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Demand Response Devices - Human Health Safety Code Considerations

Thank you for the informative meeting on "2019 Pre-Ruling Making for Energy Efficiency Building Standards". I am writing this comment as a "layperson" as I have been learning about this subject on my own time. Please forgive me if you notice errors in my analysis. In fact, it would be helpful to point them out to me. I appreciated learning about the role of OpenADR.org in guiding California investment owned utilities with internet guided messages from, for example, the California Independent System Operator. I was surprised to learn that smart meters were not as involved as they were forecasted to be several years ago in directing building management demand response systems.

As outlined today, the CEC appears to be working on guiding residential and commercial new and remodeled building construction in achieving benefits in energy efficiency and cost savings by writing voluntary guidance code to follow. Today's pre-rule making meeting was about proposed code language changes. My comment here is not in conflict with any of the suggested changes nor any staff nor device nor software. My comment here is more a "food for thought" issue that I think the CEC and/or their stakeholders can play more role in addressing publicly. Because the CEC staff and stakeholders are entangled in demand response tactics to accomplish zero net energy goals, it seems that this audience is an appropriate sounding board for demand response device human health concerns. I believe it might be possible to further entangle codes into achieving more human health concerns.

I use to work for SMUD. I came across several health issues from 2011-2015 that I could not explain well. (I was exposed to ionizing radiation in 2011 so perhaps that has played a role). In 2012 I had a manager tell me that one of my projects went to the board. So I spent time listening to board meetings on my personal time trying to figure out what my manager was talking about. (It turns out that the project did not end up in a board meeting but may have been submitted to a board phone line). In listening to at least three consecutive SMUD board meetings, I listened to customers complain about their exposure to the newly installed pulsing radio frequency smart meters and the tolls those pulses were taking upon their health.

In 2015 I received a cell phone call that hurt my ears. I sent a message about that experience to SMUD's Safety Department. As a designer not only were we required to have a cell phone, but we also were subject to fielding projects for wireless communication installments in places where radio frequency (RF) danger signs were prevalent. Also our entire department, as well as many others, in 2013 moved to a new highly energy efficient building; a demand response unit of some sort likely manages this building. As not unexpected, the SMUD safety department sent me back the message that there is no reason to believe that wireless radiation is not safe for humans. Similarly there was literature for customers about electromagnetic fields (EMF) from transmission lines; as designer I could give a pamphlet to address customer concerns about EMF. Despite all that old documentation and the more recent safety department enforcement, I began internet research and reading books on EMF. I also bought a Cornet EMF meter of my own. I attended an IBE (international Building Biology. see: hblec.org) conference in 2015 and listened to several speakers, most whom have EMF awareness. As I mentioned I was surprised to read data from some of my non-RF device EMF readings including my wired in thermostat and digital clock. My small kitchen appliances appear full of machine frequency; there is also a "smart" gas meter and electric meter outside adjacent to this room. Machine frequency is said to be worse for humans (I heard that from a few building biologists) though neither frequency seems wise to be near for any length of time. In noticing this, I put an "fyi out" to designer placement of thermostats.

New EMF research surprised me. I think it would surprise many. In particular, I was swayed by the research of

retired biochemist Dr. Martin Pall. Some of his initial research work has shown some benefits to bone growth, but also has shown that Calcium ion transport systems in cell walls change when exposed to what has been considered non-thermal radiation fields. He relates that this ion transport change is similar to that of a toxins influence in that when Calcium ion transport changes the cell nitrous oxide content can accumulate. In that way it has been suggested that EMF exposure can be accumulative. DNA breakage has been noted as well. Please verify this research for yourself because at the moment I am operating on memory. His work is easily found on the internet and his public speaking has been user friendly and comprehensible on YouTube videos. There are numerous other EMF researchers who have been providing what appears to be quality research. There are several internet sites addressing concerns of the public regarding EMF issues including a Facebook site titled, "Campaign for Radiation Free Schools" run by Camilla Rees.

From what I have read, listened to and watched thus far, the U.S. Federal Communications Commission (FCC) has old safety standards in place from the 90s that were determined by volunteer electrical engineers. Also from reading FCC work, it seems that many of the newer regulations are more business oriented and less safety oriented than I expected to see. For example, the FCC not too long ago relaxed the idea that the ear was an organ so that a cell phone by safety standards could be held as close to the ear as it could to an extremity. This is discouraging to notice as cell phones are said to be magnitudes worse in exposing humans to radio frequency fields.

Recently in 2017, I measured radio frequency on my cell phone, at a level of 1827 mW/m² (milliWatts per meter squared), which is a level that is beyond probably most safety standards. I had a bad instant ear ache again prior to this phone call. So I got out my Cornet EMF meter to see if I could figure out what was happening. I was in communication with AT&T that day. The phone in which I recorded that reading was about an ATT technician coming to my home.

From what I understand, there is no regulation of the connection between the cell tower and the cell phone. They are created by separate companies - the cell tower company and the cell phone company. So regulations exist for the cell tower and for the cell phone but not for the connection they make. If this is the case, I gather it is likely the case for many other radio frequency connecting devices including the many that might be involved in a residential and/or a commercial building management's demand response unit. If a cell tower and/or satellite is communicating with a demand response device, such as a thermostat, it might be wise to advise that the device is located beyond human reach.

In summary, I am requesting that since it seems that there is not a local California communications standards office that can over-rule the FCC's outdated safety regulations, that CEC staff and/or stakeholders involved in building and device design guidance start helping to consider making more code to address the human health safety in regards to installed EMF devices. For example, suggesting EMF devices might not be wisely placed in where sleeping heads are might help those who suffer from Electromagnetic Health Sensitivity (EHS). According to some past posts cited on the Campaign for Radiation Free schools Facebook site we all might want to consider code as to where to put modems in schools. It is all work, and no one wants too much of it, but if what I have read and watched is true, in achieving our highly connected society and modern conveniences, we may have covered ourselves with a light blanket of an EMF field that may have a dampening effect on healing and general public health.