This document is designed to summarize some of the common questions and concerns surrounding the Village of Mt. Prospect’s deployment of an Automatic Meter Infrastructure, or AMI and smart water meters.

**What is a smart meter and how does it work?**
A smart meter is an electronic device that measures that amount of something (water in this case) that is used over a period of time. The device periodically transmits and receives information using a radio frequency (RF) signal to a central location via other low power radio stations, where the data is then collected, analyzed, and interfaced with billing software. The RF signals in a smart meter are very similar to the types of signals sent and received from a cell phone, cordless phone, or WiFi router. However, the significant difference is that smart meter RF signals are typically on less than 1% of the time, whereas the above examples are typically used much more frequently, or even continuously.

**What is Automated Metering Infrastructure, or AMI?**
To ensure residents and businesses in Mt. Prospect are billed for the correct water usage, the amounts must be measured and reported accurately. The Village has embarked on a process to upgrade all of our water meters to an Automatic Metering Infrastructure, which uses a series of smart meters that have a flow meter, a small battery operated radio, along with a network of base stations throughout the Village and a centralized computer system. All of these devices work together to ensure users are accurately billed and information on usage is used to help Village staff make intelligent decisions about water system infrastructure improvements.

**Why does Mt. Prospect want to use smart meters?**
Smart Meters are typically used by utilities to both save the fuel and manual effort that has been required for decades to manually read meters. Essentially, smart meters help to both reduce our fleet greenhouse gas emissions and help us to use our labor force more efficiently, helping to keep utility rates low. In some cases, smart meters may eventually be used to provide our customers more information on their usage habits, helping businesses, families, and individuals to be better stewards of their natural resource usage.

**What is Radio Frequency (RF) Radiation and are there different types?**
Without getting overly technical, RF can radiate from a large number of devices that use a wide variety of frequencies, and RF can be broken down into two categories: ionizing and non-ionizing radiation. Ionizing radiation is what we typically think of when we think of “radiation,” and it is used to generate electric power, kill certain types of cancer cells, produce X-rays, and can be used in a variety of manufacturing processes. Non-ionizing radiation is typically used for telecommunications (TV, AM/FM radio, WiFi, cellular, cordless phones, etc.) and when used at a much higher power, warming food (microwaves). We are surrounded each day by a large number of lower power radios that use RF. Mt. Prospect’s smart meters use the same RF technology that has been around for decades in many of these devices.

**Do Smart Meters emit Radio Frequency (RF) radiation and at what level?**
Smart Meters emit non-ionizing radiation, just like your garage door opener, WiFi router, cell phone, or baby monitors. Mt. Prospect’s Smart Meters only transmit and receive less than 0.10% of the time, unlike your WiFi router, or cell phone, which typically are transmitting and receiving data 100% of the time that they are on (and not in airplane mode). Mt. Prospect’s meter radios transmit less than one minute total per day.

**Do smart meters emit more RF energy than a laptop or cell phone?**
No. According to the Public Utilities Commission of the State of California, “RF emissions produced by Smart Meters is extremely small in comparison to the RF emissions from many other commonly used devices and far below emission standards set by the FCC, which licenses or certifies the smart meters.” The less than 0.10% of the time the meter radio is transmitting, the level at which it produces RF emissions is lower than a cell phone typically produces.
Does the US Government regulate the RF output of smart meters?
Yes. The Federal Communications Commission (FCC) is responsible for RF emissions and exposure and issues guidelines and limits that are designed to protect both the public and workers that are more regularly exposed to RF energy. The radio energy emitted from smart meters is a small fraction of the limits allowed by the FCC. Even if the smart meter were to transmit 100% of the day, the maximum exposure would still be less than 60% the FCC’s allowable limit.

What are the technical specifications of Mt Prospect’s Smart Meters?
Mt. Prospect currently utilizes the Badger Meter Orion series of smart meters. These meters use FCC regulated Spread Spectrum (FHSS) radios that operate in the 902-928 MHz frequency range (ISM band) and operate at 1 Watt or less of power with a duty cycle (operating) of less than 0.10%.

Are there security risks from hackers?
Basically, the data that the meters and radio devices in Mt. Prospect homes and business send is anonymous. There is no personally identifying data, nor is there any sort of GPS/location based information coming from these meters. While nothing should be considered “unhackable,” there is nothing even inside of the Badger meter data packet that ever could be considered personally identifiable (no names, no addresses, no account or personal data, etc.).

What is the risk of fire from the smart meters?
Mt. Prospect’s smart water meters use a small low voltage battery (similar to what is in small electronic devices). Unlike many other meters, there is no line level AC voltage present, so there is no risk of an AC electrical short. If the battery in the smart water meter were to short, it would simply drain the battery faster.

What if I still have questions?
Mt. Prospect recognizes that concerns about excessive RF emissions exist and we take them very seriously. Our staff, vendors, and consultants continue to carefully monitor regulations, studies, and various authoritative agencies to understand advances in understanding in this area. While our staff are not RF experts, the following references and resources below were used by our staff and are designed to help our customers develop a better understanding on the effects of RF emissions.

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Other useful resources:
Health Physics Society (RF Radiation): http://hps.org/hspublications/articles/rfradiation.html
Badger Orion AMR/AMI Hardware: http://www.badgermeter.com/Water-Utility/AMR-AMI-Hardware-Solutions/ORION.htm