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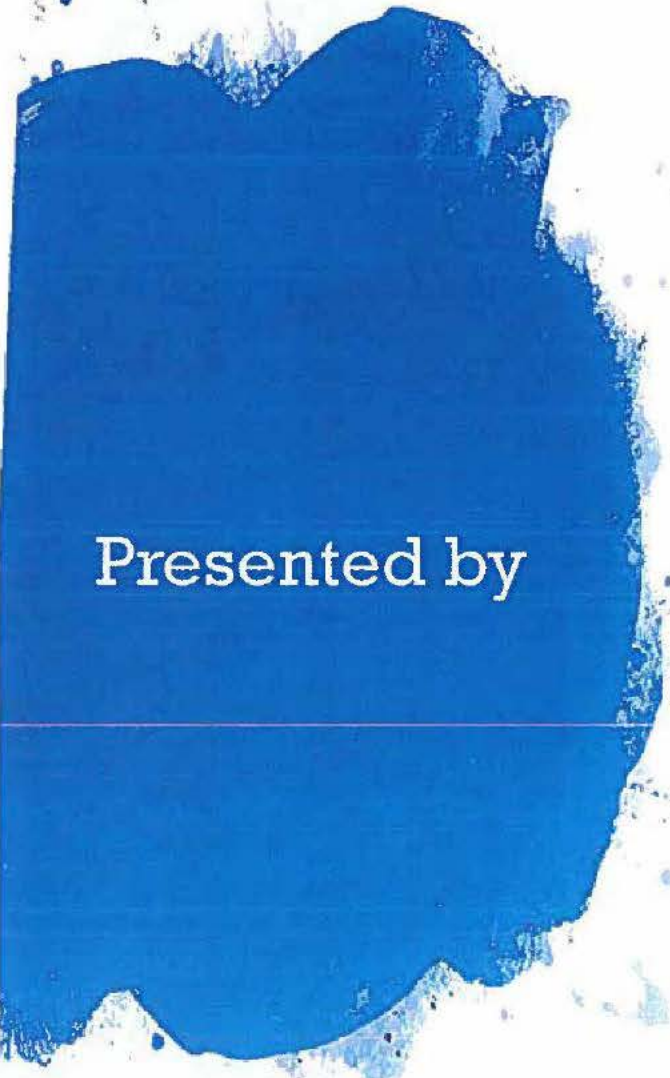
The Discovery and Science of Smart Meter Fires

Introduction to
the discovery of
Radio Frequency
Radiation (RF
Rad) and the
related
breakdown of
electrical wiring
insulation leading
to fire causation

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Presented by

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NFPA 921

Guide for Fire and Explosion Investigations

2021



Scientific Methodology

- Fire investigation requires the “global” responsibility to determine the origin of the fire and the fire cause. Utilization of this methodology is the age-old inductive and deductive reasoning process. This process is only as good as the thoroughness of the individual to examine possibilities and scientifically determine their probability in causation.
- Thus, the more information the investigator knows, the more hypotheses they can introduce into the inductive/deductive reasoning process, the better the result.
- The length and breadth of scientific knowledge and principles needed by the fire investigator is large in scope. Subject matter experts are generally required. These experts include crime scene examiners and evidence collection personnel, laboratory analysts, electrical/mechanical engineers and others.

Scientific Methodology...

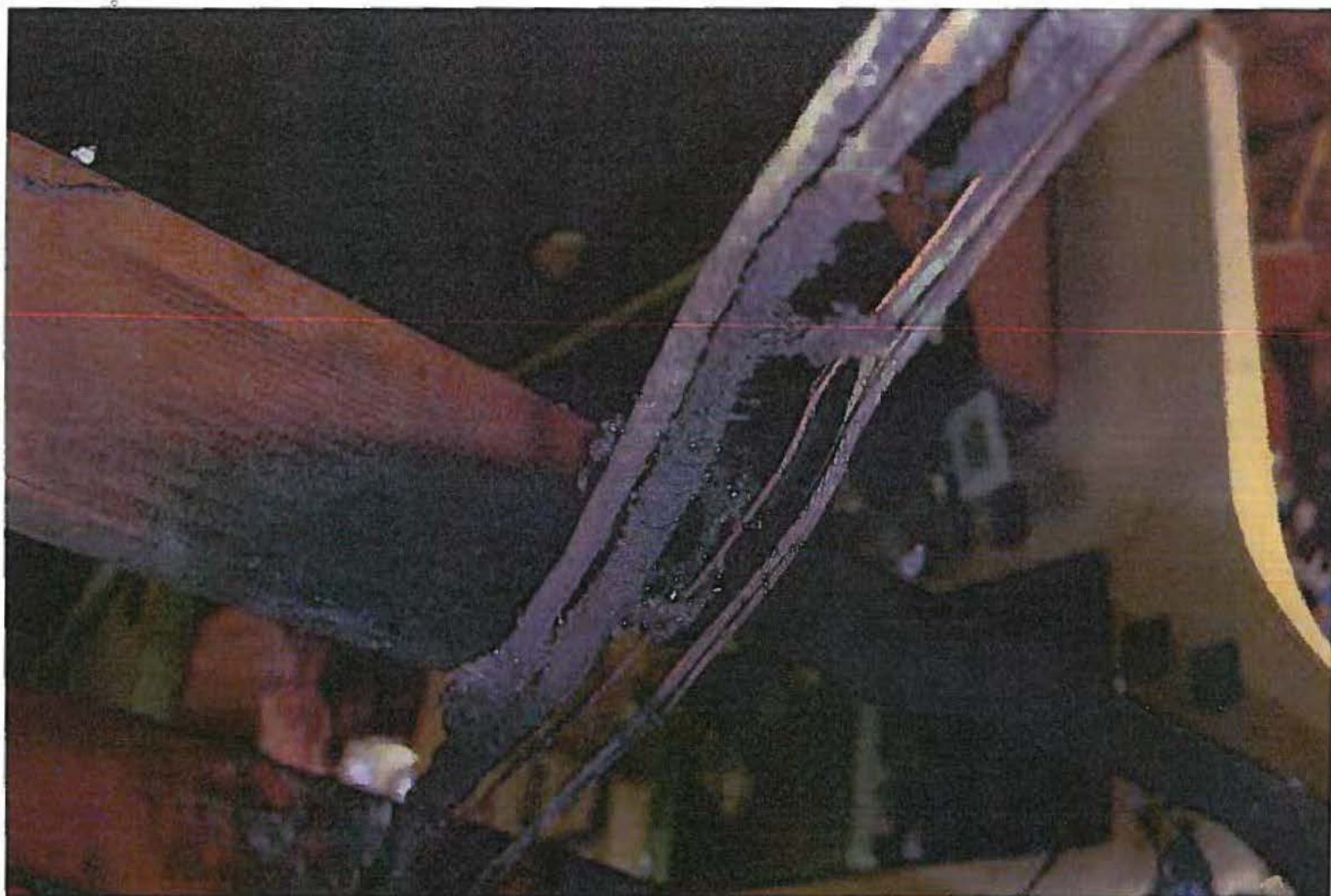
- The pursuit of scientific analysis and discovery is a non-advocacy endeavor of the investigator. This applies to both criminal and civil fire investigation. The collection of data/evidence leading to the scientific conclusions are adjudicated/advocated in the legal system.
- As with the following investigation into the increase in and causation of, fixed wiring electrical fires, no blame is targeted to any specific agency or group. As you will see in this presentation, the investigation into the fire cause of the proliferation of fixed wiring fires followed scientific methodology to arrive at a probable causation theory.

“The Eyes will never see what the Mind does not know”

- This is the key to all scientific journeys and discovery. The more you know, the more you “see”.
- Therefore, your ability to hypothesize and test those hypotheses is only as good as your thorough knowledge of the subject at hand.
- Your “angle of perception” is as valuable as what you know. There are 360 different views of your evidence that makes up your final conclusion.

What the eyes saw that the mind did not know

- Every scientific discovery begins as a journey to find the truth of a confusing matter. This journey began to answer the question of electrically-caused fixed wiring fires that were beginning to exhibit a repeated modality not seen prior.
- Here is an example of the fire problem:





Resistive heating of Romex electrical conductors in mid span run

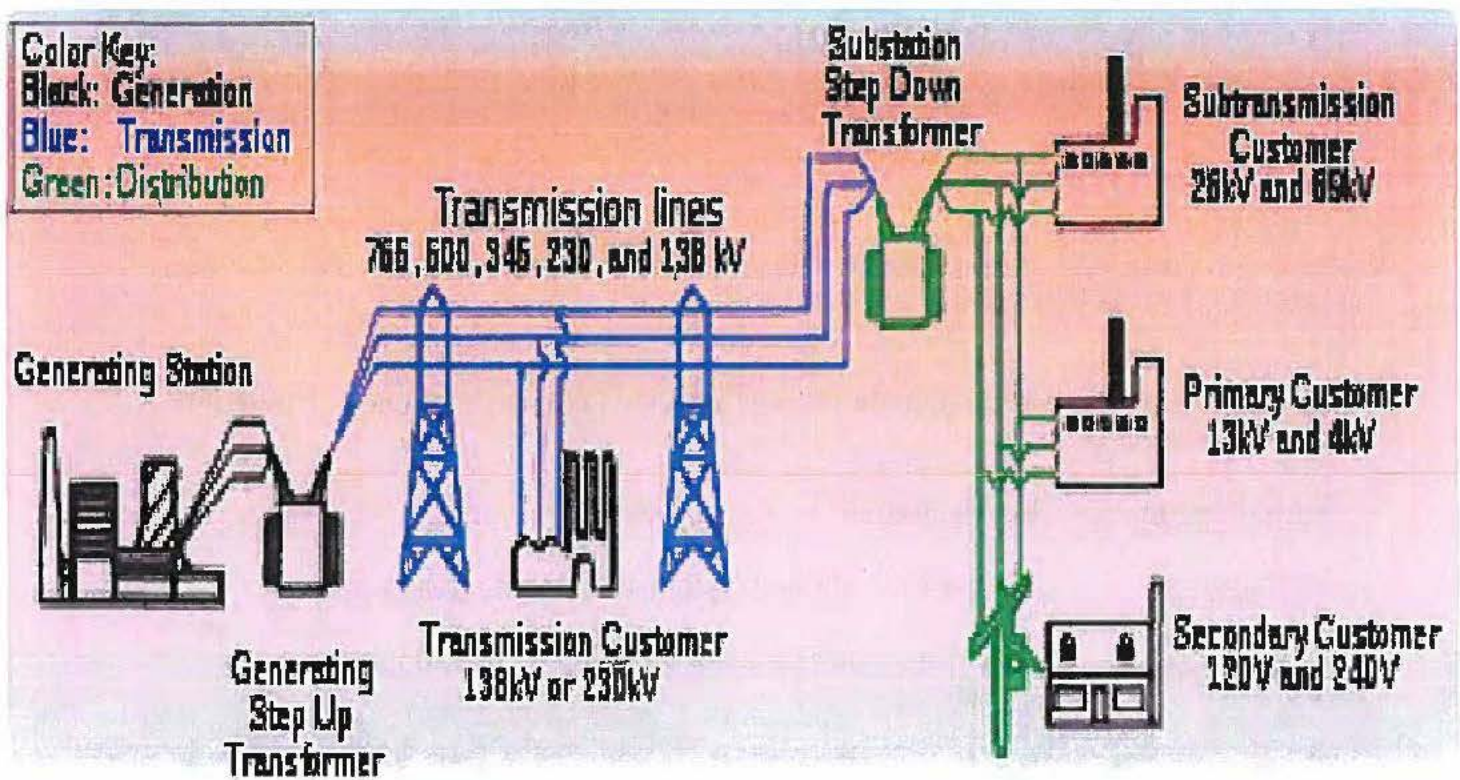
- Fixed electrical wiring fires are often caused by connection point failures over time at junction boxes or wire- nut connections. These failures result in arc faulting and resistive heating.
- Mid-span electrical fires may be attributable to a hard-driven staple that over time causes the insulation to be compressed. These failures result in resistive heating fires.
- Resistive heating from an electrical conductor does not cause the circuit breaker protection to trip, resulting in localized electrical heat energy to the wood structural member nearby. This heating causes slow pyrolytic damage to the wood that can eventually result in flaming combustion.

Smart Meters and the “Smart Grid Initiative”

- Allows two-way real time communication between utility company and end user (“customer”) using radio frequency (RF).
- Transmits usage data based upon the settings selected by utility company. Numerous variables include:
 - Modulation Signal strength
 - Frequency Similar to Wi-Fi and cellphone but with greater power
 - Daisy chains Data from meter to meter covering up to 750 locations

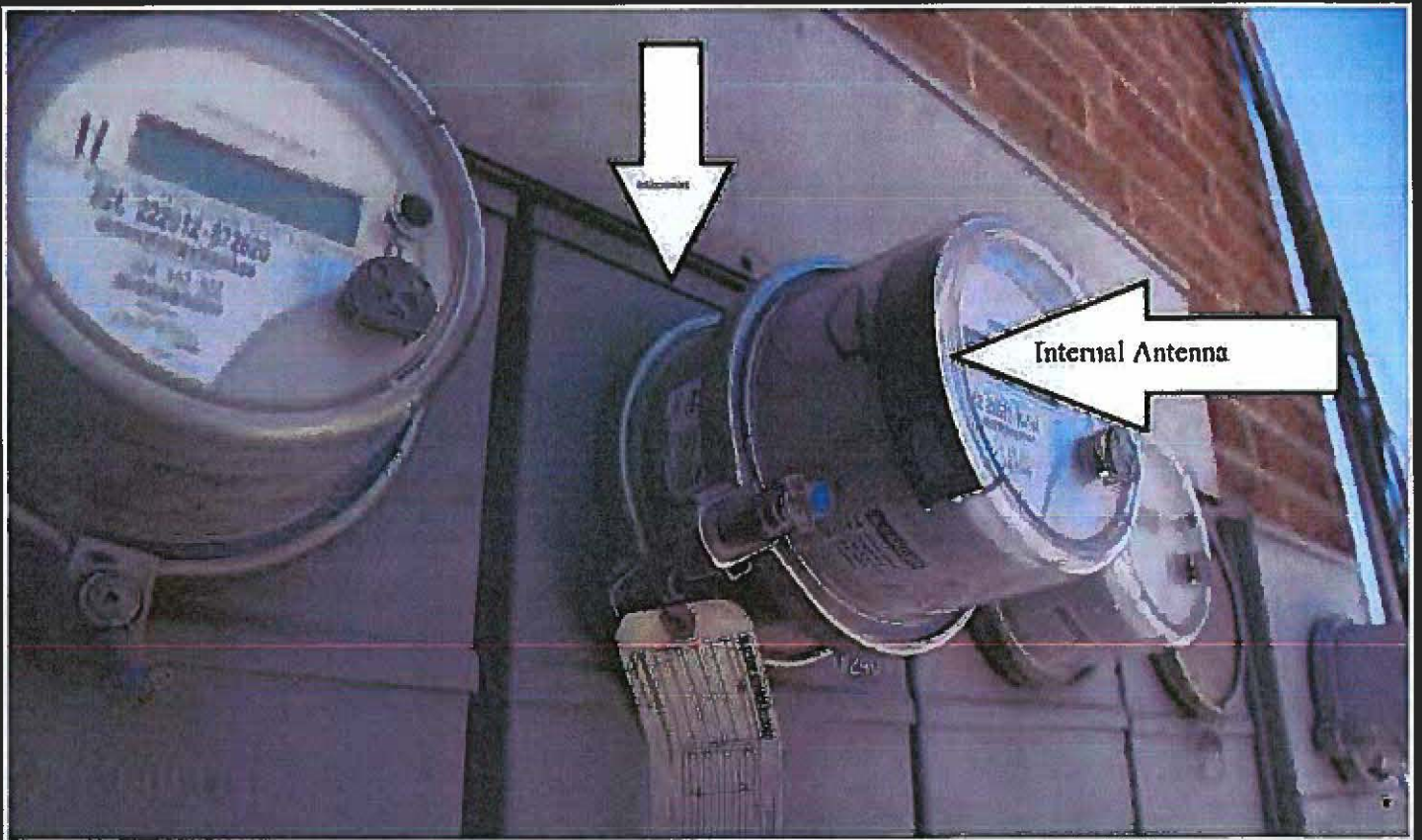
Electric Utility Power Distribution Systems

New Definition of Grid Now Includes “Customer Equipment”

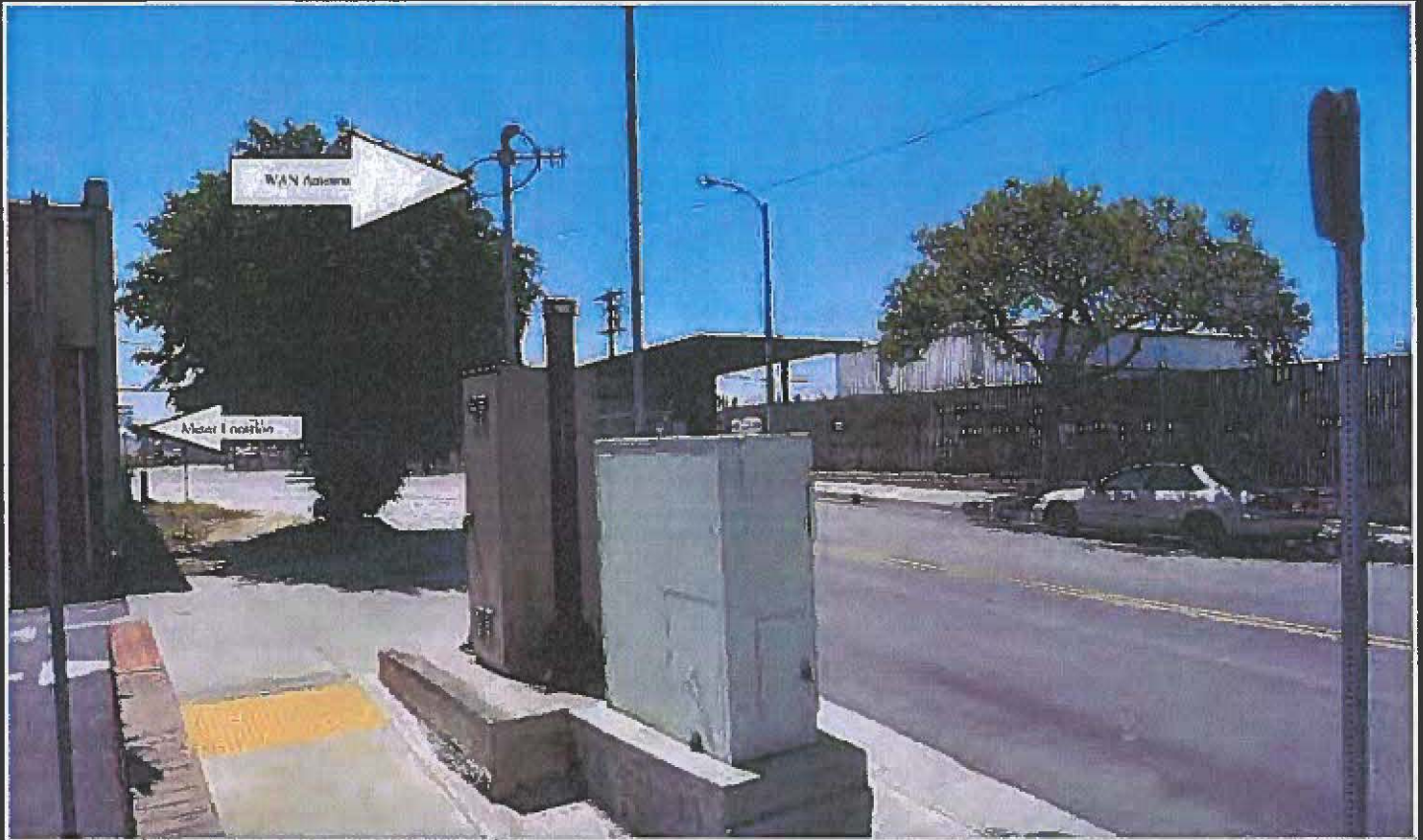




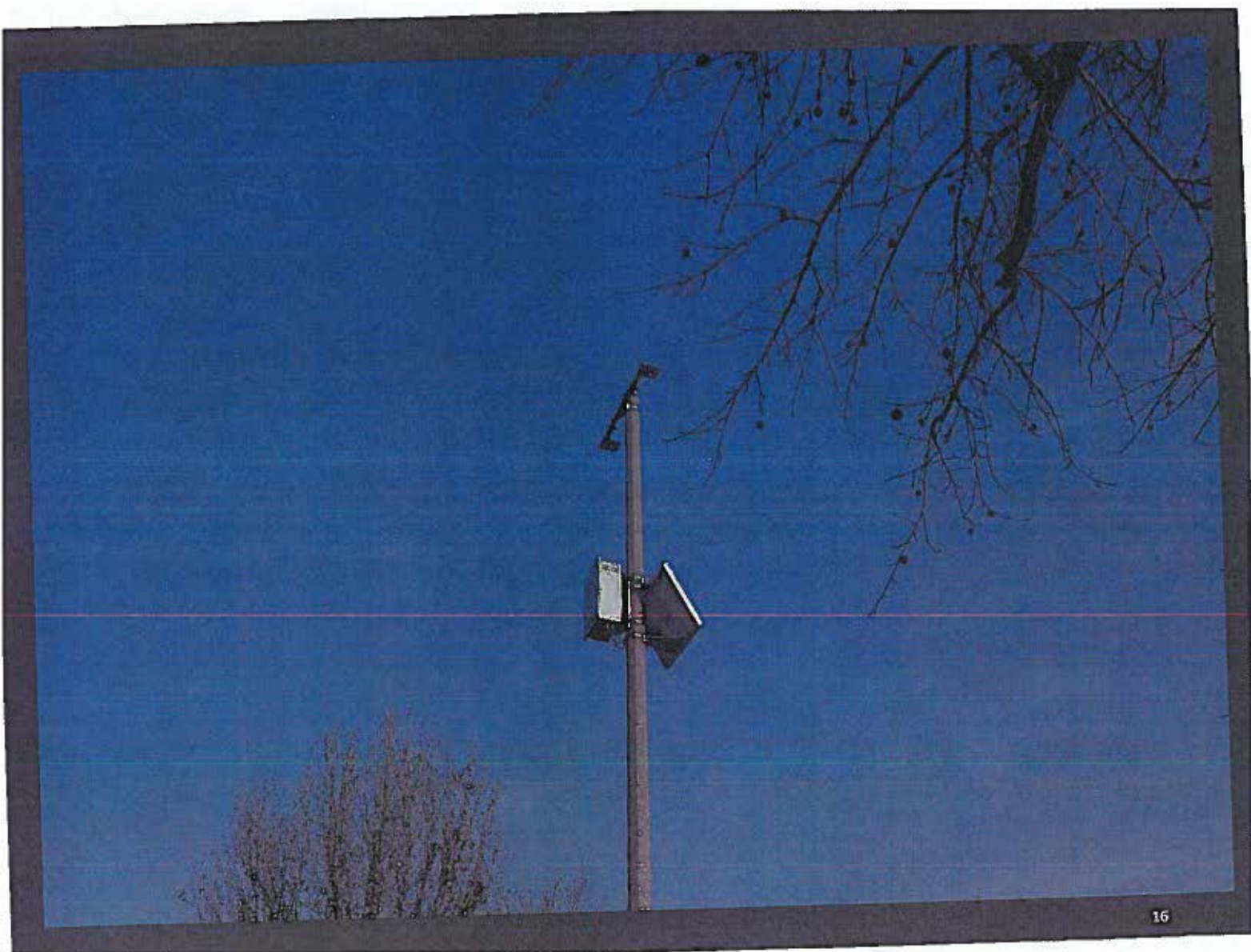
Digital Smart Meter

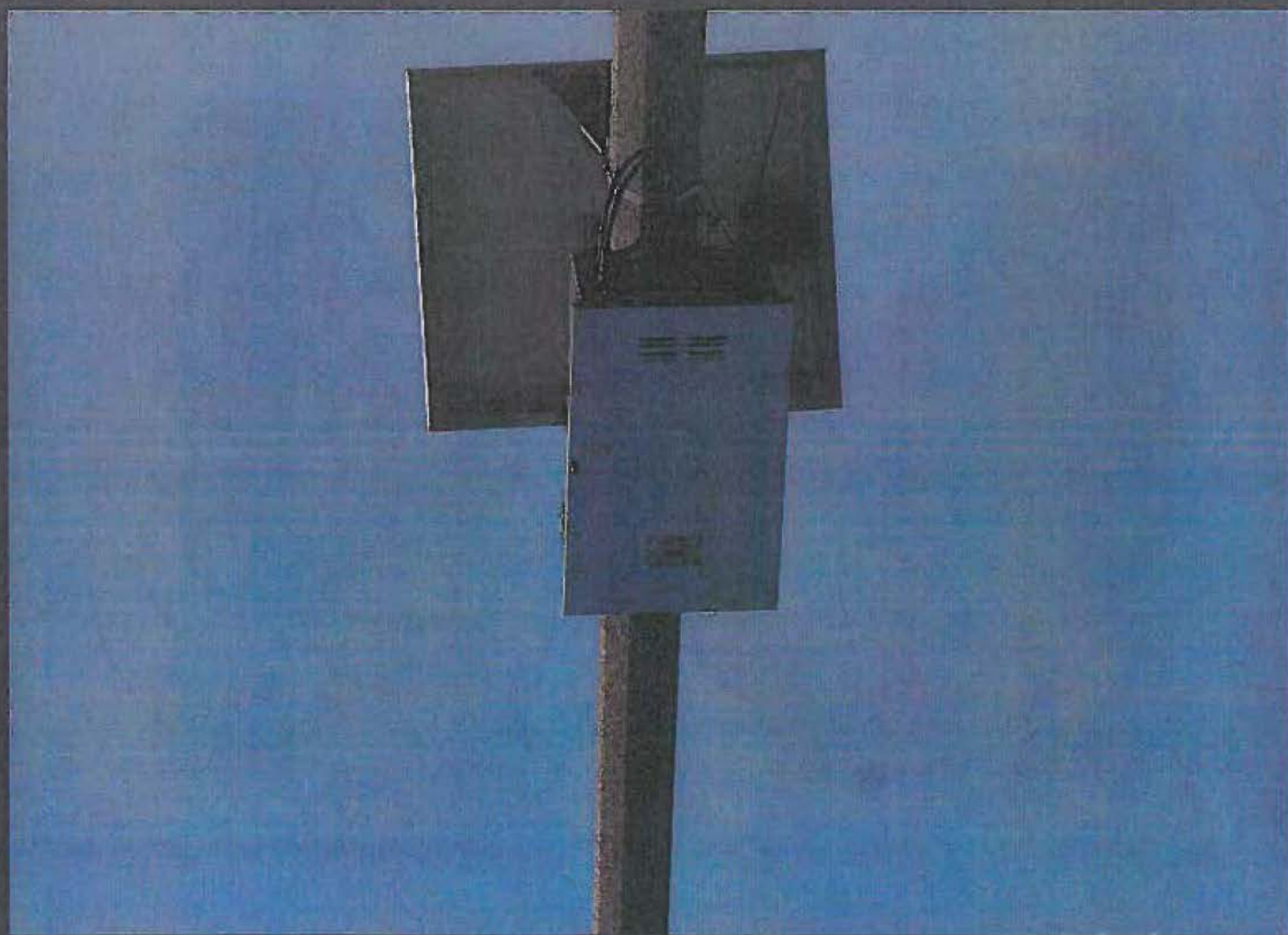


Collector or “Super Meter”

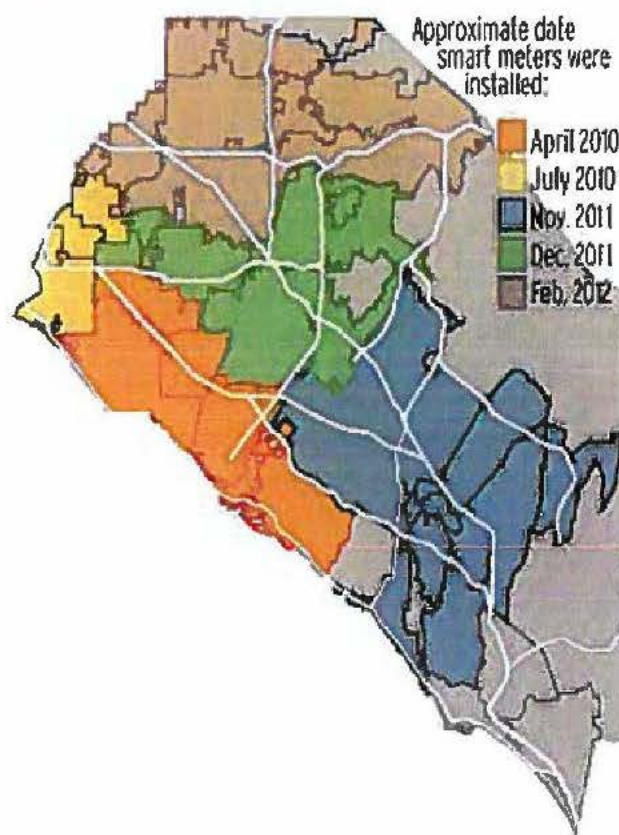
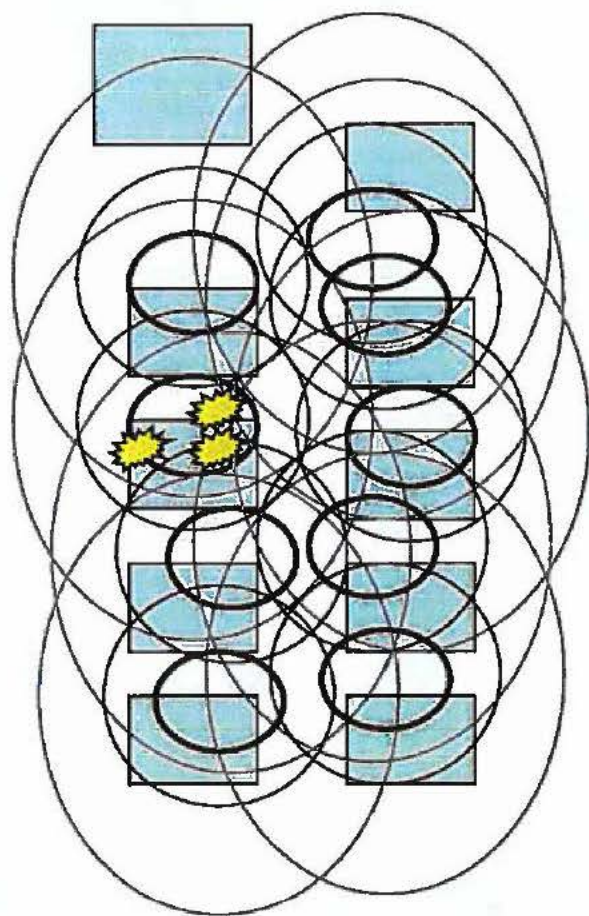


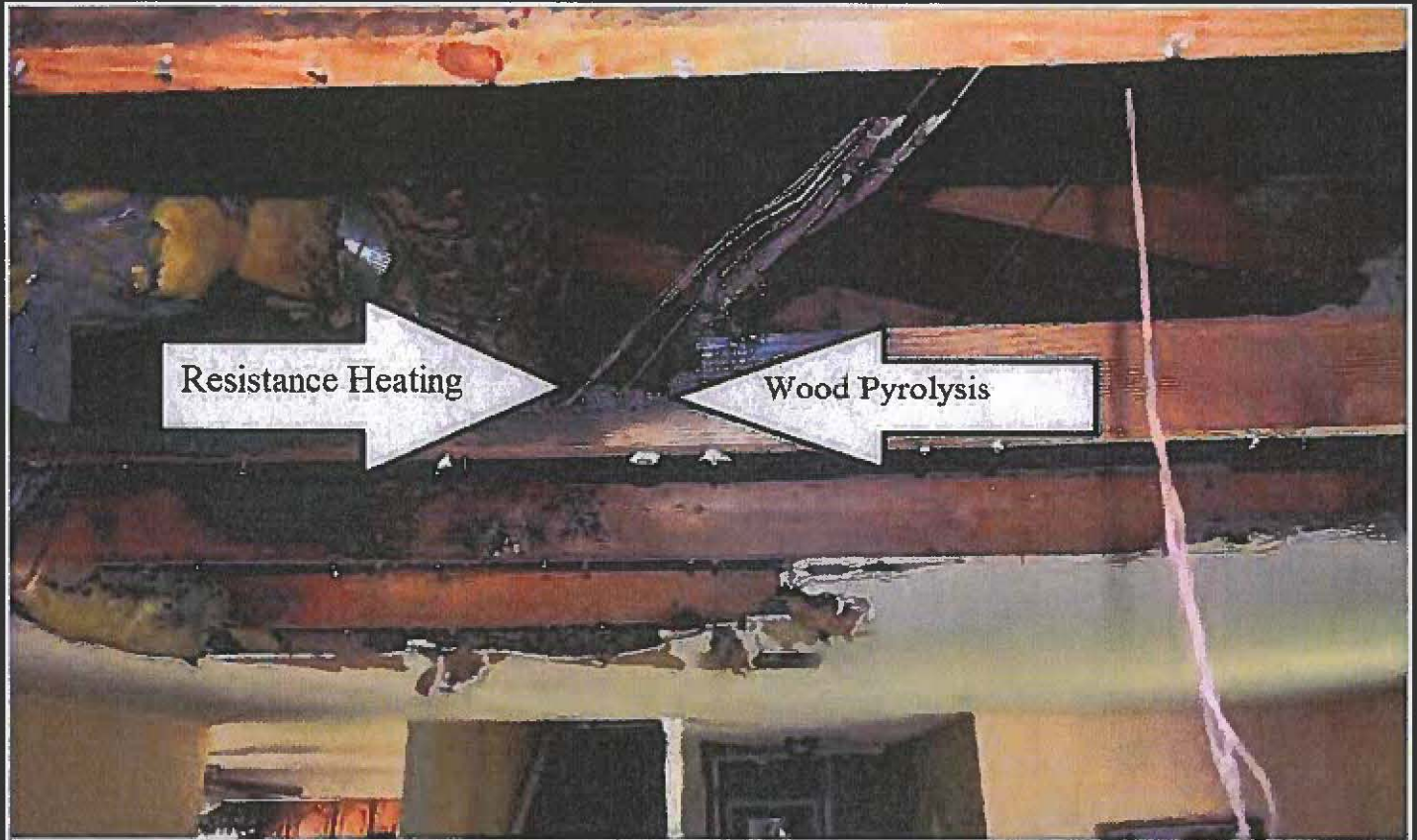
Sends Signals to WAN Antenna





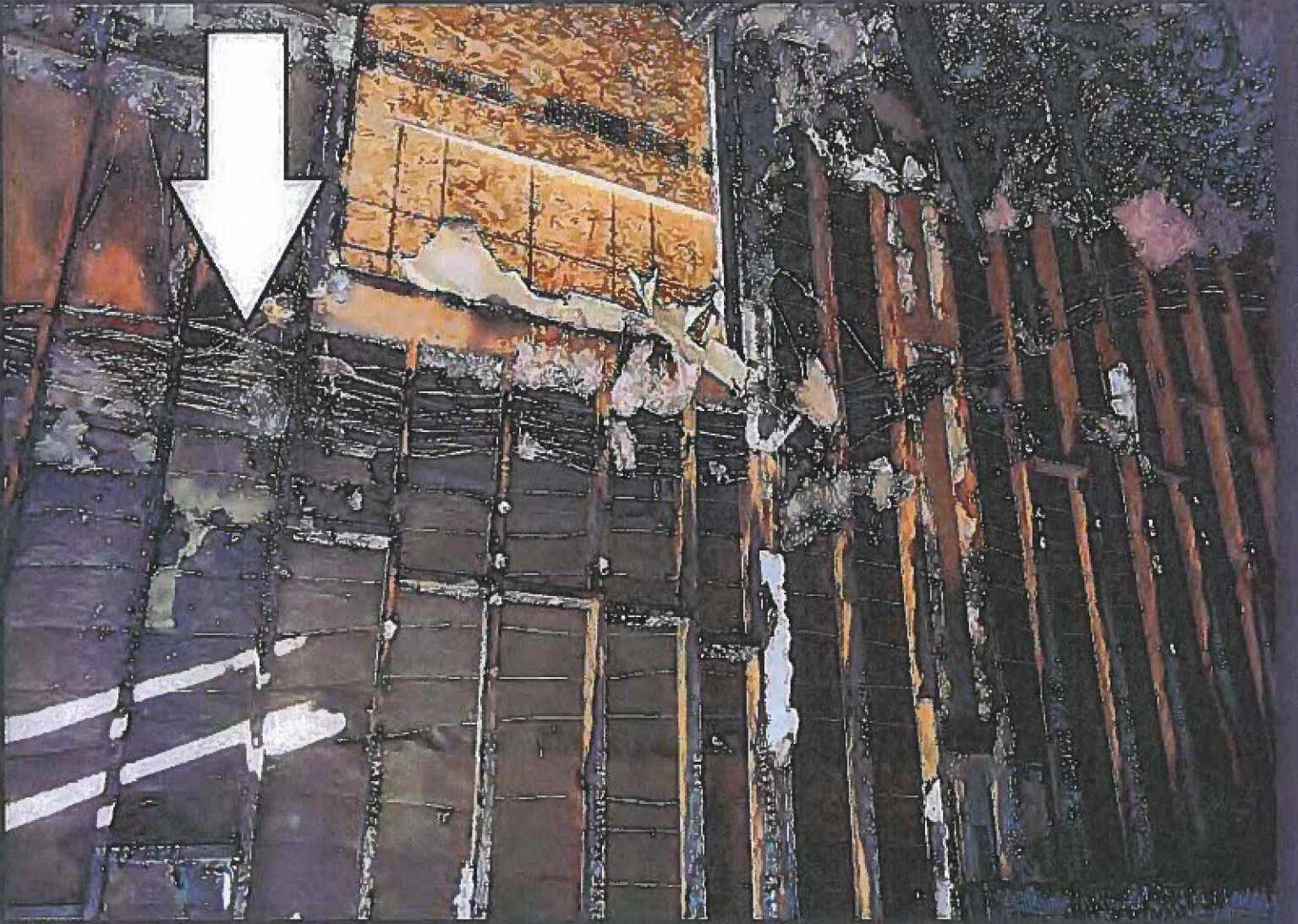
Mesh network communications





Typical Fires Resulting From Wiring Breakdown







Characteristics of smart meter fires from field observation

- Occur within 1 month to two years following initial replacement of analog meter with smart meter
- Within 15 – 25 feet of smart meter
- Occur in continuous sections of branch circuit wiring, not at points of connection or splices, not near staples, not in junction boxes
- No evidence of insect or rodent infestation
- Occur in void spaces (walls, ceilings) and in attics with no human activity
- Often small fires (5 – 10' diameter)
- No correlation to service size or circuit loading
- No correlation to premises wiring age or material (Al or Cu)
- No correlation to significant weather events (lightning)
- No evidence of utility supply (distribution) system anomalies (voltage spikes)
- Fires cause typically listed as UNDETERMINED

5 Stages Leading to Fire...

- 1st Stage: RF pulses (beams) away from meter in a specific pattern to send signals (data) to nearby meters in the “Daisy Chain”.
- 2nd Stage: RF from meter bounces off “reflected” surfaces causing RF to “double/quadruple” in intensity (in terms of energy density measured as microwatts per square meter; $\mu\text{W}/\text{m}^2$). The pulse bounces back and onto the oncoming pulse and intersects at a specific geometric focal point. If PVC insulation is present at that focal point, the RF energy can get converted to heat energy in the dielectric, causing micro fractures or bubbles in the polymer. The main effect is likely thermal, but the existing electric field may accelerate the degradation of the polymer (PVC).

5 Stages (cont.)

- **3rd Stage:** Sufficient heating can either ignite the polymer directly, or, more likely, first carbonize it. If PVC gets carbonized, then this can be the initiation of arc tracking, and arc tracking can end up in ignition.
- **4th Stage:** If wood structural members are near/touching, this resistive heating can initiate and sustain pyrolysis of wood.
- **5th Stage:** Flaming combustion begins.

New Scientific Discovery?

- Breakdown/destruction of wiring insulation due to RF radiation was first encountered by the DoD (Navy/Air Force) when radar was utilized. They encountered numerous fires to the electrical wiring onboard ships and airplanes. Steps were taken to produce an “RF resistant” insulation material to prevent the breakdown.
- Ignitions from military radar equipment were first observed in the early 1940s. But it is surprising how little literature can be found on the phenomenon.
- Below are some of the very few citations found in the published literature.

US Navy report, 1957

ELECTRONIC POTENTIAL — Lockheed Aircraft Corporation, having conducted actual tests with the AN/APS20 E Radar, has come up with the following findings:

- It ignited dry steel wool at a distance of 45 feet.
- It caused sparking among a mixture of aluminum chips which exploded a gasoline vapor/air mixture at a distance of 251 feet.
- It set off photo flash bulbs at a distance of 850 feet.
- It caused audible and visible sparking among metallic chips shaken in a paper bag at a distance of 275 feet.
- Pronounced humming was produced by medium aluminum wool at 300 feet.

Fueling and defueling operations should not be conducted within 275 feet of the radar beam,

US Navy report, 1958

RADAR RADIATION CAUSES FIRE—Returning from a routine flight, a ZPG-2 experienced what seemed to be an electrical fire. In-flight investigation indicated that the fire came from below the deck adjacent to the main inverter.

The deck plates were removed and CO₂ was discharged into the radome. Shortly thereafter the fire subsided. The airship returned to base and made a normal landing.

Later, removal of the radome fairing showed that oil from the bilge had seeped between the radome and the fairing and had accumulated in the low spot between them. A pair of pliers, a 1.5-volt battery, and several small pieces of wire were also found in this area. Charred portions of the radome and fairing described the path of the fire.

Investigation indicated that the fire was located in the dead space bounded by the car bilge bottom, the radome, and the after radome fairing. It was determined that the fire exhausted itself of oil and/or air and the discharged CO₂ did not reach the area.

Such objects as steel wool and aluminum chips can be set afire by the radiation pattern of this

Hypothesis or Fact?

- This hypothesis has been tested with a post-fire NM cable ("Romex") submitted for analysis to a well-respected materials laboratory. The conclusions yielded positive results of bond dissociation causing the breakdown of the PVC insulation material near the point of the resistive-heating-caused fire event.
- The analysis found molecular breakdown in PVC insulation that could have only been caused by RF radiation. The resulting breakdown compromises or destroys the insulating properties of PVC.

National Fire Statistics on Fixed Wiring Fires

- The following graphs were taken from an NFPA study dated September 2017. Please note the spike nationally on electrical fires to fixed wiring during 2012-2015, the time when most of the Smart Meters were initially installed and put into operation.

Electrical fires in the US for 2002 – 2016 (Source: NFPA)

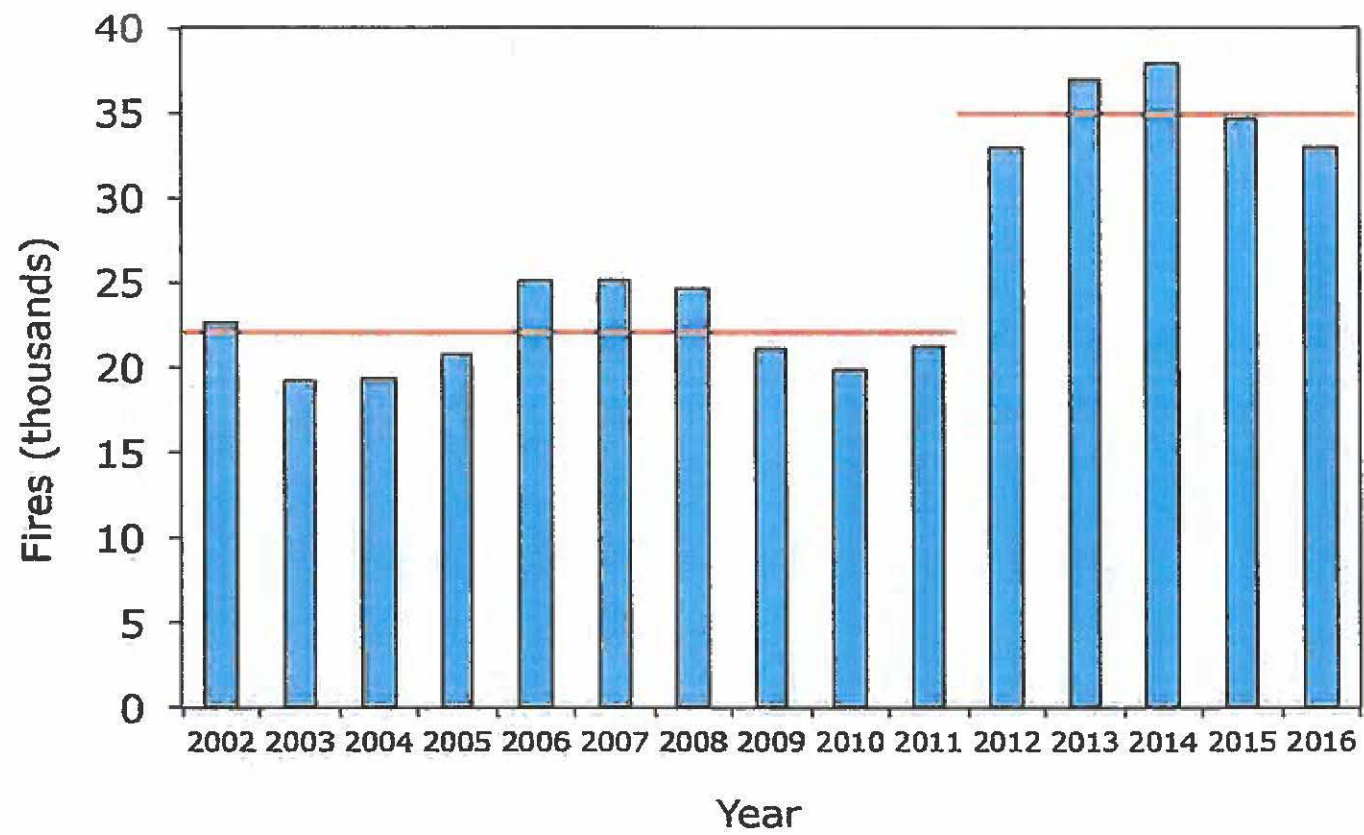


Figure 15. Home Electrical Distribution or Lighting Fires and Deaths, by Year

Figure 15A. Fires

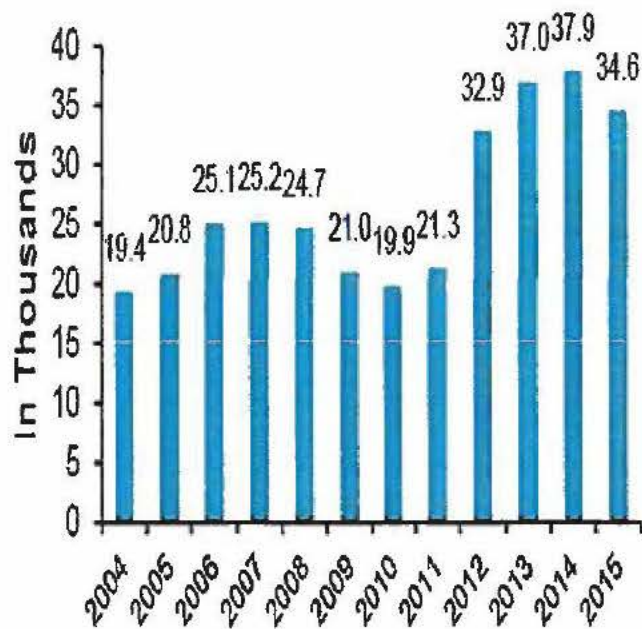
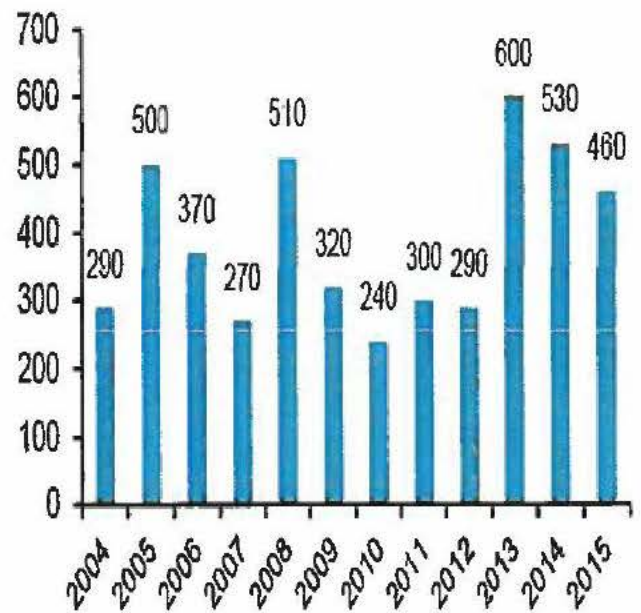


Figure 15B. Civilian Deaths



What the statistics indicate

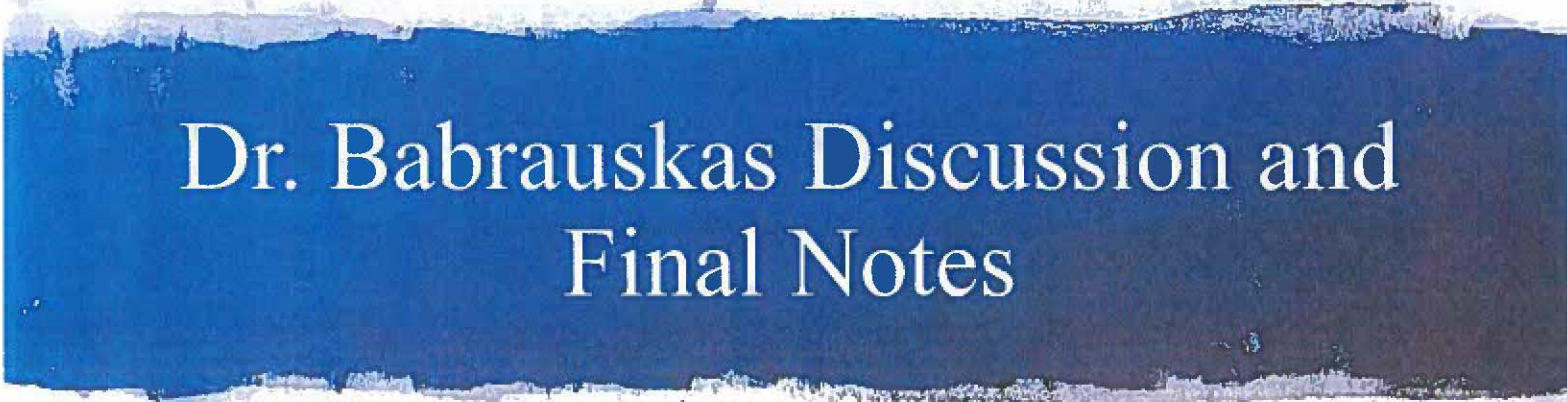
- The number of fixed wiring fires in the U.S. during 2002 – 2011 was approximately 22,000. For the next 5 years, the number rose to 35,000 or a 59% increase.
- The figures tend to suggest the presence of some specific change in conditions that would cause such a jump. For fixed wiring that is hidden in walls and ceilings, the possibility of accidental damage of the PVC insulation is remote. For any given case, this can be ruled out by examining for staple damage or mechanical damage.
- Utilizing the Scientific Method, the question to all who examine fires is simple: What is the cause of this deadly spike?

If not this, then what?

- This investigation has taken several years to discover, theorize, analyze, test and conclude without prejudice or agenda. The scientific team assembled to exam these large number of fires has explored every known scientific possibility and reason. Leaving only one question: If not this, then what...
- The fire investigator has one primary mission, to DETERMINE the origin and cause of fires. As you have seen, the number of a specific electrical fire classification has spiked greatly. Therefore, staying "on mission" requires an answer to this proliferation.
- The team continually invites any new possibilities...

Video compilation of arcing sound prior to flaming combustion

- Sound emission captured on radio band as “static” for hours preceding a fire caused by arc tracking prior to eruption of flaming combustion.



Dr. Babrauskas Discussion and Final Notes

Types of smart meter fires

Smart-meter-caused fires can be grouped into three broad categories:

- 1) **Inadequate mechanical or electronic design of the meter.**
 - Example: Overheating component(s) inside meter; water ingress into electronics due to poor sealing; inadequately-sized shut-off relays causing fire upon remote re-energization; faulty Li-ion batteries (note that mechanical meters do not need one).
- 2) **Problems at the meter/base stab connections.**
 - This has nothing to do with the “smart” aspects. Usually due to an untrained gorilla force-fitting the new meter onto the base.
- 3) **Ignitions of wiring at some distance from the meter.**
 - This is the sole topic of our presentation today. #1 and #2 are fairly well understood and not particularly controversial.

Research is needed...

- On PVC failure mechanisms due to RF heating
- On RF fields created due to smart meters
- However, we can start by considering what we do know now:

Some important regions of the EM spectrum

Spectral region	Wavelength (m)	Frequency (Hz)	Energy (eV)
RF	$> 10^{-3}$	$< 300 \text{ GHz}$	$< 1.24 \times 10^{-3}$
microwave	$10^{-3} - 0.3$	$1 \text{ GHz} - 300 \text{ GHz}$	$4.1 \times 10^{-6} - 1.24 \times 10^{-3}$
IR	$7.6 \times 10^{-7} - 10^{-3}$	$300 \text{ GHz} - 30 \text{ THz}$	$1.24 \times 10^{-3} - 0.124$
visible	$3.8 \times 10^{-7} - 7.5 \times 10^{-7}$	$4.0 \times 10^{14} - 7.9 \times 10^{14}$	$1.61 - 3.26$
UV	$10 \times 10^{-9} - 3.8 \times 10^{-7}$	$7.9 \times 10^{14} \text{ Hz} - 3.4 \times 10^{16} \text{ Hz}$	$3.26 - 141$
ionizing radiation	$< 1.24 \times 10^{-7}$	$> 2.42 \times 10^{15} \text{ Hz}$	> 10

RF heating

- Also called dielectric heating
- Old medical example: diathermy machines
- If it is in the microwave region, then it is called microwave heating

...Research...

- It is sometimes thought that, when RF fields are involved, one needs **ionizing radiation** in order to ignite or destroy a plastic.
- This is a fallacy. Ionizing radiation is of such huge frequencies (small wavelengths) that it only is found near nuclear reactions or in high-energy physics labs.
- Instead, normal microwaves (such as emitted by smart meters) can damage or destroy plastics due to **dielectric heating**.

...Research...

- An electric convection oven works in the visible/IR spectrum, yet try sticking in a piece of PVC wiring in there and turn it up to 550°F!
- The microwave portion of the spectrum shows only slightly lower eV values, which are also way below the 10-eV minimum to constitute ionizing radiation.
- Destruction is not due to ionizing, but simply due to thermal heating.

Bond breakage...

- Ionizing radiation will normally not be encountered in practical conditions.
- But there is an intermediate mechanism between ionizing radiation and dielectric heating: **bond dissociation**.
- To break a C-Cl bond requires about 350 kJ/mol, which is equal to 3.5 eV.
- Whereas to *ionize* a molecule, the energy required is often in the range 8 – 12 eV.

...Bond breakage

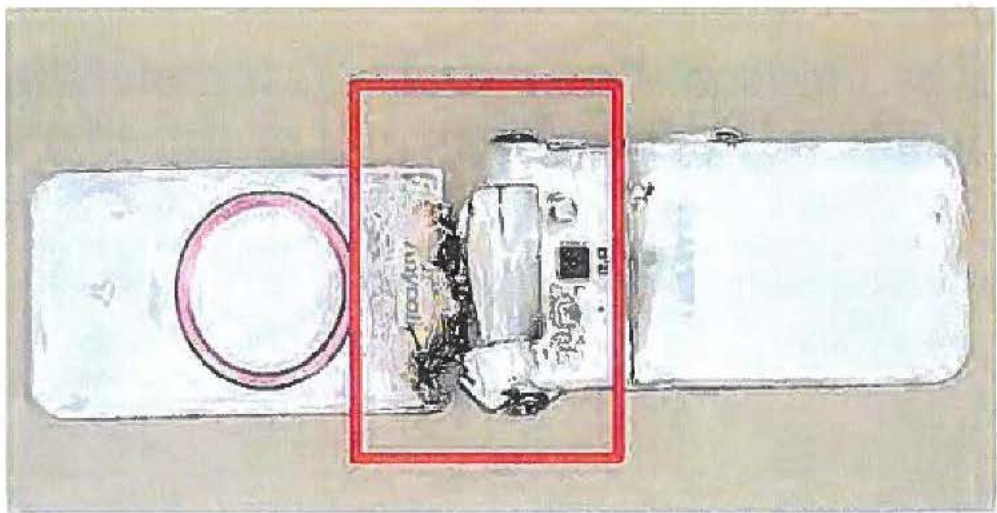
- Microwave heating regime is below the 3.5 eV (and is, in fact, below 1.24×10^{-3} eV)
- But this just means that a single photon is not energetic enough to destroy a single chemical bond.
- It does not say that cumulative input energy from the microwave spectrum will not overheat the plastic, degrade it, char it, and then maybe ignite it.

...Research...

- Dielectric heating, if sufficient in magnitude, can damage polymers
- The polymer (PVC here) gets damaged by an excessive temperature rise.
- The excessive temperature rise breaks some chemical bonds and creates others (cross-linking)
- The net result manifests as charring.
- You don't need ionizing radiation for this, you just need to put in enough heat.

Microwave heating

- Cellphones and microwave ovens are both very convenient modern electronic devices.
- But you should not put your cellphone in your microwave oven. If you do, get this:



*Photo:
Nam-Kyu Park*

Heating in microwave oven

- Note where the damage occurred to the flip-phone: near the hinge.
- The hinge is the single biggest metal object inside this particular model of flip-phone.

Fundamental dielectric heating equation

$$P = 2\pi\nu\epsilon\epsilon_0\mathcal{E}^2 \tan \delta$$

where

$\mathcal{E}$ = electric field (V m^{-1})

P = power absorbed per unit volume of dielectric (W m^{-3})

ϵ = relative permittivity (--),

ϵ_0 = permittivity of free space ($8.845 \times 10^{-12} \text{ F m}^{-1}$)

$\tan \delta$ = loss angle (--).

Sometimes also define for convenience a dielectric heating coefficient, J (--):

$$J = \frac{1}{\epsilon \tan \delta}$$

Dielectric heating coefficient

Material	J (--)	
phenol formaldehyde	1.0 – 1.9	worse
melamine formaldehyde	2.4	
urea formaldehyde	3.8	
PVC	20	
ABS	40	
polyethylene	1100	
polystyrene	1330	
		better

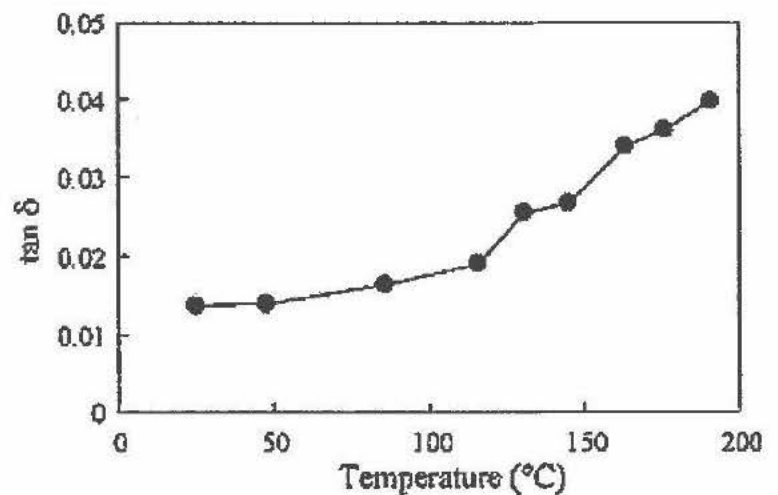
- So, PVC is not the worst...but it's bad enough

Dielectric heating equation

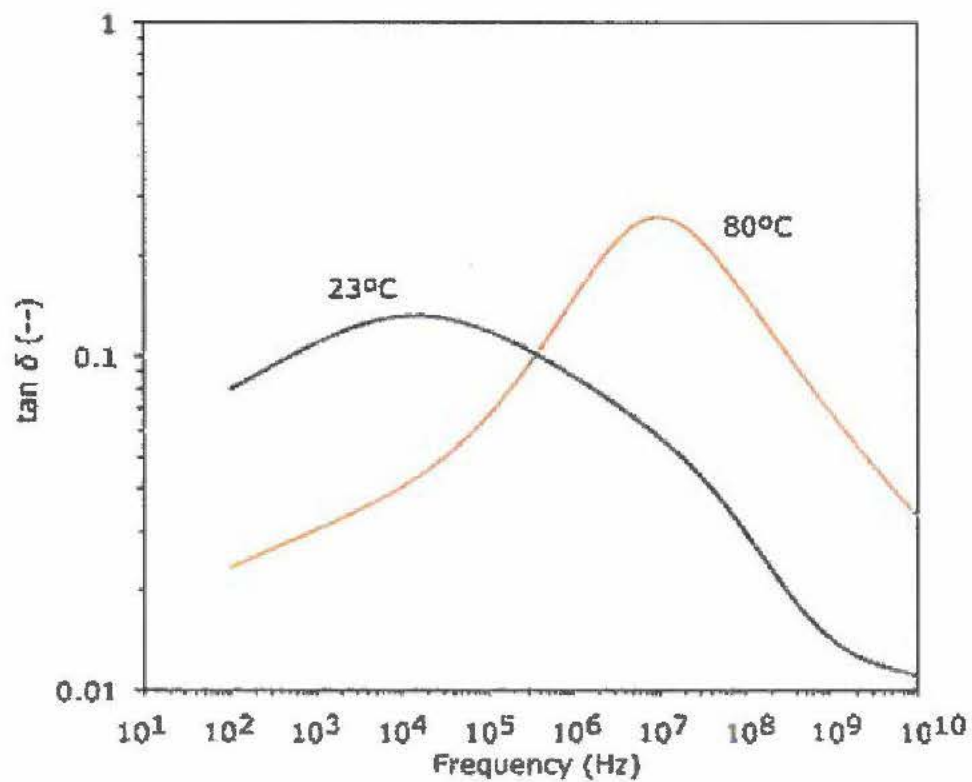
- The equation is fairly simple, but *using* it may not be simple.
- Primarily since ϵ and $\tan \delta$, vary with both frequency and temperature.

PVC temperature dependence of $\tan \delta$

- This is only applicable to 2.4 GHz; data for other frequencies are hard to find.
- Smart meters radiate in the 2.45 GHz band, but also 900 MHz and CDMA bands (850, 1900 MHz).



Combined temperature and frequency effect

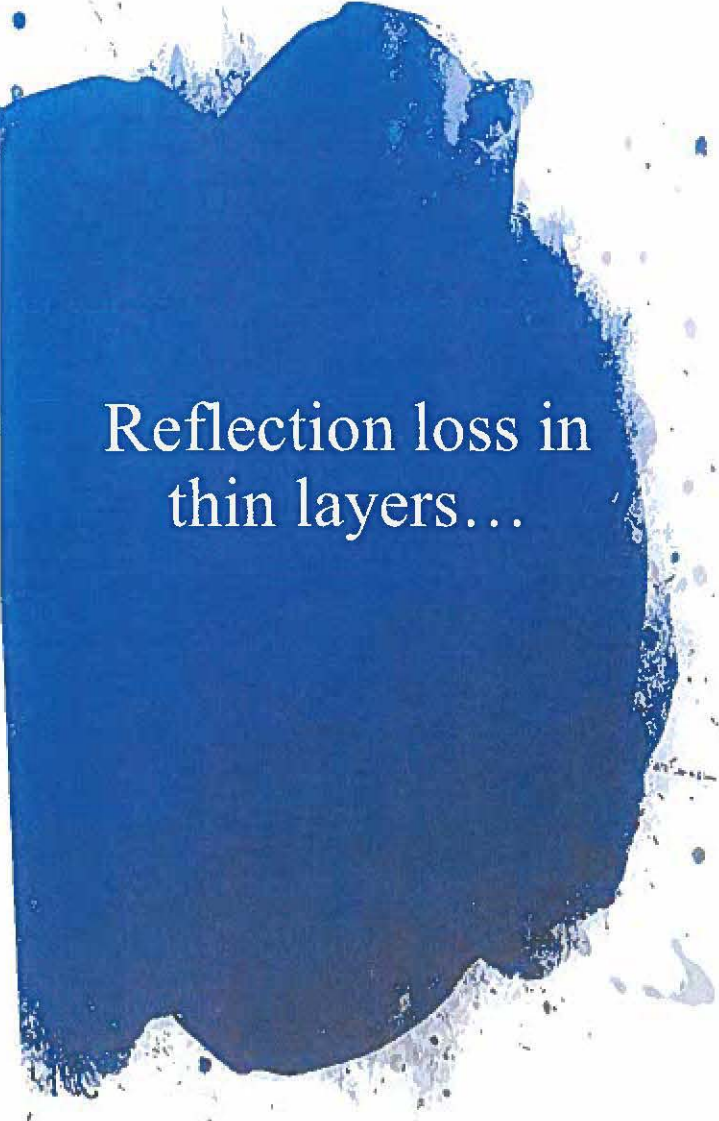


Microwave-metal interaction pyrolysis...

- This is a relatively new area of scientific study.
- While PVC has not yet been studied, work with some other polymers shows that the presence of metal in/at/near the polymer which is in a microwave field can greatly enhance the heating process.

...Microwave-metal interaction pyrolysis

- Gasner, L. L. Denloye, A. O., and Regan, T. M., Microwave and Conventional Pyrolysis of a Bituminous Coal, *Chem. Eng. Commun.* 48, 349-354 (1986).
- “*The presence of the two parallel copper wires led to a concentration of microwave energy within the coal mass and the wires in effect acted as antennae for microwaves.*”



Reflection loss in thin layers...

- Some studies exist on microwave losses due to reflections within thin layers, notably at $\frac{1}{4} \lambda$ and $\frac{3}{4} \lambda$.
- This effect shows sharp peaks localized at a specific frequency.
- Some experimental data from Duan.
 - Duan, Y., Wu, G., Gu, S., Li, S., and Ma, G., Study on Microwave Absorbing Properties of Carbonyl-Iron Composite Coating Based on PVC and Al Sheet, *Applied Surface Science* 258, 5746-5752 (2012).

Reflection loss in thin PVC layers

Layer thick. (mm)	Absorption peak (GHz)
1	5
2	4
3	2.6

“Non-thermal” microwave effects...

- For quite a long time, various studies have noted that microwave heating can—under some circumstances—provide more apparent heating, and greater rate of chemical reactions, than seems explainable by simply viewing the microwaves as a thermal energy source.

...“Non-thermal” microwave effects...

- This has proven perplexing to chemists, not just engineers. See for example, R. Dagani (1997).
- The simplest cause is the propensity for MW-heating to cause hot spots. This is very well known (why do you think the tray rotates in your MW oven?), but not always fully understood. Hot spots due to nonuniform external fields are well-understood, but hot spots due to the material's own response, less so.
- Hot spots are a “thermal” cause; other causes are termed “non-thermal.”

...“Non-thermal” microwave effects...

- A more “chemical” explanation is MW-induced alignment of dipolar reacting molecules or groupings, also called *MW-forced tightening* of opposite polar heads of co-reacting groups. (Parodi, 1999). Or, storage of MW energy in the vibration-energy modes of the molecule (Peng, 2015).
- Other causes can include dielectric and crystal lattice polarization, electronic and ionic conduction, eddy current circulation, and interfacial polarization at grain boundaries (Parodi, 1999).

...“Non-thermal” microwave effects

- Possibly also, non-thermal MW effects are due to direct lowering of activation energy of some reactions (Xu, 2015; Ahirwar, 2016). This is an active debate area in chemistry, and the issue is unsettled.

The role of standards

- With most electrical devices, the public expects that there will be engineering standards which prevent fires and electric shock injuries.
 - But with smart meters, the situation is unusual.
- IEEE Std 1377, IEEE Std 1701, IEEE Std 1702, IEEE Std 1703, and IEC 62056 standards exist. But they only deal with data-interchange issues, not device safety.
- Way after the initial wave of smart meter rollouts, in 2014, UL first issued UL 2735, which is the first standard to contain some safety provisions.
 - BUT, compliance is not required. And there is no indication at this point if this standard is preventing fires.

Current status

- The above has been a “brainstorming” output on the problem.
- Hypotheses have been considered, but need experimental examination (or, in some cases, checking against existing research work).
- The problem is very real, so now must come some concerted study to unravel the details.

How could things be fixed?

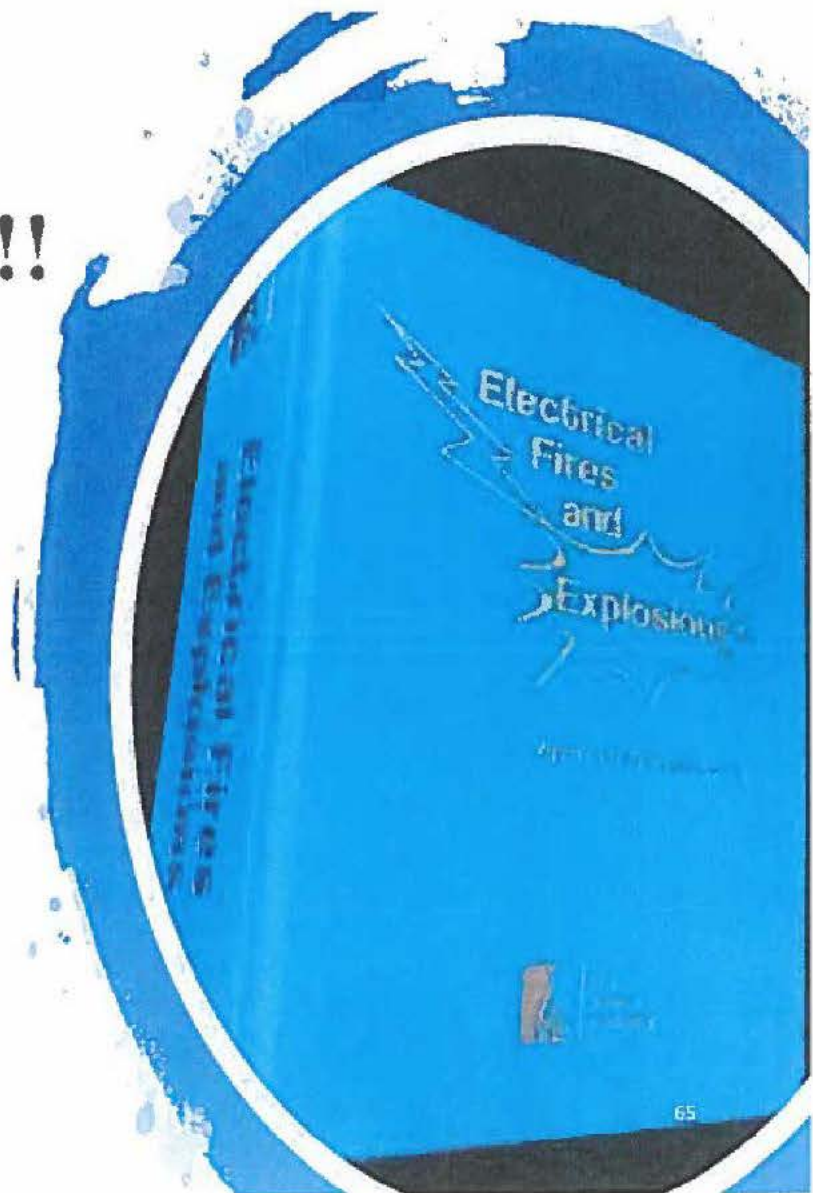
- It appears that the bulk of the problem may be due to the fact that RF (MW) power is directly coupled into wiring.
- An external antenna, used instead, would alleviate much of this.
- Models of smart meters are available with external antennas.
- Some countries (Italy, Portugal) require external antennas, with the antennas to be mounted above roof-level.



The end

Breaking news !!!

- Brand new book, **Electrical Fires and Explosions**, will be released in about 2 weeks.
- 1300 pages
- Bigger than the **Ignition Handbook**
- Only sold in hardback; only on www.doctorfire.com web store.
- More information there on smart meter fires, plus all things electrical.



ENGINEER REPORT

**IN THE SUPREME COURT OF PENNSYLVANIA
MIDDLE DISTRICT**

RE: No. 34 MAP 2021, *Povacz, M, et al. v. PUC*

Associated Case(s):

35 MAP 2021 Consolidated
36 MAP 2021 Consolidated
37 MAP 2021 Consolidated
38 MAP 2021 Consolidated
39 MAP 2021 Consolidated
40 MAP 2021 Consolidated
41 MAP 2021 Consolidated
42 MAP 2021 Consolidated
43 MAP 2021 Consolidated
44 MAP 2021 Consolidated
45 MAP 2021 Consolidated

Engineer Report – Smart Meters Operation & RF Emissions

Purpose of Statement

1. My name is Erik S. Anderson, P.E. I am a forensic electrical engineer working on root cause failure analysis of matters that cause loss of property, personal injury, and loss of life.
2. I am submitting my expert opinion regarding the operation of smart meters and digital meters and in support of the *amici*.

Credentials

3. I am the president of an engineering firm that offers professional engineering and investigation services across the United States and manufactures current transformers.¹

4. It is my expert opinion that these smart and digital meters cause a significant amount of radio-frequency (RF) “noise” on homes’ electric wiring system, thereby transforming them into a whole house antenna.

5. I have a Bachelor’s of Science degree from North Dakota State University, Fargo, North Dakota, in Electrical and Electronic Engineering. I am a licensed Professional Engineer in the states of Minnesota, Illinois, Arizona, Wisconsin, Indiana, Iowa, New Mexico, Texas, Louisiana, California, Kentucky, Michigan, and Nevada. I am a licensed Class A Master Electrician in the state of Minnesota. I also hold a Private Investigator License in Arizona and I am a Certified Fire and Explosion Investigator.

6. I have 30 years of experience as a forensic engineer. I have over 20 years of experience of design and manufacture of current transformers. I have been involved in many thousands of matters concerned with determining the root cause of failures of electrical devices that may have caused a loss of property, personal injury, or loss of life. I have given expert witness testimony in approximately 113

¹ <https://www.aenpi.com/>

separate matters. I personally have tested smart meters and given expert testimony regarding their operation and emissions. My *curriculum vitae* is attached (Exhibit 1).

7. As a designer and manufacturer of transformers, their operation is one of my main areas of expertise. Switch Mode Power Supply modules used by smart and digital meters are merely another type of transformers. I have investigated the involvement of the operation of the Switch Mode Power Supply in these meters and their involvement in the creation of radio frequency (RF) emissions.²

8. My expert determination principally relies on my own smart meter testing. I do also rely on reviews by other experts, their' testing reports and my professional education and vast experience.

Smart Meter Operation

9. Smart meters create intense exposure to pulsed radio frequencies (RF) in a few ways. RF antennas are embedded within the smart meter to transmit data usage to utility companies and/or to communicate with other smart meters or with other "smart" devices like home thermostats. These antennas emit pulsed RF radiation. The various radiofrequencies emitted by these antennas also conduct through the home electric wiring. RF "wire conducted" frequencies come also

² An explanation of what are radio frequencies and about the electromagnetic spectrum can be found in the scientists' statements which is also attached to the *amicus* brief as well as in the *amicus* brief itself.

from the conversion process from alternating current (AC) to direct current (DC) handled by the Switch Mode Power Supply (SMPS).³ Non-transmitting digital meters also use SMPS, and therefore they too create RF, even though they do not contain a transmitting RF antenna for communications. These radio frequencies are transmitted on the residence's electrical distribution system and conduct over the internal wiring, thereby turning the home into a whole-house antenna.

RF Emissions from the Transmitting Antennas

10. The RF antennas that wirelessly transmit the consumer's electrical power usage data to the utility company use frequencies in the 900 MHz & 2,400 MHz range. These emissions are intense and can occur often, up to 190,000 times a day.⁴ From my experience and testing done by others, these meters transmit more times than the electric companies report. This can easily be shown by measuring the emissions with a simple RF meter.

11. "Isotrope Wireless,"⁵ which provides industry and municipalities with design, specification, evaluation, and construction support for wireless facilities, tested smart meters in three houses.⁶ This testing showed that RF emission from the smart meters' transmitting antennas could be detected throughout the house and

³ In some meters the conversion is done using capacitors instead of SMPS.

⁴ <https://childrenshealthdefense.org/pa-amicus-sage-smart-meters/>.

⁵ <https://www.isotrope.im/about-2/>.

⁶ <https://childrenshealthdefense.org/pa-amicus-isotrope/>.

were “well above” the ambient RF radiation levels.⁷ These pulsed RF emissions exceed the absolute energy output limits⁸ stated in Federal Communications Commission (FCC) guidelines (if the emissions are not averaged over a 30-minute exposure as prescribed by those guidelines).⁹

RF from Wireless Antennas Enter the House’s Electrical System

12. The Isotrope testing also showed that the house’s electrical wiring conducted substantial levels of the RF emissions at 915 MHz – the communications-related frequency for that meter¹⁰ – and this frequency was then radiated from outlets (electrical power delivery points) and along the house wiring (branch circuitry).

⁷ <https://childrenshealthdefense.org/pa-amicus-isotrope/#page=12>.

⁸ <https://childrenshealthdefense.org/pa-amicus-sage-smart-meters/#page=3>.

⁹ On August 13, 2021, the Court of Appeals for the DC Circuit ruled that the FCC’s 2019 decision that its guidelines adequately protect the public’s health are arbitrary, capricious and not evidence-based. The Children’s Health Defense is a Petitioner in this case. *Env’tl. Health Tr., et al v. FCC*, Nos. 20-1025, 20-1138, 2021 U.S. App. LEXIS 24138 (D.C. Cir. Aug. 13, 2021). The opinion specifically questioned whether the FCC’s testing procedures adequately captured the effect of pulsation or modulation. 2021 U.S. App. LEXIS 24138, *12, *29.

¹⁰ Smart meters use a variety of frequencies for communications depending on the manufacturer’s choice. PECO’s meters operate at around 901 MHz. They also contain a “Zigbee” antenna that can be turned on and then communicate with nearby wireless smart devices. Zigbee uses 2400 MHz band.

13. Thus, the pulsed RF emissions from the smart meter's transmitting antenna not only enter the house wirelessly but also enter into and are conducted along the house's electrical wiring

RF "Noise" From the Switch Mode Power Supply

14. Other RF frequencies besides the RFs from the transmitting antennas, also enter the house electric system. In my testing I have witnessed and analyzed smart meters' effects on the incoming electrical power voltage waveform. These frequencies are a byproduct of the AC/DC conversion process which is done by the Switch Mode Power Supply (SMPS). The conversion process is necessary because utility service employs alternating current whereas the electrical components in smart meters use direct current.¹¹

15. SMPS converts the 240 Volt AC power coming into the meter from the main power transformer, into the much lower DC voltage that the electronic devices require to function. The rapid back-and-forth conversion process used to remove the "alternating" aspect creates *unintended* RF frequencies. The on/off, back-and-forth, pulses can occur up to 150,000 times per second, which means frequencies of up to 150,000 Hz (150 KHz¹²), are created. These kilohertz

¹¹ Smart meters also rely on AC for some of the non-electronic functions they perform.

¹² 1,000 Hz is a kilohertz ("KHz"). 1,000,000 Hz is a megahertz ("MHz"). 1,000,000,000 Hz is a gigahertz ("GHz").

frequencies are within the RF band of frequencies.¹³ Most of the observed “noise” spikes are in the range of 2 to 50 kHz (2,000 to 50,000 Hz).¹⁴ The switching RF “spikes” are variable, and they are being imposed on the 60 Hz house electricity wave,¹⁵ creating significant unintended RF “noise.”

16. These frequencies are present all the time but are worse when less electricity is being used (e.g., at night) and when the smart meter’s electronics need more power, for example, when transmitting RF bursts to the utility. These RF transmission bursts cause spikes over the electric wiring, and they are created because the SMPS has to suddenly supply more DC power.

Digital Meters Use SMPS and Therefore Also Created Unintended RF

17. Digital meters also use SMPS. Therefore, even though they do not contain an RF communications antenna, the AC/DC conversion process creates significant and variable RF spikes over the electrical wiring, which is then radiated into the house.

¹³ FCC defines RF as frequencies between 3 KHz – 300 GHz.

¹⁴ Finding of Fact 87 in *McKnight v. PECO* (once of the cases on hold below) states that “PECO’s AMI meters do not produce 5 Hz, 3 kilohertz, or 5 megahertz fields. (April 13, Tr. 75-76).” While I have some doubt this is actually so, this finding does not rule out emissions in the other frequencies I list.

¹⁵ Electricity comes to the house at a frequency of 60 Hz.

Analog Meters Do Not Have SMPS and Do Not Create RF Spikes

18. In contrast, unlike wireless smart meters and digital meters, analog meters do not contain an SMPS or other electronic components that create unintended RF frequencies. No AC/DC conversion is necessary, and unlike smart and digital meters, analog meters have a separate wired grounding rod that eliminates much of the “noise” that may come from the energy feed.

19. The images below compare a smart meter like that used by PECO¹⁶ with an analog meter. The red waveform is the 60 Hz house electricity frequency. The yellow waveform indicates the RF frequencies imposed over the 60 Hz. Image 1 shows that an analog meter does not create RF spikes. Image 2 shows the smart meter causing significant RF spikes “noise” over the 60 Hz frequency house electric wiring system.¹⁷

¹⁶ <https://childrenshealthdefense.org/wp-content/uploads/pa-amicus-bathgate-pa-smart-meters.pdf>. Pages 17-18.

¹⁷ <https://childrenshealthdefense.org/wp-content/uploads/pa-amicus-bathgate-pa-smart-meters.pdf#page=14>.

Image 1: Analog Meter – No RF Spikes

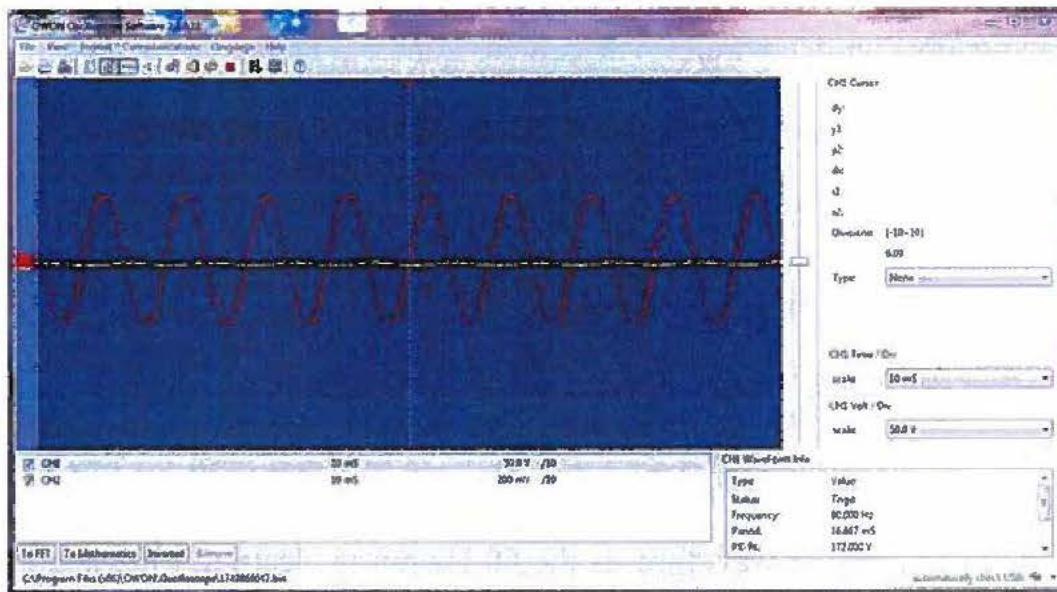
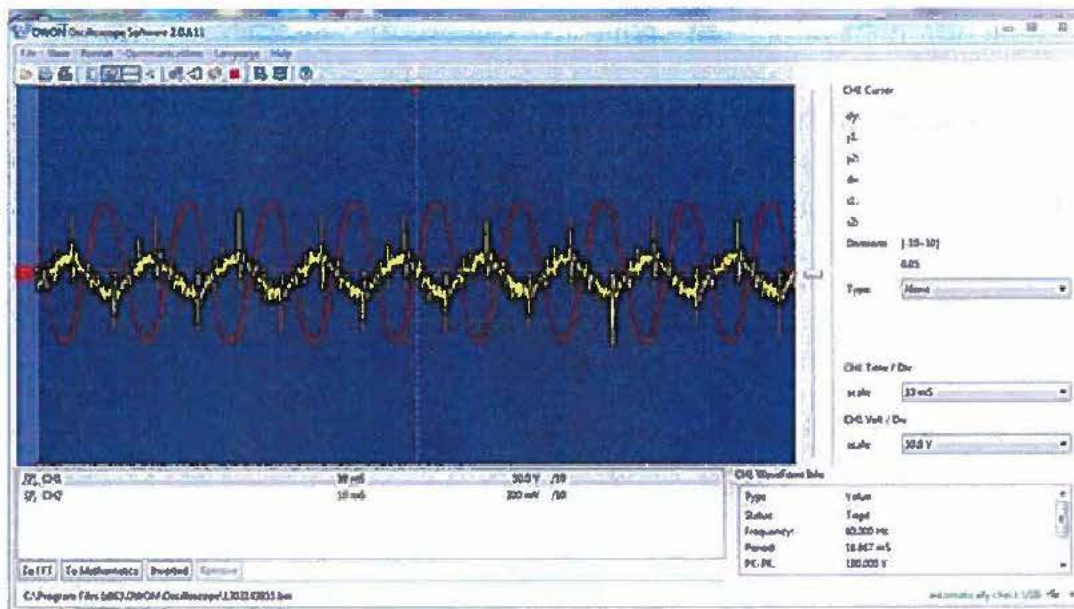


Image 2: Smart Meter – Intense RF spikes.



My Smart Meter Testing:

20. My test setup consisted of a meter socket enclosure suitable for 120/240 Volt, single-phase, three-wire connection. A smart meter, Landis & Gyr,

Gridstream RF, Focus AXR-SD, Form 2S, CL200, 240 V, 3 W, 60 Hz, power meter was used.¹⁸ The voltage waveform was captured with a Fluke 215C Scopemeter. One input to the Scopemeter was connected to the incoming voltage, 120 Volts-to-Ground, unfiltered. The other input to the Scopemeter was connected to the incoming voltage with the 60 Hz waveform filtered out. A radiofrequency emissions meter was also used to indicate when an RF signal increase was detected.

21. When the test equipment was connected to the incoming power, the waveform of the incoming electrical power was observed. The 60 Hz signal was recognized as the dominant frequency with some noise observed on the waveform. The 60 Hz was filtered out to analyze the noise on the signal.

22. When the smart meter was not connected, the noise level was approximately 45 milliVolts at its peak. When the smart meter was added to the circuit, the noise on the 60 Hz sine wave was noticeably larger, approximately 85 milliVolts. This is nearly double the amount of noise than without the smart meter.

23. The dominant frequencies are in the range of 2 to 50 kHz. These are the frequencies that the “smart meter” generates when it is transmitting.

¹⁸ PECO uses this meter, or one quite like it. R995a, 1046a.

Conclusion and Opinion

24. There is no doubt that smart and digital meters create pulsed RF emissions and these emissions, from the smart meters' antennas and the RF created by the SMPS, both enter the house's electric system. The result is that the entire house is transformed into a radiating RF antenna.

25. Any meter with a switch mode power supply will create RF frequencies in the Kilohertz range that enter the electrical wiring system of the house. Smart meters and digital meters inject significant levels of RF onto the home's electrical distribution system.

26. This report is based on information learned to date. I reserve the right to amend, clarify, or change my opinions based on more work or information learned.

Respectfully Submitted:

A handwritten signature in black ink, appearing to read 'Erik S. Anderson', followed by a long horizontal flourish.

Erik S. Anderson, P.E.

ENGINEER REPORT – Exhibit 1



Anderson EngineeringTM
of New Prague Inc.

ANDERSON ENGINEERING OF NEW PRAGUE, INC.

9007 S. Third Street
Phoenix, Arizona 85042
Office: (602) 437-5455
Mobile: (952) 292-6416
Email: eanderson@aenpi.com

ERIK S. ANDERSON Registered Professional Engineer

REGISTRATION: Licensed Professional

Engineer

State of Minnesota	1991	21471
State of Illinois	1999	062052733
State of Arizona	2003	39627
State of Wisconsin	2008	39418-006
State of Indiana	2008	PE.10809314
State of Iowa	2008	18758
State of New Mexico	2008	19001
State of Texas	2009	102714
State of Louisiana	2009	PE.0034787
State of California	2010	105359
State of Kentucky	2012	28492
State of Michigan	2013	6201060247
State of Nevada	2013	022690

Other Licenses:

Licensed Class A Master Electrician – State of Minnesota	1995	AM005344
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Private Investigator – Arizona	2011	1615601
Private Detective – Illinois	2017	115.002549
Private Investigator – Minnesota	2019	PDC 2098

Certified Fire and Explosion Investigator (NAFI -CFEI)	2012, 2017	17853-9760
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EDUCATION: B.S. in Electrical and Electronic Engineering
North Dakota State University, Fargo, North Dakota, 1987.

Chemical Engineering Course Work
University of Minnesota, Minneapolis, Minnesota, 1981-
1983.

CONTINUING EDUCATION: Hazardous Materials: HAZWOPER: 40-hour worker 2008
Annual 8-Hr. HAZWOPER Refresher Course: 2009, 2010, 2011, 2012, 2013, 2014, 2015

Asbestos Awareness: 05/09, 3/14, 09/16, 01/2020

Annual Fire Investigation Seminar Instructor
Maricopa AZ: 04/08, 03/09, 03/12, 03/13

Minnesota Chapter IAAI Fire & Arson Conference
3/88, 3/89, 3/90, 3/01, 3/05, 3/06.

Instructor: Fire/Arson Level 3
Mesa, Arizona, 10/03.

Illinois Chapter IAAI Northern Zone Winter Seminar
Instructor: Electrical Appliance Fires, 2/03.

Completed Code & Code Change Class
Minnesota Electrical Association – National Electrical Code
1/99, 2/01, 1/03, 1/05, 1/07, 1/09, 1/11, 2/13, 5/15, 2/17, 3/19, 2/21

Illinois Chapter IAAI Fire Investigation Conference
Instructor: Forensic Electrical Engineering Principles & Practices, 9/99.

Graduate Course Work, University of Minnesota
Minneapolis, Minnesota, 1995-1997.

Master Electrician Course, Hennepin County Technical
College, Eden Prairie, Minnesota 3/95.

Completed Designing Electrical Systems for Hazardous
Locations University of Wisconsin-Madison, 4/92.

Completed Electrical Fires Accidental and Deliberate
Sponsored by Georgia Chapter of IAAI, 12/91.

Completed Fire and Arson Investigation Course,
Nebraska State Fire & Arson Investigators Conference, 10/87

EXPERIENCE: 01/05 - Present Anderson Engineering of New Prague, Inc., Phoenix, AZ
President & Forensic Electrical Engineer. Responsible for all
aspects of business operations including engineering services
to clients, product testing, fire investigation, and failure
analysis.

Our case load also includes construction defect cases involving the evaluation of the workmanship of the electrical subcontractor and personal injury cases involving electric shock and/or electrocutions.

4/87 – 1/05 Anderson Engineering of New Prague, Inc., New Prague, MN
Electrical Engineer. Responsible to client for engineering services including product testing, fire investigation, and failure analysis.

Midwest Current Transformer, Division of Anderson Engineering of New Prague, Inc., New Prague, MN.
Designer, manufacturer, and quality control engineer of current transformers.

1/84 - 11/84 O.S. Anderson Engineering, Inc., New Prague, MN.
Research and Design Coordinator. Duties included work on transponder design for communications system through earth.

6/83 - 9/83 Koch Refinery, Southeast St. Paul, MN. Conducted ultrasound testing on oil refinery systems.

1981 & 1982 O.S. Anderson Engineering, Inc., New Prague, MN.
(Summers) Assistant Engineer. Designed software for and compiled data of E-fields generated by high voltage transmission lines, assisted in investigations of various cases involving questions of product liability.

PROFESSIONAL AFFILIATIONS: Member Institute of Electrical and Electronic Engineers.
Member National Society of Professional Engineers.
Member Minnesota Society of Professional Engineers.
Member International Association of Arson Investigators.
Member National Fire Protection Association.
Member National Association of Fire Investigators.
Member American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

EXPERT	Arbitrations:	02
TESTIFYING	Depositions:	91
WITNESS:	Trials:	27
	Arizona	01
	Corporation	
	Commission	

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2. The Wireless Meters are a Privacy Violation and easily hacked. They must constantly be updated and replaced every 3-5 Years. (We the Consumer are charged for this!) The Safe and Private Analog Mechanical Meters were Hardwired, couldn't be hacked and lasted 35-50 Years!

3. The Utility Companies are allowed to Depreciate these Wireless Meters every 5 years which means they and the IRS know that they do not last! This means We the Consumer pay for the New Wireless Meters over, and over, and over again! We the Consumer are paying a fortune for Dangerous technology we don't want or need!

4. The Entire Utility Grid could have already been Rebuilt using the Analog Mechanical Meters and Keeping the Safe Hardwiring Grid Systems with LESS MONEY than has already been wasted to keep replacing, upgrading, hiring technicians, storing data (that none of us agreed to let them collect), etc...for these greedy utilities. (Consumers are being billed each time they have to replace, upgrade, hire hacking prevention technicians, etc...for these meters. We are not Paid for damages caused to our property, health and Environment by these wireless meters.)

5. Those of us who have chosen to keep our Safe Analog Mechanical Meters are being charged "Opt-Out" Fees even though we never "Opted In" and then we are also being charged for the replacement wireless meters that the utilities forced on other consumers who didn't know about the dangers. Why do we have to bear the costs of Someone Else's Ignorance or Stupidity?

6. Bills are ALWAYS Inaccurate with Electric, Gas, and Water the minute these Wireless Meters are installed. Consumers who normally pay \$30-\$40/month for water suddenly get \$200 water bills after their neighbors drain and refill their pools! Consumers who live by themselves and use barely any electric suddenly get astronomical bills because their next door neighbors have kids (and parents) who constantly use electronic devices, leave lights on, cook more, etc.... This has been proven by numerous studies several of which are in your case files.

7. Our Health is being damaged by the wireless mesh network that is being created around and in our homes and businesses. Even if we choose not to have a wireless meter on our home, the radiation frequency from the surrounding homes with wireless meters radiates through our homes, into our bodies, into our yards and through the city causing illness, diseases, and even killing humans, pets, wildlife, trees, plants, birds, bats, bees etc... The wireless frequencies leak onto our lines and end up causing more dirty electricity into our homes. This is causing our Medical Bills, Veterinarian Bills, Funeral Expenses, etc., to increase due to the negligence of the Utility Companies.

8. Homes and Businesses are Catching Fire and/or Burning Down due to the installation of these wireless meters and the Utility Companies are not held liable! (In Most Cases, Insurance will not cover the damages caused by these fires when they find out the Wireless Meter Caused the Fire.) We are the ones being Financially, Physically, and Emotionally DAMAGED by the Utility Companies!

9. Water Heaters, Washers, Dryers, TV's, Furnaces, Lighting Systems, Medical Equipment, Electronics of all kinds, etc... work Intermittently, Short Out, or Catch Fire. This is proven to be caused by these Wireless Meters and yet the utility companies don't have to pay us for the damages their equipment has caused! We the Consumer have to pay for their Negligence! (Many have been "Electrocuted" in their bathtub or feel "Stray Currents!")

10. Garage Doors are suddenly opening/closing because the Wireless Meters interfere with other radio frequencies. This means you are No Longer Safe in your Home. You go to bed with the garage door closed and suddenly it opens on its own leaving you vulnerable to robbery or even being murdered! If you are at work or gone on vacation and the door opens up, you could come home to all your Valuables gone!

11. Utility Companies are Collecting Data from the wireless meters that we never agreed to or wanted collected and are now charging us to store that illegally gained and collected data.

12. Utilities are INTENTIONALLY eliminating or selling off the Analog-Mechanical Meters so that they can perform a "Bait and Switch" and force Customers into "Digital Opt-Out Meters" which still Transmit Wirelessly using Zigbee Technology and cause the same damages as above.

We the Undersigned Say "NO" to a Rate Increase due to the above mentioned reasons (as well as many more...) (* **Please Include Over 2000 Documents and Complaints turned into Kentucky PSC Case Files 2012-00428 , 2016-00394, 2016-00187, 2016-00152, 2016-00370 regarding REASONS NOT TO INSTALL Wireless Meters... Violations and Consequences of which are NOW HAPPENING since they were Approved!**)

We Request that the Ky PSC Seriously consider Eliminating All Wireless Utility Meters in order to Return to the **Safe, Hardwired, Analog-Mechanical Meters that last 35-50 Years and Don't Cause Financial losses, Health Damage, Property Damage, and Environmental Damage to the Consumers.**

The Utility Companies are Stealing Our Hard Earned Money!

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[illegible]

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- 2. The Wireless Meters are a Privacy Violation and easily hacked. They must constantly be updated and replaced every 3-5 Years. (We the Consumer are charged for this!) The Safe and Private Analog Mechanical Meters were Hardwired, couldn't be hacked and lasted 35-50 Years!**
- 3. The Utility Companies are allowed to Depreciate these Wireless Meters every 5 years which means they and the IRS know that they do not last! This means We the Consumer pay for the New Wireless Meters over, and over, and over again! We the Consumer are paying a fortune for Dangerous technology we don't want or need!**
- 4. The Entire Utility Grid could have already been Rebuilt using the Analog Mechanical Meters and Keeping the Safe Hardwiring Grid Systems with LESS MONEY than has already been wasted to keep replacing, upgrading, hiring technicians, storing data (that none of us agreed to let them collect), etc...for these greedy utilities. (Consumers are being billed each time they have to replace, upgrade, hire hacking prevention technicians, etc...for these meters. We are not Paid for damages caused to our property, health and Environment by these wireless meters.)**
- 5. Those of us who have chosen to keep our Safe Analog Mechanical Meters are being charged "Opt-Out" Fees even though we never "Opted In" and then we are also being charged for the replacement wireless meters that the utilities forced on other consumers who didn't know about the dangers. Why do we have to bear the costs of Someone Else's Ignorance or Stupidity?**
- 6. Bills are ALWAYS Inaccurate with Electric, Gas, and Water the minute these Wireless Meters are installed. Consumers who normally pay \$30-\$40/month for water suddenly get \$200 water bills after their neighbors drain and refill their pools! Consumers who live by themselves and use barely any electric suddenly get astronomical bills because their next door neighbors have kids (and parents) who constantly use electronic devices, leave lights on, cook more, etc.... This has been proven by numerous studies several of which are in your case files.**
- 7. Our Health is being damaged by the wireless mesh network that is being created around and in our homes and businesses. Even if we choose not to have a wireless meter on our home, the radiation frequency from the surrounding homes with wireless meters radiates through our homes, into our bodies, into our yards and through the city causing illness, diseases, and even killing humans, pets, wildlife, trees, plants, birds, bats, bees etc... The wireless frequencies leak onto our lines and end up causing more dirty electricity into our homes. This is causing our Medical Bills, Veterinarian Bills, Funeral Expenses, etc..., to increase due to the negligence of the Utility Companies.**
- 8. Homes and Businesses are Catching Fire and/or Burning Down due to the installation of these wireless meters and the Utility Companies are not held liable! (In Most Cases, Insurance will not cover the damages caused by these fires when they find out the Wireless Meter Caused the Fire.)
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12. Utilities are INTENTIONALLY eliminating or selling off the Analog-Mechanical Meters so that they can perform a "Bait and Switch" and force Customers into "Digital Opt-Out Meters" which still Transmit Wirelessly using Zigbee Technology and cause the same damages as above.

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4. The Entire Utility Grid could have already been Rebuilt using the Analog Mechanical Meters and Keeping the Safe Hardwiring Grid Systems with LESS MONEY than has already been wasted to keep replacing, upgrading, hiring technicians, storing data (that none of us agreed to let them collect), etc...for these greedy utilities. (Consumers are being billed each time they have to replace, upgrade, hire hacking prevention technicians, etc...for these meters. We are not Paid for damages caused to our property, health and Environment by these wireless meters.)
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7. Our Health is being damaged by the wireless mesh network that is being created around and in our homes and businesses. Even if we choose not to have a wireless meter on our home, the radiation frequency from the surrounding homes with wireless meters radiates through our homes, into our bodies, into our yards and through the city causing illness, diseases, and even killing humans, pets, wildlife, trees, plants, birds, bats, bees etc... The wireless frequencies leak onto our lines and end up causing more dirty electricity into our homes. This is causing our Medical Bills, Veterinarian Bills, Funeral Expenses, etc., to increase due to the negligence of the Utility Companies.
8. Homes and Businesses are Catching Fire and/or Burning Down due to the installation of these wireless meters and the Utility Companies are not held liable! (In Most Cases, Insurance will not cover the damages caused by these fires when they find out the Wireless Meter Caused the Fire.)
We are the ones being Financially, Physically, and Emotionally DAMAGED by the Utility Companies!

9. Water Heaters, Washers, Dryers, TV's, Furnaces, Lighting Systems, Medical Equipment, Electronics of all kinds, etc... work Intermittently, Short Out, or Catch Fire. This is proven to be caused by these Wireless Meters and yet the utility companies don't have to pay us for the damages their equipment has caused! We the Consumer have to pay for their Negligence! (Many have been "Electrocuted" in their bathtub or feel "Stray Currents!")

10. Garage Doors are suddenly opening/closing because the Wireless Meters interfere with other radio frequencies. This means you are **No Longer Safe in your Home.** You go to bed with the garage door closed and suddenly it opens on its own leaving you vulnerable to robbery or even being murdered! If you are at work or gone on vacation and the door opens up, you could come home to all your Valuables gone!

11. Utility Companies are Collecting Data from the wireless meters that we never agreed to or wanted collected and are now charging us to store that illegally gained and collected data.

12. Utilities are INTENTIONALLY eliminating or selling off the Analog-Mechanical Meters so that they can perform a "Bait and Switch" and force Customers into "Digital Opt-Out Meters" which still Transmit Wirelessly using Zigbee Technology and cause the same damages as above.

We the Undersigned Say "NO" to a Rate Increase due to the above mentioned reasons (as well as many more...) (* **Please Include Over 2000 Documents and Complaints turned into Kentucky PSC Case Files 2012-00428 , 2016-00394, 2016-00187, 2016-00152, 2016-00370 regarding REASONS NOT TO INSTALL Wireless Meters... Violations and Consequences of which are NOW HAPPENING since they were Approved!**)

We Request that the Ky PSC Seriously consider Eliminating All Wireless Utility Meters in order to Return to the Safe, Hardwired, Analog-Mechanical Meters that last 35-50 Years and Don't Cause Financial losses, Health Damage, Property Damage, and Environmental Damage to the Consumers.

The Utility Companies are Stealing Our Hard Earned Money!

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[illegible]

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1. The **Utility Companies are extorting monthly fees from us** for keeping our safe analog-mechanical utility meters. According to Federal Law, these wireless meters were to be offered and not Mandated. (According to the Utility Companies Meter Readers were too expensive and these fees are to read the meters. Meter Readers were already part of having a Analog Mechanical Meter so why now do we suddenly have to pay for a service we have always had? Meter Readers lost their jobs because they were supposedly too much expenditure, but now the consumer is paying 4x as much without them because the wireless equipment is more costly and has to be constantly upgraded and replaced. Meter Readers were cheaper and the Analog Mechanical Meters were Safe, Private, and definitely more Efficient! Meter Readers were a part of our original service. Why do we have to pay to keep our original service? Wireless Meters need to be Eliminated! They are not Safe or Cost Effective!

2. The Wireless Meters are a **Privacy Violation and easily hacked. They must constantly be updated and replaced every 3-5 Years. (We the Consumer are charged for this!) The Safe and Private Analog Mechanical Meters were Hardwired, couldn't be hacked and lasted 35-50 Years!**

3. The Utility Companies are allowed to Depreciate these Wireless Meters every 5 years which means they and the IRS know that they do not last! This means We the Consumer pay for the New Wireless Meters over, and over, and over again! We the Consumer are paying a fortune for Dangerous technology we don't want or need!

4. The Entire Utility Grid could have already been Rebuilt using the Analog Mechanical Meters and Keeping the Safe Hardwiring Grid Systems with LESS MONEY than has already been wasted to keep replacing, upgrading, hiring technicians, storing data (that none of us agreed to let them collect), etc...for these greedy utilities. (Consumers are being billed each time they have to replace, upgrade, hire hacking prevention technicians, etc...for these meters. We are not Paid for damages caused to our property, health and Environment by these wireless meters.)

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6. Bills are ALWAYS Inaccurate with Electric, Gas, and Water the minute these Wireless Meters are installed. Consumers who normally pay \$30-\$40/month for water suddenly get \$200 water bills after their neighbors drain and refill their pools! Consumers who live by themselves and use barely any electric suddenly get astronomical bills because their next door neighbors have kids (and parents) who constantly use electronic devices, leave lights on, cook more, etc.... This has been proven by numerous studies several of which are in your case files.

7. Our Health is being damaged by the wireless mesh network that is being created around and in our homes and businesses. Even if we choose not to have a wireless meter on our home, the radiation frequency from the surrounding homes with wireless meters radiates through our homes, into our bodies, into our yards and through the city causing illness, diseases, and even killing humans, pets, wildlife, trees, plants, birds, bats, bees etc... The wireless frequencies leak onto our lines and end up causing more dirty electricity into our homes. This is causing our Medical Bills, Veterinarian Bills, Funeral Expenses, etc., to increase due to the negligence of the Utility Companies.

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Name	Address	Utility Company	Signature

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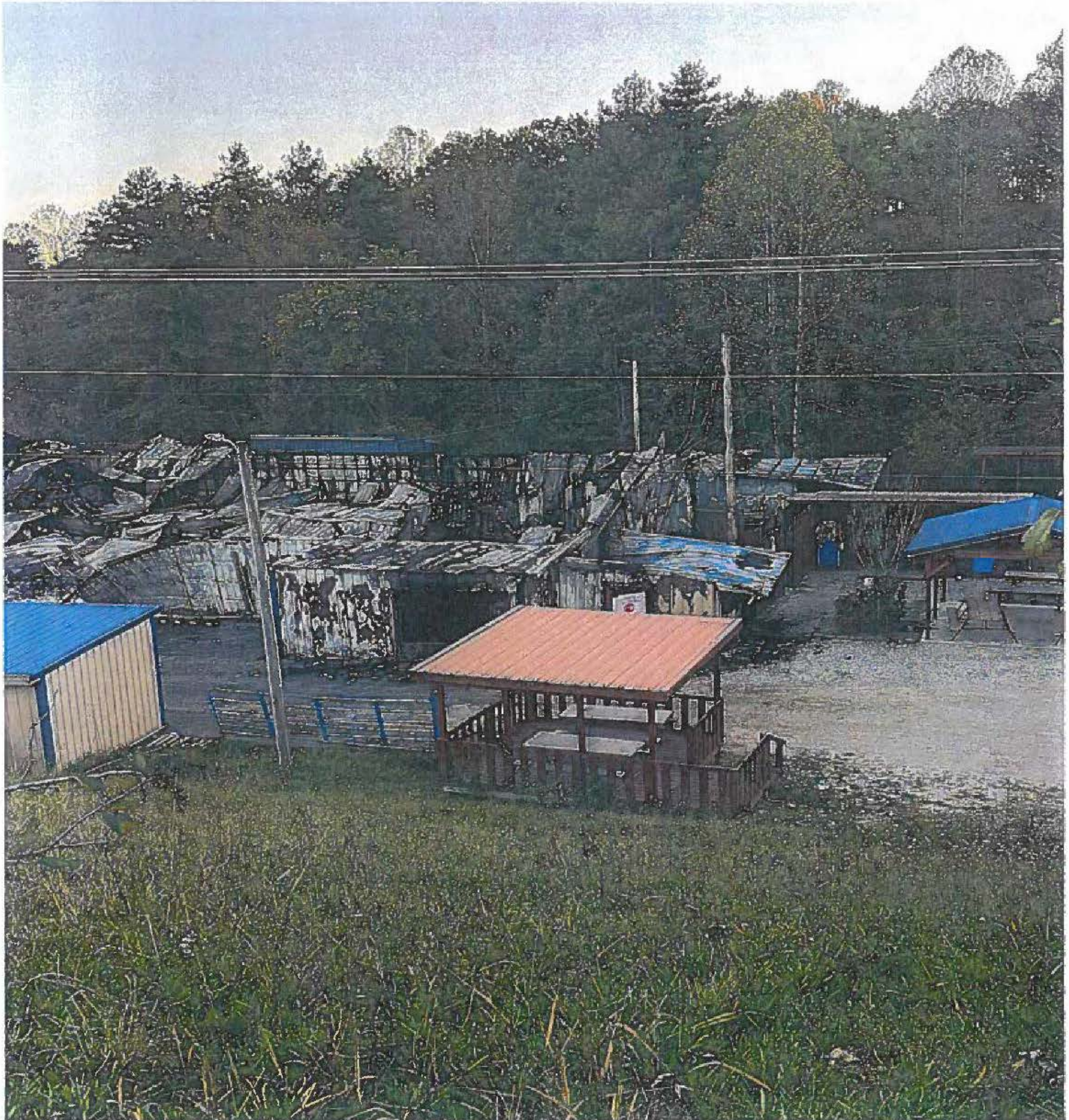
Name	Address	Utility	Signature
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PUBLIC COMMENT

Smart Meter Fire!
CS 2025-00113 & 00114

took these pictures of the Wicked Wolfe

(We all ate together there on the day we went to meet with Licking Valley Rural Electric Co Op Corporation to request Analog Mechanical Utility Meters instead of the Dangerous Wireless Meters they have installed.) (We had given them the documentation of all the Fires and Illnesses caused by these Class 2b Carcinogenic Meters and they basically laughed in our faces and claimed that the residents loved how easy it was to track their Energy Usage)





INDIE COMMENT



Family restaurant The Wicked Wolfe working to return to serving customers after devastating fire

By: [Kayleigh Randle](#)

Posted 7:00 PM, Oct 15, 2025

and last updated 3:57 PM, Oct 17, 2025

Smart Meter Fire!



UPDATE: Oct. 17 at 4 p.m.

A popular Campton restaurant is working to get back on its feet after a devastating fire destroyed the building.

The owners of The Wicked Wolfe in Wolfe County lost everything when flames destroyed the restaurant Tuesday night. No one was hurt, but the building was a total loss.

The owners are now considering buying a food truck to put on site while they rebuild. They're asking the community to let them know if anyone has an affordable food truck for sale.

"Our intention is 100% to rebuild if we are able, but of course that will take time," the restaurant said on social media Thursday. "It is one option to buy a food truck to put on site and that way we could still offer a limited menu, continue to serve our customers, have an income, and be right on site to oversee the rebuild."

The family says they're taking things hour by hour, but are determined to serve customers again.

"As you can imagine we have had a very shocking and devastating couple of days. We did want to take a moment to check in and more importantly thank each and every one of you for your outpouring of love, prayers and support," they continued.

Original Story:

A family-run restaurant in Wolfe County was destroyed Tuesday night when fire swept through The Wicked Wolfe in Campton, leaving nothing but smoke, ash, and burnt walls behind.

Owner Amy Draper said the restaurant was more than just a business — it was their entire livelihood and a place where the family worked together every day.

"And it was a family restaurant. It was us and our kids, and we got to spend the day every day working with them, and it was just wonderful customers, and it was just our whole life," Draper said.

Draper learned about the fire when her son called to report flames in the kitchen. He had already called the fire department and safely evacuated the building.

"When we got here, it was pretty big in one area. But for the next two hours, we just watched it take the whole place down," Draper said.

Wolfe County fire crews have not confirmed what caused the fire.

The financial impact is devastating for the family. Draper said the restaurant was their only source of income, and most of their savings had gone into recent renovations.

"The hardest part is this was going to be all of our incomes. Our only income. So we now have our kids who don't have an income, and we don't have an income. We don't know what that looks like," Draper said.

The family had just purchased new barstools and a pizza oven, and had plans to add a dance floor to expand the restaurant.

Despite the overwhelming loss, Draper said the support from the local community is helping them get through each day. The family is determined to rebuild and continue serving the Campton area.

"We're not gonna sit back, we're gonna do every step we need to take to hopefully rebuild again. We want to be here. We love being here. We love serving the customers of Campton and the surrounding areas. We've built so many bonds with people. We just want to be back doing that," Draper said.



We are
taking action through
**LITIGATION, EDUCATION,
SCIENCE and ADVOCACY**



September 01, 2023

**70 yr/old Woman Composer Forced to Live Outdoors by
Utility's Insistence on Smart Meter Installations**



Updated 9/20/11 9:07 AM

Liza Regina Mousios of Revette, Bucks Co. , is a renowned composer, lyricist, orchestrator, and scriptwriter, and is moving into a tent today, though she is not doing so to enjoy the outdoors for Labor Day. She has been forced from her home for over 4 years now by a smart meter mandated by the Pennsylvania legislature. Her electric utility, Met Ed, refused to accommodate her disability. Smart meters have been completely rolled out to replace previously installed electric meters. These new smart meters transmit electrical usage wirelessly, allow utilities to remotely disconnect power, and collect data from certain wireless devices within the home.

Liza, who is over 70 years old now, knew she had electromagnetic sensitivity prior to the smart meter installation but was able to manage her symptoms. Electromagnetic sensitivity, also known as EMS, is a disability recognized by the US Access Board and listed in the Americans with Disabilities Act. An electrical engineer visited her home and took measurements, noting that the levels of electromagnetic radiation were among the highest he had measured.

The radiation was emitted by the neighbor's smart meter and included both radiofrequency and microwave radiation from the smart meter as well as the conducted electromagnetic emissions on the household wiring from the meter's switch-mode power supply. Submitting a formal complaint (as did hundreds of other Pennsylvanians) and subsequent legal proceedings, Liza prevented the installation of a smart meter on her own home yet had no control over installations on adjacent neighbors homes.

The meter's radiation creates pressure in Liza's head, especially the occiput. The microwave radiation creates horrific stabbing pain in her ears with high pitched ringing, impeding her ability to compose. Her connective tissue feels on fire, especially in her arms. She experiences sharp pain in her muscles and joints. Newer symptom developments include suffering from lung pain and restriction with shortness of breath and horrific pain in her chest and palpitations. If in the house, exposed to the radiation for a number of hours, Liza vomits blood. She has never previously had any such bleeding or gastric problems

Read [LIZA's AFFIDAVIT](#) presented to the PA House Consumer Affairs Committee.

Liza slept in her car and in a tent for the first nine months after being injured by severe electromagnetic sensitivity from the neighbor's meter. Every time she tried to sleep inside her house after the smart meter was installed, she would become violently ill and vomit blood. She never had this problem before and is without symptoms in a home with an electrically clean environment—one without wireless devices such as smart meters, Bluetooth, WIFI, cell phones, etc. Her physician wrote letters documenting her adverse reactions to the smart meter and her increasing electromagnetic sensitivity, which the utility company continued to ignore. Liza persevered in the tent.



The smart meter that caused Liza's disabling electromagnetic sensitivity

When it became too cold, she worked harder to try to find a place to live. It was difficult to work during this time because she did not have safe housing or a safe work environment. Access to a piano was intermittent at best. A local pastor allowed her to use the one in a church for a period of time. Her talent and gift of music is broadly recognized. Academy Award winning composer Joe Renzetti, who has worked with Liza, says "She is a wonderful, clever, composer, capable of composing, orchestrating, writing lyrics, scriptwriting, and with a good understanding of stage direction and choreography. She is very talented, hard-working, reliable and versatile. Ms. Mousios is able to compose and orchestrate jazz, R&B, theater and film music. She is also well-versed in composing all styles of music; baroque, fugues, classical, modern."

The Opera Project's Director Walt MacNicoll writes that Liza "is in my sincere belief one of the finest and most original composers of the last fifty years. Liza's talent is undeniable, as it is indefatigable."

Liza's housing has been precarious since the smart meter was installed. Every residence in Pennsylvania is mandated to have a smart meter, so very few homes do not. Liza found a room in a secluded old house in a wooded area that lacked safe water and heat but did not have a smart meter. She had to drive back home to shower and brush her teeth. Liza eventually found housing in an empty convent, though it also had no heat. Despite these significant hurdles, she was able to function and work on her music when it was warm enough. She is highly motivated, loves her music, and just wants to work.

The convent housing was wrought with other insurmountable obstacles, forcing Liza back into a state of homelessness.

Liza agreed to share her story publicly in order to bring attention to the detrimental effects of smart meters and the lack of housing available for people disabled by electromagnetic sensitivity. Liza would be most grateful for any assistance anyone can provide, especially with respect to finding safe and permanent housing for her and others in this situation. It is estimated that up to 30% of the population is developing electromagnetic sensitivity and that up to 3% of the population has already developed severe symptoms similar to Liza's.

Dear Kentucky Public Service Commission, President, agents, officers, employees, contractors and interested parties of Ky PSC;

This Letter is for Public Comment in regards to Case File 2016-00394

I am enclosing a CD with Unbiased Research and Documentation which I wish you to study thoroughly and then post with the public comments so that those unaware can be educated to the dangers of these wireless utility meters.

I live in a different state where all of us have become symptomatic and sick after chronic exposure to wireless utility meters. We were recently made aware that Ky PSC is considering allowing Kentucky American Water to deviate from annually inspecting their meters, meter settings, and valves. In regards to the wireless water meters that these utility companies have forced unknowingly on the public, I feel it is my responsibility to protest this deviation. These wireless water meters are known to cause billing errors based on malfunctions, spiking during usage, incorrect data information at collector units, and much, much, more! The following information provided should be more than enough to warrant the removal of the wireless water meters. If the removal is not done, then the utilities should be forced to inspect the dangerous wireless water meters on a monthly basis due to all the malfunctions and damages associated with their installations!

Any and every party intending to install (or who have installed) any "wireless" utility meters (Also referred to as; AMI, AMR, ERT, AMS, Smart Meters or any other deceptive name) or any activity-monitoring device on anyone's home should be denied consent for installation and denied consent for use of all such devices on all properties. Any wireless utility meters already installed, should definitely not be allowed to deviate from inspection requirements, but instead should be required to remove the devices immediately and be required to inspect them monthly until they are removed! Installation and use of any activity-monitoring device should be refused and prohibited. Based on the Federal Wiretap Act and the Stored Electronic Communications Act, informed consent is legally required for installation of any surveillance device and any device that will collect and transmit private and personal data to undisclosed and unauthorized parties for undisclosed and unauthorized purposes. Authorization for sharing of personal and private information may only be given by the originator and subject of that information.

The United States Federal Energy Policy Act of 2005 states as follows: the utility shall offer customers a time-based rate; and for customers who request a time-based rate, the utility will provide a time-based smart meter. Therefore, the customer has the right to decide to refuse a smart meter, and the customer should not be challenged on this decision by a utility representative. The customer should not incur any additional charge for this decision nor for maintaining the utility meter presently in operation on their properties. In essence, the smart meter program is truly an "Opt-In" program.

As a customer of other similar utility companies in a different state, I feel it is my responsibility to help other individuals who are being affected by these dangerous wireless meters just as we are here. I am opposed to all wireless utility meters for the following reasons:

1. Duke Energy, all of its associated Utilities, (as well as other Utility Companies not listed here) and the Kentucky Public Service Commission are well aware of not only the violations listed above, but the Health and Environmental Damages caused by accumulation of exposure to these Class 2b labeled Carcinogenic / DNA damaging, wireless utility meters. This is evidenced by carefully reading all of the case files listed below as well as reading the unbiased medical research, doctors letters, public complaints, lawsuits, etc... that have been filed against the utilities and the PSC's;

RECEIVED

*Ohio PSC : Case File 14-1160-EL-UNC

FEB 22 2017

*Kentucky PSC: Case File 2012-000428, 2016-00394, 2016-00187, 2016-00152, 2016-00370

Public Service
Commission

*South Carolina PSC: Case File 2013-59-E

*Florida PSC: Case File Docket No. 130223

*North Carolina PSC: Docket No. E-7 Sub 1115 (Note: Originally Docket No. E-100, SUB 141)

2. In May 2011, the World Health Organization's International Agency for Research on Cancer (IARC) classified radiofrequency electromagnetic fields (RF-EMF) as a possible human carcinogen (Group 2B) in the same classification as lead, DDT, and chloroform. We do not want additional layers of pulsed radiofrequency electromagnetic fields in our homes.
3. Wireless meters identify electrical devices inside the home and record when and for how long they are operated, resulting in an invasion of our privacy. They monitor household activity and occupancy in violation of our rights to privacy in our homes. According to a February 2012 Congressional Research Service Report entitled *Smart Meter: Privacy and Cybersecurity*, the Department of Energy reported that by matching data with known appliance load signatures, smart meters will be able to reveal people's daily schedules, their appliances and electronic equipment, and whether they use certain types of medical equipment. /
4. Wireless meters transmit information-carrying radio waves which can be intercepted by unauthorized and unknown parties. The signals can be used to monitor behavior and occupancy, and they can be used by criminals to aid criminal activity against the occupants. Former CIA Director James Woolsey accounted the wireless security threat at http://www.metacafe.com/watch/4260978/jim_woolsey_grid_security_is_afterthought
5. Data about residents' daily routines and activities are collected, recorded, and stored in the utility's databases, which are accessed by parties not authorized by occupants to know and share that private data. Those databases may be handed off to criminals, blackmailers, corrupt law enforcement, private hackers, power company employees, and anyone who may act against the interests of the occupants who are under metered surveillance.
6. Medical research has documented that smart meters can negatively impact health. In April 2012, the American Academy of Environmental Medicine (AAEM) issued a position paper entitled, *Electromagnetic and Radiofrequency Fields Effect on Human Health*. According to the report, "Multiple studies correlate RF exposure with diseases such as cancer, neurological disease, reproductive disorders, immune dysfunction, and electromagnetic hypersensitivity.... many in vitro, in vivo and epidemiological studies demonstrate that significant harmful biological effects occur from non - thermal RF exposure... Genetic damage, reproductive defects, cancer, neurological degeneration and nervous system dysfunction, immune system dysfunction, cognitive effects, protein and peptide damage, kidney damage, and developmental effects have all been reported in the peer - reviewed scientific literature." In a press release, the AAEM calls for immediate caution regarding smart meter installations due to potentially harmful exposure to pulsed radiofrequency radiation.
7. Dr. Magda Havas, Associate Professor of Environmental & Resource Studies at Trent University in Peterborough, Ontario, Canada has received emails and phone calls from occupants of properties where wireless meters were recently installed. They complain of ill health, including new symptoms such as headaches, insomnia, anxiety, skin rashes, tinnitus, heart palpitations, depression, fatigue, and short-term memory loss. The following link (EMF Safety Network), has specific accounts of deteriorating health after wireless meters were installed: http://emfsafetynetwork.org/?page_id=229
8. Wireless meters continually transmit pulsed digital microwave radiation (RF-EMF) 24/7. According to a report issued by Pacific Gas and Electric Company, some wireless meters transmit up to 190,000 pulses per day. 2
9. Wireless meters can interfere with arc-fault circuit interrupters and have been the suspected cause of explosions and fires.
10. The required power conversion of wireless meters causes harmonic distortion within electrical systems (otherwise known as "dirty electricity"). Dirty electricity has links to cancer.
11. Wireless meters cause radiofrequency interference. On November 19, 2011, Portland Press Herald reported that the Maine Public Advocate's Office issued the following statement, "*Smart Meters are interfering with a wide range of household electronic devices, from garage door openers and WiFi devices to security systems.*" "
12. Utilities claim that wireless meters will cause customers to monitor their electrical usage to conserve more electricity. However, a British study reported on Sept. 2, 2011 that thousands of citizens with a wireless meter on their home over the course of one year experienced little to no change in electrical usage. In many other states consumers have reported outrageous billing errors and problems with collector units associated with the wireless meters which cause severe spikes and mis-information regarding billing.

13. Dr. David Carpenter states in his letter to the NCUC;

While the strongest evidence for hazards coming from RFR is for cancer, there is a growing body of evidence that some people develop a condition called electrohypersensitivity (EHS). These individuals respond to being in the presence of RFR with a variety of symptoms, including headache, fatigue, memory loss, ringing in the ears, "brain fog" and burning, tingling and itchy skin. Some reports indicate that up to three percent of the population may develop these symptoms, and that exposure to smart meters is a trigger for development of EHS.

- Smart meters operate with much more frequent pulses than do cell phones, increasing the potential for adverse health impacts.
- Smart meter pulses can average 9,600 times a day, and up to 190,000 signals a day. Cell phones only pulse when they are on.
- Cell phone RFR is concentrated, affecting the head or the area where the phone is stored, whereas smart meter RFR affects the entire body.
- An individual can choose whether or not to use a cell phone and for what period of time. When smart meters are placed on a home the occupants have no option but to be continuously exposed to RFR.

I am asking that the Kentucky Public Service Commission respond ethically and morally by stopping the abuse of money and power in relationship to these unethical and criminal acts against our freedoms and health.

I am asking that the Kentucky Public Service Commission protect all humans, pets, wildlife, and the environment against the damages caused by the accumulation of these wireless radiation frequencies which will only continue to increase unless responsible, ethical, and morally responsible leaders take action to stop this illegal activity.

Please protect all consumers in Kentucky against the above mentioned by installing only safe analog utility meters and not charging any fees for insisting upon the usage of, and/or returning to the usage of safe analog utility meters.

Please stop all deceptive practices in regards to ignoring the unbiased research and allow the public to be made aware of all the dangers related to wireless utility meters so that they can make "informed" decisions regarding their utility services.

I am asking you to protect our rights to privacy and protection as stated above and to require Kentucky American Water to inspect their wireless water meters monthly until they are replaced again with Safe Analog Water Meters!

Sincerely,

Brandy Calvert

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County: McDowell

Date: Feb. 4th, 2017.