

# EMI/RFI

## Health Risk Assessment

**No Health Threat  
From Smart Meters**

# Introduction

- Smart meters are transforming water and electricity transmission and distribution networks worldwide that use robust two-way communications, advanced sensors, and distributed computers to improve the efficiency, reliability and safety of power and water delivery use.
- The outcome of this technology is a better management of our assets locally and globally.
- There are unsubstantiated concerns that the smart meters being installed around the country and the world will cause ill health effects to members of the household where the meters are installed. Therefore, we examine the facts about the impact of radio frequency energy on the body, showing that the devices utilities install pose no threat of harm to humans.

# Federal Jurisdiction for Safety of Radio Frequency Devices

- The Federal Communications Commission (FCC) has jurisdiction over the approval and use of radio frequency devices, whether a license is required for the devices or if unlicensed operation is allowed. FCC regulations are based on standards set by the Institute of Electrical and Electronic Engineers (IEEE) based on years of research by health professionals.
- The FCC has allocated some frequencies for unlicensed operation, allowing consumers to purchase products at Best Buy or Wal-Mart and install them in their homes. These devices operate at low power levels, enabling communications but posing no threat of health effects to humans. Examples include the WiFi routers already discussed, wireless baby monitors, computers and garage door openers.
- The FCC's second role is to approve radio devices for manufacture, import and sale. Regardless of whether the equipment operates on low power unlicensed channels or at higher power operations that require an authorization, each device must be tested to meet FCC standards which include health standards.

# In Depth Global Studies

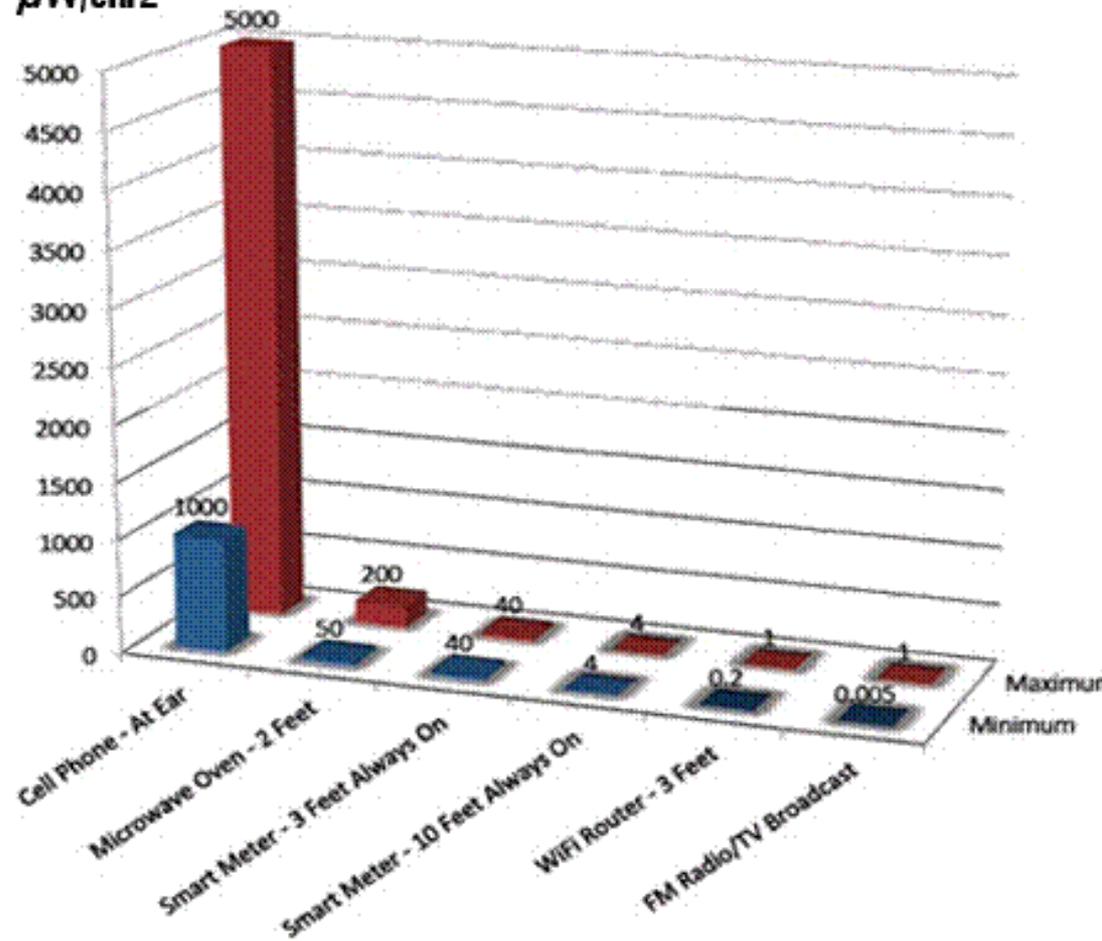
After reviewing the large amount of materials available to us, the AMI team decided to increasingly focus our reviews on health studies and assessments by government agencies and some affiliated private and academic organizations, including the:

- World Health Organization (WHO),
- U.S. Federal Communications Commission (FCC),
- National Cancer Institute (NCI) in the National Institutes of Health (NIH),
- Health Canada (Canada's public health agency),
- Health Protection Agency of the United Kingdom (U.K.'s public health agency),
- International Commission on Non-Ionizing Radiation Protection (ICNRP),
- Institute of Electrical and Electronics Engineers (IEEE),
- University of Ottawa's McLaughlin Centre for Population Health Risk Assessment,
- Ontario Agency for Health Protection and Promotion,
- Swedish Radiation Protection Authority, and
- Australian Radiation Protection and Nuclear Safety Agency.

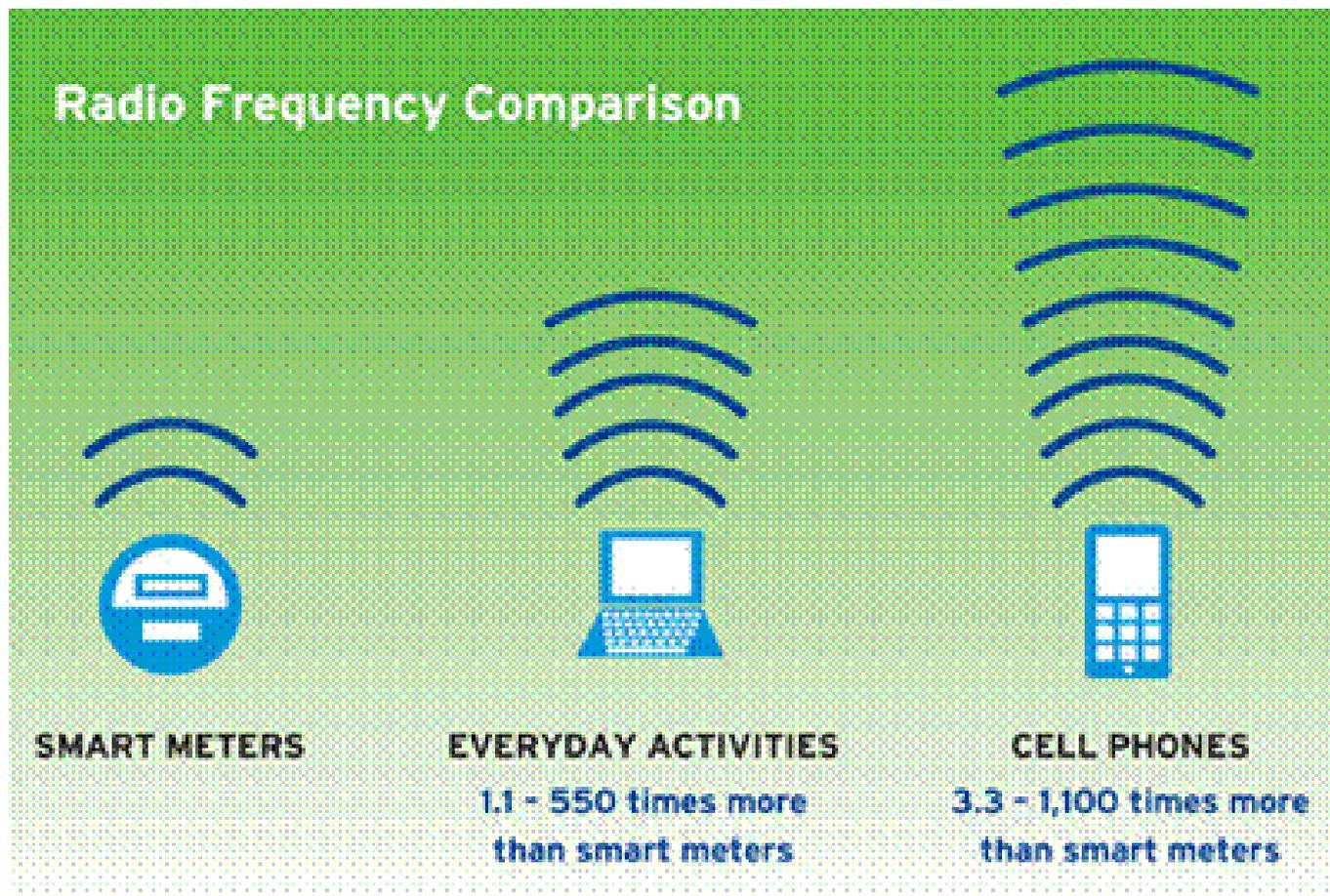
# RF Frequency Levels in Households

Smart meters' radio frequency (RF) emissions are a whisper compared to a roar from cell and cordless phones, microwaves, wireless routers, laptops and even blow dryers. Typical daily exposure to RF from cell phones is up to 10,000 times the intensity of that from smart meters. Unlike cell phones however, smart meters only actively transmit signals for a very small fraction (between .01% and 5%) of the day, and at several orders of magnitude lower energy levels. The chart on this page illustrate typical RF emissions from a smart meter compared to other consumer electronics.

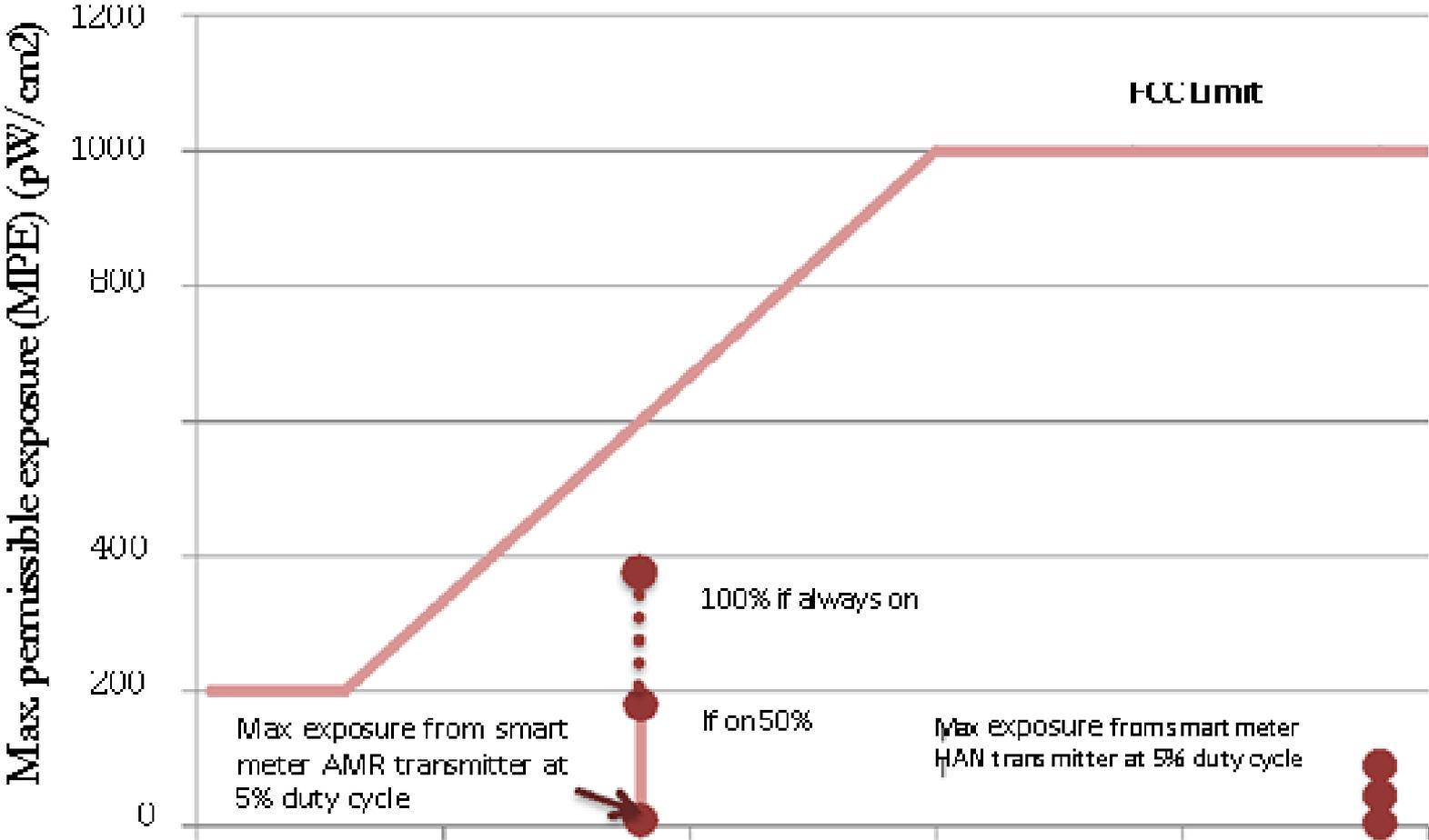
RF Frequency Levels  
 $\mu\text{W}/\text{cm}^2$



# RF Frequency Levels in Households



# Zenner Very Low EMI



**Zenner devices transmit 1/8 of a second every 20 minutes**

# Conclusion

- **In conclusion, 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 radio frequency 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.**

# Brief Summary of Findings

- **Our review of these national and international government or government-affiliated assessments indicate a broad consensus that studies to date give no consistent or convincing evidence of a causal relation between RF exposure in the range of frequencies and power used by smart meters and adverse health effects.**

# Operational Benefits

- reduced meter reading costs
- reduced costs associated with field visits and customer calls
- improved billing accuracy and improved cash flow
- improved outage information and response
- more efficient asset management and distribution engineering design.
- **Benefits ascribed to installation of an AMR system**

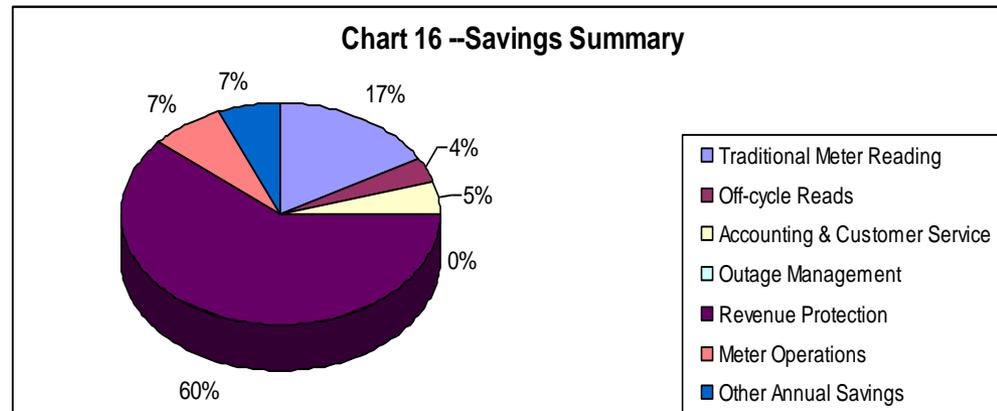
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  - Increased revenue from previously unaccounted for water
  - Reduced meter reading costs including both regular cycle reading and special reads
  - Reduction in safety / security issues
  - Increased customer service
  - Help identify and pinpoint losses (customer and system)
  - Help detect theft of service
  - More efficient billing
  - Improved cash flow
  - Conservation/Efficiency Improvements
  - Provide outage management and detection
  - Intangible benefits

# Typical ROI of Two To Four Years On a Well Designed System

## Colorado Based Utility

- The estimated total savings for this utility was \$326,590 per year
- NPV of the project over 15 years is estimated at \$5,195,194
- Annual Maintenance and data hosting of the system is \$3,740 per year
- Initial cost of the system was \$319,430
- Savings calculated as follows,
  - Meter reading savings \$54,129
  - Off cycle reads \$12,336
  - Accounting and customer service \$15,025
  - Revenue Protection \$199,500



# California Based Utility Lease to Own

- The total savings for this utility was \$2,773,201 per year
- NPV of the project over 15 years is estimated at \$28,439,029
- Annual Maintenance and data hosting of the system is \$27,724 per year
- 10 year lease to own annual payment \$773,704
- Initial cost of the system was \$0
- Savings calculated as follows,
  - Meter reading savings \$553,387
  - Off cycle reads \$196,000
  - Accounting and customer service \$28,001
  - Meter operations \$1,531,413
  - Revenue Protection \$273,000

