

OVERVIEW:

Fire and Electrical Hazards from ‘Smart’, Wireless, PLC, and Digital Utility Meters

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In the last twelve+ years, utility companies have launched major roll-outs of electronic digital meters across the United States and globally for electric, natural gas, and water service. These meters include wireless transmitting Smart or AMI Meters, AMR meters and ERTs, and powerline communication (PLC, BPL) meters.

Due to meter design and function, these digital meters can malfunction in several ways. Electric digital meters can allow surges and overvoltage to flow into buildings which can burn wiring and destroy appliances and electronics. They can interfere with arc and ground fault circuit interrupters. Meters have exploded and have caused fires, and they have likely contributed to the severity of other fires. Some of the fires have resulted in the deaths of people and their pets. Water and gas AMI/AMR/digital meters pose additional hazards.

These problems are known to the industry, regulatory commissions, some fire officials, the news media, and insurance companies, and were the subject of a dispute before the National Labor Relations Board. This paper is on known problems with meters used in the U.S. and Canada, but electrical problems and fires are occurring internationally.

Australia, Daily Telegraph, March 1, 2012

The state's electrical union fears someone will have to die before safety concerns about controversial smart meters are addressed. The Electrical Trades Union has repeated demands to suspend the rollout until power companies commit to mounting all meters on flame-resistant boards. But the Government and suppliers are adamant the units aren't a fire risk and are safer than those they replaced. Energy Safe Victoria is investigating claims power surges are causing smart meters to explode.¹

“Our experience has shown that these issues are systemic in the industry and we are committed to delivering solutions that help our customers to overcome these challenges,” said Sensus President Randy Bays in 2014.² Sensus manufacturers Smart Meters.

Institute of Electrical and Electronics Engineers (IEEE), 2012:³

We are seeing a spate of reports from around the United States—and indeed around the world—of fires believed to have been caused by smart meters that were

¹ <http://www.heraldsun.com.au/news/more-news/smart-meter-death-fears/story-fn7x8me2-1226285463342>

² <http://globalnews.ca/news/1489707/manufacture-defends-smart-meters-after-fires/>
August 3, 2014, citing Sensus press release

³ <http://spectrum.ieee.org/energywise/energy/the-smarter-grid/smart-meter-fire-reports>

faulty, incorrectly installed, or connected to circuits where there were unfortunate and unforeseen effects. This appears to be not just a matter of freak incidents that may or may not have taken place here or there... Obviously all companies with smart meter programs, and all their suppliers and sub-contractors, are going to have to take a close look at the issue of fire hazards. This is just the beginning of a difficult story. Companies installing smart meters already have run into a lot of consumer push-back because of concerns about privacy, security, and--sometimes--higher rather lower electricity costs. The last thing the smart grid needs is meters causing fires.

Utility companies and regulatory commissions have publicly denied these problems. Fire and electrical risks have not been disclosed to the public. In California, the California Public Utilities Commission refused to release results of a 2013 preliminary investigation on Smart Meter fires and declined to investigate further. California fire officials have yet to launch a public investigation despite continuing problems.

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In the U.S., common names for these meters include Smart, AMI (advanced metering infrastructure), AMR (automated meter reading), PLC (powerline communication), BPL (broadband over powerline), and ERT (encoder receiver transmitter). I use “Smart” or “digital” to describe these meters. Common electric meter brands used in California by investor owned utilities (IOUs) and municipal utility districts are Landis & Gyr, GE/Aclara (Aclara acquired GE’s electric meter division in 2015), and Itron.

Surges, surge protection, and grounding

Surges in the electrical current flowing through power lines can be caused by lightning strikes, power lines touching (eg. during windstorms, from falling branches, or when a pole is knocked down), malfunctioning transformers or other electrical equipment, disconnection and reconnection of power, arcing, fires on the lines, momentary connection losses, and other electrical problems.

Cyber-security expert Cynthia Ayres also told the Michigan legislature:

It should be noted that massive surges (with much greater effects than weather related or other types of flow interruptions) are associated with severe space weather (geomagnetic storms caused by coronal mass ejections from the sun) and electromagnetic pulse (EMP) associated with high–altitude nuclear explosions – both of which have been known to cause arching [sic] and fires.⁴

Without protection, surges can flow into a building, destroying wiring and appliances, and start a fire. This can happen in seconds.

Detroit, March 17, 2017:

A 95-year-old grandmother died this week after she was rushed to the hospital after power was restored to the family’s home and a surge started a fire.
Reginald Hollman said after last week’s powerful storm, his family home lost power.

⁴ Testimony to Michigan House Energy Committee March 7, 2017

<https://smartgridawareness.org/2017/03/12/expert-testimony-retain-analog-systems/>

When power was restored, he said a surge rushed through home, starting a massive fire.⁵

Traditional analog electromechanical electric meters have a ground connection as well as surge protection which is based on spark-gap technology (like a spark plug).⁶ The spark gap functions like a circuit breaker and protects the house from surges and overvoltage conditions. The analog electric meter clips to a pair of semi-circular metal rings that is connected to the meter box. These are connected to a neutral wire, then to a grounding rod which is in the ground. Spark gap technology allows current that exceeds a set threshold – generally 450 volts -- to “jump the gap”, and the voltage is conducted to the ground. This spares the meter, the building, the building’s wiring, and the plugged-in electronics from damage and fire. One engineer told me that a particular analog meter model would entirely disconnect power to the house if a surge was present and reset on the next half-cycle (within a few milliseconds) once the surge was gone.

The 1973 patent⁷ for an overvoltage surge arrester for GE meters by Ansell Palmer is an example of this technology.

Electric Power Research Institute, 2010:

Electromechanical meters had no digital circuitry. They utilized spark-gap to control the location of arc-over and to dissipate the energy of typical voltage events. As a result, they were generally immune to standard surge events. This nature is evidenced in the section of ANSI C12.1 that specifies voltage surge testing, but allows that ‘This test may be omitted for electromechanical meters and registers.’⁸

This sophisticated spark-gap technology has worked for decades, protecting buildings from overvoltage conditions. Even with lightning strikes, analog meters with this technology have survived and protected their buildings. And this technology works repeatedly without damage to the meter, because there are no electronic components to wear out. In the case of a home that survived two lightning strikes (up to 30 million volts), the home and the meter were fine, because the surge went to ground.

New Smart/AMI/AMR/digital meters do not have this surge protection and do not have a connection to the ground.⁹ See Appendix A photos comparing the back of an analog meter

⁵ <http://www.fox2detroit.com/news/local-news/242346844-story> link no longer works,

⁶ <http://www.google.ca/patents/US3735259>

⁷ <http://www.google.ca/patents/US3735259>

⁸ <https://skyvisionsolutions.files.wordpress.com/2015/06/eprl-accuracy-of-digital-meters.pdf>

“Accuracy of Digital Electricity Meters”, Electric Power Research Institute, May 2010, p.7

⁹ For example, <http://www.freedom2sayno2smartmeters.org/wp-content/uploads/2018/06/Evaluation-of-the-Aclara-I-210C-AMI-Meter-v1.3.pdf> p. 5-6, Evaluation of the Aclara I-210+C AMI Meter, William Bathgate, May 30, 2018 (Aclara purchased GE AMI division)

with the back of an AMI meter.

Instead, meter manufacturers put a varistor – a voltage dependent resistor, or variable resistor -- on the digital meter circuit board.

All electronics have varistors. When there is an increase in voltage, the varistor will increase the resistance of the circuit to try to dampen the amount of voltage going across the lead. Voltage exceeding the varistor's limit (300-350 volts) will cause the varistor to explode, ruining the circuit board and the appliance or electronic equipment.

However, with a Smart/digital meter, when the varistor blows out, the current from the utility pole, including high voltage current, will flow directly into the building if any appliances or electronics are drawing power, and many of today's electronics and appliances are always on. The results can be burned wiring, damaged electronics and equipment, including well pumps, and fires.

“Varistors are useful for short duration protection in case of high transient voltage surges in the order of 1-1000 microseconds. They are however not suited to handle sustained surges. If a transient pulse energy in joules (J) is too high and significantly exceeds the absolute maximum ratings, they can melt, burn or explode.”¹⁰

Electrical engineer William Bathgate:

This small electronic part cannot withstand more than a 300 Volts AC surge. The part will explode when a line voltage surge exceeds this limit, such as when a tree branch touches the high voltage lines or lightning strike occurs nearby. Once this Varistor explosion has occurred it permits high voltage transfer to the other circuit board components and the circuit board substrate. This results in the AMI meter literally exploding from the meter socket or in a severe melting of the plastic components, likely leading to a fire and/or severe home damage. Most customers that comment when this occurs say they hear a load pop or a boom, followed by lights flickering, and followed by arcing at the meter housing. This is not how a circuit board should be protected... There is no sound electronic engineering firm that would permit 240 volts AC to short circuit across the circuit boards due to a component failure such as a Varistor. This is extremely dangerous. Once the progression of the subsequent short circuit begins the line transformer will apply up to 2,000 Amps to the meter housing until either the feed lines to the home disintegrate and vaporize or the transformer line breaker/fuse trips out after 50 seconds. By this time the damage is so extensive it is jeopardizing human and animal life. No such condition is possible from an Analog Meter.¹¹

If a tree or branch falls across the lines and causes a high voltage line to contact a lower voltage utility line, much higher voltages can flow down the line into a building. And

¹⁰ <http://www.resistorguide.com/varistor/>

¹¹ <https://mi-psc.force.com/sfc/servlet.shepherd/version/download/068t000001UX3MAAW>
Testimony of William Bathgate, 8/29/17, Michigan Public Service Commission

lightning strikes are about 30 million volts.

Electric meter testing company TESCO, 2015:¹²

“Electronic meters fail as do electromechanical meters but differently.”
New failure modes include “Power supply damage due to lightning surges and other causes”.

The fire department cannot get there in time once this chain of events starts because it happens so fast.

Repeated surges up to the meter varistor’s maximum threshold will weaken the varistor and eventually destroy it, also allowing unregulated current to flow into the building.

Fire Chief Duane Roddy testified to the Michigan House Energy Committee in 2017 that he watched a Smart Meter ignite and arc at his home from a surge.¹³ The electricity kept flowing and arcing, melting the lines to his house, and didn’t stop until the transformer on the pole blew, and then the fuse on the pole finally tripped. In Pacific Grove, California, PG&E crews shut off power to repair a transformer. When they re-connected the power, they heard a popping sound, and a nearby building’s Smart Meter and panel caught fire.¹⁴

This situation is similar to the 60 cent bolt that fails and brings down an airplane

Circuit breakers inside a house or building do not protect from outside electrical problems or incoming surges from the power lines. If an overage comes from the street or from the meter, the building’s circuit breakers will not trip. Circuit breakers in a building only protect from inside electrical problems.

When a varistor explodes, it makes a popping sound.

Branches and trees fell on lines in the California North Bay fires, causing contact between higher voltage and lower voltage lines. Lines caught fire from the high voltage current. This high voltage current was flowing into homes, blowing out the varistors. Automatic restarters kept re-energizing the lines, keeping this high voltage current flowing and also sending repeated surges down lines into buildings, intensifying the problem – a particular problem

¹² Tom Lawton at 2015 conference sponsored by the Edison Electric Institute (EEI).
<http://web.archive.org/web/20151123003953/http://www.slideshare.net/bravenna/site-verification-and-its-role-in-asset-management>
[http://www.eei.org/about/meetings/Meeting_Documents/FINAL - Metering Agenda-LaJolla.pdf](http://www.eei.org/about/meetings/Meeting_Documents/FINAL_-_Metering_Agenda-LaJolla.pdf)
<http://smartgridawareness.org/2015/11/03/catastrophic-failures-expected-with-smart-meters/>

¹³ https://youtu.be/qhQGmP_ixJw?t=2853 47:33 - 52:16
Michigan House Energy Committee February 21, 2017 (Fire Chief Roddy’s testimony was not reported by the Detroit News)

¹⁴ Incident report, January 22, 2012; <https://cedarstreettimes.com/weekend-fire-puts-favaloros-out-of-commission/>

with PG&E's system. Smart Meters could have malfunctioned in very significant numbers and actually caused many of the building fires.

East Palo Alto, Stockton, Summerland, Ontario, and Forest, Ontario are a few incidents when many Smart Meters failed simultaneously and spectacularly due to a surge.

Stockton, March 30, 2015:

The smart meters were unable to handle the surge and exploded. Some of the explosions were serious, others were not.

...Stockton fire Capt. Bryan Carr with Engine 6, one of several fire crews dispatched Monday morning as dozens of electric customers began reporting explosions, smoke or the smell of burning wires, described the scene as "unreal" when his engine pulled onto Fairbury Lane, a residential street in southeast Stockton... His best estimate was that 50 or 60 homes had some type of significant electrical damage.¹⁵

(GE and Landis & Gyr Smart Meters)

Summerland, Ontario, Nov. 26, 2014:

69 Smart Meters damaged, and some blew off buildings.¹⁶

(Itron Smart Meters)

Forest, Ontario, Nov. 7, 2013:

60-70 Smart Meters explode due to winds at Fairview Court Apartments.

Don Plowright, who lives with his wife in the Fairview Court Apartments, says the meters sustained a lot of damage. "Some of them blew right off and hit one of the windows," he remarks. "Ours was all blackened. The people next to us, the meter was blown right off and the wires were sticking out."

...Apparently, this was a totally new experience for Hydro One crews. 'They were really surprised. They said that they'd never had anything like this happen before...'

Hydro One employee Ron Core, one of the crew members onsite, says the surge was caused when a 16,000 volt line landed on a 2,000 volt line during the high winds last Thursday, blowing one transformer and destroying the Smart Meters.

... When [the meters] were installed at his former residence, Plowright says, "The guy that looked after that say they're not very good. Most of the old ones were made in Canada. These are made in China and they're not made to stand up to real rough weather. He didn't think much of them." The meters are manufactured by a company called Landis + Gyr...¹⁷

¹⁵CBS 13 <http://scoopfeed.net/2015/04/05/stockton-ca-smart-meters-explode-after-truck-causes-power-surge/> link no longer works

http://www.recordnet.com/article/20150330/NEWS/150339956/101007/A_NEWS

<https://www.youtube.com/watch?v=dpoJ-kP27aI>

¹⁶ <http://www.stopsmartmetersbc.com/z/2014-12-14-power-surge-in-summerland-were-meters-involved/>

<http://globalnews.ca/video/1724887/summerland-still-dealing-with-november-power-surge-fall-out> video is missing

¹⁷ Forest Standard, November 7, 2013 (emphasis added)

East Palo Alto, Aug. 25, 2011:

When Pacific Gas and Electric turned the power back on, the surge blew up a number of smart meters in homes. More than 80 fires were reported, and a number of home appliances were damaged. Homes that did not yet have the smart meters installed reported no problem.¹⁸

Television sets and lights popped and and blew out in two East Palo Alto neighborhoods after a power surge Thursday night..¹⁹

...The sustained electrical surge to more than 200 East Palo Alto homes and businesses lasted for about one hour and 20 minutes, until a PG&E crew shut off the power, according to a Menlo Park Fire Protection District incident report... Palo Alto utilities spokeswoman Debbie Katz said that surges have not burned out the city's analog meters.... "The idea with SmartMeters is to make the customers' and the utility's life better, but this is a good example of how sometimes the old way is the good way," Katz said.²⁰

(GE and Landis & Gyr Smart Meters)

Mindy Spatt, communications director of The Utility Reform Network (TURN):

In the collective memory of TURN, we have not seen similar incidents with analog meters.²¹

Along with other utility companies in California, Pacific Gas and Electric instituted a Public Safety Power Shutoff (PSPS) policy during extreme fire danger conditions to de-energize both transmission and distribution lines. PG&E in particular began activating this with little advance warning to officials of affected communities which caused problems.²² However, re-energizing electrical lines after power shut-offs will cause power surges, and these surges will hit all the Smart Meters in the area. No one is talking about this risk or the potential impact on well pumps and water availability.

¹⁸ CBS 13 <http://scoopfeed.net/2015/04/05/stockton-ca-smart-meters-explode-after-truck-causes-power-surge/> (emphasis added) link no longer works

¹⁹ <http://www.paloaltoonline.com/news/2011/08/25/power-surge-pops-lights-televisions-in-east-palo-alto>

²⁰ <http://www.paloaltoonline.com/news/2011/09/04/power-surge-raises-questions-about-smartmeters> (emphasis added)

²¹ ibid

²² California Department of Public Health's county and city health officers heard a presentation June 6, 2019. It discussed the problems with PSPS as well as PG&E specific problems, which include PG&E's practice of sending public relations people to talk to local officials when there is a problem.
<https://www.cdph.ca.gov/Programs/CCLHO/Pages/CCLHOBoardofDirectors.aspx> June 6, 2019

National Electrical Code violation

National Electrical Code Section 240.4:

240.4 Protection of Conductors. Conductors, other than flexible cords, flexible cables, and fixture wires, shall be protected against overcurrent in accordance with their ampacities specified in 310.15, unless otherwise permitted or required in 240.4(A) through (G)²³

All electrical components must be protected by a circuit breaker.

The NEC also says:

Article 230 Services

VII. Service Equipment – Overcurrent Protection

230.90 Where Required. Each ungrounded service conductor shall have overload protection.

Article 240 Overcurrent Protection

240.15 Ungrounded Conductors.

(A) Overcurrent Device Required. A fuse or an overcurrent trip unit of a circuit breaker shall be connected in series with each ungrounded conductor. A combination of a current transformer and overcurrent relay shall be considered equivalent to an overcurrent trip unit.²⁴

Analog meters are grounded; they are directly connected to the ground via spark-gap technology, protected from surges. Smart/digital meters are not grounded.

Utility companies were granted an exemption from 240.4 when they were using analog meters, not electronic devices. Now however, utility companies have replaced analog meters with electronic Smart/digital meters and haven't made any provision for that change by installing a circuit breaker. When there's a surge, it goes directly to the Smart/digital meter's circuit board with potentially catastrophic results.

Since utility companies changed the nature of the meter, did not put in a circuit breaker, and have not revised the situation with the regulating body, they could be found in violation of the terms of the National Electrical Code exemption.

Electrical Engineer Tony Simmons:²⁵

I am a retired Electrical Engineer licensed in Nevada and California. I have 11 years' experience in electric utility meter operations ..The problem is meters and sockets

²³ National Electrical Code (2008)

²⁴ ibid

²⁵ <http://www.stopsmartmetersbc.com/bcuc-smart-meter-fires-the-failure-to-protect/>
<http://tinyurl.com/SMFireReport>

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are NOT known to be properly protected with the correct fuse.

...

All electrical equipment is expected to fail eventually. The question is not “does it create a hazard if it fails”; the question is “does it create a hazard when it fails”. The answer depends on the rating of the fuse protecting the meter and socket.

The first instruction [below] is to use fuses. The second instruction is to not use the meter (as) a protective device – don’t rely on the remote switch as a safety feature.

(from the [Itron] manual)

“All voltage paths (measurement and auxiliary) must be fused.

Do not use any meter functions or features for primary protection purposes.

Do not install the meter where failure of the device could cause death, injury or release sufficient energy to start a fire.”

... The more practical solution is use the correct fuse to protect the meter and socket as ITRON indirectly instructs. This is where the electric utility industry went wrong. Big time.

If the utilities were required to install a circuit breaker outside the meter -- between meter and building – the costs would have been substantial, and utility companies likely wouldn’t have been able to make their business cases to the state regulatory commissions. In addition, the public would have raised safety questions about the new meters versus the analog meters, and refused to fund them.

In addition, master disconnect switches for buildings are often located next to electric meters. A meter fire makes it impossible for emergency responders to access the switch and turn off the electricity to a building. Electricity has to be disconnected at the pole by the utility company, resulting in a dangerous delay. This is another serious safety problem that is not addressed in state and local electrical codes.

No Protective Device Coordination Study

Electrical engineer Tony Simmons:²⁶

The utilities failed to perform the industry standard Protective Device Coordination Study. This study is also called the Short Circuit Coordination Study or mostly commonly, the coordination study.

Coordinated Power Engineering Inc.²⁷

A Short Circuit and Coordination Study is critical for the safe, efficient, and economical operation of any electrical distribution system. A Short Circuit Study will help to ensure that personnel and equipment are protected by establishing proper

²⁶ <http://www.stopsmartmetersbc.com/bcuc-smart-meter-fires-the-failure-to-protect/http://tinyurl.com/SMFireReport>

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²⁷ www.cpeinc.net/PDFs/SCCCspecs.pdf (emphasis added)

interrupting ratings. When an electrical fault exceeds the interrupting rating of the protective device, the consequences can be devastating, including injury, damaged electrical equipment, and costly downtime. A Coordination Study maximizes power system selectivity by isolating faults to the nearest protective device, as well as helping to avoid nuisance operations that are due to transformer inrush or motor starting operations.

[National Fire Protection Association] NFPA 70B maintains that a Short Circuit and Coordination Study is a very important, yet sometimes overlooked step after the initial design and before the implementation of an electrical distribution system. The [National Electrical Code] NEC addresses the importance of this type of study in articles 110-9, 110-10, 240, and 517.17. It is clear that a third-party, independent study performed during/after the equipment submittal process, can prove to be invaluable. A Short Circuit and Coordination Study serves to incorporate all the system changes that come about after the initial design.

Smart and digital meters were not a part of the initial electrical power system design.

New failure mode – “catastrophic” failure

Electric Power Research Institute:

The average person may have experienced a broken-down car, a worn-out appliance, or a piece of electrical equipment that died in a lightning storm, but most don't likely recall their electricity meter ever failing. Such is the reliable legacy of the electromechanical meter.

By anyone's assessment, traditional electromechanical meters are an amazing piece of engineering work. Refined over a hundred years, the design of a standard residential electricity meter became an impressive combination of economy, accuracy, durability, and simplicity.²⁸

According to industry experts, Smart/digital meters are subject to new failure modes, One of these new failure modes is catastrophic failure. Analog electromechanical meters do not have this failure mode.

From a presentation by TESCO in 2015:

Electronic Meters – new failure modes require new testing and inspection methods
Electronic meters fail as do electromechanical meters but differently.

- Their overall life expectancy is not nearly the same
- Failure modes include drift (unexpected)
- Failure modes include catastrophic (expected)
- Power supply damage due to lightning surges and other causes...²⁹

²⁸ “Accuracy of Digital Electricity Meters”, Electric Power Research Institute, May 2010

²⁹ Slide from presentation by TESCO representative Tom Lawton at 2015 conference sponsored by the Edison Electric Institute (EEI). TESCO (The Eastern Specialty Company) is an electric meter testing equipment and services company. (emphasis added)
<http://web.archive.org/web/20151123003953/http://www.slideshare.net/bravenna/site->

The Saskatchewan government launched an investigation after a series of Smart Meter fires. “Eight meters failed catastrophically, melting or burning, and in some cases damaging the sides of houses.”³⁰ The report stated:

A catastrophic failure has been defined by the consultants and industry as a meter which has burnt, melted, blackened, caught fire, arced, sparked, or exploded/blown from the premises.³¹

Overheating, inferior materials

Digital/Smart meters have electronics inside which create heat. Analog meters do not have electronic components which generate heat.

“The electronics inside smart meters typically employ metal-oxide varistors (MOVs) for overvoltage surge protection. The problem arises from the lack of the heavy heat sinking capacity of the MOVs. This is needed in order to avoid failure due to overheating when they are energized. The physical construction of the smart meters does not allow for the heat generated by the energized MOVs to escape into the environment as there are few metal parts to act as a heat sink. Under the right conditions of over-voltage and line impedance, it may be possible to cause the MOV to burst into flames.³² The Fire Marshal’s report³³ from Ontario, Canada noted overheating and fires associated with MOVs.”³⁴

[verification-and-its-role-in-asset-management](#)

[http://www.eei.org/about/meetings/Meeting_Documents/FINAL - Metering Agenda-LaJolla.pdf](http://www.eei.org/about/meetings/Meeting_Documents/FINAL_-_Metering_Agenda-LaJolla.pdf)

<http://smartgridawareness.org/2015/11/03/catastrophic-failures-expected-with-smart-meters/>

³⁰ http://www.saskatchewan.ca/~media/news_release_backgrounders/2014/oct/1_cic_introduction.pdf p.2

http://www.saskatchewan.ca/~media/news_release_backgrounders/2014/oct/2_pwc_final_report.pdf p.3

³¹ http://www.saskatchewan.ca/~media/news_release_backgrounders/2014/oct/3_ritenburg_final_report.pdf

<http://www.saskatchewan.ca/government/news-and-media/2014/october/27/smart-meter-review>

CIC Smart Meter Review Makes Recommendations to Improve Crown Procurement
The head of the provincial utility SaskPower resigned after these reports were released.

³² <http://en.wikipedia.org/wiki/Varistor>

³³ <https://skyvisionsolutions.files.wordpress.com/2014/08/firemarshall-report-smart-meter-fires-canada.pdf>

“Utility “Smart Meters””, Ontario Fire Marshall Armen Kassabian, June 15, 2012

³⁴ <https://takebackyourpower.net/smart-meter-fire-risk-liability-is-undeniable-and-unprecedented/>

Norman Lambe, a California insurance adjuster, has investigated fire-related Smart Meter incidents. In 2015, he said that overheating is a primary cause of these fires. He said the meters spark and make too much heat when they operate, and the materials within the meters are flammable in the right heat conditions.³⁵

“Today’s meters are light. The old ones were heavy and dissipated heat a lot better, actually,” said Ken Dimpfl, manager of meter engineering with American Electric Power (AEP), while discussing temperature data analytics at Utility Analytics Week in New Orleans.³⁶

The UK East Sussex Fire Service reports: “[T]he amount of current being drawn is an important factor, since the greater the current, the higher the risk of resistance heating in a poor connection.”³⁷

Burned meter-to-meter-box connections

Engineer William Bathgate’s Smart Meter was installed in 2015. By 2017, due to network malfunctions, the utility company wasn’t receiving the meter’s wireless data transmissions, so they started sending him estimated bills. He decided to opt-out.

When the AMI meter was removed. I discovered that the one set of contacts had all burned up from excessive heat.

This was a new meter box in 2015 and in use for about 2 years. It could have easily led to a meter fire without warning. If I had not changed my meter, I would never have known there was a problem. How many other meter boxes are at risk with the same conditions today? The only way we will know is when we begin to see more meter fires. Unfortunately once a fire begins at the meter contacts all evidence of the root cause are near impossible to determine. The utility concludes without any evidence that the meter fire occurred due to customer wiring. Had I known that placing an AMI meter on my home would lead to burned contacts on my home, I would never have permitted its installation.³⁸

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http://www.naturalnews.com/055227_smart_meters_catching_fire_safety_risks.html#ixzz4JiYE2Q2R

36 <http://smartgridawareness.org/2015/11/03/catastrophic-failures-expected-with-smart-meters/>

37 Investigation Report into: Fires Originating in Electrical Intakes, Mark Hobbs, Lead Fire Investigation Officer, East Sussex Fire & Rescue Service, UK, July 2010

38 <https://mi-psc.force.com/sfc/servlet.shepherd/version/download/068t0000001UX3MAAW> (emphasis added)

Faulty remote disconnect switch

PG&E whistleblower Patrick Wrigley told the CPUC December 20, 2012:

I was a meter reader for nine and a half years with PG&E in the Marin office before I was illegally fired because I was not intimidated into being quiet with the problems I saw firsthand regarding smart meters' inaccuracy...The fact that PG&E knows that they do catch on fire when they are remotely turned back on when a customer who is delinquent in their bill finally pays their bill. These meters catch fire. They know it, and they are covering it up.³⁹

Utility companies used to send an employee to manually disconnect electricity from a building. With Smart Meters, the company sends a wireless signal to the meter, and it disconnects the electricity. Electricians have told me it takes strength to turn off a house's electrical power, and wonder what could be so powerful in a plastic Smart Meter to disconnect this current. With disconnection, there can also be arcing.

From Reno, Nevada:

While city fire investigators have been unable to determine exactly what is causing the meters to combust, the electrician who replaces the burned meters said it appears to him that the "relays" inside the meter are overheating at the switch NV Energy uses to remotely disconnect the power.

"That's where I think the problems are occurring," he said. "I even saw a couple here where the meters had just started to turn black. Everything in the panel is fine, it's just the meter is starting to go."

A forensic investigator hired by the Reno Fire Department to examine four of the meters involved in the Reno and Sparks fires found that the blazes started within the meter itself.⁴⁰

In 2011, an electrician wrote:

One of the novel features in the new meters is the incorporation of an internal disconnect switch that the power company purports safely disconnects/reconnects power to the dwelling it supplies by remote control. This disconnect feature is a new and significant change to the old style analog meters. The safety of the new disconnect feature is in question.

As a California Electrical Contractor, I estimate that a 200 amp disconnect enclosure would be sized roughly 20"x 20"x 6", several times larger than a smart meter. Concerned about this, I asked other electrical contractors' opinions about the remote disconnect switch. Like myself, they found it hard to believe a 100, 200, or 400 amp disconnect switch can be crammed into a tiny meter enclosure.

He asked:

³⁹ California Public Utilities Public Participation Hearing (PPH), December 20, 2012, Santa Rosa, From the official transcript
<http://www.scribd.com/doc/118148663/CPUC-PPH-Santa-Rosa-Transcript>

⁴⁰ <https://www.rgj.com/story/news/2014/09/21/reno-smart-meter-fires-widespread-first-feared/15897355/>

Is there a full load test for the meter disconnect switch?

If a dwelling's electrical service is rated at 200 amps, the meter has the potential to have a 200 amp load. Are the smart meter disconnects rated for the maximum potential load of the dwelling it serves?

Are the smart meter disconnects tested and certified to safely disconnect/reconnect under full load conditions?⁴¹

Is the disconnect switch certified at all? In the new UL 2735 certifications, are meter models certified without the disconnect switch or other components?

Electrical engineer William Bathgate:

After a hard look at the design and construction of this ITRON meter there are the following observations:

The biggest weakness is the power disconnect, it suffers from a small surface area for the disconnect contact and would be prone to excessive heating and likely result in contact pitting and carbon deposits that are not readily visible by the customer and there is not a sensory circuit that could detect it and report it to the customer or the utility. The design would be prone to creating unpredicted fires.⁴²

Electrical engineers evaluated the British Columbia Utility Commission's draft report on Smart Meter fire safety concerns (Itron Smart Meters) and among their conclusions found:⁴³

A critical item missing in this Report is any investigation and discussion about the meter's built-in 200 Ampere disconnect switch. The switch is not CSA⁴⁴ certified, yet it is being used as a "Service Disconnect Switch" – (CSA Code definition), for which it is not designed. Several requests for technical performance and certification data have been ignored by [utility company] BC Hydro and by Itron. The switch is a potential failure mechanism, in particular during fault conditions, because as described elsewhere, the electrical protection on the HV side of the transformer does not appear to adequately protect the electronic meter from excessive fault current. This BCUC Report states that BC Hydro meters do not need to be certified under the Electrical Safety Regulations, however it also states that BC Hydro is NOT exempt from the Electrical Safety Act. An immediate investigation into the design, certification, testing, operation and capabilities of this disconnect switch is

⁴¹ <http://1hope.org/hopeblog/unknown-safety-of-smartmeters-new-disconnect-switch/>

Unknown Safety of New On-Off Switch in Smart Meters:
CPUC Meter Safety Testing Confirmation Needed.

⁴² <http://www.stopsmartmetersbc.com/wp-content/uploads/2017/04/Evaluation-of-the-ITRON-Open-Way-AMI-Meter-PowerPoint-by-William-Bathgate-Jan.12-2017-v8-3-2-2017.pdf>

<http://www.stopsmartmetersbc.com/bcuc-smart-meter-fires-the-failure-to-protect/>

Cited in <http://tinyurl.com/SMFireReport> p. 34

⁴³ <http://www.stopsmartmetersbc.com/bcuc-smart-meter-fires-the-failure-to-protect/>
<http://tinyurl.com/SMFireReport> p. 77

⁴⁴ Canadian Standards Association

required.

British Columbia never finalized its report.

Insurance adjuster Norman Lambe to New Mexico Public Regulatory Commission:

Unlike analog meters, "smart" meters can turn power "on" or "off" remotely. Sometimes, during activation of this remote switch, a tremendous burst of power can cause arcing in the meter and result in fire. As noted in the report by EFI Global (CFRE NL 3 b p.4), "All observed damage to the electrical panel and the meter itself is consistent with a fire triggered by extreme heat at the defective switch contacts inside the meter. The heat transferred to the metal clips, which were held in position by a resin-based insulator. The extreme heat ignited the insulator. The ensuing fire burned upward inside the panel, explaining the damage to the circuit breaker located directly above it. Open flame conducts electricity, so the flame drew an arc between the two energized power rails in the panel, explaining the unusual arc patterns in the center circuit on the panel, which was not part of the 'HP' meter circuit."⁴⁵

Portland General Electric removed 70,000 Smart Meters after several house fires, saying the disconnect switch was faulty.

In 2015, Quebec began requiring a separation distance of three linear meters between propane tanks and Smart Meters. The rule only applied to Smart Meters. Utility company Hydro Quebec inspected properties to check compliance. "Until your installation has been checked and found to be up to code, the remote service interruption feature will be deactivated."⁴⁶

Circuit boards in electric meters

Electrical engineer William Bathgate:

The fact that there is a set of circuit boards in a power meter at all is a large risk. The circuit boards would not be able to withstand a lightning strike or a power surge without an explosive reaction and likely melting of the circuits. This would lead to total destruction of the unit and lead to a possible fire.⁴⁷

EMSG Inc.:

Circuit boards aren't invulnerable either. Over time, they experience a great deal of wear and tear that can deteriorate their performance and functionality. Things such as the weather, humidity, age, and even elevation can affect the condition of a

⁴⁵ <http://www.electronicssilentspring.com/wp-content/uploads/2016/10/nl.pdf> -- p. 8

⁴⁶ <http://ofsys.hydroquebec.com/T/OFSYS/SM2/2/S/F/4947/13087532/Dnm3qyNW.html>

⁴⁷ <http://www.stopsmartmetersbc.com/bcuc-smart-meter-fires-the-failure-to-protect/>
<http://tinyurl.com/SMFireReport>

board.⁴⁸

Smart/digital meter circuit boards are not in a climate-controlled, protected space. They are outdoors, exposed to all the elements including sun, extreme hot and cold temperatures, moisture, wind, dust, rain, and snow.

Energy Central:

Look under the plastic covers of any smart device, and you will see a printed circuit board and attachments and wires that should be familiar to anyone in the computer industry. This simple fact should give everyone using this equipment pause. Why would this equipment, whose origins and designs have been forged in a throw-away culture of consumer electronics, be durable enough for the demands of the electric utility? The answer is clear. They aren't.

...Enter the electronic era. Smart meters are already posting failure rates, anecdotally, in the 5% per annum range. This is ten times the failure rate of the traditional meter, and the lifecycle of the product has barely begun. Each additional device connecting the meter to the mothership also has a failure rate. The stability of the grid can only be as good as the weakest device -- yet we don't know which devices are weak. Selecting products for reliability is now essential, but the tools for making associations between products and reliability are entirely missing.⁴⁹

Melting solder can create new circuit pathways

Fire and excessive heat can melt solder. This is a circuit board vulnerability. If the solder melts, it can create a new pathway, resulting in a short circuit, and potentially, a fire.

Thinner blades, meters don't fit sockets, pitting

Bobby Reed, a Texas IBEW business manager and troubleshooter for utility company Oncor was fired by Oncor after he testified to the Texas legislature about Smart Meter fires and electrical problems that were regularly occurring and the risk to electrical workers. The complaint to the National Labor Relations Board⁵⁰ about his firing detailed evidence that Smart Meter fires, burned Smart Meters, overheating, arcing, burned meter sockets, and malfunctioning Smart Meters are regularly occurring and are known to Oncor and CenterPoint, two Texas utility companies.

What I came to testify about today is when they started installing the AMS meters, I noticed that the tickets that I worked or the work orders that I went out on were beginning to be increasingly of the meters burning up and burning up the meter

⁴⁸ <http://emsginc.com/resources/5-most-common-pcb-repairs/>

⁴⁹ <https://www.energycentral.com/c/ku/dirty-little-secret-smart-devices-are-consumer-electronics>

⁵⁰ NLRB Decision and Order: <http://apps.nlr.gov/link/document.aspx/09031d4582177a1a>
Bobby Reed's Senate testimony is on p. 13-14

bases. And it's kind of a two-issue thing there I wanted to bring up to you. But I can't tell you how many times I went out. And when I go to a low income house where this lady comes out, this elderly woman, that's widow woman and she says, you know, "What's the problem?" And I said, "Well, your meter base burnt up, and it's your equipment and you have to pay for the repairs before you can get your lights back on." And she tells me, "Well, I've been living here for 45 years, and I've never had a problem until they installed that meter." And that just has happened a lot.

When this started to increase--

SEN. CARONA: Do you believe that it is attributable directly to the meter or perhaps the age of the line in a box?

MR. REED: No, it's the meter. And I've read that about the wiring in the box. But the meter is just a little bit bigger than the old analog meter, and especially for an older house, it's a 100-amp meter base normally. And when you have to set that meter, it's a little bigger, and the cover won't go down. So people have to manipulate that meter in order to get the cover to lock.

But when I started noticing this, I called the union there in Houston and asked them if they were experiencing the same thing. And he told me he would go by the meter shop that next day and then call me. And he called me the next day and said that they are experiencing a significant increase in the meters being turned in that are burnt up from the old analog meters to now, the AMS meter."

Two reasons identified by union workers were the thinner blades in Smart Meters, and that Landis and Gyr Smart Meters were too big for the meter socket.

Smart meters do not fit into the base properly, leaving a gap which leads to arcing and fires. The base was designed and certified to hold an analog and nothing else.

The meters mentioned were Itron and Landis & Gyr. In California, Itron Smart Meters are used by Southern California Edison, San Diego Gas and Electric, and Los Angeles Department of Water and Power. Landis & Gyr Smart Meters are used by PG&E and Sacramento Municipal Utility District.

The blades of the meters must provide contact with the jaws of the meter socket. If the blades are too thin or the meter isn't the right size, this causes inadequate contact or gaps, and that will cause arcing. This is a fire hazard and also results in pitting of the metal surface which will increase arcing. Arcing also creates transients which in turn affect the electrical wiring and appliances and electronics.

Sharon Noble, Coalition to Stop Smart Meters BC, has been investigating Smart Meter fires for many years and lobbying the government to take action. In 2014, she wrote, According to electrical engineers in our group, the Canadian Standards Association (CSA) is quite concerned because the base was certified to hold an analog, not an digital meter running on electricity. CSA said the bases could lose their certification because there has been no testing to ensure that the base and the meter are compatible. Due to the thermal resistance created by the corrosion, the electricity begins to arc and these arcs ignite the main insulation wiring causing electrical

shorts that start fires.⁵¹

Malfunctioning temperature alarms and sensors

Thermal sensors have actually been installed in some meters to notify utility companies of potential problems or shut off the electricity. However, these have malfunctioned as well.

Engineer William Bathgate: "There are supposed to be sensors of high heat within the meter, but it did not detect the condition at my home [with the burned contacts]."⁵²

Take Back Your Power:⁵³

As reported in a 2013 Illinois Commerce Commission (ICC) report,⁵⁴ some utilities are attempting to mitigate smart meter fire risks by 'proactive temperature monitoring.' However, as stated in the ICC report: "The majority of ComEd's AMI meters (GE) are equipped with temperature sensors and can report their internal temperature on command -- [a]lthough the temperature sensor was not designed for that function. However, a problem with the scans soon made itself known. Apparently, radiofrequencies can enter the meter and cause the temperature sensor to report significantly inaccurate measurements."

Also, the previously mentioned document⁵⁵ submitted to the Maryland Public Service Commission in the form of comments contains the following language: "The meter (BGE uses L&G) burned up despite the sensing device. Although no fire occurred, the safety system failed miserably. "[They] could actually hear the meter sizzling as if something was being fried inside it. " What this clearly demonstrates is that the remote sensing system the utilities are relying on is hardly foolproof. One can only imagine what would have happened if there had been a real fire."

Switching mode power supply surges (SMPS), damaged appliances

A switching mode power supply (SMPS) in the Smart/digital meter constantly converts the incoming alternating current (AC) to direct current (DC) to power the meter and its electronics. This causes surges. These constant surges go into the home or building along the wiring and to all electronics and appliances and their varistors. A varistor in a piece of

⁵¹ <http://marylandsmartmeterawareness.org/smart-meter-news/maryland-smart-meter-awareness-and-anne-arundel-county-environmental-council-request-moratorium-on-all-smart-meter-installations-in-wake-of-house-fires/>

⁵² <https://mi-psc.force.com/sfc/servlet.shepherd/version/download/068t0000001UX3MAAW>

⁵³ <https://takebackyourpower.net/smart-meter-fire-risk-liability-is-undeniable-and-unprecedented/>

⁵⁴ <https://skyvisionsolutions.files.wordpress.com/2014/08/icc-smart-meter-fires-staff-report-2013.pdf>

⁵⁵ <https://skyvisionsolutions.files.wordpress.com/2014/08/comments-on-meter-fires-from-msma-final.pdf>

equipment can take only so many surges before it fails and destroys the motherboard.

Many people have reported damaged or destroyed appliances and electronics after Smart Meter installations. This can occur weeks or many months later.

RF signal and SMPS transients routed onto building wiring

Every electronic component you purchase needs a connection to ground to work. It protects the circuit by routing the currents to ground. On the 3-prong plug for electronics and appliances is the wire for the ground.

The switching mode power supply (SMPS) in electronic devices creates transient voltage. If the SMPS creates transient voltage above 60 Hz, those transients are normally routed to ground, just like surges.

Smart/digital meters create transients but have no ground path. Therefore, there is no way for the meters to shunt the transients to ground.

Electrical engineer William Bathgate:

On examination of typical meters, including ABB, GE, ITRON and Landis+Gyr, and many others they report that, in addition to its RF transmitter, each wireless digital meter also has a component called the 'switching-mode power supply' (SMPS) – switching power supply for short. Its function is to 'step down' the 240v alternating current (AC) coming in from the utility pole power lines to the 3.3 to 12 volts of direct current (DC) required to run the meter's digital electronics which record the electricity usage data and send out the various RF transmissions.

The SMPS function emits sharp spikes of millisecond bursts constantly, 24/7. The SMPS on the commonly used Silver Springs Network, OWS 514 NIC model, for instance, which is within the smart meter models widely installed by PG&E and other utilities throughout their territory, has been measured to emit spikes of up to 50,000 Hz and higher. This constant pulsing of high frequencies, in addition to the RF function, is causing not only interference with other electric and electronic equipment in many homes with smart meters installed, but also is causing havoc with biological systems in its field of exposure.⁵⁶

A 2010 report by Cindy Sage/Sage Associates and electrical engineer James Biergiel warned

Typical gauge electrical wiring that provides electricity to buildings (60 Hz power) is not constructed or intended to carry high frequency harmonics that are increasingly present on normal electrical wiring...Harmonics are higher frequencies than 60 Hz that carry more energy, and ride along on the electrical wiring in bursts It may be contributing to electrical fires where there is a weak spot (older wiring, undersized neutrals for the electrical load, poor grounding, use of aluminum conductors, etc.).

⁵⁶ <https://www.defiltersllc.com/new-critical-problem-with-smart-meters/>

New Critical Problem with 'Smart' Meters -- Just When You Thought It Was Safe to Opt-Out, William Bathgate

The use of smart meters will place an entirely new and significantly increased burden on existing electrical wiring because of the very short, very high intensity wireless emissions (radio frequency bursts) that the meters produce to signal the utility about energy usage.

... [W]hen the wireless signal is produced in the meter... it boomerangs around on all the conductive components and can be coupled onto the wiring, water and gas lines, etc. where it can be carried to other parts of the residence or building.

It is an over-current condition on the wiring. It produces heat where the neutral cannot properly handle it. The location of the fire does NOT have to be in close proximity to the main electrical panel where the smart meter is installed.

... For fires that are 'unexplained' or termed electrical in nature, fire inspectors should check whether smart meters were installed within the last year or so at the main panel serving the buildings. They should question contractors and electricians who may have observed damage from the fire such as damage along a neutral, melted aluminum conductor or other evidence that would imply an overcurrent condition.

... Faulty wiring, faulty grounding or over-burdened electrical wiring may be unable to take the additional energy load.⁵⁷

Interference with AFCI/GFCI

Wireless signals and transients produced by the Smart/digital meters interfere with ground fault circuit interrupters (GFCIs) and arc fault circuit interrupters (AFCIs). This interference can make them trip or prevent them from tripping⁵⁸ PG&E reported this in 2011, though they claimed these were "limited problems."

In 2014, a Masters degree candidate at the University of Texas studied Smart Meter interference with GFCIs.

It has been reported that the RF transmissions from Smart Meters can induce false tripping events on GFCI outlets installed on temporary construction poles... Controlled investigations in the laboratory have shown that the tripping events are repeatable and it has been found that the RF transmissions from the Smart Meter's wireless radio are likely the cause of the unexpected GFCI tripping events. The tripping is caused through the coupling of the roughly 900 – 930 MHz transmissions into the sense electronics within the GFCI... It was concluded that both radiative and conductive interference was occurring, both of which could completely independently cause the GFCI to trip... Not only could conductive interference occur between the two devices, but the wire used to power the GFCI off of the Smart Meter was acting as an antenna.⁵⁹

⁵⁷ <http://eon3emfblog.net/wp-content/uploads/2010/09/Wireless-Smart-Meters-and-Potential-for-Electrical-Fires.pdf>

Wireless Smart Meters and Potential for Electrical Fires, Cindy Sage, Sage Associates and James J. Biergiel, EMF Electrical Consultant, July 2010

⁵⁸ <https://skyvisionsolutions.files.wordpress.com/2014/08/pge-gfci-and-afci-rf-interference.jpg>

⁵⁹ <https://rc.library.uta.edu/uta->

Certified home inspector Jim Hime:

Smart meters are now being installed in my area. Smart meters are starting to trip AFCI's as reported by 2 electricians I know and work with so far.

As you know, an arc fault breaker looks at an electrical [sine] wave and figures out what's right and what's not. When it "see's" the signature of an arc, it trips. RF (radio frequency) interference has nearly the same electrical signature as an electrical arc.

Guess how the new smart meters talk to the home office? (radio frequency) Where the electrical panel is located next to the smart meter problems have developed according to my bubba electricians.

This is NOT a builders problem. It is a utility company problem. A builder has no control over a utility company. What can someone do? Write your congressmen and ask that the utility companies go back to the drawing board...⁶⁰

Moisture, heat, and flammable lithium batteries

Smart/digital meters are not watertight or hermetically sealed.

Ritenburg & Associates Report, October 24, 2014:

After reviewing the information available, we are of the opinion that moisture and contaminants within the Sensus meter has been a major factor in the meter failures and ensuing fires. We have not found any issues with the new meter installation methods and practices... As there is some danger with destructive meter failures and potential resulting fires, we recommend that the existing Sensus Generation 3.3 meters be replaced as soon as possible. As the existing meter fires have had a close relationship to precipitation levels, SaskPower might wish to consider replacement no later than the end of winter and before the spring thaw and spring rains begin.⁶¹

Smart/digital meters use 1-cell lithium batteries for the memory, and gas Smart Meters use lithium batteries for the RF transmission. Lithium batteries are very flammable to water, causing them to catch fire or explode. Since meter cases are not watertight, batteries are

[ir/bitstream/handle/10106/24887/Donahue_uta_2502M_12842.pdf?sequence=1&isAllowed=y](http://bitstream.handle/10106/24887/Donahue_uta_2502M_12842.pdf?sequence=1&isAllowed=y)

"The Study of the Effect of Smart Meter RF Transmissions on Ground Fault Circuit Interrupters" Simon Donahue, December 2014, University of Texas

⁶⁰ <https://forum.nachi.org/t/smart-meters-tripping-afcis/63603>

"Smart Meters tripping AFCIs", Jim Hime, October 2011, InterNational Association of Certified Home Inspectors

⁶¹ http://www.saskatchewan.ca/~media/news_release_backgrounders/2014/oct/3_ritenburg_final_report.pdf

CIC SaskPower Smart Meter Program: Electrical Fire Investigation and Review, Ritenburg and Associates, Ltd., October 24, 2014 (p. 3, 26)

exposed to moisture, including humidity and rain. In a fire, the plastic cases and parts of gas and electric Smart/digital meters will melt and burn, exposing the explosive batteries to water. Furthermore, in coastal areas, there is salt in the vapor, and that salty moisture can corrode the batteries. Components on a circuit board will not last; this salt will cause corrosion including to the solder joints. Over time, this will cause bridging, leading to short circuits and circuit board failures.

Lithium batteries are also vulnerable to overheating which will cause them to explode.

Gas AMI/AMR digital meters containing lithium batteries pose additional threats of ignition of gas lines if gas meters catch fire, melt, or explode.

Risks from AMI/AMR water meters

AMI/AMR digital water meters contain lithium batteries and are a fire risk due to their normal proximity to water. These meters are also commonly located in the public rights of way, and can be near trees and vegetation. New water meter pit covers are made of flammable fiberglass instead of dense concrete in order for the RF signal to pass. These covers and meter plastic components would be destroyed in an externally originating fire or a meter fire.

Water lines could be ruptured if water meters catch fire or explode. If that happens, water pressure and water availability to fight fires will be compromised. This may already have happened in fires.

Analog electromechanical and water and gas flow meters do not contain these ignition sources.

UL certification of meter models that cause fires

In 2012, Underwriters Laboratory said:

UL has a program for Listing of Utility Meters, but since there is no regulation in USA that requires utility meters to be Certified, this is an entirely voluntary program.⁶²

However, the public increasingly raised the issue of no UL certification of Smart Meters especially in light of fires and electrical problems.⁶³

In 2015, MetLabs acknowledged fire hazards and other problems, and announced a new

⁶²

http://www.psc.state.fl.us/Files/PDF/Utilities/Electricgas/SmartMeters/09_20_2012/WorkshopComments/MaredyHanford.pdf -- p. 4

Correspondence with Mike Chan, Underwriters Laboratory, Sept 24, 2012 (emphasis added)

⁶³<http://www.smartgridtoday.com/public/ComEd-asks-GE-to-get-UL-seal-based-on-consumer-expectations.cfm> link no longer works

voluntary UL standard for these meters:

In the past, design flaws in smart meter units have been known to cause serious fire hazards and spotty performance. This has caused a lot of concern for utilities and manufacturers of smart meters....To prevent problems like this, a new voluntary safety standard – UL 2735 – has been created for electric utility meters...⁶⁴

However, doubts have been voiced about this new testing.

Insurance adjuster Norman Lambe told the New Mexico PRC in 2016:⁶⁵

UL has a new certification standard that is said to have been developed to insure the safety of "smart" meters, UL Standard 2735. But, even this certification is not sufficient. The very meters that have received this certification, Sensus and Landis & Gyr, have caused fires.

For instance, the Smart Meters in Saskatchewan that caused fires were sent for certification, and "...the Sensus meters passed all safety tests under the UL 2735 Standard for Safety for Electric Utility Meters, which test resistance to flame, water, temperature swings and exposure to various voltages and other extreme operating conditions."⁶⁶

Underwriters Laboratory and other certification companies may remove the remote disconnect switch and other components before testing. These companies may test components individually, not as a complete meter. Meters may only be tested in a laboratory and in isolation, not under "real world" conditions -- being connected to a building, in an analog-certified socket, in a mesh network, PLC, or cellular system, and as part of a bank of meters.

Flawed FCC requirements and testing

Isotrope, LLC:⁶⁷

Conclusions in this report include the observation that [FCC] Part 15 radiated--- and conducted---emissions testing of electrical meters does not replicate actual conditions because a power cord is attached to the meter socket in the test

⁶⁴ <http://www.metlabs.com/blog/meters/new-ul-2735-electric-utility-meter-standard-ensures-safety-and-performance/> (emphasis added)

New UL 2735 Electric Utility Meter Standard Ensures Safety and Performance
Posted in <http://smartmeterharm.org/2016/01/05/international-lab-says-smart-meter-design-flaws-known-to-cause-serious-fire-hazards/>

⁶⁵ <http://www.electronicssilentspring.com/wp-content/uploads/2016/10/nl.pdf> (emphasis added)

⁶⁶ <https://www.greentechmedia.com/articles/read/sensus-smart-meters-pass-ul-safety-tests-but-fire-concerns-remain>

⁶⁷ Report on Examination of Selected Sources of Electromagnetic Fields at Selected Residences in Hastings-on-Hudson, November 23, 2013
http://stopsmartmetersny.org/images/Report_on_Examination_of_Selected_Sources_of_Electromagnetic_Fields_at_Selected_Residences_20140301.pdf (emphasis added)

chamber rather than simulating the installation of the meter on a meter socket connected to both the power grid secondary and the residence distribution panel. Moreover, while the conducted emissions from the meter at 915 MHz ISM frequencies in a residence was observed to be substantial, FCC Part 15 regulations limit conducted emissions testing to 30 MHz, ignoring the conducted emissions of the AMR radio signal.

...

7. Summary Conclusions

...

- AMR Conducted Emissions Are Strong, but Not Regulated. The conducted emissions of the AMR electric meters at the 915 MHz band are substantial, but are not regulated by Part 15 (which cuts off above 30 MHz). If the 30 MHz limit were applied to 915 MHz, it is probable that the meter would fail a lab test, subject to the following observation.
- AMR Meter Lab Testing Fails to Simulate in Situ Wiring. The lab testing of the AMR meters employed a simple power cord temporarily attached to the meter mounted in a panel. The meter does not normally employ a power cord. This approach does not simulate the manner in which the house wiring feeds through the electric meter. The meter has two power connections: one entering the meter typically from the top to deliver power to the meter and another exiting the bottom of rear of the meter panel to supply power to the main breaker panel. Using a power cord instead of setting up the power wiring the way the device is actually used may not reveal how the house circuit wiring through the meter may act. The actual in situ wiring may be more like an antenna that may pick up unwanted RF energy and noise within the meter and conduct it into the residence. See photo appended to this report [p. 15-16]

Other noise frequencies above 30 Hz caused by the switched mode power supply would not be regulated by FCC Part 15 either.

Inadequate worker qualifications and training, poor installation quality

PG&E hired the company Wellington to install most Smart Meters. Wellington hired people who were not electricians and gave them a minimum of training on how to remove the analog electric meters and install gas and electric Smart Meters. Installers were paid per meter they installed and were also awarded bonuses for exceeding quotas. They incentivized installing meters as quickly as possible. This was true of other utility companies in the U.S. and other countries. Many times these contractors would not notify building occupants they were installing meters and disconnecting the electricity, endangering the people in the building or home. There were also accounts of contractors removing the meters under load – not disconnecting the electricity at all. This is a fire risk and a very hazardous procedure.

The Saskatchewan provincial government changed the law to allow SaskPower to use unqualified workers to install Smart Meters.⁶⁸ This was discovered through Freedom of

⁶⁸ <http://www.theglobeandmail.com/news/national/saskatchewan-changed-law-to-allow-unqualified-workers-to-install-smart-meters-ndp/article20086884/>
http://www.ndpcaucus.sk.ca/government_has_known_using_non_electrical_workers_mad

Information requests. “(International Brotherhood of Electrical Workers) IBEW Local 2067 originally fought the exemption, saying it had ‘serious reservations about the potential for injury or property damage and the lack of qualified supervision.’ The change went ahead anyway. On March 1 this year [2014], the meter replacement workers were brought into the union, their safety training “beefed up,” and wages and benefits increased.”⁶⁹

Tennessee IBEW local 1288 strongly opposed Smart Meters over the high program costs, fire danger, overbilling by the meters, loss of jobs and value of on-site inspections.⁷⁰

However, in California and other areas, IBEW actually promoted Smart Meters and the temp jobs at public city and county hearings, and opposed Smart Meter moratoriums.

IBEW supported unskilled workers installing Smart Meters. Why? Because “the meter replacement workers were brought into the union.” How much did utility companies and contractors pay IBEW to enroll installers as temporary union members? Which state officials gave these temp workers a qualifications waiver from state safety rules?

A former Wellington worker talked with Stop Smart Meters! in 2011:

SSM: The FCC requires that these devices be installed by trained professional electricians. What kind of training did you receive prior to working as a ‘smart’ meter installer?

WW: We received only two weeks of training before they sent us out to do the installations. Though the procedure is relatively simple, if you get it wrong this can lead to arcing, shorts- even house fires. The blades on the back of the meter have to be aligned properly with the jaws on the socket the meter gets placed in. I kept hearing one of the managers say, “you guys weren’t trained properly.” ...There was a lot of pressure on workers to install as many meters as possible in a day in order to earn bonuses. I overheard numerous times while at work, “you could have burned that goddamned house down.”...The more you called Wellington, the worse it looked on your record- because you’re wasting time. I saw sparks coming from one of the meters on a home. I reported it but am not sure what- if anything- was done.⁷¹

A fire captain called PG&E when he had electrical problems following Smart Meter installation. A PG&E worker checked his electrical system.

[e smart meters dangerous](#) link no longer works

⁶⁹ <http://www.leaderpost.com/health/Smart+meter+installers+problem+Union/10141322/story.html> (emphasis added) link no longer works

⁷⁰ <https://web.archive.org/web/20130617155711/http://www.wmctv.com/story/22229806/unions-oppose-mlgws-smart-meter-expansion>

⁷¹ <http://stopsmartmeters.org/2011/01/26/stop-smart-meterexclusive-interview-with-a-wellington-energy-whistleblower/>

He then proceeded to tell me that they were having nothing but problems with the contractor who was installing the meters and that it was costing PG&E more money to follow the contractors through each neighborhood and fix the problems they were causing and that the reason they did this is that PG&E didn't want to pay its own workers wages and wanted a cheaper price...

He then went on, telling me that the burnt area was more than likely due to the contractors not being able to fit the new Smartmeter into place, so they widened the receiving clip and shoved it into place. By them widening the clips, they caused an area of no contact which then caused arcing every time we used an appliance with 220v.

...He then kept telling us more and more about all the problems and how this company only gave these people installing the meters two days of training and were hiring people who were not electricians. He also told us about injuries to contact [contract?] employees were receiving due to lack of training.⁷²

Vulnerability to hacking

Cybersecurity has been a problem with Smart Meters from the beginning.

Reuters, 2014:

Traditionally, energy utilities have kept infrastructure like power plants safe from cyber attack by keeping it separate from the open Internet. But that is rapidly changing as a new generation of "smart" power meters hooks up customers to their utilities through the web,

...Last November, Felix Lindner came very close to shutting down the power supply of Ettligen, a town of almost 40,000 people in the south of Germany. "We could have switched off everything: power, water, gas," Lindner, head of Berlin-based Reurity Labs, an IT security company, said. Fortunately for residents, Lindner's cyber attack on its energy utility, Stadtwerke Ettligen, was simulated. But he revealed how easy it was to hack into the utility's network through its IT grid, which gave him access to its control room.⁷³

Interview with former CIA director James Woolsey.⁷⁴

...What they're doing now, they're constructing what they call a "Smart Grid." And they're going to make it easier for you and me to call our homes on our cell phone and turn down our air-conditioning on a hot afternoon if we're not there. Great, but that may well mean that a hacker in Shanghai with his cell phone could do the same thing or worse. And a so-called "Smart Grid" that is as vulnerable as what we've got is not smart at all, it's a really, really stupid grid.

⁷² <http://emfsafetynetwork.org/?p=4904#.Tqg5ljufSvo.email> (emphasis added)

⁷³ <http://www.abs-cbnnews.com/business/tech-biz/07/16/14/smart-technology-could-make-utilities-more-vulnerable-hackers>

'Smart' technology could make utilities more vulnerable to hackers, 7-16-14

⁷⁴ <http://www.youtube.com/watch?v=1F3eywqD-l>

EnergyNow, June 19, 2011

[ASSURAS] Vulnerabilities is what you're telling me. We're not taking care of them.
[WOOLSEY] We're not.

A widespread hack in Puerto Rico allowed electricity theft and fraudulent bills.

Smart Meters allow access to energy data and use for surveillance, data alteration, and being able to shut-off power to individual meters, neighborhoods, or the grid itself.

Doug Powell, Manager of SMI Security, Privacy & Safety, Canadian utility BC Hydro:
Every endpoint [meter] is a new potential threat vector.⁷⁵

Bloomberg, 2015:

'Introducing smart meters means you install access points to the electricity grid in private homes,' said Reinhard Gruenwald, an energy expert at the Office of Technology Assessment at the German Bundestag, a scientific institution advising German lawmakers.⁷⁶

This vulnerability brings fire and explosion risks, says Karthik Pattabiraman,⁷⁷ associate professor of electrical and computer engineering at University of British Columbia, discussing his recent published research on improving Smart Meter security:

Hacked meters can even cause house fires and explosions or even a widespread blackout. Unlike remote servers, smart meters can be relatively easily accessed by attackers, so each smart meter must be quite hackproof and resilient in the field.

Danger due to meter location

Sparks, Nevada fire chief Tom Garrison was interviewed on Nevada Smart Meter fires: Fires sparked by smart meters can be dangerous because they often start outside of the house and cannot be detected by smoke detectors, Garrison said. "It can burn a long time and enter the attic or the walls," Garrison said of a smart-meter blaze. "The occupants inside may not even be aware the house is on fire. This is very alarming to me."⁷⁸

⁷⁵ <https://www.businesswire.com/news/home/20120412005992/en/Hacking-Expert-David-Chalk-Joins-Urgent-Call>

⁷⁶ <https://www.bloomberg.com/news/articles/2015-04-01/turkish-blackout-shows-world-power-grids-under-threat>

Turkey's 10-Hour Blackout Shows Threat to World Power Grids

⁷⁷ <https://news.ubc.ca/2019/06/06/ubc-researchers-find-ways-to-hackproof-smart-meters/>
UBC researchers find ways to hackproof smart meters

⁷⁸ <https://www.offthegridnews.com/2014/10/01/this-womans-death-may-confirm-all-your-suspicions-about-smart-meters/>

Vibration and heat in building materials from RF emissions

Thermografix Consulting Corporation thermal radiation consultant and Red Seal journeyman electrician Curtis Bennett has measured heat buildup in buildings as a result of vibration caused by internal or external RF emissions. He has repeatedly warned that fire wall and structural integrity are being compromised by this exposure, and that this can lead to fire wall failure.⁷⁹ He says building codes were designed to protect and shield building materials from 60 Hz electromagnetic fields and their impact on material integrity. Those fields vibrate molecules, changing molecular polarity at 120 times per second. This vibration also causes heat.

But, building codes were not designed for the much higher frequencies and vibration of wireless radiation exposure. PG&E electric Smart Meters constantly transmit at 924 MHz and 2.4 GHz for the Home Area Network. This high frequency radiation causes molecules in building materials, metal, and in the body to change polarity 1.8 billion times per second and 4.8 billion times per second. "There is a physical interaction with the frequencies at molecular levels affecting building code compliance by vibrating the building billions of times per second."⁸⁰ These exposures violate building codes which prohibit vibration.⁸¹

Accelerated corrosion

In metal, these near-field exposures can cause metal fatigue and rapid non-oxidative corrosion from electron-stripping.

Andrew Michrowski PhD.⁸²

The rate of corrosion is directly proportional to the frequency of emissions - 3 GHz signals will corrode 10X faster than 300 MHz, and 500,000X faster than powerfrequency (60Hz) corroding water mains, gas pipelines, reinforced concrete re-bars, etc.

Violation of FCC Grants of Equipment Authorization

EMF Safety Network, California Public Utilities Commission, A.10-04-018 excerpts:

...
5. FCC Grants of Equipment Authorization, which govern the rules upon which FCC compliance is based, warns that RF exposure compliance depends on specific conditions.

⁷⁹ <http://youtu.be/GtIWW6PY-vk>

⁸⁰ https://www.bcuc.com/Documents/Proceedings/2012/DOC_32604_C19-6_WKCC-Submission-RDCK-Nelson-Creston_Suspension.pdf

⁸¹ <http://thermoguy.com/fortisbc-canadian-wireless-smart-meter-programs-not-compliant-with-building-codes/>

⁸² Personal correspondence, 2014, with Dr. Michrowski, Planetary Association for Clean Energy (PACE)

6. Network has researched FCC conditions for the following meters that PG&E is deploying: FCC ID numbers OWS-NIC514, OWS-NIC507, and LLB6327PWM.

7. Network believes that PG&E Smart Meters violate one or more FCC conditions that determine RF exposure compliance. The conditions include one or more of the following, depending on the specific make and model of Smart Meter:

- limited single module approval requires professional installation;
- antenna(s) must provide a separation distance of at least 20 centimeters (cm) from all persons;
- antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter;

...

8. I doubt that several weeks of installer training qualifies PG&E installers as “professionals” and also doubts that Smart Meter installers are given accurate information about RF operating conditions.

9. Many PG&E Smart Meters are installed within 20 cm of public access. In some cases the meters are installed inside homes and businesses. In many situations Smart Meters are easily accessible to the public.

10. PG&E Smart Meters are widely co-located in banks of multiple meters. Co-location also occurs within Smart Meters because electric Smart Meters include at least two internal RF antennas. One antenna is used for the mesh network system and the other is for Home Area Network (HAN) systems. Antennas are designed to work in conjunction with HAN and RF appliances and with other Smart Meters in a mesh network.

11. Antennas have separate Grants of Equipment Authorization, which suggests that manufacturers have tested antennas in isolation and individually, and not in combination, which is how the Smart Meter and the Smart Grid system were designed to operate...⁸³ (emphasis added).

This lack of compliance may have electrical safety consequences.

Other fire-related issues with Smart or digital meters

Removing meters and hampering investigations

A fire scene is essentially a crime scene, and must be preserved pending investigation by fire personnel. However, PG&E and other utility companies are usually very quick to respond to incidents and pull off the meter and take it away. They often arrive at the fire scene before the fire department.⁸⁴ Utility personnel do not let investigators examine meters, and they have even questioned the fire department’s authority to have the meter.

From Nevada:

In some cases, fire investigators who did respond had difficulty confiscating the

⁸³ <http://emfsafetynetwork.org/wp-content/uploads/2012/11/129162.pdf>

Application for Rehearing, California Public Utilities Commission

⁸⁴ <https://smartgridawareness.org/2015/07/28/utilities-remove-burned-smart-meter-evidence-from-fire-scenes/>

burned meters as evidence.

"I notified (the NV Energy employee) that the smart meter remains were evidence for the investigation and would be logged in at the Sparks Police Department for investigation hold," the Sparks investigator on a fire on Windswept Drive wrote. "(He) asked under what authority we have to keep their property."⁸⁵

From Quebec:

Quebec City's fire department says Hydro-Québec has been too quick to remove smart meters from the scenes of fires where faulty wiring may be an issue. The fire department says the meters are sometimes gone before investigators can look at them to find out whether their wires might have been damaged, which could lead to a short circuit and a fire.

"A fire is considered a crime scene and at a crime scene evidence should be left alone," said France Voiselle, a department spokeswoman.

But Patrice Lavoie, a spokesman for Hydro-Québec, said the meters belong to the public utility and the meters don't cause fires.

"We are totally entitled to bring them back to our office," he said.⁸⁶

Insurance adjuster Norman Lambe, New Mexico Public Regulatory Commission:

Q. What are some of the issues that have arisen from "smart" meter-caused fires?

A. In cases of fire involving "smart" meters, by the time a representative from the insurance company arrives at the scene, the utility has already responded, usually during the course of the local fire department's fire suppression efforts. Utility companies commonly remove the "smart" meter that had malfunctioned and/or ignited prior to completion of the necessary investigation into the cause of the fire. This hampers my ability to see that a proper investigation is performed for insurance purposes. This also complicates the job of Fire Marshals and/or fire department investigators. This may potentially also lead to a misdiagnosis by fire departments and insurance agencies and an undercounting of the total number of "smart" meter caused fires.

Utility companies have kept the "smart" meters, claiming that they are the company's property, and they can do with them as they please. It can take me several months, if not years, to obtain the "smart" meter that is believed to be the same one involved in, and the primary cause of a particular fire. Thus, the timeframe required to perform the requisite analysis is substantially extended; consequently, fires caused by "smart" meters can be extremely challenging to investigate and resolve.

...(Claim number 2015-2031-77A) This case exemplifies the difficulty that we encounter when trying to obtain access to "smart" meters in order to perform a proper investigation. We still have not been permitted the opportunity to inspect the meter by Nevada Energy. Residents stated that the "smart" meter exploded. The inability to access the meters in "smart" meter fire cases is a consistent

⁸⁵ <https://www.rgj.com/story/news/2014/09/21/reno-smart-meter-fires-widespread-first-feared/15897355/>

⁸⁶ <http://www.cbc.ca/news/canada/montreal/quebec-city-firefighters-ask-hydro-quebec-to-leave-smart-meters-alone-1.2983309>

problem...(Re: Friars Village Shopping Mall) Please note that as of the date of this testimony, more than two years later, we have not yet been able to gain access to our insured's "smart" meter in order to perform the requisite investigation.⁸⁷

A fire broke out at a home in Firebaugh, California:

[Jose] Valdez and his family ran out and firefighters had already started pouring water on the house.

He noticed several PG&E employees got there almost as quickly, and he says one of them removed the smart meter while the firefighters worked. Firebaugh's fire chief saw it too.

He says he [has] never seen that before, but he thinks he knows why they may have wanted the device.

"Investigation after the fire was put out revealed that in all probability the fire was caused by a problem in the electrical panel and the problem in the electrical panel, in my belief, was the Smart Meter that was installed in the panel by PG&E," said John Borboa.⁸⁸

In Nevada:

The investigation files also offer evidence that the meter blazes could be more widespread than even fire investigators know. In the reports, NV Energy employees on the scenes of two of the fires told investigators that such blazes happened regularly.

In an interview last week, an electrician who helps NV Energy replace the meters told the Reno Gazette-Journal that often meters would be fixed before the fire department could even be called. The RGJ has withheld his name because he continues to do work for NV Energy and didn't want to put his employment at risk. "NV Energy was so quick in having me or one of the other guys out there that the fire department never knew about them," he said. "We'd have the panel changed out and power turned on within five hours and a guy painting the wall right behind us."

He said that he's fixed 15 or 16 burned-out meters in the past two years in Reno, Sparks and Gardnerville.

"The fire department was never called on most of them. I only saw the fire department on two or three of them," he said.

... Another worker on scene at that fire told Sparks investigators he "has been replacing about two smart meters a month that have failed and caused damage to the residential or commercial buildings."

"NV Energy collects all the damaged smart meters and has not admitted to the problems with them," he told investigators, according to the report.⁸⁹

⁸⁷ <http://www.electronicssilentspring.com/wp-content/uploads/2016/10/nl.pdf>
<https://skyvisionsolutions.files.wordpress.com/2016/08/lambe-testimony-in-new-mexico.pdf>
 Norman Lambe testimony, July 13, 2016, PNM rate case, New Mexico PRC

⁸⁸ <https://abc30.com/lawsuits-claim-faulty-pg-e-smart-meters-started-house-fires/2657513/>
 with video
 Lawsuits claim faulty PG&E Smart Meters started house fires, November 17, 2017

⁸⁹ <https://www.rgj.com/story/news/2014/09/21/reno-smart-meter-fires-widespread-first->

This situation is likely illegal, and utility workers and IBEW members are participating in the cover-up.

At a fire in June 2013, an NV Energy trouble technician told firefighters that exploding smart meters were a "big problem," and that trouble technicians and meter technicians have opted out of having them installed on their own homes — which they did out of safety concerns as well as in protest to NV Energy's decision to lay off meter readers once the smart meters were installed.⁹⁰

Non-specific and inadequate fire coding

Complicating and impeding investigations and research is the lack of specific fire coding for fires related to Smart Meters. Coding is vague, and there is no coding for a Smart Meter or electric meter as primary or secondary cause.

A UK report said: "The current (CLG) Fire & Rescue Service Incident Recording System is not configured to capture specific details of fires originating in electrical equipment."⁹¹

Punished whistleblowers

- Oncor employee Bobby Reed testified before the Texas legislature about Smart Meter fires and was fired. The union filed a complaint with the NLRB.
- PG&E meter reader Patrick Wrigley testified before CPUC Administrative Law Judge Amy Yip-Kikugawa that he was fired because he spoke up on meter inaccuracy. He also told her that PG&E knows Smart Meters cause fires.
- Sensus: Engineer Don Baker was fired for warning of meter defects creating a fire hazard. He filed a qui tam lawsuit against Sensus, Alabama Power and Southern Company because he said they knew of the defects.⁹² U.S. DOJ refused to hear the case.

These whistleblowers were ignored.

Problems undercounted due to lack of proper investigation

The Canadian report by Ritenburg and Associates⁹³ on SaskPower's meter fires found

[feared/15897355/](#)

⁹⁰ *ibid* (emphasis added)

⁹¹ Investigation Report into: Fires Originating in Electrical Intakes, Mark Hobbs, Lead Fire Investigation Officer, East Sussex Fire & Rescue Service, UK, July 2010

⁹² <http://stopsmartmeters.org/2012/01/20/meters-that-endorse-shocking-details-from-a-whistleblower/>
<http://stopsmartmeters.org/wp-content/uploads/2012/01/Alabama-Baker-Sensus-Complaint.pdf>

⁹³ http://www.saskatchewan.ca/~media/news_release_backgrounders/2014/oct/3_ritenburg

malfunctioning meters were often not investigated. Instead, they were returned to the manufacturer for replacement. Meter malfunctions or issues were also not thoroughly recorded. The Ritenburg report has photos of meters tagged as “communication errors” but have signs of arcing on the circuit board.

Many more meters may be malfunctioning due to burgeoning conditions that can culminate in fire, but they are not being counted. Therefore, the true scope of the problem will not be known. This benefits meter manufacturers, utility companies, and states and provinces which bear the liability.

SaskPower told Ritenburg that it’s normal for communication to be lost with meters “for up to a day.” Ritenburg’s response: “This trend makes reporting of off-normal conditions on a timely basis somewhat unreliable.”

Saskatchewan ordered SaskPower to remove all its Smart Meters, and Ritenburg reported that SaskPower was simply disposing of the meters, not examining them for signs of degradation. This is unprofessional and lacking in any regard for public safety. It is likely common practice for most, if not all, utilities. How can the public trust these companies and workers to deliver gas and electricity safely to their communities?

Elimination of monthly inspections

Utility companies no longer visually inspect meters every month. Meter reader jobs were eliminated by Smart Meters, which wirelessly transmits customer usage data constantly instead. Labor cost-cutting was a key part of alleged program “benefits”. However, those monthly meter visits could identify meter safety issues. The public has repeatedly warned about this cost to public safety and opposed these job losses.

Increasing terpene production in surrounding trees due to stress

Studies have shown significant stress, injury, and death to trees from RF exposure due to cell towers and radar⁹⁴, and the public has reported rapid negative health changes to trees following Smart Meter roll-outs. This occurred in Monterey. Trees produce terpenes -- volatile oils that are aerosols -- under normal conditions. When trees are stressed or injured, they emit more terpenes. Increased volatile oils due to wireless radiation exposure would create a more flammable environment for fire.

Inaction from fire safety administrators

Some fire and public safety officials have been outspoken about these fire and electrical hazards, and helpful in researching this issue, such as the 2017 testimony of retired fire

[final report.pdf](#)

⁹⁴ [http://kompetenzinitiative.net/KIT/wp-content/uploads/2016/06/Tree-damages-in-the-
vicinity-of-mobile-phone-base-stations.pdf](http://kompetenzinitiative.net/KIT/wp-content/uploads/2016/06/Tree-damages-in-the-vicinity-of-mobile-phone-base-stations.pdf)
[https://www.researchgate.net/publication/306435017_Radiofrequency_radiation_injures_tr
ees_around_mobile_phone_base_stations](https://www.researchgate.net/publication/306435017_Radiofrequency_radiation_injures_trees_around_mobile_phone_base_stations)

captain Duane Roddy to the Michigan House Energy Committee. Others have kept quiet, unresponsive to records requests, and uninterested in investigating, while others have even said the meters are safe.. Some fire personnel have expressed fear of retribution, fear for their jobs, or the risk of lawsuits if they speak out on the fire and electrical problems they've seen.

From Nevada:

“Given the lingering safety question presented by the Reno and Sparks fire departments' expert, staff believes it would be prudent to gather some information from NV Energy regarding any fires which have occurred where NV Energy equipment may have been involved,” PUC lawyer Tammy Cordova wrote. Not everybody is convinced that the meters are a menace. Nevada State Fire Marshal Peter Mulvihill thinks the gadgets are safe, although he said the new fires warrant an investigation. NV Energy, which has installed 1.1 million meters, also defends their safety.⁹⁵

Preserving the fire scene is essential.⁹⁶ Fire officials and insurance companies must thoroughly investigate first. Yet, state, county, and city fire officials haven't stopped utility companies from removing meters from fire scenes. They also haven't insisted on conducting their own investigations, and haven't gotten specific fire coding. Why?

A PG&E email⁹⁷ to the CPUC surfaced several years ago about getting the help of “sympathetic” fire officials after Smart Meters exploded at two shopping malls.

PG&E advertises its close relationship with fire officials in television ads. Fire departments also get grants from PG&E for equipment. PG&E and other utility companies routinely train fire personnel for electrical and gas fires. This creates a cozy relationship particularly with fire department upper management.

The report on British Columbia fires and investigations⁹⁸ indicates some fire safety officials and agencies may have become politically compromised -- a disturbing prospect. In 2016, twelve horses were killed, eleven injured, two severely so, and two firefighters were injured in a catastrophic barn fire in Florida.⁹⁹ Initial quotes from Fire Rescue and fire investigators

⁹⁵ <http://www.offthegridnews.com/2014/10/01/this-womans-death-may-confirm-all-your-suspicions-about-smart-meters/>

⁹⁶ <https://www.iveyengineering.com/steps-fire-explosion-experts-use-investigate-building-fire/>

⁹⁷ PG&E email: 84. “We have contacted several fire chiefs who are sympathetic”
ftp://ftp2.cpuc.ca.gov/PG&E20150130ResponseToA1312012Ruling/2011/09/SB_GT&S_023103_1.pdf

⁹⁸ <http://www.stopsmartmetersbc.com/bcuc-smart-meter-fires-the-failure-to-protect/>
<http://tinyurl.com/SMFireReport>

⁹⁹ <https://smartgridawareness.org/2017/12/09/questions-remain-regarding-fire-linked-to-utility-meter/>

were that the cause was a catastrophic failure of the meter “causing flames and sparks to ignite hay, feed and other combustible materials that were nearby”. But that changed. The incident report later issued by the county and its inspector painted a very different picture -- “a unspecified electrical malfunction on the south end of the building...(I was unable to identify which device caused the fire without further specific testing and examination...)” The investigation office did no further testing once arson was ruled out, turning the case over to private investigators. Smart Grid Awareness researched this and was unable to discover any final resolution or determination.

If some fire administration officials are no longer objective and won't speak out and expose a fire hazard, they harm the public and the fire fighters on the line that must deal with the consequences and risk their lives. That is unacceptable.

Inaction from regulatory agencies, exemptions and loopholes

It only took six GE dishwashers to overheat and one dishwasher fire to initiate a total recall. Nothing has happened with Smart Meters.

In California, the 2010 Vacaville death of Larry Nikkel in a Smart Meter fire¹⁰⁰ was never publicly investigated by the local district attorney, the CPUC, or other officials. It was swept under the rug until it was uncovered and investigated by consumer advocacy groups in 2013. Likewise, no action was taken following whistleblower Patrick Wrigley's stunning 2012 CPUC testimony about Smart Meter fires, overbilling, and other problems.

No State or federal action has been taken despite deaths, house fires, extensive damage to personal property, and failure of the meters themselves.

Utility companies appear to be exempt from National Electrical Code rules.

90.2 Scope

(B) Not Covered. This Code does not cover the following:

(5) Installations under the exclusive control of an electric utility where such installations

- a. Consist of service drops or service laterals, and associated metering, or
- b. Are located in legally established easements or rights-of-way designated by or recognized by public service commissions, utility commissions, or other regulatory agencies having jurisdiction for such installations, or
- c. Are on property owned or leased by the electric utility for the purpose of communications, metering, generation, control, transformation, transmission, or distribution of electric energy.¹⁰¹

Are utilities covered under state or local electrical code rules and if so, how are these rules

¹⁰⁰ <http://stopsmartmeters.org/2013/06/21/when-smart-meters-kill-the-story-of-larry-nikkel-details-emerge-of-vacaville-ca-smart-meter-fire-death/>

¹⁰¹ NFPA 70 National Electric Code 2008 (emphasis added)

enforced? If not, what rules govern their practices, and who monitors compliance?

Meters have been exempt from UL certification, and the new questionable 2735 certification is voluntary and ineffective. When people file complaints with consumer agencies, they're generally told Smart Meters are exempt or not under their jurisdiction. The U.S. Consumer Products Safety Commission (CPSC) has now said it is willing to take complaints, but time will tell whether it takes action on complaints.

News media censorship and failure to investigate

In-depth news media reporting on fires has been infrequent. The Firebaugh story is a refreshing exception. Actual investigation or follow-up is rare. The utility companies are often given the last word in news coverage, and their explanations are reported as fact. This is public relations, not journalism.

An example is the censorship and slant by the Detroit News in reporting on the Michigan House Energy Committee in 2017.¹⁰² It did not report on Fire Chief Duane Roddy's testimony on the Smart Meter fire at his home. Instead, it wrote about public testimony, describing it as "fears", "concerns", "worries", and "alleged health effects", and it let utility company DTE have the talking points.

Orlean Koehle's house survived the Santa Rosa fire but all the homes in her neighborhood burned. She found out her home was the only one with an analog meter; all the neighbors had Smart Meters. She wrote an editorial for the Santa Rosa Press Democrat detailing this, but the newspaper refused to publish it. The Siskiyou Daily News did publish it, but did not archive it on its website.

The California mainstream news generally focused on protests of the Smart Meter program, frequently using words such as "concerns" and "fears". The news paid little attention to the actual issues raised by the public and experts, or criticized those who raised them without doing any investigation.

Regulatory commission defense of the Smart Meter program

The CPUC and its personnel have blocked investigation into Smart Meter program defects and defended the program,¹⁰³ a position duplicated across the country. An example of this

¹⁰² <http://www.detroitnews.com/story/news/local/michigan/2017/02/21/smart-meter-trial/98202698/>

¹⁰³ City and County of San Francisco (CCSF) petition to modify 09-3-026, 6-17-10 p. 1

The City requests an immediate suspension of PG&E's further installation of SmartMeters until the Commission concludes its investigation into the significant problems created by PG&E's deployment of its SmartMeters. In view of the problems already known to the Commission, it is unreasonable for PG&E to simply continue installing SmartMeters as if nothing is wrong. [initially, the petition focused on Smart Meter reliability and accuracy problems; later in the proceeding, the City added electromagnetic

happened with the Structure Group report on Smart Meter accuracy. The CPUC's Office of Ratepayer Advocates attempted its own investigation, but had to abandon it because the CPUC commissioners would not support it.

The California Public Utility Code has a gaping regulatory hole. It does not compel CPUC investigations, no matter how many incidents occur, how many complaints are made, or what the nature of the complaints is. The CPUC "may" take steps when faced with health and safety problems, consumer fraud, and other problems, but those steps are optional, according to Sections 701, 762, and 768. This same problem is likely faced in all other states. In 2012, I outlined needed changes in the code, including thresholds for mandatory investigation of utility problems and timelines for action, and changing the language in the Public Utilities Code from "may" to "shall" on CPUC responsibilities.¹⁰⁴

The CPUC refused to initiate investigations on Smart Meter problems despite repeated recommendations by the Office of Ratepayer Advocates (formerly the Division of Ratepayer Advocates) in 2010:

DRA recommends immediate Commission action to address concerns about RF interference and possible adverse impacts on health and safety. Such concerns have been raised in filings by local governments, and consumers, and by numerous individual customers in person at Commission public business meetings. This level of public concern warrants action by the Commission to determine if these concerns are well founded, regardless of CARE's Application.

1. The Commission has a responsibility to protect public health and safety. Although DRA's statutory mandate is to try to obtain "the lowest possible rate for service consistent with reliable and safe service levels" (Public Utilities Code § 309.5(a)), and in that role supports the provision of service that is safe and reliable, the Commission has the primary authority and responsibility to protect the health and welfare of California residents by ensuring that public utility service is safe and reliable. See, e.g., Public Utilities Code §§ 45113, 76114, 76215, and 768.16¹⁰⁵

In the Smart Meter opt-out proceeding (Application No. 11-03-014), Chairman Michael Peevey allowed utility companies and their experts to present evidence, and then improperly closed the proceeding, issuing a decision before the other parties had presented their evidence.¹⁰⁶

emissions from Smart Meters]

¹⁰⁴ <http://smartmeterharm.org/2012/12/14/report-smart-meter-problems-dec-2012/>

¹⁰⁵ CPUC Division of Ratepayer Advocates (DRA) response to Californians for Renewable Energy (CARE) application for modification, October 20, 2010 (A.10-09-012), p. 5

¹⁰⁶ San Francisco, Comments on CPUC Proposed Decision, Opt-out Proceeding, 12-11-11, p. 4-6

EMF Safety Network:¹⁰⁷

In the 2014 California Public Utilities Commission (CPUC) Annual Report to the Governor and the Legislature states, "There was some concern regarding fires in smart meters but this was investigated by CPUC staff in 2013. Staff determined that, of reported fires involving smart meter installation, none were actually caused by the smart meter." EMF Safety Network sent a records act request for the details of that investigation in 2014, which the CPUC has ignored.

California cities and counties which passed ordinances banning Smart Meters faced bullying by CPUC officials who claimed exclusive jurisdiction over utility companies, despite policing powers granted under state law to cities and counties (recently reaffirmed by the California Supreme Court), and local franchises with PG&E.

Pennsylvania:

The commissioners' mostly polite questions indicated they have no desire to undermine the statewide changeover to smart meters, which is mandated by a 2008 law. Smart meters have attracted opposition from some customers who worried about health effects of the wireless technology and loss of privacy, concerns that regulators say are overblown.

Robert F. Powelson, the commission chairman, said the meeting was intended only to gather information about the "isolated incidents" involving overheating meters,

The City recommends that the Commission reject the PD [Proposed Decision] in its entirety for two reasons. First, the PD makes these findings without a hearing and without allowing the parties to this proceeding – other than PG&E – to submit any evidence. The Commission cannot make such a finding when it prevented the parties other than PG&E from making a record.

...The parties were never given an opportunity to submit written testimony. Despite this procedural posture, the PD would dispose of this case without a hearing. The PD determines that a hearing is not necessary because "there were no disputed factual issues material to the resolution of this application." The PD, however, makes this determination based solely on the uncontested evidence submitted by PG&E in support of its application. The PD errs by ignoring the many protests and motions filed in this proceeding...

... It seems obvious from the proceedings in this case that a complete record would show that there are disputed factual issues that require a hearing.

In issuing the PD without allowing the other parties to this proceeding to submit evidence the PD has denied these parties their legal right to be heard in this ratesetting proceeding.

¹⁰⁷ <http://emfsafetynetwork.org/smart-meters/smart-meter-fires-and-explosions/>

Quote from CPUC Report to the Governor, see page 5:

<https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=3292>

and public questions were not permitted.

... "This hearing is not a debate about whether or not to meter," he said. "We are moving forward with metering in Pennsylvania."

Commissioner James H. Cawley agreed. "We want this done," he said. "We want it done safely, of course, because the benefits to customers are enormous."¹⁰⁸

The National Association of Regulatory Commissions conferences and meetings set national policy, and the utility industry, industry-affiliated groups, and commissioners lead the sessions. Public stakeholders are not heard or included.

PG&E/CPUC emails released due to San Bruno explosion lawsuits showed the cozy relationship between CPUC commissioners and staff and PG&E, and the joint maneuvers they took on many utility issues, including Smart Meters.

PG&E email July 2, 2010 on a meeting with former CPUC Chair Michael Peevey:

... SmartMeters – Mike [Peevey] grumbled about the CCSF PFM [City and County of San Francisco Petition for Modification] and the folks in Sebastopol [sp] who want to delay SmartMeter implementation. He implied that this wasn't going to happen, and that by the time the Commission got around to acting on [PUC filings], we [PG&E] would have installed all of our meters...

Miscellaneous – Mike couldn't hide his disdain for Mark Toney and TuRN. He was particularly incensed, along with Clanon [Paul Clanon, CPUC Executive Director], about TURN's refusal to modify their website about opposition to SmartMeters. I'm not too concerned about TURN and the GRC [General Rate Case] at this point. I don't believe we need them as a settlement partner with Peevey as the assigned Commissioner.¹⁰⁹

Florida Public Service Commission Chair Nancy Argenziano upon her retirement:

[M]ost of you will understand the relief I feel at leaving the fetid pit of the PSC. I tell you that in my weirdest nightmare, I would not have expected to come upon the corruption; the bought and sold nature of everything related to the operation of the PSC; the reduction of the office of PSC legal to the office of regulated utilities' apologist; the subjugation of "the public" to the schemes of the regulated utilities, resulting in a de facto "Regulated Industries Service Commission"; the almost universal expectation that if you audition well, PSC employees and Commissioners will be rewarded with lucrative jobs with the utilities regulated; ... I will be pleased to meet with any group which wants to understand the deep, dark, behind the scenes truths of what happens in your state government.¹¹⁰

¹⁰⁸

https://web.archive.org/web/20111210072634/http://www.wptv.com/dpp/news/region_c_palm_beach_county/some-homeowners-concerned-about-meter-installation

¹⁰⁹ 7-2-10 PG&E email filed ex parte on 12-22-14

http://emfsafetynetwork.org/wp-content/uploads/2014/12/PGE-Letter-to-Mr.-Sullivan-Exhibits-1-17_-12-22-14.pdf

Brian Cherry to Thomas Bottorff (PG&E)

¹¹⁰ October 12, 2010

Unsafe time-of-use rates

Time-of-use rates give cheaper rates at off-peak times -- typically at night. They are being phased in to incentivize people to use appliances, such as washers, driers, ovens, and dishwashers, at night or other off-peak times.

UK fire officials condemned TOU rates in 2016, saying they were never consulted about this unsafe plan, appliances should never be run when people are sleeping, and this scheme would result in fires and lost lives.¹¹¹

TOU rates are a major 'green' reason for Smart Meters. Proponents claim this will cut peak time energy use, but this isn't a safe practice. British Gas said in 2016, "We have no plans to trial or launch any time-of-use tariffs that offer cheaper electricity at night."¹¹²

Utility company lack of transparency and misinformation

Utility companies have blamed customers for most Smart Meter problems, including fires and electrical problems.

Florida:

But the Florida utility [FPL] assured residents that it was nothing to worry about, smart meters don't cause fires....however a spokesperson for the utility said they'd responded to 30 complaints related to meter fires and that "you could have wiring issues if you have dimming lights or power issues on one end of your home and not the other."¹¹³

Pennsylvania:

A Peco Energy Co. executive said Thursday the suspension of a ballyhooed smart-meter installation program would likely continue until early October while the utility evaluates what caused 29 of the devices to overheat and catch fire...Peco and representatives of the three biggest smart-meter manufacturers indicated the overheating problems are most likely caused by "external" problems in the panels

<https://miamiherald.typepad.com/nakedpolitics/2010/10/nancy-argenziano-resigns-from-psc-to-oppose-scott-and-corrupt-legislature.html>

<http://miamiherald.typepad.com/nakedpolitics/2010/10/nancy-argenziano-resigns-from-psc-to-oppose-scott-and-corrupt-legislature.html>

<http://www.heraldtribune.com/article/20101023/ARTICLE/10231027>

¹¹¹ <http://www.thisismoney.co.uk/money/bills/article-3505060/Using-washing-machine-night-cost-life-Firefighters-warn-plan-charge-different-rates-different-times-day.html>

¹¹² *ibid*

¹¹³

https://web.archive.org/web/20111210072634/http://www.wptv.com/dpp/news/region_c_palm_beach_county/some-homeowners-concerned-about-meter-installation

mounted to walls into which the meter is plugged, not by a defect in the device itself.¹¹⁴

Texas:

Justin Ozuna with Oncor told News 8 that the company is aware of the fatality and is trying to gather more information, including when the meter was installed and other account history.

He also noted that smart meters operate in the same way as older, analog meters and don't use any extra energy.¹¹⁵

Charles Phillips saw smoke coming from the transformer in his back yard one morning last November. When he went out to inspect the damage, he says he saw a CenterPoint Energy contractor at his meter box with a fire extinguisher.

"He told me it had caught on fire," Phillips said. "He had talked to his boss. Evidently, he told him to put it out, which is what he did."

But that was just the beginning. Inside Phillips' home, two TVs were fried, his air-conditioner and garage door opener stopped working and all of the wires and cables hooked up to his electronics were melted from the jolt his electronics took when the smart meter on his home sparked a fire.

,,, But both CenterPoint and the subcontractor installing the smart meters across Houston say the damage is not their fault or their responsibility.

"People generally don't think about that equipment being owned by them, but it's the same with the water piping inside your home, the gas piping inside your home; it's customer-owned equipment," said CenterPoint Energy spokesman Floyd LeBlanc. ... LeBlanc says CenterPoint has had less than 100 reports of electrical fires caused during more than 1 million smart meter installations, but the power company doesn't like to use the word "fire" to describe the problem.

"When we talk about fires, we're talking about structures on fire," said LeBlanc, explaining that there have been no houses that have burned in Houston, only electrical wiring, equipment and appliances.¹¹⁶

Nevada:

Egan and Smith said they take concerns over meter flame outs very seriously and have worked hard to determine the fault of each individual fire reported by the department. In most cases, the cause remains elusive. In others, outside factors played a role, Smith said.

In one case, the fire was helped along by water damage. In another case, the company had the burned out meter X-rayed and found the inside components intact, indicating the fire came from somewhere else. In another case, wind slammed a door shut, likely jiggling lose a connection in the meter and sparking the

¹¹⁴ https://web.archive.org/web/20150326112331/http://articles.philly.com/2012-09-14/business/33818402_1_smart-meter-installation-program-smart-meters-new-meters

¹¹⁵ <http://www.kens5.com/story/news/nation-now/2015/02/03/family-blames-smart-meter-on-house-fire-that-killed-74-year-old/22799387/> link no longer works

¹¹⁶ <http://www.click2houston.com/news/local-2-investigates-smart-meter-fires>

blaze, Smith said.

Often, the fire is started by arcing within the panel that the meter is plugged into. NV Energy realized this year, Smith said, and replaced many customer panels in order to reduce the probability of a fire.

"There's many, many situations you have to study," Smith said. "Each one of these conditions are unique. There's not a common pattern that we have seen. We have not found an individual meter to be defective in all the meters we have studied this far."¹¹⁷

Getting accurate information or any information has been difficult.¹¹⁸

From Nevada:

NV Energy had been required to provide semi-annual reports on the meters to the Public Utilities Commission, but stopped filing the reports in June 2012.

Those reports contain somewhat haphazard data on meter malfunctions, using different terminology to describe meters that appear to have been damaged or destroyed by some sort of overheating.

In short, the company reported 45 "burned" or "smoked" meters between Jan. 1, 2011 and June 30, 2012. A total of 3,767 malfunctioning meters that succumbed to a variety of problems.¹¹⁹

Instead utility companies engage in endless public relations campaigns,¹²⁰ and when they cannot avoid the lawsuits, the settlements are generally sealed and complainants gagged. This lack of accountability keeps secret the extent and severity of fire and electrical problems, adding to the public risk, and it further destroys the credibility of utility companies.

Insurance industry silence

With all the known fires, deaths, injuries, and property damage related to Smart/digital meters, the amount of claims must be staggering. Yet, the insurance industry and its investigators haven't exposed this issue. Norman Lambe is a rare example. Why?

Former executives from utility companies, Smart Meter manufacturer Siemens, and Smart Grid companies Cisco and Accenture sit on insurance company boards of directors. These

¹¹⁷ <https://www.rgj.com/story/news/2014/09/21/reno-smart-meter-fires-widespread-first-feared/15897355/> (emphasis added)

¹¹⁸ <http://smartmeterharm.org/2014/07/13/how-many-rf-pulses-per-day-from-a-smart-meter/> -- one example

¹¹⁹ <https://www.rgj.com/story/news/2014/09/21/reno-smart-meter-fires-widespread-first-feared/15897355/>

¹²⁰ For example, PG&E hired PR firm Edelman to counter public opposition to Smart Meters, and product defense firm Exponent as investigator when PG&E caused a gas explosion in Carmel, destroying a home.

include

Liberty Mutual:

- Tom May, Eversource Energy (formerly Northeast Utilities) -- retired Chairman, President and CEO
- Eric Spiegel, Siemens Corporation -- retired President and CEO

The Hartford:

- Michael G. Morris, American Electric Power Company -- retired President and CEO, and former Chairman; Northeast Utilities – former Chairman, President, and CEO;
- Carlos Dominquez, Cisco -- 22 years including technology representative for the Chairman and CEO

USAA:

- Admiral Thomas B. Fargo, Hawaiian Electric Industries -- Director
- John F. Young, Exelon Corporation -- Director; Exelon Power -- former President and CEO; Exelon Generating -- former President; Exelon Corp. -- former Executive VP, Finance and Markets

MetLife

- Cheryl W. Gris , Northeast Utilities -- former Executive Vice President

State Farm:

- Pamela B. Strobel, Exelon Corp.-- former Executive Vice President and Chief Administrative Officer

Geico is a Berkshire Hathaway company. BH companies include Berkshire Energy Company.

Conclusion

The electrician interviewed by the Reno Gazette-Journal said he still has a smart meter on his home.

"But I check it a lot," he said, noting that if it is hot enough to hurt your hand or the screen goes black help should be sought.

"The lawyers say it's a real low percentage, but when it's your house a real big percentage," he said.

City officials have not recommended that meters be removed. They are waiting for the Public Utilities Commission to decide whether an investigation is warranted. But if you're worried about your smart meter, here is what you can do:

- If your meter is extremely hot, smoking or you notice signs of arcing, call 911 to have the fire department check it.
- If you are experiencing a problem, but have no immediate fire danger, you can call the Public Utilities Commission consumer line...¹²¹

¹²¹ *ibid*

This is the new “smart” reality, but the public has not been informed. People didn’t have to monitor analog meters for overheating.

From the British Columbia Report: BCUC and Smart Meter Fires: The Failure to Protect

... Who is watching out for us, ensuring that these devices that are being put on our homes without our permission, mandated by law, are safe? No one. This is in our hands and this report provides the means by which we can and must demand a recall.¹²²

Its findings are a warning for every state and region:

1. No agency is tracking fires;
2. Regulations and laws are being broken with impunity, e.g. meters are being removed from the fire scene, electrical inspections are not being done;
3. Reporting is haphazard at best;
4. The meter is combustible, poorly designed, and not certified by any agency to be safe;
5. BC Hydro did not perform its due diligence by having an independent Electrical Engineer inspect the meter prior to signing the contract. Rather, it accepted ITRON’s assurances;
6. Smart meters have burned, melted and caused homes to burn. BC Hydro and [British Columbia Utility Commission] both deny this is happening.

Michigan Senator Patrick Colbeck testimony to Michigan House Energy Committee:

When I look at what happens with smart meters, in particular, I’m actually concerned it is putting our homes, our nation, and frankly some of the power suppliers at significant risk...That is a risk that is not entertained when you have an analog meter...Against this increased risk, there is little to no consumer benefit to the adoption of smart meters.¹²³

- Smart/digital meters are ignition sources installed on every building and many water lines.
- Flame-resistant roofing material and “defensive” zones of cleared vegetation are useless if a building ignites from within and threatens homes and trees around it.
- The most preventable fire hazard in every community may be Smart/digital utility meters.

¹²² <http://www.stopsmartmetersbc.com/bcuc-smart-meter-fires-the-failure-to-protect/>
<http://www.stopsmartmetersbc.com/smart-meter-fires/>

¹²³ Sen. Colbeck was an aerospace engineer prior to becoming state senator. Testimony to the Michigan House Energy Committee March 7, 2017
<https://smartgridawareness.org/2017/03/13/secure-your-family-with-an-analog-meter/>

What is the extent of fires and electrical damage related to Smart/digital meters?
 Were Smart Meters a factor in the recent California fires? If so, how much of a factor?
 These questions and many more need to be answered:

Fire season has begun. These actions must be taken now:

- An urgent re-evaluation of the Smart Meter program and consideration of a repeal in light of program weaknesses, problems, and costs, using a process that facilitates public involvement.
- Public investigations into electrical and fire problems associated with Smart/digital meters, with testimony by independent experts, whistleblowers, and public stakeholders.
- A moratorium on further installations, including Smart/AMR water meters, and Smart/digital metering on solar arrays.
- Public investigations into overbilling, accuracy, health, security and other problems with Smart/digital meters utilizing independent experts, whistleblowers, and public stakeholders.
- An immediate no-cost opt-out and replacement of electric, natural gas, and water Smart/digital meters with analog meters for all residential and commercial customers who request it
- Public investigations into the California Public Utilities Commission and other utility regulatory commissions to discover the extent and length of knowledge of Smart Meter program problems, actions taken to block investigations, personnel involved, and coordination with utility companies and other state utility commissions.
- Investigation by state insurance commissioners into insurance company knowledge of fires, deaths, and property damage related to Smart/digital meters.
- Investigation of waivers granted from state electrical worker requirements for temporary meter installation workers
- Prohibition against utility company personnel removing Smart/digital meters and other equipment from fire scenes, with substantial penalties for violations.
- Re-evaluation of the National Electrical Code and utility company exemption.
- Revision of state electrical codes and electrical worker qualification requirements to eliminate exemptions for utility companies
- Mandated release of all utility company records and communications on damaged and malfunctioning Smart/digital meters, surges, electrical problems resulting in fires, property damage, injuries, and deaths including to pets.
- Mandated disclosure of claims paid by utility companies for fire or surge electrical damage or appliance/electronics damage to property owners, insurance companies, and city, county, and state entities

Nina Beety is an investigative writer and public speaker, and the author of “Analysis: Smart Meter and Smart Grid Problems – Legislative Proposal, 2012”. Her website is www.smartmeterharm.org. She lives in California.

This is a preliminary document, subject to revisions.

Resources on Smart Meter fires and electrical hazards include:

- EMF Safety Network www.emfsafetynetwork.org.
Archive of Smart Meter-related fires and electrical problems
<http://emfsafetynetwork.org/smart-meters/smart-meter-fires-and-explosions/>
<http://emfsafetynetwork.org/smart-meters/complaints/> - electrical problems and interference
- Coalition to Stop Smart Meters BC www.stopsmartmetersbc.com
Extensive reporting on fires. Two fire reports:
<http://tinyurl.com/SMFireReport> -- 2017, including Appendix B p. 74-109
<http://www.citizensforsafetechnology.org/Truth-About-Smart-Meter-Fires-and-Failures-in-BC--FULL-REPORT,2,3989> -- 2014
- SkyVision Solutions/Smart Grid Awareness www.smartgridawareness.org. Articles include
<https://smartgridawareness.org/2014/08/03/smart-meters-increase-the-risk-of-fires/>
<http://smartgridawareness.org/2015/11/03/catastrophic-failures-expected-with-smart-meters/>
<https://skyvisionsolutions.files.wordpress.com/2014/08/firemarshall-report-smart-meter-fires-canada.pdf>
<https://smartgridawareness.org/2015/07/28/utilities-remove-burned-smart-meter-evidence-from-fire-scenes/>
<https://smartgridawareness.org/2017/12/09/questions-remain-regarding-fire-linked-to-utility-meter/>
<https://smartgridawareness.org/2017/01/13/secure-your-family-with-an-analog-meter/>
- Stop Smart Meters www.stopsmartmeters.org
Investigation on Larry Nikkel's death and other fires. Articles include
<https://stopsmartmeters.org/frequently-asked-questions/faq-fire-and-safety-issues/>
<http://stopsmartmeters.org/2013/06/21/when-smart-meters-kill-the-story-of-larry-nikkel-details-emerge-of-vacaville-ca-smart-meter-fire-death/>
<http://stopsmartmeters.org/2011/01/26/stop-smart-meterexclusive-interview-with-a-wellington-energy-whistleblower/>
<http://stopsmartmeters.org/2012/01/20/meters-that-endanger-shocking-details-from-a-whistleblower/>
- Thermoglyphix Consulting Corp. www.thermoguy.com, Canada¹²⁴
- Film: Take Back Your Power www.takebackyourpower.net
Footage and accounts of Smart Meter fires. Articles include
<https://takebackyourpower.net/smart-meter-fire-risk-liability-is-undeniable-and-unprecedented/>
- Smart Meter Harm www.smartmeterharm.org
<http://smartmeterharm.org/2012/12/14/report-smart-meter-problems-dec-2012/>

¹²⁴ http://thermoguy.com/wp-content/uploads/Smart_Meter_Fires_and_Installation1.pdf

Appendix A:

What is missing on the AMI meter?

From
Evaluation of the Aclara
I-210+C AMI Meter¹²⁵
City of Talent, Oregon
Town Hall Meeting
By William Bathgate, EE, ME
May 30, 2018

¹²⁵ <http://www.freedom2sayno2smartmeters.org/wp-content/uploads/2018/06/Evaluation-of-the-Aclara-I-210C-AMI-Meter-v1.3.pdf>

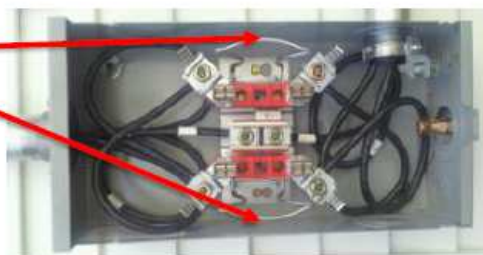
ANALOG METER

What is missing on the AMI Meter?



Analog Meter - Surge Suppression tabs which allows any power surge or lightning strike to safely route to earth ground, they touch the semicircular rings of the meter box.

Inside of your meter box are two semicircular rings that connect to the metal chassis of the box which is connected to the neutral wire and ground rod.



6/1/2018

5

AMI DIGITAL METER

What is missing on the AMI Meter?

AMI Meter - Surge Suppression is not present, therefore any power surge or lightning strike will route to the electronics boards and cause an explosion and likely a fire.



Inside of your meter box are two semicircular rings that now connect to nothing in the meter, therefore surge suppression no longer exists

