

City of Grand Haven
Department of Public Works
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MEMORANDUM

TO: Patrick McGinnis, City Manager

FROM: William Hunter, Director of Public Works

DATE: August 25, 2014

SUBJECT: Understanding RF and Smart Meters

Despite news coverage of consumer concerns regarding smart meter radio frequencies (hereinafter referenced as “RF”), numerous reports and industry group findings show that smart meter technology is very safe. Current Federal Communications Commission (FCC) standards provide an acceptable factor of safety against the health impacts of existing common household electronic devices and smart meters.

Sensus metering and automation products and technologies fully comply with the FCC standards and guidelines for environmental exposure to RF, which have been in place since 1985. In 1996, the FCC implemented recommendations from two expert organizations, the National Council on Radiation Protection and Measurements (NCRP) and the Institute of Electrical and Electronics Engineers (IEEE), in respect to the permissible RF exposure limits for field strength and power density for transmitters. The FCC also adopted the specific absorption rate (SAR) limits for human exposure to RF emissions from devices operating within close proximity to the body as specified within the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE), said guidelines being available online.

The exposure guidelines are based on thresholds for known adverse effects, and they incorporate prudent margins of safety. A few facts in regards to meter RF are as follows

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- RF exposure from a particular device varies, depending on the power of the radio in the device, by distance from the device and by attenuation from intervening objects:
 - The RF exposure from a meter, for example, drops by a factor of 100 when you move from a distance of 1 foot to 10 feet away.
 - Smart meters are typically located on the outside wall of a residence. The RF exposure inside a dwelling is typically a factor of 10 less than that immediately in front of the meter.
- Sensus smart meters and automation end points typically transmit radio signals for a very small amount of time during a day.

- Data from a large smart meter deployment using Sensus technology indicates that the typical meter transmits less than one second per day, and that 99.999% of smart meters transmit for less than one minute per day.

Generally speaking, there are a number of existing everyday environmental sources that produce much stronger RF fields than those of a smart metering system. RF energy produced by smart meters is not harmful and is comparable to cellular phone devices, wireless baby monitors, television broadcasts, garage door openers, microwave ovens, cordless home phones, and WiFi networks. In addition, because Sensus metering systems communicate over a licensed spectrum, they are in complete compliance with FCC rules and regulations.

Comparison of RF Power Density in the Everyday Environment

Device Relative Power Density in microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$)

FM radio or TV broadcast station signal	0.005
SmartMeter™ device at 10 feet	0.1
Cyber cafe (Wi-Fi)	10-20
Laptop computer	10-20
Cell phone held up to head	30-10,000
Walkie-Talkie at head	500-42,000
Microwave oven, two inches from door	5,000

Source: Richard Tell Associates, Inc.²