



CUBFacts

The facts on smart meters

What are smart meters?

ComEd and Ameren aim to replace old analog electric meters with “smart meters,” also called digital or advanced meters. Analog meters have tiny mechanical dials that someone—you or a utility worker—has to read each month in order to measure a home’s power usage. The new meters have a digital face, and unlike traditional meters, they can send—automatically and almost instantly—your power usage to the utility using a wireless radio.



What is radio frequency?

Radio waves and micro waves emitted by transmitting antennas—collectively called “radio frequency” or “RF” energy—are a form of electromagnetic energy. RF energy is used in many commonly-used household items, such as radios, televisions, cell phones, wireless laptops, walkie-talkies, baby monitors, garage door openers, microwave ovens, and now, digital meters.

How do digital meters use radio frequency?

Digital meters use a low-power wireless radio to communicate with the utility, periodically transmitting real-time customer energy-usage information. This information can help the utility company better manage the power grid, quickly detect and isolate power outages, and help reduce meter-reading costs. Customers, on the other hand, gain real-time access to their own home’s energy usage, helping them to better control costs.

Digital meters communicate with the utility only periodically, meaning they’re not always emitting RF. In fact, California utility PG&E estimates a typical digital meter communicates with the utility as little as one minute a day. And unlike cell phones, you don’t hold a meter to your ear. The devices often are on the other side of a wall or tucked away in the basement. At 10 feet away, PG&E reports, a digital meter communicating with the utility emits 300 times less RF than a typical cell phone.

Is radio frequency dangerous?

Although some critics have voiced concerns that radio frequency from digital meters poses a health risk, the devices’ RF levels, even at maximum capacity, fall far below Federal Communications Commission (FCC) safety standards—typically 70 times less—and far below RF levels used in many common household devices.

Exposure to very high levels of RF radiation warms body tissue, producing a “thermal effect” that can be harmful. But the lower levels of RF utilized by digital meters and other household devices have not been shown to produce this “thermal effect.” In its 2011 report, “Health Impacts of Radio Frequency Exposure from Smart Meters,” the California Council on Science and Technology (CCST) writes that “wireless smart meters, when installed and properly maintained, result in much smaller levels of radio frequency (RF) exposure than many existing common household electronic devices, particularly cell phones and microwave ovens.”

In addition, there has been no conclusive evidence of any damaging “non-thermal” effects produced by the RF used in common electronics, like cell phones or digital smart meters. “Given current scientific knowledge the FCC guideline provides an adequate margin of safety against known RF effects,” the CCST wrote.

What potential health benefits do digital meters support?

The cleanest energy is the energy consumers don’t use. Not only can digital meters help utilities and consumers cut their costs, but the energy efficiency they promote has key environmental and health benefits.

When utilities become more efficient in distributing power and consumers use less energy, they rely less on power created by coal plants that have been linked to significant health problems. In fact, a 2010 study by the Clean Air Task Force linked pollution from coal-fired power plants in Chicago to more than 40 deaths, 60 heart attacks and 700 asthma attacks annually.

Are there privacy concerns with digital meters?

Utilities are mandated by Illinois law to “secure the privacy of the customer’s personal information,” such as name, address, telephone number, and data about electricity usage. Under the state’s “Energy Infrastructure and Modernization Act” (SB 1652), utilities, their contractors or agents, and any third party are prohibited from using such information for mailing lists or other commercial purposes.

Will the utility have more control over my power usage and shutting my power off?

The smart grid is about giving customers more—not less— control over their power bills. A smart grid does make it easier to shut off power to customers who are stealing electricity or not paying their bills. It also helps identify customers who are simply not being billed, as well as vacant offices where the power has yet to be turned off. If such costs remain undetected, all customers must cover them, and that’s one way a smart grid can make the system more fair and save consumers billions of dollars.

RF emissions in microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$)

FM radio or TV broadcast station signal	0.005
Digital meter at 10 feet	0.1
At a coffee shop with Wi-Fi	10-20
Using a laptop computer	10-20
Talking on a cell phone (held to head)	30-10,000
Microwave oven, two inches from door	5,000

Source: Richard Tell Associates, Inc.

Summary

- Like many common household items—TV, radio, baby monitor, garage door opener—digital meters emit low levels of electromagnetic energy, called radio frequency, or RF.
- The RF levels emitted by a digital meter—on the outside of your home or tucked away in your basement—are well within FCC safety guidelines, and are much lower than many household items, including a microwave and cell phones.
- CUB is open to and interested in receiving any new research on digital meters, but there is no conclusive scientific evidence that suggests RF from a digital meter poses a health risk.