Medina City Schools

Energy Savings Program

PERFORMANCE YEAR 3

October 2011 – September 2012

YEAR END SAVINGS REPORT

April 26, 2013

Prepared by:
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6800 Eastland Road
Middleburg Heights, OH 44130

Brewer-Garrett

Table of Contents

Section 1: Overview

The Brewer-Garrett Company is pleased to present the results for Performance Year 3 of the Medina City Schools Energy Savings Program.

Medina City Schools (Medina) and The Brewer-Garrett Company have worked diligently to implement and track energy conservation measures designed to save Medina utility dollars. The total savings have exceeded the projections made during the development of the Program. For Performance Year 3, we projected $315,769 in total energy savings.

The savings achieved by Medina City Schools for Performance Year 3 of the Energy Savings Program are $444,287.

Section 2: Savings Guarantee Summary

The Performance Guarantee and this Year End Savings Report are governed by the Energy Performance Agreement, executed by Medina City Schools and The Brewer-Garrett Company on August 31, 2007 (Contract).

Performance Year 3 covers the 12 month time period from October 2011 through September 2012.

The Performance Guarantee is summarized in Table 2a, and is based on Schedule C of the Contract: Energy and Operational Savings Guarantee. The Total Guaranteed Savings over the term of this agreement (15 years) is: $4,736,535.

Summary of Performance Guarantee

Total Guaranteed Savings ($)	$4,736,535

		Guaranteed Savings ($)	
Performance Year		Total Energy/Water/Sewer/ Savings ($)	Cumulative Guaranteed Savings ($)
1	2010	$315,769	$315,769
2	2011	$315,769	$631,538
3	2012	$315,769	$947,307
4	2013	$315,769	$1,263,076
5	2014	$315,769	$1,578,845
6	2015	$315,769	$1,894,614
7	2016	$315,769	$2,210,383
8	2017	$315,769	$2,526,152
9	2018	$315,769	$2,841,921
10	2019	$315,769	$3,157,690
11	2020	$315,769	$3,473,459
12	2021	$315,769	$3,789,228
13	2022	$315,769	$4,104,997
14	2023	$315,769	$4,420,766
15	2024	$315,769	$4,736,535
Total		$4,736,535	

Table 2a

Section 3: Performance History

Table 3a

Performance History for the Medina City Schools Energy Savings Program

Performance Year		Guaranteed Savings ($)	Actual Savings ($)	Cumulative Guaranteed Savings ($)	Cumulative Actual Savings ($)
---	Interim Period	-----	$470,472	-----	$470,472
1	10/09 - 9/10	$315,769	$438,675	$315,769	$909,147
2	10/10 - 9/11	$315,769	$478,648	$631,538	$1,387,795
3	10/11 - 9/12	$315,769	$444,287	$947,307	$1,832,082
4	10/12 - 9/13	$315,769			
5	10/13 - 9/14	$315,769			
6	10/14 - 9/15	$315,769			
7	10/15 - 9/16	$315,769			
8	10/16 - 9/17	$315,769			
9	10/17 - 9/18	$315,769			
10	10/18 - 9/19	$315,769			
11	10/19 - 9/20	$315,769			
12	10/20 - 9/21	$315,769			
13	10/21 - 9/22	$315,769			
14	10/22 - 9/23	$315,769			
15	10/23 - 9/24	$315,769			
	Total	$4,736,535	$1,832,082		

Energy Audit for Medina City Schools, Year 3
The undersigned agrees that The Brewer-Garrett Company delivered this audit to Medina City Schools. If no written reply is made to The Brewer-Garrett Company concerning the validity of this audit in 30 days, it will be considered accepted by Medina City Schools.

Accepted by: _____

Date: _____

Medina City Schools

Delivered by: _____

Date: _____

The Brewer-Garrett Company

Section 4: Summary of Savings

Medina City Schools ~ Performance Year 3 ~ October 2011 - September 2012

Summary of Savings

Electric			
KWH Used In Base Year		11,180,440	KWH
Baseline for	Performance Year 3	11,633,046	KWH
Actual Usage for	Performance Year 3	9,839,578	KWH
Total KWH Saved		1,793,468	KWH
Total Dollars Saved		$305,508	

Natural Gas			
MCF Used In Base Year		42,373	MCF
Baseline for	Performance Year 3	39,009	MCF
Actual Usage for	Performance Year 3	30,780	MCF
Total MCF Saved		8,229	MCF
Total Dollars Saved		$93,067	

Water and Sewer			
Water Used In Base Year		3,676	CCF
Water Baseline for	Performance Year 3	3,676	CCF
Water Actual Usage for	Performance Year 3	1,630	CCF
Total Water CCF Saved		2,046	CCF
Total Water Dollars Saved		$4,447	
Total Sewer Dollars Saved		$18,388	

Lighting M&V Savings at Bus Garage	Performance Year 3	$1,370

One-Time Electric Utility Cash Rebate for Lighting Retrofits	$21,508

Total Actual Savings	**Performance Year 3**	**$444,287**

Total Guaranteed Savings	**Performance Year 3**	**$315,769**

Table 4a

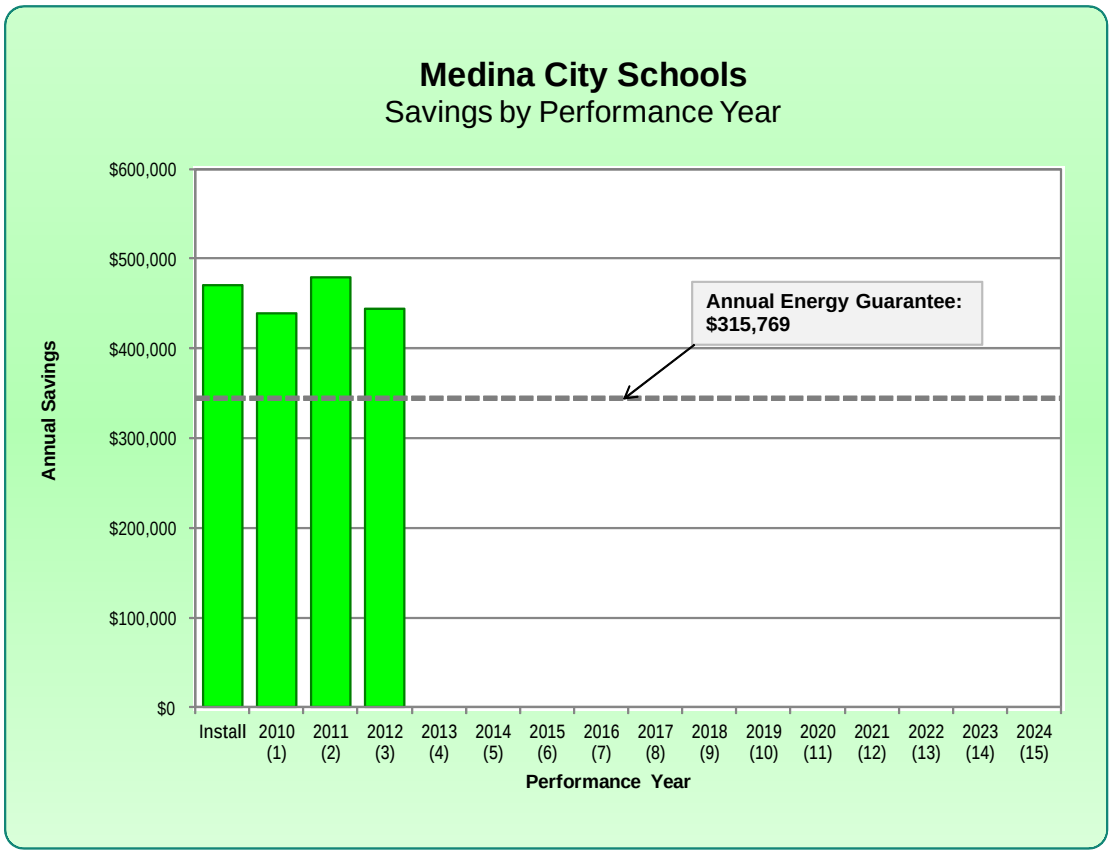
Medina City Schools
Savings by Performance Year
Annual Savings
$600,000
$500,000
$400,000
$300,000
$200,000
$100,000
$0
Annual Energy Guarantee:
$315,769
Install
2010 (1)
2011 (2)
2012 (3)
2013 (4)
2014 (5)
2015 (6)
2016 (7)
2017 (8)
2018 (9)
2019 (10)
2020 (11)
2021 (12)
2022 (13)
2023 (14)
2024 (15)
Performance Year

Figure 4b

Section 5: Electric Savings

Several projects implemented as part of the Medina City Schools Energy Savings Program were projected to achieve electric savings. These projects include a) district wide lighting retrofits and occupancy sensor installations, b) lighting controls at the High School, c) district wide vending machine control, d) variable frequency drives at Ella Canavan, Root and the High School, e) demand ventilation at Blake, Heritage, High School and Root, f) building automation system upgrades at the High School, and g) electric fan coil unit replacement with a natural gas unit at Heritage.

The annual projected and actual electric savings for each school are charted side by side in Figure 5a. We are very pleased to report that the actual electric savings have exceeded the projected savings at nearly all schools. In fact, for Performance Year 3, the total actual savings for all affected schools is118% of the projected savings.

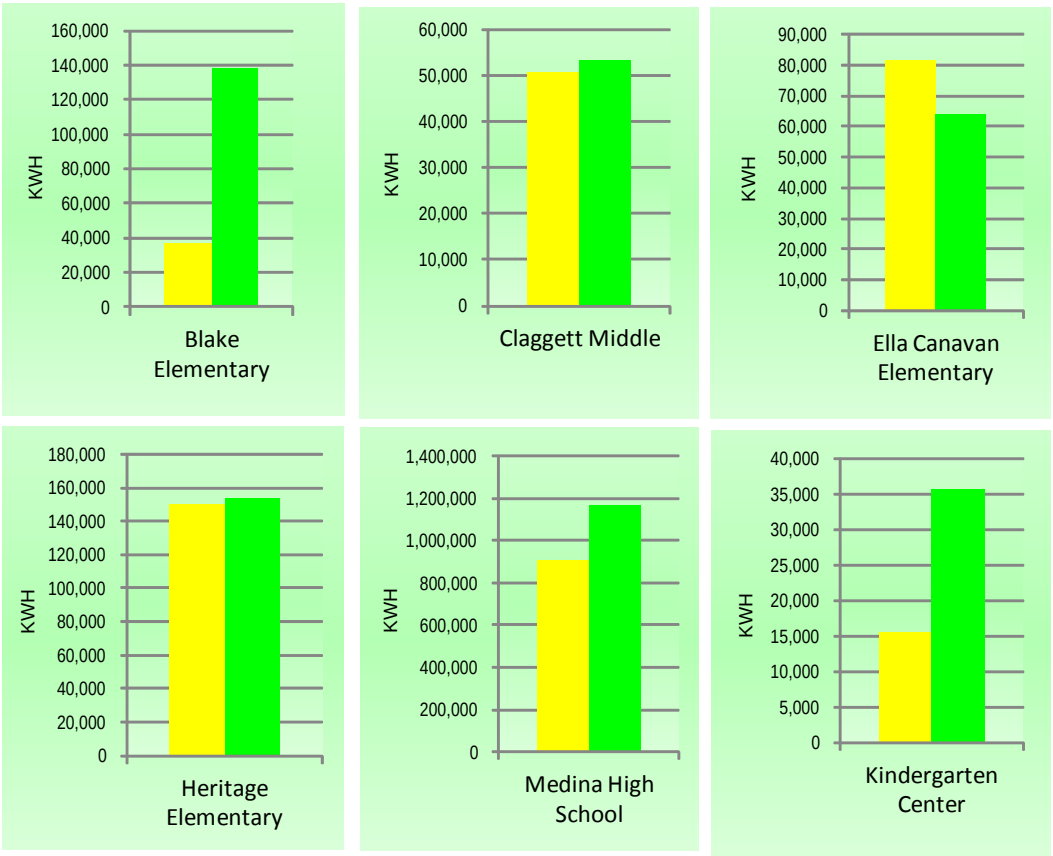

Figure 5a

Heating/ventilating units at Fenn and Garfield were replaced and air conditioning was added as part of the Energy Savings Program. The energy use associated with the air conditioning equipment is an adjustment to the baseline as addressed in Schedule F of the Contract: Savings Calculation Formulae: Methodology to Adjust Baseline. The annual projected vs actual electric savings for these buildings are shown in Figure 5b.

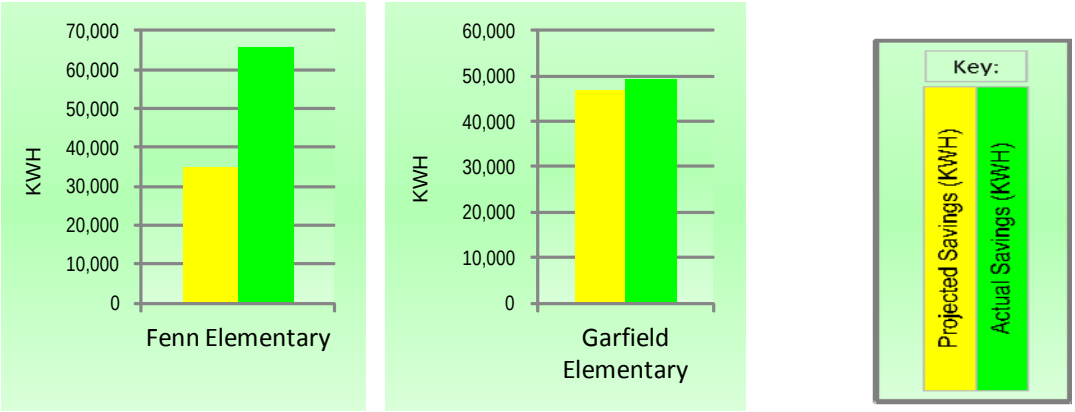

Figure 5b

The installation of a dedicated chiller system at Root to serve the office area was also included in the Energy Savings Program. Demand and energy savings were projected based on the operation of this new unit for office area cooling, in place of the main building chiller. However, the switch from main chiller to office area chiller must be done manually. Figure 5c indicates that the annual projected electric energy savings at Root have not been met during Performance Year 3; in fact current operating procedures have cost Medina over $23,000 since last performance year. This is an area of concern and requires further investigation.

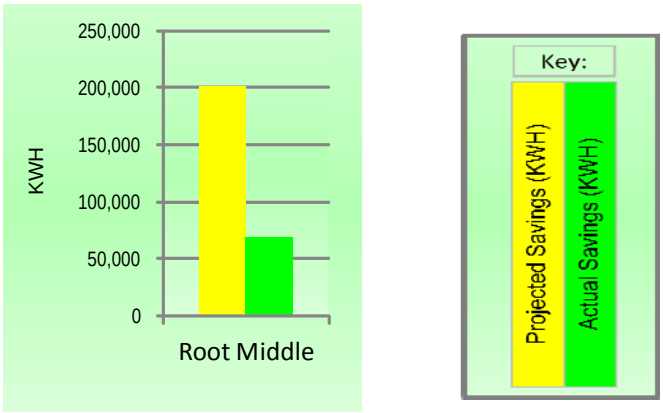

Figure 5c

There has been no demand reduction at Root as evidenced by Figure 5d. There should be an obvious reduction in monthly demand when cooling for the office area is provided by the newer, smaller chiller, and the main chiller is not required to operate. Trends will be set up to capture the usage of the main and office chillers over the next few weeks, and appropriate adjustments will be made to the guarantee to account for the deviation in operation of the chillers.

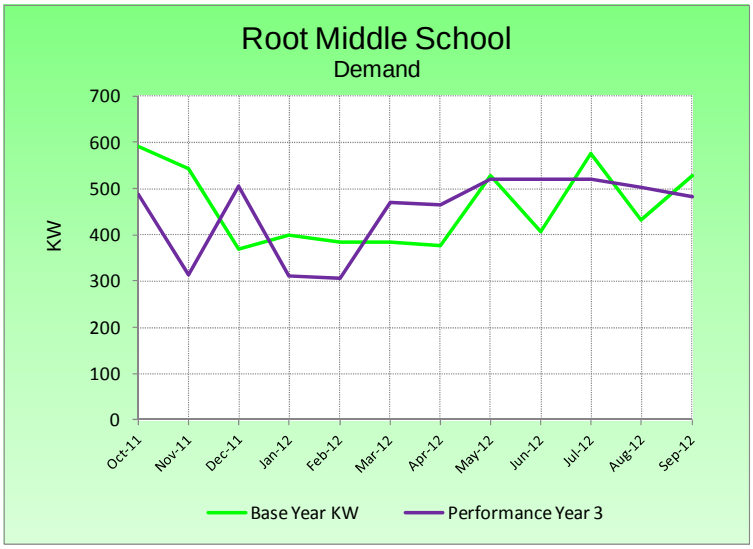

Figure 5d

The savings at Blake, as a result of our rate investigation with First Energy/Ohio Edison and the installation of a new meter, have continued. The actual annual dollar savings at Blake during Performance Year 3 are over 300% of the projected savings.

Electric savings are determined by inserting the energy and demand savings into the actual utility rate to convert units saved to dollars saved. Units of electricity saved are equal to the Baseline KWH minus Actual KWH, where the Baseline is the Base Year adjusted for time, weather and events. The electric savings are calculated monthly and then summed to yield an annual amount.

The energy savings are calculated based on the larger of the electric rate paid during the Performance Year or the Base Year as specified in Section 8.1 of the Contract.

The electricity savings at the Bus Garage as a result of the lighting retrofit are calculated based on the Measurement and Verification (M&V) methodology explained in Schedule F of the Contract. This methodology is used because the lighting retrofit is the only Energy Conservation Measure implemented at the Bus Garage; therefore electric savings due to lighting can be isolated. Voltage and amperage readings were taken in several locations throughout the Bus Garage and the other Medina schools, before and after the lighting retrofits took place. The before and after readings were taken with the same meters, in the same locations, and were used to calculate an average of watts of energy used by each lamp technology. The average readings for both the before and after measurements were inserted into the lighting spreadsheet to generate units saved. These units saved were multiplied by the utility rate to convert units saved to dollars saved. The electric savings at the Bus Garage resulting from the lighting retrofit are $1,370 for Performance Year 3.

Electric use in all of the Medina City Schools that were affected by Brewer-Garrett is summarized in Figure 5e. During Performance Year 3, the electric usage in the schools affected by the Energy Savings Program has been reduced by nearly 1.8 million KWH, or 15% from the Baseline. This is a savings of over $300,000 to Medina, and a reduction of 1,168 metric tons of CO_2 emissions.

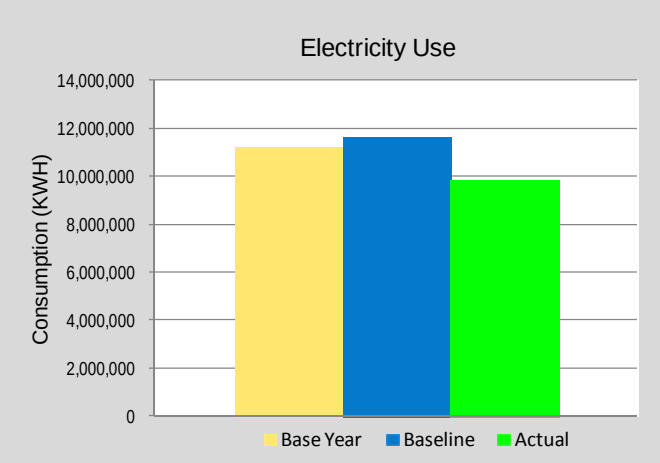

Figure 5e

Section 6: Natural Gas Savings

Several projects implemented as part of the Medina City Schools Energy Savings Program were projected to result in natural gas savings. These projects include a) demand ventilation at Blake, Heritage, High School and Root, b) building automation system upgrades at the High School, c) heat recovery and pool system modifications at the High School, and d) replacement of heating/ventilating units at Fenn and Garfield. The replacement of an electric fan coil unit with a gas-fired unit at Heritage was expected to save electricity, but use more natural gas.

The annual projected and actual natural gas savings for each school are charted side by side in Figure 6a. While actual savings at Garfield and Root have exceeded projections, savings at Blake, Fenn and the High School fell short. As expected, natural gas use at Heritage increased due to the installation of the gas-fired unit.

Overall, during Performance Year 2, the actual natural gas savings have exceeded the projection made as part of the Energy Savings Program. Actual savings are 72% of the projected; this has decreased from the 109% documented last performance year. Most notable is a reduction in savings at the High School of approximately 30%, or $50,000. We will monitor this closely over the next performance year, to the extent that we have natural gas bills available.

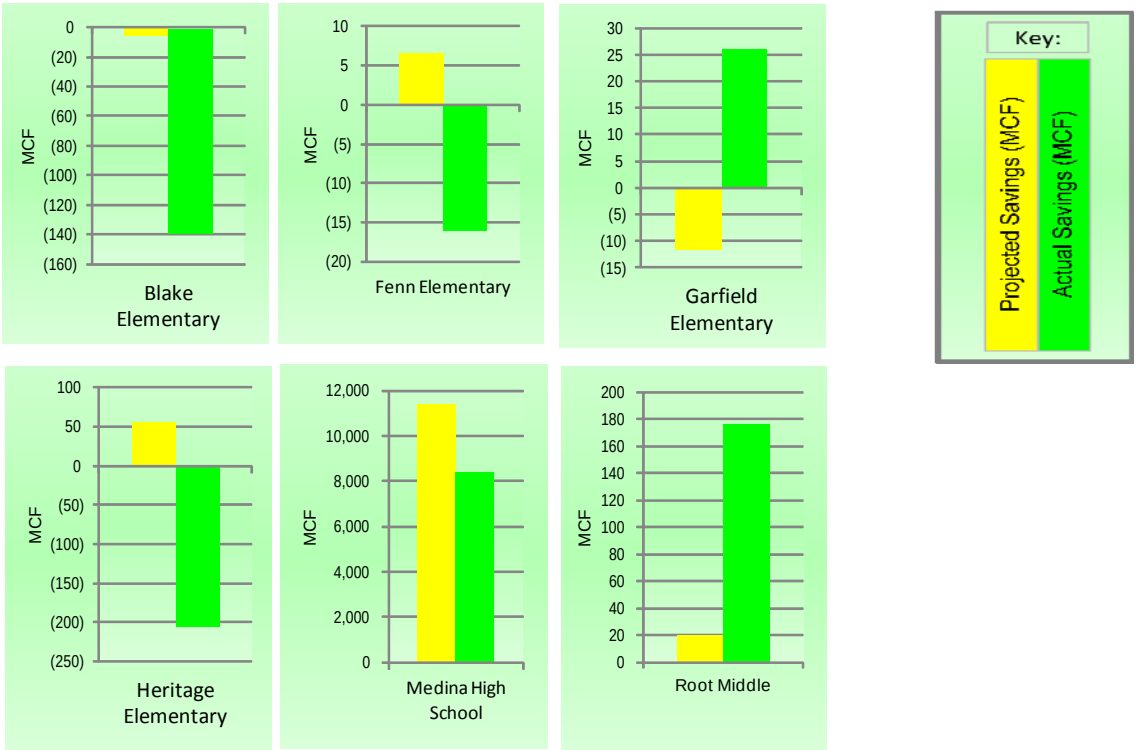

Figure 6a

Natural gas dollar savings are calculated each month by multiplying the monthly natural gas rate in $/MCF by the units of natural gas saved. The monthly natural gas rate in $/MCF is calculated based on: Total Natural Gas $ / Total Natural Gas MCF, and is calculated separately for each building. The units of natural gas saved are equal to the Baseline MCF minus Actual MCF, where Baseline is the Base Year adjusted for time, weather and events. The natural gas savings are calculated each month, and then summed to yield an annual savings.

The energy savings are calculated based on the larger of the natural gas rate paid during the Performance Year or the Base Year as specified in Section 8.1 of the Contract.

Natural gas use in all of the Medina City Schools that were affected by Brewer-Garrett is summarized in Figure 6b. During Performance Year 3, the natural gas usage in the schools affected by the Energy Savings Program has been reduced by approximately 8,000 MCF, or 21% from the Baseline. This is a savings of over $93,000 to Medina, and a reduction of 624 metric tons of CO_2 emissions.

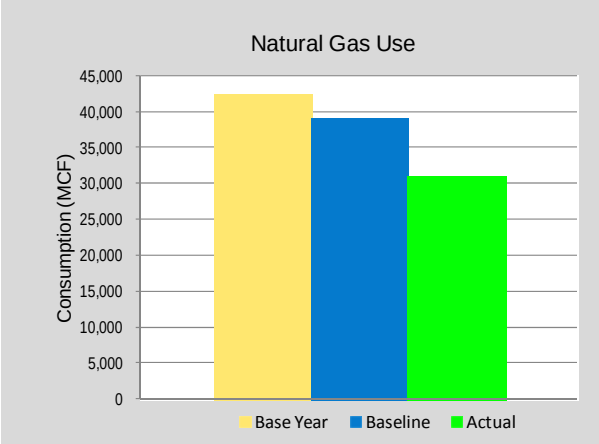

Figure 6b

Section 7: Water and Sewer Savings

Water conservation projects were implemented at Claggett and Garfield as part of the Medina City Schools Energy Savings Program, and included the replacement of water cooled condensers with air cooled units, and the automation of flush systems for urinals in the boys' bathrooms. In addition, Brewer-Garrett was instrumental in effecting a sewer rate change for Claggett. As a result, water and sewer savings were expected at both Claggett and Garfield.

Sewer savings were expected at the High School, where a sub-meter was installed for the cooling tower. This sub-meter enables the measurement of water evaporation to the atmosphere during the cooling process.

During a review of sewer billing data, it was determined that the Medina County Sanitary Engineering Department has reduced the quantity of sewer UNITS that each school is billed, no doubt in response to a reduction in water use. An analysis was performed to validate the sewer billing practices; this summary is shown in Table 7a. We believe that an argument could be made for further reductions in sewer UNITS billed at both Claggett and Garfield, as these schools are being overbilled by approximately 219 UNITS or $6,400 annually. However, it appears that the High School is currently under-billed by 163 UNITS or $4,777 annually. Based on the results of this analysis, we have not approached the Medina County Sanitary Engineering Department.

Sewer UNITS **Billing Analysis**		Claggett	Garfield	High School
Annual Actual Water Use	CCF	774	856	12,363
Annual Actual Water Use	Gallons	579,087	640,288	9,247,524
Annual Actual UNITS Used	UNITS	83	91	1,321
Annual UNITS Billed	UNITS	175	218	1,158
Monthly Actual UNITS Used	UNITS	6.9	7.6	110.1
Monthly UNITS Billed	UNITS	14.62	18.18	96.48
Overbilled or (Underbilled)	UNITS	92.72	126.69	(163.31)
Overbilled or (Underbilled)	$	$2,712	$3,706	($4,777)
Total Overbilled	UNITS		56	
Total Overbilled	$		$1,641	

Note:
1 "Unit" = 230 gallons/day
1 "Unit" = 7,000 gallons/month

Table 7a

Water dollar savings are calculated each month by multiplying the monthly water rate in $/CCF by the units of water saved. The monthly water rate in $/CCF is calculated based on: Total Water $ / Total Water CCF, and is calculated separately for each building. The units of water saved are equal to the Baseline CCF minus Actual CCF, where Baseline is the Base Year use with no adjustments. The water savings are calculated each month, and then summed to yield an annual savings.

Sewer dollar savings are calculated bi-monthly, to correspond with actual sewer bills. Sewer savings in this performance report are from: a) Claggett, as the result of the reduction in sewer "units" that Brewer-Garrett was instrumental in securing, and b) Garfield, as the result of the reduction in water use, and the corresponding reduction in sewer "units" that the Medina County Sanitary Engineering Department implemented. No sewer savings for the High School were included in this report. The sewer savings in terms of "units" are multiplied by the sewer rate in $/"unit" on a bi-monthly basis, and then summed to yield an annual savings.

The water and sewer savings are calculated based on the larger of the water and sewer rates paid during the Performance Year or the Base Year as specified in Section 8.1 of the Contract.

The combined water use for Claggett and Garfield is summarized in Figure 7b. The Base Year, Baseline and Actual total usage during Performance Year 3 are shown side-by-side for comparison. The overall water usage in these schools has been reduced by approximately 56% from the Baseline; this is a savings to Medina of over $22,000 in water and sewer charges.

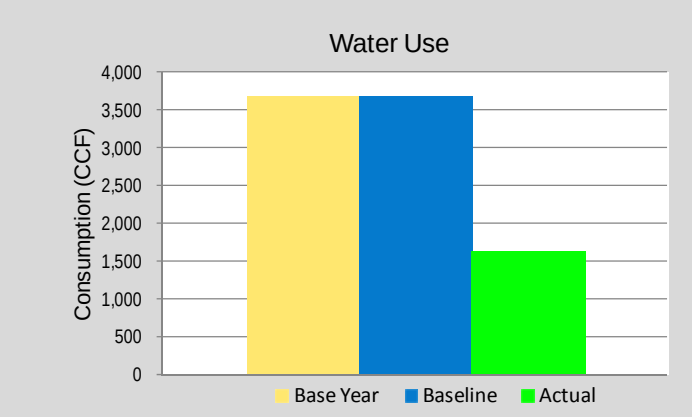

Figure 7b

Section 8: Operational Savings

No operational savings were claimed on this project.

Section 9: Adjustments

Adjustments are incorporated in the baseline projection for energy use to include changes in the number of days in a billing period as well as weather fluctuations.

No building changes have been identified by Medina during Performance Year 3. As a reminder, we request that changes in building operation be identified in order that we may track and account for changes to your facilities.

The heating/ventilating units at Fenn and Garfield were replaced and air conditioning was added as part of the Energy Savings Program. The energy use associated with the air conditioning equipment is an adjustment to the baseline as addressed in Schedule F of the Contract: Savings Calculation Formulae: Methodology to Adjust Baseline.

The additional demand and energy use for these units is calculated based on the information in Table 9a and is included in the Electric Baseline.

School Name	Quantity	Unit Description
Fenn Elementary	1	Library/Computer Lab Unit 10 ton, EER=11, 2300 hrs
	1	Gym Unit 10 ton, EER=11, 2700 hrs
Garfield Elementary	1	Gym Unit 12 ton, EER=9.7, 2925 hrs

Table 9a

Section 10: Results

For Performance Year 3, we projected $315,769 in total savings. These savings are a combination of weather/variable-dependent energy savings and water/sewer savings.

Figure 10a identifies the total utility savings apportioned by electric, natural gas, and water/sewer.

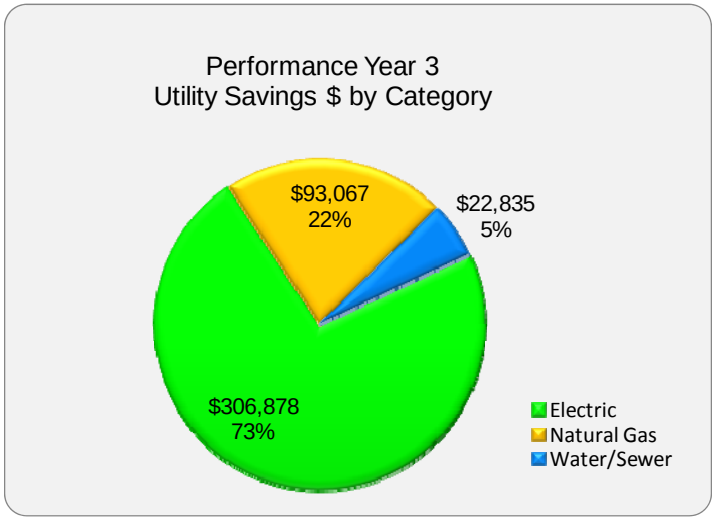

Figure 10a

The savings achieved by Medina City Schools for Performance Year 3 of the Energy Savings Program are $444,287; this includes $422,779 in utility savings and $21,508 in one-time utility rebates.

Section 11: Conclusion

The Brewer-Garrett Company is pleased to be Medina's energy partner. We believe in bringing value to the partnership in areas outside of merely reporting energy savings.

In addition to the administration of Demand Side Management (DSE2) Rider exemption documentation for the High School chiller variable frequency drive, we have applied for a cash rebate for the lighting retrofits on Medina's behalf. Medina has received a one-time cash rebate from FirstEnergy in the amount of $21,508; this value has been included in the Performance Year 3 savings results.

We look forward to continuing this partnership and will work with Medina to maintain and enhance the levels of energy efficiency achieved to date.