City of Arts & Innovation

City Council Memorandum

TO: **HONORABLE MAYOR AND CITY COUNCIL** **DATE: MARCH 12, 2019**

FROM: **PUBLIC UTILITIES DEPARTMENT** **WARD: ALL**

SUBJECT: **IMPLEMENTATION OF AN ELECTRIC ADVANCED METER SYSTEM AND METER DATA MANAGEMENT SYSTEM - UPDATE**

ISSUE:

Receive and file a project update for implementation of an Electric Advanced Meter System and Meter Data Management System.

RECOMMENDATION:

That the City Council receive and file this project update for implementation of an Electric Advanced Meter System and Meter Data Management System.

BOARD RECOMMENDATION:

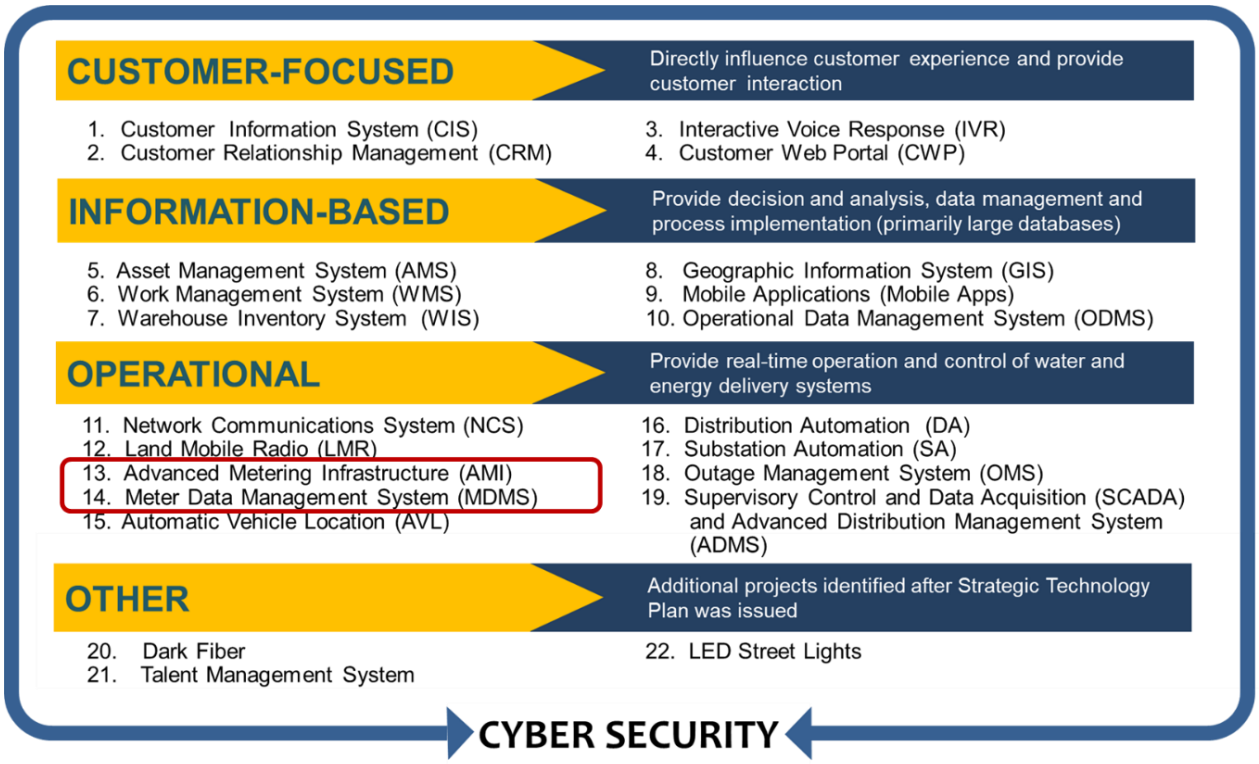
On January 28, 2019, the Board of Public Utilities, with six members present, approved the award of RFP 1837 for a TUNet Network Systems Agreement to Tantalus Systems, Inc. for an Electric Advanced Meter System for a two-year term in the amount of $7,267,644, with the option to extend for an additional three-year term and a Software as a Service Agreement to SmartWorks, a division of N. Harris Computer Corporation, for a Meter Data Management System for a five-year term in the amount of $1,754,677; and approved an increase to Work Order No. 1707248 by $660,000 for the total amount of $3,660,000 for Fiscal Year 2018-19 for the first phase of implementation of an Electric Advanced Meter System and Meter Data Management System.

BACKGROUND:

In 2015, the Board of Public Utilities (Board) adopted the Riverside Public Utilities (RPU) Strategic Technology Plan (Plan) developed with the assistance of Leidos, Inc. The Plan outlines a strategic technology vision for RPU, recognizing the crucial role of technology in improving operational efficiency, reliability and customer satisfaction, as well as, supporting broader initiatives in the areas of economic development and community service.

There were 22 advanced operational technology projects envisioned in the Plan, as shown in Figure 1 on the next page:

Figure 1. RPU's Strategic Technology Plan



Implementation of an Advanced Meter Infrastructure (AMI) and Meter Data Management System (MDMS) are two (2) of the most critical projects outlined in the Plan, and support three (3) primary goals of the Utility 2.0 Strategic Plan: Customer Experience, Reliability and Resiliency, and Sustainability. An AMI system is an integrated system of smart meters, communications networks and data that enables two-way communication between the utility and customers' AMI smart meters. An MDMS validates and edits the meter data to ensure the data is accurately transferred to the Customer Information System for billing. Together these systems, along with a new Customer Portal, make up RPU's Advanced Meter Program (Program) that will provide customers with near real-time information to make more informed decisions about water and energy usage, as well as many other benefits that are outlined in this report.

In early 2017, RPU began exploring options for an Advanced Meter Program. Due to the enormous complexity of this Program and the associated risks, RPU obtained approval from the Board on June 12, 2017 to execute a Professional Services Agreement with Utiliworks Consulting, LLC (UWC), a professional consulting firm with 13 years of experience successfully planning and implementing Advanced Meter Programs, to support the project from planning through execution.

Since approval of the UWC agreement, staff has worked diligently with the consultant to assess the feasibility and options of deploying AMI systems across both the electric and water utilities. The first steps in this process were to identify goals for the project, assess readiness, develop a detailed business case, and identify potential operational gaps that could pose challenges both during and after implementation. UWC examined RPU's current utility operations, meter hardware and equipment, systems and software, operating costs and staffing across all divisions of RPU through a series of data requests and onsite stakeholder interviews and workshops.

Utilizing the data and information gathered and analyzed from the tasks listed above, the team developed a detailed business case for an Advanced Meter Program that best meets RPU's

needs and desired benefits, with the greatest return on investment. The business case outlines the quantitative and qualitative benefits that can be realized with an AMI program and proposes an implementation roadmap.

Based on the recommendations made in the business case, the project team, in partnership with the Innovation and Technology Department, developed a comprehensive set of business requirements (functional, technical and security) to develop an Advanced Meter Program Request for Proposal (RFP). This item was taken to Board to obtain approval to proceed with the vendors that were evaluated and selected through the RFP process, as well as to obtain approval of the overall Electric Advanced Meter Program plan, budget and approach.

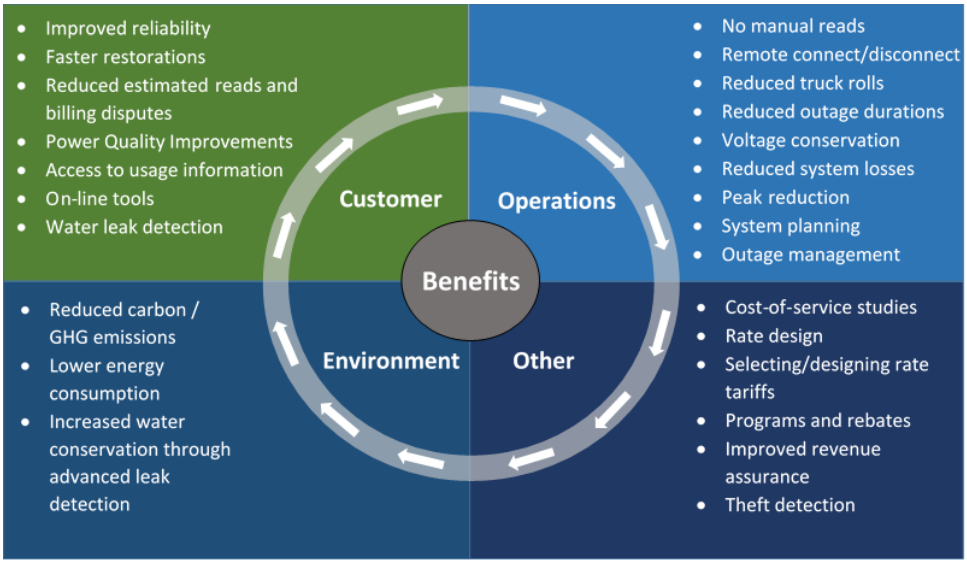
Although the RFP included water AMI, it has been determined that the goals, benefits and infrastructure for Water AMI is significantly different from electric AMI, and therefore will be treated as a separate and distinct program.

DISCUSSION:

AMI technology fundamentally changes RPU's entire business process from reading meters to generating customer bills. Depending on the supporting technology and business process changes employed along with AMI, RPU has the opportunity to realize significant benefits by proactively using the data and information generated by AMI. Leveraging AMI technologies will significantly improve the measurement and management of utility resources and will bring direct benefit and value to customers.

Figure 2 highlights the potential benefits that can be realized with the data yielded from an AMI system, along with add-on technologies such as remote disconnect and sensor devices. UWC worked with RPU staff to derive the necessary data and assumptions in order to calculate the potential benefits and factored those conclusions into the business case. The potential quantitative and qualitative benefits highlighted in Figure 2 are summarized in Attachment 4 (AMI Benefits and FAQs).

Figure 2. AMI benefits



RPU's current technology and business processes in the area of metering operations are antiquated under most standards. RPU's current electric Encoder Receiver Transmitter (ERT)

meters are partially automated, in that they broadcast remote reads on regular intervals, but the only way to collect those reads is by walking or driving by the meter with a hand-held collector device. This process occurs on a monthly basis and is subject to errors. Customers receive the data on the bill received following the monthly data collection. Currently, there is no way for RPU customers to review their meter data throughout the month to make decisions about usage or be alerted if their usage pattern may be leading to a higher than usual bill.

Transitioning to an AMI system will benefit customers and RPU by enhancing and optimizing operations with access to near real-time and accurate system data, improving reliability through more timely detection of problems and outages, and lowering costs of meter reading and outage detection. It will also improve customer service by providing customers with better data to make more informed decisions about energy usage. Finally, AMI represents a critical foundational technology for other advanced technology initiatives in the future.

Program Approach

The average life expectancy of legacy electric meters is 20 years; therefore, a majority of the meters in RPU's system have not yet met their end-of-life. One of the primary goals of the Advanced Meter Program is to maximize the current residential ERT meter investment. The solution that is being proposed is an "ERT overlay," which means installing a fixed network utilizing new AMI meters and collection devices to collect data from the existing meters, as well as provide new AMI functionality. In order to effectively manage the implementation of the new system and the significant business process, policy and staffing changes that will occur, the project team is proposing a phased approach. This phased approach will begin with a two-part proof-of-concept (POC), a Phase 1 POC and a Phase 2 POC, followed by full implementation.

The Phase 1 POC consists of installing 100 new AMI meters in strategic "clusters" throughout the City that correspond to each of Riverside's seven wards. The specific areas and meters will be determined following vendor selection and design reviews. The meters selected are to represent a cross-section of the most common, challenging and/or unique considerations and will encompass a mix of residential (including multi-family) units, solar PV owners and business customers, and will represent a cross-section of different meter types, customer types and configurations. The 100 AMI meters will transmit meter data utilizing collector devices that will be placed on utility poles and other utility assets with height, on hourly intervals for residential meters and five-minute intervals for commercial and industrial meters, via a private cellular network to cloud-based AMI "head-end" system. The AMI meters will also pick up at least one read per day from the surrounding ERT meters. The data will then be transmitted, via flat files, to a cloud-hosted MDMS for validation, editing and estimating, prior to being transmitted via flat file to the Customer Information System (CIS) for billing. This will be significantly more data than staff processes today, as the data stream will be going from one data point per meter/per month to hundreds or even thousands of data points per meter/per month.

The purpose of the Phase 1 POC is to:

1. Test meter functionality and meter coverage.
2. Test effectiveness and range of the "ERT overlay".
3. Replace probe, visual-read, and hard to reach meters.
4. Test communications devices and coverage.
5. Assess impacted business processes.
6. Determine impacts to existing policies.
7. Assess staffing impacts and changes in roles and responsibilities, job descriptions, and organizational structures.
8. Begin organizational change management process.

9. Validate cost savings assumptions and return on investment.

During the Phase 1 POC, RPU and the City's Office of Communications will develop a Community/Customer Engagement Campaign to include:

1. Communicating the benefits expected from the Advanced Meter Program.
2. Minimizing citizen concern regarding advanced meter technology.
3. Creating internal champions for the program.
4. Continuing to build on and improve key messages throughout the duration of the program.
5. Creating customer ambassadors for the Advanced Meter Program.
6. Ensuring that program information is accessible.
7. Providing the Board, City Council and the RPU Executive Leadership Team with frequent updates on program progress and activities.

Following the successful implementation of the Phase 1 POC, which should take approximately six (6) months, there will be a Phase 2 POC. During this phase, 1,000 additional meters will be installed, and the MDMS with the utility's existing Customer Information System via a real-time interface for alerts, alarms and connect/disconnect functionality. The Customer Web Portal, which is included in the MDMS contract, will be configured and tested and integrated with the existing customer website. All of the remaining communication devices will be installed.

The purpose of the Phase 2 POC is to:

1. Test the integration between the AMI and the MDMS Software as a Service (SAAS) solution.
2. Verify design, security and capabilities of the AMI and the MDMS SAAS solutions.
3. Validate that data flows accurately from the meter all the way through to the billing system.
4. Re-engineer impacted business processes.
5. Recommend necessary policy changes.
6. Design data streams for new AMI data to appropriate stakeholders.
7. Configure operational reports and dashboards for Operations, Engineering, Customer Service, and other stakeholder groups to receive and process the data.
8. Recommend organizational and staffing changes to support AMI.

The full implementation rollout will commence following successful completion of the Phase 2 POC. RPU will create a full AMI network with the deployment of approximately 25,000 AMI meters (cost included in the Tantalus agreement) to collect data from all of the remaining legacy ERT meters in the system. All commercial and industrial meters (approximately 11,000) will be replaced and the remaining 14,000 residential meters will be distributed at ends of feeders to capture distribution voltage data, in high turn-over areas for automated meter connects and disconnects, and other strategic locations that maximize the return on investment. RPU electric meter technicians and reassigned field services technicians will conduct the meter replacements. The remaining legacy ERT meters (approximately 85,000) will be replaced at their normal end-of-life or as they fail through the normal annual replacement process and are not included in this Program scope or budget.

Tantalus and SmartWorks both provide cloud-hosted, SAAS solutions, which means the City does not have to invest in and build extensive on premise IT infrastructure to support the systems. The SAAS agreements allow the City to convert these systems to on premise solutions at any point if the City deems necessary. The SAAS agreements and costs outlined below include annual data storage and hosting fees for the term of the agreements, should the City opt to continue as SAAS for the duration of the agreements.

FISCAL IMPACT:

There is no fiscal impact associated with this Council action.

The total fiscal impact of the project will be approximately $11,182,321 spread over 5-years. Sufficient funds are available in Fiscal Year 2018-19 in the Network Communications Systems Account No. 6130200-470826 in the amount of $660,000. To maintain budget oversight of the AMI project, this funding will be transferred to the AMI Account No. 6130200-470823. Staff will return to the Board to obtain approval for Fiscal Year 2019-20 funding in the amount of $8,556,294, which is part of the City Council approved five-year capital improvement program plan and included in the budget. Funding for subsequent years will be included in the next biennial budget process.

Prepared by:	Todd M. Corbin, Utilities General Manager
Certified as to availability of funds:	Edward Enriquez, Chief Financial Officer/City Treasurer
Approved by:	Al Zelinka, FAICP, City Manager
Approved as to form:	Gary G. Geuss, City Attorney

Attachments:

1. 1/28/2019 Board of Public Utilities Report
2. 1/28/2019 Board of Public Utilities approved meeting minutes
3. Presentation