Water Efficiency Grant Report
AMI Fixed Base System
C154200

Final Report - 2013

Castle Pines Metropolitan District
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This final report summarizes the Water Efficiency Grant for the AMI Fixed Base System which was provided to Castle Pines Metropolitan District (CPMD) by the Colorado Water Conservation Board (CWCB).

Grant Background:

The grant was provided to the District for the purpose of implementing an AMI Fixed Base System which will be used as the primary water conservation program for CPMD. The AMI Fixed Base System collects meter data and alarms from the ultility base and transmits the data wirelessly to one or more Tower Gateway Basestations (TGB) data collection points. AMI provides two-way communication from the host computer to the TGB and to the installed meter transceivers (MXU's). The AMI has been designed to provide coverage for all meters in CPMD's service area, in order to collect all consumption data.

AMI will be used in conjunction with the AquaHawk Alerting™ program to provide a web-based water conservation and customer communications system that would enable CPMD to share information with customers so they can reduce unnecessary consumption and water waste.

CPMD received a grant totaling $115,752.00 from the CWCB for the purchase and installation of the AMI Fixed Base System. The AMI system installation costs were higher than anticipated and CPMD contributed over half the total project cost of $265,398, including actual expenses of $238,950 and in-kind costs of $26,448.

AMI System Purchase and Install

The equipment for this project consisted of 2 TGB's, 1 Remote Repeater and 1679 MXU's. The equipment was delivered between August and September 2012. A necessary component to the system that was not itemized in the grant is the handheld programming device that was delivered but was not an extra expense to the District. TGB's were installed in September 2012. Endpoint radios were installed between October 2012 and February 2013. The endpoints were communicating with CPMD in April 2013.

At the end of December 2013, the District had a total of 1695 endpoint radios installed and they are communicating with the TGB's or repeater. Staff has worked over the last

nine months to upgrade the balance of radios that were not communicating and this has been completed.

AquaHawk Alerting™

CPMD has attained great success with its Advanced Demand Side Leak Detection and Irrigation Efficiency (ALDIE) Program which is the conservation program that encompasses the AMI system and the data analytics and customer engagement tool called AquaHawk Alerting™. CPMD staff has found numerous accounts with abnormal usage and has enhanced its level of customer service with regard to water conservation. One customer said, "I appreciate Metro's proactive nature in regard to helping customers find leaks inside the house and in the irrigation system." This customer had a leaky toilet that was not picked up on the AMI system software (Flexnet) but was found in the high level data analytics program AquaHawk Alerting™.

CPMD has been working with team members at AquaHawk to create a web-based system for our customers use. We engaged four of our high usage sub-associations to try out the pilot web-site program this last summer. We created accounts for them to be able to log in to track their usage, on demand. The sub-associations found this most helpful in reducing water usage, watching their water budget and trouble-shooting high usage readings. This program is linked to our billing account website, and will be available to all homeowners in 2014.

Summary

Within the first five months of installation of the AMI system, more than five acre-feet (AF) of loss has been prevented. In nine months of collecting usage data on a decreased latency time scale prior to the installation of the AMI system, over 12 AF of water loss was prevented. CPMD staff estimates a prevented loss of almost 18 AF since the program inception 12/06/2011. Savings at this level are projected to be realized annually due to the aging infrastructure. The avoided cost over 15 months of program implementation is estimated to be $264,250.00 using only $15,000.00/AF in this calculation.

The District is extremely appreciative of the CWCB and this grant funding. As a result, the District has been able to implement a superior water conservation program, which will benefit the District and the homeowners. With the addition of AquaHawk Alerting™, out of the ordinary usage is reported to the District for follow-up. The District receives email from AquaHawk each morning with alerts. We had at least 2 homes this winter reported with extremely high usage after zero usage for the past 30 days. These homes were vacant, and water pipes had burst. If not for the alerts, these homes would have been destroyed.

The timeline for the project follows:

8/27/2012 – AMI equipment shipped
9/06/2012 – AMI equipment delivered
9/18/2012 – Sensus installed first TGB
9/25/2012 – Sensus programs first TGB
9/25/2012 – Staff prepares 1st CWCB grant report
10/1/2012 – Sensus, staff, and installer training sessions
10/3/2012 - Contractor begins installation of endpoint radios (radios at each meter)
10/15/2012 – Sensus Project Manager and staff ensure billing software correctly integrated with AMI software
10/22/2012 – Sensus installs second TGB and repeater.
10/25/2012 - Sensus and staff confirm Metro's and repeaters properly communicating to endpoints and Metro office
02/28/2013 – Contractor completes installation of endpoint radios
04/01/2013 – Endpoints communicating with CPMD
04/04/2013 – Staff prepares 2nd CWCB grant report
05/01/2013 to 10/31/2013 – Staff continued to fine tune endpoint radios (radios as each meter)
12/31/2013 – Staff prepares 3rd and final CWCB grant report

As per Task 3 in the grant Statement of Work (SOW), CPMD ensures "final report has been received and accepted by the CWCB project manager by December 31, 2013. Funds are continuously appropriated and do not expire until contract is complete." The table below details the funding as per the grant request. CPMD has paid for all of the equipment and installation costs. The invoice associated with this final report is for the amount outlined in the grant SOW, $11,575.20.

CPMD AMI Grant			
Task 1	**CPM Staff + Hours**	**CPMD Cash Contribution**	**CWCB Grant Request Task 3**
Task 1 - Purchase AMI	100 @ $33.75/hr Emily Coll, Jeff Coufal Sue Mantz, LeAnna Gonzales, Phil Hunt		
2 TGB's		$ 52,500	$ -
1 Remote Repeater		$ 9,350	$ -
932 MXU's		$ 81,700	$ -
747 MXU's		$ 62,694	$ -
Task 2			
Task 2 - Complete Installation and System Test	400 @ $33.75/hr and 368 @ $22.07/hr Emily Coll, Jeff Coufal Sue Mantz, LeAnna Gonzales, Phil Hunt		
Misc. infrastructure expenses		$ 1,760	$ -
Mapping - Radio Frequency studies		$ 380	$ -
Communication/Backhaul costs		$ 10,906	$ -
Public Relations - articles, signage		$ 1,270	$ -
Misc. expenses, i.e. supplies, billing technical support, electrical		$ 3,110	$ -
Installation		$ 15,280	$ -
Task 3			
Task 3 - Final Report	43 @ $33.75/hr Jeff Coufal, Phil Hunt		
Misc. infrastructure expenses		$ -	$ -
Mapping - Radio Frequency studies		$ -	$ -
Communication/Backhaul costs		$ -	$ -
Public Relations - articles, signage		$ -	$ -
Misc. expenses, i.e. supplies, billing technical support, electrical		$ -	$ -
Installation		$ -	$ -
Task 1, 2 & 3 Total In-kind Costs:	**$ 26,448.01**	$ -	$ -
Task 1, 2 & 3 Total Cash Contributions:	-	**$ 238,950.18**	**$ 11,575.20**