COPPER MOUNTAIN CONSOLIDATED METROPOLITAN DISTRICT
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MEMORANDUM

To:	Mr. Ben Wade, Project Manager Colorado Water Conservation Board
Cc:	Kevin Reidy – Colorado Water Conservation Board
From:	Robert Martin, Public Works Director Copper Mountain Consolidated Metropolitan District
Date:	September 9, 2020
Re:	Water Efficiency Plan Foundational Activity Water Meter System AMI Upgrades

Introduction

Copper Mountain Consolidated Metropolitan District applied for and was awarded a Colorado Water Conservation Board (CWCB) Water Efficiency Grant Fund Grant in February 2019. The grant monies were requested to facilitate and expedite implementation of a District project to upgrade the existing water metering system to an Advanced Metering Infrastructure (AMI) platform, with the primary goals of reducing water loss and improving monitoring of water consumption. This Memorandum is intended to serve as the 50% progress report for the Water Meter System AMI Upgrades project.

Project Status

Several unforeseen obstacles presented themselves during the first year of project implementation. Due to scheduling conflicts and unanticipated employee turnover at the District, much of the work scheduled for 2019 in the original Scope of Work (SOW) was effectively delayed until 2020. Both materials procurement and installations fell short of project goals and expectations. Water & Sanitation Department staff were geared to refocus their efforts on the project in early 2020 when the advent of the Coronavirus and COVID-19 disease forced the District to postpone many of its higher priority capital projects. Not knowing what the long-term financial ramifications of the COVID-19 pandemic would be, the District chose to hit pause and limit budgetary spending. Although there is still considerable uncertainty regarding the economic impact of the pandemic, the District has elected in recent months to move forward with critical capital projects, the meter project being one of them. Beginning in June 2020 and continuing into August 2020, renewed project efforts have resulted in approximately $70,000 in materials procurement with the goal of installing all of the new meter inventory by the end of 2020. At that point, the project will be between 60 – 70 percent complete.

As discussed in the original Grant Application and Scope of Work, the primary meter manufacturer that the District was working with at the beginning of the project was Metron Farnier (Metron). Since project inception, the District has developed a relationship with Badger Meter and has procured and installed a significant number of their instruments. Badger's AMI platform is very similar to that of Metron with a comparable web portal interface and similar instrumentation for flow data transmission. The primary difference between the two systems is that Badger transmits over a closed, proprietary network while Metron employs a hosted service provided by Verizon. The District has maintained its relationship with Metron and will continue to procure and install materials from both manufacturers. There was some initial concern with employing two separate AMI

systems, but the ease of access and remote monitoring capabilities of both manufacturer's systems has proved to be very user friendly and relatively easy to implement and manage.

Goals & Objectives

Although the project fell behind schedule, it has been very successful in meeting the goals and objectives identified and defined in the Grant Application and SOW. The water customer properties with meters that were malfunctioning or that were no longer registering were immediately identified and replaced. This effort alone resulted in significant decreases in water loss and increases in revenue for the District. A substantial percentage of older, functioning meters have also been replaced in single family, multi-family, commercial, and mixed-use properties. Replacement of the older meters that were not AMI compatible has resulted in early identification of system leaks and has provided District staff and Water & Sanitation (W&S) customers with real-time water usage data and insight into their consumption patterns. Regarding specific goals and objectives:

- Conservation and Water Loss Reduction – the increased monitoring capability provided by the AMI platform has enabled W&S staff to identify leaks almost immediately and notify property owners. Customers have also recognized irregularities in their usage and have contacted the District for assistance in troubleshooting and resolving the issues.
- Asset & Resource Management – Although the District does not have enough data to fully quantify project results, the early identification of leaks and of meters that have failed or were malfunctioning, has certainly resulted more efficient operation of the distribution and treatment systems.
- Metering Accuracy – It is a fairly obvious observation but, the new meters are more accurate simply by virtue of the fact that they are new. In addition to the improved accuracy of new equipment, monitoring the system on a regular basis has given W&S staff the ability to almost immediately identify faulty meters and get them replaced. In several cases, the cellular registers on the AMI meters have stopped transmitting. Operators recognized the issue, contacted the manufacturer, and had the devices replaced under warranty and operational within days. With older non-AMI meters, it would have taken several months before a failed meter would have been identified.
- Remote Meter Reading – One W&S staff member if fully capable of monitoring the AMI system on an almost daily basis and reading all meters within a couple of hours. By comparison, reading the older meters takes several days to weeks and is often delayed due to transmitting issues and challenges associated with contacting property owners and physically accessing individual properties.
- Equipment & Fuel Reduction – As a result of the remote meter reading capability, W&S staff have already spent less time driving to individual properties. Besides meeting the goal of reduced fuel consumption and wear and tear on District vehicles, remote reading has saved a considerable amount of time, freeing staff up to focus on operations, process optimization, and capital projects.
- Customer Involvement & Education – Many of the customers whose meters have been upgraded to the AMI platform have been genuinely interested in their own consumption patterns and have been making or planning for real improvements to their properties. Customers have also been instrumental in identifying leaks or atypical usage and notifying the District.
- System Alerts – implementing a system with the ability to alert W&S staff to leaks or atypical usage was an important objective, however, operators have been monitoring the system closely enough that they often identify problems before the AMI system does. We anticipate that after the novelty of the system wears off, W&S staff will begin to rely more on system alerts.

Preliminary Findings & Accomplishments

The Goals and Objectives discussion above summarizes the accomplishments of implementing the AMI system. However, it is worth reiterating the benefits of being able to access metering data on an almost real-time basis. We have not yet quantified the results, but the ability to detect leaks or anomalous usage patterns has

significantly reduced water loss, improved operational efficiency, and dramatically reduced the time and resources required to monitor and manage the District's water system.

Scheduling & Scope of Work

Postponement of the project due to unanticipated employee turnover and project delays related to the COVID-19 pandemic have necessitated revisions to the overall project schedule. The final completion date has been delayed by approximately one year from December 2020 to December 2021. A revised schedule with adjustments to individual task completion and final completion dates is provided as Attachment I. Note that the Scope of Work has not changed the tasks that were defined in the original SOW and the sequencing of the work remains the same. The schedule will be revised as necessary in the 75% progress report.

Invoicing & Grant Funding

In addition to a revised project schedule, a District invoice is provided as Attachment II, detailing project Cash Contributions and In-Kind services provided by the District to date. The 10% of Combined Subtotal row represents the percentage of the approved Grant monies that the District is requesting at approximately fifty percent completion of the project. Invoices from meter manufacturers and contractors are attached for CWCB reference and evaluation. Most of the invoices are from 2020 but some materials were procured in 2019. Similarly, there are several invoices for contracted services (plumbing) from 2019. The District has been able to perform all materials procurement without consultant (Tetra Tech) involvement and most of the meter installations using limited contractor services. This has significantly reduced the total anticipated cost of the project to date.

ATTACHMENT I

CMCMD WATER METER SYSTEM AMI UPGRADES

PROGRESS REPORT AT 50% COMPLETION

REVISED PROJECT SCHEDULE

COPPER MOUNTAIN CONSOLIDATED METROPOLITAN DISTRICT
METER SYSTEM UPGRADES - PROJECT SCHEDULE