Annual Savings Report
State of Ohio Standard Forms and Documents

Project Name Riverside Local Schools Date 3/1/2017
Project Number 1354

Project Summary		
School District Name	Riverside Local Schools	
State Project Number (SN)	1354	
School Building Name(s)	Riverside High School JR Williams Bus Garage LaMuth Middle School Field House Hale Road Buckeye Leroy Madison Melridge Hadden	
Total Project Cost ($)	$1,246,110	
Length of Contract Term (years)	15 years	
Projected Avg. Annual Savings ($)	$85,236 - Energy and Operational	
Construction Started/Completed	Start Date: 3/1/2015	Completion Date: 12/31/2015
Reporting Year (1, 2 or 3)	1	
ESCO Name	CCG Energy Solutions	
ESCO Address	3868 Congress Parkway Richfield, OH 44286	
ESCO Phone Number	330-659-3120	
ESCO Contact Person	Scott Ulrich	
ESCO E-mail Address	sulrich@ccgenergysolutions.com	

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

Annual Savings Report

Prepared by:

Scott Ulrich , Energy Engineer
CCG Energy Solutions

3/7/17
Date

Certified by:

Gary Platko, Treasurer
Riverside Local Schools

3/7/17
Date

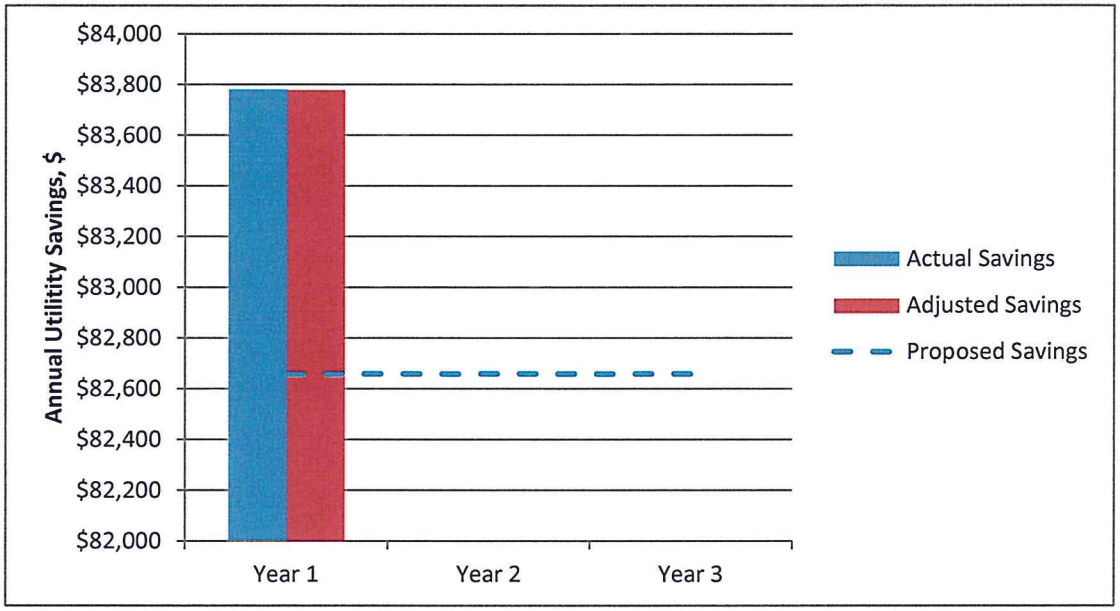
Utility Table

Electricity	**Baseline**	**Proposed**	**Actual**	**Adjusted Baseline year**	**Adjusted Current year**
Annual Usage, kWh	2,609,608	1,927,116	N/A	1,917,992	N/A
Annual Cost, $	$314,848	$232,189	$N/A	$231,067	$N/A
CDD	N/A		N/A	N/A	N/A
Fuel (if applicable)	**Baseline**	**Proposed**	**Actual**	**Adjusted Baseline year**	**Adjusted Current year**
Annual Usage, _____ Units	N/A	N/A	N/A	N/A	N/A
Annual Cost, $	$N/A	$N/A	$N/A	$N/A	$N/A
HDD	N/A		N/A	N/A	N/A
Water/Sewage (if applicable)					
Annual Usage _____ Units	N/A	N/A	N/A	N/A	N/A
Annual Cost, $	$N/A	$N/A	$N/A	$N/A	$N/A
Total Annual Utility Cost, $	$314,848(A)	$232,189(B)	$N/A(C)	$231,067(D)	$N/A(E)

Note: Adjustments can be to baseline year or current (measured) year, or both if baselines are adjusted to a historical average. Adjustments include weather, occupancy, utility rate, over-rides, additions, etc. Please justify these adjustments in the body of the report.

The project was an all lighting project. Savings were measured and calculated using Option A. Therefore the utility data after the project does not need to be tracked. Savings is calculated using measured reductions and agreed upon operational hours with the District. The actual and adjusted savings numbers will be equal due to actual measurement. Utility data tables can be provided upon request.

Utility Savings Chart



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Riverside Local Schools

Reconciliation Report for House Bill 264 Project

Reporting Period 1
Ending December 2016

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Richfield, OH 44286

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Certifications

Treasurer/CFO

I, Gary Platko, CFO/Treasurer of Riverside Local Schools, certify that I have reviewed this report and agree, to the best of my knowledge, that the operational reductions shown in this report are in alignment with our operational expense reductions.

Signature

3/7/17
Date

James Kalis
Superintendent
Riverside Local Schools
585 Riverside Drive
Painesville, OH 44077

Dear Mr. Kalis:

Enclosed in this report are the savings calculations for the House Bill 264 project. The International Performance Measurement and Verification Protocol (IPMVP) was used as a guideline for the savings verification. This protocol was developed by the Efficiency Valuation Organization (EVO) to create a standard which leaves customers secure in the knowledge that their savings reported are based on a solid, tested protocol used worldwide.

We would like to thank the Efficiency Valuation Organization for dedicating the time to producing the International Performance Measurement and Verification Protocol (IPMVP). Their hard work has resulted in a standard which leaves customers secure in the knowledge that their projected savings will be realized.

We would especially like to thank Riverside Local Schools for giving us the opportunity to show that when projects are done correctly, results can be real.

Sincerely,
CCG ENERGY SOLUTIONS, INC.

Brian C. Wagner
President

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Overview

This Reconciliation Report (the "Report"), dated March 1, 2017 is between **CCG Energy Solutions, Inc.,** an Ohio corporation, with a principal place of business at 3868 Congress Parkway, Richfield, Ohio 44286 (CCG), and **Riverside Local Schools Board of Education** with its principal place of business at 585 Riverside Drive Painesville, Ohio 44077 (the "Customer"). This Report was prepared to detail the savings for the **Ohio House Bill 264 Project** (the "Project") over the first year reconciliation period.

Executive Summary

Executive Summary

Consumption			
Utility	Projected Savings	Actual Savings	Difference
Electric (kWh)	682,492	691,616	9,124

Cost			
Utility	Projected Savings	Actual Savings	Difference
Electric (kWh)	$82,659	$83,781	$1,122
Operational	$2,667	$2,667	$0
Totals	**$85,326**	**$86,448**	**$1,122**

Year-By-Year Summary								
Year	Savings				Cashflow			
	Projected Savings	Actual Savings	Difference		Annual Payment	Net Cashflow	Cumulative Cashflow	% Debt Repaid
			Dollars	Percent				
Construction	$0	$0	$0	0%	$0	$0	$0	0%
1	$85,326	$86,448	$1,122	1.31%	$97,275	-$10,827	-$10,827	7.10%
2					$80,261			
3					$80,228			
4					$80,194			
5					$80,158			
6					$80,121			
7					$80,083			
8					$80,043			
9					$80,002			
10					$79,959			
11					$79,915			
12					$79,869			
13					$79,822			
14					$79,772			
15					$79,721			
Totals	**$85,326**	**$86,448**	**$1,122**	**1.31%**	**$1,217,422**	**-$10,827**	**$0**	**7.10%**

Building	Rate	Projected Savings		Calculated Savings	
		Total (kWh)	Cost	Total (kWh)	Cost
Riverside High School/JR Williams/Bus Garage/Field House	$0.13	324,159	$41,034	330,589	$41,848
LaMuth Middle School	$0.11	145,628	$16,685	143,932	$16,491
Buckeye Elementary	$0.13	40,002	$5,214	41,329	$5,387
Clyde C. Hadden Elementary	$0.11	28,067	$2,993	29,150	$3,109
Hale Road Elementary	$0.11	43,135	$4,560	44,834	$4,739
Leroy Elementary	$0.12	34,522	$4,054	34,688	$4,074
Madison Avenue Elementary	$0.13	29,126	$3,784	29,222	$3,797
Melridge Elementary	$0.11	37,854	$4,335	37,871	$4,337
Totals		**682,492**	**$82,659**	**691,616**	**$83,781**

Baseline Adjustments and Assumptions:

- CCG has based its energy savings calculations on information supplied by the Customer and the loggers installed during the project.

- All cost savings are calculated based on the average kWh during the baseline period for this facility.

- During the development of the HB264 project, certain assumptions (ex: schedules, temperature set-points, equipment utilization, etc…) were made to recognize and account for a designated amount of savings. Baseline adjustments are made due to the owner's modifications in operating practices or the addition of equipment that directly impacts energy usage after the baseline period end date.

Savings Measurement Methodology

What is Measurement & Verification

Measurement & Verification (M&V) is the process of using measurement to reliably determine the savings created within a facility by an energy management program or Project. Savings cannot be directly measured, since they represent the absence of energy use. Instead, savings are determined by comparing measured use before and after implementation of a project, and making appropriate adjustments for changes in conditions.

What is International Performance Measurement and Verification Protocol?

The International Performance Measurement and Verification Protocol (IPMVP) is the guiding process for measuring, computing, and reporting savings achieved by energy or water efficiency projects at end users' facilities. The IPMVP represents a framework for transparently, reliably, and consistently reporting energy savings. M&V activities include site surveys, metering of energy or water flows, monitoring of other variables, calculation of raw data, and generating informational reports.

The IPMVP is maintained with the sponsorship of the US Department of Energy by a broad international coalition of facility owners/operators, financiers, contractors or Energy Services Companies (ESCOs), and other stake holders. Energy Conservations Measures (ECMs) covered by IPMVP include fuel saving measures, water efficiency measures, energy reductions through installation or retrofit of equipment, and/or modification of operating procedures.

IPMVP has been adopted as the standard Protocol for calculating energy savings by the Association of Energy Engineers (AEE), and was used by CCG Energy Solutions as the basis for preparing this report.

Further information about M&V and the IPMVP can be found at http://www.evo-world.org/

IPMVP Measurement and Verification Options

IPMVP provides four ways or options for determining Savings (Options A, B, C and D). Deciding which option to use involves many considerations, including the complexity of the energy conservation measure, the interaction of the ECM with other energy-consuming devices, the ability to measure the ECM, etc. The four Options are summarized below:

Option A **Retrofit Isolation: Key Parameter Measurement**

Savings are determined by field measurement of the key performance parameter(s) which define the energy use of the ECMs affected system(s) and/or the success of the project. This option is used when before and after energy quantities can be measured without regard to weather, occupancy, etc. In this case, a metering device would be put to a circuit before and after the retrofit to quantify the energy reduction. This M&V option does not quantify savings over time or account for changes in use patterns but is useful to verify that actual design intent has been accomplished. The savings in electricity in this case would be expressed as a kW reduction.

Example: In a lighting retrofit, both before and after power consumption of a lighting circuit is measured and recorded; the energy savings is the difference in the two readings.

Option B **Retrofit Isolation: All Parameter Measurement**

Savings are determined by field measurement of the energy use for the ECM-affected system for a period of time. The key difference between Option A and Option B is that the energy use is measured over a period of time. The savings in electricity in this case would be expressed as a kWh reduction.

Example: A variable speed drive and building automation controls are installed on a motor to adjust pump flow, both before and after power consumption of the motor is measured and recorded for a period of one week; the energy savings is the difference in the sum of the two readings.

Option C **Whole Facility**

Savings are determined by measuring energy use at the whole facility or sub-facility level. They are typically determined by the difference between pre and post project utility bills. This method is used when several ECMs are being implemented simultaneously and it would be impractical to attempt to isolate the savings from each. Furthermore, data on energy use is available only for the entire facility, in the form of utility bills.

Example: In a project that involved energy savings from a lighting retrofit and the replacement of boilers, building utility bills (both pre-project and post-project) are used to evaluate the savings.

Option D **Calibrated Simulation**

Savings are determined through simulation of the energy use at the whole facility or sub-facility level. The building is modeled through simulation software that predicts the buildings energy performance both before and after the implementation of the ECMs. This method is used when metering data is unavailable.

Example: In a project that involved energy savings from multiple ECMs in a building that does not have utility meters, the building energy consumption would be calculated based on the simulation modeling of the building's pre and post project energy profile.

The measurement and verification options used are displayed in the chart below.

ECM Summary		
ECM	**ECM Description**	**IPMVP Used**
NHS-01	Lighting Upgrades	A
NMS-01	Lighting Upgrades	A
LES-01	Lighting Upgrades	A
NES-01	Lighting Upgrades	A
RES-01	Lighting Upgrades	A
LDS-01	Lighting Upgrades	A

Retrofit Isolation – Option A Utilization

Savings are determined by field measurement of the key performance parameter(s) which define the energy use of the ECMs affected system(s) and/or the success of the project. This option is used when before and after energy quantities can be measured without regard to weather, occupancy, etc.

In this case, Option A was utilized by taking field measurements of the lighting installed throughout the District. A sample size of each type of retrofit application was determined and measurements were made before and after the retrofit to calculate the actual amount of wattage that was reduced.

This M&V option does not quantify savings over time or account for changes in use patterns but is useful to verify that actual design intent has been accomplished. It is then up to the owner or operator to maintain patterns of occupancy to achieve savings. The savings in electricity in this case would be expressed as a kW reduction.

The kW reduction is calculated and the hours of operation either stipulated or measured using loggers was then applied to approximate a kWh savings. In this case, the rooms that did not have installed occupancy sensors were given stipulated hours before and after the retrofit. In the cases where occupancy sensors were installed, light/occupancy sensors were installed throughout the District to calculate the amount of hours the lights were on as well as the amount of time an occupancy sensor would save. Regardless of the room and if a sensor were to be installed, the hours were calculated using logger data for actual runtime of the lights. Collection of the hours using the light/occupancy loggers allows for the kW reduction to be converted into kWh saved for the project based on both measured hours and kW reduction.

The pre and post measurements for the lighting circuits can be made available upon request. According to Option A, this savings can be applied to all 15 years of the reconciliation due to the fact that any change in occupancy patterns would be an adjustment. Actual utility bill comparison savings may rise or fall based on the change of behavioral patterns, weather, or runtimes in the District.

Terms and Definitions

Actual Savings: The actual savings is the adjusted baseline minus the reporting period usage. It is the amount of savings the project has accrued over a specified amount of time.

Additional Savings: Additional savings is the actual savings minus the projected savings. It is the amount of savings over the projected savings that occurs in a project. If the additional savings is positive the project saved more than it estimated. If it is negative, the project fell short of its savings estimate.

Adjusted Baseline Energy: The energy use of the baseline period, adjusted to a different set of operating conditions.

Assumption: Any data that is used that has not been obtained by direct measurement.

Avoided Energy Use: This is the reduction in energy use that occurred in the reporting period relative to what would have occurred if the facility had been equipped and operated as it was in the baseline period under reporting period conditions.

Baseline Energy: The energy use occurring during the baseline period before any adjustments.

Baseline Period: The period of time chosen to represent operation of the facility or system before implementation of an ECM for purposes of reconciliation or M&V.

Baseline: The data set that is used as the normal energy consumption profile for the project, usually derived from base year utility data that has been "normalized" or averaged.

Base Year: 12 month period of time prior to the energy project that is used to calculate baseline energy use.

Constant: A term used to describe a physical parameter which does not change during a period of interest.

Demand: Refers to the maximum amount of electrical energy that is required at a given time. It is expressed in kW.

Energy Conservation Measures (ECMs): Any activity designed to increase the energy efficiency of the facility, system, or piece of equipment.

Estimate: A process of determining a parameter used in calculations where measured data is not available.

Independent Variable: A parameter that is expected to change regularly and have a measureable impact on the energy use of the facility.

Measurement Boundary: A theoretical boundary drawn around equipment and/or systems to segregate those which are relevant to savings determination from those which are not.

Metering: The use of a measurement device to collect data over time at a facility.

Kilowatt Hours: The amount of electrical energy consumed, expressed in kWh.

Original Baseline: Actual consumption data before normalization occurs.

Reporting Period: The agreed upon period of time following implementation of an ECM when savings reports adhere to IPMVP.

Routine Adjustments: Calculations made to account for an independent variable (such as weather) to adjust the baseline energy use.

Projected Savings: Estimated amount of energy an ECM or project will save during a specified amount of time.

Static Factors: Those characteristics of a facility, which affect the energy use within the chosen measurement boundary, but which are not used as the basis for any routine adjustments. These characteristics include fixed, environmental, operational and/or maintenance factors; they may be constant or varying. Examples of these include permanent or semi permanent changes in operating hours, facility size, or energy consuming equipment. Static factors will result in an engineering calculation to adjust the baseline energy use.

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CCG Measurement and Verification Plan

CCG Energy Solutions, Inc. employs individuals who have been certified as Measurement and Verification Professionals (CMVP) and Certified Energy Managers (CEM) through the Association of Energy Engineers (AEE). AEE uses the International Performance Measurement and Verification Protocol (IPMVP) as a standard for business practices in the energy saving industry.

CCG Energy Solutions, Inc. Logo

Metrix

Appendix 1 – Environmental Reduction

Environmental Impact

Along with the energy and cost savings for the building, the positive environmental impact of this project extends far beyond this community. Reduced energy use will prevent a significant amount of pollutants from being emitted into the atmosphere each year, including an estimated:

	Baseline	Reporting Period	Savings
Carbon Dioxide	1,799	1,323	477
Cars	379	278	100
Trees	46,140	33,912	12,228
Wind Turbines	0.5	0.4	0.1