologies. He is now Obama's Secretary of Energy, and in 2009 Chu issued a statement telling the states to take the federal stimulus money and not stand in the way of Smart Grids.

But perhaps the biggest lack of intelligence lies in the energy and environment committees of the U.S. House of Representatives and Senate. Smart Grid legislation first passed in 2007 as part of the Energy Independence and Security Act under the Bush administration. Additional legislation was contained in the American Clean Energy and Security Act of 2009 at the House Committee on Energy & Environment, formerly chaired by Henry Waxman (D-CA). A companion bill was in the Senate., while in 2010 twelve bills were considered, some of which were revived in 2011. Everyone, including the Committee of Environment and Public Works – formerly chaired by Barbara Boxer (D-CA) with a grid-related subcommittee chaired by Bernard Sanders (I-VT) – has had a hand in Smart Grids.

Now some Republicans, especially Tea Party activists who view Smart Grids as massive big government intrusion, may be fighting Smart Grid proposals – a situation that is

creating an odd alliance between the extreme right and some activists who find themselves on the same side.

Smart Grids – Boondoggle or Economic Stimulus?

2010's federal appropriations for Smart Grids was \$11 billion.

But some financial analysts say it will take over \$900 billion over the next two decades to upgrade high-tension lines, meters, central control facilities, and substations. In addition, they say to truly digitize and digitalize grids, it will cost hundreds of billions more, into 2030, because every utility's computer network will need to be upgraded, new renewable-energy sources will be needed to plug into new access points, and recharging stations and power lines will need to be built. Proponents brag that the construction will be a bonanza.

But Smart Grids may be little more than a Trojan Horse donned in a "green" hat. After all the government mandates and stimulus money for Smart Grids, a veritable gold rush ensued – with utility companies, hedge funds, meter vendors, patent owners, and colossi like Google and Verizon vying for taxpayer bucks.

In fact, few jobs were created.

Ironically, environmentalists are also pushing for Smart Grids without studying the environmental/health impacts or even calculating if such systems will save energy. Plus, provisions in the stimulus package exempt Smart Grids from National Environmental Policy Act review and allow federal preemption for siting high-tension corridors through environmentally-sensitive areas.

But the biggest enviro-irony is that most Smart Meter models don't "run backwards"; if you install solar panels or other renewable-energy sources and want to sell energy back to the grid, without very expensive additional equipment the new metering makes that impossible.

People Are Getting Smart

Connecticut Light and Power is currently petitioning the Department of Public Utility Control to allow Smart Meters to be placed on 1.2 million homes, over the objections of the state's Attorney General George Jepsen. A pilot program of 10,000 such meters found no energy savings in 2009, he said, but would cost ratepayers \$500 million.

Maine has begun a statewide Smart Grid project – over citizen opposition. Smart Grids already exist in parts of Virginia, Florida, Texas, New Mexico, and the Midwest, while PG&E in California has installed several million meters on homes and businesses; 73%

of buildings in Alameda County already have them. As of June 1, 2010, the California Public Utilities Commission reports 2000 health-related and 1500 non-health-related complaints. The PG& E executive in charge of the Smart Meter program, William Devereaux, was discovered infiltrating activist groups opposed to Smart Grids, and the utility admitted to monitoring online groups to track their strategies.

And yet California customers are signing petitions, organizing calling campaigns, forming neighborhood groups, holding forums, throwing protests, getting arrested for blocking from neighborhoods, suing the state, and threatening to go off the grid. Sebastopol in Sonoma County is calling for 'opt-out' campaigns whereby customers refuse transmitters. And thus far, Berkeley, Scotts Valley, San Francisco, Sebastopol, Capitola, Fairfax, Camp Meeker, Cotati, Bolinas, and Watsonville, as well as Santa Cruz and Santa Rosa counties, have requested moratoriums.

In 2010 Assemblyman Jared Huffman (D-San Rafael) requested that the California Council on Science and Technology evaluate health effects, and Marin County Supervisor Charles McGlashan has called for state hearings – with his county board declaring that the state should shut down all Smart Meters until billing, health, and safety issues are resolved.

High I.Q.'s in Europe

In 2007, Germany's Environment Ministry issued a warning to German citizens to avoid wireless technology when possible and return to cabled means of communication. The French national library banned Wi-Fi in libraries when librarians became ill. And the European Environmental Agency called for action to reduce public exposure to radiation from mobile phones, Wi-Fi, Wi-Max, and other antennas.

In 2008 the European Parliament proposed publicly displayed maps of RF-contaminated areas so people could avoid them, while the U.K.'s Association of Teachers and Lecturers came out against Wi-Fi in classrooms.

Sweden has declared some beaches and public buildings RF-free areas where cell phones and wireless computers cannot be used so that people with electromagnetic hypersensitivity – a form of environmental allergy that Sweden classifies as a functional disability – can take a breather from contamination.

Individuals have also rallied. Spanish activists hold an annual International Day Against Electromagnetic Pollution. British and Irish citizens have taken to civil disobedience, bulldozing down cell towers. And Israelis have torn down cell towers with their bare hands and chased landlords who lease rooftops to tower companies through the streets.

All the while, a truly intelligent way to help an aging infrastructure does exist. Using closed cables, fiber optic boasts no environmental RF exposures, no dirty electricity, is resistant to sabotage and weather disruptions, and provides TV and high-speed Internet. For \$11 billion, the U.S. could bring fiber optic to every home just as Japan has done.

And some towns aren't waiting. Chattanooga TN already has a municipally-owned fiber optic network. The community of Dunnellon FL is proposing a fiber-optic system for every home and business – without increasing taxes. Meanwhile, Google is seeking prototype communities for a fiber-optic system that could possibly be licensed for utility metering. Unfortunately, Google has also wandered into wireless smart metering too.

The fact is: Smart Grids are dumb. Given known biological effects of RF — together with the use of financial resources better spent on true sustainability — this new roll-out adds yet another threat to the planet.

But, in this current stampede toward everything “green,” many environmentalists are flunking the I.Q. test. We all need to smarten up.

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Smart Grid meters aren't the same as the older wireless models. With the first generation, a van would cruise a neighborhood once a month, “call” for a signal to get the info on your energy use, and be done with it. Most of those meters don't put out radiation at any other time. But Smart Grids are that system on steroids, doing away with the meter reader and emanating 24/7.

<http://www.counterpunch.org/2011/03/18/the-problems-with-smart-grids/>