

# Smart Grid Technology and Automated Meter Reading on the Horizon in Kirkwood

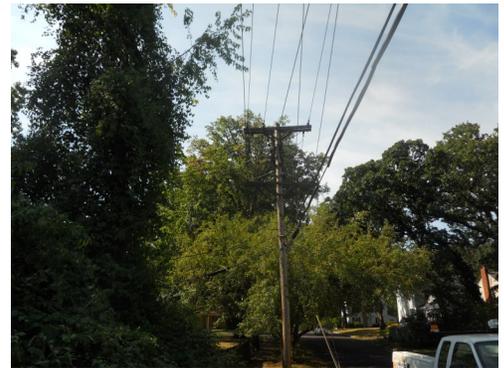


## What is “Smart Grid” technology?

**Well, first of all, what’s a grid?** Electric power can travel over many different paths and come from many different sources. Throughout the neighborhoods there is a collection of poles, wires and switching stations that connect power sources to places where power is used. Sometimes power sources are unavailable due to a variety of reasons, including: Equipment failure, scheduled maintenance, downed wires from storms, or problems resulting from trees or animals coming in contact with power lines. The grid is a collection of poles, wires and switching stations designed to deliver power to homes, schools and businesses when individual power sources or connections in the system become unavailable.

In the 19<sup>th</sup> century, the first electric power system was installed. By the mid-20<sup>th</sup> century, local grids had grown and were eventually interconnected for economic and reliability purposes. Today, electric grids connect centralized power stations and deliver power to cities and towns using power lines that branch and divide across large areas or regions.

**Meters:** Every home, school or business has a meter. The meter is used to measure the amount of electricity or water used by that location. Meter readings are taken every month, and that information is collected by a meter reader. The meter reader visits every location, enters meter readings into a handheld device that stores the readings, and then returns to the office and downloads the readings into a software program that calculates the amount of electricity that was used during the month. The software then computes a bill for that location, and bills are mailed out to the customers.



**The Smart Grid:** With the growth of electronic communication technology over the past few years, utilities can now use these changes in technology to more efficiently collect meter readings and automatically reroute power through the grid. New automated meter reading and information systems can:

- ◆ Detect and communicate, using wireless technology, where, when, and how much power is being used;
- ◆ Detect faults and problems in power delivery, and communicate exactly where these problems are on the grid;
- ◆ Redirect power to accommodate varying customer needs during both high-demand and low-demand periods.

We call these new systems “smart” because they are able to use computers to electronically read meters, perform calculations, detect problems, and redirect power.

**Are we doing this in Kirkwood?** In Kirkwood, we are ready to install an automated meter information system. Kirkwood Water has already received City Council approval to begin the installation of a system and is looking at new meters for their project. Kirkwood Electric is in the process of selecting a project manager for its system implementation and expects to start putting in new meters starting this fall.

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## Automated Meter Reading / Advanced Metering Infrastructure for Kirkwood Water

Kirkwood Water is in the process of planning for replacement of water meters throughout the City with newer meters. These new meters will measure water usage better, provide Automated Meter Reading (AMR) and install an Advanced Metering Infrastructure (AMI) technology.

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## ***Kirkwood Water Infrastructure Improvements Begin This Year***

**Improved Accuracy:** Currently, the City has 10,300 water meters in the system, including 13 different brands of meters, ranging in age from 1 to 53 years. About 87 percent of these are more than five years old. Kirkwood Water estimates an annual loss of about \$164,652 in revenue due to malfunctioning meters. Additionally, it costs about \$158,000 each year to manually read every water meter on a monthly basis. A change to new, more accurate water meters will help Kirkwood Water avoid losses caused by old, malfunctioning meters.

**Automated Meter Reading:** The newer, more accurate meters purchased by Kirkwood Water will utilize Automated Meter Reading (AMR) technology. This technology will allow for the wireless reading of water meters. The upgrade to AMR technology-enabled meters will result in a large labor savings and will improve meter reading efficiency. **Advanced Metering Infrastructure:** Eventually, a new communications network will be installed to communicate with the new meters. Today we read meters monthly. In the future we'll perform continuous data collection or interval data collection from AMR meters that send the meter readings to a central database via a new wireless network. As with smart-grid power technology, these systems allow for greater efficiency, with:

- ◆ **Leak Detection:** AMR units can alert staff to possible leaks, allowing the City to proactively notify residents of a leak needing repair, thereby potentially saving residents money;
- ◆ **Access:** Minimizing the need to access customer property to read the meter;
- ◆ **Accuracy and Efficiency:** Providing residents with access to daily or even hourly water consumption data, eliminating the need for additional meter reading when bills are questioned, eliminating estimated bills due to inaccessible or blocked water meters, and eliminating human error in the manual reading of water meters.



## ***But That's Not All: Kirkwood Electric System Improvement Projects Begin This Summer***

Starting this summer, Kirkwood Electric will begin some major system improvement projects, approved by City Council in May. These include renovation of three substations, upgrading poles and wires in some neighborhoods, rebuilding some traffic signal intersections, and upgrading street lighting in Downtown Kirkwood.

**New and Improved Substations:** The design for a new Alfred substation, to serve 4,000 residents, will be completed this summer. It will involve renovating the existing substation site, improving the site's appearance, and improving the substation's power-delivery efficiency. It should be in service by Summer 2016. The Essex substation at the corner of Essex and Geyer will likewise receive a facelift over the next year, and a new Sugar Creek substation, on Ballas just north of Ann Avenue, is in the planning stages and is expected to be completed by 2019.

**New Poles, Infrastructure:** All the new substation work will involve upgrading high voltage equipment in the substations, but we can't deliver that power to homes in Kirkwood without new poles, transformers, and wires that can handle the increased voltage. Design for a more efficient system begins this summer, with installation slated to begin next spring.

**Traffic Signal Upgrades:** The Public Services Department is widening the road at the intersections of Quan and Taylor and Quan and Woodlawn. We're going to work hand-in hand with our colleagues and modify the traffic signals at those intersections to accommodate the change at the corners of the road. Next year there will be new traffic signals to go with the wider-turning areas at the intersections.

**Downtown Lighting:** In the past, Kirkwood Electric has invited residents to provide input on the right type of decorative street lighting for Kirkwood. This summer, KE will once again invite residents to City Hall (details to come) to review what's currently being used and make suggestions about new lighting.

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**SUMMER COOLING – ENERGY-SAVING TIPS:** A tip sheet, courtesy of the Missouri Public Utilities Alliance, designed to help residents during the summer cooling season, is now available on the home page of the City Website at: [www.KirkwoodMO.org](http://www.KirkwoodMO.org).