

Memorandum



Internal Services Department

Date: May 19, 2016

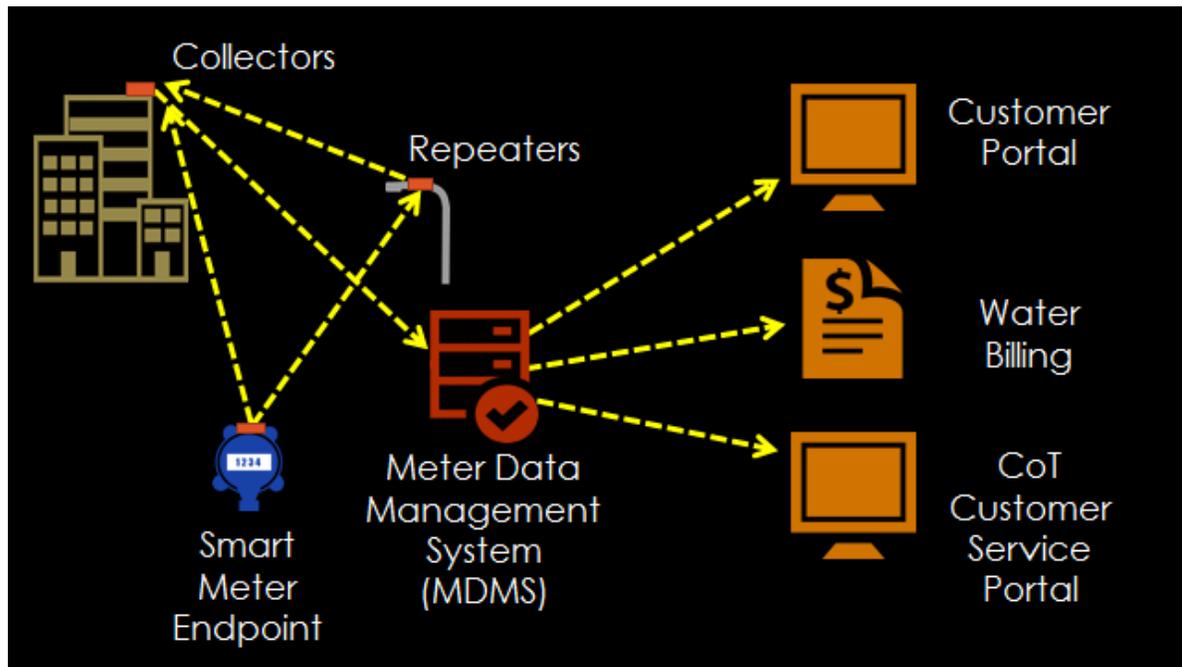
To: Mayor and City Council

From: Jerry Hart, Deputy Internal Services Director – Finance (8505)
Renie Broderick, Internal Services Director

Subject: Automated Metering Project Update

During the May 23, 2016 Issue Review Session, we will provide an update on the progress of the council-approved Automated Metering project and seek council direction to continue moving forward with the project as currently planned. Staff is recommending the deployment of an **Advanced Metering Infrastructure (AMI)** system for the efficient collection of water meter reads and other related benefits. AMI is a fixed collection system where a network collects an hourly read from each meter; monthly a billable read is then transmitted to the utility billing system for billing generation. Currently, Tempe’s 43,000+ meters are manually read once a month utilizing a staff of 8 full-time water meter readers; these efforts result in the annual billing and collection of over \$80 million in water and sewer charges necessary to provide these utility services to our customers. However, the current, manual collection method is labor intensive and inefficient; the electric and gas utility industries have long abandoned this method of collection.

Overview of AMI System



Depicted above is the basic design and flow of an AMI system. The major components of the system and their function are as follows:

- Endpoint – attached to each meter; transmits hourly read data to collectors or repeaters
- Repeaters – attached to either street lights or buildings/structures; receives data transmissions from endpoints and then transmits to collectors
- Collectors – attached to either street lights or building/structures; receives data transmissions directly from endpoints or from repeaters and then transmits to meter data management system (MDMS)
- MDMS – receives data transmissions from collectors; stores and analyzes meter data for reporting; provides monthly billable read to the utility billing system; also provides meter data to both customer and Customer Service staff portals

Customers as well as Customer Services Division staff will have the ability to access read and historical consumption data via portals. Additionally, staff will have the ability to obtain on-demand reads as necessary.

Initial estimates are that approximately 50 collector/repeaters will be deployed across the city. The plan calls for the achievement of “2 to 1 redundancy”, meaning that every endpoint must be able to successfully transmit data to two collector/repeaters. This is necessary to ensure the ability to continue to receive data in the event of a transmission failure or interruption. The recommended AMI vendor will conduct a full propagation study that will determine the exact number of collector/repeaters and ideal locations necessary to achieve the required 2 to 1 redundancy. There will be some limited flexibility in the final locating of the collector/repeaters. Staff will work closely with the vendor to ensure that the collector/repeaters are appropriately located to meet the needs of the city as well as contract performance requirements.

AMI Benefits

Implementation of this system will provide benefits in the following areas:

Customer Service

- Consistent billing cycles
- Improved billing accuracy
- Faster response times
- Early leak detection
- Enhanced transparency

System Operations

- Reduced operational costs from elimination of manual meter reads
- Increased efficiency/control of water system management

Financial

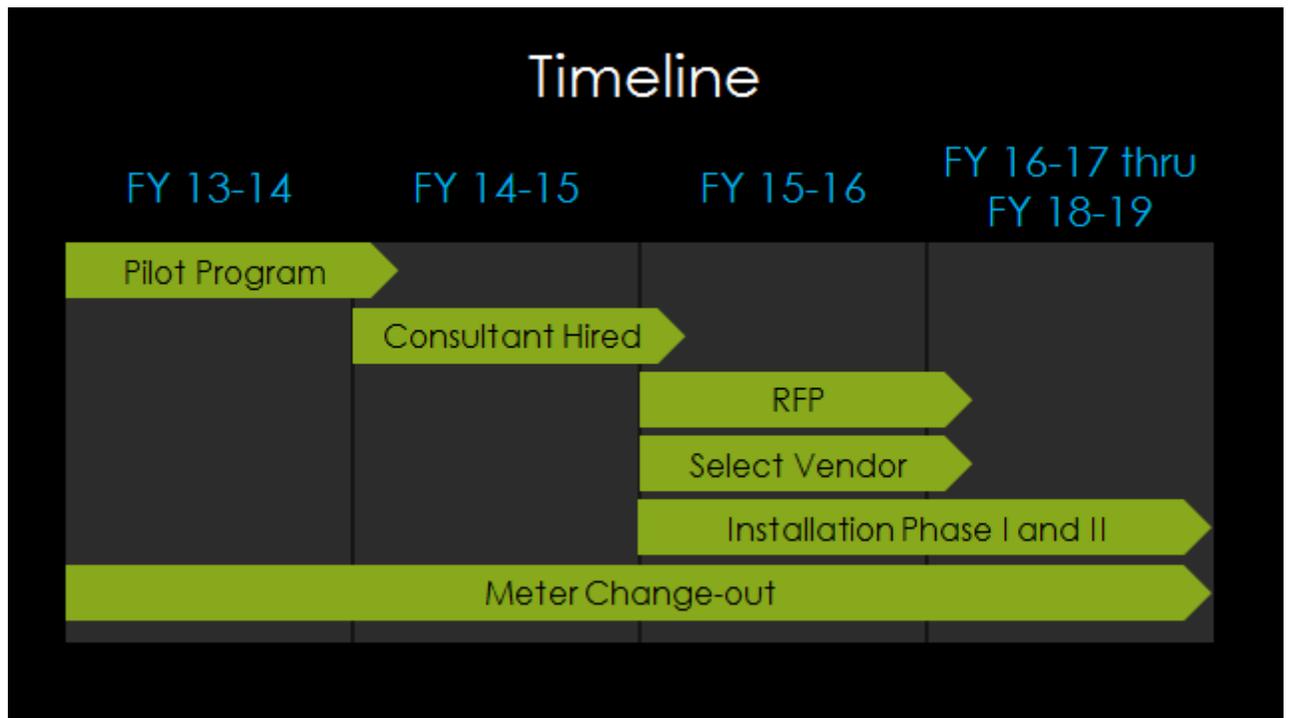
- Reduced equipment operating and maintenance costs (estimated at \$30,000 annually)
- Reduced water losses (estimated at \$100,000 annually)
- Reduced labor costs (estimated at \$300,000 annually)

Conservation

- User dashboards (portals) help customers monitor and reduce consumption
- Early leak detection
- Reduced truck rolls
- Reduced carbon footprint
- Collection of water metrics that will enhance city's ability to achieve conservation goals

Other important benefits include significantly improved employee safety and the ability to be more proactive with our preventative maintenance program for our water system infrastructure.

Project Timeline



The City Council approved a pilot study for an automated meter reading project as part of the FY13/14 Capital Improvements Project budget. The purpose of the study was to identify the various types of technology available in the market and to perform limited testing of the technology in our environment. Three different solutions were successfully tested over a six month period, providing the necessary evidence that deploying the technology would meet the city's needs.

Funding to move forward with an automated meter reading project was approved as part of the FY 14/15 to 18/19 Capital Improvement Projects plan. The city hired a consultant, SL-serco, to assist in clearly identifying the needs of the city, defining the type of technology best suited to meet those needs, work with staff to develop the specifications for a request for proposal (RFP) and assist in proposal evaluations, and facilitate the implementation of the selected solution. The city has substantially completed the RFP process and will be recommending a contract award at a June 2016 Regular Council Meeting. A Project Steering Committee, consisting of

representatives from the Internal Services and Public Works departments and the City Manager's Office, is providing oversight of the project.

Phase I of the project will consist of purchasing and installing the base hardware and software infrastructure of the system, including the installation of 5,000 endpoints. The system will be tested to ensure the successful endpoint data transmission of the meter reads to the billing system. Also the ability to obtain on demand reads will be tested during this phase. This first phase is anticipated to be complete by the first quarter of calendar 2017. **Phase II** will consist of the deployment of the remaining endpoints and collectors/repeaters throughout the city once we are assured that the system is working as expected; this final phase is expected to be completed by first quarter calendar 2019.

Implementation of the AMI system will be closely coordinated with the city's ongoing meter replacement project. Over the past several years, the city has been replacing its' aging meter stock with new meters capable of working with various automated meter reading technologies available today.

Current AMI Fixed Network Installations

The following are municipalities from around the country that have installed or are currently installing an AMI fixed network system similar to the one proposed for Tempe:

- City of Harrison, Arkansas
- City of Scottsdale, Arizona
- City of Tucson, Arizona
- City of San Diego, California
- Rancho California Water District – City of Temecula, California
- North Springs Improvement District – City of Coral Springs, Florida
- City of Baltimore, Maryland
- City of Cleveland, Ohio
- City of Olympia, Washington
- City of Madison, Wisconsin

Financial Impact

The estimated costs of deploying the AMI system is \$7.75 million (includes the initial cost of hardware and software, and annual maintenance and support of the system over its 15-yr estimated life). However, the following estimated cost offsets are anticipated once full deployment is achieved:

- Annual labor costs savings: \$300,000
- Annual vehicle costs savings: 30,000
- Annual unmetered water/theft reduction: 100,000

Once fully deployed, the **estimated monthly utility bill impact is \$0.25** and will be recovered as part of the monthly water and sewer charges billed to customers.

Direction Requested

Staff is seeking direction from the City Council to continue moving forward with the project as currently planned. If approved, staff will be placing a recommended contract award for the AMI system on the next Regular Council Meeting agenda for council action.