

Vermont SMARTGrid: Smart Meters and Radio Frequency (RF) Questions

What is “smart grid”?

“Smart grid” is an upgraded electric system that uses fiber optic cable and digital technology to relay information back and forth between customer meters and the utility, and between the utility and various components of the electric grid. When fully operational, smart grid will provide a more reliable electric system, with the ability to more easily incorporate renewable energy sources and to offer customers innovative rate options and other tools to better manage their electric use. For individual customers, the link to smart grid is a “smart meter.”

Why do we need a smart grid?

The electric power grid has been a primary driver of the economy for more than a century. It contributes incalculably to the comfort, security and safety of everyday life. However, the demands of the digital age, the cost of energy, population growth, and concerns about the environment, reliability and security are increasing requirements from the electric system. By updating this critical infrastructure, and offering new rate choices for customers, the smart grid will provide new tools to improve reliability, increase security and balance the increasing demands of the electricity system.

Why do some smart meters use radio frequencies?

Some smart meters use radio frequencies to wirelessly communicate data between your utility and your home.

How do utilities determine if there are any adverse health effects from the technologies they choose?

Utilities rely on peer reviewed scientific evidence, industry best practice, and regulatory guidelines and approvals when making technology decisions.

What have scientific studies shown?

Fifty years of scientific studies lead to confidence that the radio frequencies of common household devices, especially at the low levels emitted by smart meters, do not pose a health or safety issue. In-depth research into the safety of human exposure to RF emissions began in 1953. Since then, the issue of RF safety continues to receive scrutiny. Between 1953 and the present day, about every five years another study has been conducted into various aspects of the technology and its effects (over a dozen studies in all). These independent analyses, studies and reports are developed not by manufacturers of RF technology, but by independent researchers and scientists. The studies have frequently coincided with the introduction of new RF technologies widely used in residences and by consumers such as microwave ovens, pagers, cordless phones, and cell phones.

Are other states evaluating RF concerns about smart meters?

Yes, for example, the Maine Center for Disease Control published a report November 8, 2010, concluding “our review of these agency



assessments and studies do not indicate any consistent or convincing evidence to support a concern for health effects related to the use of radiofrequency in the range of frequencies and power used by smart meters. They also do not indicate an association of EMF exposure and symptoms that have been described as electromagnetic sensitivity.” The California Council for Science and Technology also recently released a report that can be found at this website:

<http://www.ccst.us/publications/2011/2011smartA.pdf>.

Additionally the Vermont Dept. of Health is currently reviewing RF concerns.

How much RF do smart meters emit?

Wireless smart meters typically emit many times less RF exposure than other common devices such as wireless computer routers, cell phones, televisions, computers and microwave ovens as shown in the following table.

Comparison of RF Power Density in the Everyday Environment

Device Relative Power Density in microwatts per sq cm

FM radio or TV broadcast signal	0.005
SmartMeter™ device at 10 feet	0.1
Cyber café (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, 2" from door	5,000

Source: Richard Tell Associate, Inc.

How is the safety of smart meters regulated?

The radios used in electric meters operate in the 902-928 MHz band under Part 15 of the FCC rules and must be certified by independent laboratory testing that they comply with FCC exposure limits. For more information about the FCC standards, go to

<http://www.fcc.gov/oet/rfsafety/rf-faqs.html#Q9>

RF exposure decreases with distance from devices that produces RF waves. Unlike many other RF-emitting devices, such as computers and cell phones, people typically do not stand within inches of the meter, and building materials and the metal meter socket are normally between the antenna and a person, further reducing the already minimal RF energy exposure.

Smart meter technology relies on and complies with almost sixty years of RF safety studies and guidelines enforced by the FCC. In addition, typical RF exposure from the radios used in smart meters is thousands of times lower than the FCC maximum permissible exposure limit.

Produced by the eEnergy Vermont Communications Working Group. eEnergy Vermont is Vermont's statewide smart grid project, funded in part with Department of Energy Smart Grid funds from the American Recovery and Reinvestment Act.

For more information: <http://www.velco.com/smartgrid> or <http://www.sgiclearinghouse.org/>