Annual Savings Report

State of Ohio Standard Forms and Documents

Project Name Graham Local School District Date November 1,2016
Project Number 1277

Project Summary	
School District Name	Graham Local Schools
State Project Number (SN)	1277
Total Project Cost ($)	$858,632
Length of Contract Term (years)	3
Projected Avg. Annual Savings ($)	$85,655
Construction Started / Completed	June 2012 / June 2013
Reporting Year (1, 2, or 3)	3
ESCO Name	Energy Optimizers USA
ESCO Address	7950 S. County Rd. 25 A Tipp City, OH 45371
ESCO Phone Number	(937) 877-1919
ESCO Contact Person	Shalini Kumaralingam
ESCO E-mail Address	skumar@energyoptusa.com

At a minimum, the following items must be included in the annual report to support the summary table above. Additional information may be included and the items below are in no order within your report.

Please check that the following are included in the report.

- ✓ Baseline utility tables (gas, electric, water/sewage, etc.) including rates
- ✓ Actual monthly utility data for the current year
- ✓ List of Adjustments from baseline to current year and the supporting documentation
- ✓ Adjusted utility tables for the current reporting year
- ✓ Conclusion as to whether the project has its savings projection
- ✓ Conclusion as to whether the project has met its guarantee (for projects approved after September 2013)
- ✓ In case of shortfall, what measures are proposed to remedy the shortfall (if applicable)

Prepared By:

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Shalini Kumaralingam, Sr. Energy Engineer
Energy Optimizers, USA

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Date

Certified By:

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Judy Geers, Treasurer
Graham Local School District

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Date

Table of Contents

1 Annual Savings Summary

Below is a quick overview of the School Energy Performance Contracting Project completed at Graham Local Schools.

Graham Local Schools	Benchmark			Proposed		Actual Post-Project				Normalized Post-Project		
	Consumption & Costs	Adjustments	Net	Consumption & Costs	Savings	Consumption & Costs	Net	Savings	% Change to Benchmark	Consumption & Costs	Normalized Savings	% Change to Benchmark
Electric												
Annual Usage, *kWh*	3,681,694	28,206	3,709,900	3,178,902	530,998	2,846,074	2,846,074	863,826	-23.3%	2,983,063	726,837	-19.6%
Annual Cost, *$*	$383,018	$3,434	$386,453	$331,140	$55,313	$287,858	$287,858	$98,594	-25.5%	$309,448	$73,571	-19.9%
Fuel												
Annual Usage, *MMBtu*	12,193	0	12,193	9,952	2,241	7,878	7,878	4,315	-35.4%	9,246	2,947	-24.2%
Annual Cost, *$*	$144,595	$0	$144,595	$118,023	$26,572	$63,891	$63,891	$80,705	-55.8%	$113,089	$31,506	-21.8%
Total Annual Utility Cost	*$527,614*	*$3,434*	*$531,048*	*$449,163*	*$81,885*	*$351,749*	*$351,749*	*$179,299*	*-33.8%*	*$422,537*	*$105,076*	*-20.4%*
Stipulation/Savings accounted for								*$8,151*			*$8,151*	
Weather												
Cooling Degree Days, *CDD*	1,123			914						-18.6%		
Heating Degree Days, *HDD*	5,762			4,760						-17.4%		

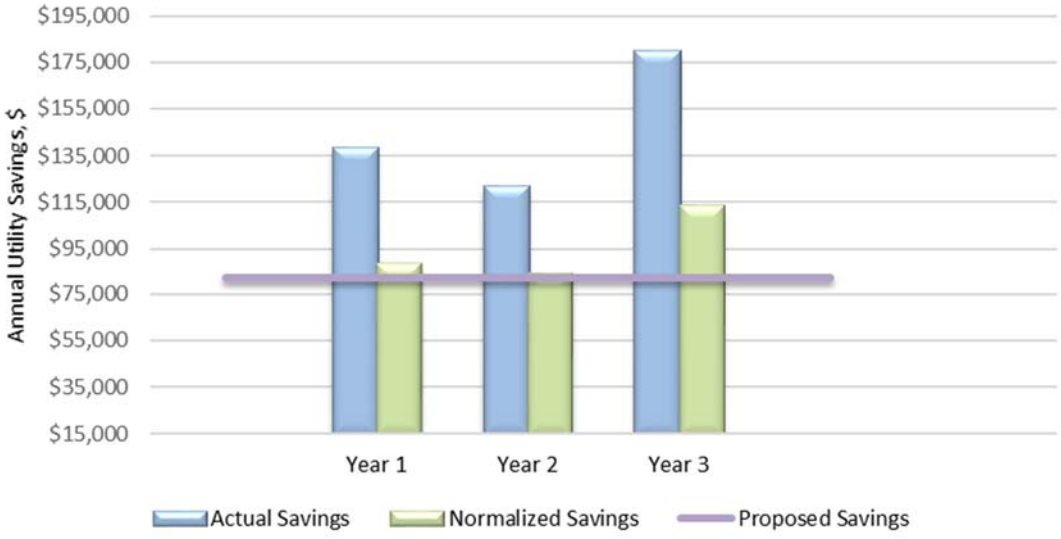
**Normalized savings are adjusted for pricing, weather conditions, and major facility changes to ensure an "apples to apples" comparison with benchmark data.*

***HDD/CDD – Are a measurement of heating and cooling loads and are defined as the amount of degrees per day that the average temperature deviates from 65 F. For example, a cold day with an average temperature of 20 F would have 45 degree-days for that day (65 F – 20 F).*

Savings for 12 Months						
School	**Proposed Savings**		**Actual Savings**		**Normalized Savings**	
	Electric	**Gas**	**Electric**	**Gas**	**Electric**	**Gas**
Middle School	$ 10,722	$ 4,351	$ 44,689	$ 26,598	$ 19,591	$ 17,082
Elementary School	$ 14,854	$ 8,592	$ 45,735	$ 27,901	$ 25,352	$ 16,782
High School	$ 26,209	$ 9,006	$ 8,170	$ 26,206	$ 28,627	$ (2,358)
Administration	$ -	$ -	$ -	$ -	***Stipulated***	
Total	$ 51,785	$ 21,949	$ 98,594	$ 80,705	$ 73,571	$ 31,506

****The proposed savings is a weighted average of the School Performance Contracting Program's calculated savings***

Graham Local Schools' Savings



Proposed Savings		Actual Savings	Normalized Savings
Electric	$55,313	$98,594	$73,571
Natural Gas	$26,572	$80,705	$31,506
Water	$0	$0	$0
Stipulated			$8,151
Total Savings	$81,885	$179,299	$113,227

2 Introduction

The Reconciliation Report is meant to highlight the energy savings due to the School Energy Performance Contracting Project for Graham Local Schools. There is a slight difference in the initial submittal savings versus the proposed savings due to the adjustments in detailed engineering calculations as well as what the true savings are compared to what we guarantee. The implementation of the energy savings measures was completed in June 2013. This report details energy savings only; operations and maintenance savings have not been tabulated.

2.1 Energy Saving Summary

It was anticipated that the School Energy Performance Contracting Project would save the district $81,885 in energy per year. In the one year of post-project energy data considered, it has been calculated that the district saved $113,227 in energy!

Building Considered during the Project:

- Administration
- High School
- Middle School
- Elementary School

Buildings Considered in the Post Project

- High School
- Middle School
- Elementary School

The Administration was sold in early 2015 therefore the utility data was not considered in the reconciliation report and the proposed savings for that building, $8,151, was stipulated.

Reconciliation Report – Energy Savings Summary

Proposed Savings		Actual Savings	Normalized Savings
Electric	$55,313	$98,594	$73,571
Natural Gas	$26,572	$80,705	$31,506
Water	$0	$0	$0
Stipulated			$8,151
Total Savings	$81,885	$179,299	$113,227

Note: The table above only includes Energy Savings; it does not include Operations and Maintenance Savings.

3 Project Adjustments

3.1 Adjustments

In the case of Graham School District, there has been a change in how the facility uses energy which will affect the energy savings tabulated with respect to the benchmark time period.

3.1.1 Admin Addition – Plug Load

The first change is the addition of the Administration in the High School. Due to this addition, there is an increase in the occupancy and therefore increase in the energy consumption. It has been estimated that the building requires 5 kBtu/sq.ft annually in plug load. It is considered that the administration occupies 5% of the High School.

3.1.2 Additional Plug Load

Finally, the School has recently purchased a total of 850 chrome books (assuming 290 chrome books at the High School and 280 chrome books each at the Middle School and Elementary School) for student educational purposes. It is conservatively estimated that each chrome book consumes 14.4 W and are charged for 8 hours per day for 194 days per year. These estimations have been applied to the benchmark to normalize the data considering the alterations that the project changes have enacted on the normalized post-project energy usage. These estimations are displayed in the tables below.

Pre - Project High School				
Meter Read Date	Actual Electricity Usage (kWh)	Additional Plug Load (kWh)	Admin Addition - Plug Load (kWh)	Modified Energy (kWh)
08/10/10	175,884	648	921	177,453
09/07/10	146,817	648	921	148,386
10/08/10	135,546	648	921	137,115
11/09/10	116,267	648	921	117,836
12/08/10	99,954	648	921	101,523
01/10/11	139,699	648	921	141,268
02/04/11	105,886	648	921	107,455
03/08/11	133,173	648	921	134,742
04/07/11	121,903	648	921	123,472
05/10/11	128,724	-	-	128,724
06/07/11	118,343	-	-	118,343
07/08/11	118,937	648	921	120,506
Totals	1,541,133	6,481	9,209	1,556,824

Pre - Project Middle School			
Meter Read Date	Actual Electricity Usage (kWh)	Additional Plug Load (kWh)	Modified Energy (kWh)
08/10/10	100,266	521	100,787
09/08/10	96,686	521	97,207
10/07/10	94,012	521	94,533
11/05/10	82,837	521	83,358
12/07/10	84,720	521	85,241
01/10/11	77,668	521	78,189
02/08/11	71,730	521	72,251
03/09/11	79,057	521	79,578
04/07/11	79,874	521	80,395
05/09/11	86,557	521	87,078
06/10/11	112,661	521	113,182
07/11/11	82,679	521	83,200
Totals	1,048,747	6,258	1,055,005

Pre - Project Elementary School			
Meter Read Date	Actual Electricity (kWh)	Additional Plug Load (kWh)	Modified Energy (kWh)
08/10/10	79,001	521	79,522
09/08/10	88,543	521	89,064
10/07/10	96,839	521	97,360
11/05/10	87,292	521	87,813
12/07/10	91,358	521	91,879
01/10/11	93,593	521	94,114
02/08/11	94,849	521	95,370
03/09/11	92,648	521	93,169
04/07/11	88,673	521	89,194
05/09/11	90,826	521	91,347
06/10/11	117,453	521	117,974
07/11/11	70,739	521	71,260
Totals	1,091,814	6,258	1,098,072

4 Savings Calculations

We at Energy Optimizers, USA find that the most accurate and reliable way of calculating the savings is Option C which is to compare energy usage data from after the project to data from before the project. Energy data from the time period after the project has been completed, or the "post-project period" is measured against the energy data from before the project started, the baseline or benchmark time period. These two time periods are:

Benchmark Time Period:	August 2010 – July 2011
Post-Project Time Period:	July 2015 – June 2016

4.1 Normalized Savings

4.1.1 Need for Normalization

Due to fluctuations in weather and prices in energy, the amount of money spent on energy can change drastically from year-to-year. In order to compare "apples to apples," normalizing the data for the same weather and energy cost baseline is necessary. For example, if the price of electricity increases from $0.10/unit to $0.12/unit from one year to the next, and the owner uses 10% less energy, the overall cost will still increase because of the increased cost per unit.

Normalization is accomplished by adjusting the savings figures by a ratio of the benchmark heating or cooling demand and the post-project heating or cooling demand. Also, the benchmark energy cost rate is multiplied by the energy saved. These two steps remove the variables of weather and energy cost from the savings figures so that they are comparable to the anticipated savings. In turn, this allows us to determine the accurate amount of energy that was saved due to the School Energy Performance Contracting project.

4.1.2 Usage Dependency

The first step is separating each respective energy usage by two or three categories, namely Weather-dependent, Occupancy-dependent, and/or Independent use. These dependency percentages were determined using "Energy Explorer," regression model software developed by Dr. Kelly Kissock at the University of Dayton. The percentages will allow the energy usage that is dependent on the weather to be normalized with respect to changes in weather from year to year. The independent portion is separated so it is not normalized for weather or occupancy. These percentages determined using "Energy Explorer" for the district are displayed in the table below.

Energy Usage Dependence Percentages

Pre - Project						
Graham Local Schools	**Electric**			**Natural Gas**		
	Ind %	Wea %	Occ %	Ind %	Wea %	Occ %
Middle School	81.0%	10.0%	9.0%	34.0%	66.0%	0.0%
Elementary School	73.0%	1.0%	26.0%	42.0%	32.0%	26.0%
High School	94.0%	6.0%	0.0%	86.0%	13.0%	1.0%

Post - Project						
Graham Local Schools	**Electric**			**Natural Gas**		
	Ind %	Wea %	Occ %	Ind %	Wea %	Occ %
Middle School	79.0%	21.0%	0.0%	14.9%	59.1%	26.0%
Elementary School	79.0%	21.0%	0.0%	25.2%	74.8%	0.0%
High School	79.0%	21.0%	0.0%	5.3%	94.7%	0.0%

The following was assumed if the R^2 value of the regression model was below 0.75.

Criteria	**Electric**			**Natural Gas**		
	Ind %	Wea %	Occ %	Ind %	Wea %	Occ %
Building with Cooling	79.0%	21.0%	0.0%	8.0%	92.0%	0.0%

4.1.3 Weather Differences

To adjust for differences in weather, it is necessary to determine the annual heating and cooling demand. Energy Optimizers, USA chooses to use heating degree days (HDD) and cooling degree days (CDD) for this measurement, as degree days are a great representation of the typical heating/cooling requirements for a building.

For example, the process of calculating the annual heating degree days is:
When the average outdoor air temperature (Toa) is less than the balance point temperature (Tbal - the outdoor air temperature at which heating/cooling is initiated), calculate the difference between the balance point temperature and average outdoor air temperature.
Sum that difference up for all days in the given year.

This equates to the heating degree days per year, and gives us an estimate of the annual heating energy use for a given location and balance temperature. The calculation for heating degree days is represented in the equation below; the process is nearly identical for cooling degree days.

$$Heating\ Degree\ Days = \sum_{i=1}^{365} (T_{bal} - T_{oa,i})$$

The heating and cooling degree days for the both time periods are displayed in the table below.

Heating and Cooling Degree Days

Weather Data	Baseline	Post Project	% Change to Baseline
Cooling Degree Days CDD	1,123	914	-18.6%
Heating Degree Days HDD	5,762	4,760	-17.4%

Using the heating and cooling degree days for each time period, as well as the Baseline Energy Signature breakdown from the initial analysis of the district's energy use, we were able to determine how much of the total energy was used for heating or cooling the facility. The percentage breakdown allows us to adjust the weather dependent portion of the usage with the ratio of heating/cooling degree days of the two time periods, which enables us to calculate the normalized post-project savings. This, in turn, will allow us to see how well the project has performed in comparison to the anticipated savings.

4.1.4 Electricity

Now that the heating and cooling degree days have been determined, it is possible to normalize the energy savings to determine just how much energy and money the School Energy Performance Contracting project saved the District. To adjust for the electricity cost per unit change from the benchmark to the post-project time frame, we will multiply the weather normalized savings by the benchmark electricity cost per unit. The calculations and results are displayed below.

Weather Normalized Electricity Usage Calculations

Non-Weather Normalized Data			
Electricity Usage Data	**Baseline**	**Post-Project**	**Change from Baseline**
Annual kWh Usage	3,709,900	2,846,074	-23.3%
Annual kWh Cost	$386,453	$287,858	($98,594)
Average Cost per kWh	$0.10	$0.10	-2.9%
Annual kW Usage (Demand)	13,774	3,161	-77.1%
Rate Structure: Cost per kW; Cost per kWh	$0.00	$0.00	
Electrical kBtu/SqFt	36.21	27.78	-23.3%

Weather Normalized Data			
Electricity Usage Data	**Baseline**	**Post-Project**	**Change from Baseline**
Independent kWh Usage	3,500,009	2,248,398	-35.8%
Weather-Dependent kWh Usage	209,891	597,676	184.8%
Electrical kWh/CDD	186.90	654.20	250.0%
Weather Normalized kWh	3,709,900	2,983,063	-19.6%
Total Electrical kWh/CDD	3,304	3,265	-1.2%

4.1.5 Natural Gas/ Propane

The same process that was completed to ascertain the normalized electricity savings has been executed for the natural gas/propane side of the savings venture. The calculations and savings associated are shown below.

Weather Normalized Natural Gas/Propane Usage Calculations

Non-Weather Normalized Data			
Heating Fuel Usage Data	**Baseline**	**Post-Project**	**Change from Baseline**
Annual MMBtu Usage	12,193	7,878	-35.4%
Annual MMBtu Cost	$144,595	$63,891	($80,705)
Average Cost per MMBtu	$11.86	$8.11	-31.6%
Heating Fuel kBtu/SqFt	34.87	22.53	-35.4%
Weather Normalized Data			
Heating Fuel Usage Data	**Baseline**	**Post-Project**	**Change from Baseline**
Independent MMBtu Usage	8084	1378	-82.9%
Weather-Dependent MMBtu Usage	4,109	6,500	58.2%
Heating Fuel MMBtu/HDD	0.71	1.37	91.5%
Weather Normalized MMBtu	12,193	9,246	-24.2%
Total Heating Fuel MMBtu/HDD	2.12	1.94	-8.2%

4.1.6 Savings Summary

Proposed Savings		**Actual Savings**	**Normalized Savings**
Electric	$55,313	$98,594	$73,571
Natural Gas	$26,572	$80,705	$31,506
Water	$0	$0	$0
Stipulated			$8,151
Total Savings	$81,885	$179,299	$113,227

5 Proposed Measures for Shortfall in Savings

The School achieved normalized savings of $113,227 compared to the proposed savings of $81,885. There are no shortfalls in savings.

6 Appendices

6.1 District Reconciliation Analysis

Graham Local Schools

District Summary

Reconciliation Report: HVAC, Weather and Price Normalized

Baseline Energy Use Time Period:	August 2010 - July 2011			Post-Project Energy Use Time Period:	July 2015 - June 2016	

Note: Energy savings figures only reflect (12) months of post-project data.

Weather Data	Cooling Degree Days (CDD)	Baseline:	1,123	914	Difference from Baseline:	-18.6%
Weather Stn. Location: Dayton	Heating Degree Days (HDD)	Baseline:	5,762	4,760	Difference from Baseline:	-17.4%

ENERGY USAGE COMPARISON

Electricty Usage Data

Non-Weather Normalized Data

Electricity Usage Data	Baseline	Post-Project	Change from Baseline
Annual kWh Usage	3,709,900	2,846,074	-23.3%
Annual kWh Cost	$386,453	$287,858	($98,594)
Average Cost per kWh	$0.10	$0.10	-2.9%
Annual kW Usage (Demand)	13,774	3,161	-77.1%
Rate Structure: Cost per kW; Cost per kWh	$0.00	$0.00	
Electrical kBtu/SqFt	36.21	27.78	-23.3%

Weather Normalized Data

Electricity Usage Data	Baseline	Post-Project	Change from Baseline
Independent kWh Usage	3,500,009	2,248,398	-35.8%
Weather-Dependent kWh Usage	209,891	597,676	184.8%
Electrical kWh/CDD	186.90	654.20	250.0%
Weather Normalized kWh	3,709,900	2,983,063	-19.6%
Total Electrical kWh/CDD	3,304	3,265	-1.2%

Heating Fuel Usage Data

Non-Weather Normalized Data

Heating Fuel Usage Data	Baseline	Post-Project	Change from Baseline
Annual MMBtu Usage	12,193	7,878	-35.4%
Annual MMBtu Cost	$144,595	$63,891	($80,705)
Average Cost per MMBtu	$11.86	$8.11	-31.6%
Heating Fuel kBtu/SqFt	34.87	22.53	-35.4%

Weather Normalized Data

Heating Fuel Usage Data	Baseline	Post-Project	Change from Baseline
Independent MMBtu Usage	8084	1378	-82.9%
Weather-Dependent MMBtu Usage	4,109	6,500	58.2%
Heating Fuel MMBtu/HDD	0.71	1.37	91.5%
Weather Normalized MMBtu	12,193	9,246	-24.2%
Total Heating Fuel MMBtu/HDD	2.12	1.94	-8.2%

Savings Summary

	Proposed Savings - Unit	Proposed Savings - $	Bill to Bill Savings by Unit	Bill to Bill Savings - $	Normalized Savings - Unit	Normalized Savings - $
Electrical Savings - kWh	530,998	$55,313	863,826	$98,594	726,837	$73,571
Heating Fuel Savings - MMBtu	2,241	$26,572	4,315	$80,705	2,947	$31,506
Stipulation/Savings accounted for						$8,151

TOTAL SAVINGS:

Anticipated Savings	$81,885	Bill to Bill Comparison Savings	$179,299	Normalized Savings	$113,227

6.2 District Utility Analysis

Graham Local Schools

District Summary

Post Project Period July 2015 - June 2016

	FACILITY LOCATION NAME	FACILITY SIZE (S.F.)	ANNUAL ELECTRIC KWH	ANNUAL ELECTRIC COST	ANNUAL KW	COST/ KWH	KBTU/ SF	ANNUAL FUEL (Total) MMBTU	ANNUAL FUEL (Total) COST (Total)	COST/ MMBTU	KBTU/ SF	TOTAL ANNUAL COST	TOTAL KBTU/SF	TOTAL $/SF
1	Middle School	103,814	857,022	$ 87,186	3160.5	$ 0.102	28.18	1,655	$ 10,760	$ 6.50	15.94	$ 97,946	44.12	$ 0.94
2	Elementary School	120,108	840,915	$ 82,740	0.0	$ 0.098	23.90	1,867	$ 12,185	$ 6.53	15.54	$ 94,925	39.44	$ 0.79
3	High School	125,727	1,148,137	$ 117,932	0.0	$ 0.103	31.17	4,356	$ 40,946	$ -	34.65	$ 158,878	65.81	$ 1.26
	District Totals	**349,649**	**2,846,074**	**$ 287,858**	**3160.5**	**$ 0.101**	**27.78**	**7,878**	**$ 63,891**	**$ 8.11**	**22.53**	**$ 351,749**	**50.31**	**$ 1.01**

Baseline Period August 2010 - July 2011

	FACILITY LOCATION NAME	FACILITY SIZE (S.F.)	ANNUAL ELECTRIC KWH	ANNUAL ELECTRIC COST	ANNUAL KW	COST/ KWH	KBTU/ SF	ANNUAL FUEL (Total) MMBTU	ANNUAL FUEL (Total) COST (Total)	COST/ MMBTU	KBTU/ SF	TOTAL ANNUAL COST	TOTAL KBTU/SF	TOTAL $/SF
1	Middle School	103,814	1,055,005	$ 131,876	4521.8	$ 0.125	34.68	3,429	$ 37,357	$ 10.89	33.03	$ 169,233	67.71	$ 1.63
2	Elementary School	120,108	1,098,072	$ 128,474	4331.4	$ 0.117	31.20	3,717	$ 40,086	$ 10.78	30.95	$ 168,561	62.15	$ 1.40
3	High School	125,727	1,556,824	$ 126,103	4921.0	$ 0.081	42.26	5,047	$ 67,151	$ 13.31	40.14	$ 193,254	82.40	$ 1.54
	District Totals	**349,649**	**3,709,900**	**$ 386,453**	**13774.2**	**$ 0.104**	36.21	**12,193**	**$ 144,595**	**$ 11.86**	**34.87**	**$ 531,048**	**71.08**	**$ 1.52**

6.3 High School Utility Analysis – Adjusted Data

High School										
7800 W US Hwy 36, St.Paris, OH								**Facility Size**		125,727
	Electricity				Fuel				Summary	
Post Project Data	**Meter Read Date**	**Energy (kWh)**	**Cost ($)**	**Cost/ kWh**	**Meter Read Date**	**Fuel (MMBtu)**	**Cost ($)**	**Cost/ MMBtu**	**Total ($)**	**$/SF**
	08/10/15	71,184	$7,744	$ 0.109	08/01/15	6.3	$59	$ 9.40	$7,145	$0.06
	09/09/15	99,954	$10,193	$ 0.102	09/01/15	31.5	$296	$ 9.40	$7,803	$0.06
	10/08/15	110,335	$12,811	$ 0.116	10/01/15	267.2	$2,512	$ 9.40	$10,489	$0.08
	11/07/15	104,403	$11,397	$ 0.109	11/01/15	471.9	$4,436	$ 9.40	$15,323	$0.12
	12/05/15	87,497	$9,931	$ 0.114	12/01/15	613.9	$5,771	$ 9.40	$15,832	$0.13
	01/08/16	94,615	$8,966	$ 0.095	01/01/16	1,054.1	$9,908	$ 9.40	$15,702	$0.12
	02/08/16	102,920	$9,165	$ 0.089	02/01/16	826.2	$7,766	$ 9.40	$18,874	$0.15
	03/09/16	98,471	$10,311	$ 0.105	03/01/16	498.9	$4,690	$ 9.40	$16,931	$0.13
	04/08/16	98,175	$10,539	$ 0.107	04/01/16	388.7	$3,654	$ 9.40	$15,001	$0.12
	05/09/16	103,513	$7,763	$ 0.075	05/01/16	184.3	$1,733	$ 9.40	$14,193	$0.11
	06/09/16	105,293	$12,028	$ 0.114	06/01/16	6.4	$60	$ 9.40	$9,496	$0.08
	07/10/15	71,777	$7,085	$ 0.099	07/02/15	6.4	$60	$ 9.40	$12,089	$0.10
	Totals	1,148,137	$117,932	$ 0.103		4,355.9	$40,946	$ 9.40	$158,878	$1.26
	Electricity				Fuel				Summary	
Baseline Pre-Project Data	**Meter Read Date**	**Energy (kWh)**	**Cost ($)**	**Cost/ kWh**	**Meter Read Date**	**Fuel (MMBtu)**	**Cost ($)**	**Cost/ MMBtu**	**Total ($)**	**$/SF**
	08/10/10	177,453	$14,374	$ 0.081	07/31/10	435.5	$ 5,795	$ 13.31	$20,169	$0.16
	09/07/10	148,386	$12,019	$ 0.081	08/31/10	435.5	$ 5,795	$ 13.31	$17,814	$0.14
	10/08/10	137,115	$11,106	$ 0.081	09/30/10	348.4	$ 4,636	$ 13.31	$15,742	$0.13
	11/09/10	117,836	$9,545	$ 0.081	10/31/10	522.6	$ 6,954	$ 13.31	$16,499	$0.13
	12/08/10	101,523	$8,223	$ 0.081	11/30/10	348.4	$ 4,636	$ 13.31	$12,859	$0.10
	01/10/11	141,268	$11,443	$ 0.081	12/31/10	522.6	$ 6,954	$ 13.31	$18,397	$0.15
	02/04/11	107,455	$8,704	$ 0.081	01/31/11	871.1	$ 11,590	$ 13.31	$20,294	$0.16
	03/08/11	134,742	$10,914	$ 0.081	02/28/11	545.9	$ 7,263	$ 13.31	$18,177	$0.14
	04/07/11	123,472	$10,001	$ 0.081	03/31/11	325.2	$ 4,327	$ 13.31	$14,328	$0.11
	05/10/11	128,724	$10,427	$ 0.081	04/30/11	278.0	$ 3,699	$ 13.31	$14,126	$0.11
	06/07/11	118,343	$9,586	$ 0.081	05/31/11	231.4	$ 3,080	$ 13.31	$12,665	$0.10
	07/08/11	120,506	$9,761	$ 0.081	06/30/11	182.0	$ 2,422	$ 13.31	$12,183	$0.10
	Totals	1,556,824	126,103	$ 0.081		5,046.8	$ 67,151	$ 13.31	$193,254	$1.54

6.4 High School Utility Analysis – Actual Data

High School

Post Project Data

Electricity				Fuel			
Meter Read	**Energy (kWh)**	**Cost ($)**	**Cost/ kWh**	**Meter Read**	**Fuel (MMBtu)**	**Cost ($)**	**Cost/ MMBtu**
08/10/15	71,184	$7,744	$ 0.109	08/01/15	6	$59	$ 9.40
09/09/15	99,954	$10,193	$ 0.102	09/01/15	31	$296	$ 9.40
10/08/15	110,335	$12,811	$ 0.116	10/01/15	267	$2,512	$ 9.40
11/07/15	104,403	$11,397	$ 0.109	11/01/15	472	$4,436	$ 9.40
12/05/16	87,497	$9,931	$ 0.114	12/01/15	614	$5,771	$ 9.40
01/08/16	94,615	$8,966	$ 0.095	01/01/16	1,054	$9,908	$ 9.40
02/08/16	102,920	$9,165	$ 0.089	02/01/16	826	$7,766	$ 9.40
03/09/16	98,471	$10,311	$ 0.105	03/01/16	499	$4,690	$ 9.40
04/08/16	98,175	$10,539	$ 0.107	04/01/16	389	$3,654	$ 9.40
05/09/16	103,513	$7,763	$ 0.075	05/01/16	184	$1,733	$ 9.40
06/09/16	105,293	$12,028	$ 0.114	06/01/16	6	$60	$ 9.40
07/10/15	71,777	$7,085	$ 0.099	07/02/15	6	$60	$ 9.40
Totals	1,148,137	$117,932	$ 0.103		4,356	$40,946	$ 9.40

Baseline Pre-Project Data

Electricity				Fuel			
Meter Read	**Energy (kWh)**	**Cost ($)**	**Cost/ kWh**	**Meter Read**	**Fuel (MMBtu)**	**Cost ($)**	**Cost/ MMBtu**
08/10/10	175,884	$13,408	$ 0.076	07/31/10	435.5	$5,795	$ 13.31
09/08/10	146,817	$12,314	$ 0.084	08/31/10	435.5	$5,795	$ 13.31
10/07/10	135,546	$11,733	$ 0.087	09/30/10	348.4	$4,636	$ 13.31
11/05/10	116,267	$6,765	$ 0.058	10/31/10	522.6	$6,954	$ 13.31
12/07/10	99,954	$9,449	$ 0.095	11/30/10	348.4	$4,636	$ 13.31
01/10/11	139,699	$10,586	$ 0.076	12/31/10	522.6	$6,954	$ 13.31
02/08/11	105,886	$8,878	$ 0.084	01/31/11	871.1	$11,590	$ 13.31
03/09/11	133,173	$9,857	$ 0.074	02/28/11	545.9	$7,263	$ 13.31
04/07/11	121,903	$9,353	$ 0.077	03/31/11	325.2	$4,327	$ 13.31
05/09/11	128,724	$9,780	$ 0.076	04/30/11	278.0	$3,699	$ 13.31
06/10/11	118,343	$10,371	$ 0.088	05/31/11	231.4	$3,080	$ 13.31
07/11/11	118,937	$11,781	$ 0.099	06/30/11	182.0	$2,422	$ 13.31
Totals	1,541,133	$124,274	$ 0.081		5,046.8	$ 67,151	$ 13.31

6.5 Elementary School Utility Analysis - Adjusted

Elementary School

9464 W US Rt 36, St.Paris, OH	Facility Size	120,108

Post Project Data

	Electricity				Fuel				Summary	
Meter Read Date	Energy (kWh)	Cost ($)	Cost/ kWh		Meter Read Date	Fuel (MMBtu)	Cost ($)	Cost/ MMBtu	Total ($)	$/SF
08/10/15	38,492	$4,618	$	0.120	08/01/15	7.2	$42	$ 5.88	$4,571	$0.04
09/09/15	76,140	$7,984	$	0.105	09/01/15	29.9	$171	$ 5.73	$4,660	$0.04
10/08/15	74,811	$7,777	$	0.104	10/01/15	40.7	$259	$ 6.37	$8,155	$0.07
11/07/15	67,591	$6,543	$	0.097	11/01/15	121.9	$845	$ 6.93	$8,036	$0.07
12/05/15	65,494	$6,579	$	0.100	12/01/15	212.3	$1,411	$ 6.65	$7,387	$0.06
01/08/16	81,369	$7,560	$	0.093	01/01/16	278.4	$1,882	$ 6.76	$7,990	$0.07
02/08/16	86,002	$7,678	$	0.089	02/01/16	433.6	$2,772	$ 6.39	$9,443	$0.08
03/09/16	92,801	$8,357	$	0.090	03/01/16	281.8	$1,801	$ 6.39	$10,449	$0.09
04/08/16	74,991	$6,945	$	0.093	04/01/16	202.2	$1,290	$ 6.38	$10,158	$0.08
05/09/16	78,472	$7,263	$	0.093	05/01/16	157.0	$1,072	$ 6.83	$8,236	$0.07
06/09/16	69,495	$7,008	$	0.101	06/01/16	77.7	$497	$ 6.39	$8,335	$0.07
07/10/15	35,257	$4,428	$	0.126	07/02/15	24.2	$143	$ 5.91	$7,505	$0.06
Totals	840,915	82,740	$	0.098		1,867.0	12,185.3	$ 6.53	$94,925	0.790331

Baseline Pre-Project Data

	Electricity				Fuel				Summary	
Meter Read Date	Energy (kWh)	Cost ($)	Cost/ kWh		Meter Read Date	Fuel (MMBtu)	Cost ($)	Cost/ MMBtu	Total ($)	$/SF
08/10/10	79,522	$9,304	$	0.117	07/31/10	142.0	$ 1,044	$ 7.35	$10,348	$0.09
09/08/10	89,064	$10,421	$	0.117	08/31/10	144.0	$ 1,011	$ 7.02	$11,432	$0.10
10/07/10	97,360	$11,391	$	0.117	09/30/10	165.0	$ 1,183	$ 7.17	$12,574	$0.10
11/05/10	87,813	$10,274	$	0.117	10/31/10	338.0	$ 3,555	$ 10.52	$13,829	$0.12
12/07/10	91,879	$10,750	$	0.117	11/30/10	345.0	$ 4,136	$ 11.99	$14,885	$0.12
01/10/11	94,114	$11,011	$	0.117	12/31/10	536.0	$ 5,905	$ 11.02	$16,916	$0.14
02/08/11	95,370	$11,158	$	0.117	01/31/11	688.0	$ 7,389	$ 10.74	$18,547	$0.15
03/09/11	93,169	$10,901	$	0.117	02/28/11	570.0	$ 6,380	$ 11.19	$17,281	$0.14
04/07/11	89,194	$10,436	$	0.117	03/31/11	342.0	$ 4,123	$ 12.05	$14,558	$0.12
05/09/11	91,347	$10,688	$	0.117	04/30/11	175.0	$ 2,470	$ 14.11	$13,158	$0.11
06/10/11	117,974	$13,803	$	0.117	05/31/11	141.0	$ 1,726	$ 12.24	$15,529	$0.13
07/11/11	71,260	$8,337	$	0.117	06/30/11	131.0	$ 1,166	$ 8.90	$9,503	$0.08
Totals	1,098,072	128,474	$	0.117		3,717.0	$ 40,086	$ 10.78	$168,561	1.40341

6.6 Elementary School Utility Analysis – Actual

Post Project Data

	Electricity				Fuel			
	Meter Read	Energy (kWh)	Cost ($)	Cost/ kWh	Meter Read	Fuel (MMBtu)	Cost ($)	Cost/ MMBtu
	07/10/15	35,257	$4,428	$ 0.126	07/02/15	24	$143	$ 5.91
	08/10/15	38,492	$4,618	$ 0.120	08/01/15	7	$42	$ 5.88
	09/09/15	76,140	$7,984	$ 0.105	09/01/15	30	$171	$ 5.73
	10/08/15	74,811	$7,777	$ 0.104	10/01/15	41	$259	$ 6.37
	11/07/15	67,591	$6,543	$ 0.097	11/01/15	122	$845	$ 6.93
	12/05/16	65,494	$6,579	$ 0.100	12/01/15	212	$1,411	$ 6.65
	01/08/16	81,369	$7,560	$ 0.093	01/01/16	278	$1,882	$ 6.76
	02/08/16	86,002	$7,678	$ 0.089	02/01/16	434	$2,772	$ 6.39
	03/09/16	92,801	$8,357	$ 0.090	03/01/16	282	$1,801	$ 6.39
	04/08/16	74,991	$6,945	$ 0.093	04/01/16	202	$1,290	$ 6.38
	05/09/16	78,472	$7,263	$ 0.093	05/01/16	157	$1,072	$ 6.83
	06/09/16	69,495	$7,008	$ 0.101	06/01/16	78	$497	$ 6.39
	Totals	840,915	$82,740	$ 0.098		1,867	$12,185	$ 6.53

Baseline Pre-Project Data

	Electricity				Fuel			
	Meter Read	Energy (kWh)	Cost ($)	Cost/ kWh	Meter Read	Fuel (MMBtu)	Cost ($)	Cost/ MMBtu
	08/10/10	79,001	$9,507	$ 0.120	07/31/10	142.0	$1,044	$ 7.35
	09/08/10	88,543	$11,474	$ 0.130	08/31/10	144.0	$1,011	$ 7.02
	10/07/10	96,839	$11,950	$ 0.123	09/30/10	165.0	$1,183	$ 7.17
	11/05/10	87,292	$10,507	$ 0.120	10/31/10	338.0	$3,555	$ 10.52
	12/07/10	91,358	$10,363	$ 0.113	11/30/10	345.0	$4,136	$ 11.99
	01/10/11	93,593	$10,713	$ 0.114	12/31/10	536.0	$5,905	$ 11.02
	02/08/11	94,849	$11,073	$ 0.117	01/31/11	688.0	$7,389	$ 10.74
	03/09/11	92,648	$10,528	$ 0.114	02/28/11	570.0	$6,380	$ 11.19
	04/07/11	88,673	$10,302	$ 0.116	03/31/11	342.0	$4,123	$ 12.05
	05/09/11	90,826	$9,622	$ 0.106	04/30/11	175.0	$2,470	$ 14.11
	06/10/11	117,453	$12,998	$ 0.111	05/31/11	141.0	$1,726	$ 12.24
	07/11/11	70,739	$8,876	$ 0.125	06/30/11	131.0	$1,166	$ 8.90
	Totals	1,091,814	$127,912	$ 0.117		3,717.0	$ 40,086	$ 10.78

6.7 Middle School Utility Analysis – Adjusted

Middle School

9644 W US Rt 36,St. Paris, OH	Facility Size	103814

Post Project Data

Electricity				Fuel				Summary	
Meter Read Date	Energy (kWh)	Cost ($)	Cost/ kWh	Meter Read Date	Fuel (MMBtu)	Cost ($)	Cost/ MMBtu	Total ($)	$/SF
08/10/15	57,905	6,208	$ 0.107	08/01/15	29.47	$ 172.4	$ 5.85	$6,158	$ 0.06
09/09/15	84,439	8,886	$ 0.105	09/01/15	40.36	$ 233.6	$ 5.79	$6,380	$ 0.06
10/08/15	85,496	8,721	$ 0.102	10/01/15	37.71	$ 240.1	$ 6.37	$9,119	$ 0.09
11/07/15	80,146	7,822	$ 0.098	11/01/15	92.74	$ 640.7	$ 6.91	$8,961	$ 0.09
12/05/15	64,022	6,553	$ 0.102	12/01/15	150.25	$ 998.3	$ 6.64	$8,462	$ 0.08
01/08/16	75,486	7,345	$ 0.097	01/01/16	211.56	$ 1,430.7	$ 6.76	$7,551	$ 0.07
02/08/16	65,333	6,608	$ 0.101	02/01/16	370.23	$ 2,366.5	$ 6.39	$8,775	$ 0.08
03/09/16	69,691	6,927	$ 0.099	03/01/16	213.81	$ 1,366.7	$ 6.39	$8,975	$ 0.09
04/08/16	64,949	6,631	$ 0.102	04/01/16	195.23	$ 1,247.9	$ 6.39	$8,294	$ 0.08
05/09/16	77,726	7,689	$ 0.099	05/01/16	171.10	$ 1,170.1	$ 6.84	$7,879	$ 0.08
06/09/16	78,906	7,884	$ 0.100	06/01/16	101.36	$ 647.9	$ 6.39	$8,859	$ 0.09
07/10/15	52,923	5,913	$ 0.112	07/02/15	41.39	$ 244.8	$ 5.91	$8,532	$ 0.08
Totals	857,022	87,186	$ 0.102		1,655.2	10,759.6	$ 6.50	$97,946	$ 0.94

Baseline Pre-Project Data

Electricity				Fuel				Summary	
Meter Read Date	Energy (kWh)	Cost ($)	Cost/ kWh	Meter Read Date	Fuel (MMBtu)	Cost ($)	Cost/ MMBtu	Total ($)	$/SF
08/10/10	100,787	$12,598	$ 0.125	7/31/2010	150	$1,103	$ 7.35	$13,702	$ 0.13
09/08/10	97,207	$12,151	$ 0.125	8/31/2010	93	$653	$ 7.02	$12,804	$ 0.12
10/07/10	94,533	$11,817	$ 0.125	9/30/2010	110	$787	$ 7.15	$12,603	$ 0.12
11/05/10	83,358	$10,420	$ 0.125	10/31/2010	259	$2,723	$ 10.51	$13,142	$ 0.13
12/07/10	85,241	$10,655	$ 0.125	11/30/2010	306	$3,667	$ 11.98	$14,322	$ 0.14
01/10/11	78,189	$9,774	$ 0.125	12/31/2010	609	$6,708	$ 11.01	$16,481	$ 0.16
02/08/11	72,251	$9,031	$ 0.125	1/31/2011	602	$6,464	$ 10.74	$15,495	$ 0.15
03/09/11	79,578	$9,947	$ 0.125	2/28/2011	517	$5,787	$ 11.19	$15,734	$ 0.15
04/07/11	80,395	$10,049	$ 0.125	3/31/2011	308	$3,712	$ 12.05	$13,761	$ 0.13
05/09/11	87,078	$10,885	$ 0.125	4/30/2011	191	$2,697	$ 14.12	$13,582	$ 0.13
06/10/11	113,182	$14,148	$ 0.125	5/31/2011	159	$1,946	$ 12.24	$16,094	$ 0.16
07/11/11	83,200	$10,400	$ 0.125	6/30/2011	125	$1,112	$ 8.90	$11,512	$ 0.11
Totals	1,055,005	131,876	$ 0.125		3,429.0	$ 37,357	$ 10.89	$169,233	$ 1.63

6.8 Middle School Utility Analysis – Actual

Post Project Data

	Electricity				Fuel			
	Meter Read	Energy (kWh)	Cost ($)	Cost/ kWh	Meter Read	Fuel (MMBtu)	Cost ($)	Cost/ MMBtu
	07/10/15	52,923	$5,913	$ 0.112	07/02/15	$ 41	$ 244.8	$ 5.91
	08/10/15	57,905	$6,208	$ 0.107	08/01/15	$ 29	$ 172.4	$ 5.85
	09/09/15	84,439	$8,886	$ 0.105	09/01/15	$ 40	$ 233.6	$ 5.79
	10/08/15	85,496	$8,721	$ 0.102	10/01/15	$ 38	$ 240.1	$ 6.37
	11/07/15	80,146	$7,822	$ 0.098	11/01/15	$ 93	$ 640.7	$ 6.91
	12/05/16	64,022	$6,553	$ 0.102	12/01/15	$ 150	$ 998.3	$ 6.64
	01/08/16	75,486	$7,345	$ 0.097	01/01/16	$ 212	$1,430.7	$ 6.76
	02/08/16	65,333	$6,608	$ 0.101	02/01/16	$ 370	$2,366.5	$ 6.39
	03/09/16	69,691	$6,927	$ 0.099	03/01/16	$ 214	$1,366.7	$ 6.39
	04/08/16	64,949	$6,631	$ 0.102	04/01/16	$ 195	$1,247.9	$ 6.39
	05/09/16	77,726	$7,689	$ 0.099	05/01/16	$ 171	$1,170.1	$ 6.84
	06/09/16	78,906	$7,884	$ 0.100	06/01/16	$ 101	$ 647.9	$ 6.39
	Totals	857,022	$87,186	$ 0.102		1,655	$10,760	$ 6.50

Baseline Pre-Project Data

	Electricity				Fuel			
	Meter Read	Energy (kWh)	Cost ($)	Cost/ kWh	Meter Read	Fuel (MMBtu)	Cost ($)	Cost/ MMBtu
	08/10/10	100,266	$11,740	$ 0.117	07/31/10	150.0	$1,103	$ 7.35
	09/08/10	96,686	$11,549	$ 0.119	08/31/10	93.0	$653	$ 7.02
	10/07/10	94,012	$11,532	$ 0.123	09/30/10	110.0	$787	$ 7.15
	11/05/10	82,837	$11,100	$ 0.134	10/31/10	259.0	$2,723	$ 10.51
	12/07/10	84,720	$10,698	$ 0.126	11/30/10	306.0	$3,667	$ 11.98
	01/10/11	77,668	$10,528	$ 0.136	12/31/10	609.0	$6,708	$ 11.01
	02/08/11	71,730	$10,226	$ 0.143	01/31/11	602.0	$6,464	$ 10.74
	03/09/11	79,057	$10,509	$ 0.133	02/28/11	517.0	$5,787	$ 11.19
	04/07/11	79,874	$10,524	$ 0.132	03/31/11	308.0	$3,712	$ 12.05
	05/09/11	86,557	$9,978	$ 0.115	04/30/11	191.0	$2,697	$ 14.12
	06/10/11	112,661	$12,865	$ 0.114	05/31/11	159.0	$1,946	$ 12.24
	07/11/11	82,679	$9,585	$ 0.116	06/30/11	125.0	$1,113	$ 8.90
	Totals	1,048,747	$130,833	$ 0.125		3,429.0	$ 37,358	$ 10.89