

Fires and electrical problems from Smart Meters and digital utility meters

By Nina Beety

Smart and digital meters are electronic devices which vary considerably from traditional analog electromechanical meters. Differences in design and function, including basic design flaws ignoring National Electrical Code rules, create an enormous fire and electrical hazard in every community. Deaths, injuries, and property damage have occurred in the U.S. and internationally as a result of these electronic meters.

This week I released a 50-page overview on the fire and electrical hazards of Smart Meters, ERTs, AMI, AMR, PLC and other digital utility meters used in the U.S. and Canada. Fire season is here, and with it, even greater risks to the public. Most people are unaware that the most preventable fire hazard may be these meters on the side of their homes and every building in their community.

These issues and vulnerabilities include:

- Inadequate surge protection
- No direct path to ground
- No circuit breaker
- “Catastrophic failure”
- Overheating
- Inferior materials
- Faulty remote disconnect switches
- Circuit boards
- Meters don’t fit sockets
- Thinner meter blades
- Malfunctioning temperature alarms and sensors
- Switching mode power supply (SMPS) surges and transients damaging appliances and electrical equipment
- RF signal and transients routed onto building wiring
- Interference with AFCIs/GFCIs
- Flammable Lithium batteries in digital electric, natural gas, and water meters
- No Protective Device Coordination Study
- Poor installation quality and Inadequate installer training
- Vibration and heat caused by RF emissions
- Violation of FCC Grants of Equipment Authorization

Traditional analog electric meters are typically protected by spark-gap technology (like a spark plug) that has a direct connection to the ground. When there are overcurrent conditions (such as a high voltage line coming into contact with a lower voltage line, or lightning strikes) or electrical surges, the current “jumps the gap” and is conducted directly to the ground. This provides protection to a building, its wiring, and all devices connected to it, as well as the meter.

Smart and other digital electric meters do not have spark gap technology, do not have a direct connection to ground and do not have a circuit breaker. National Electrical Code 240.4 requires electronic devices to have a circuit breaker, but utility meters are exempt, and this exemption was granted when meters were analog meters, not electronic meters.

Instead, digital meters contain varistors which explode when the electrical current exceeds the varistor's maximum. In addition, surges under their maximum limit repeatedly weaken a varistor until it fails and explodes. When varistors explode, they make a popping sound.

When they fail happens, current flows unimpeded across the circuit board of the meter and into the building along the electrical wiring, and can result in burned wiring, burned outlets, damaged appliances, electronics and other devices, and fires. The damage is rapid and happens in a matter of seconds.

Sustained over-voltages are particularly dangerous. The current will continue to flow unimpeded until something gives way – the electrical utility line itself catches fire and breaks, falling to the ground, the fuse on the pole and/or transformer blows, or buildings catch fire.

Meter sockets were made for analog electromechanical meters. Poor connections between the electronic meters and the meter socket can cause arcing, pitting of meter connections, leading to more arcing and burned meter-to-meter box connections, and eventually fires.

UL has awarded certification to Smart Meter models that have caused fires, leading to questions about the thorough nature and conditions of the tests. Meters tested for FCC compliance are rigged with temporary power cords and not tested as manufactured and used -- on the side of a building with the mains power supply running through them.

Smart, AMI, AMR meters – part of the networked Internet of Things – can be hacked to cause fires and explosions, as well as power outages.

These problems persist and worsen because:

Regulatory commissions turn a blind eye and staunchly defend Smart Meter programs
Utility companies remove meters from fire scenes in violation of fire rules, and may not even report fires or electrical incidents

No agencies gather and report data on fires and electrical problems

Industry whistleblowers are punished and their information is ignored

There are no fire codes for these types of fires

Fire investigation focus and budget is often only for arson investigation

Fire investigators are not trained to recognize the evidence for these fires

Insurance companies are silent despite regular customer damage claims and often have board members who are former utility company executives

The news media frequently does not investigate or follow-up.

The 50-page overview on my website Smart Meter Harm covers crucial information from experts. Hopefully, it will galvanize investigations by the public, firefighters, homeowner associations, electricians, property managers, and consumer groups.

State and federal regulatory agencies appear too compromised to protect the public, and only a rare state or federal elected official takes leadership on this subject.

The public will have to demand accountability and action on these meters. Reliable, solidly designed, and time-tested analog electromechanical meters and water and natural gas flow meters provide proper protection, cost effectiveness, and dependability for the public, and without the liabilities of these “smart” and digital meters.

Fire season is now here. Investigations and action on these meters must be initiated immediately.

www.smartmeterharm.org