Data Centers

I am a Certified Building Biologist, EMRS Specialist, and have over 200 hours working with electrical engineers in electrical measurement with advanced Spectrum Analyzers, and Oscilloscopes. In other words, I can see the electrical pollution caused by Non-Linear Loads also called switch mode power supplies in the data centers. There is a Switch Mode Power supply in every server in a data center. Multiply this RED waveform by 3,000 times and the impact will be enormous. We are all concerned of the impact of these Mega Data Centers for water and power, these are very physical things we can see but this impact of added electrical noise to the grid is never discussed. It is because you cannot readily see this without expensive instruments most homeowners do not have. This will have a biological impact to many people that share the grid with the data centers. The incidence of Tinnitus (ringing in the ears and what sounds like a sea of crickets in your ears) will skyrocket. People with Diabetes will see their blood sugar control to be more problematic. Their home and the general area will be unlivable and will increase dramatically. This invisible noise will be on every wire in the home and will radiate 6 feet into the room. No wall will be protection from this. Most rooms in a house are typically 12 feet wide. So, there is no safe place to sit or stand in your home.

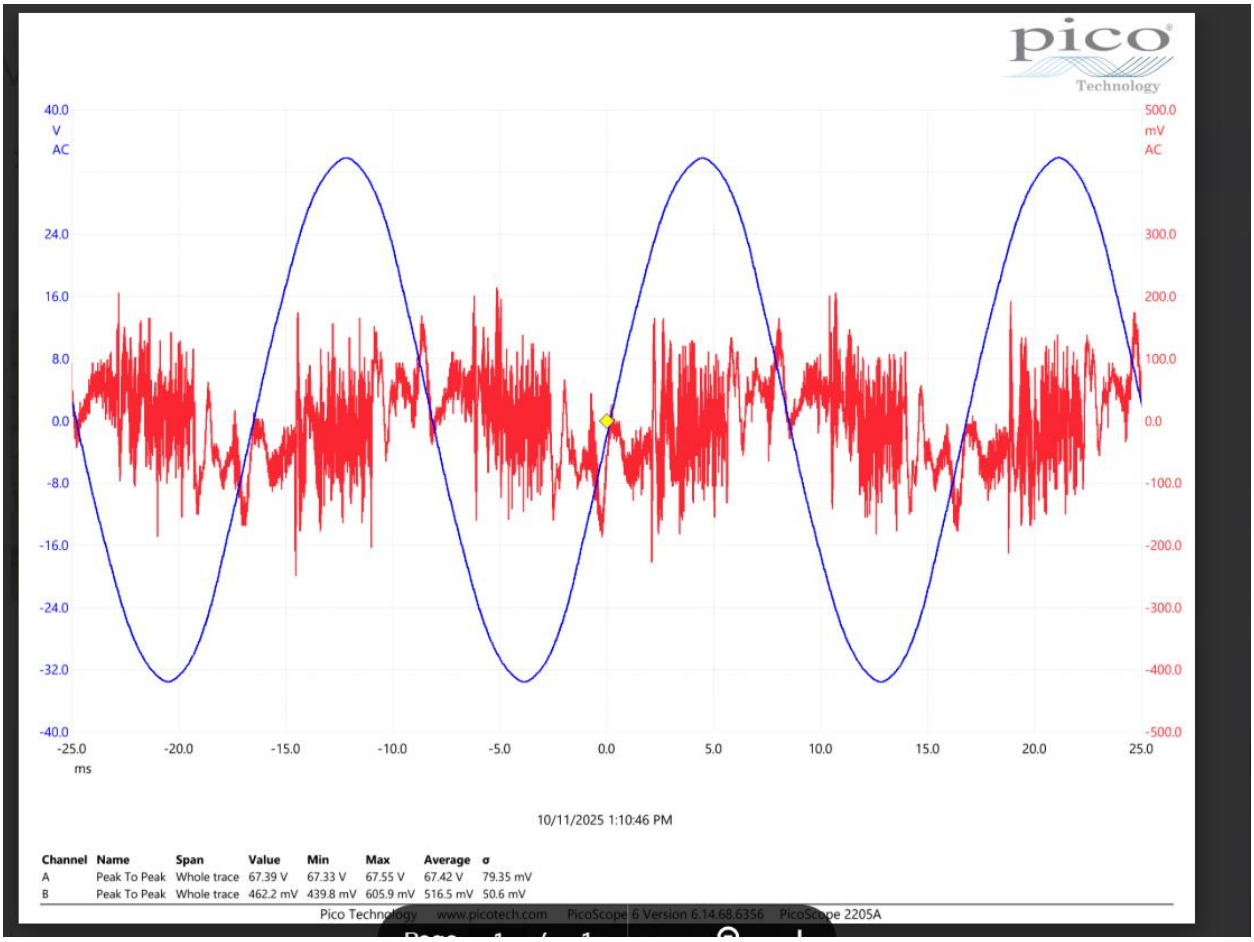
Here is what your typical home has today from the existing grid. This is typical of most homes. The examples provided here are from an unoccupied home, with no appliances, TV's or other switch mode powered devices.

The Blue waveform is your baseline 60 Hz power signal, the RED waveform is what is injected by noise on the grid coming from Smart Meters and other devices that are inside every digital

device in a home. Such as TV sets, Alexa, WIFI, Microwave ovens, and anything that has a digital display. All these devices contribute to this noise profile.

What most people fail to think about the grid is that the power coming into a home is from a shared source, So, it is like everyone is on the same power strip, if you put just one very noisy generating source on that power strip everyone sharing that power strip gets the entire load of high noise. It is not separated by your neighbors it is joined together with your neighbors. Your home is not an island.

Voltage View



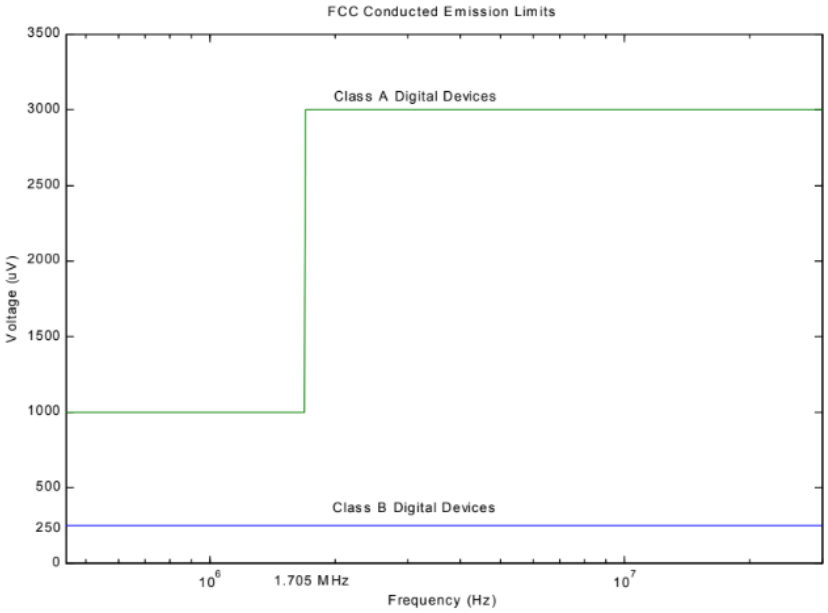
This is what is called a Voltage view a time versus voltage measurement. This comes from a scope.

This next view is what is called a Spectrum view you cannot detect this with a voltmeter only a spectrum analyzer it shows the voltages above 60 Hz on the grid versus the frequencies present. As you can readily see the power in your home is full of many signals not just the 60Hz

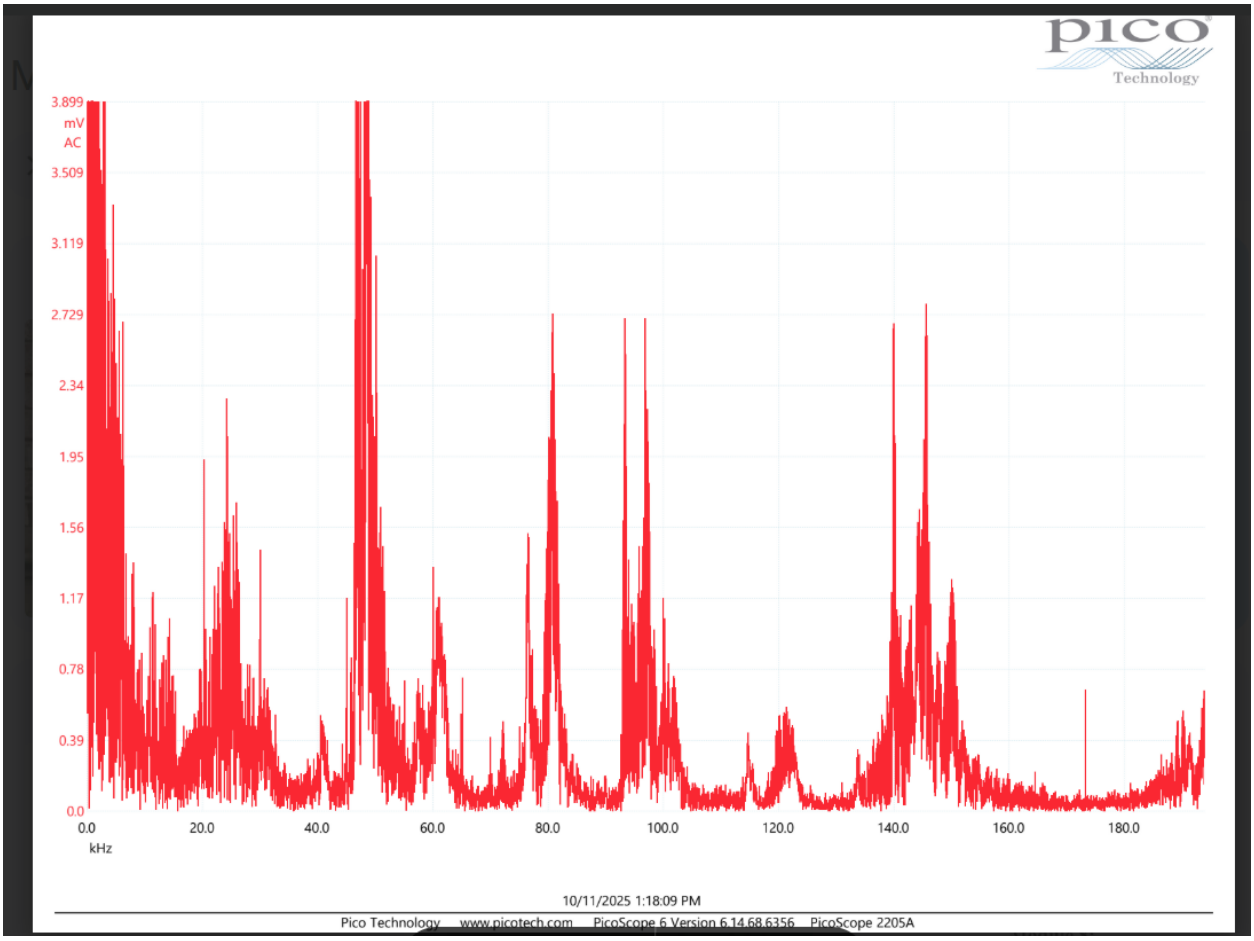
main power signal. Many homeowners are unaware that this is even on their homes. Mitigating this is very deficit and an exponential increase in this noise on the wires in the home is not a cheap $100 electrical filter it will cost the home owner many thousands to correct this. Given the stress financially in our economy this is going to devastate the local environment and drive people from their homes.

So, what are the FCC Specifications/Limits for voltages /noise above 60 Hz?

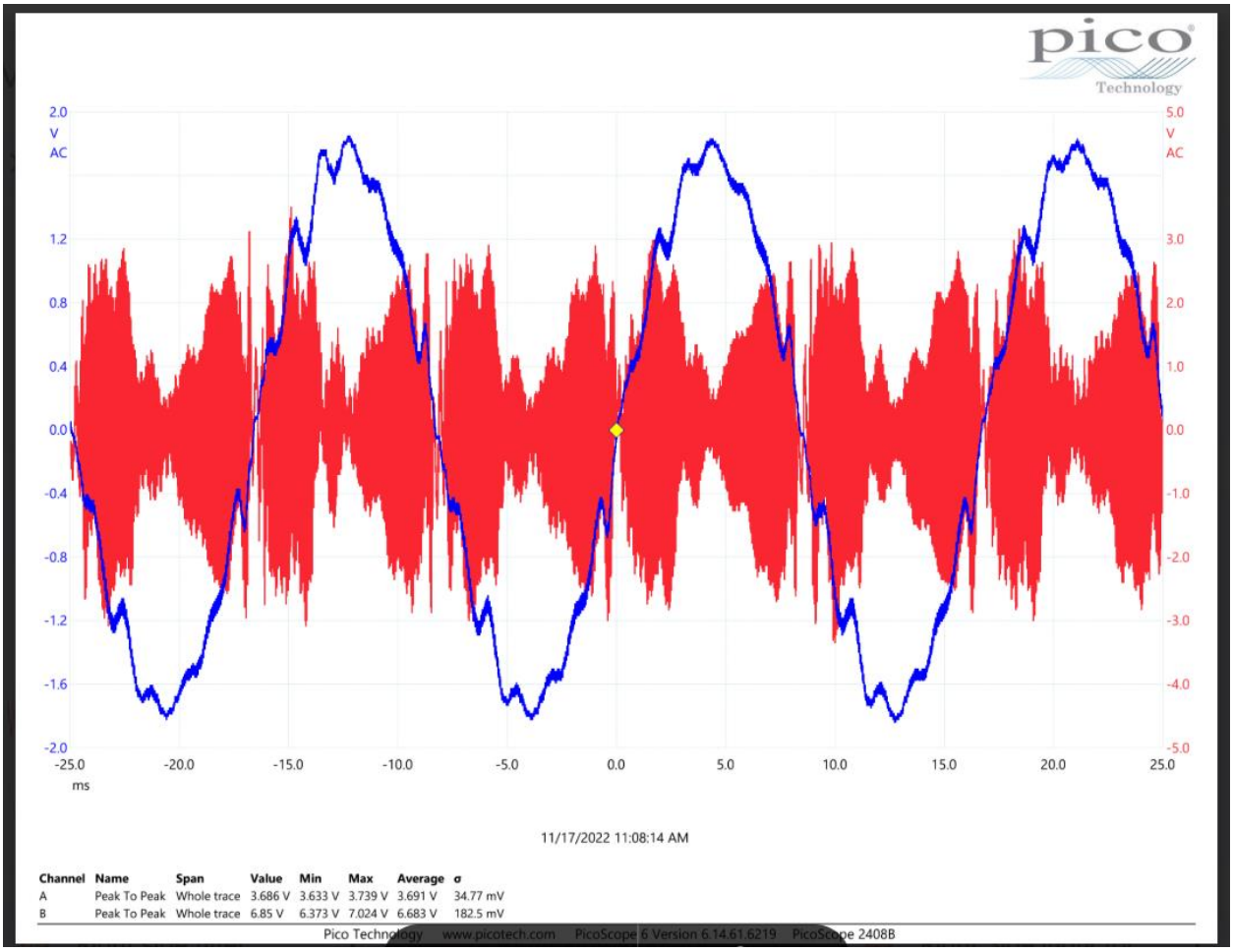
Well, most homes have computers along with computers in data centers and they are also subject to the FCC class B limits. This limit is 250 µVolts. Look at what we find is an average of 516 Millivolts over 1000 times higher than the FCC Specs. An AI data center is likely going to be many amplitudes higher. 516 Millivolts is 516,000 µVolts. This is outrageous as it is already not considerate what the AI data centers will create. The noise created by the data centers will be so far out of spec it will be impossible to mitigate the electrical noise.



Spectrum View of a typical home



Voltage View with high Conducted Emissions



Data centers will have 3000 to 4000 servers which will have 3000 to 4000 switch mode power supplies. The conductive emissions from the switch mode power supplies will create conductive emissions which will get also get pushed back on the neutral in the form of an oscillating current and the neutral and the ground are bonded together at each house at the panel so there will be elevated voltages/current on the ground because the neutral and ground is bonded in the panel. The transformer also has the same neutral, and ground which is bonded. Therefore, the base ground you walk on will be elevated raising the prospect of the current ERPI contact current limits that are directly related to the development of Cancer.

The Electrical Power Research Institute[9] (EPRI), one of America's largest electrical research agencies (created by the electric utilities in 1973), published research in 2000 revealing that extremely low levels of contact current (~18µA) are a "potentially important exposure with respect to childhood leukemia" and have "biological effects relevant to cancer.

*…the absolute (as well as modest) level of contact current modeled (**~18µA)** produces average electric fields in tissue along its path that exceed 1 mV/m. At and above this level, the NIEHS[2] **[National Institute of Environmental Health Sciences]** Working Group [1998] accepts that **biological effects relevant to cancer** have been reported in 'numerous well-programmed studies.'*

The effects the Working Group cites are ''increased cell proliferation, disruption of signal transduction pathways, and inhibition of differentiation." The NIEHS endorses this conclusion in its final EMF RAPID report [1999][3]

The 3000 servers will impact the ground levels for many miles near the data centers that is not currently there or has been tested.

The noise frequencies created from the switch mode power supplies will travel everywhere for about 10 miles in all directions. So once this happens, there is no way to attenuate this noise. So, now everybody will have to isolate themselves from the grid VIA expense inductors and filters which will need which will be about $6,000 to $11,000 per house. I predict everybody will get tinnitus and make the homes unlivable.

1. Will the data center be open or a closed system

2. What about the potential for overwhelming local fire department's ability to effectively respond to the fire risks, see this article https://futurism.com/future-society/fire-fighters-data-centers. As an example, this will cause a diversion of township tax resources in Hillard, Ohio as much as $2 million a year which is not budgeted and this cost will be have to be borne by the local tax payers not the data center. Surprises will continue to come from poor due diligence and due care with all the AI data centers proposed.
3. Will the data center have its own power generated without connection to the public utility. So will the data center have a Big Enough Neutral, so the pollution will not be connected to the earth to flow back via the substation.
4. Can the applicant show they have followed a federal law NEPA and FCC specs to prove this will not pollute the environment and can they please provide anywhere in the United States after 5 years that a data center was built and safe from pollution.
5. If Lithium batteries are used can the applicant show a time test how long the lithium batteries last and what environmental protocol will be used after the batteries expire. Refer to the data center fire at the Ubiversity OF Michigan
6. Let's make the Applicant responsible to prove the pollution will not be connected to the public electrical grid since it already overloaded since the neutral is not big enough to handle the public pollution back to the substation.
7. Applicants must set aside a slush fund of 10 million, and the applicant will be held personally responsible for any future data center pollution or disaster.
8. How much Gigawatts (GW) per day is the data center expected to consume.
9. What kill switch will the public have if the data center overloads the electrical grid
10. What is the expected EMF pollution that the data center will create and what will be the switching frequency created from the nonlinear loads and how will the data center filter this pollution.