

RIVERSIDE PUBLIC UTILITIES

Board Memorandum

BOARD OF PUBLIC UTILITIES

DATE: June 10, 2019

ITEM NO: 23

SUBJECT: OPERATIONAL DATA MANAGEMENT SYSTEM PROJECT UPDATE AND STAFF REPORT

ISSUE:

Receive and file a project update and staff report on the Operational Data Management System.

RECOMMENDATION:

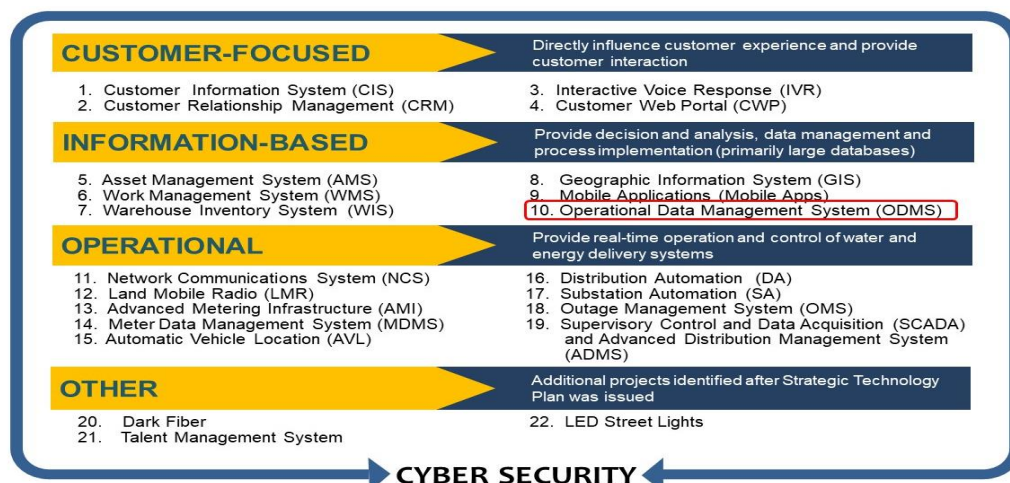
That the Board of Public Utilities receive and file a project update and staff report on the Operational Data Management System.

BACKGROUND:

In early 2015, Riverside Public Utilities (RPU) issued a Strategic Technology Plan (Plan) that outlined strategic investments in new operational technologies (OT) as shown in Figure 1 below. Twenty-two OT projects were identified, with the intent of implementing the 10-year period following plan issuance.

One of the most critical and foundational projects outlined in the Plan is the Operational Data Management System (ODMS). The ODMS is foundational for advancing the Utility 2.0 Strategic Plan, as it serves as a “data hub” or central repository for collecting, analyzing and visualizing operational data. An effective ODMS manages large amounts of data across multiple systems and workgroups and helps staff turn the data into actionable information to drive critical business decisions.

FIGURE 1 – STRATEGIC TECHNOLOGY PLAN

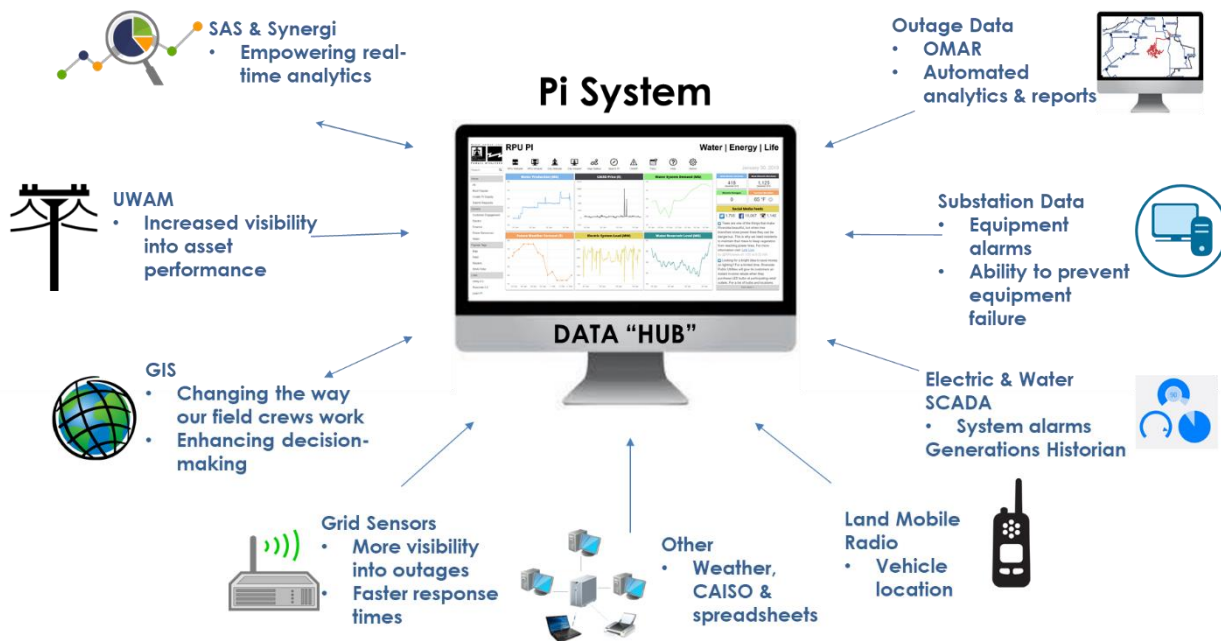


All RPU divisions rely on data to make operational and fiscal decisions. Thousands of data points are collected daily from field equipment and monitoring devices, electric and water meters, customer interactions and financial transactions. As staff continue to implement the OT systems outlined in the Plan, RPU will continue to accumulate larger amounts of data. Therefore, staff recognizes the need to move away from storing data in various formats and disparate systems to a streamlined system of collecting, analyzing, visualizing and sharing large amounts of historical, real-time and time series data from multiple sources with people and systems across all operations.

DISCUSSION:

In April 2016, the Board of Public Utilities (Board) approved implementation of the OSIsoft Pi System (Pi) to serve as RPU's ODMS. Pi integrates previously nonintegrated data and transforms it into meaningful information that can be displayed and consumed through visual tools such as dashboards and reports (as represented in Figure 2 below). In addition to providing readily available and easy-to-consume information, Pi provides an enhanced analytics platform that RPU can leverage to improve operational performance. Twenty-eight separate software systems have been integrated with Pi thus far; for a complete list of integrations, please refer to Table 2 on page 5 of the attached staff report.

FIGURE 2 – PI SYSTEM DATA HUB



Utilizing Pi, RPU has been able to significantly improve operational efficiencies, reduce staff time and operating costs, and improve asset management and system reliability. Additionally, RPU has benefited in several other ways, including:

- Increased visibility into systems and assets
- Improved ability to monitor and track performance to support operating decisions
- Improved ability to analyze incidents to determine cause and effect for establishing corrective actions
- Better enterprise-wide decision making, driven by real-time data
- Automation of multiple manual workflow processes
- Reduced risks and costs associated with potential equipment failure

- Improved asset maintenance and field workforce management
- Increased proactive (predictive) operations to optimize the cost of operating the distribution system
- Improved analytics of historical data for better capital improvement and resources planning
- Improved ability to capture data and produce timely and accurate mandatory compliance reports (required for utilities by North American Electric Reliability Corporation, United States Environmental Protection Agency, California Independent System Operator, etc.)
- Improved real-time methods for monitoring market activity and optimizing bidding strategies

RPU has invested a total of \$4,907,000 into implementing and deploying the Pi System. This investment includes the purchasing of hardware and software; a comprehensive enterprise license and services agreement with OSIsoft; City Innovation and Technology Department labor to support back-end implementation of the system; and professional contract services to support system integration, data migration and the development of dashboards and reports. The annual enterprise services fee is \$347,000 per year through July 2019, and then reduces to \$225,026 until July 2021, at which time RPU will request approval from the Board to extend the OSIsoft enterprise services agreement.

Since implementing Pi, RPU has achieved a return on investment (ROI) of nearly \$673,000 per year (as shown in Table 1 on page 3 of the attached staff report). This greatly surpasses the annual enterprise service cost of the OSI-Pi system. Additionally, a significant amount of new development is concurrently underway that should increase this ROI to over \$800,000 per year in the next 12 months.

The attached staff report provides an overview of status of the Pi implementation. It includes an overview of the many dashboards, reports and alerts that have been created for various RPU working groups and the ROI that has been achieved in each instance. These ROI calculations are based on quantitative factors. The primary quantitative factor in each instance is the reduction in staff time to complete tasks. The ROI is calculated using an average hourly rate of the employee position responsible for the task adjusted by a payroll burden multiplier¹ for water and electric staff, respectively. The adjusted total hourly value of the staff position is then multiplied by the hours saved in a year.

It should be noted that other quantitative benefits have also been realized that are not specifically calculated in the ROI, such as reduced truck rolls to investigate problems, reduced operating costs and reduced paper waste. Staff currently cannot assign an exact value to these benefits, even though these benefits are believed to be material. In addition, there are numerous qualitative benefits being derived from the system, which are more difficult to calculate as tangible savings. These savings include increased visibility into system status, avoided costs of potential regulatory fines or lawsuits, reduced length of system outages, fewer customer complaints and improved system planning.

Over the next several years, RPU plans to continue developing and expanding the use of Pi for additional operational benefits, efficiencies and ROI. One area that will be developed is the use of Pi Manual Logger. This is a “mobile forms” application in Pi that is used to manually enter data from the field into the Pi server. RPU’s facilities have significant amounts of data that cannot be collected automatically from instrumentation and control systems. Currently, field staff collects this data on paper and then returns to their work location to enter the data into the Oracle Utility Work and Asset Management (UWAM) system, in addition to other systems. Utilizing Pi Manual Logger, these antiquated paper processes can be replaced with a more streamlined and automated process of collecting data. The data will automatically populate in the Pi system for analysis, and from there be automatically sent to other systems where the data is needed, such as UWAM.

Finally, there are many new dashboards and reports that will be developed using the data from the existing integrations, such as in-depth grid sensor multi-phase reporting and real-time renewables analysis. Likewise, staff also plans to integrate the Customer Information System and the new Advanced

¹ Payroll burden multipliers of 1.656 for electric and 1.693 for water provided by Finance and Administration, based on the fiscal year 2017-2018 Summary of Overhead Rate information.

Meter Infrastructure (AMI) system with Pi during the AMI roll-out process, to facilitate improved reporting and analysis of meter data, system performance and customer interaction metrics.

FISCAL IMPACT:

There is no fiscal impact associated with this report.

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Certifies availability
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Attachments:

1. Operational Data Management System Staff Report
2. Presentation