

Advanced Meters and Radio Frequency (RF) Safety

Advanced meters and smart metering technology both allow for automated, accurate and remote meter reading and offer customers more timely energy usage data to help them better manage their energy usage. The main difference of SoCalGas' advanced meter is simply the addition of a communication device that will be added on to existing analog gas meters. Electric smart meters are A/C powered and usually include a digital meter replacement as well as a radio module, all integrated within the new device.

Myth vs. Fact about Advanced Meter and Radio Frequency

Myth: An advanced meter is "on" all the time and emitting RF as it searches for a signal.





Fact: On average, a SoCalGas advanced meter communication device turns on for a fraction of a second per day for a total of less than 2 minutes per year. When not transmitting data, the advanced meter is off and not transmitting unless it needs to send an alert because someone has tampered with the device.

Natural gas advanced meters will use low-powered radio frequency (RF) to transmit data to Southern California Gas Company (SoCalGas®). The technology products SoCalGas plans to use for its advanced meter project will fully comply with U.S. Federal Communications Commission (FCC) guidelines for human exposure to RF energy.

There are three key factors that contribute to RF exposure from a transmitting device:

- 1 Signal duration:** SoCalGas' advanced meter communication device turns on for a fraction of a second per day for a total of less than 2 minutes per year.
- 2 RF energy:** The RF energy emitted by an advanced meter is significantly less than that from common items used everyday that emit RF, such as laptops, cell phones, wireless routers and handheld radios.
- 3 Distance from source:** Advanced meters will be located in the same place as the existing meter. When the advanced meter is transmitting, the exposure level is thousands of times lower than the exposure limits set by the FCC.

Radio Frequency Emission Comparison Chart

Natural gas advanced meter	Using a laptop computer with a wireless internet connection	Maximum exposure level operating a microwave oven (8 inches from the door)	Talking on a cell phone*
			
Reference level	up to 5,000 times more	up to 500,000 times more	up to 1,000,000 times more

*Cell phones are designed to reduce RF output to the minimum required for reliable communication, but may reach peak power output when signal strength is limited.

For example, a person using a cell phone in their house can have as much as a million times more RF exposure than a person standing eight inches from an advanced meter when it is transmitting. Similarly, a person using a laptop computer can experience up to 5,000 times more RF exposure.

Advanced Meter Technology and Products

SoCalGas' advanced meter communication device and the network communication system will operate in the 450 to 470 megahertz (MHz) and 900 MHz bands, respectively. These bands include the same FCC-approved frequencies that have been used for many years in devices such as baby monitors, cell phones, remote-controlled toys and video games.

The equipment manufacturer has conducted independent third-party testing of their devices, which are similar in RF output to the models SoCalGas plans to install, and RF emissions were found to be far below FCC limits. When the device is transmitting, the exposure to RF is much lower than the exposure limits set by the FCC. For example:

- ▶ At eight inches from the front of the meter, exposure is almost 10,000 times lower than the 450-470 MHz FCC exposure limits.
- ▶ At two feet away while it is transmitting, exposure drops to 90,000 times below FCC exposure limits.

The advanced meters will communicate with the network communication system through data collectors. The data collectors will be installed about 25 feet or higher on poles and/or towers and operate both on 450 MHz and 900 MHz bands. If a person is standing near a pole with a data collector, the RF exposure from the data collector is at least 25 times less than that of the advanced meter due to the mounting height of the antennas.

Additionally, the equipment manufacturer and SoCalGas will conduct third-party testing on the advanced meter devices and the data collectors in 2012 as part of the equipment certification process.

Scientific Research

SoCalGas continually monitors regulatory and scientific developments related to human exposure to RF energy. SoCalGas relies upon the expert findings on science related to RF exposures and health effects, most notably by the World Health Organization (WHO), the FCC, and the U.S. Food and Drug Administration. According to studies by the FCC, the Electric Power Research Institute, and the WHO, no adverse short- or long-term effects have been shown to occur from the RF signals produced by advanced meter technologies or other such wireless networks. In addition, the FCC confirmed that current smart meter installations (including those for multiple meters at a site) comply with FCC RF exposure limits.

FCC Radio Frequency Exposure Guidelines

The FCC guidelines for human exposure to RF energy were adopted from limits recommended by the U.S. National Council on Radiation Protection and Measurements and the C95.1-1992 guidelines developed by the American National Standards Institute and Institute of Electrical and Electronic Engineers (IEEE).

For More Information

To learn more about advanced meters, visit socialgas.com (Search "ADVANCED METER").