



Source: Water & Light

Agenda Item No: REP 7-14

To: City Council

From: City Manager and Staff

Council Meeting Date: Jan 21, 2014

Re: Smart grid concerns and smart meters

EXECUTIVE SUMMARY:

At the October 21st Council Meeting, concerns of smart grid and smart meters were presented to the City Council during the Scheduled Public Comment section of the meeting. These concerns were based from issues brought up by the "Take Back Your Power" organization. Staff has reviewed these concerns with our neighboring utility, Boone Electric Cooperative. The following responses are from staff's point of view with input from Boone Electric Cooperative:

DISCUSSION:

Definition of a smart meter (from Wikipedia)

A smart meter is usually an electrical meter that records consumption of electric energy in intervals of an hour or less and communicates that information at least daily back to the utility for monitoring and billing purposes. Smart meters enable two-way communication between the meter and the central system. Unlike home energy monitors, smart meters can gather data for remote reporting. Such Advanced Metering Infrastructure (AMI) differs from traditional Automatic Meter Reading (AMR) in that it enables two-way communications with the meter.

Columbia Water & Light electric meters are not smart meters per the definition above. They do not have the ability for two-way data communication and they do not record data on an automatic interval. They cannot even report a customer's loss of power. AMR meters started being installed in January 1996. Once a month, a reading from the meter is taken from the street via a radio signal through a hand-held or drive by device.

Am I legally required to accept a smart meter?

As previously stated, Columbia Water & Light does not utilize smart meters at this time. Chapter 27-95 of the City's Code of Ordinances reads as follows:

The department shall furnish the electric meter and meter socket. The meter loop, including all conduit, wire, fittings, fasteners and other accessories required for mounting and connecting the meter shall be furnished, installed and maintained by the customer.

Therefore by law it is the department's responsibility to provide and install electric meters. The City's current term and supply contract is for meters that have AMR capabilities. We currently do not have a specification for mechanical type meters. It has also come to our attention that mechanical type meters are no longer domestically manufactured and the department has exhausted its supply of mechanical meters.

Can I expect my energy bills to go up with a smart meter?

Energy use is solely dependent on the customer's consumption. Mechanical meters are prone to slow down over time as the motors and gearing mechanisms begin to wear. This results in a meter that does not properly meter the amount of energy that a customer uses. Solid state metering has no moving parts to wear and provides a higher level of accuracy. A customer's meter that is changed from a mechanical to a solid state will see a more accurate reflection of the electricity used which might result in higher metered consumption. "Time of day" pricing structures are not currently available in Columbia at this time.

Do smart meters violate 4th amendment rights?

Columbia Water & Light does not know what customers are doing with the electricity supplied; only the amount used. The difference between the way things are done today and 50 years ago is that the meter reading is collected through a radio signal once a month versus a person physically reading the meter. If a smart meter system is installed in the future, the utility would still only know the overall usage. To determine which electric appliances were being used, something would have to be installed inside the home's breaker panel or attached to electric appliances. This would require permission from the customer since it is private property.

Sell info to 3rd party vendors

Columbia Water & Light does not sell data. Per the Missouri Sunshine laws, usage data could be requested and a fee assessed in order to facilitate the request. In order for this situation to change, a bill would have to pass to exempt utility data from the Sunshine Laws.

Will smart meters help the environment by reducing electric use?

For individual consumers, energy use is solely dependent on the customer's consumption. Mechanical meters are prone to slow down over time as the motors and gearing mechanisms begin to wear. This results in a meter that does not properly meter the amount of energy that a customer uses. Solid state metering has no moving parts to wear and provides a higher level of accuracy. Smart meters with two way communications may help someone monitor their electric consumption more closely. With more data available, customers could see what activities use more energy and change their habits to lower their usage.

For the electric distribution system, more real time metering points may allow better control of distribution level breakers, switches, capacitors, etc. This could in turn allow City personnel to operate the system more efficiently and thus reduce the demand of the City's electric distribution system.

Have there been fires where smart meters are installed?

With any electric meter there is a possibility for a fire. When meters are changed out, the connection can become loose, brittle wiring may come loose, foreign material may enter the meter base, etc. All of these can melt the meter and/or start a fire. Only trained personnel can change out meters so it can be done in a safe manner. Columbia Water & Light takes the safety of our employees, customers, friends and families very seriously. Columbia's meters meet all the utility safety standards including the American National Standards Institute (ANSI), Institute of Electrical and Electronics Engineers (IEEE) and the International Electrotechnical Commission (IEC) and National Electrical Manufacturers Associations (NEMA). The meters in use are not rated by Underwrites Laboratory because they rate consumer grade equipment.

Are there any known health effects related to smart meters?

Both mechanical and solid state meters produce electromagnetic fields (EMF). There are no conclusive studies linking EMF to health problems. According to the Environmental Protection Agency, "Despite more than two decades of research to determine whether elevated EMF exposure, principally to magnetic fields, is related to an increased risk of childhood leukemia, there is still no definitive answer. The general scientific consensus is that, thus far, the evidence available is weak and is not sufficient to establish a definitive cause-effect relationship."

How many pulses of radiation does a smart meter emit per day?

Since the City currently doesn't have any smart meters we have not researched the operating frequencies of smart meters. The transmission frequencies of Columbia's meters are from 910 to 920 megahertz. This is the same frequency as many cordless phones, remote controls and garage door openers. The FCC allows for up to one watt to transmit the signal. The City's current meters use 22.65 milliwatts to transmit meter readings to the hand held collection devices.

Have smart meters been proven to be safe?

We are around Radio Frequency or RF on a regular basis with communication systems, cell phones, microwaves, baby monitors, wireless networks, etc. The RF signal from an electric meter is only transmitted once a month and the meter is outside your house. Your cell phone exposes you to a stronger RF signal and you hold it close to your head so the exposure is much higher.

Are utilities getting financial kickbacks for installing smart meters?

No. Columbia has received no outside funding for any meter project and has not applied for any.

In 2013 Water and Light contracted with the consultant, Burns and McDonnell, for preparing business cases for the expansion of smart grid technologies on Columbia's distribution system. This report along with a staff plan for implementation will be forthcoming in the near future.

FISCAL IMPACT:

None

VISION IMPACT:

<http://www.gocolumbiamo.com/Council/Meetings/visionimpact.php>

None

SUGGESTED COUNCIL ACTIONS:

None. Information only.

FISCAL and VISION NOTES:					
City Fiscal Impact Enter all that apply		Program Impact		Mandates	
City's current net FY cost	\$0.00	New Program/ Agency?	No	Federal or State mandated?	No
Amount of funds already appropriated	\$0.00	Duplicates/Expands an existing program?	No	Vision Implementation impact	
Amount of budget amendment needed	\$0.00	Fiscal Impact on any local political subdivision?	No	Enter all that apply: Refer to Web site	
Estimated 2 year net costs:		Resources Required		Vision Impact?	No
One Time	\$0.00	Requires add'l FTE Personnel?	No	Primary Vision, Strategy and/or Goal Item #	
Operating/ Ongoing	\$0.00	Requires add'l facilities?	No	Secondary Vision, Strategy and/or Goal Item #	
		Requires add'l capital equipment?	No	Fiscal year implementation Task #	