

Dear North Carolina Utilities Commission and Public Staff:

I am writing to object to Duke Energy's lack of definitive advanced metering system (AMI) opt-out procedure information in its 2015 Smart Grid Technology Plan (SGTP) update, as required by the North Carolina Utilities Commission (UC) in its November 5, 2015 Order for Approving Smart Grid Technology Plans. With Duke Energy planning to install almost 200,000 AMI meters, with deployment now underway, it is imperative that citizens understand the financial repercussions that they may be facing once Duke receives approval for a tariff levied against those who do opt out. People opt out for a variety of reasons, all of which should be honored without penalty of a monthly tariff or an excessive one-time tariff such as those proposed by Duke for customers in Ohio (discussed below). Those who opt out for health reasons especially should not be penalized. It is imperative that the Public Staff and the UC require Duke Energy to immediately make public their monthly and one-time tariff proposals for the reasons discussed below, and the UC is urged to reject any proposed monthly tariffs or unreasonably high one-time tariffs against North Carolina's citizens.

### AMI and Health Concerns

Duke Energy has repeatedly stated that there are no health concerns related to AMI and the associated radiofrequency (RF) output, and that RF output falls within FCC guidelines. The first assertion is patently false based on the published literature authored by researchers not affiliated with the energy sector, and the second assertion is correct but profoundly flawed. I will address both of these issues below.

### *Electromagnetic Hypersensitivity (EHS)*

Everyone experiences physical impacts from electromagnetic fields (EMF), or radiofrequency (RF) fields. For some people, those impacts are not noticeable, but for others they are debilitating to the point of physical collapse and inability to function. For those like myself who experience noticeable impacts, EHS is a serious problem and we take measures to reduce our exposure, such as avoiding wireless internet communication, cell phones, cordless phones and more. In my case, I am a professor of music at the University of North Carolina at Chapel Hill. When EHS fully struck me I was the Principal Horn of the North Carolina Symphony Orchestra and was severely debilitated with loss of coordination and balance, blurred vision, sharp pin-like pains in the head, headaches, irregular heartbeat, respiratory distress, abdominal pain, memory loss, irritation, and depression. I almost lost my career. Fortunately, UNC created a wi-fi-free, EMF-free environment so that I could continue working, performing and teaching.

I developed EHS after moving into a recently constructed home. After about 6 months, my wife and I started noticing some of the symptoms I mentioned above, with me being hit harder than my wife. My symptoms occur in a dose-response relationship (increasing with time and

proximity), and if a person reaches the EHS tipping point into disability, the response time decreases and the magnitude of response increases. It took us a long time to figure out that the TV/Radio tower across the street from our home and the wiring in our home were making us sick. After much research, my wife and I sold the home near the radio tower and moved to another, where we have largely recovered our health.

Unfortunately, a radiation producing meter was put on my new home without my knowledge and I began to feel terrible, lose sleep, etc. When I took EMF measurements I found the new electrical meter, and immediately requested that Duke Energy remove it. It took a long time, months, to negotiate with Duke to have it removed, but I felt better immediately once it was. After approximately a year, I began to feel terrible again, and I took EMF measurements and discovered that Duke, without my knowledge or consent, AGAIN installed a radio/microwave producing meter on my home. It took another month or so to get that meter removed, and my health, relationships and work suffered in the interim.

Fighting with Duke twice to remove these health hazards was painstaking. An AMI meter would be devastating to me. After recovering from my first debilitating experience, I put up a website dedicated to helping others with my condition. I regularly get calls from all over North Carolina and from around the country, with people sharing stories similar to mine, where they notice a significant downturn in health when an AMI meter is placed on their homes. Like me, they have been battling their electric provider and they come to me for advice about getting their utility company to remove their AMI meters.

### *The U.S. Government Takes EHS Seriously*

My experience is not unique and in fact EHS is becoming more common as the intensity of EMF/RF exposure grows. The United States and Sweden, for example, recognize EHS as a disability. [The United States Access Board](#), who developed the Americans with Disabilities Act standards, states that:

**The Board recognizes that multiple chemical sensitivities and electromagnetic sensitivities may be considered disabilities under the ADA** if they so severely impair the neurological, respiratory or other functions of an individual that it substantially limits one or more of the individual's major life activities. The Board plans to closely examine the needs of this population, and undertake activities that address accessibility issues for these individuals.

**The Board plans to develop technical assistance materials on best practices for accommodating individuals with multiple chemical sensitivities and electromagnetic sensitivities. The Board also plans to sponsor a project on indoor environmental quality.** In this project, the Board will bring together building owners, architects, building product manufacturers,

model code and standard-setting organizations, individuals with multiple chemical sensitivities and electromagnetic sensitivities, and other individuals. This group will examine building design and construction issues that affect the indoor environment, and develop an action plan that can be used to reduce the level of chemicals and electromagnetic fields in the built environment.

A person who is already struggling with EHS should not have the added burden of protecting their lives and their homes from the utility companies and paying what amounts to extortion to avoid an AMI meter. I don't use the word "fair" lightly, but in the case of paying to avoid an AMI meter, as proposed by Duke Energy, there is no fairness for the citizen.

### *State Legislatures are Taking the Health Threats of Smart Meters Seriously*

A number of state legislatures are considering various types of AMI meter opt-out legislation. Vermont's legislature is the first to eliminate any type of fee or tariff associated with AMI meter opt-out, including removal: [§ 2811. Smart meters: customer rights; reports.](#)

### *Published Literature Related to Health Impacts of EMF/RF*

There is growing evidence from non-energy sector researchers that EMF/RF can cause profound harm. The amount of published literature is extensive, but I will keep what I present minimal for now and will be happy to provide more information as needed.

Dr. Igor Belyaev et. al. provided an excellent overview of research and government-related actions protecting the citizenry in the October 2015 article, [EUROPAEM EMF Guideline 2015 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses, published in Reviews on Environmental Health](#) (attached). I strongly encourage the Public Staff and the UC Commissioners to read this article and consider it in their deliberations.

Dr. Belyaev references another very recent (2015) and important publication in *Electromagnetic Biology and Medicine* by Dr. Igor Yakymenko, et. al. entitled [Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation](#). Dr. Yakymenko reviews 100 peer-reviewed studies and finds that 93 have identified adverse biological effects of EMF/RF.

Because these articles are so comprehensive, I will refrain at this point from discussing them and attaching many of the referenced articles. I sincerely request that the UC and the Public Staff include these articles and supporting documentation in their investigation.

### *Citizen Letters of Objection Regarding AMI Meters*

While published literature is given heavier weight, citizen-registered reports of adverse health impacts and objections to AMI meters can't be ignored. While these concerns are considered anecdotal data, there is so much anecdotal data that heightened scrutiny of the health impacts

of AMI meters, and the appropriateness of tariffs, must be viewed from that point of view. Accordingly, I request that the Public Staff and UC consider the citizen objections filed in Ohio (tariff proceedings discussed below) and include those in its deliberations, as they are representative of what can be expected in North Carolina.

The Ohio comments can be viewed here: [PUC of Ohio, DUKE ENERGY OHIO INC.](#)

This Ohio comment in particular emphasizes the coercion exerted by Duke and powerlessness of the average citizen who attempts to reject Duke Energy's AMI meters: [Public comment in opposition, filed by consumer Leo Gray](#). As in Ohio, I am receiving reports in North Carolina of these types of heavy handed, threatening tactics in relation to the installation of AMI meters by electrical cooperatives.

### The Current FCC Standards are Inappropriate

Duke Energy relies on the FCC Standards to make the case that AMI is safe. The FCC standards are inappropriate for application to AMI-type EMF/RF because the FCC standards are heat-based standards meant to ensure that humans are not thermally harmed by RF. The RF from AMI meters and other devices do not produce heat but do cause harm in non-thermal ways, as discussed in the Published Literature section of this letter. In short, the FCC standards are a dangerous mismatch in the case of non-thermal RF, and the need for appropriate non-thermal human safety standards is imperative. The Environmental Protection Agency (EPA) powerfully summarized these concerns in its July 16, 2002 letter, which you can view here: [EPA position on FCC standards](#).

A considerable amount of independent research has shown, repeatedly, that non-thermal effects are significant from wireless devices despite well-funded opposition from the telecom industry that tries to discredit and minimize any health risk caused by their products. The proof is with the insurance agencies: Lloyd's of London Insurance won't cover injuries caused by EMF/RF generated by AMI, Wi-Fi or Smart phones and excludes all wireless radiation hazards. Please view [A&E Insurance for Architects & Engineers](#) and [Lloyd's of London excludes coverage for RF/EMR claims](#) for documentation and explanation.

Insurance company Swiss Re won't insure mobile phones for health risks. The rating of 33 is the most dangerous and highest risk rating possible assigned by Swiss Re. Asbestos, endocrine disrupters, nanotechnology and fuel additives are considered to be more "insurable" than cell phones and EMF related products and infrastructure. Endocrine disrupting chemicals (EDC) 20.0; Asbestos (re-emerging risk) 21.0; Methyl Tertiary-Butyl Ether (MTBE additives to fuel) 22.0; Nano Technology 23.0; Genetically Modified Crops 24.0; Animals or animal products and feedstuffs infected with Bovine Spongiform; Encephalopathy (Mad Cow Disease) 26.5; Electromagnetic Fields (EMF), Electro-smog 27.0 (see [PUC Docket 2011.262 Friedman on Remand](#), p. 9, paragraph 9.18, as well as other portions of this document for examples of insurance industry rejection of EMF/RF producing technology.)

The Alaska Supreme Court (Court) upheld the decision of the Alaska Workers' Compensation Board (Board) awarding an AT&T equipment installer 100% disability as a result of his workplace electromagnetic field exposure to radiofrequency (RF) radiation. The RF radiation exposure level in question was well below the FCC's recognized level of "thermal" harm. The FCC contends that there is no scientifically established harmful health effects below the thermal threshold. The Board decision agrees with the medical experts who found adverse health effects from this RF radiation exposure which occurred above the FCC safety limit but **below** the thermal threshold. Please see [Alaska Supreme Court Upholds Award for RF Radiation Injury Below Thermal Exposure Level](#).

### Tariffs Duke Energy Proposed in Ohio

It is clear that RF/EMF from AMI and other devices is a health hazard based on the scientific research, insurance industry positions, the above-mentioned court ruling and public comments, and that the FCC standards do not provide protection. Combine this information with the fact that the United States Government recognizes the non-thermal health threats from RF/EMF, and the idea that Duke would require a tariff so that people can protect themselves, is clearly corporate greed at its worst.

Duke Energy has proposed to levy the following tariffs on the citizens of Ohio (See December 15, 2015, Public Utilities of Ohio Publication, [Reply Brief By The Office Of The Ohio Consumers' Counsel](#), which is a state government agency). These proposed tariffs are utterly astonishing and exceptionally burdensome:

Duke initially proposed a one-time charge of \$1,073.10 for residential customers who do not have (or want) an advanced meter.<sup>6</sup> In written testimony, Duke witness Justin C. Brown revised the one-time charge to \$426.04, due to reduced information technology ("IT") costs compared to the original estimate in the Application.<sup>7</sup> Duke proposes that these IT costs be deferred and collected in Duke's next distribution base rate proceeding.<sup>8</sup> If the IT costs are deferred to Duke's next base rate proceeding, Duke's one-time charge would be \$126.70.<sup>9</sup>

Regardless of the amount, the one-time charge would be paid by all customers who have a traditional meter, even those who kept their existing traditional meter and never had an advanced meter.<sup>10</sup> The deferred costs would be paid by all of Duke's electric customers, not just by customers who choose not to have an advanced meter installed.<sup>11</sup> In addition to the one-time charge, Duke has proposed charging customers who have a traditional meter \$40.63 per month for meter reading,<sup>12</sup> even during months when the meter is not read.<sup>13</sup>

Duke has the burden of proof in this case and has not justified its alleged costs for either the one-time charge or the monthly meter reading charge, either through its Application

or its testimony,<sup>14</sup> or in its initial brief.<sup>15</sup> For this reason, the PUCO Staff, Ohio Partners for Affordable Energy (“OPAE”), and the Office of the Ohio Consumers’ Counsel (“OCC”) oppose Duke’s proposed charges.

The Ohio Consumers’ Counsel Reply Brief further highlights Duke’s profound shortcomings when trying to justify its proposed tariffs:

As noted in OCC’s brief,<sup>22</sup> Duke’s Application and testimony offer no justification for either the one-time charge or the monthly meter reading charge. Duke’s Application and testimony both vaguely describe the costs associated with customers choosing to have a traditional meter. The attachments to the Application and the testimony only summarize the costs, with no information regarding how they were derived. Duke’s Application and testimony provide no support for the alleged costs.

Duke’s brief also contains no support for the charges. Duke merely cites to portions of Mr. Brown’s testimony, and occasionally makes conclusory statements concerning the testimony of the PUCO Staff’s witnesses and OCC’s witness with little or no citation to the record to support these statements. Parading “a team of twenty people”<sup>23</sup> into the hearing also would not explain Duke’s costs, if their testimony were as inadequate as the Application and Mr. Brown’s testimony. Duke is in “the best possible position to know what costs were incurred internally to create an opt-out program.”<sup>24</sup> But Duke has not placed anything into the record of this case to show the specifics of each component of those costs and how they were derived.

The UC and Public Staff will also see that Duke has not been accurate in its communications about the Public Utilities Commission (PUC) of Ohio. In this example, it is the Ohio PUC’s position that Duke Energy overestimated the cost of its one-time tariff fee:

<http://dis.puc.state.oh.us/TiffToPDF/A1001001A15J02B42658G00992.pdf> (Question 11). See this Reply Brief for an example of where Duke misrepresents PUC staff testimony:

<http://dis.puc.state.oh.us/TiffToPDF/A1001001A15L15B52719C00604.pdf>. I am sure that if I were to dig further I would find other conflicts created by Duke, but as a private citizen I should not have to spend so much time researching this.

If the Public Staff has not yet had the opportunity to review the Ohio Duke Tariff docket, you can do so here: <http://dis.puc.state.oh.us/CaseRecord.aspx?Caseno=14-1160&link=PDC>

Duke has not made its tariff plans known to the citizens of North Carolina. Often future actions can be predicted by past efforts. Given the astounding size of Duke’s proposed tariffs in Ohio, its mischaracterization of PUC staff, the inaccuracies pointed out by the Ohio PUC and the Consumers’ Council, and Duke’s lack of documentation and specificity regarding its proposal, it would be reasonable for the NCUC to require that Duke provide its estimated North Carolina tariffs in the 2015 IRP update so that the citizens of North Carolina have adequate time to learn about and oppose the burden that Duke will soon be attempting to force upon them. Further,

Duke should not be afforded the courtesy of confidentiality by the NCUC as it prepares to request approval to levy tariffs.

Finally, given the reported small number of people, 0.06% of Duke customers (December 7, 2015, DEC Supplemental Comments) who opt out of AMI, the revenue impact of a tariff-free opt-out program should be fairly negligible for the world's largest utility provider and, accordingly, the UC and the Public Staff are urged to reject any tariffs proposed by Duke. That said, a small one-time fee or tariff to remove an AMI device that was initially approved by a homeowner is understandable, but that fee needs to be well documented and justified.

### Overview of Electricity Meters

Dr. Ronald Powell, Ph.D. in applied physics from Harvard (retired and formerly employed by the Executive Office of the President, the National Science Foundation and the National Institute of Standards and Technology), has authored an [overview of the different types of electrical meters](#) and created a ranking of health risks and other factors. This document provides context and a scale for the potential threats of AMI meters, and I request that the Public Staff and the UC consider this document when weighing relative risk to North Carolina's citizens and Duke Energy's request to penalize them for opting out of AMI meters.

Dr. Powell also has created a [citizen administered questionnaire](#) to utility companies to assist Maryland citizens (his home state) who are concerned about AMI meter installation. This questionnaire may be useful to the Public Staff and UC when considering whether or not Duke Energy's rationale for implementing tariffs to opt out of AMI installation is defensible, and, even more fundamentally, if tariffs against North Carolina's citizens should even be an option. I would very much the Public Staff's findings regarding Duke Energy's tariff analysis and am requesting the criteria that the UC has used when reviewing any current and future tariff proposals. It is my understanding that some of the documentation is confidential, and hence I will be unable to perform such an analysis myself, so the Public Staff's and the UC's opinion would be greatly appreciated.

### Outreach to Duke Energy Carolinas

I have twice reached out to Susan Vick, Duke Energy's Director of North Carolina Government Affairs, in an effort to work with Duke Energy to try to effectively meet theirs and my goals (please see attached). Ms. Vick did not respond to my first attempt, causing me to send a Certified letter, which was ignored as well.

### Conclusion

Given the difficulties I have had trying to work proactively with Duke Energy, as well as the difficulties in convincing them to remove the two meters which harmed my health, it seems clear that Duke has no interest in partnering with its customers. Duke's greedy and seemingly

unfounded tariff proposals in Ohio, discussed above, are alarming. Duke Energy is the largest electrical provider in the world, and the only protection that North Carolinians who suffer from EHS have from AMI meters is the Public Staff and the Utilities Commission.

Accordingly, I request that the UC:

- please add me to any mailing lists or other public communication mechanisms you have regarding AMI and Duke Energy
- please notify me of any opportunities for public input
- please inform me of other interested offices or personnel at the UC to which I should submit my comments
- please let me know if you have any questions regarding my comments or are in need of additional documentation. The published literature and opinions of experts such as Dr. Powell are numerous to the point of overwhelming, and I am happy to provide assistance in sorting through it all.

North Carolinians desperately need an agency that will not just blindly accept the FCC's standards and electrical utility desires. They need a government agency that will assess the most recent and best available information and make decisions based on the best interests of North Carolina's most vulnerable citizens.

Thank you for your consideration and your hard work on this important matter.

Sincerely,

Andrew McAfee  
andrew@raleighes.info  
919.787.3022