

Radio Frequencies and Smart Meters



In most regions of the United States, key electric utility infrastructure is now over half a century old. It is no surprise, then, that this infrastructure is in need of major upgrades to keep up with our nation's ever-rising demand for power. One important step that electric utilities are taking to improve their distribution systems is installing smart meters. These devices earn the right to be called "smart" by making it easy for utilities—and consumers like you—to obtain accurate, real-time readings of electricity usage. With smart meter data, utilities can manage power distribution more efficiently to avoid overloading to the grid and the blackouts that follow. Even better, smart meters empower you to make informed, money-saving decisions about how and when you use electricity in your home and business.



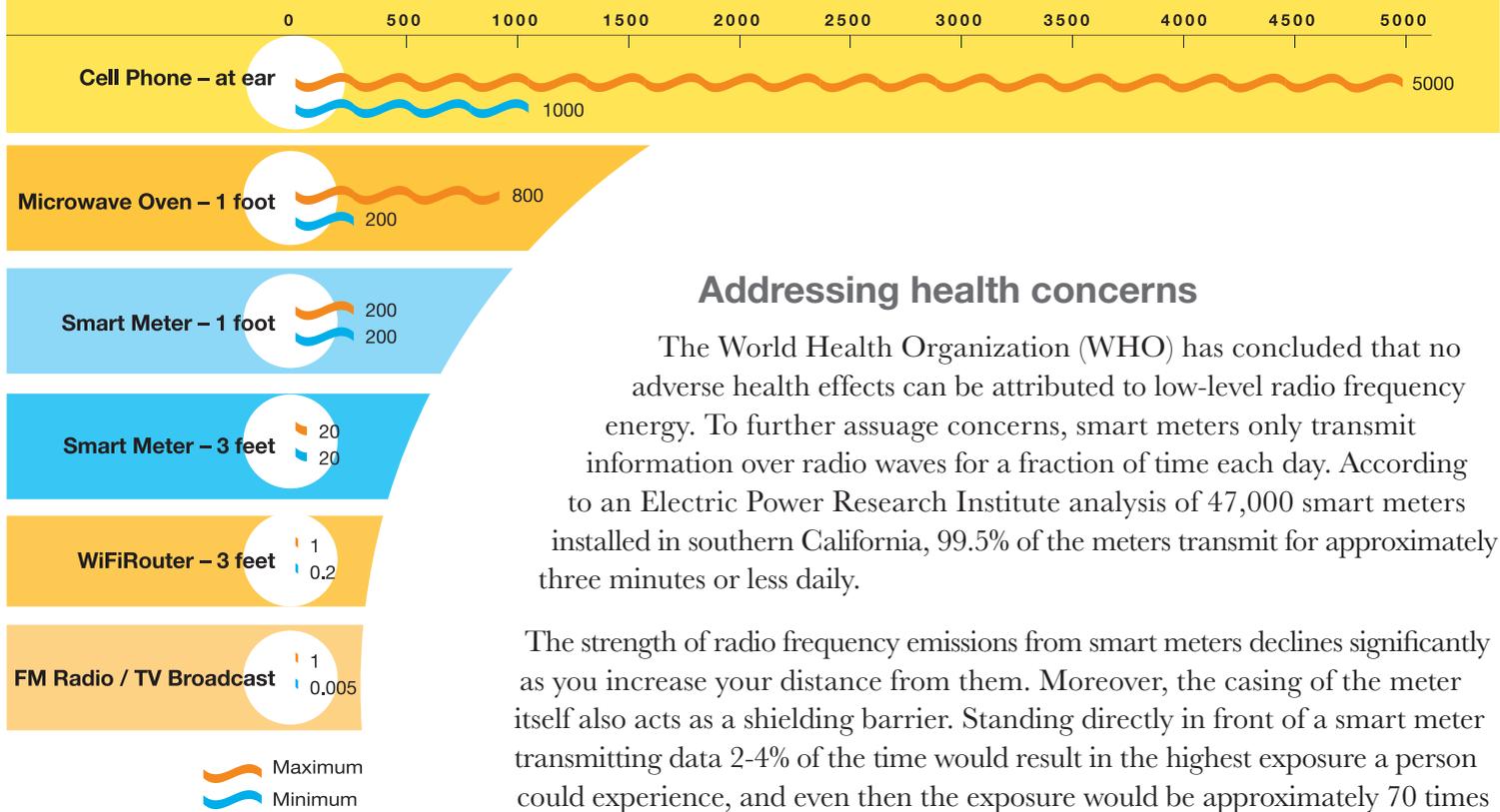
Smart meters, which operate by transmitting and receiving information wirelessly, are an important element of the effort to bring electric systems into the 21st century. Nevertheless, some people have voiced concerns about them, namely the possible negative health effects associated with the radio frequency waves that smart meters give off.

What are radio frequency waves?

Radio frequency waves are a form of electromagnetic energy. They move through space at the speed of light and can be man-made or occur naturally. Radio waves are used for a variety of purposes, but most importantly, they are employed in telecommunications services. Smart meters use low-energy radio frequency waves to transmit information across distances.

Every day, people use and keep nearby to them many devices that utilize radio frequency waves, including microwave ovens and cellular telephones. The Federal Communications Commission (FCC) requires that all radio-communicating devices be tested to ensure that they meet federal standards before they are allowed to transmit within the radio spectrum. Smart meters emit even less radio frequency energy than many other commonly-used wireless devices, but like smart meters, these devices are safe and FCC-approved.

Instantaneous Radio Frequency Power Density Levels of Common Devices (in microWatts/cm²)



About this figure: This figure depicts the radio frequency waves emitted by various common wireless devices. Source for starting measurements: Electric Power Research Institute (EPRI), Radio-Frequency Exposure Levels from Smart Meters: A Case Study of One Model (February 2011). The RF exposure for cellular phones shown in this graph is for comparison purposes only. Cellular phones are evaluated for compliance with FCC exposure standards on the basis of specific absorption rate (SAR) and not power density.

Addressing health concerns

The World Health Organization (WHO) has concluded that no adverse health effects can be attributed to low-level radio frequency energy. To further assuage concerns, smart meters only transmit information over radio waves for a fraction of time each day. According to an Electric Power Research Institute analysis of 47,000 smart meters installed in southern California, 99.5% of the meters transmit for approximately three minutes or less daily.

The strength of radio frequency emissions from smart meters declines significantly as you increase your distance from them. Moreover, the casing of the meter itself also acts as a shielding barrier. Standing directly in front of a smart meter transmitting data 2-4% of the time would result in the highest exposure a person could experience, and even then the exposure would be approximately 70 times less than the FCC limit.

IN CONCLUSION...

There is no need to worry about negative health impacts with regard to smart meters. Smart meters emit a low level of radio frequency energy that is approved by the FCC and the WHO and is lower than the level of many other devices that are used daily by millions of people. In addition, smart meters transmit data for only a few minutes each day and are insulated by their casing.

Smart meters are a very important step to improving the delivery of electricity for consumers. They will give you more insight into your energy usage and more control over your energy expenditures. Most importantly, smart meters will help create a more efficient, more reliable, and more sustainable electricity world for generations to come.



Working for a consumer-friendly, consumer-safe smart grid

SGCC is a consumer focused non-profit organization aiming to promote the understanding and benefits of modernized electrical systems among all stakeholders in the United States. Membership is open to all consumer and environmental advocates, technology vendors, research scientists, and electric utilities for sharing in research, best practices, and collaborative efforts of the group.

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