Health, Safety, Environmental and Economic Risks,
Testimony of Patricia Burke et. al. for MA DPU Dockets 21-90, 21-91, 21-92

Respectfully submitted, Patricia Burke

This testimony addresses the opportunity and urgency for the Massachusetts Dept. of Public Utilities, environmental groups, utilities, and industry to recognize and act prudently regarding recent legal developments concerning Federal Communications Commission (FCC) radio frequency exposure guidelines.

Regarding EVs, this pertains directly to ideas about time-of-use billing and off-peak charging via smart meters.

Safety questions raised by the court's August 13, 2021 ruling against the FCC pertain directly to impending decisions and proceedings by the MA DPU regarding wireless smart utility meters, mesh networks, powerline communications, and other grid infrastructure investments, including EV charging.

The MA DPU is in a position to adjust grid modernization strategic planning, to reflect necessary recognition that the health and safety assumptions driving pending grid policy and investment decisions, sourced back to 2014, are based on FCC guidelines that have been determined by the court to be ***not evidence-based.***

In addition, in 2014, MA DPU 12-76-B misrepresented FCC exposure limits as protective of both thermal and non-thermal impacts of radio frequency exposures.

The MA DPU's claim is misleading and inaccurate.

In 2014, members of the public voiced this concern to the MA DPU. [1]

The August 2021 court decision against the FCC correctly identified the scope of FCC limits as excluding non-thermal impacts.

The misrepresentation by the MA DPU of the scope of the FCC's exposure limits regarding non-thermal effects has never been addressed, despite being brought to the agency's attention in filings by the public, and as outlined in MA-DPU 12-76-B itself, seven years ago.

The court further ruled "The factual premise—the non-existence of non-thermal biological effects—underlying the current RF guidelines may no longer be accurate."

As reported by Children's Health Defense, "According to the Court's decision, the FCC failed to provide evidence to support its decision in regard to the non-cancer health effects and that it also failed to

[1] As noted by Last Tree Laws, "evidence regarding detrimental non-ionizing radiation public and environmental health impacts, in addition to problems related to privacy, cybersecurity, and costs, has been provided to the department and utilities on an ongoing basis, as seen in D.P.U. dockets 13-83, 12-76, 12-76-A, 21-80, 20-69, and 21-90, as far back as 2012."

respond to the extensive evidence that was filed with the FCC (via the docket which is also called "record") that shows that the current radiofrequency emissions guidelines may cause negative health effects unrelated to cancer. The court stated that, the FCC's failure, undermines the Commission's conclusions regarding the adequacy of its testing procedures, particularly as they relate to children, and its conclusions regarding the implications of long-term exposure to RF radiation, exposure to RF pulsation or modulation, and the effects of wireless technologies that were developed since 1996. The court also found that the FCC 2019 decision was arbitrary and capricious in its failure to respond to comments concerning environmental harm caused by RF radiation."

The opening brief filed with the Court by Children's Health Defense specifically refers to issues associated with smart meters.

In its ruling, the Court remanded the issues of chronic long term exposures, and pulsed modulated exposures, both associated with smart grid infrastructure, to the FCC.

Recent Action: MA DPU 20-69 and MA DPU 20-69-A - Background: Customer-Facing Grid Modernization Investments

The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

D.P.U. 20-69-A May 21, 2021

Investigation by the Department of Public Utilities on its own Motion into the Modernization of the Electric Grid – Phase Two.

ORDER ADDRESSING FORM AND CONTENT OF: (1) GRID MODERNIZATION PLAN FILINGS; (2) ELECTRIC VEHICLE PROPOSALS REQUIRED UNDER THE TRANSPORTATION ACT, CHAPTER 383 OF THE ACTS OF 2020, AND OTHER ELECTRIC VEHICLE PROGRAM PROPOSALS; AND (3) BATTERY ENERGY STORAGE PROPOSALS

SOURCE: https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/13552861

The three grid modernization dockets: MA DPU Dockets 21-80, 21-81, and 21-82 were ordered following proceedings for MA DPU 20-69.

The three EV dockets 21-90, 21-91, and 21-92 were also ordered as the result of MA DPU 20-69.

"D.P.U. 20-69-A May 21, 2021 Investigation by the Department of Public Utilities on its own Motion into the Modernization of the Electric Grid – Phase Two, ORDER ADDRESSING FORM AND CONTENT OF: (1) GRID MODERNIZATION PLAN FILINGS; (2) ELECTRIC VEHICLE PROPOSALS REQUIRED UNDER THE TRANSPORTATION ACT, CHAPTER 383 OF THE ACTS OF 2020, AND OTHER ELECTRIC VEHICLE PROGRAM PROPOSALS; AND (3) BATTERY ENERGY STORAGE PROPOSALS"

Direct Quotes, MA-DPU-20-69-A; Demonstrate That the MA DPU Has Instructed Massachusetts Investor-Owned Utilities to Deploy Advanced Metering Functionality/AMI Technology

Page 1 "On July 2, 2020, the Department of Public Utilities ("Department") initiated the second phase of its inquiry into the modernization of the electric grid. Grid Modernization – Phase II, D.P.U. 20-69 (2020). The purpose of this investigation is to consider the next appropriate steps for **the deployment of advanced metering functionality** in the Commonwealth. D.P.U. 20-69, at 3. Recognizing that continued growth in the electric vehicle sector will be critical to the achievement of the necessary reductions in the Commonwealth's greenhouse gas emissions, the Department determined that the investigation would consider, among other things, whether a targeted deployment of **advanced metering functionality** to electric vehicle customers was appropriate."

Page 3 "the Department opened the instant investigation to consider the **next appropriate steps for the deployment of advanced metering functionality**. D.P.U. 20-69, at 3."

Page 5,6 "the Department **sought comments from the Companies and interested stakeholders** on a number of specific topics including: (1) the capabilities of the Companies' current systems to support advanced metering functionality; (2) the feasibility of targeted deployment of advanced metering functionality to certain customer segments, such as electric vehicle customers; (3) alternative solutions to advanced metering infrastructure ("AMI") and the compatibility of such solutions with the Companies' current systems; (4) end-of-life meter replacement strategies, including cost recovery associated with such strategies, that will support the Department's grid modernization objectives and avoid or minimize stranded costs, and (5) dynamic pricing options to provide effective price signals to customers. D.P.U. 20-69, at 3-8. **Stakeholders also submitted comments on a wide variety of other topics.** [2] The summary of comments below is limited to those topics relevant to the issues addressed in this Order." [3]

Recent Court Ruling Against the FCC, and MA DPU 20-69 "Alleged" Health Concerns

[2] .Among the "other topics" discussed by stakeholders at the listening session for MA DPU 20-69 were health concerns, including the question of exposures in multi-family dwellings. This complexity is not addressed in the subsequent opt out instructions to outlined by the MA DPU for utilities. Testifiers also identified the need to specify provision of a true analogue as the opt out meter choice, also not addressed by the DPU.

[3] Comment was also introduced into the proceeding for docket 20-69, noting inaccurate results reporting, cost over-runs, misleading opt out statistics, and other concerns regarding the National Grid smart meter pilot program conducted in Worcester MA, which was conducted to inform policy decisions regarding smart meters. These concerns have been submitted in other MA DPU proceedings and have not been addressed (including MA DPU 14-109, 15-21, 16-28, 17-53, 18-28, 18-29, 20-69) In addition, commenters raised on-going concerns about the MA DPU's promotion of the "expert" opinion of Peter Valberg and product defense firm Gradient regarding health and safety of smart meters.

On May 21, 2021, in MA DPU 20-69-A, on page 35, the MA DPU characterized concerns about radio frequency exposures as "alleged."

The MA DPU wrote:

*"Citing **alleged** health concerns associated with the radio frequency emissions from AMI meters, a number of commenters urge the Department to ensure that individual customers are able to opt-out of receiving AMI meters."*

On August 13, 2021, in its decision 20-1025, the United Stated Court of Appeals for the District of Columbia found these concerns not "alleged."

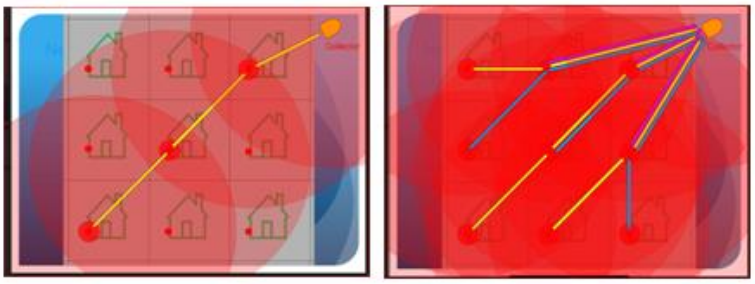
The court noted "The factual premise—the non-existence of non-thermal biological effects—underlying the current RF guidelines may no longer be accurate."

The court also noted, "record evidence that exposure to RF radiation at levels below the Commission's current limits may cause negative health effects unrelated to cancer."

This ruling by the court directly contradicts earlier statements made by the MA DPU, including but not limited to the reliance on FCC guidelines as a basis for dismissing public concern, and the MA DPU implying that FCC guidelines are inclusive of non-thermal effects.

This court ruling raises the question of whether or not the DPU's policy decision to offer an opt out meter will meet the requirement stated in MA DPU 12-76, that "the Department must ensure that electric distribution companies provide safe and reliable electricity to all ratepayers."

Smart Meters Increase RF Exposures in Communities, Court Has Ruled: FCC Guidelines "Not Evidence-Based"



Direct Quotes: MA DPU 20-69-A; MA DPU Directs Utilities to Invest in AMI, Refers to Health Concerns as "Alleged," Proposes Opt Out Tariff

Quotes from docket 20-69-A indicate that the MA DPU specified smart meters/AMI/advanced meter functionality as the technology choice *despite public testimony regarding health concerns:*

Page 21 "Advanced Meter Infrastructure Opt-Out A number of commenters argue that the Department should provide individuals with the ability to opt-out of receiving an AMI meter (CLF Comments at 10; see, generally, Public Commenters). In particular, **65 public commenters assert that there are a number of health concerns associated with the radio frequency emissions from AMI meters and, therefore, urge the Department to require the Companies to allow customers to opt-out of an AMI meter and receive an analog meter at little or no cost** (see, generally, Public Commenters). Finally, 16 public commenters suggest that outreach and education regarding energy conservation could achieve demand reduction goals without the need for AMI meters (see, e.g., Comments of Anne Frances Martin; Comments of Lokita Jackson; Comments of Dorothy Baker"

Page 25 "After review of the extensive comments submitted and the information gathered over four days of technical sessions, the Department has determined that a targeted deployment of AMI to electric vehicle customers is not likely to be cost-effective. Instead, in consideration of the Commonwealth's long-term energy policy and climate goals, as well as the current status of the Companies' metering infrastructure, **the Department finds it appropriate to consider a path to achieve advanced metering functionality through a full-scale deployment of AMI**. Below, **the Department provides guidance on the content and format of the Companies' forthcoming grid modernization plans to achieve advanced metering functionality through the full-scale deployment of AMI."**

Page 27 "given that the costs to upgrade back-office supporting systems to enable advanced metering functionality through **AMI meters** do not vary significantly between a targeted and a full-scale deployment, full utilization of these upgraded back-office systems will likely result in efficiency gains (Eversource Comments at 11-16; National Grid Comments at 24-25, 27). For these reasons, the Department is persuaded that it is not appropriate to pursue a targeted deployment of advanced metering functionality for electric vehicle customers through alternative metering strategies.7 **Instead, the Department shifts its focus to the achievement of advanced metering functionality in support of our grid modernization objectives and the Commonwealth's long-term energy policies through a full-scale deployment of AMI"**

Page 28 "Content and Form of Grid Modernization Plan Filings 1. Introduction Each company's next grid modernization plan filing must include: (1) **a five-year strategic plan, including a plan for the full deployment of advanced metering functionality;** (2) separate four-year grid-facing and customer-facing short-term investment plans;8 and (3) a composite business case in support of both short-term investment plans."

Page 35 "4. Cost-Based Opt-Out Tariffs Citing **alleged** health concerns associated with the radio frequency emissions from AMI meters, a number of commenters urge the Department to ensure that individual customers are able to opt-out of receiving AMI meters (see, generally, Public Commenters; Senator Moore Comments at 1; Senator DiZoglio Comments at 1; Representative Linsky Comments at 1-2). In D.P.U. 12-76-B at 47-49, the Department addressed this issue and determined that each company would be required to have an opt-out tariff in effect before the deployment of new advanced meters as part of the company's grid modernization plan. Consistent with this finding, **each company shall include as part of its customer-facing investment plan an illustrative AMI meter opt-out tariff for Department**

review, with proposed opt-out charges that adhere to traditional ratemaking principles of cost causation.14,15"

Page 36 "As discussed above, the next grid modernization plans will include proposals to achieve advanced metering functionality through the full-scale deployment of AMI and separate short-term investment plans for grid-facing and customer-facing investments. In addition, we anticipate that these new plans will include proposals involving newer grid modernization technologies or present novel approaches to achieving our grid modernization objectives."

Page 52 "VIII. CONCLUSION Our investigation of the **next appropriate steps for the deployment of advanced metering functionality in the Commonwealth to meet the Department's grid modernization objectives** has benefitted greatly from the extensive participation of stakeholders. After review of stakeholder comments and information gathered over four days of technical sessions, the Department has determined that a targeted deployment of AMI to electric vehicle customers is not likely to be cost-effective. Instead, in the upcoming grid modernization plan filings**, the Department will consider the achievement of advanced metering functionality in support of our grid modernization objectives through a full-scale deployment of AMI."**

Court Ruling Against FCC, Issued August 13, 2021, Regarding FCC Radiofrequency Exposure Guidelines, Submitted for Dockets MA DPU 21-80, 21-81, 21-82; August 20, 2021

I, Patricia Burke, submitted the decision by the U.S. Court of Appeals regarding FCC exposure limits to the MA DPU for the three Grid Modernization proceedings MA DPU 21-80, 21-81, and 21-82, on August 21, 2021.

National Grid: https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/13916143
NStar/Eversource :https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/13889389
Unitil: https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/13889390


United States Court of Appeals

SOURCE:
https://www.cadc.uscourts.gov/internet/opinions.nsf/FB976465BF00F8BD85258730004EFDF7/$file/20-1025-1910111.pdf

Explanation: United States Court of Appeals For The District Of Columbia Circuit; Argued January 25, 2021; Decided August 13, 2021; No. 20-1025 Environmental Health Trust, Et Al., Petitioners V. Federal Communications Commission And United States Of America

Quotes from the Petitioners' summaries regarding the decision:

As reported by the Children's Health Defense,

"The Children's Health Defense (CHD) won its historic case against the Federal Communications Commission (FCC) for the agency's decision not to review its health and safety guidelines for wireless-based technologies, including 5G. On Friday, Aug. 13 , the U.S. Court of Appeals for the DC Circuit published its decision, ruling that the FCC failed to consider the non-cancer evidence regarding adverse health effects of wireless technology when it decided that its 1996 radiofrequency (RF) emission guidelines protect the public's health.

CHD filed the case on February 2, 2020, shortly after the FCC closed the docket it had opened in 2013 seeking public comment on its health guidelines for wireless technologies, which had not been updated in over two decades. Despite thousands of comments and scientific evidence submitted by scientists, doctors and medical organizations, and statements by those who have been injured by RF radiation attesting to the need for stricter guidelines, on Dec. 4, 2019 the FCC published its decision affirming the adequacy of its guidelines without proper assessment of the comments or the evidence.

The case brought by CHD (consolidated with another similar suit brought by the Environmental Health Trust) claimed that the FCC lacked reasoned decision making and that its refusal to address the evidence was arbitrary and capricious. In a 2-to-1 ruling, the Court agreed, citing numerous instances of the Commission's arbitrary and capricious failures to respond, including to evidence that exposure to RF radiation at levels below current limits may cause negative health effects; the inadequacy of testing procedures particularly related to children, to long-term exposure to RF radiation, to pulsed and modulated RF radiation; and the implications of technological developments that have occurred since 1996. The court also noted the agency's complete failure to respond to comments about environmental harms.

The court's judgment states:
"The case be remanded to the commission to provide a reasoned explanation for its determination that its guidelines adequately protect against harmful effects of exposure to radiofrequency radiation…"

"According to the Court's decision, the FCC failed to provide evidence to support its decision in regard to the non-cancer health effects and that it **also failed to respond to the extensive evidence that was filed** with the FCC (via the docket which is also called "record") that shows that **the current radiofrequency emissions guidelines may cause negative health effects unrelated to cancer.** The court stated that, the FCC's failure, undermines the Commission's conclusions regarding the adequacy of its testing procedures, particularly as they relate to **children**, and its conclusions regarding **the implications of long-term exposure to RF radiation, exposure to RF pulsation or modulation, and the effects of wireless technologies that were developed since 1996.** The court also found that the FCC 2019 decision was arbitrary and capricious in its failure to respond to comments concerning **environmental harm** caused by RF radiation."

As reported by the Environmental Health Trust, "The court granted the petitions for review because, contrary to the requirements of the Administrative Procedure Act (APA**), the commission failed to provide a reasoned explanation for its assertion that its guidelines adequately protect against the harmful effects of exposure to radiofrequency radiation."**

"The Petitioners contend **the FCC ignored the extensive evidence submitted to the agency showing that non-thermal levels of pulsed and modulated RFR emitted by wireless technology are harmful to humans, wildlife and the environment,** and its order failed to provide a record of a reasoned decision making. Therefore, the Petitioners claim the FCC has violated the Administrative Procedure Act (APA) and **its decision is capricious, arbitrary and not evidence-based.** In addition, the Petitioners argue that the FCC violated NEPA because the agency did not consider the environmental impacts of its decision. FCC also violated the 1996 Telecommunications Act (TCA) in failing to consider the impact of its decision on public health and safety."

Children's Health Defense explains, "In 1996, the FCC adopted guidelines which only protect consumers from adverse effects occurring at levels of radiation that cause thermal effects (temperature change in tissue), while ignoring substantial evidence of profound harms from pulsed and modulated RF radiation at non-thermal levels. The FCC hasn't reviewed its guidelines or the evidence since, despite clear scientific evidence of harm and growing rates of RF-related sickness.

In 2012, the Government Accountability Office of Congress published a report recommending the FCC reassess its guidelines. As a result, in 2013 the FCC published an inquiry to decide whether the guidelines should be reviewed. It opened docket 13-84 for the public to file comments.

Thousands of comments and scientific evidence by scientists, medical organizations and doctors, as well as hundreds of comments by people who have become sick from this radiation were filed in support of new rules. Nevertheless, on Dec. 4, 2019, the FCC closed the docket and published its decision, affirming the adequacy of its guidelines without proper assessment of the comments or the evidence.

The lawsuit, called a Petition for Review, contends that the agency's decision is arbitrary, capricious, not evidence-based, an abuse of discretion and in violation of the Administrative Procedures Act (APA).

CHD's lawsuit was joined by nine individual petitioners. Petitioners include Professor David Carpenter MD, a world-renowned scientist and public health expert who is co-editor of the BioInitiative Report, the most comprehensive review of the science on RF effects; physicians who see the sickness caused by wireless radiation in their clinics; and a mother whose son died of a cell phone-related brain tumor. CHD's lawsuit was filed in the U.S. Court of Appeals for the Ninth Circuit. However it was transferred to the U.S. Court of Appeals for the DC Circuit where it was joined with a similar lawsuit filed by the Environmental Health Trust and Consumers for Safe Cell Phones. The main brief and the reply brief were filed jointly by all petitioners."

Would it not also be arbitrary, capricious, and not evidence-based for the MA DPU, industry, and environmental organizations to disregard the Court's ruling and its implications as they apply to public policy mandating AMI and related grid investments, and issues of public safety, environmental protection, and human rights?

The Court ruled the FCC failed to engage at the level of reasoned decision-making required from a federal agency. Furthermore, the commission failed to provide an analysis of the evidence showing how it reached its decision.

Likewise, ratepayers have questioned whether the process by which the MA DPU addressed health concerns in 2014 constituted reasoned decision making, especially because a state agency provided misleading, inaccurate information about the scope of the FCC guidelines.

The basis of the assumption that smart meters are safe is based on FCC guidelines now remanded by the Court.

The MA DPU cannot reasonably make implications to the public, ratepayers, or investors, that mandated smart meter deployment is prudent and safe.

Direct Quotes: United States Court Of Appeals For The District Of Columbia Circuit; August 13, 2021 Ruling Regarding Inadequacy of FCC Review Of Radio Frequency Exposure Limits

"The factual premise—the non-existence of non-thermal biological effects—underlying the current RF guidelines may no longer be accurate."

"One agency's unexplained adoption of an unreasoned analysis just compounds rather than vitiates the analytical void. Said another way, **two wrongs do not make a right**."

".. we find the Commission's order **arbitrary and capricious** in its failure to respond to record evidence that exposure to **RF radiation at levels below the Commission's current limits may cause negative health effects** unrelated to cancer. That failure undermines the Commission's conclusions regarding the adequacy of its **testing procedures**, particularly as they relate to **children**, **and its conclusions regarding the implications of long-term exposure to RF radiation, exposure to RF pulsation or modulation, and**

the implications of technological developments that have occurred since 1996, all of which depend on the premise that exposure to RF radiation at levels below its current limits causes no negative health effects. Accordingly, we find those conclusions **arbitrary and capricious** as well. Finally, we find the Commission's order arbitrary and capricious in its complete failure to respond to comments concerning **environmental harm caused by RF radiation**."

"The Commission explained its decision **by asserting that "[n]o new information has been submitted** that would provide a convincing argument for modifying the extrapolation factor . . . at this time." Id. (internal alterations omitted). We rejected that explanation as **conclusory and unreasoned**. Id"

"The Commission last updated its limits for RF exposure in 1996. Resolution of Notice of Inquiry, Second Report and Order, Notice of Proposed Rulemaking, and Memorandum Opinion and Order, 34 FCC Rcd. 11,687, 11,689–90 (2019) ("2019 Order"); see also Telecommunications Act of 1996, Pub. L. No. 104-104, § 704(b), 110 Stat. 56, 152 (directing the Commission to "prescribe and make effective rules regarding the environmental effects of radio frequency emissions" within 180 days). The limits are based on standards for RF exposure 6 issued by the American National Standards Institute Committee ("ANSI"), the Institute of Electrical and Electronic Engineers, Inc. ("IEEE"), and the National Council on Radiation Protection and Measurements ("NCRP"). In re Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, 11 FCC Rcd. 15,123, 15,134–35, 15,146–47 (1996). **The limits are designed to protect against "thermal effects" of exposure to RF radiation, but not "nonthermal" effects.** EMR Network, 391 F.3d at 271."

"We do not agree that these statements provide a reasoned explanation for the Commission's decision to terminate its notice of inquiry. Rather, we find them to be of the conclusory variety that we have previously rejected as insufficient to sustain an agency's refusal to initiate a rulemaking."

The MA DPU's Reliance on FCC Guidelines in MA DPU 12-76-B Can No Longer Form the Basis of Representation of Safety to the Public, Until or Unless the Remand by the Court to the FCC is Addressed

MA DPU 12-76-B's dismissal of health concerns either references FCC guidelines, and/or references other agencies that rely on the FCC, or "expert" testimony provided by Peter Valberg of the product defense firm Gradient. [4]

[4] The MA DPU has received significant testimony from the public challenging the agency's reliance on comprised "experts" engaged in product defense,(including tobacco scientists), specifically regarding Peter Valberg, who testified for Philip Morris cigarettes the same week that he testified before the MA DPU to nullify citizen health concerns about smart meters. Valberg did not submit written testimony into the public record, yet his opinion is widely quoted in MA-DPU 12-76-B, which includes references that were not introduced in his verbal testimony. [In May of 2003, the Oak Hill Park Association, Newton, MA submitted a" Rebuttal of the May 2002 Report on Potential RF Health Impacts Related to AM Radio Antennas, 31 May 2003 "This analysis documents serious scientific and technical flaws in Peter Valberg's May 2002 report to the City of Newton on the potential RF health impacts of the proposed antenna array at 750 Saw Mill Brook Parkway.]

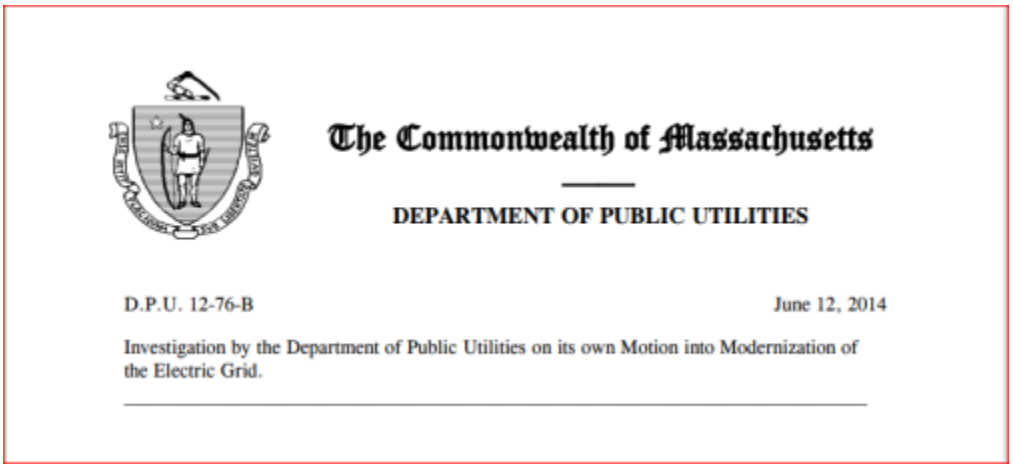
While the FCC guidelines remain in effect, assurance of safety is not in effect, especially in regard to non-thermal effects of radio frequency exposures (below the heating threshold).

In addition, the MA DPU has misrepresented FCC guidelines in the text on page 43 and in Footnote 44, significantly misleading regulators, decision-makers, legislators, utilities, environmentalists, and the public about the scope and adequacy of FCC safety guidelines regarding non-thermal impacts.

The MA DPU also presented its own determination regarding electromagnetic hypersensitivity.

As ordered by the court, the FCC must conduct a review of the 11,000 pages of evidence submitted into the 13-84 proceeding, including evidence of harm associated with smart meters.

Direct Quotes: MA DPU 12-76-B Relative to FCC Guidelines, 2014; (The Court Has Since Ruled, on August 13, 2021, That Current Radiofrequency Emissions Guidelines May Cause Negative Health Effects, Unrelated To Cancer)



The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

D.P.U. 12-76-B June 12, 2014

Investigation by the Department of Public Utilities on its own Motion into Modernization of the Electric Grid.

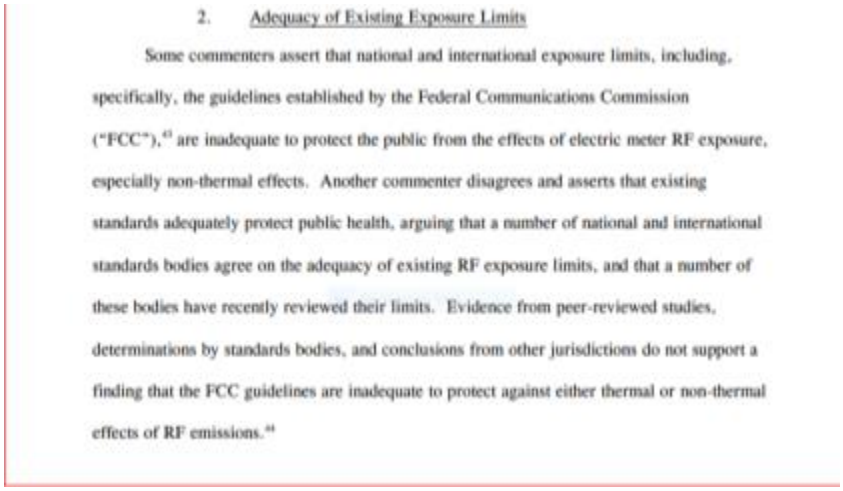
MA DPU quotes from MA DPU 12-76-B discounting health concerns by referencing FCC guidelines:

Footnote 41 Page 42 "Key distinctions between wireless phones and RF-emitting meters include proximity to the body, duty cycle, and RF frequency. Levy/Page Memorandum at 1-3. RF field strength declines rapidly from the source and is extremely small at any reasonable distance from the advanced meter. Taking into account the duty cycle of the meter (below one percent), this results in 90 percent of measured RF values being less than 0.1 percent of the **FCC Maximum Permissible Exposure ("MPE").** Electric Power Research Institute, Characterization of Radio Frequency Emissions from Two Models of Wireless Smart Meters at 6.3, 7.1 (2011) ("EPRI Study").

Text Page 42 "In assessing arguments and cited studies, we also consider their consistency with the weight of scientific evidence and determinations made by other jurisdictions. Other jurisdictions that have considered potential health impacts of RF, **including regulatory bodies** and public health organizations, do not find that RF exposure from advanced meters, operating **under established U.S. and international exposure limit guidelines,** leads to adverse health effects.42"

Text Page 43 "In sum, considering the well accepted standards for review of scientific arguments and associated evidence **we find that the studies cited by opponents of smart meters do not amount to credible evidence of health impacts."**[5]

Text Page 43 "2. **Adequacy of Existing Exposure Limits Some commenters assert that national and international exposure limits, including, specifically, the guidelines established by the Federal Communications Commission ("FCC"),43 are inadequate to protect the public from the effects of electric meter RF exposure, especially non-thermal effects.** Another commenter disagrees and asserts that existing standards adequately protect public health, arguing that a number **of national and international standards bodies** agree on the adequacy of existing RF exposure limits, and that a number of these bodies have recently reviewed their limits**. Evidence from peer-reviewed studies, determinations by standards bodies, and conclusions from other jurisdictions do not support a finding that the FCC guidelines are inadequate to protect against either thermal or non-thermal effects of RF emissions**.44"



2. Adequacy of Existing Exposure Limits

Some commenters assert that national and international exposure limits, including, specifically, the guidelines established by the Federal Communications Commission ("FCC"),[43] are inadequate to protect the public from the effects of electric meter RF exposure, especially non-thermal effects. Another commenter disagrees and asserts that existing standards adequately protect public health, arguing that a number of national and international standards bodies agree on the adequacy of existing RF exposure limits, and that a number of these bodies have recently reviewed their limits. Evidence from peer-reviewed studies, determinations by standards bodies, and conclusions from other jurisdictions do not support a finding that the FCC guidelines are inadequate to protect against either thermal or non-thermal effects of RF emissions.[44]

SOURCE: https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/9235208

Footnote 43 page 43 "The FCC regulates communications by radio, television, wire, satellites, and cable within the United States and its territories. 47 U.S.C. §§ 151, 154. Under the National Policy Act of 1969, **the FCC has responsibility for the development and enforcement of the federally mandated RF exposure limits.** 42 U.S.C. § 4321 et seq."

Footnote 44 page 43 "See, e.g., Tr. 4, at 945, 977-979, 1012 (existing exposure limits adequately protect public health; national and international standards bodies agree on the adequacy of existing RF limits); California Council on Science and Technology, Health Impacts of Radio Frequency Exposure from Smart Meters at 2, 5 (2011) **(FCC guidelines provide an adequate factor of safety against RF health impacts of smart meters**; evidence does not support a causal link between RF emissions and non-thermal health impacts); Maine Examiners Report 44 **(there is no basis for finding that the FCC limits inadequate for**

[5] A Review of the Smart Meter "No Credible Evidence" Health Effects Controversy https://smartgridawareness.org/2014/02/27/smart-meter-no-credible-evidence-controversy/

both thermal and non-thermal effects); Colorado Department of Public Health and Environment, Fact Sheet on Smart Meters and Associated Health Concerns at 3 (2012) ("[o]verall, based on the current knowledge, **additional standards are not needed to protect public health**")."

Text Page 44 "3. Cumulative Impacts Some commenters suggest that electric meter RF emissions add to the background level of RF fields in an environment in which a number of other RF-emitting devices operate, such as cell phones, household appliances, and wireless communications devices and networks, furthering the potential health issues for the public**. However, advanced meter RF emissions, as studied in reports evaluating their compliance with FCC and other limits**, are far below emissions levels associated with these other devices under both peak and time-averaged exposure.45 Even under conservative estimates, RF emissions from advanced meters are **less than one percent of FCC and other limits relative to time-averaged exposures** and less than four percent relative to peak exposures."

Text Page 45 "In addition, a number of independent studies have verified the compliance of advanced meters with FCC and other national and international limits.47 These reports evaluate electric meter RF emissions under multiple installation scenarios, including individual and aggregate installations with multiple meters.48 **Finally, the FCC has indicated that banks of RF-emitting electric meters fall below FCC public exposure limits. Letter from Julius Knapp, Chief, Federal Communications Commission Office of Engineering and Technology, to Cindy Sage,** Sage Associates Environmental Consultants (August 6, 2010) ("FCC/OET Letter").49 Specifically, the FCC stated that "[i]rrespective of duty cycle, based on the practical separation distance and the need for orderly communications among several devices, even multiple units or 'banks' of meters in the same location will be compliant with the public exposure limits." **FCC/OET Letter at 2."**

Footnote 47 Page 45 " Cascadia PM, LLC, Report of Results of Smart Meter RF Testing – Maui at 10 (2014) ("Maui Report") (meter readings at no time exceeded .015 percent of the general population exposure limit); EPRI Study at 7-1 (showing that the subject smart meter emissions are small in comparison to the applicable **FCC limits for exposure**; this finding of compliance with the MPE holds true whether or not the peak measured fields are corrected for meter duty cycles, whether spatial averaging or any other factor that reduces RF fields such as the construction materials of homes is considered, or whether the meters exist in a large group, or whether individuals are outside near the smart meter or inside their residence); City of Naperville Smart Grid Initiative, Pilot 2 RF Emissions Testing – Summary Report – V2.0, at 26 (2011) ("NSGI Report") (even under the worst case scenario, the instantaneous peak measurements observed from a smart meter **are far below the FCC MPE limit)."**

Footnote 49 page 45 "This letter was issued in response to a letter from Cindy Sage of Sage Associates Environmental Consultants requesting that the **FCC review compliance with FCC RF exposure limits for "smart meters," in particular, the installation of multiple adjacent "smart meters" and the associated exposure effects."**

Text Page 46 "**Electromagnetic Hypersensitivity** Some commenters assert that advanced meters pose a particular health threat to individuals with electromagnetic hypersensitivity. We recognize that certain individuals report a heightened sensitivity to RF emissions and attribute illness or other physical

symptoms to RF exposure. **While we appreciate that their symptoms are serious, based on all of the testimony and the materials we have reviewed we are unable to conclude that RF exposure and, specifically, RF from electric meters, is the cause of those symptoms.**50"

Footnote 50 Page 46 "See, e.g., Tr. 4, at 986; World Health Organization, Electromagnetic Fields and Public Health: Electromagnetic Hypersensitivity, http://www.who.int/pehemf/publications/facts/fs296/en/ (last visited June 11, 2014); **Texas Commission Report at 55-57 (2012);[6] Exponent Report at 35" (references FCC) [7]**

Text Page 47 "7. **Conclusion In the absence of credible evidence of harm to human health from advanced meters, we will allow electric distribution companies to include the broad deployment of advanced meters in their plans to achieve advanced meter functionality.** However, as discussed further below, companies will be required to provide customers with an option to decline the installation of an advanced meter."

Appendix 1 Page 29 "IV. CONCERNS ABOUT HEALTH EFFECTS AND OPT-OUT PROVISIONS A. Concerns about Health Effects In the Straw Proposal, the Department recognized the possibility that some electricity customers would question the effects of radio frequencies ("RF") on their health. Straw Proposal at 31. **The Department received numerous comments from individuals and organizations on the potential health effects resulting from exposure to RF emitted by certain electric meters7** (HaltMASmartMeters Comments at 1, 3; StopSmartMetersMassachusetts Comments at 1-3; EMR Policy Institute ("EMRPI") Comments at 1-2; Massachusetts Association for the Chemically Injured, Inc. ("MACI") Comments at 1-2; American Academy of Environmental Medicine ("AAEM") Comments at 1-3; David Carpenter Comments at 4). Additionally, many participants addressed this issue during the panel hearing session on Health and Safety held on February 27, 2014 (Tr. 4, at 935-1074). **Several commenters assert that RF-emitting meters pose a health threat to the public, and particularly to subsets of the population that report chemical and electrical sensitivity** (Tr. 4, at 949, 956-958, 986, 994; MACI Comments at 1-2; AAEM Comments at 1-2; HaltMASmartMeters Reply Comments at 6). These commenters argue that **sensitive populations may be unable to live in their** homes with the deployment of RF-emitting meters (StopSmartMetersMassachusetts Comments at 4; HaltMASmartMeters Comments at 1; MACI Comments at 5). **Commenters contend that current Federal Communication Commission ("FCC") standards to which RF-emitting meter manufacturers are required to adhere are outdated, and that studies that indicate meter adherence to these standards is inadequate** (StopSmartMetersMassachusetts Comments at 4-5; HaltMASmartMeters Reply Comments at 5; MACI Comments at 5**). These commenters argue that FCC standards only account for thermal effects and do not address non-thermal effects** (Tr. 4, at 965-966; AAEM Comments at 2;

[6] The Texas Commission Report was compiled by a security analyst with no public health expertise. A rebuttal of that document is available here: https://www.eiwellspring.org/smartmeter/ACC_TPUCrebuttal.htm and here: https://smartgridawareness.org/2014/01/16/rebuttal-texas-smart-meter-report/

[7] Exponent is another company engaged in product defense. Exponent and Gradient provided testimony in favor of smart meters in many proceedings across the US, and were also referenced by the National Council of State Legislatures.

HaltMASmartMeters Reply Comments at 5).8 **Additionally, they assert that studies evaluating RF exposure, including those on which FCC bases its standards, have not looked specifically at RF-emitting meters, have rejected critical variables such as the effects of whole body exposure, have not evaluated RF exposure impacts on children, and are inherently flawed in their research methodologies** (StopSmartMetersMassachusetts Comments at 3-5; HaltMASmartMeters Reply Comments at 5; MACI Comments at 5-6**). Gradient Consulting ("Gradient") disagrees and asserts that existing standards adequately protect public health (Tr. 4, at 945, 977-979). Gradient argues that standards bodies establish these standards through an evaluation of peer-reviewed, reproducible science, evaluating both thermal and non-thermal effects of RF exposure (Tr. 4, at 945, 977-979). Gradient also notes that a number of national and international standards bodies agree on the adequacy of existing RF standards, and that a number of these bodies have recently reviewed their standards (Tr. 4, at 978, 1012).**9 Commenters cite a number of studies that identify both **thermal and non-thermal effects of RF exposure**, concluding that there is evidence for adverse health effects (Tr. 4, at 958; MACI Comments at 4; David Carpenter Comments at 2-4). MACI and HaltMASmartMeters argue that the health impacts of RF-emitting meters are not adequately settled scientifically and that further study and research are necessary (MACI Comments at 4-5; HaltMASmartMeters Reply Comments at 6). AAEM contends that **studies exist that correlate RF exposure with cancer, neurological disease, reproductive disorders, immune dysfunction, and electromagnetic hypersensitivity** (AAEM Comments at 1-3). Commenters also note that the World Health Organization ("WHO") recently classified RF energy as a class 2B possible carcinogen, as evidence of the detrimental effects of exposure to emissions from RF-emitting electric meters (Tr. 4, at 947; StopSmartMetersMassachusetts Comments at 2-3; HaltSmartMetersMA Reply Comments at 5). **Gradient asserts that national and international studies have not shown a causal link between RF exposures and any detrimental health effects, including those identified above** (Tr. 4, at 943, 986, 1069). MACI and David Carpenter assert that **cumulative and aggregate exposure is a critical factor for which existing studies and standards do not account**, and that the deployment of new RF-emitting electric meters will add to the existing RF baseline in the environment, further compromising the health of sensitive individuals (MACI Comments at 4; David Carpenter Comments at 4-6). They also maintain **that RF exposure from banks of meters, such as in a large apartment building, is particularly problematic given the potential for higher levels of RF emissions and that studies have not evaluated whether this type of installation is in compliance with RF standards** (Tr. 4, at 997, 1032, 1033; Fournier Reply Comments at 11). **Gradient states that RF exposure from meters at a distance of four feet is hundredths of a percent of the FCC exposure standard, and thus unlikely to cause any adverse health impacts (Tr. 4, at 1005-1006)."**

Appendix 1 Page29 Footnote 8 "Thermal effects refer to body tissue heating and associated tissue damage, whereas non-thermal effects refer to all other biological impacts (Tr. 4, at 943)."

MA DPU 12-76-B is inaccurate, misleading, and misrepresents the scope and protection of FCC limits.

In 2014, public commenters informed the MA DPU that safety claims smart meters, including portraying FCC limits as protective of non-thermal impacts, voiced by the MA DPU in policy-making, were inaccurate.

Scope of FCC Guidelines Court Ruling, Relative to Misrepresentation of Fact in MA DPU 12-76-B

The Court issued the following statement regarding the FCC in its decision:

".. we find the Commission's order **arbitrary and capricious in its failure to respond to record evidence that exposure to RF radiation at levels below the Commission's current limits may cause negative health effects** unrelated to cancer. That failure undermines the Commission's conclusions regarding the **adequacy of its testing procedures**, particularly as they relate to **children,** and its conclusions regarding the implications of **long-term exposure to RF radiation, exposure to RF pulsation or modulation, and the implications of technological developments that have occurred since 1996,** all of which depend on the premise that exposure to RF radiation at levels below its current limits causes no negative health effects. Accordingly, we find those conclusions arbitrary and capricious as well. Finally, we find the Commission's order arbitrary and capricious in its complete failure to respond to comments concerning environmental harm caused by RF radiation."

1. "adequacy of its testing procedures"

When faced with questions concerning the safety of wireless smart meters, the industry and regulators measured meter transmissions in isolation, in laboratory settings, and/or averaged the peak exposures (MA DPU 12-76-8 Footnote 47 Page 45), evaluating readings against theoretical FCC guidelines, which have now been remanded to the FCC by the court.[8]

2. "children"

In her March 21, 2014 reply testimony to the MA DPU, Janet Newton of the EMR Policy Institute noted that the National Academies of Science had identified lack of research on the impacts of children as one of twenty short-comings in the research record.

3. "conclusions regarding the implications of long-term exposure to RF radiation"

Long term, involuntary, ubiquitous exposure to RF, including night-time exposures, is introduced into communities by the deployment of wireless utility meters and infrastructure. The Court remanded this issue to the FCC. Janet Newton's testimony included the National Academies of Science identifying lack of adequate study of long term exposure as a research deficit.

[8] Issues regarding the safety of smart meters appear to include both the transmission of radio frequencies through the air, and transmissions riding on the household electrical service. See: Pre-Filed Testimony by Erik S. Anderson, P.E., C.F.E.I. on behalf of Warren Woodward, April 3, 2017; available at http://docket.images.azcc.gov/0000178630.pdf and based upon a "Report on Examination of Selected Sources of EMF at Selected Residences in Hastings-on-Hudson" by Isotrope Wireless, dated November 23, 2013: "There was a substantial conducted 915 MHz component on the power line." Report available at: https://skyvisionsolutions.files.wordpress.com/2014/04/report-on-examination-of-selected-sources-of-emf-at-selected-residences.pdf.

4. "exposure to RF pulsation or modulation"

This was also noted in Janet Newton's testimony referencing the National Academies report. The court remanded this issue to the FCC.

5. "the implications of technological developments that have occurred since 1996"

The court has identified new applications for wireless technologies, introduced since 1996, which includes smart meters, as an area of inadequate health and safety inquiry, in its remand to the FCC.

6. "two wrongs do not make a right."

Regulators, health officials, legislators, and other decision makers have received reports from the public about health harm associated with wireless exposures, including the acute onset of electromagnetic hypersensitivity associated with wireless utility meters.

While organizations including the MA DPU disregarded the concerns on the basis of FCC guidelines, the court has ruled that **"The factual premise—the non-existence of non-thermal biological effects—underlying the current RF guidelines may no longer be accurate."**

6. "scientific evidence and evidence of existing sickness"

The court ruled that FCC failure to address reports of harm was arbitrary and capricious, and not science-based. Testimony submitted to the FCC for consideration of the need to review safety standards included reports of acute onset of electromagnetic hypersensitivity (also known as radiation sickness) associated with the installation of smart meters and smart grid infrastructure.

7. "record evidence that exposure to RF radiation at levels below the Commission's current limits may cause negative health effects unrelated to cancer."

The court ruled, "The factual premise—the non-existence of non-thermal biological effects—underlying the current RF guidelines may no longer be accurate."

This directly contradicts MA DPU 12-76-B implications that the FCC guidelines encompass non-thermal effects, and that the guidelines are adequate.

8." that its current regulations are inadequate or the factual premises underlying its prior judgment have eroded, it must offer more to justify its decision to retain its regulations than mere conclusory statements. Rather, the agency must provide "assurance that [it] considered the relevant factors," and it

must provide analysis that follows “a discernable path to which the court may defer.”

In addition to the FCC, other agencies have been presented with public concern and reports of harm indicating that FCC regulations are inadequate, including the MA DPU (for example, MA DPU 13-83).

The court noted, “Petitioners also point to approximately 200 comments submitted by individuals who advised the Commission that either they or their family members suffer from radiation sickness, “a constellation of mainly neurological symptoms that manifest as a result of RF[] exposure.” Pet’rs’ Br. at 30–31, 30 n.99.” (Within the FCC inquiry there are reports of harm to citizens associated with the installation of smart meters, including the acute onset of electromagnetic hypersensitivity.)

At this time, the standards remain in effect, but the court has indicated that there is a question as to whether FCC assumptions and claims about safety are evidence based.

The MA DPU’s Portrayal Of “Alleged” Health Concerns Associated With Non-Thermal Impacts Cannot Be Demonstrated To Be Evidence-Based

Claims that smart meters are safe, based on FCC guidelines, could be described as “alleged,” as the court has now demanded further scrutiny.

Misrepresentation of fact regarding RF safety claims may be actionable in tort law.

The FCC must prove that its decision making was reasoned.

FCC assumptions and safety claims are also contradicted by both FCC orders 19-126 and 19-176.

Implications Of FCC 19-126, And 19-176 Resolution Of Notice Of Inquiry, Second Report And Order; Notice Of Proposed Rulemaking, And Memorandum Opinion And Order Adopted: November 27, 2019; Released: December 4, 2019

Source: https://docs.fcc.gov/public/attachments/FCC-19-126A1.pdf
Page 56, and footnotes starting on page 57

In addition to the August 13 court ruling regarding the FCC's decision not to revisit its radiofrequency exposure limits, the FCC's 19-176 Notice of Proposed Rulemaking raises concerns regarding the Massachusetts Department of Public Utilities' claim that FCC guidelines are adequate because they are protective of non-thermal effects. It also negates the FCC's denial of non-thermal effects.

Order FCC 19-126 **recognizes biological and adverse effects below the heating threshold**. The document notes it is necessary to determine guidelines "aimed at prevention of electrostimulation due to RF electric fields induced internally within the human body in the presence of an external electromagnetic field outside the body—the primary human reaction to electromagnetic field energy at these frequencies...., [the goal being that] the internal electric field avoids neural stimulation **effects unrelated to heating**.328"

The FCC noted that these reactions occur instantaneously.

The FCC's current method of averaging exposure levels over 30 minutes – which obscures pulsation effects, (utilized to justify smart meter safety)—ignores RF electric fields induced internally within the human body in the presence of an external electromagnetic field outside the body.

The FCC noted, in the range between 3 Hz and 10 MH, "[a]dverse neural stimulation effects …such as perception of tingling, shock, pain, or altered behavior due to excitation of tissue in the body's peripheral nervous system."

As the FCC stated in its own admission, externally generated EMF interferes with internal electrical and biological responses. The adverse impact of *pulsed* RF/EMFs on physiology has not been addressed by the FCC, or the MA DPU, as noted by the court ruling.

In its decision by the Court, safety testing procedures were remanded to the FCC.

Misrepresentation of Fact by MA DPU: 12-76-B

In its MA DPU order 12-76-B, the MA DPU stated, "Evidence from peer-reviewed studies, determinations by standards bodies, and conclusions from other jurisdictions do not support a finding that the FCC guidelines are inadequate to protect against either thermal or non-thermal effects of RF emissions."

My understanding is that "There are three types of misrepresentation in contract law: innocent misrepresentation, fraudulent misrepresentation, and negligent misrepresentation."

Whether the misrepresentation in MA DPU 12-76-B of the FCC limits including non-thermal effects was sourced from "another commenter," Peter Valberg, or Gradient, (none of whom submitted written testimony) or from the MA DPU staff, the fact remains that the MA DPU published a claim about health and safety that is unsubstantiated and misleading, and not evidence-based.

Not correcting the misrepresentation made by the MA DPU about the scope of FCC guidelines to the public, to investor-owned utilities, and to investors enables the DPU to potentially defraud ratepayers and investors in Massachusetts and elsewhere, regarding the costs and benefits of future investments. [9]

Despite public testimony regarding the misrepresentation of FCC limits dating back to 2014, the MA DPU has taken no corrective action.

The court's ruling against the FCC affirms the validity of citizen testimony given back in 2014, regarding the misrepresentation of MA DPU 12-76-B, as well as other concerns brought before the MA DPU, as outlined in the order itself.

Consideration of Adequacy of Safety Testing Procedures for Smart Meters

By way of background, the Court ruling against the FCC provided an overview of the FCC actions that resulted in the court's decision:

The court described the FCC's actions:

"The Commission (FCC) divided its notice of inquiry into five sections. In the first section, it sought **comment on the propriety of its exposure limits for RF radiation**, particularly as they relate to device use by children. Id. at 3,575–80. In the second section, the Commission sought comment **on how to better provide information to consumers and the public about exposure to RF radiation and methods for reducing exposure.** Id. at 3,580–82. In the third section, the Commission sought comment on **whether it should impose additional precautionary restrictions on devices and facilities that are unlikely to expose people to RF radiation in excess of the limits set by the Commission's guidelines**. Id. at 3,582–85. In the fourth and fifth sections, the Commission sought comment on **whether it should change its methods for determining whether devices and facilities comply with the Commission's guidelines**. Id. at 3,585–89. The Commission explained that it was issuing the notice of inquiry in response to changes in the ubiquity of wireless devices and in scientific standards and research since 1996. In December 2019, the Commission issued a final order resolving its 2013 notice of inquiry by **declining to undertake any of the changes contemplated in the notice of inquiry.** See 2019 Order, 34 FCC Rcd. at 11,692–97

"…the Commission's decision to terminate its notice of inquiry must be "reasoned" if it is to survive arbitrary and capricious review**. When an agency in the Commission's position is confronted with evidence that its current regulations are inadequate or the factual premises underlying its prior judgment have eroded, it must offer more to justify its decision to retain its regulations than mere conclusory statements."**

In the ruling against the FCC, the court noted " we find the Commission's order **arbitrary and capricious** in its failure to respond to record evidence that exposure to **RF radiation at levels below the**

[9] Investor-owned utilities in MA also serve portions of Rhode Island, Connecticut, New Hampshire and New York.

Commission's current limits may cause negative health effects unrelated to cancer. That failure undermines the Commission's conclusions regarding the adequacy of its **testing procedures**…."

Testing procedures for smart meter safety have exclusively on engineering measurements, rather than scientifically investigating whether or not and/or how biology is being impacted by the environmental stressor of RF exposure introduced by the meter technology.

Emerging Research: "Effects of radiofrequency electromagnetic radiation on neurotransmitters in the brain"

Recent review article, "Effects of radiofrequency electromagnetic radiation on neurotransmitters in the brain" has just been published. http://journal.frontiersin.org/article/10.3389/fpubh.2021.691880/:

"**Many studies have shown that the nervous system is an important target organ system sensitive to EMR.** In recent years, an increasing number of studies have focused on the neurobiological effects of EMR, including the metabolism and transport of neurotransmitters. As messengers of synaptic transmission, neurotransmitters play critical roles in cognitive and emotional behavior.[ ], the effects of EMR on the metabolism and receptors of neurotransmitters in the brain are summarized. "

"Discussion" " **It is known that the response to non-thermal EMR depends on both power density and duration of exposure.** Some studies show no effect under fixed short-term EMR exposures, but this does not imply no effects under longer-term exposures (5, 124). In a recent review, Leach et al. analyzed **2,653 papers captured in the database examine the bioeffect outcomes in the 300 MHz−3 GHz range. The results showed three times more biological "Effect" than "No Effect" papers (125).**."

"… some studies have suggested that the **calcium activation** could be the initial event leading to alteration in protein configuration, followed by generation of ROS and ultimately activation of the molecular apoptosis pathways (101). Lushchak et al. reported that **EMR exposure may firstly produce the free radicals in the brain** and later they are converted to ROS (126). The elevation of ROS level can attack various biomolecules in the cell. The raised ROS can also in turn trigger calcium release, and then **activate the genetic factors leading to DNA damage** (110). Any alteration in gene and enzyme levels, may result in the activation of downstream signaling (114), particularly the mitochondria-dependent caspase-3 pathway can cause the apoptosis of neurons (113, 127), which would lead to altered behavioral manifestations and pathophysiological changes in the brain**. In a word, EMR exposure does increases the intracellular calcium and the formation of ROS, which would alter the cellular function eventually and lead to numerous biological effects including neurotransmitter imbalance**."

Environmental Impacts of Non-ionizing EMFs

In addition to harm to human health, evidence of environmental harm is being increasingly documented by independent, non-industry researchers. This research deficiency holds implications for farming and food supply assets and potential financial harm to industries in Massachusetts.

Effects of non-ionizing electromagnetic fields on flora and fauna, part 1. Rising ambient EMF levels in the environment B Blake Levitt , Henry C Lai , Albert M Manville

Effects of non-ionizing electromagnetic fields on flora and fauna, Part 2 impacts: how species interact with natural and man-made EMF B Blake Levitt , Henry C Lai , Albert M Manville

In particular, the court ruling against the FCC noted, "The court also found that the FCC 2019 decision was arbitrary and capricious in its failure to respond to comments concerning **environmental harm** caused by RF radiation."

Implications/Conclusions

1. **Opt Out Policies to Address What the MA DPU Has Characterized As "Alleged" Are Unreasoned, A Moratorium on Further Investment in Wireless is Warranted** As a result of the court's ruling on the FCC case, and especially in light of the FCC admission of non-thermal effects in 19-126, as a responsible future planning scenario, the MA DPU could halt plans for deployment of wireless and powerline smart meters, until the FCC remand is addressed.

2. **Opt Out Policies to Address What the MA DPU Has Characterized As "Alleged" Is Unreasoned, Other Technology Choices Should be Promoted** As a result of the court's ruling on the FCC case, the MA DPU could modify its order and solicit plans for wired, non-emitting technology that does not utilize the airwaves or the household wiring and utility grid as an antenna. One could argue that continued expense associated with not recognizing the FCC court decision would be against the public interest, and irresponsible to both ratepayers and investors.

3. **Ratepayers Need Protection from Unresponsive Policy Making** If the MA DPU continues to direct investor-owned utilities to deploy smart meters, policies should be in place to protect ratepayers from costs associated with inadequate scrutiny of both health and environmental impacts.

4**. Ratepayers Need the Right to Opt In, With Informed Consent** Due to emerging questions regarding public safety, until the FCC conducts a review of the science in accordance with the law, smart meters, including digital meters, should only be offered as an "opt-in" option with informed consent, after full disclosure about the FCC court case and findings.

5. **The MA DPU Should Address Misrepresentation of Safety** Considering the FCC court ruling, if the MA DPU and NGrid misrepresented the safety of wireless smart meters to the Worcester community and others, including the MA DPU's inaccurate claim of FCC protection from non-thermal effects,

- the DPU should clarify to the public that MA DPU claims about FCC guidelines encompassing non-thermal effects were misleading, and inaccurate

-the DPU should inform all customers who currently have smart meters, including those auto-enrolled in the Worcester pilot program, that safety claims regarding the meters are under review, and that historical claims are not substantiated

- The DPU can specify that ratepayers can request and receive an analogue meter at no charge, *especially if they are experiencing adverse health effects.*

The MA DPU and National Grid could extend the Worcester pilot program to generate data to model the cost-benefit -analysis of installing smart meters, and then needing to address overlooked health and safety accommodation issues.

5. **The Grid Modernization Business Case Needs to Be Re-evaluated for the Possible Futures Scenario of Needing to Provide Protection in Multi-Family Dwellings, and Other Technical Challenges** In order MA DPU 20-69, the regulator failed to address concerns voiced by public testifiers about the exposures created in multi-family homes, proximal to banks of meters, or from neighboring meter emissions (noted in oral and written testimony of Helen Walker, Jean Lemieux, and others)

The MA DPU could instruct utilities to provide data regarding the potential impact of needing to protect health-vulnerable ratepayers in multi-family homes, in the future. Utilities could be instructed to provide a break- down of the percentage of meters in their service territory housed in multi-family dwellings, or in close proximity to other occupied premises (for example, on a garage proximal to a bedroom.)

Will this accommodation interfere with the functioning of the mesh network, or will the mesh network or powerline choice render accommodation not possible?

6. **Emerging Accommodation Issues Created by Willful Reliance on Inadequate FCC Guidelines Require Consideration, Including Specification of the Opt Out Meter Technology, and Shielding**

Many commenters, including MACI, Massachusetts Association for the Chemically Injured, HaltMAsmartmeters, Stop Smart Meters MA, Last Tree Laws, and individual testifiers raised concerns over the years about the impact of increased radio frequency exposures for health vulnerable populations on housing accessibility.

If the issue of health effects is inadequately vetted by regulators, and the installation of smart meter s and smart grid infrastructure is eventually found to interfere with the protections of Fair Housing, ADA, and Rehabilitation Act, because it was ignored now, how will costs for remediation be allocated?

The MA DPU failed to address these complexities in its instruction to utilities to file opt out proposals and opt out fees, treating health concerns as “alleged.” The MA DPU reduced the responsibility of the investor-owned utilities to simply offering an opt out policy and tariff, without specifying the type of meter required (analogue), and without addressing multiple dwellings and neighboring emissions.

The MA DPU could require utilities to re-file smart meter plans that incorporate expenses for accommodation, which includes professional shielding, for example, as provided in Sweden and other countries, to protect health vulnerable individuals.

7. The Proposed Opt Out Provision Discussion in Inadequate, Except in the Case of a Single Family Home Without Neighboring Meters Transmitting Nearby, Therefore the Business Case and Financial Forecasting is Incomplete, and the Question of Liability May Follow

The opt out provisions specified by the MA DPU and put forth by the utilities do not address any of the challenges of neighboring meters and multi-family homes.

This oversight may cause the entire smart meter deployment further complications and unaccounted-for costs down the road if the MA DPU is not able to justify claims of safety, particularly for a mesh network. Shielding and additional remediation will be necessary.

In addition, there will be questions regarding liability for health damages if the smart meter industry, the FCC, state utility regulators, and utilities willfully fail to address reports of harm and misrepresentation in response to the recent court action.

8. To Enable Data-Driven Decision Making, the MA DPU Should Quantify Populations that Have Been Identified as At Risk

Health care practitioners monitoring their patients over time noted a dramatic downturn in the condition of individuals with Lyme, Parkinson's, MS, Multiple Chemical Sensitivity and other environmental and chronic illnesses, following meter installations. Cardiac, neurological, and endocrine concerns, fertility issues, brain fog, and sleep disturbance have been reported, as well as research demonstrating increased risk for cancer.

More importantly, researcher Beatrice Golumb reports that the installation of a wireless smart utility meter is the single most common trigger for the onset of sensitivity to non-ionizing radiation, as she noted in her testimony submitted to the MA DPU for docket 20-69.

In addition to quantifying the risks of installations on or near multi-family dwellings, the MA DPU and health agencies could also quantify the cost-benefit implications of needing to accommodate health-vulnerable populations, as well as the health care savings associated with providing an EMF-protected environment. (This cost-benefit analysis is a common practice when discussing fossil fuels and particulate air pollution.)

The MA DPU Could Change Course

The MA DPU could adjust its course, and stop describing concerns as "alleged."

The MA DPU could stop referencing irrelevant engineering measurements, and treating the health and safety issue as a public relations concern rather than a science-based question, In light of tremendous suffering and harm to a portion of the population.

The court ruled:"The factual premise—the non-existence of non-thermal biological effects—underlying the current RF guidelines may no longer be accurate."

The court also ruled. "The Commission explained its decision by asserting that "[n]o new information has been submitted that would provide a convincing argument for modifying the extrapolation factor… at this time." Id. (internal alterations omitted). We rejected that explanation as conclusory and unreasoned. Id"

The court ruling against the FCC has affirmed many of the concerns brought before the MA DPU by the public over the last 7 years, dating back in 2014.

Had regulators and the industry heeded public testimony 7 years ago, initiatives in clean energy technology could have been 7 years ahead in adjusting to evidence that radio frequency exposure guidelines are inadequate.

In the words of the court, the MA DPU, like the FCC, was "**confronted with evidence that its current regulations are inadequate or the factual premises underlying its prior judgment have eroded."**

The MA DPU and utility regulators and decision-makers across the country could have acted nearly a decade ago on evidence that RF exposure limits are not protective enough, *especially for smart meters.* Electricity, water and gas are essential services provided by monopoly corporations. The standard of care in responsible policy-making must be greater than the industry practice of hiring marketers and mercenary tobacco scientists.

These concerns have also been raised in countless proceedings across the country, as ratepayers became injured as the result of wireless meter installations in other jurisdictions.

In recognizing the significance of the Court ruling against the FCC, for the MA DPU, environmental groups, utilities, and decision makers *to not act is unreasoned.*

Respectfully Submitted,

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