

Subject: Reply comment to D.P.U. 20-69 Against Department of Public Utilities Modernization of Electric Grid – Phase II

From: [Kirstin Beatty](#), currently co-chair, [Last Tree Laws](#) Massachusetts Ballot Committee

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To: Mark Marini, Secretary, Mark.Marini@mass.gov; Tina Chin, Hearing Officer, Tina.Chin@mass.gov; Sarah Spruce, Hearing Officer, Sarah.Spruce@mass.gov; Peter Ray, Paralegal, Peter.Ray@mass.gov; Massachusetts Department of Public Utilities; One South Station, 5th Floor Boston, Massachusetts 02110

I currently co-chair of [Last Tree Laws](#), a ballot measure committee and an informal advocacy group. Previously, I organized Healing Earth Refuge, which no longer exists on Meetup. I have [written relevant state legislation](#); [critiqued](#) existing legislation; written an [amendment](#) for current bills S. 129 and H. 383; worked on [ordinances](#) to regulate cellular infrastructure; created educational materials such as [reasons to stop wireless](#); blog at [Beatty.fyi](#); provided testimony and open letters on dockets and in legislative testimony; et cetera.

I do not have conflicts of interest. I do not receive money for my work, though I'd love some recompense and more help or support. I've done a lot and it has been hard.

I ask that the Attorney General and utilities take responsibility to address electromagnetic hazards and other issues of smart meters. This comment is intended to provide support for legal action with a simple review of cases, access barriers, etc. – previous comments included a [joint](#) comment with other advocates and a personal reply comment.

EMR = means electromagnetic radiation emitted by or the same as from smart meters

Measurements provided to DPU in past

In the [information](#) I [provided](#) in a D.P.U. docket 12-76, which I hereby incorporate as a reference, I stated that the **meters transmit at levels far above that where studies note effects**. The D.P.U. has had plenty of time to verify this statement. You can look online at the Bioinitiative RF color charts to see studies showing different biological effects at levels at or below smart meter exposures.

I measured a neighbor's wireless meter, which may not have been a "smart" meter, as **5 V/m** (volts per meter) about a foot away, which is very high – or about **6.6 uW/cm²** (microwatts per centimeter squared). If I had stayed longer than a minute, likely I'd have higher readings as pulses vary in strength. Additionally, some homes serve as collector stations, and thus have higher readings.

A study by Balmori on white storks found that a 2 V/m, inside 300 meters from a cell tower, storks had struggled to build nests, fought, and had significantly fewer babies.

For other reference of measurements, I cite an attached 2012 review by County of Santa Cruz health officer Poki Stewart Namkung, MD, MPH, which cites a time-averaged exposure of **655 uW/cm²**. I also attach a relevant report by Dr. Cindy Sage of smart meter measurements.

Lawsuits ~ How the Attorney General could Help

A winning case with great publicity against any type of wireless transmitter is vital for domino effects within industry and business, so as to:

- stem EMR,
- dismiss illusions of smart meter “success” and economic justice,
- dismiss illusions of “green technology,” and
- protect safety, security, and privacy.

First, in terms of smart meter **privacy**, this issue was denied by the [seventh circuit](#), but according to a [write-up](#) by advocate Nina Beety, the decision was based on the **false premise that smart meters provided substantial benefits**. Organizations such as the Electronic Frontier Foundation, EPIC, Privacy International, have written white papers on smart meter privacy, and some joined in an Amici Brief for this case. The Massachusetts ACLU, while not involved in smart meters, has also shown interest in protecting privacy.

Two **smart meter lawsuits** are progressing: (1) [Deborah Kopald](#) v. The New York Public Service Commission and Orange and Rockland Utilities, Inc., and (2) [Ed Friedman](#) v. Central Maine Power Company.

There are **federal lawsuits** proceeding against the FCC’s negligence in (1) allowing an explosion of wireless satellites, (2) lax cellphone monitoring, and (3) failing to update exposure guidelines or acknowledge actual exposures. The last case has smart meter relevance.

In any case, why install more wireless utility meters when such cases are proceeding? Or when there is even a question?

Municipalities have sued or are suing the FCC, including Boston, so far without a sea change. The issue appears to be that these cases largely **omit constitutional questions of civil liberties, state rights, and environmental health, which need to be addressed directly**. The FCC appears to want removal of local zoning control, and the federal courts haven’t yet seen reason to object. The FCC is exceedingly brazen, and so one would hope for pushback from the federal courts.

Boston and Philadelphia filed with the Federal Communications Commission in November 2013 in dockets #13-84 and #03-137, noting that the FCC and courts have **failed to address electromagnetic sensitivity as a protected disability**, and recently filed on docket 19-226 to state that Boston believes current wireless exposures are harmful.

In 2017 the Worcester **federal district court case recognized sensitivity as a valid syndrome** (G, a minor v. The Fay School, no. 4:15-cv-40116-TSH). Judge Timothy Hillman found that the now 14-year-old guidelines issued by the Federal Communication Commission (FCC) do not bar such claims. Dr. David Carpenter's methods and testimony, as causation expert, were considered credible, including his statements that nonthermal wireless radiation has biological effects.

In 2002 the United States Access Board issued guidelines recognizing and the 2005 U.S. National Institute of Building Sciences Indoor Environmental Quality report [recognized](#) the sensitivity. The U.S. Jobs Accomodation Network currently provides a list of accommodations. The Environmental Health Trust, which also maintains lists of relevant town resolutions, provides a listing of electromagnetic

sensitivity proclamations: (1) Alabama Governor Kay Ivey [proclaimed](#) an electromagnetic sensitivity month (2) the same for Governor Bill Ritter of Colorado (3) the same for Governor M. Jodi Rell of Connecticut, (4) and the same for the Board of Commissioners in Broward County.

Overseas, working compensation and wireless injury cases have been won, including for electromagnetic sensitivity. One U.S. workman's compensation administrative case recognized electromagnetic sensitivity caused by electrical wiring issues. In the USA, some cases have recognized harm from EMR caused by extreme exposures to telecommunication workers – however, these were likely beyond the FCC limit.

No one has yet addressed the false premise and marketing that smart meters are “green.”

Utilities cite engineers and experts on industry payroll to deny medical and biological impacts

Specifically as a response to my smart meter concerns, my utility cited an engineer, Janiswamy, at UMass Amherst. So, an engineer lacks a medical background and lacks a scientific background in chemistry, biology, epidemiology, and yet his paper is supposed to be used to deny my personal experience, my research references, and that of many others.

In the article I was sent, this engineer says “the Elster REX2 meter radiates for only 1.5 seconds every 4 hours” which is not even true for the meter I had, which radiated inside every five minutes. Even so, every signal is very short, approximately 20 milliseconds, allowing for 75 pulses in 1.5 seconds and more than 2000 in half a minute. If you were hit on the head 2000 times every 4 minutes, you'd think it was constant. According to research, the pulsing initiates effects which continue afterwards – blood-brain barriers open, etc.

This engineer derides the concerns of others, and yet he lacks scientific credentials. He cherry picks a few phrases to say that the IARC decision to categorize wireless as a possible carcinogen is of little concern – well, that is an interesting opinion. Since then, many of the original experts on the IARC committee have also asked for a higher rating than the 2B classification, with Hardell advocating for a rating of group 1, the highest carcinogenicity rating. Also, Janiswamy fails to acknowledge that the Interphone study he cites, which found less of a risk, was considered a significantly biased study in favor of finding nothing. Selective bias in the Interphone study included that regular users of cellphones, who were examined for tumor development, included those who had just started using a cellphone once a week for a few months. The study lacked enough users with the 30 years of use then considered necessary for tumor development

Further, Janiswamy cuts down the Bioinitiative working group - well, the Bioinitiative is composed of independent scientists including experts with a long list of credentials in the field and positions at universities. COMAR, which he cites as critical of the Bioinitiative, is composed of paid lobbyists for the industry – many standards-setting organizations have been found to be led by and composed of paid lobbyists, essentially front groups, for who else has the free time to devote? As of 2014, COMAR had 3 officers and 24 members, many with ties to industry, including: C-K Chou (Former Motorola chief scientist), Ken Foster (Industry-funded studies), Jerrold T. Bushberg (consultant, expert witness), Antonia Farone (Motorola Labs), Ralf Bodeman (Siemens AG), Linda Erdreich (Exponent, product defense company), Rob Kavet (EPRI), Richard Tell, chair (consultant).

Here I want to cite a submission to FCC 12-39 by Lloyd Morgan which addresses many of the conflicts of interest of organizations frequently cited in denial of EMR biological activity. The document is

attached. For emphasis, many of these organizations have the same members. As an update, I reference the Microwave News article, "[The Lies Must Stop Disband ICNIRP.](#)"

The Bioinitiative report summarizes of peer-reviewed science in its reports – and so this engineer is casting aside hundreds or thousands of studies by many different scientists on the basis of industry lobbyist advice.

Secondly, radiating sources are not all alike. The smart meter sends out very high spikes among its signals, it is not constant and smooth. Many researchers believe that this pulsing, modulating signal is far more disruptive for our cells than a constant continuous wave.

[Microwave News](#) has an article on Repacholi, who initiated the World Health Organization EMF Project, and Valberg, who served as a MA DPU "expert." The article discusses how each submitted ridiculous EMR guidelines to Connecticut Siting Council, contested by the Connecticut's own Department of Public Health, which advocated 10 milligauss (mG) in contrast to Valberg's 100 mG "screening" level and Repacholi's 833 mG. While magnetic fields quickly drop with distance, magnetic fields 3 mG or greater are strongly associated with childhood leukemia, and so the suggestions of Valberg and Repacholi are far outside the norm.

Peter Valberg was also hired to speak against me, for a different court case – I attach his critique. I looked at his submission and realized the following:

1. Many citations lack authors to stand behind claims;
2. He cherry picks or otherwise mischaracterizes the positions of scientists such as Dr. Belpomme or organizations like the IARC;
3. He uses psychological studies rather than hard science;
4. He fails to address hard science to the contrary;
5. He neglects the advances of quantum physics which show EMR subatomic impacts;
6. That mainstream, or as he terms "blue ribbon," science is with him is a mirage;
7. He omits conflicts of interest as an expert witness for industry or principal of Gradient, which has industry clients and is a product defense company;
8. He neglects that his scientific views are radical on all pollutants: denial of harms from carbon black, [Weymouth compressor](#), tobacco, chemical leaks (see for some examples the Center for Public Integrity's series *Science for Sale*)
9. He hypes working with Harvard, failing to mention his professorship was associate or adjunct in physiology;
10. He cites working with the Harvard Center for Risk Analysis, a center listed on *SourceWatch* as conducting risk analysis that is "widely criticised by community groups" and largely funded by big polluters.

Access barrier

Everyone's health suffers from random EMR, but electromagnetic sensitivity is painful. In my experience, these are smart meter access barriers:

- Smart meters for EV charging would reduce access to parking spaces, garages, or anywhere else these were located and require extra gas to seek alternative parking;
- Alternative energy installers or installations may require smart meters, serving as an access barrier for the sensitive;

- The increase proximity of smart meters is an access barrier for going door to door or in homes to meet neighbors;
- Safe, affordable housing is limited as smart meters reduce options, such as for shared housing, banks of smart meters on apartments; or via proximity in row housing;
- Smart meter infrastructure, which includes relay antennas and cell towers, may require that an electrosensitive person move;
- Smart meters set on the edges of property by roads and sidewalks are an access barrier for the sensitive, and may require extra time or gas to avoid.

When I drive down main roads, I drive sometimes by smart meters posted right by the road, and I can feel a flare of intense wireless from this. My symptoms include numbness, heat, and neck or facial pain. My hands go numb surprisingly quickly.

Big data, privacy, and security

Normally, you must get a warrant to collect data, not just collect and promise not to look. My utility promised not to collect private data without permission, but it seems hollow.

These meters are able to collect very personal data. If you use medical equipment, marijuana growing equipment, or any device – it doesn't matter – it can be identified via smart meters which further connects to detailed data in connected smart appliances. I think that is objectionable just on principle. But ratepayers cannot this point when needing to get along with the utility for meter removal.

Holyoke Gas & Electric received grant funding to work with UMass Amherst (see attached) to study “anonymous” data. Well, the Electronic Frontier Foundation and [others](#) have pointed out that **data can be deanonymized**. The articles on smart grid research at UMass show data is being collected by the meters. Here are a few relevant articles as evidence of data collection:

- [Irwin Works with Smart Meter Project at Holyoke Gas & Electric Co.](#)
- [Toward a Smarter Grid \(ResearchNext\)](#) "UMass Amherst computer scientist Prashant Shenoy and electrical and computer engineer David Irwin ...partner Holyoke Gas and Electric (HG&E), ...are analyzing data from 18,000 smart meters in the city of Holyoke. ...these record electricity data constantly ...—peak usage times, appliance usage, and more"
- [UMass Amherst Researchers Receive \\$1 Million Grant to Improve Utility Smart Metering, Energy Services and Conservation](#)
- [UMass \\$200K Grant to work with Holyoke G&E](#)

The grants above occur in part because data is big business. I've attached a “Relecura Paper” which discusses patents for the smart grid that goes up to 2010 – lots of patents. At one time, I had evidence that Al Gore was heavily invested in the smart grid. The federal government was also persuaded to provide many subsidies to encourage utilities to move to smart meters and dump analogs at the behest of GE and other patent holders. Environmental organizations, nonprofits, have also been associated with the smart grid and utilities, leading to conflicts of interest. At one time, which may still be true, the Sierra Club board included representatives of Silver Spring, then invested in the smart grid.

Smart meter capabilities include not only data collection, but the ability to turn individual devices and electricity on and off remotely. Turning off electricity or devices on and off remotely – well that could be used dangerously by anyone.

The Electronic Privacy & Information Center pages on the [smart grid](#) and privacy and the [recommendations](#) of the Electronic Frontier Foundation discuss issues around privacy and the smart grid. Data can be hacked, especially easy if data is transmitted wirelessly, and that data can then be available to criminals. There are many articles on the subject, including:

- [Smart grid powers up privacy worries](#) (Also discusses profits)
- [Urjanet sells utility billing data for 20 million](#)
- [Ratepayers pay for data collection in Illinois, and consumer groups want access to data without permission](#)
- [Russian Hackers Threaten Power Companies, Researchers Say](#)
- [Cybersecurity of the Power Grid: A Growing Challenge](#)
- Cimpanu, C (2019 Jul 2) **US wants to isolate power grids with 'retro' technology to limit cyber-attacks:** SEIA bill, inspired by the 2015 cyber-attack on Ukraine's power grid, passes Senate. ZDNet. Available online at <https://www.zdnet.com/article/us-wants-to-isolate-power-grids-with-retro-technology-to-limit-cyber-attacks/>
- Please also see in Liz Barris's white paper on the same docket, these articles: "When Smart Homes Get Hacked" and "FBI: Smart Meter Hacks Likely to Spread"

Fire hazards

I attach some information from William Bathgate and Dan Mattson on hazards such as fire from these meters, and refer to the detailed overview by advocate Nina Beety provided on this docket. I am attaching a presentation from the perspective of industry on fires by Chambers. I am uncertain whether this fire risk applies to all smart meters, all digital meters, or why this occurs. As I understand, over time fire hazards increase with a smart meter. Other articles on the subject include:

- [80 Palo Alto meters burn after a power surge](#)
- [Insurance companies sue utilities for smart meter fires; utilities remove of meters at home fires](#)
- [Stockton Smart Meters Explode After Truck Causes Power Surge](#) (And power goes out for 5000)

Economic justice & overbilling

Utilities have used net metering to set rates favorable to utility companies. Net metering is being used to disfavor decentralization or private production of energy, and to set rates to favor certain businesses, such as fossil fuels. Analogs simply run backwards if producing energy. Smart meters have the capability to set a lower rate for energy returned to the grid.

Analogs, if anything, can bill a little less over time but can last 20 years. Smart meters, in contrast, may cost 400 dollars for the meter and need replacement every few years – this alone is an extra cost for all. Not only is it wrong to expect the poor to pay extra for smart meters and as well as subsidize those who

have time to use energy at the right time and place via net metering, but smart meters can also lead to overbilling.

Here are a few articles on the subject of overbilling:

- ["Smart" meters could be overbilling you by a whopping 582%](#) (References a study on electronic noise effects: F. Leferink, C. Keyer and A. Melentjev, "[Static energy meter errors caused by conducted electromagnetic interference](#)," in IEEE Electromagnetic Compatibility Magazine, vol. 5, no. 4, pp. 49-55, Fourth Quarter 2016, doi: 10.1109/MEMC.2016.7866234)
- [Maine class action for overbilling \(5000+ customers\)](#)
- [Billing errors in Chicago hidden from customers](#)
- [Grossly inflated "estimated" smart meter bills in LA](#)
- [Atlanta class action, bills of 10K, and observation misfitted meter can increase bill](#)

Climate and environmental impacts

Every smart meter requires more energy to run, just to allow digital functions of the meter alone. Data infrastructure also adds to that energy cost. See the following on the subject:

- Environmental Health Trust 5G and climate fact sheet, which has hyperlinked references that discuss **energy costs of data collection** and so this is relevant to smart meters as well.
- The Power of the Wireless Cloud. [Points out wireless systems use 15-23 times more energy than wired systems] Centre for Energy-Efficient Telecommunications. Bell Labs and University of Melbourne. Available online at <https://ceet.unimelb.edu.au/publications/ceet-white-paper-wireless-cloud.pdf>
- An early paper, attached, "Environmental impact of high power density microwave beams on different atmospheric layers," introduces the concept that **EMR may be having impacts on the weather and atmosphere that need further study**.
- In 2016 Najmi et al in *Radio Science* "Simulations of ionospheric turbulence produced by HF heating near the upper hybrid layer" reported EMR produces ionospheric turbulence and electron heating. Najmi and colleagues are silent on what this means, but this sounds like technological experimentation that **ignores ecological ramifications**.
- I can no longer locate, but found an explanatory article stating EMR increases ionospheric electrostatic and leads to more lightning strikes or discharges of energy.
- Dirty electricity increases demands on the grid or on the home. Dirty electricity harms power quality and thereby harms energy efficiency, such as discussed in this article on [power quality](#) and this 2010 [article](#) on harmonics and transients disrupting power quality – how much of an effect I do not know.
- Please see an attached letter signed by experts on environmental and agricultural impacts – this letter is older, and so since then there is more research available on the subject to support concerns. That research can be found online at websites including the Environmental Health Trust and Physicians for Safe Technology.

Property rights, wireless and analog meters

Why an analog? An analog doesn't have data collecting abilities. Digital devices also add dirty electricity, or harmonics and transients, which leads to a deterioration of equipment using those

electrical lines and radiates from home electrical wires, harming health. As a meter set directly on the entry point of electricity to residences, digital meters add dirty electricity to the entire circuit.

Dirty electricity may for digital devices can [cause](#): “intermittent lock ups and resets, corrupted data, premature equipment failure, overheating of components for no apparent cause, etc.” A filter may remove dirty electricity, but generally smart meters do not include this filter.

Dirty electricity is essentially EMR, with harmonics that are multiples of 60 hertz and transients equivalent to surges or pulses of EMR other than 60 hertz. Please also see the attached 2014 DPU docket submission by Dr. William Bruno, which discusses the topic of dirty electricity.

Wireless may alone may cause deterioration of property, as [discussed](#) by Curtis Bennet as increasing corrosion.

If dirty electricity is well known to cause deterioration of electrical equipment, is this not then a violation of property rights? What of rights to private information? To health?

Research on Health Impacts

I am attaching several relevant documents including of:

- A 2012 joint statement that smart meters cause harm signed by over 50 experts in the medical and scientific fields;
- A 2012 review by Dr. Poki Stewart Namkung, health officer of the County of Santa Cruz, finding research evidence supports electromagnetic sensitivity and zero evidence of smart meter safety.
- A 2014 12-76 docket submission by Dr. William J. Bruno, retired biophysicist with Los Alamos National Laboratory, disputing Peter Valberg’s testimony on the same docket and explaining, clearly, why EMR can break chemical bonds.
- Dr. Denis L. Henshaw, University of Bristol emeritus professor, in 2019 on why the supposition EMR is safe is a myth;
- A 2017 letter by Dr. Beatrice Golomb, who has led well-respected research into statins and Gulf War illness, to the California legislature against wireless expansion and detailing the reality of electromagnetic sensitivity, the condition, and the research backing these symptoms;
- A 2014 draft summary of electromagnetic sensitivity research by Dr. Erica Mallery-Blythe;
- Smart meter testimony regarding biological impacts (cancer, electromagnetic sensitivity) in 2016 from Dr. Andrew A. Marino, an attorney and retired biophysicist from LSU Medical School, who also [testified](#) with Dr. Robert Becker against powerlines in the 1970s, shifting public opinion on high-voltage powerlines;
- Smart meter testimony regarding biological impacts, including from dirty electricity, in 2015 from Dr. David Carpenter, director of Institute for Health and the Environment at the University of Albany NY;
- Smart meter and electromagnetic sensitivity testimony from Dr. Richard Conrad;
- Smart meter testimony of Dr. Magda Havas;
- A 2017 letter regarding biological impacts of smart meters from Dr. David Carpenter;
- Letter on smart meter biological effects from Dr. De Kun Li, research scientist with Kaiser Permanente and lecturer with Stanford University.

Additionally, the following may be useful:

- 2014 electromagnetic sensitivity presentation by Dr. Isaac Jamieson to European Economic and Social Committee, also including reference to Alzheimer’s Disease and other ailments.
- A 2020 [review](#) by Dr. Ronald Kostoff et al discussing how numerous toxins, including EMR, cause inflated response to Covid19.
- Work by Dr. Olle Johansson finding an increase of mast cells and other changes in the skin or tissue from EMR exposures. Mast cells are known triggers of swelling and rashes.
- Work by Dr. Martin Pall, especially on the topic of behavioral changes, apathy and depression considering our current society: Pall ML. Microwave frequency electromagnetic fields (EMFs) produce widespread neuropsychiatric effects including depression. J Chem Neuroanat. 2016;75(Pt B):43-51. doi:10.1016/j.jchemneu.2015.08.001
- A review of electromagnetic sensitivity research by Dr. Erica Mallery-Blythe.
- The Physicians for Safe Technology has an overview of electromagnetic sensitivity, as well as pages on other impacts of exposures to EMR, including immune and endocrine impacts , prenatal effects, behavior, cardiac, and more.
- An excellent review of Russian studies on the topic “[Health implications of long-term exposure to electrosmog](#)” by Dr. Karl Hecht
- Dr. Joel Moskowitz, director of the Center for Family and Community Health at UC Berkeley, has provided at his blog SaferEMR.com several useful resources:
 - A list of [symptoms](#) reported by persons with electromagnetic sensitivity in an FCC docket # 13-84.
 - Updated compilations of recent wireless research, available through the [index](#), including a page on electromagnetic sensitivity.

Finally, I had initially created a listing of research categorized by health impacts, as well as PPTs, including one focused on fertility. The research list was created to address the ignorance and to understand my symptoms, so it is is pertinent to electromagnetic sensitivity, but also to understand the concerns of others. I may attach these as well, but these are also available at Beatty.fyi.

Closing

I am including many attachments to this docket, and also recommend on this docket the same 2013 document posted by David Adams, Ph.D., of Dr. Ronald Powell on Biological Effects from RF, as well as many other filings by parties contesting the energy, health, and economic benefits. I also incorporate by reference my previous testimony on docket 12-76, and also all testimonies on docket 12-76 as evidence of previous reporting of smart meter harm as neglected by the DPU.

All references and links are hereby incorporated by reference.