

Special Agenda

Date: Thursday, July 9, 2020

Meeting: Special Meeting with Closed Session as per OMA and 5ILCS120/2c

Time: 6:00 PM

Location: District Office
650 Dr. John Burkey Drive
Algonquin, IL 60102

The meeting will be held in-person in the Board Room at the District Office, 650 Dr. John Burkey Drive, Algonquin, IL. The Board will be following social distancing guidelines in accordance with Phase 4 of the Restore Illinois Plan. To accommodate those preferring not to attend the meeting in person, those seeking to make comment may submit comments prior to the meeting via email to superintendent@district158.org to be read publicly at the meeting.

Mission Statement: Our learning community will inspire, challenge and empower all students always.

Board of Education Members: President, Mr. Anthony Quagliano; Vice President, Mr. Kevin Gentry; Secretary, Mr. Paul Troy; Mr. William Geheren; Mrs. Melissa Maiorino; Mrs. Lesli Melendy; Mr. Shawn Cratty.

Agenda

All times are approximate. D=Discussion, R=Report, A=Action

1. **Call to Order / Roll Call (A)** (Mr. Fleck)

Call to order the July 9, 2020

Regular Meeting at ___ p.m. A quorum must be met.

Roll Call: Ayes / Absent / **Motion** _____

2. **Pledge of Allegiance** (Mr. Fleck)

3. **Public Comment** (Mr. Fleck)

As per Policy 2:230, public comment can be made during this portion of the meeting. The members of the public and district employees may comment on or ask questions of the Board, subject to reasonable constraints. To accommodate those preferring not to attend the meeting in person, those seeking to make comment may submit comments prior to the meeting via email to superintendent@district158.org to be read publicly at the meeting.

4. **Action Items / Roll/ Voice Call** (Mr. Fleck)

Action items require a motion and a second; discussion if needed; and roll or voice call.

1. **Guaranteed Energy Savings Contract RFP# 2020-32 (A)** (Mr. Renkosik) **3**

Mr. Renkosik will review the tabulation of response and is seeking the approval of attached agreement with The CTS Group from the Board of Education for the lighting retrofits at Leggee, Heineman and Martin Schools and the kitchen hood demand control ventilation control work for all eight schools at the July 9, 2020 Special Board Meeting.

Roll Call: Ayes / Absent / Nays /

Recommendation: Seeking approval as presented.

5. **Debt Refunding Opportunity (R)** (Mr. Altmayer) **52**

As part of the district's debt restructuring plan, Bob Lewis from PMA Securities, Inc. and Eric Anderson from Piper Jaffray & Co. will be here to present a refunding opportunity.

Recommendation: Seeking guidance from the Board at their next regular meeting.

6. **Board of Education Candidate Interviews** (Mr. Quagliano) **73**

The Board of Education will interview candidates who submitted a formal application to fill the open seat on the School Board.

7. **Closed Session / Roll Call (A)** (Mr. Fleck)

Move to enter into closed session at ___ p.m. as indicated in the Open Meetings Act and 5ILCS120/2c for discussion of: (3)
The selection of a person to fill the pending vacant seat on the Board.

Members: Mr. Geheren, Mr. Fleck, Mr. Gentry, Mr. Quagliano, Mrs. Melendy, Mr. Troy, Mrs. Maiorino

Roll Call: Ayes / Nays / Absent / **Motion** _____

1. **Exit or Suspend Closed Session / Voice Call (A)**

Move to exit or suspend closed session at ___ p.m. and return to open session.

Voice Call: Ayes / Nays / **Motion** _____

8. **Resume in Public Session / Roll Call (A)** (Mr. Fleck)

Resume the Regular meeting at ___ p.m.

Roll Call: Ayes / Absent / **Motion** _____

1. **Action as Required / Roll Call** (Mr. Fleck)

Will come from the Board.

Roll Call: Ayes / Nays / Absent / **Motion** _____

Members: Mr. Fleck, Mr. Geheren, Mr. Gentry, Mr. Quagliano, Mrs. Melendy, Mr. Troy, Mrs. Maiorino

9. **Public Comment** (Mr. Fleck)

10. **Adjournment (A)** (Mr. Fleck)

Motion to adjourn the meeting at ___ p.m.

Voice Call: Ayes / Nays / **Motion** _____



Huntley Community School District 158

650 Academic Drive
Algonquin, Illinois 60102
(847) 659-6158 • www.district158.org

DATE: July 9, 2020

TO: Board of Education and Administration

FROM: Doug Renkosik, Director of Operations & Maintenance

RE: Guaranteed Energy Savings Contract RFP #2020-32(A)
Special Board of Education Meeting, July 9, 2020
Action Item

Background:

At a Special Board meeting on February 6, 2020, the Board of Education acted to approve an application to the Illinois State Board of Education (ISBE)'s Illinois School Maintenance Grant program. The School District's application was for a Priority 3: Energy Conservation project for retrofitting fluorescent light fixtures at Leggee Elementary, Martin Elementary, and Heineman Middle Schools.

On March 26, 2020, HCSD158 was notified that ISBE awarded HCSD158 a \$50,000 matching funds School Maintenance Grant.

On April 20, 2020, the Administration released an RFP for a Guaranteed Energy Savings Contractor (RFP # 2020-32) which included request for proposals for the lighting retrofit initiative sighted above and another energy conservation measure (ECM) involving the eight food service kitchen range hoods in School District 158's facilities. This kitchen hood ECM which included installation of a temperature sensor in each range hood to manage the operation of the hood in lieu of constantly being ON was recommended by D158's Strategic Energy Management coach; Clear Results, during its recent audit of these facilities.

RFP's we received and opened in a virtual meeting on May 22, 2020.

The original proposals received had many different kinds of offers due to vendor assumptions made to determine first cost, labor source, equipment run time hours, fixture quantities and energy savings that made the proposals unable to be compared fairly.

A request was made of each vendor to provide a revised pricing sheet with a defined set of parameters of fixtures quantities and energy costs which made them comparable for further evaluation. The last page attached is a summary of all the proposals that were delivered to the School District during the evaluation of the opportunity with the interested vendors.

After investigation of the proposals it was brought to the attention of the District that the Type A fixture best fits the needs of the School District's plan for all fixtures except the fixtures with the Robertson ballasted fixtures and the older gymnasium light fixtures. Therefore, the Administration requested additional pricing from the two vendors with the two most aggressive pricing models with an appropriate blend of Type A and Type B lighting solutions. The first attached page is an executive summary of the updated proposals from these two vendors which provide for the aforementioned blending lighting solution along with the kitchen exhaust hood demand control ventilation energy conservation measure for all eight D158 commercial food service kitchens.

The work for this project is a stipulated energy savings. Attached is a form of agreement between School District 158 and The CTS group for the project which is materially³the same contract used in past Guaranteed Energy

Savings projects with the only exception being stipulated savings which does not require annual measurement and verification once the final work is accepted.

Recommendation:

The Administration recommends the Board of Education approve the attached agreement with The CTS Group for the lighting retrofits at Leggee, Heineman and Martin Schools and the kitchen hood demand control ventilation control work for all eight schools at the July 9, 2020 Special Board Meeting.

DR/jw

Guaranteed Energy Savings Contract - RFP # 2020-32

Executive Summary Response Tabulation

Energy Conservation Measures include:
LED lamp retrofits at Heinemann, Martin, and Leggee
and kitchen exhaust hood demand control ventilation at all 8 schools

Lowest cost
Lowest ROI

Vendor	ESCOE responses from most competitive vendor offers					RFP all in	
	cost	rebate	net cost	annual energy savings	ROI yrs	W \$50k ISBE grant	ROI yrs
lamp retrofit Type A w GE ballasted lights and Type B in gym and where Robertson Ballasts							
CTS	228,538.00	23,500.00	205,038.00	19,389.00	10.57	155,038.00	8.00
GPR Wegman	232,559.33	22,500.00	210,059.33	19,025.27	11.04	160,059.33	8.41

SPECIAL NOTE: operational savings not recognized as equipment is presently not incurring maintenance expense at this time

Guaranteed Energy Savings Contract - RFP # 2020-32

Huntley Community School District 158

Response Tabulation w revised pricing solicited during evaluation

includes LED lighting retrofit in Heineman, Leggee, and Martin and kitchen exhaust demand control ventilation in all 8 schools

SPECIAL NOTE: operational savings not recognized as equipment is presently not incurring maintenance expense at this time

Lowest cost

Lowest ROI

Vendor	ESCOE responses				annual energy savings	ROI yrs	w \$50k ISBE grant		Comments
	cost	rebate	net cost	ROI yrs			net cost	ROI yrs	
Type A where GE ballast and Type B where Robertson ballast and in gyms									
CTS	228,538	23,500	205,038	19,389	10.57	155,038	8.00		
GPR Wegman	232,559	22,500	210,059	19,025	11.04	160,059	8.41		
GPR Wegman w Type C in gym fixtures	242,086	26,750	215,336	18,257	11.79	165,336	9.06		
GPR Wegman w new gym fixtures	254,839	27,558	227,281	18,518	12.27	177,281	9.57		
Type A with LED lamp running off existing ballast									
CTS	236,382.00	23,500.00	212,882	19,389	11.0	162,882	8.40		
Ameresco	305,615.00	-	305,615	19,396	15.8	255,615	13.18		
GPR Wegman w new gym fixtures	172,086.90	27,557.50	144,529	31,850	4.5	94,529	2.97		flawed kitchen EM savings
Energy Systems Group	436,517.00	53,620.00	382,897	18,685	20.5	332,897	17.82		
McKinstry	363,795.00	14,500.00	363,795	33,604	10.83	313,795	9.34		
Type B - w internal driver & disconnected									
CTS	299,797	23,500	276,297	19,389	14.3	226,297	11.67		
Ameresco	430,231	71,641	358,590	22,579	15.9	308,590	13.67		
GPR Wegman w new gym fixtures	319,703	27,558	292,146	32,997	8.9	242,146	7.34		flawed kitchen EM savings
Energy Systems Group	617,369	53,620	563,749	21,507	26.2	513,749	23.89		
McKinstry	510,891	14,500	510,891	33,604	15.20	460,891	13.72		
Type C - w external driver replacing ballasts									
CTS	388,016	64,573	323,443	19,389	16.7	273,443	14.10		
Ameresco	347,331	71,641	275,690	22,579	12.2	225,690	10.00		
GPR Wegman w new gym fixtures	409,383	73,720	335,663	34,053	9.9	285,663	8.39		flawed kitchen EM savings
Energy Systems Group	713,561	82,289	631,272	23,079	27.4	581,272	25.19		
McKinstry	580,019	71,156	580,019	35,760	16.22	530,019	14.82		
PSI - D158 fixture counts	525,269	68,080	457,189	14,925	30.63	407,189	27.28		
PSI - PSI fixture counts	583,679	73,815	509,864	16,544	30.82	459,864	27.80		

CTS AGREEMENT with Huntley Community School District #158

CUSTOMER NAME: Huntley Community School District 158

DATE OF SUBMISSION: July 9, 2020

TABLE OF CONTENTS

ARTICLE	PAGE
1. GENERAL PROVISIONS.....	2
2. ESCOE'S RESPONSIBILITIES.....	2
3. CUSTOMER'S RESPONSIBILITIES.....	4
4. SUBCONTRACTS.....	5
5. INSTALLATION AND ACCEPTANCE.....	6
6. PRICE AND PAYMENT.....	6
7. CHANGES IN THE PROJECT.....	7
8. INSURANCE, INDEMNITY, WAIVER OF SUBROGATION, AND LIMITATION OF LIABILITY.....	7
9. TERMINATION OF THE AGREEMENT.....	9
10. ASSIGNMENT AND GOVERNING LAW.....	9
11. MISCELLANEOUS PROVISIONS.....	9
12. ARBITRATION.....	11
13. LIMIT OF LIABILITY - FIRE AND/OR SECURITY SYSTEMS.....	11

ATTACHMENT A THE WORK (SCOPE-OF-WORK)
ATTACHMENT B THE INSTALLATION SCHEDULE
ATTACHMENT C PAYMENT SCHEDULE
ATTACHMENT D ENERGY GUARANTEE
ATTACHMENT E SCHEDULE OF SAVINGS
ATTACHMENT F PROJECT ACCEPTANCE

Note Regarding Modifications Made to this Agreement: Provisions in the printed document that are not to be included in the agreement may be deleted by striking through the word, sentence or paragraph to be omitted. It is recommended that unwanted provisions not be made illegible. The parties should be clearly aware of the material deleted from the standard form. **Do not make any modifications to this Agreement unless approval to do so has been granted. Changes may be made only by deletion as explained above, or, by addendum.**

ARTICLE 1 GENERAL PROVISIONS

- 1.1** This Agreement, including all Attachments, Exhibits, and Schedules referenced herein (hereinafter the "Agreement") is made this day of July 9, 2020 (the "Effective Date") by and between Control Technology and Solutions, LLC d/b/a CTS Group ("ESCOE"), a *Missouri* limited liability company, with a principal place of business at (16647 Chesterfield Grove Road, Suite 200, Chesterfield, MO 63005), and Board of Education of Huntley Community School District 158 ("CUSTOMER") with a principal place of business at 650 Dr. John Burkey Dr., Algonquin, IL 60102, (collectively the "Parties").
- 1.2** EXTENT OF AGREEMENT: This Agreement, including all attachments and exhibits hereto, represents the entire agreement between CUSTOMER and ESCOE and supersedes all prior negotiations, representations or agreements. This Agreement shall not be superseded by any provisions of the documents for construction and may be amended only by written instrument signed by both CUSTOMER and ESCOE. None of the provisions of this Agreement shall be modified, altered, changed or voided by any subsequent Purchase Order issued by CUSTOMER, which relates to the subject matter of this Agreement.
- 1.3** As used in this Agreement, the term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by ESCOE to fulfill ESCOE's obligations, as described in Attachment A and otherwise set forth in the Contract Documents. The Work may constitute the whole or a part of the Project. The Work specifically excludes certain design and construction, which are the subject of separate agreements between CUSTOMER and parties other than ESCOE.
- 1.4** The Project is the total construction of which the Work performed by ESCOE under this Agreement may be the whole or a part.
- 1.5** The Contract Documents consist of this Agreement, its attachments, exhibits, schedules, and addenda.
- 1.6** Installation Schedule means that schedule set out in Attachment B describing the Parties' intentions respecting the times by which the components or aspects of the Work therein set forth shall be installed and/or ready for acceptance or beneficial use by CUSTOMER.

ARTICLE 2 ESCOE'S RESPONSIBILITIES

2.1 ESCOE Services

- 2.1.1** ESCOE shall be responsible for construction of the Project.
- 2.1.2** ESCOE will assist in securing permits necessary for the Work. CUSTOMER shall pay such proper and legal fees to public officers and others as may be necessary to the due and faithful performance of the Work and which may arise incidental to the fulfilling of these specifications.

2.2 Responsibilities with Respect to the Work

- 2.2.1** ESCOE will provide construction supervision, inspection, labor, materials, tools, construction equipment and subcontracted items necessary for the execution and completion of the Work.
- 2.2.2** ESCOE shall keep the premises in an orderly fashion and free from unnecessary accumulation of waste materials or rubbish caused by its operations. If ESCOE damages property not needed for the Work, ESCOE shall repair the property to its pre-existing condition unless CUSTOMER directs otherwise. At the completion of the Work, ESCOE shall remove waste material supplied by ESCOE under this Agreement as well as all its tools, construction equipment, machinery and surplus material. ESCOE shall dispose of all waste materials or rubbish caused by its operations. ESCOE shall be responsible for disposal of toxic or hazardous materials removed from the facilities, such as fluorescent lights, potential polychlorinated biphenyl containing light ballasts and mercury-containing controls.

- 2.2.3** ESCOE shall give all notices and comply with all laws and ordinances legally enacted as of the date of execution of the Agreement governing the execution of the Work. Provided, however, that ESCOE shall not be responsible nor liable for the violation of any code, law or ordinance caused by CUSTOMER or existing in CUSTOMER's property prior to the commencement of the Work.
- 2.2.4** ESCOE shall comply with all applicable federal, state and municipal laws and regulations that regulate the health and safety of its workers while providing the Work, and shall take such measures as required by those laws and regulations to prevent injury and accidents to other persons on, about or adjacent to the site of the Work. It is understood and agreed, however, that ESCOE shall have no responsibility for elimination or abatement of health or safety hazards created or otherwise resulting from activities at the site of the Work carried on by persons not in a contractual relationship with ESCOE, including CUSTOMER, CUSTOMER's contractors or subcontractors, CUSTOMER's tenants or CUSTOMER's visitors. CUSTOMER agrees to cause its contractors, subcontractors and tenants to comply fully with all applicable federal, state and municipal laws and regulations governing health and safety and to comply with all reasonable requests and directions of ESCOE for the elimination or abatement of any such health or safety hazards at the site of the work.
- 2.2.5** ESCOE shall pay not less than the prevailing hourly rate of wages, and the generally prevailing rate of hourly wages for legal holiday and overtime work, as determined by the Illinois Department of Labor to all laborers, workers, and mechanics performing work under this Agreement.
- 2.2.6** ESCOE shall, at its sole cost and expense, meet the requirements for background checks set forth in the Guaranteed Energy Savings Contract – RFP #2020-32.
- 2.2.7** ESCOE shall comply with the provisions of the Employment of Illinois Workers on Public Works Act.

2.3 Patent Indemnity

- 2.3.1** ESCOE shall, at its expense, defend or, at its option, settle any suit that may be instituted against CUSTOMER for alleged infringement of any United States patents related to the hardware manufactured and provided by ESCOE, provided that:
1. Such alleged infringement consists only in the use of such hardware by itself and not as part of, or in combination with, any other devices, parts or software not provided by ESCOE hereunder;
 2. CUSTOMER gives ESCOE immediate notice in writing of any such suit and permits ESCOE, through counsel of its choice, to answer the charge of infringement and defend such suit; and
 3. CUSTOMER gives ESCOE all needed information, assistance and authority, at ESCOE's expense, to enable ESCOE to defend such suit.
- 2.3.2** If such a suit has occurred, or in ESCOE's opinion is likely to occur, ESCOE may, at its election and expense: obtain for CUSTOMER the right to continue using such equipment; or replace, correct or modify it so that it is not infringing; or remove such equipment and grant CUSTOMER a credit therefore, as depreciated.
- 2.3.3** In the case of a final award of damages in any such suit, ESCOE will pay such award. ESCOE shall not, however, be responsible for any settlement made without its written consent.
- 2.3.4** This article states ESCOE's total liability and CUSTOMER's sole remedy for any actual or alleged infringement of any patent by the hardware manufactured and provided by ESCOE hereunder. In no event shall ESCOE be liable for any indirect, special or consequential damages resulting from any such actual or alleged infringement, except as set forth in this section 2.3.

2.4 Warranties and Completion

- 2.4.1** ESCOE warrants CUSTOMER good and clear title to all equipment and materials furnished to CUSTOMER pursuant to this Agreement free and clear of liens and encumbrances. ESCOE hereby warrants that all such equipment and materials shall be of good quality and shall be free from defects in materials and workmanship, including installation and setup, for a period of one (1) year from the date of beneficial use or substantial completion of the equipment or portion of the Work in question, provided that no repairs, substitutions, modifications, or additions have been made, except by ESCOE or with ESCOE's written permission, and provided that after delivery such equipment or materials have not been subjected by non-ESCOE personnel to accident, neglect, misuse, or use in violation of any instructions supplied by ESCOE. ESCOE's sole liability hereunder shall be to repair promptly or replace defective equipment or materials, at CUSTOMER'S option and at ESCOE's expense. Any defect on work or materials shall be replaced or corrected to the satisfaction of the customer within fourteen (14) days upon notification by customer at no cost to customer. The limited warranty contained in this Section 2.4.1 shall constitute the exclusive remedy of CUSTOMER and the exclusive liability of ESCOE for any breach of any warranty related to the equipment and materials furnished by ESCOE pursuant to this Agreement.

- 2.4.2** In addition to the warranty set forth in Section 2.4.1 above, ESCOE shall, at CUSTOMER's request, assign to CUSTOMER any and all manufacturer's or installer's warranties for equipment or materials not manufactured by ESCOE and provided as part of the Work, to the extent that such third-party warranties are assignable and extend beyond the one (1) year limited warranty set forth in Section 2.4.1.
- 2.4.3** The warranties set forth herein are exclusive, and ESCOE expressly disclaims all other warranties, whether written or oral, implied or statutory, including but not limited to, any warranties of merchantability and fitness for a particular purpose, with respect to the equipment and materials provided hereunder. ESCOE shall not be liable for any special, indirect, incidental or consequential damages arising from, or relating to, this limited warranty or its breach.
- 2.4.4** ESCOE's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by ESCOE, improper or insufficient maintenance, if required by manufacturer, or improper operation.

2.5 Hazardous Materials

- 2.5.1** ESCOE and its subcontractors shall not be required to handle, remove, come into contact with, dispose of, or otherwise work with hazardous materials existing on the project site at the date of this Agreement or resulting, either directly or indirectly, from any acts or omissions of CUSTOMER, its employees, agents or assigns, or any of its other contractors or subcontractors. "Hazardous materials" as used herein includes all hazardous or toxic substances or materials as may be so designated by federal, state or local governmental entities. "Hazardous materials" shall also include fungus and mold. If, during the performance of the Work, the presence of hazardous materials is discovered or reasonably suspected, ESCOE shall notify CUSTOMER of such discovery or suspicion and shall be permitted to immediately cease all work which requires contact with or exposure to such hazardous materials, until the CUSTOMER has made arrangements for the removal of the same. ESCOE shall be entitled to an extension of the Contract Time for ceasing work pursuant to this Section.
- 2.5.2** To the extent permitted by law CUSTOMER shall indemnify, defend, and hold ESCOE and its respective officers, directors, employees, agents and subcontractors (collectively the "Indemnified Parties"), harmless from, against, and in respect of any and all rights, claims, demands, liabilities, obligations, orders, assessments, interest, penalties, fines, settlement payments, costs, expenses and damages, including, without limitation, reasonable legal fees and out-of-pocket expenses ("Damages") imposed upon or incurred by any Indemnified Party and that arise from claims asserted by third parties or by CUSTOMER concerning any Hazardous Materials; provided that the Damages are not the direct result of any act or omission of ESCOE or its agents.
- 2.5.3** Unless prior to the execution of this Agreement, ESCOE received written notification from CUSTOMER of the existence of Hazardous Materials on the site, and said notice included a description of the Hazardous Materials, and the quantity and location of the Hazardous Materials, CUSTOMER is hereby representing to ESCOE that CUSTOMER is not aware of any Hazardous Materials present at the site.
- 2.5.4** If the structure(s) where the Contract Work is to be performed was built before 1978, CUSTOMER understands that it may contain lead paint. CUSTOMER also understands that the only way to know whether lead paint is present is to have one or more paint samples in the work area tested. CUSTOMER authorizes, upon request of ESCOE, those tests to be done by ESCOE and agrees to pay ESCOE for the costs of those tests, in addition to the Contract Price. Alternatively, as a condition of accepting this Contract, CUSTOMER agrees to provide ESCOE with documentation demonstrating, to ESCOE's reasonable satisfaction, that:
- (1) the areas where the Contract Work is to be performed has been tested and determined to be lead free by a certified risk assessor, certified lead inspector or certified renovator;
 - (2) the areas where the Contract Work is to be performed is paint free; and/or
 - (3) the areas where the Contract Work is to be performed were built after 1977.
- 2.5.5** ESCOE shall indemnify, defend, and hold CUSTOMER and its respective officers, directors, employees, agents and subcontractors (collectively the "Indemnified Parties"), harmless from, against, and in respect of any and all rights, claims, demands, liabilities, obligations, orders, assessments, interest, penalties, fines, settlement payments, costs, expenses and damages, including, without limitation, reasonable legal fees and out-of-pocket expenses ("Damages") imposed upon or incurred by any Indemnified Party and that arise from claims asserted by third parties or by ESCOE concerning any Hazardous Materials that were brought to the project site by ESCOE or its subcontractors.

ARTICLE 3 CUSTOMER'S RESPONSIBILITIES

- 3.1** CUSTOMER shall provide ESCOE full information regarding the requirements for the Work.
- 3.2** CUSTOMER shall designate a representative who shall be fully acquainted with the Work, and who has authority to approve changes in the scope of the Work and render decisions promptly.

- 3.3** CUSTOMER shall furnish to ESCOE all information regarding legal limitations, utility locations and other information reasonably pertinent to this Agreement, the Work and the Project.
- 3.4** CUSTOMER shall secure and pay for all necessary approvals, easements, assessments, permits and charges required for the construction, use or occupancy of permanent structures or for permanent changes in existing facilities, including charges for legal and auditing services.
- 3.5** If CUSTOMER becomes aware of any fault or defect in the Work, it shall give prompt written notice thereof to ESCOE, however, the CUSTOMER's failure to give timely notice within (14) days of the date of discovery of the defect in the work shall not relieve ESCOE of its responsibilities under Section 2.4 WARRANTIES AND COMPLETION of this AGREEMENT.
- 3.6** The services and information required by the above paragraphs shall be furnished with reasonable promptness at CUSTOMER's expense and ESCOE shall be entitled to rely upon the accuracy and the completeness thereof.
- 3.7** Prior to the commencement of the Work and at such future times as ESCOE shall reasonably deem appropriate, CUSTOMER shall furnish evidence in a form satisfactory to ESCOE that sufficient funds are available and committed to pay for the Work. Unless such evidence is furnished, ESCOE is not required to commence or continue any Work. Further, if CUSTOMER does not provide such evidence, ESCOE may stop work upon fifteen (15) days notice to CUSTOMER. The failure of ESCOE to insist upon the providing of this evidence at any one time shall not be a waiver of CUSTOMER's obligation to make payments pursuant to this Agreement, nor shall it be a waiver of ESCOE's right to request or insist that such evidence be provided at a later date.
- 3.8** CUSTOMER shall comply with all applicable federal, state and municipal laws and regulations governing occupational health and safety in the areas where ESCOE will perform services and/or perform the Work. CUSTOMER represents and warrants that, except as otherwise disclosed in this Agreement, in the areas where ESCOE will undertake Work or provide services, there are no: (a) materials or substances classified as toxic or hazardous either (i) on or within the walls, floors, ceilings or other structural components, or (ii) otherwise located in the work area, including asbestos or presumed asbestos-containing materials, formaldehyde, containers or pipelines containing petroleum products or hazardous substances, etc.; (b) situations subject to special precautions or equipment required by federal, state or local health or safety regulations; or (c) unsafe working conditions. CUSTOMER shall notify ESCOE of any changes or updates that occur during the course of the Agreement. If any such materials, situations or conditions, whether disclosed or not, are in fact discovered by ESCOE or others and provide an unsafe condition for the performance of the Work or services, the discovery of the material, situation or condition shall constitute a cause beyond ESCOE's reasonable control and ESCOE shall have the right to cease or not commence the Work until the area has been made safe by CUSTOMER or CUSTOMER's representative, at CUSTOMER's expense. To the fullest extent allowed by law, customer shall indemnify and hold ESCOE harmless from and against any and all claims and costs of whatever nature, including but not limited to, consultants' and attorneys' fees, damages for bodily injury and property damage, fines, penalties, cleanup costs and costs associated with delay or work stoppage, that in any way results from or arises under the breach of the representations and warranties in this section, the existence of mold or a hazardous substance at a site, or the occurrence or existence of the situations or conditions described in this section, whether or not customer provides ESCOE advance notice of the existence or occurrence and regardless of when the hazardous substance or occurrence is discovered or occurs. Nothing in this section shall be construed to require that customer indemnify and hold harmless ESCOE from claims and costs resulting from the negligent use by ESCOE of any hazardous substance brought to the site by ESCOE (and customer acknowledges that ESCOE may bring to the site lubricants or other materials that are routinely used in performing maintenance and that may be classified as hazardous).
- 3.9** In addition to the price set forth in Article 6 of this Agreement, CUSTOMER shall pay any present and future taxes or any other governmental charges now or hereafter imposed by existing or future laws with respect to the sale, transfer, use, ownership or possession of the Work provided hereunder, excluding taxes on ESCOE's net income.
- 3.10** ESCOE shall be entitled to rely on the accuracy of the information furnished by CUSTOMER. The CUSTOMER shall furnish information and services required of CUSTOMER by the Contract Documents with reasonable promptness.

ARTICLE 4 SUBCONTRACTS

- 4.1** At its option, ESCOE may subcontract some or all of the Work subject to the District's approval of all subcontractors. Approval will not be unreasonably withheld. Names and qualifications of subcontractors must be submitted at least three weeks in advance of subcontractor scheduled start date, unless otherwise agreed by the parties.
- 4.2** A Subcontractor is a person or entity who has a direct contract with ESCOE to provide work, labor and materials in

connection with the Work. The term Subcontractor does NOT include any separate contractors employed by CUSTOMER or such separate contractors' subcontractors.

- 4.3** For the purposes of this Agreement, no contractual relationship shall exist between CUSTOMER and any Subcontractor. ESCOE shall be responsible for the management of its Subcontractors in their performance of their Work.
- 4.4** CUSTOMER shall not hire any of ESCOE's Subcontractors without the prior written approval of ESCOE.

ARTICLE 5 INSTALLATION AND ACCEPTANCE

- 5.1** The Work to be performed under this Agreement shall be commenced and substantially completed as set forth in the Installation Schedule attached hereto as Attachment B.
- 5.2** If ESCOE is delayed at any time in the progress of performing its obligations under this Agreement by any act of neglect of CUSTOMER or of any employee or agent of CUSTOMER or any contractor employed by CUSTOMER; or by changes ordered or requested by CUSTOMER in the Work performed pursuant to this Agreement; or by labor disputes, fire, unusual delay in transportation or deliveries, adverse weather conditions or other events or occurrences which could not be reasonably anticipated; or unavoidable casualties; or any other problem beyond ESCOE's reasonable control (an "Excusable Delay"), then the time for performance of the obligations affected by such Excusable Delay shall be extended by the period of any delay actually incurred as a result thereof.
- 5.3** ESCOE shall provide Delivery and Acceptance Certificates in a form acceptable to CUSTOMER and ESCOE (the "Delivery and Acceptance Certificates") for the Work provided pursuant to the Schedule identified in Attachment F. Upon receipt of each Delivery and Acceptance Certificate, CUSTOMER shall promptly inspect the Work performed by ESCOE identified therein and execute each such Delivery and Acceptance Certificate as soon as reasonably possible, but in no event later than ten (10) days after delivery of the same by ESCOE, unless CUSTOMER provides ESCOE with a written statement identifying specific material performance deficiencies that it wishes ESCOE to correct. ESCOE will use reasonably diligent efforts to correct all such material deficiencies and will give written notice to CUSTOMER when all such items have been corrected. The Parties intend that a final Delivery and Acceptance Certificate will be executed for the Work as soon as all Work is installed and operating. Execution and delivery by CUSTOMER of such final Delivery and Acceptance Certificate with respect to the Work shall constitute "Final Acceptance" of such Work performed by ESCOE pursuant to the Installation Schedule.
- 5.4 Payment Verification** Prior to final acceptance of all energy conservation measures by the District, ESCOE shall provide Waivers of Lien as verification of payment in full for services rendered. ESCOE shall provide a schedule of values during the project. All final waivers must state "Paid in Full" in place of a dollar amount. Final payment will not be released until final waivers marked "Paid in Full" are submitted.

ARTICLE 6 PRICE AND PAYMENT

6.1 Price

- 6.1.1** The price for the Work is \$ two hundred twenty-eight thousand, five hundred and thirty-eight Dollars (\$ 228,538), subject to the adjustments set forth in Articles 5 and 7.
- 6.1.2** The price is based upon laws, codes and regulations in existence as of the date this Agreement is executed. Any future changes after commencement of the work in or to applicable laws, codes and regulations affecting the cost of the Work shall be the responsibility of CUSTOMER and shall entitle ESCOE to an equitable adjustment in the price and schedule.
- 6.1.3** The price will be modified for delays caused by CUSTOMER and for Changes in the Work, all pursuant to Article 7.
- 6.1.4** The license fees for all licensed software are included in the price to be paid by CUSTOMER as identified in this Article 6.
- 6.1.5** If, at any time, CUSTOMER requests overtime work which requires overtime or premium pay, ESCOE shall be entitled to add such premium or overtime pay to the Contract Price, plus ESCOE's overhead and profit, subject to the review and approval of CUSTOMER.
- 6.1.6** The Contract Price does not include the items of work specifically excluded in Attachment A. If CUSTOMER requests ESCOE to perform any of the work expressly excluded in said Attachment, the cost for this additional work, plus ESCOE's overhead and profit, shall be added to the Contract Price.

6.2 Payment

- 6.2.1** Upon execution of this Agreement, CUSTOMER shall pay or cause to be paid to ESCOE the full price for the Work, in accordance with the Payment Schedule, Attachment C. Payment shall be made net forty five (45) days of invoice date.
- 6.2.2** Payments due and unpaid shall bear interest from the date payment is due at the rate of 1 ½% per month, compounded monthly or the maximum amount permissible per law; whichever is less. In the event that Customer failed to pay ESCOE any sums due, Customer shall pay ESCOE all attorney's fees incurred by ESCOE in collecting amounts owed to ESCOE under this Agreement. If a progress payment is not paid by the due date, ESCOE reserves the right (without further notice) to immediately stop work until the progress payment then due is made, increased by the amount of ESCOE's costs of shutdown, delay and startup and, in such event, ESCOE will not be liable or responsible for any damages, costs or delays whatsoever due to such work stoppage. ESCOE reserves the right (without further notice) to terminate this Agreement altogether if work is stopped for thirty (30) or more days (whether or not consecutive days) because of a failure to make progress payments, and, in such event, also reserves the right to recover payment for all work executed and losses from stoppage of the work including reasonable overhead and profit.

ARTICLE 7 CHANGES IN THE PROJECT

- 7.1** A Change Order is a written order signed by CUSTOMER and ESCOE authorizing a change in the Work or adjustment in the price, or a change to the Installation Schedule described in Attachment B. Each Change Order shall describe the change in the work, the amount of adjustment, if any, to the Contract Price, and the extent of any adjustment to the completion date.
- 7.2** CUSTOMER may request ESCOE to submit proposals for changes in the Work.
- 7.3 Claims for Concealed or Unknown Conditions** The Contract Price has been based on normal site conditions, without allowance for any additional work that might be caused by unanticipated site conditions. If conditions are encountered at the site that are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents, or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than twenty-one (21) days after first observance of the conditions, and, if appropriate, an equitable adjustment to the Contract Price and Installation Schedule shall be made by a Change Order. Said adjustment in Contract Price shall include ESCOE's overhead and profit. If agreement cannot be reached by the Parties, the party seeking an adjustment in the Price or Installation Schedule may assert a claim in accordance with Paragraph 7.4.
- 7.4** If ESCOE wishes to make a claim for an increase in the Contract Price or an extension in the Installation Schedule it shall give CUSTOMER written notice thereof within fourteen days (14) after the occurrence of the event giving rise to such claim. This notice shall be given by ESCOE before proceeding to execute the Work, upon approval by CUSTOMER to proposal of work except in an emergency endangering life or property, in which case ESCOE shall have the authority to act, in its discretion, to prevent threatened damage, injury or loss. Claims arising from delay shall be made within a fourteen days (14) after the delay. Increases based upon design and estimating costs with respect to possible changes requested by CUSTOMER shall be made within fourteen days (14) after the decision is made not to proceed with the change. No such claim shall be valid unless so made. If CUSTOMER and ESCOE cannot agree on the amount of the adjustment in the Price, or the Installation Schedule, it shall be determined pursuant to the provisions of Article 12. Any change in the Price or the Installation Schedule resulting from such claim shall be authorized by Change Order.
- 7.5 Emergencies** In any emergency affecting the safety of persons or property, ESCOE shall act, at its discretion, to prevent threatened damage, injury or loss. Any increase in the Price or extension of time claimed by ESCOE on account of emergency work shall be determined as provided in Section 7.4.
- 7.6 Minor Changes** ESCOE shall, with CUSTOMER's approval, have the authority to make minor changes in the Work so long as they do not result in a material alteration or modification or cause an adjustment to the Contract Price or an extension of the Contract Time.

ARTICLE 8 INSURANCE, INDEMNITY, WAIVER OF SUBROGATION, AND LIMITATION OF LIABILITY

8.1 Indemnity

- 8.1.1** ESCOE agrees to indemnify and hold CUSTOMER, and CUSTOMER's consultants, agents and employees harmless from all claims for bodily injury and property damages [other than the Work itself and other property insured under Paragraph 8.4] to the extent such claims result from or arise under ESCOE's negligent actions or

willful misconduct in its performance of the Work, nothing in this article shall be construed or understood to alter the limitations of liability contained in this article, article 2, or the indemnification contained in section 3.8. Except as otherwise

provided herein, ESCOE's obligation, if any, to indemnify the CUSTOMER does not extend to losses sustained in whole or in part as a result of the CUSTOMER's (or its agent's) acts or omissions.

- 8.1.2** To the extent permitted by law, CUSTOMER shall indemnify and hold harmless ESCOE and ESCOE's consultants, agents and employees from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of, or resulting from, any negligent act or omission of CUSTOMER or CUSTOMER's contractors, consultants, agents or employees.
- 8.1.3** CUSTOMER shall require any other contractor who may have a contract on this project with CUSTOMER to perform work in the areas where Work will be performed under this Agreement to agree to indemnify CUSTOMER and ESCOE and hold them harmless from all claims for bodily injury and property damage [other than property insured under Paragraph 8.4] that may arise from that contractor's operations. Such provisions shall be in a form satisfactory to ESCOE.

8.2 Contractor's Liability Insurance

- 8.2.1** ESCOE shall purchase and maintain such insurance as will protect it from claims that may arise out of or result from ESCOE's operations under this Agreement. ESCOE shall name the Customer as an additional insured. All insurance will meet customer's requirements set forth in the RFP document; Guaranteed Energy Savings Contract – RFP #2020-32.
- 8.2.2** The Commercial General Liability Insurance shall include premises-operations (including explosion, collapse and underground coverage), elevators, independent contractors, completed operations, and blanket contractual liability on all written contracts, all including broad form property damage coverage.
- 8.2.3** ESCOE's Commercial General and Automobile Liability Insurance, as required by Subparagraphs 8.2.1 and 8.2.2, shall be written for not less than limits of liability as outlined in the RFP document; Guaranteed Energy Savings Contract – RFP #2020-32.
- 8.2.4** ESCOE shall maintain at all times during the performance of the Work and Services hereunder, Worker's Compensation Insurance in accordance with the laws of the State in which the Work is performed.

8.3. CUSTOMER's Liability Insurance

- 8.3.1** CUSTOMER shall be responsible for purchasing and maintaining its own liability insurance and, at its option, may purchase and maintain such insurance as will protect it against claims that may arise from operations under this Agreement.

8.4 Insurance to Protect Project

- 8.4.1** CUSTOMER shall purchase and maintain replacement property insurance for the length of time to complete the Project. This insurance shall include as named additional insureds ESCOE and ESCOE's Subcontractors and Sub-subcontractors and shall include, at a minimum, coverage for fire, windstorm, flood, earthquake, theft, vandalism, malicious mischief, transit, collapse, testing, and damage resulting from defective design, workmanship, or material in the existing facilities. CUSTOMER will increase limits of coverage, if necessary, to reflect estimated replacement costs. CUSTOMER will be responsible for any coinsurance penalties or deductibles. If the Work covers an addition to or is adjacent to an existing building, ESCOE and its Subcontractors and Sub-subcontractors shall be named additional insureds under CUSTOMER's Property Insurance covering such building and its contents.
 - 8.4.1.1** If CUSTOMER finds it necessary to occupy or use a portion or portions of the Facilities prior to Substantial Completion thereof, such occupancy shall not commence prior to a time mutually agreed to by CUSTOMER and ESCOE and to which the insurance company or companies providing the property insurance have consented by endorsement to the policy or policies. This insurance shall not be canceled or lapsed on account of such partial occupancy. Consent of ESCOE and of the insurance company or companies to such occupancy or use shall not be unreasonably withheld.
- 8.4.2** CUSTOMER shall purchase and maintain such insurance as will protect CUSTOMER and ESCOE against loss of use of CUSTOMER's property due to those perils insured pursuant to Subparagraph 8.4.1. Such policy will provide coverage for expenses of expediting materials, continuing overhead of CUSTOMER and ESCOE, necessary labor expense including overtime, loss of income by CUSTOMER and other determined exposures. Exposures of CUSTOMER and ESCOE shall be determined by mutual agreement and separate

limits of coverage fixed for each item.

8.4.3 ESCOE and CUSTOMER shall provide Certificate(s) of Insurance to each other before work on the Project begins. All insurance coverage(s) must be with a carrier rated A or better by one of the National Insurance Rating Agencies such as A.M. Best or if customer is self-insured then a certificate of self-insurance shall be provided. ESCOE and customer will be given sixty (60) days notice of cancellation, nonrenewal, or any endorsements restricting or reducing coverage. ESCOE will maintain a file of sub-contractors insurance certificates evidencing compliance with these requirements. All insurers shall be licensed by the State of Illinois and rated A-Vu or better by A.M. Best or comparable rating service or be an authorized Risk Retention Group acceptable to the School District.

8.5 Property Insurance Loss Adjustment

8.5.1 Any insured loss shall be adjusted with CUSTOMER and ESCOE and made payable to CUSTOMER and ESCOE as trustees for the insureds, as their interests may appear, subject to any applicable mortgagee clause.

8.5.2 Upon the occurrence of an insured loss, monies received will be deposited in a separate account and the trustees shall make distribution in accordance with the agreement of the parties in interest, or in the absence of such agreement, in accordance with an arbitration award pursuant to Article 12. If the trustees are unable to agree between themselves on the settlement of the loss, such dispute shall also be submitted to arbitration pursuant to Article 12.

8.7 Limitation of Liability

8.7.1 In no event shall ESCOE be liable for any special, incidental, indirect, speculative, remote, or consequential damages arising from, relating to, or connected with the work, equipment, materials, or any goods or services provided hereunder. The CUSTOMER waives claims against ESCOE for consequential damages arising out of or relating to this Agreement. This waiver includes damages incurred by CUSTOMER for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons.

ARTICLE 9 TERMINATION OF THE AGREEMENT

9.1 If ESCOE defaults in, or fails or neglects to carry forward the Work in accordance with this Agreement, CUSTOMER may provide notice in writing of its intention to terminate this Agreement to ESCOE. If ESCOE, following receipt of such written notice, neglects to cure or correct the identified deficiencies within Seven (7) business days, CUSTOMER may provide a second written notice. If ESCOE has not, within Seven (7) business days after receipt of such notice, acted to remedy and make good such deficiencies, CUSTOMER may terminate this Agreement and take possession of the site together with all materials thereon, and move to complete the Work itself expeditiously. If the expense to finish the work exceeds the unpaid balance of the contract sum, ESCOE shall pay the difference to CUSTOMER.

9.2 If CUSTOMER fails to make payments as they become due, or otherwise defaults or breaches its obligations under this Agreement, ESCOE may give written notice to CUSTOMER of ESCOE's intention to terminate this Agreement. If, within fourteen (14) days following receipt of such notice, CUSTOMER fails to make the payments then due, or otherwise fails to cure or perform its obligations, ESCOE may, by written notice to CUSTOMER, terminate this Agreement and recover from CUSTOMER payment for Work executed and for losses sustained for materials, tools, construction equipment and machinery, including but not limited to, reasonable overhead, profit and applicable damages.

ARTICLE 10 ASSIGNMENT AND GOVERNING LAW

10.1 This Agreement shall be governed by the law of the State where the Work is performed and subject to the jurisdiction of the circuit court of McHenry County, Illinois.

10.2 Neither party to the Agreement shall assign this Agreement or sublet it as a whole without the written consent of the other party. Such consent shall not be reasonably withheld, except that ESCOE may assign to another party the right to receive payments due under this Agreement. ESCOE may enter into subcontracts for the Work without obtaining CUSTOMER's consent.

ARTICLE 11 MISCELLANEOUS PROVISIONS

11.1 The Table of Contents and headings in this Agreement are for information and convenience only and do not modify the obligations of this Agreement.

11.2 Confidentiality. As used herein, the term "CONFIDENTIAL INFORMATION" shall mean any information in

readable form or in machine readable form, including software supplied to CUSTOMER by ESCOE that has been identified or labeled as “Confidential” and/or “Proprietary” or with words of similar import. CONFIDENTIAL INFORMATION shall also mean any information that is disclosed orally and is designated as “Confidential” and/or “Proprietary” or with words of similar import at the time of disclosure and is reduced to writing, marked as “Confidential” and/or “Proprietary” or with words of similar import, and supplied to the receiving party within ten (10) days of disclosure. All rights in and to CONFIDENTIAL INFORMATION and to any proprietary and/or novel features contained in CONFIDENTIAL INFORMATION disclosed are reserved by the disclosing party; and the party receiving such disclosure will not use the CONFIDENTIAL INFORMATION for any purpose except in the performance of this Agreement and will not disclose any of the CONFIDENTIAL INFORMATION to benefit itself or to damage the disclosing party. This prohibition includes any business information (strategic plans, etc.) that may become known to either party. Each party shall, upon request of the other party or upon completion or earlier termination of this Agreement, return the other party’s CONFIDENTIAL INFORMATION and all copies thereof. Notwithstanding the foregoing provisions, neither party shall be liable for any disclosure or use of information disclosed or communicated by the other party if the information: (a) is publicly available pursuant to the provisions of the Open Meetings Act (OMA) and the Freedom of Information Act (FOIA) at the time of disclosure or later becomes publicly available other than through breach of this Agreement; or (b) is known to the receiving party at the time of disclosure; or (c) is subsequently rightfully obtained from a third party on an unrestricted basis; or (d) is approved for release in writing by an authorized representative of the disclosing party; or (e) is otherwise required by law. The obligation of this Article shall survive any expiration, cancellation or termination of this Agreement.

- 11.3** If any provision is held illegal, invalid or unenforceable, the remaining provisions of this Agreement shall be construed and interpreted to achieve the purposes of the Parties.
- 11.4** Risk of loss for all equipment and materials provided by ESCOE hereunder shall transfer to CUSTOMER upon delivery to CUSTOMER’s Facilities from ESCOE or its Subcontractor and title shall pass upon final acceptance or final payment by CUSTOMER to ESCOE, whichever occurs later.
- 11.5** Final notice or other communications required or permitted hereunder shall be sufficiently given if personally delivered to the person specified below, or if sent by registered or certified mail, return receipt requested, postage prepaid, addressed as follows:

To ESCOE:

Control Technology and Solutions, LLC
 Attention: Scott Ririe
 16647 Chesterfield Grove Road, Suite 200
 Chesterfield, MO 63005

To
 CUSTOMER:

Consolidated School
 District 158 650 Dr. John
 Burkey Dr.
 Algonquin, IL 60102
 Attn: Director of Operations and Maintenance

- 11.6 Waiver.** Customer or ESCOE's failure to insist upon the performance or fulfillment of any of each party's obligations under this Agreement shall not be deemed or construed as a waiver or relinquishment of the future performance of any such right or obligation hereunder.
- 11.7** If any provision of this Agreement or the application thereof to any circumstances shall be held to be invalid or unenforceable, then the remaining provisions of this Agreement or the application thereof to other circumstances shall not be affected hereby and shall be valid and enforceable to the fullest extent permitted by law.
- 11.8 Performance/Payment Bond.** ESCOE shall furnish a performance bond and payment bond covering the construction of the work in an amount equal to the contract price prior to commencement of work in a form acceptable to CUSTOMER.
- 11.9** The bond identified in Section 11.8 shall cover only the performance and payment exposure associated with the performance of the construction portion of the work.
- 11.10 Ambiguities.** The parties have each had the opportunity to review and negotiate the terms of this Agreement, and any rule of construction to the effect that ambiguities are to be resolved against the drafting party shall not apply in the interpretation of this Agreement.
- 11.11 Headings.** The section headings contained herein are intended for convenience and reference only, and are not a part of this Agreement.
- 11.12 Authority to Enter into this Contract.** The persons signing the Agreement on behalf of the parties are authorized to execute and accept contracts of this nature.
- 11.13 CUSTOMER Representations.** To the extent applicable, ESCOE and CUSTOMER warrant that they have the necessary power and authority to enter into this Agreement and this Agreement has been duly authorized by its duly elected representatives. This Agreement is a legal, valid and binding obligation of ESCOE and CUSTOMER.

ARTICLE 12 ARBITRATION

- 12.1** The Parties agree that any controversy or claim between ESCOE and CUSTOMER arising out of or relating to this Agreement, or the breach thereof, at the sole discretion of CUSTOMER shall be settled by arbitration, conducted in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association at a location specified by CUSTOMER. The arbitration will be conducted at a mutually agreeable location. Any award rendered by the arbitrator shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

ARTICLE 13 LIMIT OF LIABILITY – FIRE AND/OR SECURITY SYSTEMS

- 13.1** The parties agree that ESCOE is not an insurer; that the fire and/or security system and/or Service purchased herein is designed only to reduce the risk of loss; that CUSTOMER chose such system and/or Service from several levels of protection offered by ESCOE; that ESCOE will not be held liable for any loss, whether in tort or contract, which may arise from the failure of the system and/or Service; and that customer will indemnify, defend and save ESCOE harmless from any and all loss, claims, actions, causes of actions or expense, including attorneys' fees, arising from the actual or alleged malfunction or non-function of the system and/or service. The parties further agree that this Agreement shall not confer any rights on the part of any person or entity not a party hereto, whether as a third-party beneficiary or otherwise. Because it is extremely difficult to assess actual damages arising from the failure of a system and/or service, the parties agree that if any liability is imposed on ESCOE for damages or personal injury to either customer or any third party, such liability shall be limited to an aggregate amount not to exceed the value of the system installed. This sum shall be paid either as (i) liquidated damages and not as a penalty, or (ii) a limitation of liability agreed upon by the parties. No suit or action shall be brought against ESCOE more than one (1) year after the accrual of the cause of action thereof.

ARTICLE 14 GOVERNING LAW

This Agreement and the performance thereof shall be governed, interpreted, construed, and regulated by the laws of the State of Illinois. Any litigation concerning this Agreement shall be conducted in the courts located in McHenry County, and the parties hereto agree to the venue and personal jurisdiction of these courts.

APPROVALS:

The parties hereby execute this Agreement as of the date first set forth herein by the signatures of their duly authorized representatives:

Control Technology and Solutions, LLC

By _____

Name _____

Title _____

Date _____

Customer _____

By _____

Name _____

Title _____

Date _____

ATTACHMENT A TO CONTRACT SCOPE OF WORK

ESCOE includes the following requirements taken from District 158 RFP #2020-32

Grant Services: Provide assistance with processing of Applications for Grants, Incentives, and Rebates from all available sources as a part of the proposed Guaranteed Energy Savings Projects.

Professional Engineer Services: ESCOE will provide a Professional Engineer licensed in the State of Illinois who shall, at a minimum:

- Review and approve design of energy conservation measures under this contract
 - Process all building permits necessary for the project
 - Review of all commissioning efforts as outlined below herein
 - Process all occupancy permits necessary for the project
 - Review and approve ESCOE's annual audit of energy savings under this contract during the payback period
- As a part of the Guaranteed Energy Savings Contract, ESCOE's Professional Engineer providing the services listed above shall also gain consensus on designs with the School District's Architect of record; consensus shall not be unreasonably withheld.

The School District's Architect of Record's time will be funded by the School District for these outlined service.

Construction Management: ESCOE will be required to work with current facilities management personnel in order to coordinate construction and provide appropriate training in operations and maintenance of all installed improvements. The District requires a full time on-site Construction Superintendent during the construction. No equipment or other improvements will be installed that would require the District to hire additional personnel unless contract negotiations produce an explicit exemption for a specific installation. Maintenance responsibilities shall be retained by the District, but at their discretion, they can negotiate for maintenance services with ESCOE.

Commissioning: ESCOE will be required to commission all new equipment, building systems and control programs installed as a part of the project. Commission shall include:

- Start-up of all new building control equipment whenever available from a qualified representative of the manufacturer of said equipment
- Functional performance testing of all new control systems and reprogrammed control systems
- Delivery of written documentation of all above referenced commissioning efforts to the District

O&M Manuals: At least two hard copies and one electronic (pdf) version of the operation and maintenance manuals for each site will be provided for all equipment replacements and/or upgrades. Completeness of delivered manuals are subject to approve of District.

As-Built Drawings: Where applicable, ESCOE must provide two hard copies and one electronic (pdf) version of "as built" and record drawings (or such electronic equivalents as may be agreed to with District) of all existing and modified conditions associated with the project, conforming to typical engineering standards. These should include controls drawings and operating manuals within 30 days of completed project installation.

District Inspection: District retains the right to have its representative visit the site during the audit and implementation phases of the project, and to attend relevant on-site or off-site meetings of ESCOE and or its subcontractors. District will have the right to inspect, test and approve the materials and work conducted in the facilities during construction and operation.

Final Approval of District: District retains final approval over the scope of work and all end use conditions.

Ownership of Drawings, Reports and Materials: All drawings, reports and materials prepared by ESCOE specifically in performance of this contract shall become the property of District and will be delivered to District as needed, required or upon completion of construction.

Project Scope Development

The Energy Conservation Measures (ECMs) identified below represent the projects that were evaluated and are being proposed by CTS for the Huntley School District 158.

ECM-1: Lighting (LED) Upgrades for (3) Schools - Heineman MS, Martin ES and Leggee ES

ECM-2: Kitchen Hood controls upgrade for (8) School kitchens – Huntley HS, Heineman MS, Marlow MS, Conley ES, Mackeben ES, Martin ES, Chesak ES and Leggee ES.

ECM-1: Lighting (LED) Upgrades – Scope of Work

Heinemann Middle School:

- Supply & install Type-A LED lamps to replace existing T8 lamps
- Supply & install Type-B LED lamps (Fixtures have Robertson ballasts which are not compatible with Type-A lamps)
- Supply & install Type-B lamps in the gymnasium
- Photometric layout
- Recycle lamps

Summary of lighting upgrade

		Heinemann Middle School - Type A (Gym Type-B)							
		Address: 725 Dr. John Burkey Dr. Algonquin, IL 60102							
Indoor Area	Action	Hours Per Year	Existing Fixture		RetroFit Fixture		CTS Proposal 6/15/20		
			Qty	Type	Qty	Type	Type-A Lamps	Type-B lamps	
Hallways	Retrofit	2603	95	2x4 2L F28 T8	95	2x4 2L 4ft. LED	190		
Hallways	Retrofit	2603	276	1x4 1L F28 T8	276	1x4 1L 4ft. LED	276		
Pentohouses	Retrofit	2603	28	2x4 2L F28 T8	28	2x4 2L 4ft. LED	56		
Classrooms + Multi-Purpose	Retrofit	1743	495	2x4 2L F28 T8	495	2x4 2L 4ft. LED	990		
Offices + Teachers Lounge	Retrofit	2241	51	1x4 1L F28 T8	51	1x4 1L 4ft. LED	51		
Offices + Teachers Lounge	Retrofit	2241	65	2x4 2L F28 T8	65	2x4 2L 4ft. LED	130		
Gymnasium	Retrofit	2211	40	Highbay 6L T8	40	Highbay 6L 4ft. LED		240	
Gymnasium	Retrofit	2211	14	2x4 2L F28 T8	14	2x4 2L 4ft. LED	28		
Gymnasium	Retrofit	2211	80	1x4 1L F28 T8	80	1x4 1L 4ft. LED	80		
Library	Retrofit	1743	14	2x4 2L F28 T8	14	2x4 2L 4ft. LED	28		
Library	Retrofit	1743	8	1x4 1L F28 T8	8	1x4 1L 4ft. LED	8		
Library	Retrofit	1743	85	1x4 2L F28 T8	85	1x4 2L 4ft. LED	170		
Cafeteria/Kitchen/Receiving	Retrofit	1211	89	1x4 1L F28 T8	89	1x4 1L 4ft. LED	89		
Cafeteria/Kitchen/Receiving	Retrofit	1211	53	2x4 2L F28 T8	53	2x4 2L 4ft. LED	106		
Auditorium/Music/Band	Retrofit	1743	78	1x4 1L F28 T8	78	1x4 1L 4ft. LED	78		
Auditorium/Music/Band	Retrofit	1743	51	2x4 2L F28 T8	51	2x4 2L 4ft. LED	102		
	Replace		0		0				
			1522	= Total Exist Indoor	1522	= Total Indoor Fixtures	2382	240	

NOTE: Hallway T5 lamps are not included in the scope

Martin Elementary School:

- Supply & install Type-A LED lamps to replace existing T8 lamps
- Supply & install Type-B LED lamps (Only fixtures with Robertson ballasts which are not compatible with Type-A lamps)
- Supply & install Type-B lamps in the gymnasium
- Photometric layout
- Recycle lamps

Summary of lighting upgrade

		Martin Elementary School - Type-A+B (Gym Type-B)							
		Address: 10920 Reed Road Lake in the Hills, IL 60156							
Indoor Area	Action	Hours Per Year	Existing Fixture			RetroFit Fixture		CTS Proposal 6/15/20	
			Qty	Type	W	Qty	Type	Type-A Lamps	Type-B lamps
Hallways	Retrofit	2603	163	2x4 1L F28 T8	25	163	2x4 1L 4ft. LED		163
Hallways	Retrofit	2603	70	2x2 1L F17 T8	18	70	2x2 1L 2ft. LED		70
Hallways	Retrofit	2603	2	1x4 2L F28 T8	50	2	1x4 2L 4ft. LED		4
Bathrooms	Retrofit	2603	53	1x4 2L F28 T8	60	53	1x4 2L 4ft. LED		106
Bathrooms	Retrofit	2603	1	2x2 2L F17 T8	34	1	2x2 2L 2ft. LED		1
Bathrooms	Retrofit	2603	9	2x4 2L F28 T8	50	9	2x4 2L 4ft. LED	18	
Boiler/Custodian/Electrical	Retrofit	2603	68	2x4 2L F28 T8	50	68	2x4 2L 4ft. LED	136	
Classrooms + Multi-Purpose	Retrofit	1743	1038	2x4 2L F28 T8	50	1038	2x4 2L 4ft. LED		2076
Offices + Conf. Rooms	Retrofit	2241	10	2x2 2L F17 T8	34	10	2x2 2L 2ft. LED		20
Offices + Conf. Rooms	Retrofit	2241	64	2x4 2L F28 T8	50	64	2x4 2L 4ft. LED		128
Gymnasium	Replace	2211	27	Highbay 6L T8	175	27	Highbay 6L 4ft. LED		162
Gymnasium	Replace	2211	21	2x4 2L F28 T8	50	21	2x4 2L 4ft. LED		42
Library	Replace	1743	39	2x4 2L F28 T8	50	39	2x4 2L 4ft. LED	64	14
Library	Replace	1743	16	1x4 2L F28 T8	50	16	1x4 2L 4ft. LED		32
Library	Replace	1743	11	2x4 2L F28 T8	50	11	2x4 2L 4ft. LED	22	
Cafeteria/Kitchen/Receiving	Replace	1211	103	2x4 2L F28 T8	50	103	2x4 2L 4ft. LED		206
			1695	= Total Exist Indoor		1695	= Total New Fixtures	240	3024

Leggee Elementary School:

- Supply & install Type-A LED lamps to replace existing T8 lamps
- Supply & install Type-B LED lamps (Only fixtures with Robertson ballasts which are not compatible with Type-A lamps)
- Supply & install Type-B lamps in the gymnasium
- Photometric layout
- Recycle lamps

Summary of lighting upgrade

		Leggee Elementary School - Type-A+B (Gym Type-B)							
		Address: 13723 Harmony Rd, Huntley, IL 60142							
Indoor Area	Action	Hours Per Year	Existing Fixture			RetroFit Fixture		CTS Proposal 6/15/20	
			Qty	Type	Qty	Type	Type-A Lamps	Type-B lamps	
Hallways	Retrofit	2603	150	2x4 1L F28 T8	150	2x4 1L 4ft. LED	150		
Hallways	Retrofit	2603	45	2x2 1L F17 T8	45	2x2 1L 2ft. LED		45	
Hallways	Retrofit	2603	41	1x4 2L F28 T8	41	1x4 2L 4ft. LED	45	37	
Boiler/Custodian/Electrical	Retrofit	2603	65	2x4 2L F28 T8	65	2x4 2L 4ft. LED		130	
Classrooms + Multi-Purpose	Retrofit	1743	520	2x4 2L F28 T8	520	2x4 2L 4ft. LED		1040	
Classrooms + Multi-Purpose	Retrofit	1743	16	2x4 4L F28 T8	16	2x4 4L 4ft. LED		64	
Offices + Conf. Rooms	Retrofit	2241	117	2x4 2L F28 T8	117	2x4 2L 4ft. LED		234	
Gymnasium	Retrofit	2211	18	Highbay 6L T8	18	Highbay 6L 4ft. LED		108	
Cafeteria/Kitchen/Receiving	Retrofit	1211	58	2x4 2L F28 T8	58	2x4 2L 4ft. LED	64	52	
			1030	= Total Exist Indoor	1030	= Total Indoor Fixtures	259	1710	

ECM-2: Kitchen Hood Controls Upgrades – Scope of Work

The kitchen hood upgrade controls at (8) school buildings includes installing (1) Temperature sensor, (1) CO sensor and (1) Smoke detector for each hood.

1. Supply & install temperature sensor at the exhaust duct
2. Supply & install CO sensor at the hood
3. Supply & install Smoke detector at the hood
4. Tie the temperature sensor with the exhaust fan existing contactor
5. Tie the CO sensor with the exhaust fan existing contactor
6. Tie the smoke detector with the exhaust fan existing contactor
7. Tie exhaust fan & MAU together
8. Not connected to the BAS system
9. Exhaust & MAU fans will be ON when temperature > 85F
10. Exhaust & MAU fans will be ON when the CO reading > 30 ppm

Summary of the kitchen hood installation

School	Exhaust Fan HP	MAU Fan HP	Number of Hoods	Hood Size	Duct Collar Diameter (in)	Temperature sensor (new)	CO Sensor (new)	Smoke Detector (new)
Conley ES	2	2	1	21 x 4.5 x 2	10"	Yes	Yes	Yes
Mackeben ES	2	2	1	22 x 4.5 x 2	10"	Yes	Yes	Yes
Martin ES	2	2	1	16 x 4.5 x 2	10"	Yes	Yes	Yes
Chesak ES	1	1.5	1	15 x 4.5 x 2	10"	Yes	Yes	Yes
Leggee ES	1	1.5	1	15 x 4.5 x 2	10"	Yes	Yes	Yes
Heinemann MS	7.5		1	32 x 4.5 x 2	10"	Yes	Yes	Yes
Marlowe MS	7.5		1	32 x 4.5 x 2	10"	Yes	Yes	Yes
Huntley HS	7.5	7.5	2	16 x 5 x 2	12"	Yes	Yes	Yes

ATTACHMENT B TO CONTRACT INSTALLATION SCHEDULE

The Project Team will mobilize in July of 2020 to begin the Lighting and Kitchen Hood Controls System scope of work. We understand that school is scheduled for return on August 10, 2020. Mobilization and installation of projects are not to be interruptive to district activities. It is also CTS's intent to not hinder the preparation of the buildings for the start of school. The district has provided the following parameters for completion of this work that will be met.

Contractor would work weekday hours to complete the work before 8-10-20, during six day winter break, during the five day spring break, in June 2021, weekend day hours, or weeknight hours on school days. All work must be done by June 30, 2021.

The project completion date is contingent upon many factors including but not limited to:

- Timely delivery on the part of the school district
- Timely delivery of schedules

A detailed project schedule will be completed by the CTS Project Manager in collaboration with the District

**ATTACHMENT C CONTRACT
PAYMENT SCHEDULE**

1. The following is the payment schedule for the project.

Construction of the Project

The project shall be invoiced on a monthly basis for the work completed and equipment ordered for the project. These progress invoices shall be submitted on the last day of each month. All invoices shall be billed as net thirty (30) days.

A mobilization fee will be due upon contract execution for 10% of the contract price.

ATTACHMENT D ENERGY GUARANTEE

When used in this Agreement, the following capitalized words shall have the meanings ascribed to them below:

1. DEFINITIONS

"Baseline Period" is the period of time which defines the Baseline Usage and is representative of the facilities' operations, consumption, and usage that is used as the benchmark for determining cost avoidance.

"Baseline Usage or Demand" the calculated or measured energy usage (demand) by a piece of equipment or a site prior to the implementation of the ECMs. Baseline physical conditions, such as equipment counts, nameplate date, and control strategies, will typically be determined through surveys, inspections, and/or metering at the site.

"Energy and Operational Cost avoidance Guarantee Practices" are those practices identified in Attachment E, intended to achieve avoided costs in energy and/or operating expenses.

"Energy Costs" may include the cost of electricity and fuels to operate HVAC equipment, facility mechanical and lighting systems, and energy management systems, and the cost of water and sewer usage, as applicable.

"ECM" the Energy Conservation Measure (ECM) is the installation of equipment or systems, or modification of equipment or systems as described in Attachment A.

"Facilities" shall mean those buildings where the energy and operational cost savings will be realized.

"F.E.M.P." shall mean the Federal Energy Management Program of the U.S. Department of Energy and its Measurement and Verification Guidelines for Federal Energy Projects (DOE/GO-10096-248, February 1996, or later versions). The F.E.M.P. guidelines classify measurement and verification approaches as Option A, Option B, Option C, and Option D. The F.E.M.P. guidelines are based on the International Performance Measurement and Verification Protocol (I.P.M.V.P.) and are written to be fully consistent with it. It is intended to be used by Federal procurement teams consisting of contracting and technical specialists. The focus of F.E.M.P. guidelines is on choosing the M&V option and method most appropriate for specific projects.

"Financing Document" refers to that document executed between CUSTOMER and a third-party financing entity providing for payments from CUSTOMER to third-party financing entity.

"Final Project Acceptance" refers to the CUSTOMER acceptance of the installation of the ECMs as described in Attachment A.

"First Guarantee Year" is defined as the period beginning on the first (1st) day of the month following the date of Final Retrofit Acceptance of the Work installed and ending on the day prior to the first (1st) anniversary thereof.

"Guarantee Period" is defined as the period beginning on the first (1st) day of the First Guarantee Year and ending on the last day of the final Guarantee Year.

"Guarantee Year" is defined as the First Guarantee Year and each of the successive twelve (12) month periods commencing on the anniversary of the commencement of the First Guarantee Year throughout the Term of this Agreement.

"Guaranteed Savings" is defined as the amount of avoided Energy and Operational Costs necessary to pay for the cost of the Work incurred by CUSTOMER in each Guarantee Year (as identified in Section 3.1 hereof).

"I.P.M.V.P." International Performance Measurement and Verification Protocol (July 1997, or later version) provides an overview of current best practice techniques available for measurement and verification of performance contracts. This document is the basis for the F.E.M.P. protocol and is fully consistent with it. The techniques are classified as Option A, Option B, Option C, and Option D.

"Measurement and Verification Plan" (M&V Plan) is defined as the plan providing details on how the Guarantee Savings will be verified.

"Operational Costs" shall include the cost of operating and maintaining the facilities, such as, but not limited to, the cost of inside and outside labor to repair and maintain Covered Systems and Equipment, the cost of custodial supplies, the cost of replacement parts, the cost of deferred maintenance, the cost of lamp and ballast disposal, and the cost of new capital equipment.

"Option A" is a verification approach that is designed for project in which the potential to perform needs to be verified, but the actual performance can be stipulated based on the results of the "potential to perform and generate savings" verification and engineering calculations. Option A involves procedures for verifying that:

- Baseline conditions have been properly defined; and
- The equipment and/or systems that were contracted to be installed have been installed; and
- The installed equipment components or systems meet the specifications of the contract in terms of quantity, quality, and rating; and
- The installed equipment is operating and performing in accordance with the specifications in the contract and meeting all functional tests; and
- The installed equipment components or systems *continue, during the term of the contract*, to meet the specifications of the contract in terms of quantity, quality and rating, and operation and functional performance.

"Option B" is for projects in which the potential to perform and generate Savings needs to be verified; and actual performance during the term of the contract needs to be measured (verified). Option B involves procedures for verifying the same items as Option A plus verifying actual achieved energy savings during the term of the contract. Performance verification techniques involve engineering calculations with metering and monitoring.

"Option C" is also for projects in which the potential to perform needs to be verified and actual performance during the term of the contract needs to be verified. Option C involves procedures for verifying the same items as Option A plus verifying actual achieved energy savings during the term of the contract. Performance verification techniques involve utility whole building meter analysis and/or computer simulation calibrated with utility billing data.

"Option D" is a verification technique where calibrated simulations of the baseline energy use and/or calibrated simulations of the post-installation energy consumption are used to measure Savings from the Energy Conservation Measures. Option D can involve measurements of energy use both before and after the Retrofit for specific equipment or energy end use as needed to calibrate the simulation program. Periodic inspections of the equipment may also be warranted. Energy consumption is calculated by developing calibrated hourly simulation models of whole-building energy use, or equipment sub-systems in the baseline mode and in the post-installation mode and comparing the simulated annual differences for either an average year or for conditions that correspond to the specific year during either the baseline or post-installation period.

"Retrofit" is the work provided by ESCOE as defined by the

"ECMs". **"Savings"** is defined as avoided, defrayed, or

reallocated costs. **"Term"** shall have the meaning as defined in

Section 2 hereof.

"Total Guarantee Year Savings" is defined as the summation of avoided Energy and Operational Costs realized by facilities in each Guarantee Year as a result of the Retrofit provided by ESCOE as well as Excess Savings, if any, carried forward from previous years.

"Two-Year Savings Shortfall" shall mean the combined Savings Shortfall (as defined in Section 3.1.5) for the First Guaranty Year and the Second Guaranty Year.

1. TERM AND TERMINATION

- 1.1 Guarantee Term.** The Term of this Guarantee Period shall commence on the first (1st) day of the month following the date of Final Project Acceptance of the Work installed pursuant to this agreement and shall terminate at the end of the Guarantee Period unless terminated earlier as provided for herein. The Term of this Guarantee Period is defined in Section 1 of Attachment E.
- 1.2 Guarantee Termination.** Should this Agreement be terminated in whole or in part for any reason prior to the end of the Term, the Guaranteed Savings for the Guarantee Year in which such termination becomes effective shall be prorated as of the effective date of such termination, with a reasonable adjustment for seasonal fluctuations in Energy and Operational Costs, and the Guaranteed Savings for all subsequent Guarantee Years shall be null and void.

2. SAVINGS GUARANTEE

- 2.1 Guaranteed Savings.** ESCOE guarantees to CUSTOMER that the identified Facilities will realize the total energy and operational cost avoidance through the combined value of all ECMs over the Term of the contract as defined in Section 1 of Attachment E. In no event shall the savings guarantee provided herein exceed the total installation, maintenance, and financing costs for the Work under this Agreement. Notwithstanding any other provision of this Agreement required savings reconciliation or verification, the Total Guarantee Year Savings in each Guarantee Year are stipulated and agreed to by both parties to this Agreement to equal the Energy Costs and Operational Cost Avoidance amounts set forth in Attachment E (Schedule of Savings), and shall be deemed realized upon the date of final Project Acceptance.
- 3.2.1 Acceptance of Guarantee Reconciliation.** At the end of the first Guarantee Year the CUSTOMER will have forty- five (45) days to review the guarantee savings reconciliation report and provide written notice to ESCOE of non- acceptance of the Guarantee Savings for that Guarantee Year. Failure to provide written notice within forty-five (45) days of the receipt of the guarantee savings reconciliation report will deem it accepted by CUSTOMER. If the annual guarantee savings have been met after the first year, the guarantee will be deemed realized for the entire guarantee term.
- 3.2.2 Guarantee Savings Reconciliation.** Guarantee Savings will be determined in accordance with the methodology(s), operating parameters, formulas, and constants as described below and/or defined in Attachment E and/or additional methodologies defined by ESCOE that may be negotiated with CUSTOMER at any time. For reconciliation of Guarantee Savings employing the method of utility bill analysis consistent with F.E.M.P. Option C. Energy usage for the Facilities for such Guarantee Year will be summarized and compared with the adjusted Baseline Period energy usage for the Facilities through the use of energy accounting software. The difference between the adjusted Baseline Period energy usage and the Guarantee Year energy usage will be multiplied by the applicable energy rate as defined in Attachment E, to calculate the Energy Cost avoidance. Energy Cost avoidance may also include, but are not limited to, Savings from demand charges, power factor correction, taxes, ratchet charges, rate changes and other utility tariff charges that are reduced as a result of the ESCOE involvement. A Baseline Period will be specified (Section 1 of Attachment E) for the purpose of utility bill analysis. AND/OR for those energy audits employing the method consistent with I.P.M.V.P. and/or F.E.M.P. Options A and/or B: For each ECM, ESCOE will employ an M&V Plan which may be comprised of any or all of the following elements:
1. Pre-retrofit model of energy consumption or demand
 2. Post-retrofit measured energy consumption
 3. Post-retrofit measured demand and time-of-use
 4. Post-retrofit energy and demand charges
 5. Sampling plan
 6. Stipulated Values

The value of the energy savings will be derived from the measured data and engineering formulae included herein, and the applicable energy charges during each Guarantee Year. In some cases, energy usage and/or demand will be calculated from measured variables that directly relate to energy consumption, demand or cost, such as, but not limited to, measured flow, temperature, current, voltage, enthalpy or pressure. AND/OR for those energy audits employing the method consistent with I.P.M.V.P. and/or F.E.M.P. Option D:

For each Energy Conservation measure, ESCOE will employ an M&V Plan which may be comprised of any or all of the following elements:

1. Pre-retrofit model of energy consumption or demand

2. Post-retrofit model of energy consumption or demand
3. Post-retrofit measured energy consumption
4. Post-retrofit measured demand and time-of-use
5. Post-retrofit energy and demand charges
6. Sampling Plan
7. Stipulated values

The value of the energy savings will be derived from a calibrated simulation of either the whole building or of subsystems in the building to determine the difference in the performance of the specific equipment being replaced. This method may entail as needed one-time measurements of the performance of the energy consuming systems in the building in order to calibrate the simulation model. Energy usage for the Facilities for such Guarantee Year will be derived through the use of simulation programs.

The value of the energy savings will be derived from a calibrated simulation of either the whole building or of subsystems in the building to determine the difference in the performance of the specific equipment being replaced. This method may entail as needed one-time measurements of the performance of the energy consuming systems in the building in order to calibrate the simulation model. Energy usage for the Facilities for such Guarantee Year will be derived through the use of simulation programs.

- 3.3 Operational Cost Avoidance.** The agreed-upon Operational Cost Avoidance as described in Attachment E (Schedule of Savings) will be deemed realized upon execution of this Agreement and will begin to accrue on the date of the completion and acceptance of each Retrofit improvement. These Savings are representative of information provided by the CUSTOMER consisting of either whole or partial budgeted operational costs and as such, it is hereby understood and agreed that the CUSTOMER is wholly responsible for assuring that these budgeted Operational Costs are accurate and achievable.
- 3.4 Base Year Adjustments.** Baseline Period shall be adjusted to reflect: changes in occupied square footage; changes in energy-consuming equipment; changes in the Facilities; changes in Energy and Operational Cost Avoidance Guarantee Practices adversely affecting energy consumption and/or demonstrated operational changes; changes in weather between the Baseline Period and the Guarantee Year; and documented or otherwise conclusively established metering errors for the Baseline Period and/or any Guarantee Year adversely affecting energy usage measurement.
- 3.4.1 Facility Operational Changes.** Except in the case of emergencies CUSTOMER agrees it will not, without the consent of an Authorized Representative of ESCOE: make any significant deviations from the applicable Energy and Operational Cost Avoidance Guarantee Practices; put any system or item of equipment in a permanent "on" position, if the same would constitute a deviation from the applicable Energy and Operational Cost Avoidance Guarantee Practices; or assume manual control of any energy management system or item of equipment, if the same would constitute a deviation from the applicable Energy and Operational Cost Avoidance Guarantee Practices.
- 3.4.2 Hours and Practices.** To achieve these energy savings, ESCOE and CUSTOMER agree upon the operating practices listed in Attachment E.
- 3.4.3 Activities and Events Adversely Impacting Savings.** CUSTOMER shall promptly notify ESCOE of any activities known to CUSTOMER which adversely impact: ESCOE's ability to realize the Guaranteed Savings and ESCOE shall be entitled to reduce its Guaranteed Savings by the amount of any such adverse impact to the extent that such adverse impact is beyond ESCOE's reasonable control.
- 3.5 Guarantee Adjustment.** ESCOE's Guaranteed Savings obligations under this Agreement are contingent upon: (1) CUSTOMER following the Energy and Operational Cost Avoidance Guarantee Practices set forth herein and in Attachment E;
- (2) no alterations or additions being made by CUSTOMER to any of the Covered systems and Equipment without prior notice to and agreement by ESCOE;
 - (3) CUSTOMER sending all current utility bills to ESCOE within two (2) weeks after receipt by CUSTOMER, if CUSTOMER fails to provide current utility bills for a period of time in excess of six (6) months ESCOE may, at its sole discretion, deem the Guarantee Savings obligation met during that period and any successive periods, and
 - (4) ESCOE's ability to render services not being impaired by circumstances beyond its control. To the extent CUSTOMER defaults in or fails to perform fully any of its obligations under this Agreement, ESCOE may, in its sole discretion, adjust its Guaranteed Savings obligation; provided, however, that no adjustment hereunder shall be effective unless ESCOE has first provided CUSTOMER with written notice of CUSTOMER's default(s) or failure(s) to perform and CUSTOMER has failed to cure its default(s) to perform within thirty (30) days after the date of such notice.

The bond provided for the construction of the project only covers the performance of materials and workmanship for the completion of said construction work, not the energy guarantee. **CUSTOMER Inspections.** CUSTOMER retains the right to have its representative visit the site during the audit and implementation phases of the project, and to attend relevant on-site or off-site meetings of ESCOE and/or its subcontractors. CUSTOMER will have the right to inspect, test and approve the materials and work in the facilities during construction and operation.

ATTACHMENT E SCHEDULE OF SAVINGS

1. Schedule of Savings

The total energy savings over a 20 year period of time is equal to or greater than \$471,101.70 as defined in the following:

- Annual Operational Cost Savings are not less than \$0.0/yr
- Annual Energy Savings are not less than \$19,389/yr

Annual Reconciliation and Savings Allocation				
Year	Avoided Utility Savings from Existing Baseline	Secured Grants and Utility Incentives	Long Term Operating Costs Savings	Guaranteed Savings
1	\$ 19,389.00	TBD	\$ -	\$19,389.00
2	\$ 19,776.78	\$ -	\$ -	\$19,776.78
3	\$ 20,172.32	\$ -	\$ -	\$20,172.32
4	\$ 20,575.76	\$ -	\$ -	\$20,575.76
5	\$ 20,987.28	\$ -	\$ -	\$20,987.28
6	\$ 21,407.02	\$ -	\$ -	\$21,407.02
7	\$ 21,835.16	\$ -	\$ -	\$21,835.16
8	\$ 22,271.87	\$ -	\$ -	\$22,271.87
9	\$ 22,717.30	\$ -	\$ -	\$22,717.30
10	\$ 23,171.65	\$ -	\$ -	\$23,171.65
11	\$ 23,635.08	\$ -	\$ -	\$23,635.08
12	\$ 24,107.78	\$ -	\$ -	\$24,107.78
13	\$ 24,589.94	\$ -	\$ -	\$24,589.94
14	\$ 25,081.74	\$ -	\$ -	\$25,081.74
15	\$ 25,583.37	\$ -	\$ -	\$25,583.37
16	\$ 26,095.04	\$ -	\$ -	\$26,095.04
17	\$ 26,616.94	\$ -	\$ -	\$26,616.94
18	\$ 27,149.28	\$ -	\$ -	\$27,149.28
19	\$ 27,692.27	\$ -	\$ -	\$27,692.27
20	\$ 28,246.11	\$ -	\$ -	\$28,246.11
Total	\$ 471,101.70	\$ -	\$ -	\$ 471,101.70

or the sum of the Retrofit and Support Costs for such Guarantee Year, whichever is less. Provided further, in no event shall the savings guarantee provided herein exceed the total installation, maintenance, and financing costs for the Work under this Agreement.

The Term of this contract is until the date of the final acceptance of the work in place.

The Baseline Period is defined as Jan 2019 to Dec 2019 for Electric and Mar 2019 to Feb 2020 for Gas.

Note: The rates we are utilizing in our savings calculations which were obtained from Doug Renkosik. The rate utilized for Electricity is \$0.07322/kWh and the rate utilized for Natural Gas is \$0.3929/therm.

CTS and the customer agree that the energy savings for each will be based on a 2% escalation factor for the costs of utilities.

1.1 Energy Savings. The annual guarantee of energy cost avoidance is the sum of the below listed ECMs. The savings are based on the listed Energy and operational Cost Avoidance Guarantee Practices contained in Section 1.3 herein.

FEMP "Option A" measurement and verification procedures will be utilized to determine the actual natural gas and electric savings resulting from the installation of the following energy conservation measures.

*ECM #1 – Lighting Upgrades
ECM #2 – Kitchen Hood Control Upgrades*

Energy Savings Summary for all ECMs

Lighting	Lighting Retrofit	Energy Savings (\$/yr)
	Martin	\$ 4,949
	Leggee	\$ 3,049
	Heinemann	\$ 3,891
Kitchen Exhaust Hood	Eight (8) Schools	\$ 7,499
Total (All ECMs)		\$ 19,389

"Option A" is a verification approach that is designed for projects in which the potential to perform needs to be verified, but the actual performance can be stipulated based on the results of the "potential to perform and generate savings" verification and engineering calculations.

1.2 Operational Cost Savings. The district is not recognizing any operational savings as part of this contract.

1.2.1 Secured Grants. CTS will work with the BOARD to apply for energy efficient grants through Com-ed and Nicor Gas. CTS currently does not attribute any of the potential grants towards the projected operational savings, but any grants secured will be totaled within the Cumulation of Savings.

1.2.2 Long Term Operating Cost Reductions. The School Code Section 19b-1.1 allows energy conservation measures that provide long term operating cost reductions. Long term operating costs would include preventive and corrective maintenance, system repairs, and equipment replacements at their end of useful life. Much like your own automobile, as equipment ages the frequency and costs of repairs and maintenance increases as you near the end of the equipment’s usefulness. This equipment will need to be maintained, repaired and eventually replaced to maintain thermal comfort and good indoor air quality.

The district is not recognizing any long-term operational savings as part of this contract.

1.3 Energy and Operational Cost Avoidance Guarantee Practices:

1.3.1 BASELINE Operating Parameters: *are the facility(s) and system(s) operations measured and/or observed before commencement of the Work. The date summarized will be used in the calculation of the baseline energy consumption and/or demand and for calculating baseline adjustments for changes in facility operation that occur during the Guarantee Period. CTS and CUSTOMER agree that the operating parameters specified in this section are representative of equipment operating characteristics during the Base Year specified in this Agreement. The following data was collected with the assistance of District Personnel and included in the RFP.*

1.3.2 **PROPOSED Operating Parameters** of the facility(s) and system(s) after completion of Work. The data summarized will be used in the calculation of the post-retrofit energy consumption and/or demand. CTS and CUSTOMER agree that the proposed operating parameters specified in this section are representative of equipment operating characteristics during the Guarantee Period specified in this Agreement.

1.3.3 **Operational Cost Avoidance.** The following methodologies and/or calculations were used in determining the Operational Costs and/or avoided costs due to the Retrofit implementation. This section is to document standard formulas and/or a brief explanation of how the Operational Cost Savings is supposed to be generated.

1.4 **Guarantee Savings Measurement and Verification Plan**

1.4.1 **Measurement and Verification Methodology(s)**

M&V Protocols and Methods

Measuring and verifying savings from performance contracting projects requires special project planning and engineering activities. M&V continues to evolve with the performance contracting industry, although common practices exist. These practices are documented in several guidelines including the *International Performance Measurement & Verification Protocol* (IPMVP, 2001), *FEMP M&V Guidelines: Measurement and Verification for Federal Energy Projects* Version 2.2 (2000), and *ASHRAE Guideline 14: Measurement of Energy and Demand Savings* (2002).

Many industry professionals consider the *International Performance Measurement & Verification Protocol* (IPMVP) the standard protocol for conducting M&V on energy saving projects. IPMVP is available through <http://ipmvp.org/>.

IPMVP groups M&V methodologies into four categories: Options A, B, C, and D. The options are generic M&V approaches for energy and water saving projects. Having four options provides a range of approaches to determine energy savings depending on the characteristics of the ECMs being implemented and balancing the accuracy in energy savings estimates with the cost of conducting M&V activities.

M&V approaches are divided into two general types: retrofit isolation and whole facility.

Retrofit isolation methods look only at the affected equipment or system independent of the rest of the facility; whole facility methods consider only the total energy use while ignoring specific equipment performance.

Options A and B are retrofit isolation methods; Option C is a whole facility method. Option D can be used as either but is usually applied as a whole facility method.

M&V Methods

Option A – Partially Measured Retrofit Isolation

Project Benefits are determined by partial field measurement of the energy use of the system(s) to which an improvement measure was applied, which is separate from the energy use of the rest of the facility. Measurements will be short-term with only one-time measurements in the pre- and post-retrofit installation period.

Partial measurement means that some but not all parameter(s) will be Non-Measured. Careful review of improvement measure design and installation will ensure that Non-Measured values fairly represent the probable actual value. Stipulations will be shown in the M&V Plan along with analysis of the significance of the error they may introduce.

Engineering calculations use short-term pre- and post-retrofit measurements and stipulations. The finding of these pre- and post-retrofit measurements calculations of Project Benefits will then be Non-Measured for the life of the contract.

Option B – Retrofit Isolation

Project Benefits are determined by field measurement of the energy use of the system(s) to which the improvement measure was applied, which are separate from the energy use of the rest of the facility. Short-term, long-term, or continuous measurements are taken throughout the pre- and post-retrofit period of the contract.

Engineering calculations using short term, long-term, or continuous pre- and post-retrofit measurements will be used to calculate the Project Benefits for the life of the contract.

Option C – Whole Facility Energy Use

Option C involves use of utility meters or whole building sub-meters to assess the energy performance of a total building. Option C assesses the impact of any type of improvement measure, but not individually if more than one is applied to an energy meter. This option determines the collective Project Benefits of all improvement measure's applied to the part of the facility monitored by the energy meter. Also, since whole building meters are used, Project Benefits reported under Option C include the impact of any other change made in facility energy use (positive or negative).

Option D – Calibrated Simulation

Option D involves the use of computer simulation software to predict energy use. Such simulation model must be "calibrated" so that it predicts an energy use and demand pattern that reasonably matches actual utility consumption and demand data from either the base-year or a post-retrofit year.

Option D may be used to assess the performance of all improvement measures in a facility, akin to Option C; however, different from Option C, multiple runs of the simulation too in Option D allow estimates of the Project Benefits attributable to each improvement measure within a multiple improvement measure project.

Option D may also be used to assess just the performance of individual systems within a facility, akin to Option A and B. In this case, the system's energy use must be isolated from that of the rest of the facility by appropriate meters.

Energy Conservation Measure	Electric Savings Verification Method	Fuel Savings Verification Method	Other Utility Savings Verification Method
ECM 1 – Lighting Upgrades	Option A	N/A	N/A
ECM 2 – Kitchen Hood Controls Upgrades	Option A (Stipulated)	Option A (Stipulated)	N/A

1.4.3 Constants: *The following constants and/or stipulated values are agreed to be reasonable and may be used in the calculation of the energy cost avoidance.*



The calculation of energy cost avoidance is based upon the utility rate paid during the Guarantee Year, or the Baseline Period utility rate, whichever is higher and/or as defined heretofore. Energy savings were escalated at 2% annually. Energy cost avoidance may also include, but is not limited to, Savings from demand charges, power factor correction, taxes, ratchet charges, rate changes and other utility tariff charges that are reduced as a result of the CTS involvement.

ECM-1 Lighting Upgrades

A. Data Used:

The lighting upgrade include (3) schools. The lighting fixtures and type of lamps were provided as a part of the RFP (addendum #4). Following data was used to develop the baseline energy usage and the energy savings.

Existing Lighting System:

-  CTS 2010 Lighting retrofit scope and inventory
-  PSI retrofitit 2014 energy savings Schedule E Calculations Form 0122916 final excel

Existing Lighting Operating Hours:

For the purposed of calculation of energy savings for lighting retrofits, the Qualified Providers shall use the following run-time hours.

lighting runtime calculations									
location	school day less lunch	teacher extra	houkeep	extra	subtotal daily	days per year	breaks	teacher prep start and end of yr	runtime per year
classroom	6.75	1.50	1.00		9.25	185.00	8	24	1,743
gym	6.75	1.50	1.00	2.53	11.78	185.00	8	24	2,211
LRC	6.75	1.50	1.00		9.25	185.00	8	24	1,743
cafeteria	4.00		2.00	0.50	6.50	185.00	8		1,211
hallways	7.00	1.50	4.00	1.26	13.76	185.00	8	48	2,603
offices	7.00	1.00	1.00		9.00	185.00	576		2,241

Electric Rate: \$0.07322/kWh

B. Baseline Calculations

Using the school district lighting data and subsequent site visits, following baseline was developed for all (3) schools.

Heineman Middle School – Lighting Baseline

		Project:	Heineman Middle School - Type					
		Address:	725 Dr. John Burkey Dr. Algonqu					
Indoor Area	Action	Hours Per Year	Existing Fixture			Existing (KW) (Exist Watts/ 1,000)	"Existing" Annual (KWH)	
			Qty	Type	W			
Hallways	Retrofit	2603	95	2x4 2L F28 T8	45	4.3	11,128	
Hallways	Retrofit	2603	276	1x4 1L F28 T8	29	8.0	20,834	
Hallways	Retrofit	2603	0	Highbay 6L T5	0	0.0	0	
Pentohouses	Retrofit	2603	28	2x4 2L F28 T8	45	1.3	3,280	
Classrooms + Multi-Purpose	Retrofit	1743	495	2x4 2L F28 T8	45	22.3	38,825	
Offices + Teachers Lounge	Retrofit	2241	51	1x4 1L F28 T8	29	1.5	3,314	
Offices + Teachers Lounge	Retrofit	2241	65	2x4 2L F28 T8	45	2.9	6,555	
Gymnasium	Retrofit	2211	40	Highbay 6L T8	175	7.0	15,477	
Gymnasium	Retrofit	2211	14	2x4 2L F28 T8	45	0.6	1,393	
Gymnasium	Retrofit	2211	80	1x4 1L F28 T8	29	2.3	5,130	
Library	Retrofit	1743	14	2x4 2L F28 T8	45	0.6	1,098	
Library	Retrofit	1743	8	1x4 1L F28 T8	29	0.2	404	
Library	Retrofit	1743	85	1x4 2L F28 T8	45	3.8	6,667	
Cafeteria/Kitchen/Receiving	Retrofit	1211	89	1x4 1L F28 T8	29	2.6	3,126	
Cafeteria/Kitchen/Receiving	Retrofit	1211	53	2x4 2L F28 T8	45	2.4	2,888	
Auditorium/Music/Band	Retrofit	1743	78	1x4 1L F28 T8	29	2.3	3,943	
Auditorium/Music/Band	Retrofit	1743	51	2x4 2L F28 T8	45	2.3	4,000	
			1522	= Total Existing Fix		64.4	128,062	

Baseline Energy Usage = 128,062 kWh/yr; Baseline Energy Costs = \$9,377/yr

Leggee Elementary School – Lighting Baseline

	Project:	Leggee ES- Type-A&B Gym al					
	Address:	13723 Harmony Rd, Huntley, IL					
Indoor Area	Hours Per Year	Existing Fixture			Existing (KW) (Exist Watts/ 1,000)	"Existing" Annual (KWH)	
		Qty	Type	W			
Hallways	2603	150	2x4 1L F28 T8	25	3.75	9,761	
Hallways	2603	45	2x2 1L F17 T8	18	0.81	2,108	
Hallways	2603	41	1x4 2L F28 T8	50	2.05	5,336	
Boiler/Custodian/Electrical	2603	65	2x4 2L F28 T8	50	3.25	8,460	
Classrooms + Multi-Purpose	1743	520	2x4 2L F28 T8	50	26.00	45,318	
Classrooms + Multi-Purpose	1743	16	2x4 4L F28 T8	96	1.54	2,677	
Offices + Conf. Rooms	2241	117	2x4 2L F28 T8	50	5.85	13,110	
Gymnasium	2211	18	Highbay 6L T8	175	3.15	6,965	
Cafeteria/Kitchen/Receiving	1211	58	2x4 2L F28 T8	50	2.90	3,512	
			1030	= Total Exist Indoor		49.30	97,247

Baseline Energy Usage = 97,247 kWh/yr; Baseline Energy Costs = \$7,120/yr

Martin Elementary School – Lighting Baseline

		Project:	Martin Elementary School - T					
		Address:	10920 Reed Road Lake in the Hi					
Indoor Area	Action	Hours Per Year	Existing Fixture			Existing (KW) (Exist Watts/ 1,000)	"Existing" Annual (KWH)	
			Qty	Type	W			
Hallways	Retrofit	2603	163	2x4 1L F28 T8	25	4.08	10,607	
Hallways	Retrofit	2603	70	2x2 1L F17 T8	18	1.26	3,280	
Hallways	Retrofit	2603	2	1x4 2L F28 T8	50	0.10	260	
Bathrooms	Retrofit	2603	53	1x4 2L F28 T8	60	3.18	8,278	
Bathrooms	Retrofit	2603	1	2x2 2L F17 T8	34	0.03	89	
Bathrooms	Retrofit	2603	9	2x4 2L F28 T8	50	0.45	1,171	
Boiler/Custodian/Electrical	Retrofit	2603	68	2x4 2L F28 T8	50	3.40	8,850	
Classrooms + Multi-Purpose	Retrofit	1743	1038	2x4 2L F28 T8	50	51.90	90,462	
Offices + Conf. Rooms	Retrofit	2241	10	2x2 2L F17 T8	34	0.34	762	
Offices + Conf. Rooms	Retrofit	2241	64	2x4 2L F28 T8	50	3.20	7,171	
Gymnasium	Retrofit	2211	27	Highbay 6L T8	175	4.73	10,447	
Gymnasium	Retrofit	2211	21	2x4 2L F28 T8	50	1.05	2,322	
Library	Retrofit	1743	39	2x4 2L F28 T8	50	1.95	3,399	
Library	Retrofit	1743	16	1x4 2L F28 T8	50	0.80	1,394	
Library	Retrofit	1743	11	2x4 2L F28 T8	50	0.55	959	
Cafeteria/Kitchen/Receiving	Retrofit	1211	103	2x4 2L F28 T8	50	5.15	6,237	
			1695	= Total Exist Indoor		82.16	155,687	

Baseline Energy Usage = 155,687 kWh/yr; Baseline Energy Costs = \$11,399/yr

C. Proposed Lighting Upgrades (All Schools)

1. Replace existing T8 lamps with LED Type-A lamps to work with existing GE ballasts
2. Replace existing T8 lamps with LED Type-B lamps if not compatible with existing Robertson ballasts
3. Replace existing T8 lamps with LED Type-B lamps in all gymnasiums

D. Energy Savings Calculations

Lighting Energy Savings Summary:

Name	Existing Lighting kWh/yr	Existing Lighting kW	Existing Lighting \$/yr	Existing lamp Count	Proposed Lighting kWh/yr	Proposed Lighting kW	Proposed Lighting \$/yr	Proposed Type-A lamp Count	Proposed Type-B lamp Count	Proposed Total lamp Count	Energy Savings kWh/yr	Costs Savings (\$/yr)
Heinemann MS	128,062	64	\$ 9,377	2,622	74,924	38	5,486	2,382	240	2,622	53,139	\$ 3,891
Leggee ES (low)	97,247	49	\$ 7,120	1,969	55,605	28	4,071	259	1,710	1,969	41,642	\$ 3,049
Martin ES	155,687	82	\$ 11,399	3,264	88,095	47	6,450	240	3,024	3,264	67,592	\$ 4,949
	380,996	196	\$ 27,897	7,855	218,624	113	16,008	2,881	4,974	7,855	162,373	\$11,890

Heineman Middle School Energy Savings:

		Project: Heineman Middle School - Type A (Gym -Type-B) no Hallway T-5s														
		Address: 725 Dr. John Burkley Dr. Algonquin, IL 60102														
Indoor Area	Action	Hours Per Year	Existing Fixture			RetroFit Fixture			Yrly \$ Saved @ \$0.07322/K	Existing kW	New kW	"Existing" Annual (KWH)	"New" Annual (KWH)	"Reduced" Annual (KWH)		
			Qty	Type	W	Qty	Type	W								
Hallways	Retrofit	2603	95	2x4 2L F28 T8	45	95	2x4 2L 4ft. LED	29	\$290	4.275	2.755	11,128	7,171	3,957		
Hallways	Retrofit	2603	276	1x4 1L F28 T8	29	276	1x4 1L 4ft. LED	15	\$763	8.004	4.002	20,834	10,417	10,417		
Hallways	Retrofit	2603	0	Highbay 6L T5	0	0	Highbay 6L 4ft LED T5	0	\$0	0.000	0.000	0	0	0		
Penthouses	Retrofit	2603	28	2x4 2L F28 T8	45	28	2x4 2L 4ft. LED	29	\$85	1.260	0.812	3,280	2,114	1,166		
Classrooms + Multi-Purpose	Retrofit	1743	495	2x4 2L F28 T8	45	495	2x4 2L 4ft. LED	29	\$1,012	22.275	14.345	38,825	25,004	13,822		
Offices + Teachers Lounge	Retrofit	2241	51	1x4 1L F28 T8	29	51	1x4 1L 4ft. LED	15	\$121	1.479	0.740	3,314	1,657	1,657		
Offices + Teachers Lounge	Retrofit	2241	65	2x4 2L F28 T8	45	65	2x4 2L 4ft. LED	29	\$171	2.925	1.885	6,555	4,224	2,331		
Gymnasium	Retrofit	2211	40	Highbay 6L T8	175	40	Highbay 6L 4ft. LED	87	\$570	7.000	3.480	15,477	7,694	7,783		
Gymnasium	Retrofit	2211	14	2x4 2L F28 T8	45	14	2x4 2L 4ft. LED	29	\$36	0.630	0.406	1,393	898	495		
Gymnasium	Retrofit	2211	80	1x4 1L F28 T8	29	80	1x4 1L 4ft. LED	15	\$188	2.320	1.160	5,130	2,565	2,565		
Library	Retrofit	1743	14	2x4 2L F28 T8	45	14	2x4 2L 4ft. LED	29	\$29	0.630	0.406	1,098	708	390		
Library	Retrofit	1743	8	1x4 1L F28 T8	29	8	1x4 1L 4ft. LED	15	\$15	0.232	0.116	404	202	202		
Library	Retrofit	1743	85	1x4 2L F28 T8	45	85	1x4 2L 4ft. LED	29	\$174	3.825	2.465	6,667	4,296	2,370		
Cafeteria/Kitchen/Receiving	Retrofit	1211	89	1x4 1L F28 T8	29	89	1x4 1L 4ft. LED	15	\$114	2.581	1.291	3,126	1,563	1,563		
Cafeteria/Kitchen/Receiving	Retrofit	1211	53	2x4 2L F28 T8	45	53	2x4 2L 4ft. LED	29	\$75	2.385	1.537	2,888	1,861	1,027		
Auditorium/Music/Band	Retrofit	1743	78	1x4 1L F28 T8	29	78	1x4 1L 4ft. LED	15	\$144	2.262	1.131	3,943	1,971	1,971		
Auditorium/Music/Band	Retrofit	1743	51	2x4 2L F28 T8	45	51	2x4 2L 4ft. LED	29	\$104	2.295	1.479	4,000	2,578	1,422		
			1522	= Total Exist Indoor			1522	= Total New Indoor Fixtures			\$3,891	64.4	38.0	128,062	74,924	53,139

Leggee Elementary School Energy Savings:

		Project: Leggee ES- Type-A&B Gym all Type-B (Lower Count)														
		Address: 13723 Harmony Rd, Huntley, IL 60142														
Indoor Area	Action	Hours Per Year	Existing Fixture			RetroFit Fixture			Yrly \$ Saved @ \$0.07322/kWh	Existing kW	New kW	"Existing" Annual (KWH)	"New" Annual (KWH)	"Reduced" Annual (KWH)		
			Qty	Type	W	Qty	Type	W								
Hallways	Retrofit	2603	150	2x4 1L F28 T8	25	150	2x4 1L 4ft. LED	15	\$300	3.75	2.18	9,761	5,662	4,100		
Hallways	Retrofit	2603	45	2x2 1L F17 T8	18	45	2x2 1L 2ft. LED	8	\$86	0.81	0.36	2,108	937	1,171		
Hallways	Retrofit	2603	41	1x4 1L F28 T8	50	41	1x4 2L 4ft. LED	29	\$164	2.05	1.19	5,336	3,095	2,241		
Boiler/Custodian/Electrical	Retrofit	2603	65	2x4 2L F28 T8	50	65	2x4 2L 4ft. LED	29	\$260	3.25	1.89	8,460	4,907	3,553		
Classrooms + Multi-Purpose	Retrofit	1743	520	2x4 2L F28 T8	50	520	2x4 2L 4ft. LED	29	\$1,394	26.00	15.08	45,318	26,284	19,034		
Classrooms + Multi-Purpose	Retrofit	1743	16	2x4 4L F28 T8	96	16	2x4 4L 4ft. LED	58	\$78	1.54	0.93	2,677	1,618	1,060		
Offices + Conf. Rooms	Retrofit	2241	117	2x4 2L F28 T8	50	117	2x4 2L 4ft. LED	29	\$403	5.85	3.39	13,110	7,604	5,506		
Gymnasium	Replace	2211	18	Highbay 6L T8	175	18	Highbay 6L 4ft. LED	87	\$256	3.15	1.57	6,965	3,462	3,502		
Cafeteria/Kitchen/Receiving	Replace	1211	58	2x4 2L F28 T8	50	58	2x4 2L 4ft. LED	29	\$108	2.90	1.68	3,512	2,037	1,475		
			1030	= Total Exist Fix			1030	= Total New Fix			\$3,049	49.30	28.26	97,247	55,605	41,642

Martin Elementary School Energy Savings:

		Project: Martin Elementary School - Type-A& B Gym - Typ														
		Address: 10920 Reed Road Lake in the Hills, IL 60156														
Indoor Area	Action	Hours Per Year	Existing Fixture			RetroFit Fixture			Yrly \$ Saved @ \$0.07322/kwh	Existing kW	New kW	"Existing" Annual (KWH)	"New" Annual (KWH)	"Reduced" Annual (KWH)		
			Qty	Type	W	Qty	Type	W								
Hallways	Retrofit	2603	163	2x4 1L F28 T8	25	163	2x4 1L 4ft. LED	15	\$326	4.08	2.36	10,607	6,152	4,455		
Hallways	Retrofit	2603	70	2x2 1L F17 T8	18	70	2x2 1L 2ft. LED	8	\$133	1.26	0.56	3,280	1,458	1,822		
Hallways	Retrofit	2603	2	1x4 2L F28 T8	50	2	1x4 2L 4ft. LED	29	\$8	0.10	0.06	260	151	109		
Bathrooms	Retrofit	2603	53	1x4 2L F28 T8	60	53	1x4 2L 4ft. LED	29	\$313	3.18	1.54	8,278	4,001	4,277		
Bathrooms	Retrofit	2603	1	2x2 2L F17 T8	34	1	2x2 2L 2ft. LED	16	\$3	0.03	0.02	89	42	47		
Bathrooms	Retrofit	2603	9	2x4 2L F28 T8	50	9	2x4 2L 4ft. LED	29	\$36	0.45	0.26	1,171	679	492		
Boiler/Custodian/Electrical	Retrofit	2603	68	2x4 2L F28 T8	50	68	2x4 2L 4ft. LED	29	\$272	3.40	1.97	8,850	5,133	3,717		
Classrooms + Multi-Purpose	Retrofit	1743	1038	2x4 2L F28 T8	50	1038	2x4 2L 4ft. LED	29	\$2,782	51.90	30.10	90,462	52,468	37,994		
Offices + Conf. Rooms	Retrofit	2241	10	2x2 2L F17 T8	34	10	2x2 2L 2ft. LED	16	\$30	0.34	0.16	762	359	403		
Offices + Conf. Rooms	Retrofit	2241	64	2x4 2L F28 T8	50	64	2x4 2L 4ft. LED	29	\$221	3.20	1.86	7,171	4,159	3,012		
Gymnasium	Retrofit	2211	27	Highbay 6L T8	175	27	Highbay 6L 4ft. LED	87	\$385	4.73	2.35	10,447	5,194	5,253		
Gymnasium	Retrofit	2211	21	2x4 2L F28 T8	50	21	2x4 2L 4ft. LED	29	\$71	1.05	0.61	2,322	1,346	975		
Library	Retrofit	1743	39	2x4 2L F28 T8	50	39	2x4 2L 4ft. LED	29	\$105	1.95	1.13	3,399	1,971	1,428		
Library	Retrofit	1743	16	1x4 2L F28 T8	50	16	1x4 2L 4ft. LED	29	\$43	0.80	0.46	1,394	809	586		
Library	Retrofit	1743	11	2x4 2L F28 T8	50	11	2x4 2L 4ft. LED	29	\$29	0.55	0.32	959	556	403		
Cafeteria/Kitchen/Receiving	Retrofit	1211	103	2x4 2L F28 T8	50	103	2x4 2L 4ft. LED	29	\$192	5.15	2.99	6,237	3,617	2,619		
			1695	= Total Exist Fix			1695	= Total New Fix			\$4,949	82.16	46.74	155,687	88,095	67,592

E. M&V Plan (Option-A One Time measurement)

The Measure & Verification (M&V) plan for the lighting upgrade will use the following methodology. CTS will measure the actual lighting amps for 10% of the fixtures before the upgrade to establish the baseline energy use for the existing lighting system. Baseline lighting wattage (kW) will be calculated based in the actual measured amps and the line voltage. After the retrofit again same10% of the fixtures will be measured (amps).

The energy savings table will be updated based on the actual field measurement and M&V report will be issued to the school district with the actual lighting energy savings.

Baseline energy use (kilowatt-hours) = kilowatts pre x hours of use

The energy use after the retrofit (post-retrofit) is the new kilowatts multiplied by the hours of use. The equation for the energy use of the new lighting system is:

Post-retrofit energy use (kilowatt-hours) = kilowatts post x hours of use

Since the energy savings is the post-retrofit energy use subtracted from the baseline energy use, the equation for the energy savings can be simplified to:

Energy savings = (kilowatts pre – kilowatts post) x hours of use

ECM-2 Kitchen Hoods Controls Upgrades

A. Data Used:

Kitchen operating hours were provided by the school district as a part of the RFP as follows:

- a. Conley and Mackeben Elementary School - operating hours are 8 am to 1 pm
- b. Marlowe and Heinemann Middle school– operating hours are 7 am to 1:30 pm
- c. Chesak and Leggee Elementary School - operating are 8 am to 1 pm
- d. Martin Elementary School - operating are 8 am to 1 pm
- e. Huntley High School - operating are 7am to 2pm

Utility rates were provided by the school district as a part of the RFP as follows:

- Will you be providing the rates you want used to calculate savings (\$/kWh, \$/kW, \$/Therm) to keep savings calculations comparable?
- *Rate to use for electricity is \$0.07322 per kWh all in at meter (due to solar project)*
 - *Rate to use for natural gas is \$0.3929 per therm all in at the meter*

Motor Efficiency is estimated based on the following table:

Rated hp	Standard Motor*	High-Efficiency Motor*
1.0	75.5	82.6
1.5	78.1	83.3
2.0	80.5	83.8
3.0	81.2	87.7
5.0	82.8	88.6
7.5	83.8	89.8
10.0	85.2	90.1
15.0	86.8	91.3
20.0	87.8	91.9
25.0	88.3	92.8
30.0	89.1	92.7
40.0	89.6	93.3
50.0	90.5	93.8
60.0	90.6	94.1
75.0	91.2	94.4
100.0	91.8	94.7
125.0	92.4	95.3
150.0	92.9	95.5
200.0	94.0	95.4

*Design B, Four Pole, Three-Phase

Kitchen Hood CFM is estimated based on ASHRAE 90.1 table 6.5.7.1.3 wall mounted – Medium duty 210 cfm/linear ft

ASHRAE 90.1-2010/13 Table 6.5.7.1.3: Maximum Net Exhaust Flow Rate, CFM per Linear Foot of Hood Length

Type of Hood	Light Duty Equipment	Medium Duty Equipment	Heavy Duty Equipment	Extra Heavy Duty
Wall-Mounted Canopy	140	210	280	385
Single Island	280	350	420	490
Double Island (Per Side)	175	210	280	385
Eyebrow	175	175	Not Allowed	Not Allowed
Backshelf / Pass-Over	210	210	280	Not Allowed

Weather Data:

BIN Maker program was used to create weather data based on Rockford, IL USFA #725430TY data.

		BIN Weather data (Rockford) 8:00 am -1:00 pm (9 months)										
		January	February	March	April	May	September	October	November	December	Total	
Mid-pts	DB (F)	Hrs	Hrs	Hrs	Hrs	Hrs	Hrs	Hrs	Hrs	Hrs	Hrs	
87.5	85 to 90				2	2	1				5	
82.5	80 to 85				3	13	6				22	
77.5	75 to 80				5	25	21				51	
72.5	70 to 75				3	19	28	4	1		55	
67.5	65 to 70				9	19	29	7	2		66	
62.5	60 to 65			2	9	23	22	11	1		68	
57.5	55 to 60			3	11	22	14	36	4		90	
52.5	50 to 55	4		10	11	13	3	44	3		88	
47.5	45 to 50	3	1	17	11	2	2	16	17		69	
42.5	40 to 45	3	4	23	22			13	20	3	88	
37.5	35 to 40	23	24	31	23			1	24	13	139	
32.5	30 to 35	15	11	23	10				13	39	111	
27.5	25 to 30	2	9	14	1				21	18	65	
22.5	20 to 25	6	9	13					16	20	64	
17.5	15 to 20	9	15	2					7	15	48	
12.5	10 to 15	12	13						2	8	35	
7.5	5 to 10	16	11						1	5	33	
2.5	0 to 5	9	6							4	19	
-2.5	-5 to 0	10	9								19	
-7.5	-10 to -5	10	4							1	15	
-12.5	-15 to -10	7	3								10	
-17.5	-20 to -15	3	1								4	
		132	120	138	120	138	126	132	132	126	1164	

Kitchen Operating data:

Operating hours per day	5	hr/day
Hood start time (manual / auto)?	Manual	
Hood end time (manual / auto)?	Manual	
Actual cooking hours/day	5	hr/day
Operating days per week	5	days/wk
Operating weeks per year	38	wk/yr
Winter space temperature setpoint	70	F
Summer space temperature setpoint	76	F

Make-up Air Unit assumption:

MAU cfm = 80% of the Exhaust cfm to maintain -ve delta P

B. Baseline Calculations:

Conley Elementary School – Baseline Energy Usage

EXISTING KITCHEN HOOD (CONSTANT SPEED) ENERGY USAGE & COSTS																		
OAT (F)	Space Temp Setpoint (F)	Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	MAU kW	MAU kWh	MAU Energy \$	MAU / Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$	
88	76	2	2.74	13.70	\$ 1.00	2	2.74	13.70	\$ 1.00	3,528			27	\$ 2.01	-	\$ -	\$ 2.01	
83	76	2	2.74	60.26	\$ 4.41	2	2.74	60.26	\$ 4.41	3,528			121	\$ 8.82	-	\$ -	\$ 8.82	
78	76	2	2.74	139.70	\$ 10.23	2	2.74	139.70	\$ 10.23	3,528			279	\$ 20.46	-	\$ -	\$ 20.46	
73	76	2	2.74	150.65	\$ 11.03	2	2.74	150.65	\$ 11.03	3,528	9	\$ 3.60	301	\$ 22.06	9	\$ 3.60	\$ 25.66	
68	76	2	2.74	180.78	\$ 13.24	2	2.74	180.78	\$ 13.24	3,528	27	\$ 10.50	362	\$ 26.47	27	\$ 10.50	\$ 36.97	
63	76	2	2.74	186.26	\$ 13.64	2	2.74	186.26	\$ 13.64	3,528	44	\$ 17.18	373	\$ 27.28	44	\$ 17.18	\$ 44.45	
58	76	2	2.74	246.52	\$ 18.05	2	2.74	246.52	\$ 18.05	3,528	79	\$ 31.16	493	\$ 36.10	79	\$ 31.16	\$ 67.26	
53	76	2	2.74	241.04	\$ 17.65	2	2.74	241.04	\$ 17.65	3,528	98	\$ 38.70	482	\$ 35.30	98	\$ 38.70	\$ 74.00	
48	76	2	2.74	189.00	\$ 13.84	2	2.74	189.00	\$ 13.84	3,528	94	\$ 36.80	378	\$ 27.68	94	\$ 36.80	\$ 64.48	
43	70	2	2.74	241.04	\$ 17.65	2	2.74	241.04	\$ 17.65	3,528	115	\$ 45.29	482	\$ 35.30	115	\$ 45.29	\$ 80.58	
38	70	2	2.74	380.74	\$ 27.88	2	2.74	380.74	\$ 27.88	3,528	215	\$ 84.54	761	\$ 55.76	215	\$ 84.54	\$ 140.29	
33	70	2	2.74	304.04	\$ 22.26	2	2.74	304.04	\$ 22.26	3,528	198	\$ 77.89	608	\$ 44.52	198	\$ 77.89	\$ 122.42	
28	70	2	2.74	178.04	\$ 13.04	2	2.74	178.04	\$ 13.04	3,528	132	\$ 51.69	356	\$ 26.07	132	\$ 51.69	\$ 77.77	
23	70	2	2.74	175.30	\$ 12.84	2	2.74	175.30	\$ 12.84	3,528	145	\$ 56.89	351	\$ 25.67	145	\$ 56.89	\$ 82.56	
18	70	2	2.74	131.48	\$ 9.63	2	2.74	131.48	\$ 9.63	3,528	120	\$ 47.16	263	\$ 19.25	120	\$ 47.16	\$ 66.41	
13	70	2	2.74	95.87	\$ 7.02	2	2.74	95.87	\$ 7.02	3,528	96	\$ 37.66	192	\$ 14.04	96	\$ 37.66	\$ 51.70	
8	70	2	2.74	90.39	\$ 6.62	2	2.74	90.39	\$ 6.62	3,528	98	\$ 38.60	181	\$ 13.24	98	\$ 38.60	\$ 51.83	
3	70	2	2.74	52.04	\$ 3.81	2	2.74	52.04	\$ 3.81	3,528	61	\$ 24.00	104	\$ 7.62	61	\$ 24.00	\$ 31.62	
-3	70	2	2.74	52.04	\$ 3.81	2	2.74	52.04	\$ 3.81	3,528	66	\$ 25.78	104	\$ 7.62	66	\$ 25.78	\$ 33.40	
-8	70	2	2.74	41.09	\$ 3.01	2	2.74	41.09	\$ 3.01	3,528	55	\$ 21.75	82	\$ 6.02	55	\$ 21.75	\$ 27.77	
-13	70	2	2.74	27.39	\$ 2.01	2	2.74	27.39	\$ 2.01	3,528	39	\$ 15.44	55	\$ 4.01	39	\$ 15.44	\$ 19.45	
-18	70	2	2.74	10.96	\$ 0.80	2	2.74	10.96	\$ 0.80	3,528	17	\$ 6.55	22	\$ 1.60	17	\$ 6.55	\$ 8.15	
				3,188	\$ 233			3,188	\$ 233			1,699	\$ 668	6,377	\$ 467	1,708	\$ 671	\$ 1,138

Mackeben Elementary School – Baseline Energy Usage

EXISTING KITCHEN HOOD (CONSTANT SPEED) ENERGY USAGE & COSTS																		
OAT (F)	Space Temp Setpoint (F)	Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	MAU kW	MAU kWh	MAU Energy \$	MAU / Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$	
88	76	2	2.74	13.70	\$ 1.00	2	2.74	13.70	\$ 1.00	3,528			27	\$ 2.01	-	\$ -	\$ 2.01	
83	76	2	2.74	60.26	\$ 4.41	2	2.74	60.26	\$ 4.41	3,528			121	\$ 8.82	-	\$ -	\$ 8.82	
78	76	2	2.74	139.70	\$ 10.23	2	2.74	139.70	\$ 10.23	3,528			279	\$ 20.46	-	\$ -	\$ 20.46	
73	76	2	2.74	150.65	\$ 11.03	2	2.74	150.65	\$ 11.03	3,528	9	\$ 3.60	301	\$ 22.06	9	\$ 3.60	\$ 25.66	
68	76	2	2.74	180.78	\$ 13.24	2	2.74	180.78	\$ 13.24	3,528	27	\$ 10.50	362	\$ 26.47	27	\$ 10.50	\$ 36.97	
63	76	2	2.74	186.26	\$ 13.64	2	2.74	186.26	\$ 13.64	3,528	44	\$ 17.18	373	\$ 27.28	44	\$ 17.18	\$ 44.45	
58	76	2	2.74	246.52	\$ 18.05	2	2.74	246.52	\$ 18.05	3,528	79	\$ 31.16	493	\$ 36.10	79	\$ 31.16	\$ 67.26	
53	76	2	2.74	241.04	\$ 17.65	2	2.74	241.04	\$ 17.65	3,528	98	\$ 38.70	482	\$ 35.30	98	\$ 38.70	\$ 74.00	
48	76	2	2.74	189.00	\$ 13.84	2	2.74	189.00	\$ 13.84	3,528	94	\$ 36.80	378	\$ 27.68	94	\$ 36.80	\$ 64.48	
43	70	2	2.74	241.04	\$ 17.65	2	2.74	241.04	\$ 17.65	3,528	115	\$ 45.29	482	\$ 35.30	115	\$ 45.29	\$ 80.58	
38	70	2	2.74	380.74	\$ 27.88	2	2.74	380.74	\$ 27.88	3,528	215	\$ 84.54	761	\$ 55.76	215	\$ 84.54	\$ 140.29	
33	70	2	2.74	304.04	\$ 22.26	2	2.74	304.04	\$ 22.26	3,528	198	\$ 77.89	608	\$ 44.52	198	\$ 77.89	\$ 122.42	
28	70	2	2.74	178.04	\$ 13.04	2	2.74	178.04	\$ 13.04	3,528	132	\$ 51.69	356	\$ 26.07	132	\$ 51.69	\$ 77.77	
23	70	2	2.74	175.30	\$ 12.84	2	2.74	175.30	\$ 12.84	3,528	145	\$ 56.89	351	\$ 25.67	145	\$ 56.89	\$ 82.56	
18	70	2	2.74	131.48	\$ 9.63	2	2.74	131.48	\$ 9.63	3,528	120	\$ 47.16	263	\$ 19.25	120	\$ 47.16	\$ 66.41	
13	70	2	2.74	95.87	\$ 7.02	2	2.74	95.87	\$ 7.02	3,528	96	\$ 37.66	192	\$ 14.04	96	\$ 37.66	\$ 51.70	
8	70	2	2.74	90.39	\$ 6.62	2	2.74	90.39	\$ 6.62	3,528	98	\$ 38.60	181	\$ 13.24	98	\$ 38.60	\$ 51.83	
3	70	2	2.74	52.04	\$ 3.81	2	2.74	52.04	\$ 3.81	3,528	61	\$ 24.00	104	\$ 7.62	61	\$ 24.00	\$ 31.62	
-3	70	2	2.74	52.04	\$ 3.81	2	2.74	52.04	\$ 3.81	3,528	66	\$ 25.78	104	\$ 7.62	66	\$ 25.78	\$ 33.40	
-8	70	2	2.74	41.09	\$ 3.01	2	2.74	41.09	\$ 3.01	3,528	55	\$ 21.75	82	\$ 6.02	55	\$ 21.75	\$ 27.77	
-13	70	2	2.74	27.39	\$ 2.01	2	2.74	27.39	\$ 2.01	3,528	39	\$ 15.44	55	\$ 4.01	39	\$ 15.44	\$ 19.45	
-18	70	2	2.74	10.96	\$ 0.80	2	2.74	10.96	\$ 0.80	3,528	17	\$ 6.55	22	\$ 1.60	17	\$ 6.55	\$ 8.15	
				3,188	\$ 233			3,188	\$ 233			1,699	\$ 668	6,377	\$ 467	1,708	\$ 671	\$ 1,138

Martin Elementary School – Baseline Energy Usage

EXISTING KITCHEN HOOD (CONSTANT SPEED) ENERGY USAGE & COSTS																	
OAT (F)	Space Temp Setpoint (F)	Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	MAU kW	MAU kWh	MAU Energy \$	MAU / Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$
88	76	2	2.74	13.70	\$ 1.00	2	2.74	13.70	\$ 1.00	2,688			27	\$ 2.01	-	\$ -	\$ 2.01
83	76	2	2.74	60.26	\$ 4.41	2	2.74	60.26	\$ 4.41	2,688			121	\$ 8.82	-	\$ -	\$ 8.82
78	76	2	2.74	139.70	\$ 10.23	2	2.74	139.70	\$ 10.23	2,688			279	\$ 20.46	-	\$ -	\$ 20.46
73	76	2	2.74	150.65	\$ 11.03	2	2.74	150.65	\$ 11.03	2,688	7	\$ 2.74	301	\$ 22.06	7	\$ 2.74	\$ 24.81
68	76	2	2.74	180.78	\$ 13.24	2	2.74	180.78	\$ 13.24	2,688	20	\$ 8.00	362	\$ 26.47	20	\$ 8.00	\$ 34.47
63	76	2	2.74	186.26	\$ 13.64	2	2.74	186.26	\$ 13.64	2,688	33	\$ 13.09	373	\$ 27.28	33	\$ 13.09	\$ 40.36
58	76	2	2.74	246.52	\$ 18.05	2	2.74	246.52	\$ 18.05	2,688	60	\$ 23.74	493	\$ 36.10	60	\$ 23.74	\$ 59.84
53	76	2	2.74	241.04	\$ 17.65	2	2.74	241.04	\$ 17.65	2,688	75	\$ 29.48	482	\$ 35.30	75	\$ 29.48	\$ 64.78
48	76	2	2.74	189.00	\$ 13.84	2	2.74	189.00	\$ 13.84	2,688	71	\$ 28.04	378	\$ 27.68	71	\$ 28.04	\$ 55.71
43	70	2	2.74	241.04	\$ 17.65	2	2.74	241.04	\$ 17.65	2,688	88	\$ 34.50	482	\$ 35.30	88	\$ 34.50	\$ 69.80
38	70	2	2.74	380.74	\$ 27.88	2	2.74	380.74	\$ 27.88	2,688	164	\$ 64.41	761	\$ 55.76	164	\$ 64.41	\$ 120.16
33	70	2	2.74	304.04	\$ 22.26	2	2.74	304.04	\$ 22.26	2,688	151	\$ 59.35	608	\$ 44.52	151	\$ 59.35	\$ 103.87
28	70	2	2.74	178.04	\$ 13.04	2	2.74	178.04	\$ 13.04	2,688	100	\$ 39.39	356	\$ 26.07	100	\$ 39.39	\$ 65.46
23	70	2	2.74	175.30	\$ 12.84	2	2.74	175.30	\$ 12.84	2,688	110	\$ 43.34	351	\$ 25.67	110	\$ 43.34	\$ 69.01
18	70	2	2.74	131.48	\$ 9.63	2	2.74	131.48	\$ 9.63	2,688	91	\$ 35.93	263	\$ 19.25	91	\$ 35.93	\$ 55.18
13	70	2	2.74	95.87	\$ 7.02	2	2.74	95.87	\$ 7.02	2,688	73	\$ 28.69	192	\$ 14.04	73	\$ 28.69	\$ 42.73
8	70	2	2.74	90.39	\$ 6.62	2	2.74	90.39	\$ 6.62	2,688	75	\$ 29.41	181	\$ 13.24	75	\$ 29.41	\$ 42.64
3	70	2	2.74	52.04	\$ 3.81	2	2.74	52.04	\$ 3.81	2,688	47	\$ 18.29	104	\$ 7.62	47	\$ 18.29	\$ 25.91
-3	70	2	2.74	52.04	\$ 3.81	2	2.74	52.04	\$ 3.81	2,688	50	\$ 19.64	104	\$ 7.62	50	\$ 19.64	\$ 27.26
-8	70	2	2.74	41.09	\$ 3.01	2	2.74	41.09	\$ 3.01	2,688	42	\$ 16.57	82	\$ 6.02	42	\$ 16.57	\$ 22.59
-13	70	2	2.74	27.39	\$ 2.01	2	2.74	27.39	\$ 2.01	2,688	30	\$ 11.76	55	\$ 4.01	30	\$ 11.76	\$ 15.77
-18	70	2	2.74	10.96	\$ 0.80	2	2.74	10.96	\$ 0.80	2,688	13	\$ 4.99	22	\$ 1.60	13	\$ 4.99	\$ 6.59
				3,188	\$ 233			3,188	\$ 233		1,295	\$ 509	6,377	\$ 467	1,302	\$ 511	\$ 978

Chesak Elementary School – Baseline Energy Usage

EXISTING KITCHEN HOOD (CONSTANT SPEED) ENERGY USAGE & COSTS																	
OAT (F)	Space Temp Setpoint (F)	Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	MAU kW	MAU kWh	MAU Energy \$	MAU / Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$
88	76	1	1.39	6.95	\$ 0.51	1.5	2.07	10.33	\$ 0.76	2,520			17	\$ 1.27	-	\$ -	\$ 1.27
83	76	1	1.39	30.57	\$ 2.24	1.5	2.07	45.47	\$ 3.33	2,520			76	\$ 5.57	-	\$ -	\$ 5.57
78	76	1	1.39	70.86	\$ 5.19	1.5	2.07	105.40	\$ 7.72	2,520			176	\$ 12.91	-	\$ -	\$ 12.91
73	76	1	1.39	76.42	\$ 5.60	1.5	2.07	113.67	\$ 8.32	2,520	7	\$ 2.57	190	\$ 13.92	7	\$ 2.57	\$ 16.49
68	76	1	1.39	91.70	\$ 6.71	1.5	2.07	136.40	\$ 9.99	2,520	19	\$ 7.50	228	\$ 16.70	19	\$ 7.50	\$ 24.20
63	76	1	1.39	94.48	\$ 6.92	1.5	2.07	140.53	\$ 10.29	2,520	31	\$ 12.27	235	\$ 17.21	31	\$ 12.27	\$ 29.48
58	76	1	1.39	125.05	\$ 9.16	1.5	2.07	186.00	\$ 13.62	2,520	57	\$ 22.26	311	\$ 22.78	57	\$ 22.26	\$ 45.03
53	76	1	1.39	122.27	\$ 8.95	1.5	2.07	181.87	\$ 13.32	2,520	70	\$ 27.64	304	\$ 22.27	70	\$ 27.64	\$ 49.91
48	76	1	1.39	95.87	\$ 7.02	1.5	2.07	142.60	\$ 10.44	2,520	67	\$ 26.29	238	\$ 17.46	67	\$ 26.29	\$ 43.75
43	70	1	1.39	122.27	\$ 8.95	1.5	2.07	181.87	\$ 13.32	2,520	82	\$ 32.35	304	\$ 22.27	82	\$ 32.35	\$ 54.62
38	70	1	1.39	193.13	\$ 14.14	1.5	2.07	287.27	\$ 21.03	2,520	154	\$ 60.38	480	\$ 35.18	154	\$ 60.38	\$ 95.56
33	70	1	1.39	154.23	\$ 11.29	1.5	2.07	229.40	\$ 16.80	2,520	142	\$ 55.64	384	\$ 28.09	142	\$ 55.64	\$ 83.73
28	70	1	1.39	90.31	\$ 6.61	1.5	2.07	134.33	\$ 9.84	2,520	94	\$ 36.92	225	\$ 16.45	94	\$ 36.92	\$ 53.37
23	70	1	1.39	88.93	\$ 6.51	1.5	2.07	132.27	\$ 9.68	2,520	103	\$ 40.63	221	\$ 16.20	103	\$ 40.63	\$ 56.83
18	70	1	1.39	66.69	\$ 4.88	1.5	2.07	99.20	\$ 7.26	2,520	86	\$ 33.68	166	\$ 12.15	86	\$ 33.68	\$ 45.83
13	70	1	1.39	48.63	\$ 3.56	1.5	2.07	72.33	\$ 5.30	2,520	68	\$ 26.90	121	\$ 8.86	68	\$ 26.90	\$ 35.76
8	70	1	1.39	45.85	\$ 3.36	1.5	2.07	68.20	\$ 4.99	2,520	70	\$ 27.57	114	\$ 8.35	70	\$ 27.57	\$ 35.92
3	70	1	1.39	26.40	\$ 1.93	1.5	2.07	39.27	\$ 2.88	2,520	44	\$ 17.14	66	\$ 4.81	44	\$ 17.14	\$ 21.95
-3	70	1	1.39	26.40	\$ 1.93	1.5	2.07	39.27	\$ 2.88	2,520	47	\$ 18.41	66	\$ 4.81	47	\$ 18.41	\$ 23.22
-8	70	1	1.39	20.84	\$ 1.53	1.5	2.07	31.00	\$ 2.27	2,520	40	\$ 15.54	52	\$ 3.80	40	\$ 15.54	\$ 19.33
-13	70	1	1.39	13.89	\$ 1.02	1.5	2.07	20.67	\$ 1.51	2,520	28	\$ 11.03	35	\$ 2.53	28	\$ 11.03	\$ 13.56
-18	70	1	1.39	5.56	\$ 0.41	1.5	2.07	8.27	\$ 0.61	2,520	12	\$ 4.68	14	\$ 1.01	12	\$ 4.68	\$ 5.69
				1,617	\$ 118			2,406	\$ 176		1,214	\$ 477	4,023	\$ 295	1,220	\$ 479	\$ 774

Leggee Elementary School – Baseline Energy Usage

EXISTING KITCHEN HOOD (CONSTANT SPEED) ENERGY USAGE & COSTS																		
OAT (F)	Space Temp Setpoint (F)	Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	MAU kW	MAU kWh	MAU Energy \$	MAU / Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$	
88	76	1	1.39	6.95	\$ 0.51	1.5	2.07	10.33	\$ 0.76	2,520			17	\$ 1.27	-	\$ -	\$ 1.27	
83	76	1	1.39	30.57	\$ 2.24	1.5	2.07	45.47	\$ 3.33	2,520			76	\$ 5.57	-	\$ -	\$ 5.57	
78	76	1	1.39	70.86	\$ 5.19	1.5	2.07	105.40	\$ 7.72	2,520			176	\$12.91	-	\$ -	\$ 12.91	
73	76	1	1.39	76.42	\$ 5.60	1.5	2.07	113.67	\$ 8.32	2,520	7	\$ 2.57	190	\$13.92	7	\$ 2.57	\$ 16.49	
68	76	1	1.39	91.70	\$ 6.71	1.5	2.07	136.40	\$ 9.99	2,520	19	\$ 7.50	228	\$16.70	19	\$ 7.50	\$ 24.20	
63	76	1	1.39	94.48	\$ 6.92	1.5	2.07	140.53	\$ 10.29	2,520	31	\$ 12.27	235	\$17.21	31	\$ 12.27	\$ 29.48	
58	76	1	1.39	125.05	\$ 9.16	1.5	2.07	186.00	\$ 13.62	2,520	57	\$ 22.26	311	\$22.78	57	\$ 22.26	\$ 45.03	
53	76	1	1.39	122.27	\$ 8.95	1.5	2.07	181.87	\$ 13.32	2,520	70	\$ 27.64	304	\$22.27	70	\$ 27.64	\$ 49.91	
48	76	1	1.39	95.87	\$ 7.02	1.5	2.07	142.60	\$ 10.44	2,520	67	\$ 26.29	238	\$17.46	67	\$ 26.29	\$ 43.75	
43	70	1	1.39	122.27	\$ 8.95	1.5	2.07	181.87	\$ 13.32	2,520	82	\$ 32.35	304	\$22.27	82	\$ 32.35	\$ 54.62	
38	70	1	1.39	193.13	\$ 14.14	1.5	2.07	287.27	\$ 21.03	2,520	154	\$ 60.38	480	\$35.18	154	\$ 60.38	\$ 95.56	
33	70	1	1.39	154.23	\$ 11.29	1.5	2.07	229.40	\$ 16.80	2,520	142	\$ 55.64	384	\$28.09	142	\$ 55.64	\$ 83.73	
28	70	1	1.39	90.31	\$ 6.61	1.5	2.07	134.33	\$ 9.84	2,520	94	\$ 36.92	225	\$16.45	94	\$ 36.92	\$ 53.37	
23	70	1	1.39	88.93	\$ 6.51	1.5	2.07	132.27	\$ 9.68	2,520	103	\$ 40.63	221	\$16.20	103	\$ 40.63	\$ 56.83	
18	70	1	1.39	66.69	\$ 4.88	1.5	2.07	99.20	\$ 7.26	2,520	86	\$ 33.68	166	\$12.15	86	\$ 33.68	\$ 45.83	
13	70	1	1.39	48.63	\$ 3.56	1.5	2.07	72.33	\$ 5.30	2,520	68	\$ 26.90	121	\$ 8.86	68	\$ 26.90	\$ 35.76	
8	70	1	1.39	45.85	\$ 3.36	1.5	2.07	68.20	\$ 4.99	2,520	70	\$ 27.57	114	\$ 8.35	70	\$ 27.57	\$ 35.92	
3	70	1	1.39	26.40	\$ 1.93	1.5	2.07	39.27	\$ 2.88	2,520	44	\$ 17.14	66	\$ 4.81	44	\$ 17.14	\$ 21.95	
-3	70	1	1.39	26.40	\$ 1.93	1.5	2.07	39.27	\$ 2.88	2,520	47	\$ 18.41	66	\$ 4.81	47	\$ 18.41	\$ 23.22	
-8	70	1	1.39	20.84	\$ 1.53	1.5	2.07	31.00	\$ 2.27	2,520	40	\$ 15.54	52	\$ 3.80	40	\$ 15.54	\$ 19.33	
-13	70	1	1.39	13.89	\$ 1.02	1.5	2.07	20.67	\$ 1.51	2,520	28	\$ 11.03	35	\$ 2.53	28	\$ 11.03	\$ 13.56	
-18	70	1	1.39	5.56	\$ 0.41	1.5	2.07	8.27	\$ 0.61	2,520	12	\$ 4.68	14	\$ 1.01	12	\$ 4.68	\$ 5.69	
				1,617	\$ 118			2,406	\$ 176			1,214	\$ 477	4,023	\$ 295	1,220	\$ 479	\$ 774

Heineman Middle School – Baseline Energy Usage

EXISTING KITCHEN HOOD (CONSTANT SPEED) ENERGY USAGE & COSTS															
OAT (F)	Space Temp Setpoint (F)	Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	Make-up Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$	
88	76	7.5	9.59	48	\$ 3.51	0	7,000			48	\$ 3.51	-	\$ -	\$ 3.51	
83	76	7.5	9.59	211	\$ 15.44	0	7,000			211	\$ 15.44	-	\$ -	\$ 15.44	
78	76	7.5	9.59	489	\$ 35.79	0	7,000			489	\$ 35.79	-	\$ -	\$ 35.79	
73	76	7.5	9.59	537	\$ 39.30	0	7,000	19	\$ 7.28	537	\$ 39.30	19	\$ 7.28	\$ 46.58	
68	76	7.5	9.59	767	\$ 56.15	0	7,000	64	\$ 25.25	767	\$ 56.15	64	\$ 25.25	\$ 81.40	
63	76	7.5	9.59	700	\$ 51.23	0	7,000	93	\$ 36.59	700	\$ 51.23	93	\$ 36.59	\$ 87.83	
58	76	7.5	9.59	968	\$ 70.89	0	7,000	177	\$ 69.38	968	\$ 70.89	177	\$ 69.38	\$ 140.26	
53	76	7.5	9.59	1,083	\$ 79.31	0	7,000	251	\$ 98.60	1,083	\$ 79.31	251	\$ 98.60	\$ 177.90	
48	76	7.5	9.59	728	\$ 53.34	0	7,000	205	\$ 80.42	728	\$ 53.34	205	\$ 80.42	\$ 133.76	
43	70	7.5	9.59	1,026	\$ 75.10	0	7,000	278	\$ 109.25	1,026	\$ 75.10	278	\$ 109.25	\$ 184.35	
38	70	7.5	9.59	1,562	\$ 114.40	0	7,000	501	\$ 196.69	1,562	\$ 114.40	501	\$ 196.69	\$ 311.09	
33	70	7.5	9.59	1,217	\$ 89.13	0	7,000	450	\$ 176.83	1,217	\$ 89.13	450	\$ 176.83	\$ 265.96	
28	70	7.5	9.59	776	\$ 56.85	0	7,000	325	\$ 127.82	776	\$ 56.85	325	\$ 127.82	\$ 184.67	
23	70	7.5	9.59	748	\$ 54.74	0	7,000	350	\$ 137.56	748	\$ 54.74	350	\$ 137.56	\$ 192.31	
18	70	7.5	9.59	556	\$ 40.71	0	7,000	288	\$ 113.06	556	\$ 40.71	288	\$ 113.06	\$ 153.76	
13	70	7.5	9.59	412	\$ 30.18	0	7,000	234	\$ 91.80	412	\$ 30.18	234	\$ 91.80	\$ 121.98	
8	70	7.5	9.59	364	\$ 26.67	0	7,000	224	\$ 88.18	364	\$ 26.67	224	\$ 88.18	\$ 114.85	
3	70	7.5	9.59	220	\$ 16.14	0	7,000	147	\$ 57.64	220	\$ 16.14	147	\$ 57.64	\$ 73.79	
-3	70	7.5	9.59	249	\$ 18.25	0	7,000	178	\$ 69.99	249	\$ 18.25	178	\$ 69.99	\$ 88.24	
-8	70	7.5	9.59	163	\$ 11.93	0	7,000	125	\$ 48.92	163	\$ 11.93	125	\$ 48.92	\$ 60.85	
-13	70	7.5	9.59	125	\$ 9.12	0	7,000	101	\$ 39.82	125	\$ 9.12	101	\$ 39.82	\$ 48.94	
-18	71	7.5	9.59	58	\$ 4.21	0	7,000	50	\$ 19.72	58	\$ 4.21	50	\$ 19.72	\$ 23.93	
-23	70	7.5	9.59	10	\$ 0.70	0	7,000	9	\$ 3.43	10	\$ 0.70	9	\$ 3.43	\$ 4.14	
				13,017	\$ 953			4,049	\$ 1,591	13,017	\$ 953	4,068	\$ 1,598	\$ 2,551	

Marlow Middle School – Baseline Energy Usage

EXISTING KITCHEN HOOD (CONSTANT SPEED) ENERGY USAGE & COSTS																
OAT (F)	Space Temp Setpoint (F)	Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	Make-up Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$		
88	76	7.5	9.59	48	\$ 3.51	0	7,000			48	\$ 3.51	-	\$ -	\$ 3.51		
83	76	7.5	9.59	211	\$ 15.44	0	7,000			211	\$ 15.44	-	\$ -	\$ 15.44		
78	76	7.5	9.59	489	\$ 35.79	0	7,000			489	\$ 35.79	-	\$ -	\$ 35.79		
73	76	7.5	9.59	537	\$ 39.30	0	7,000	19	\$ 7.28	537	\$ 39.30	19	\$ 7.28	\$ 46.58		
68	76	7.5	9.59	767	\$ 56.15	0	7,000	64	\$ 25.25	767	\$ 56.15	64	\$ 25.25	\$ 81.40		
63	76	7.5	9.59	700	\$ 51.23	0	7,000	93	\$ 36.59	700	\$ 51.23	93	\$ 36.59	\$ 87.83		
58	76	7.5	9.59	968	\$ 70.89	0	7,000	177	\$ 69.38	968	\$ 70.89	177	\$ 69.38	\$ 140.26		
53	76	7.5	9.59	1,083	\$ 79.31	0	7,000	251	\$ 98.60	1,083	\$ 79.31	251	\$ 98.60	\$ 177.90		
48	76	7.5	9.59	728	\$ 53.34	0	7,000	205	\$ 80.42	728	\$ 53.34	205	\$ 80.42	\$ 133.76		
43	70	7.5	9.59	1,026	\$ 75.10	0	7,000	278	\$ 109.25	1,026	\$ 75.10	278	\$ 109.25	\$ 184.35		
38	70	7.5	9.59	1,562	\$ 114.40	0	7,000	501	\$ 196.69	1,562	\$ 114.40	501	\$ 196.69	\$ 311.09		
33	70	7.5	9.59	1,217	\$ 89.13	0	7,000	450	\$ 176.83	1,217	\$ 89.13	450	\$ 176.83	\$ 265.96		
28	70	7.5	9.59	776	\$ 56.85	0	7,000	325	\$ 127.82	776	\$ 56.85	325	\$ 127.82	\$ 184.67		
23	70	7.5	9.59	748	\$ 54.74	0	7,000	350	\$ 137.56	748	\$ 54.74	350	\$ 137.56	\$ 192.31		
18	70	7.5	9.59	556	\$ 40.71	0	7,000	288	\$ 113.06	556	\$ 40.71	288	\$ 113.06	\$ 153.76		
13	70	7.5	9.59	412	\$ 30.18	0	7,000	234	\$ 91.80	412	\$ 30.18	234	\$ 91.80	\$ 121.98		
8	70	7.5	9.59	364	\$ 26.67	0	7,000	224	\$ 88.18	364	\$ 26.67	224	\$ 88.18	\$ 114.85		
3	70	7.5	9.59	220	\$ 16.14	0	7,000	147	\$ 57.64	220	\$ 16.14	147	\$ 57.64	\$ 73.79		
-3	70	7.5	9.59	249	\$ 18.25	0	7,000	178	\$ 69.99	249	\$ 18.25	178	\$ 69.99	\$ 88.24		
-8	70	7.5	9.59	163	\$ 11.93	0	7,000	125	\$ 48.92	163	\$ 11.93	125	\$ 48.92	\$ 60.85		
-13	70	7.5	9.59	125	\$ 9.12	0	7,000	101	\$ 39.82	125	\$ 9.12	101	\$ 39.82	\$ 48.94		
-18	71	7.5	9.59	58	\$ 4.21	0	7,000	50	\$ 19.72	58	\$ 4.21	50	\$ 19.72	\$ 23.93		
-23	70	7.5	9.59	10	\$ 0.70	0	7,000	9	\$ 3.43	10	\$ 0.70	9	\$ 3.43	\$ 4.14		
					13,017	\$ 953				4,049	\$ 1,591	13,017	\$ 953	4,068	\$ 1,598	\$ 2,551

Huntley High School – Baseline Energy Usage

EXISTING KITCHEN HOOD (CONSTANT SPEED) ENERGY USAGE & COSTS																		
OAT (F)	Space Temp Setpoint (F)	Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	MAU kW	MAU kWh	MAU Energy \$	MAU / Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$	
93	76	7.5	9.59	10	\$ 0.70	7.5	9.59	9.59	\$ 0.70	5,376			19	\$ 1.40	-	\$ -	\$ 1.40	
88	76	7.5	9.59	67	\$ 4.91	7.5	9.59	67.10	\$ 4.91	5,376			134	\$ 9.83	-	\$ -	\$ 9.83	
83	76	7.5	9.59	297	\$ 21.76	7.5	9.59	297.15	\$ 21.76	5,376			594	\$ 43.51	-	\$ -	\$ 43.51	
78	76	7.5	9.59	652	\$ 47.73	7.5	9.59	651.81	\$ 47.73	5,376			1,304	\$ 95.45	-	\$ -	\$ 95.45	
73	76	7.5	9.59	585	\$ 42.81	7.5	9.59	584.71	\$ 42.81	5,376	15	\$ 6	1,169	\$ 85.62	15	\$ 6.09	\$ 91.71	
68	76	7.5	9.59	834	\$ 61.06	7.5	9.59	833.93	\$ 61.06	5,376	54	\$ 21	1,668	\$ 122.12	54	\$ 21.09	\$ 143.21	
63	76	7.5	9.59	882	\$ 64.57	7.5	9.59	881.86	\$ 64.57	5,376	90	\$ 35	1,764	\$ 129.14	90	\$ 35.42	\$ 164.55	
58	76	7.5	9.59	1,083	\$ 79.31	7.5	9.59	1,083.15	\$ 79.31	5,376	152	\$ 60	2,166	\$ 158.62	152	\$ 59.61	\$ 218.23	
53	76	7.5	9.59	1,265	\$ 92.64	7.5	9.59	1,265.27	\$ 92.64	5,376	225	\$ 88	2,531	\$ 185.29	225	\$ 88.45	\$ 273.74	
48	70	7.5	9.59	834	\$ 61.06	7.5	9.59	833.93	\$ 61.06	5,376	142	\$ 56	1,668	\$ 122.12	142	\$ 55.82	\$ 177.94	
43	70	7.5	9.59	1,131	\$ 82.82	7.5	9.59	1,131.08	\$ 82.82	5,376	236	\$ 93	2,262	\$ 165.64	236	\$ 92.53	\$ 258.17	
38	70	7.5	9.59	1,792	\$ 131.24	7.5	9.59	1,792.47	\$ 131.24	5,376	441	\$ 173	3,585	\$ 262.49	441	\$ 173.30	\$ 435.79	
33	70	7.5	9.59	1,361	\$ 99.66	7.5	9.59	1,361.13	\$ 99.66	5,376	386	\$ 152	2,722	\$ 199.32	386	\$ 151.84	\$ 351.17	
28	70	7.5	9.59	863	\$ 63.17	7.5	9.59	862.69	\$ 63.17	5,376	278	\$ 109	1,725	\$ 126.33	278	\$ 109.07	\$ 235.40	
23	70	7.5	9.59	863	\$ 63.17	7.5	9.59	862.69	\$ 63.17	5,376	310	\$ 122	1,725	\$ 126.33	310	\$ 121.90	\$ 248.23	
18	70	7.5	9.59	623	\$ 45.62	7.5	9.59	623.05	\$ 45.62	5,376	248	\$ 97	1,246	\$ 91.24	248	\$ 97.31	\$ 188.55	
13	70	7.5	9.59	460	\$ 33.69	7.5	9.59	460.10	\$ 33.69	5,376	200	\$ 79	920	\$ 67.38	200	\$ 78.70	\$ 146.08	
8	70	7.5	9.59	393	\$ 28.78	7.5	9.59	393.00	\$ 28.78	5,376	186	\$ 73	786	\$ 57.55	186	\$ 73.07	\$ 130.62	
3	70	7.5	9.59	230	\$ 16.84	7.5	9.59	230.05	\$ 16.84	5,376	118	\$ 46	460	\$ 33.69	118	\$ 46.19	\$ 79.88	
-3	70	7.5	9.59	278	\$ 20.35	7.5	9.59	277.98	\$ 20.35	5,376	153	\$ 60	556	\$ 40.71	153	\$ 59.95	\$ 100.66	
-8	70	7.5	9.59	182	\$ 13.34	7.5	9.59	182.12	\$ 13.34	5,376	107	\$ 42	364	\$ 26.67	107	\$ 41.99	\$ 68.66	
-13	70	7.5	9.59	125	\$ 9.12	7.5	9.59	124.61	\$ 9.12	5,376	78	\$ 31	249	\$ 18.25	78	\$ 30.58	\$ 48.83	
-18	70	7.5	9.59	58	\$ 4.21	7.5	9.59	57.51	\$ 4.21	5,376	38	\$ 15	115	\$ 8.42	38	\$ 14.97	\$ 23.39	
-23	70	7.5	9.59	10	\$ 0.70	7.5	9.59	9.59	\$ 0.70	5,376	7	\$ 3	19	\$ 1.40	7	\$ 2.64	\$ 4.04	
					14,877	\$ 1,089				14,877	\$ 1,089	3,463	\$ 1,361	29,753	\$ 2,179	3,463	\$ 1,361	\$ 3,539

C. Proposed Kitchen Hood Controls Upgrades

The kitchen controls will turn the exhaust fan only when the hood temperature is above 85F. It is estimated that percent time the exhaust fan and the make-up air fan can stay off during operating hours are as follows:

<u>School</u>	<u>Estimated % time Exhaust Fan OFF</u>
Conley ES	54%
Mackeben ES	54%
Martin ES	57%
Chesak ES	53%
Leggee ES	53%
Heinemann MS	53%
Marlow MS	53%
Huntley HS	62%

This estimate is based on typical school operation and industry standards. The energy savings calculation is done based on this estimate.

D. Energy Savings Calculations

Conley Elementary School – Energy Usage after upgrade

PROPOSED KITCHEN HOOD ENERGY USAGE & COSTS																
Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	MAU kW	MAU kWh	MAU Energy \$	MAU / Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$	
2	2.74	6.30	\$ 0.46	2	2.74	6.30	\$ 0.46	3,528			13	\$ 0.92	-	\$ -	\$ 0.92	
2	2.74	27.72	\$ 2.03	2	2.74	27.72	\$ 2.03	3,528			55	\$ 4.06	-	\$ -	\$ 4.06	
2	2.74	64.26	\$ 4.71	2	2.74	64.26	\$ 4.71	3,528			129	\$ 9.41	-	\$ -	\$ 9.41	
2	2.74	69.30	\$ 5.07	2	2.74	69.30	\$ 5.07	3,528	4	\$ 1.66	139	\$ 10.15	4	\$ 1.66	\$11.81	
2	2.74	83.16	\$ 6.09	2	2.74	83.16	\$ 6.09	3,528	12	\$ 4.83	166	\$ 12.18	12	\$ 4.83	\$17.01	
2	2.74	85.68	\$ 6.27	2	2.74	85.68	\$ 6.27	3,528	20	\$ 7.90	171	\$ 12.55	20	\$ 7.90	\$20.45	
2	2.74	113.40	\$ 8.30	2	2.74	113.40	\$ 8.30	3,528	36	\$ 14.33	227	\$ 16.61	36	\$ 14.33	\$30.94	
2	2.74	110.88	\$ 8.12	2	2.74	110.88	\$ 8.12	3,528	45	\$ 17.80	222	\$ 16.24	45	\$ 17.80	\$34.04	
2	2.74	86.94	\$ 6.37	2	2.74	86.94	\$ 6.37	3,528	43	\$ 16.93	174	\$ 12.73	43	\$ 16.93	\$29.66	
2	2.74	110.88	\$ 8.12	2	2.74	110.88	\$ 8.12	3,528	53	\$ 20.83	222	\$ 16.24	53	\$ 20.83	\$37.07	
2	2.74	175.14	\$12.82	2	2.74	175.14	\$12.82	3,528	99	\$ 38.89	350	\$ 25.65	99	\$38.89	\$64.53	
2	2.74	139.86	\$10.24	2	2.74	139.86	\$10.24	3,528	91	\$ 35.83	280	\$ 20.48	91	\$35.83	\$56.31	
2	2.74	81.90	\$ 6.00	2	2.74	81.90	\$ 6.00	3,528	61	\$ 23.78	164	\$ 11.99	61	\$23.78	\$35.77	
2	2.74	80.64	\$ 5.90	2	2.74	80.64	\$ 5.90	3,528	67	\$ 26.17	161	\$ 11.81	67	\$26.17	\$37.98	
2	2.74	60.48	\$ 4.43	2	2.74	60.48	\$ 4.43	3,528	55	\$ 21.69	121	\$ 8.86	55	\$21.69	\$30.55	
2	2.74	44.10	\$ 3.23	2	2.74	44.10	\$ 3.23	3,528	44	\$ 17.32	88	\$ 6.46	44	\$17.32	\$23.78	
2	2.74	41.58	\$ 3.04	2	2.74	41.58	\$ 3.04	3,528	45	\$ 17.75	83	\$ 6.09	45	\$17.75	\$23.84	
2	2.74	23.94	\$ 1.75	2	2.74	23.94	\$ 1.75	3,528	28	\$ 11.04	48	\$ 3.51	28	\$11.04	\$14.55	
2	2.74	23.94	\$ 1.75	2	2.74	23.94	\$ 1.75	3,528	30	\$ 11.86	48	\$ 3.51	30	\$11.86	\$15.36	
2	2.74	18.90	\$ 1.38	2	2.74	18.90	\$ 1.38	3,528	25	\$ 10.01	38	\$ 2.77	25	\$10.01	\$12.77	
2	2.74	12.60	\$ 0.92	2	2.74	12.60	\$ 0.92	3,528	18	\$ 7.10	25	\$ 1.85	18	\$ 7.10	\$ 8.95	
2	2.74	5.04	\$ 0.37	2	2.74	5.04	\$ 0.37	3,528	8	\$ 3.01	10	\$ 0.74	8	\$ 3.01	\$ 3.75	
		1,467	\$ 107			1,467	\$ 107			782	\$ 307	2,933	\$ 215	786	\$ 309	\$ 524

Mackeben Elementary School – Energy Usage after upgrade

PROPOSED KITCHEN HOOD ENERGY USAGE & COSTS																
Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	MAU kW	MAU kWh	MAU Energy \$	MAU / Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$	
2	2.74	6.30	\$ 0.46	2	2.74	6.30	\$ 0.46	3,528			13	\$ 0.92	-	\$ -	\$ 0.92	
2	2.74	27.72	\$ 2.03	2	2.74	27.72	\$ 2.03	3,528			55	\$ 4.06	-	\$ -	\$ 4.06	
2	2.74	64.26	\$ 4.71	2	2.74	64.26	\$ 4.71	3,528			129	\$ 9.41	-	\$ -	\$ 9.41	
2	2.74	69.30	\$ 5.07	2	2.74	69.30	\$ 5.07	3,528	4	\$ 1.66	139	\$10.15	4	\$ 1.66	\$11.81	
2	2.74	83.16	\$ 6.09	2	2.74	83.16	\$ 6.09	3,528	12	\$ 4.83	166	\$12.18	12	\$ 4.83	\$17.01	
2	2.74	85.68	\$ 6.27	2	2.74	85.68	\$ 6.27	3,528	20	\$ 7.90	171	\$12.55	20	\$ 7.90	\$20.45	
2	2.74	113.40	\$ 8.30	2	2.74	113.40	\$ 8.30	3,528	36	\$ 14.33	227	\$16.61	36	\$ 14.33	\$30.94	
2	2.74	110.88	\$ 8.12	2	2.74	110.88	\$ 8.12	3,528	45	\$ 17.80	222	\$16.24	45	\$ 17.80	\$34.04	
2	2.74	86.94	\$ 6.37	2	2.74	86.94	\$ 6.37	3,528	43	\$ 16.93	174	\$12.73	43	\$ 16.93	\$29.66	
2	2.74	110.88	\$ 8.12	2	2.74	110.88	\$ 8.12	3,528	53	\$ 20.83	222	\$16.24	53	\$ 20.83	\$37.07	
2	2.74	175.14	\$12.82	2	2.74	175.14	\$ 12.82	3,528	99	\$ 38.89	350	\$25.65	99	\$ 38.89	\$64.53	
2	2.74	139.86	\$10.24	2	2.74	139.86	\$ 10.24	3,528	91	\$ 35.83	280	\$20.48	91	\$ 35.83	\$56.31	
2	2.74	81.90	\$ 6.00	2	2.74	81.90	\$ 6.00	3,528	61	\$ 23.78	164	\$11.99	61	\$ 23.78	\$35.77	
2	2.74	80.64	\$ 5.90	2	2.74	80.64	\$ 5.90	3,528	67	\$ 26.17	161	\$11.81	67	\$ 26.17	\$37.98	
2	2.74	60.48	\$ 4.43	2	2.74	60.48	\$ 4.43	3,528	55	\$ 21.69	121	\$ 8.86	55	\$ 21.69	\$30.55	
2	2.74	44.10	\$ 3.23	2	2.74	44.10	\$ 3.23	3,528	44	\$ 17.32	88	\$ 6.46	44	\$ 17.32	\$23.78	
2	2.74	41.58	\$ 3.04	2	2.74	41.58	\$ 3.04	3,528	45	\$ 17.75	83	\$ 6.09	45	\$ 17.75	\$23.84	
2	2.74	23.94	\$ 1.75	2	2.74	23.94	\$ 1.75	3,528	28	\$ 11.04	48	\$ 3.51	28	\$ 11.04	\$14.55	
2	2.74	23.94	\$ 1.75	2	2.74	23.94	\$ 1.75	3,528	30	\$ 11.86	48	\$ 3.51	30	\$ 11.86	\$15.36	
2	2.74	18.90	\$ 1.38	2	2.74	18.90	\$ 1.38	3,528	25	\$ 10.01	38	\$ 2.77	25	\$ 10.01	\$12.77	
2	2.74	12.60	\$ 0.92	2	2.74	12.60	\$ 0.92	3,528	18	\$ 7.10	25	\$ 1.85	18	\$ 7.10	\$ 8.95	
2	2.74	5.04	\$ 0.37	2	2.74	5.04	\$ 0.37	3,528	8	\$ 3.01	10	\$ 0.74	8	\$ 3.01	\$ 3.75	
		1,467	\$ 107			1,467	\$ 107			782	\$ 307	2,933	\$ 215	786	\$ 309	\$ 524

Martin Elementary School – Energy Usage after upgrade

PROPOSED KITCHEN HOOD ENERGY USAGE & COSTS																
Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	MAU kW	MAU kWh	MAU Energy \$	MAU / Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$	
2	2.74	5.89	\$ 0.43	2	2.74	5.89	\$ 0.43	2,688			12	\$ 0.86	-	\$ -	\$ 0.86	
2	2.74	25.91	\$ 1.90	2	2.74	25.91	\$ 1.90	2,688			52	\$ 3.79	-	\$ -	\$ 3.79	
2	2.74	60.07	\$ 4.40	2	2.74	60.07	\$ 4.40	2,688			120	\$ 8.80	-	\$ -	\$ 8.80	
2	2.74	64.78	\$ 4.74	2	2.74	64.78	\$ 4.74	2,688	3	\$ 1.18	130	\$ 9.49	3	\$ 1.18	\$10.67	
2	2.74	77.74	\$ 5.69	2	2.74	77.74	\$ 5.69	2,688	9	\$ 3.44	155	\$11.38	9	\$ 3.44	\$14.82	
2	2.74	80.09	\$ 5.86	2	2.74	80.09	\$ 5.86	2,688	14	\$ 5.63	160	\$11.73	14	\$ 5.63	\$17.36	
2	2.74	106.00	\$ 7.76	2	2.74	106.00	\$ 7.76	2,688	26	\$ 10.21	212	\$15.52	26	\$ 10.21	\$25.73	
2	2.74	103.65	\$ 7.59	2	2.74	103.65	\$ 7.59	2,688	32	\$ 12.68	207	\$15.18	32	\$ 12.68	\$27.86	
2	2.74	81.27	\$ 5.95	2	2.74	81.27	\$ 5.95	2,688	31	\$ 12.06	163	\$11.90	31	\$ 12.06	\$23.96	
2	2.74	103.65	\$ 7.59	2	2.74	103.65	\$ 7.59	2,688	38	\$ 14.84	207	\$15.18	38	\$ 14.84	\$30.01	
2	2.74	163.72	\$11.99	2	2.74	163.72	\$11.99	2,688	70	\$ 27.70	327	\$23.97	70	\$ 27.70	\$51.67	
2	2.74	130.74	\$ 9.57	2	2.74	130.74	\$ 9.57	2,688	65	\$ 25.52	261	\$19.15	65	\$ 25.52	\$44.66	
2	2.74	76.56	\$ 5.61	2	2.74	76.56	\$ 5.61	2,688	43	\$ 16.94	153	\$11.21	43	\$ 16.94	\$28.15	
2	2.74	75.38	\$ 5.52	2	2.74	75.38	\$ 5.52	2,688	47	\$ 18.64	151	\$11.04	47	\$ 18.64	\$29.68	
2	2.74	56.54	\$ 4.14	2	2.74	56.54	\$ 4.14	2,688	39	\$ 15.45	113	\$ 8.28	39	\$ 15.45	\$23.73	
2	2.74	41.22	\$ 3.02	2	2.74	41.22	\$ 3.02	2,688	31	\$ 12.34	82	\$ 6.04	31	\$ 12.34	\$18.37	
2	2.74	38.87	\$ 2.85	2	2.74	38.87	\$ 2.85	2,688	32	\$ 12.64	78	\$ 5.69	32	\$ 12.64	\$18.34	
2	2.74	22.38	\$ 1.64	2	2.74	22.38	\$ 1.64	2,688	20	\$ 7.86	45	\$ 3.28	20	\$ 7.86	\$11.14	
2	2.74	22.38	\$ 1.64	2	2.74	22.38	\$ 1.64	2,688	21	\$ 8.45	45	\$ 3.28	21	\$ 8.45	\$11.72	
2	2.74	17.67	\$ 1.29	2	2.74	17.67	\$ 1.29	2,688	18	\$ 7.13	35	\$ 2.59	18	\$ 7.13	\$ 9.71	
2	2.74	11.78	\$ 0.86	2	2.74	11.78	\$ 0.86	2,688	13	\$ 5.06	24	\$ 1.72	13	\$ 5.06	\$ 6.78	
2	2.74	4.71	\$ 0.34	2	2.74	10.96	\$ 0.80	2,688	5	\$ 2.15	16	\$ 1.15	5	\$ 2.15	\$ 3.29	
		1,371	\$ 100			1,377	\$ 101			557	\$ 219	2,748	\$ 201	560	\$ 220	\$ 421

Chesak Elementary School – Energy Usage after upgrade

PROPOSED KITCHEN HOOD ENERGY USAGE & COSTS															
Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	MAU kW	MAU kWh	MAU Energy \$	MAU / Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$
1	1.39	3.27	\$ 0.24	1.5	2.07	4.86	\$ 0.36	2,520			8	\$ 0.59	-	\$ -	\$ 0.59
1	1.39	14.37	\$ 1.05	1.5	2.07	21.37	\$ 1.56	2,520			36	\$ 2.62	-	\$ -	\$ 2.62
1	1.39	33.31	\$ 2.44	1.5	2.07	49.54	\$ 3.63	2,520			83	\$ 6.07	-	\$ -	\$ 6.07
1	1.39	35.92	\$ 2.63	1.5	2.07	53.42	\$ 3.91	2,520	3	\$ 1.21	89	\$ 6.54	3	\$ 1.21	\$ 7.75
1	1.39	43.10	\$ 3.16	1.5	2.07	64.11	\$ 4.69	2,520	9	\$ 3.52	107	\$ 7.85	9	\$ 3.52	\$11.37
1	1.39	44.41	\$ 3.25	1.5	2.07	66.05	\$ 4.84	2,520	15	\$ 5.77	110	\$ 8.09	15	\$ 5.77	\$13.85
1	1.39	58.77	\$ 4.30	1.5	2.07	87.42	\$ 6.40	2,520	27	\$10.46	146	\$10.70	27	\$10.46	\$21.16
1	1.39	57.47	\$ 4.21	1.5	2.07	85.48	\$ 6.26	2,520	33	\$12.99	143	\$10.47	33	\$12.99	\$23.46
1	1.39	45.06	\$ 3.30	1.5	2.07	67.02	\$ 4.91	2,520	31	\$12.35	112	\$ 8.21	31	\$12.35	\$20.56
1	1.39	57.47	\$ 4.21	1.5	2.07	85.48	\$ 6.26	2,520	39	\$15.20	143	\$10.47	39	\$15.20	\$25.67
1	1.39	90.77	\$ 6.65	1.5	2.07	135.02	\$ 9.89	2,520	72	\$28.38	226	\$16.53	72	\$28.38	\$44.91
1	1.39	72.49	\$ 5.31	1.5	2.07	107.82	\$ 7.89	2,520	67	\$26.15	180	\$13.20	67	\$26.15	\$39.35
1	1.39	42.45	\$ 3.11	1.5	2.07	63.14	\$ 4.62	2,520	44	\$17.35	106	\$ 7.73	44	\$17.35	\$25.09
1	1.39	41.79	\$ 3.06	1.5	2.07	62.17	\$ 4.55	2,520	49	\$19.10	104	\$ 7.61	49	\$19.10	\$26.71
1	1.39	31.35	\$ 2.30	1.5	2.07	46.62	\$ 3.41	2,520	40	\$15.83	78	\$ 5.71	40	\$15.83	\$21.54
1	1.39	22.86	\$ 1.67	1.5	2.07	34.00	\$ 2.49	2,520	32	\$12.64	57	\$ 4.16	32	\$12.64	\$16.81
1	1.39	21.55	\$ 1.58	1.5	2.07	32.05	\$ 2.35	2,520	33	\$12.96	54	\$ 3.92	33	\$12.96	\$16.88
1	1.39	12.41	\$ 0.91	1.5	2.07	18.46	\$ 1.35	2,520	21	\$ 8.06	31	\$ 2.26	21	\$ 8.06	\$10.32
1	1.39	12.41	\$ 0.91	1.5	2.07	18.46	\$ 1.35	2,520	22	\$ 8.65	31	\$ 2.26	22	\$ 8.65	\$10.91
1	1.39	9.80	\$ 0.72	1.5	2.07	14.57	\$ 1.07	2,520	19	\$ 7.30	24	\$ 1.78	19	\$ 7.30	\$ 9.09
1	1.39	6.53	\$ 0.48	1.5	2.07	9.71	\$ 0.71	2,520	13	\$ 5.18	16	\$ 1.19	13	\$ 5.18	\$ 6.37
1	1.39	5.56	\$ 0.41	1.5	2.07	3.89	\$ 0.28	2,520	6	\$ 2.20	9	\$ 0.69	6	\$ 2.20	\$ 2.89
			763 \$ 56				1,131 \$ 83				570 \$ 224	1,894 \$ 139	573 \$ 225	\$ 364	

Leggee Elementary School – Energy Usage after upgrade

PROPOSED KITCHEN HOOD ENERGY USAGE & COSTS															
Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	MAU kW	MAU kWh	MAU Energy \$	MAU / Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$
1	1.39	3.27	\$ 0.24	1.5	2.07	4.86	\$ 0.36	2,520			8	\$ 0.59	-	\$ -	\$ 0.59
1	1.39	14.37	\$ 1.05	1.5	2.07	21.37	\$ 1.56	2,520			36	\$ 2.62	-	\$ -	\$ 2.62
1	1.39	33.31	\$ 2.44	1.5	2.07	49.54	\$ 3.63	2,520			83	\$ 6.07	-	\$ -	\$ 6.07
1	1.39	35.92	\$ 2.63	1.5	2.07	53.42	\$ 3.91	2,520	3	\$ 1.21	89	\$ 6.54	3	\$ 1.21	\$ 7.75
1	1.39	43.10	\$ 3.16	1.5	2.07	64.11	\$ 4.69	2,520	9	\$ 3.52	107	\$ 7.85	9	\$ 3.52	\$11.37
1	1.39	44.41	\$ 3.25	1.5	2.07	66.05	\$ 4.84	2,520	15	\$ 5.77	110	\$ 8.09	15	\$ 5.77	\$13.85
1	1.39	58.77	\$ 4.30	1.5	2.07	87.42	\$ 6.40	2,520	27	\$10.46	146	\$10.70	27	\$10.46	\$21.16
1	1.39	57.47	\$ 4.21	1.5	2.07	85.48	\$ 6.26	2,520	33	\$12.99	143	\$10.47	33	\$12.99	\$23.46
1	1.39	45.06	\$ 3.30	1.5	2.07	67.02	\$ 4.91	2,520	31	\$12.35	112	\$ 8.21	31	\$12.35	\$20.56
1	1.39	57.47	\$ 4.21	1.5	2.07	85.48	\$ 6.26	2,520	39	\$15.20	143	\$10.47	39	\$15.20	\$25.67
1	1.39	90.77	\$ 6.65	1.5	2.07	135.02	\$ 9.89	2,520	72	\$28.38	226	\$16.53	72	\$28.38	\$44.91
1	1.39	72.49	\$ 5.31	1.5	2.07	107.82	\$ 7.89	2,520	67	\$26.15	180	\$13.20	67	\$26.15	\$39.35
1	1.39	42.45	\$ 3.11	1.5	2.07	63.14	\$ 4.62	2,520	44	\$17.35	106	\$ 7.73	44	\$17.35	\$25.09
1	1.39	41.79	\$ 3.06	1.5	2.07	62.17	\$ 4.55	2,520	49	\$19.10	104	\$ 7.61	49	\$19.10	\$26.71
1	1.39	31.35	\$ 2.30	1.5	2.07	46.62	\$ 3.41	2,520	40	\$15.83	78	\$ 5.71	40	\$15.83	\$21.54
1	1.39	22.86	\$ 1.67	1.5	2.07	34.00	\$ 2.49	2,520	32	\$12.64	57	\$ 4.16	32	\$12.64	\$16.81
1	1.39	21.55	\$ 1.58	1.5	2.07	32.05	\$ 2.35	2,520	33	\$12.96	54	\$ 3.92	33	\$12.96	\$16.88
1	1.39	12.41	\$ 0.91	1.5	2.07	18.46	\$ 1.35	2,520	21	\$ 8.06	31	\$ 2.26	21	\$ 8.06	\$10.32
1	1.39	12.41	\$ 0.91	1.5	2.07	18.46	\$ 1.35	2,520	22	\$ 8.65	31	\$ 2.26	22	\$ 8.65	\$10.91
1	1.39	9.80	\$ 0.72	1.5	2.07	14.57	\$ 1.07	2,520	19	\$ 7.30	24	\$ 1.78	19	\$ 7.30	\$ 9.09
1	1.39	6.53	\$ 0.48	1.5	2.07	9.71	\$ 0.71	2,520	13	\$ 5.18	16	\$ 1.19	13	\$ 5.18	\$ 6.37
1	1.39	2.61	\$ 0.19	1.5	2.07	3.89	\$ 0.28	2,520	6	\$ 2.20	6	\$ 0.48	6	\$ 2.20	\$ 2.67
			760 \$ 56				1,131 \$ 83				570 \$ 224	1,891 \$ 138	573 \$ 225	\$ 364	

Heineman Middle School – Energy Usage after upgrade

PROPOSED KITCHEN HOOD ENERGY USAGE & COSTS												
Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	Make-up Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$
7.5	9.59	22.53	\$ 1.65	0	7,000			23	\$ 1.65	-	\$ -	\$ 1.65
7.5	9.59	99.11	\$ 7.26	0	7,000			99	\$ 7.26	-	\$ -	\$ 7.26
7.5	9.59	229.76	\$ 16.82	0	7,000			230	\$ 16.82	-	\$ -	\$ 16.82
7.5	9.59	252.29	\$ 18.47	0	7,000	9	\$ 3.42	252	\$ 18.47	9	\$ 3.42	\$ 21.89
7.5	9.59	360.41	\$ 26.39	0	7,000	30	\$ 11.87	360	\$ 26.39	30	\$ 11.87	\$ 38.26
7.5	9.59	328.88	\$ 24.08	0	7,000	44	\$ 17.20	329	\$ 24.08	44	\$ 17.20	\$ 41.28
7.5	9.59	455.02	\$ 33.32	0	7,000	83	\$ 32.61	455	\$ 33.32	83	\$ 32.61	\$ 65.92
7.5	9.59	509.08	\$ 37.27	0	7,000	118	\$ 46.34	509	\$ 37.27	118	\$ 46.34	\$ 83.62
7.5	9.59	342.39	\$ 25.07	0	7,000	96	\$ 37.80	342	\$ 25.07	96	\$ 37.80	\$ 62.87
7.5	9.59	482.05	\$ 35.30	0	7,000	131	\$ 51.35	482	\$ 35.30	131	\$ 51.35	\$ 86.64
7.5	9.59	734.34	\$ 53.77	0	7,000	235	\$ 92.44	734	\$ 53.77	235	\$ 92.44	\$ 146.21
7.5	9.59	572.15	\$ 41.89	0	7,000	212	\$ 83.11	572	\$ 41.89	212	\$ 83.11	\$ 125.00
7.5	9.59	364.92	\$ 26.72	0	7,000	153	\$ 60.07	365	\$ 26.72	153	\$ 60.07	\$ 86.79
7.5	9.59	351.40	\$ 25.73	0	7,000	165	\$ 64.65	351	\$ 25.73	165	\$ 64.65	\$ 90.38
7.5	9.59	261.30	\$ 19.13	0	7,000	135	\$ 53.14	261	\$ 19.13	135	\$ 53.14	\$ 72.27
7.5	9.59	193.72	\$ 14.18	0	7,000	110	\$ 43.15	194	\$ 14.18	110	\$ 43.15	\$ 57.33
7.5	9.59	171.20	\$ 12.53	0	7,000	105	\$ 41.45	171	\$ 12.53	105	\$ 41.45	\$ 53.98
7.5	9.59	103.62	\$ 7.59	0	7,000	69	\$ 27.09	104	\$ 7.59	69	\$ 27.09	\$ 34.68
7.5	9.59	117.13	\$ 8.58	0	7,000	84	\$ 32.89	117	\$ 8.58	84	\$ 32.89	\$ 41.47
7.5	9.59	76.59	\$ 5.61	0	7,000	59	\$ 22.99	77	\$ 5.61	59	\$ 22.99	\$ 28.60
7.5	9.59	58.57	\$ 4.29	0	7,000	48	\$ 18.72	59	\$ 4.29	48	\$ 18.72	\$ 23.00
7.5	9.59	27.03	\$ 1.98	0	7,000	24	\$ 9.27	27	\$ 1.98	24	\$ 9.27	\$ 11.25
7.5	9.59	4.51	\$ 0.33	0	7,000	4	\$ 1.61	5	\$ 0.33	4	\$ 1.61	\$ 1.94
		6,118	\$ 448			1,903	\$ 748	6,118	\$ 448	1,912	\$ 751	\$ 1,199

Marlow Middle School - Energy Usage after upgrade

PROPOSED KITCHEN HOOD ENERGY USAGE & COSTS												
Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	Make-up Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$
7.5	9.59	22.53	\$ 1.65	0	7,000			23	\$ 1.65	-	\$ -	\$ 1.65
7.5	9.59	99.11	\$ 7.26	0	7,000			99	\$ 7.26	-	\$ -	\$ 7.26
7.5	9.59	229.76	\$16.82	0	7,000			230	\$ 16.82	-	\$ -	\$ 16.82
7.5	9.59	252.29	\$18.47	0	7,000	9	\$ 3.42	252	\$ 18.47	9	\$ 3.42	\$ 21.89
7.5	9.59	360.41	\$26.39	0	7,000	30	\$ 11.87	360	\$ 26.39	30	\$ 11.87	\$ 38.26
7.5	9.59	328.88	\$24.08	0	7,000	44	\$ 17.20	329	\$ 24.08	44	\$ 17.20	\$ 41.28
7.5	9.59	455.02	\$33.32	0	7,000	83	\$ 32.61	455	\$ 33.32	83	\$ 32.61	\$ 65.92
7.5	9.59	509.08	\$37.27	0	7,000	118	\$ 46.34	509	\$ 37.27	118	\$ 46.34	\$ 83.62
7.5	9.59	342.39	\$25.07	0	7,000	96	\$ 37.80	342	\$ 25.07	96	\$ 37.80	\$ 62.87
7.5	9.59	482.05	\$35.30	0	7,000	131	\$ 51.35	482	\$ 35.30	131	\$ 51.35	\$ 86.64
7.5	9.59	734.34	\$53.77	0	7,000	235	\$ 92.44	734	\$ 53.77	235	\$ 92.44	\$146.21
7.5	9.59	572.15	\$41.89	0	7,000	212	\$ 83.11	572	\$ 41.89	212	\$ 83.11	\$125.00
7.5	9.59	364.92	\$26.72	0	7,000	153	\$ 60.07	365	\$ 26.72	153	\$ 60.07	\$ 86.79
7.5	9.59	351.40	\$25.73	0	7,000	165	\$ 64.65	351	\$ 25.73	165	\$ 64.65	\$ 90.38
7.5	9.59	261.30	\$19.13	0	7,000	135	\$ 53.14	261	\$ 19.13	135	\$ 53.14	\$ 72.27
7.5	9.59	193.72	\$14.18	0	7,000	110	\$ 43.15	194	\$ 14.18	110	\$ 43.15	\$ 57.33
7.5	9.59	171.20	\$12.53	0	7,000	105	\$ 41.45	171	\$ 12.53	105	\$ 41.45	\$ 53.98
7.5	9.59	103.62	\$ 7.59	0	7,000	69	\$ 27.09	104	\$ 7.59	69	\$ 27.09	\$ 34.68
7.5	9.59	117.13	\$ 8.58	0	7,000	84	\$ 32.89	117	\$ 8.58	84	\$ 32.89	\$ 41.47
7.5	9.59	76.59	\$ 5.61	0	7,000	59	\$ 22.99	77	\$ 5.61	59	\$ 22.99	\$ 28.60
7.5	9.59	58.57	\$ 4.29	0	7,000	48	\$ 18.72	59	\$ 4.29	48	\$ 18.72	\$ 23.00
7.5	9.59	27.03	\$ 1.98	0	7,000	24	\$ 9.27	27	\$ 1.98	24	\$ 9.27	\$ 11.25
7.5	9.59	4.51	\$ 0.33	0	7,000	4	\$ 1.61	5	\$ 0.33	4	\$ 1.61	\$ 1.94
		6,118	\$ 448			1,903	\$ 748	6,118	\$ 448	1,912	\$ 751	\$ 1,199

Huntley High School - Energy Usage after upgrade

PROPOSED KITCHEN HOOD ENERGY USAGE & COSTS																
Exhaust Fan HP	Exhaust Fan KW	Exhaust Fan kWh	Exhaust Fan Energy \$	MAU HP	MAU kW	MAU kWh	MAU Energy \$	MAU / Air CFM	Heating (Therm)	Heating \$	Total kWh	Total Elec \$	Total Therms	Total Gas \$	Total \$	
7.5	9.59	3.66	\$ 0.27	7.5	9.59	3.66	\$ 0.27	5,376			7	\$ 0.54	-	\$ -	\$ 0.54	
7.5	9.59	25.62	\$ 1.88	7.5	9.59	25.62	\$ 1.88	5,376			51	\$ 3.75	-	\$ -	\$ 3.75	
7.5	9.59	113.45	\$ 8.31	7.5	9.59	113.45	\$ 8.31	5,376			227	\$ 16.61	-	\$ -	\$ 16.61	
7.5	9.59	248.86	\$18.22	7.5	9.59	248.86	\$18.22	5,376			498	\$ 36.44	-	\$ -	\$ 36.44	
7.5	9.59	223.24	\$16.35	7.5	9.59	223.24	\$16.35	5,376	6	\$ 2.32	446	\$ 32.69	6	\$ 2.32	\$ 35.02	
7.5	9.59	318.39	\$23.31	7.5	9.59	318.39	\$23.31	5,376	20	\$ 8.05	637	\$ 46.63	20	\$ 8.05	\$ 54.68	
7.5	9.59	336.69	\$24.65	7.5	9.59	336.69	\$24.65	5,376	34	\$ 13.52	673	\$ 49.31	34	\$ 13.52	\$ 62.83	
7.5	9.59	413.55	\$30.28	7.5	9.59	413.55	\$30.28	5,376	58	\$ 22.76	827	\$ 60.56	58	\$ 22.76	\$ 83.32	
7.5	9.59	483.08	\$35.37	7.5	9.59	483.08	\$35.37	5,376	86	\$ 33.77	966	\$ 70.74	86	\$ 33.77	\$ 104.51	
7.5	9.59	318.39	\$23.31	7.5	9.59	318.39	\$23.31	5,376	54	\$ 21.31	637	\$ 46.63	54	\$ 21.31	\$ 67.94	
7.5	9.59	431.85	\$31.62	7.5	9.59	431.85	\$31.62	5,376	90	\$ 35.33	864	\$ 63.24	90	\$ 35.33	\$ 98.57	
7.5	9.59	684.37	\$50.11	7.5	9.59	684.37	\$50.11	5,376	168	\$ 66.17	1,369	\$ 100.22	168	\$ 66.17	\$ 166.38	
7.5	9.59	519.68	\$38.05	7.5	9.59	519.68	\$38.05	5,376	148	\$ 57.97	1,039	\$ 76.10	148	\$ 57.97	\$ 134.08	
7.5	9.59	329.37	\$24.12	7.5	9.59	329.37	\$24.12	5,376	106	\$ 41.64	659	\$ 48.23	106	\$ 41.64	\$ 89.88	
7.5	9.59	329.37	\$24.12	7.5	9.59	329.37	\$24.12	5,376	118	\$ 46.54	659	\$ 48.23	118	\$ 46.54	\$ 94.78	
7.5	9.59	237.88	\$17.42	7.5	9.59	237.88	\$17.42	5,376	95	\$ 37.15	476	\$ 34.84	95	\$ 37.15	\$ 71.99	
7.5	9.59	175.67	\$12.86	7.5	9.59	175.67	\$12.86	5,376	76	\$ 30.05	351	\$ 25.72	76	\$ 30.05	\$ 55.77	
7.5	9.59	150.05	\$10.99	7.5	9.59	150.05	\$10.99	5,376	71	\$ 27.90	300	\$ 21.97	71	\$ 27.90	\$ 49.87	
7.5	9.59	87.83	\$ 6.43	7.5	9.59	87.83	\$ 6.43	5,376	45	\$ 17.64	176	\$ 12.86	45	\$ 17.64	\$ 30.50	
7.5	9.59	106.13	\$ 7.77	7.5	9.59	106.13	\$ 7.77	5,376	58	\$ 22.89	212	\$ 15.54	58	\$ 22.89	\$ 38.43	
7.5	9.59	69.53	\$ 5.09	7.5	9.59	69.53	\$ 5.09	5,376	41	\$ 16.03	139	\$ 10.18	41	\$ 16.03	\$ 26.21	
7.5	9.59	47.58	\$ 3.48	7.5	9.59	47.58	\$ 3.48	5,376	30	\$ 11.68	95	\$ 6.97	30	\$ 11.68	\$ 18.64	
7.5	9.59	21.96	\$ 1.61	7.5	9.59	21.96	\$ 1.61	5,376	15	\$ 5.72	44	\$ 3.22	15	\$ 5.72	\$ 8.93	
7.5	9.59	3.66	\$ 0.27	7.5	9.59	3.66	\$ 0.27	5,376	3	\$ 1.01	7	\$ 0.54	3	\$ 1.01	\$ 1.54	
		5,680	\$ 416			5,680	\$ 416			1,322	\$ 519	11,360	\$ 832	1,322	\$ 519	\$ 1,351

E. M&V Plan (Option-A Stipulated)

The energy savings is based on the following data –

1. Kitchen hood operating hours (provided by the school district)
2. Utility rates (provided by the school district)
3. Kitchen hood date (CTS field data)
4. Exhaust fan & MAU CFM – Estimated based on ASHRAE
5. Estimated kitchen hood OFF time %

Kitchen Hood Savings Summary –

ECM - KITCHEN HOODS UPGRADE	Existing Kitchen hood	Existing Kitchen hood Elec	Existing kitchen hood heating	Existing Kitchen hood heating	Existing kitchen hood total	% Savings (no VSD)	Estimated Savings NO VSD (\$/yr)
	(kWh/yr)	(\$/yr)	(therm/yr)	(\$/yr)	(\$/yr)		
Conley ES	6,377	\$ 467	1,708	\$ 671	\$ 1,138	54%	\$ 615
Mackeben ES	6,377	467	1,708	671	\$ 1,138	54%	\$ 615
Martin ES	6,377	467	1,302	511	\$ 978	57%	\$ 557
Chesak ES	4,023	295	1,220	479	\$ 774	53%	\$ 410
Leggee ES	4,023	295	1,220	479	\$ 774	53%	\$ 410
Heinemann MS	13,017	953	4,068	1,598	\$ 2,551	53%	\$ 1,352
Marlowe MS	13,017	953	4,068	1,598	\$ 2,551	53%	\$ 1,352
Huntley HS	29,753	\$ 2,179	3,463	\$ 1,361	\$ 3,539	62%	\$ 2,188
	82,963	\$ 6,075	18,757	\$ 7,369	\$ 13,444		\$ 7,499

**ATTACHMENT F CONSTRUCTION
PROJECT ACCEPTANCE FORM**

FINAL DELIVERY AND ACCEPTANCE CERTIFICATE

Project Name _____

Agreement Effective Date: _____

Scope-of-Work (SOW) Item/Energy Conservation Measure (ECM):

To: CTS

Reference is made to the above listed Agreement between the undersigned and CTS and to the Scope of Work as defined in Attachment A herein. In connection therewith, we confirm to you the following:

1. The Scope of Work (SOW) Item/ Energy Conservation Measure (ECM) referenced above and also listed in Attachment A of the Agreement has been demonstrated to the satisfaction of the Owner's Representative as being substantially complete, including all punch list items generated during the Project Acceptance Procedure.
2. All of the Work has been delivered to and received by the undersigned and that said Work has been examined and /or tested and is in good operating order and condition and is in all respects satisfactory to the undersigned and as represented, and that said Work has been accepted by the undersigned and complies with all terms of the Agreement. Consequently, you are hereby authorized to invoice for the Final Payment, as defined in Attachment C, The Payment Schedule.

Owner Name: _____

By: _____
(Authorized Signature)

(Printed Name and Title)

(Date)



Huntley Community School District 158

650 Academic Drive
Algonquin, Illinois 60102
(847) 659-6158 • www.district158.org

To: Board of Education and Administration

From: Mark Altmayer, Chief Financial Officer

Date: July 9, 2020

Subject: **Debt Refunding Opportunity - Presentation**
Board of Education Special Meeting, July 9, 2020

Over the past 7 years, the District has restructured its long term debt, implementing a multi-phase restructuring approach to manage the District's increasing debt obligations.

- Phase 1 was completed near the end of 2013, and restructured debt through levy year 2018 with the Series 2013 Refunding Bonds of \$46.7M.
- In fiscal year 2015, as part of the phase II restructuring, the District issued \$9.12M in General Obligation Refunding Bonds, Series 2014, to advance refund the Series 2005 and 2006B General Obligation School Building Bonds.
- In fiscal year 2016, the District issued \$5.25M in General Obligation Refunding School Bonds, Series 2016, whereby the proceeds were used to advance refund \$5.12M of the 2008 and 2009 General Obligation Refunding Bonds.
- In fiscal year 2019, the District issued \$6.13M in Series 2018 General Obligation Refunding School Bonds to advance refund \$6.095M of outstanding Series 2010 bonds.

As a result of favorable interest rates, a refunding opportunity exists. As such, Bob Lewis from PMA and Eric Anderson from Piper Jaffray have a presentation that will be shared. Eric Anderson will be at the meeting to present a few scenarios/options to the Board. Please see the attached presentation.

Recommendation:

Seeking guidance from the Board at their next regular meeting.

Huntley Community School District 158

Refunding Update

Series: 2003, 2003A, 2004 & 2013



Eric Anderson

MANAGING DIRECTOR

Tel: 224-512-7709

Email: eric.anderson@psc.com

John Balzano

VICE PRESIDENT

Tel: 312-267-5052

Email: john.balzano@psc.com

Robert Lewis

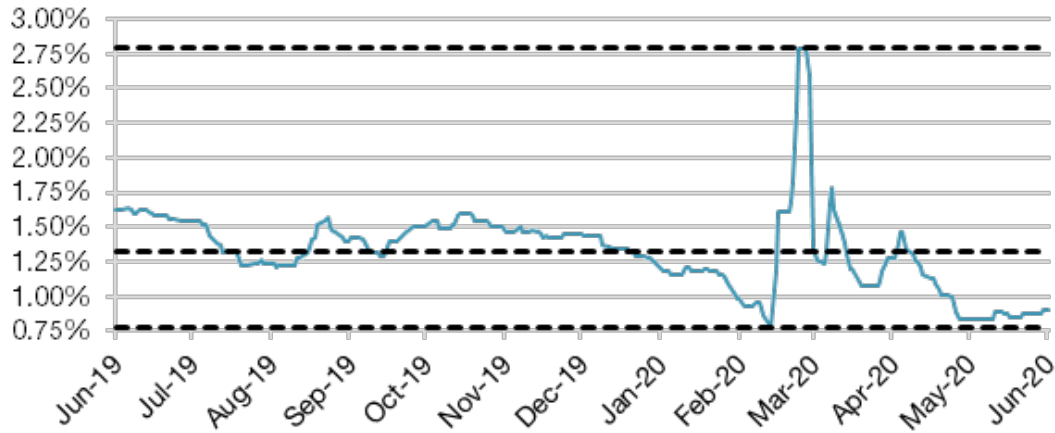
SENIOR VICE PRESIDENT/MANAGING DIRECTOR

Tel: 630-386-5026

Email: rlewis@pmanetwork.com

Market Update

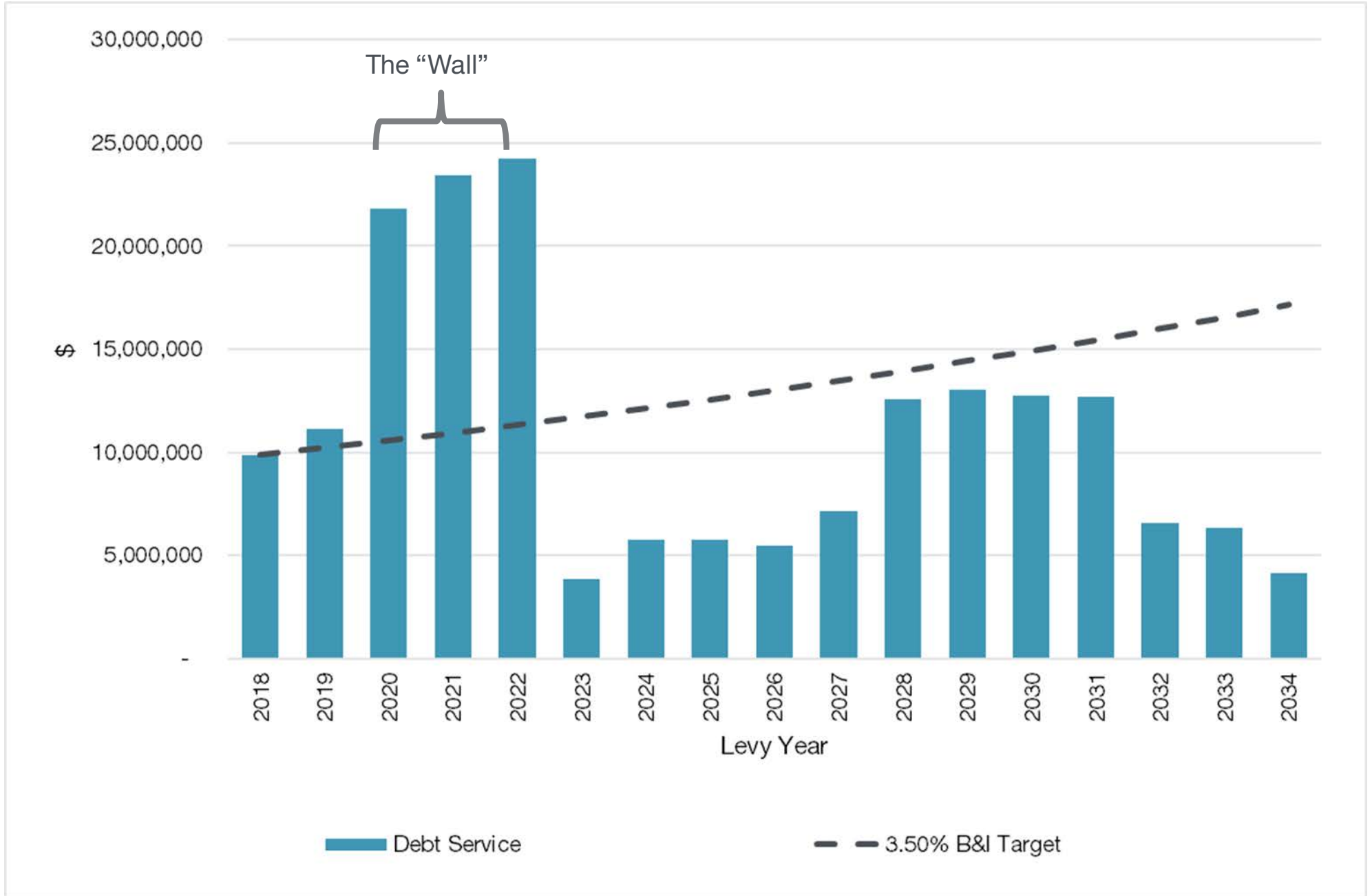
10-Year AAA MMD (1-Year History)



Municipal interest rates have declined to generational lows recently, after having a significant dislocation upwards in mid-March. Federal Reserve actions including a 1.25% decline in the Fed Funds rate in addition to other monetary and fiscal stimulus has again returned rates to pre-COVID levels.

Maturity	MMD (7/6/20)
1 year	0.25%
3 year	0.28%
5 year	0.41%
7 year	0.66%
10 year	0.90%
15 year	1.23%

Current Levied Debt



Dissecting the Wall

We looked at refunding the wall, covering levy years 2020 – 2022. We ran certain scenarios, including:

1. Refunding the entire wall currently, as taxable
2. Refunding the wall one levy year at a time, as tax exempt

The results were fairly overwhelming towards refunding the wall over a three year period, using a forward settle approach in order to issue as tax exempt. Note the district would not need to structure the bonds using a forward settlement should the Tax Cut and Jobs Act of 2017 be amended to allow for tax exempt advance refundings.

We calculate that the district could endure a 118 basis point increase in tax exempt rates versus current taxable rates and still be indifferent as to total debt service.

Forward Settle Specifics

Current refundings of Capital Appreciation Bonds are difficult – this outlines how the district may consider refunding its Capital Appreciation Bonds using a current refunding approach, thereby creating tax exempt advance refunding opportunities.

1. In October of the year preceding the maturity of the CAB (~October 3, 2020 for the January 1, 2022 CAB maturity, for example) district privately places or publicly offers refunding bond debt using a forward settlement to settle on or about October 3, 2021 or within 90 days of the maturity.
2. At the same time, Board of Education adopts abatement of bond and interest levy and files same with County Clerks, and provides for an amount of general funds equal to the abatement to be set aside as security. The funds are pledged for the existing bondholders prior to them being paid in January, 2022, and is called a “covered” abatement.
3. In October, 2021, district settles on the refunding bond, and frees up the set aside amount.

Settlement Risk

If the district were to not be able to settle on the forward, the district would then enter into a standard bond refunding in October, retaining the current refunding nature; however, if this were to occur it would subject the district to interest rate risk, perhaps materially.

This technique is an effective and potential very efficient way to refund the CABs should the district have sufficient liquidity to manage cash requirements through the set aside period of October, 2020 to October, 2021. The district would need to engage three separate transactions, presenting interest rate risk/reward, with costs of issuance potentially higher given three transactions versus one.

Dissecting the Wall – One Versus Three Pieces

Information we use when constructing the following scenarios:

	2021, as tax exempt	2022, as tax exempt	2023, as tax exempt	2020, all as taxable
Date	10.15.21	10.15.22	10.15.23	9.15.20
Bond Yield	1.357%	1.007%	0.754%	1.534%
All-In TIC	1.517%	1.253%	1.423%	1.728%
Total Debt Service	\$11,424,093	\$12,645,199	\$13,143,043	\$39,604,361

Total debt service on the three pieces of the wall would total \$37.2 million in an unchanged rate environment, or about \$2.4 million less than a single issuance as taxable. The District could bear an increase of 118 bps and still be indifferent as to total debt service.

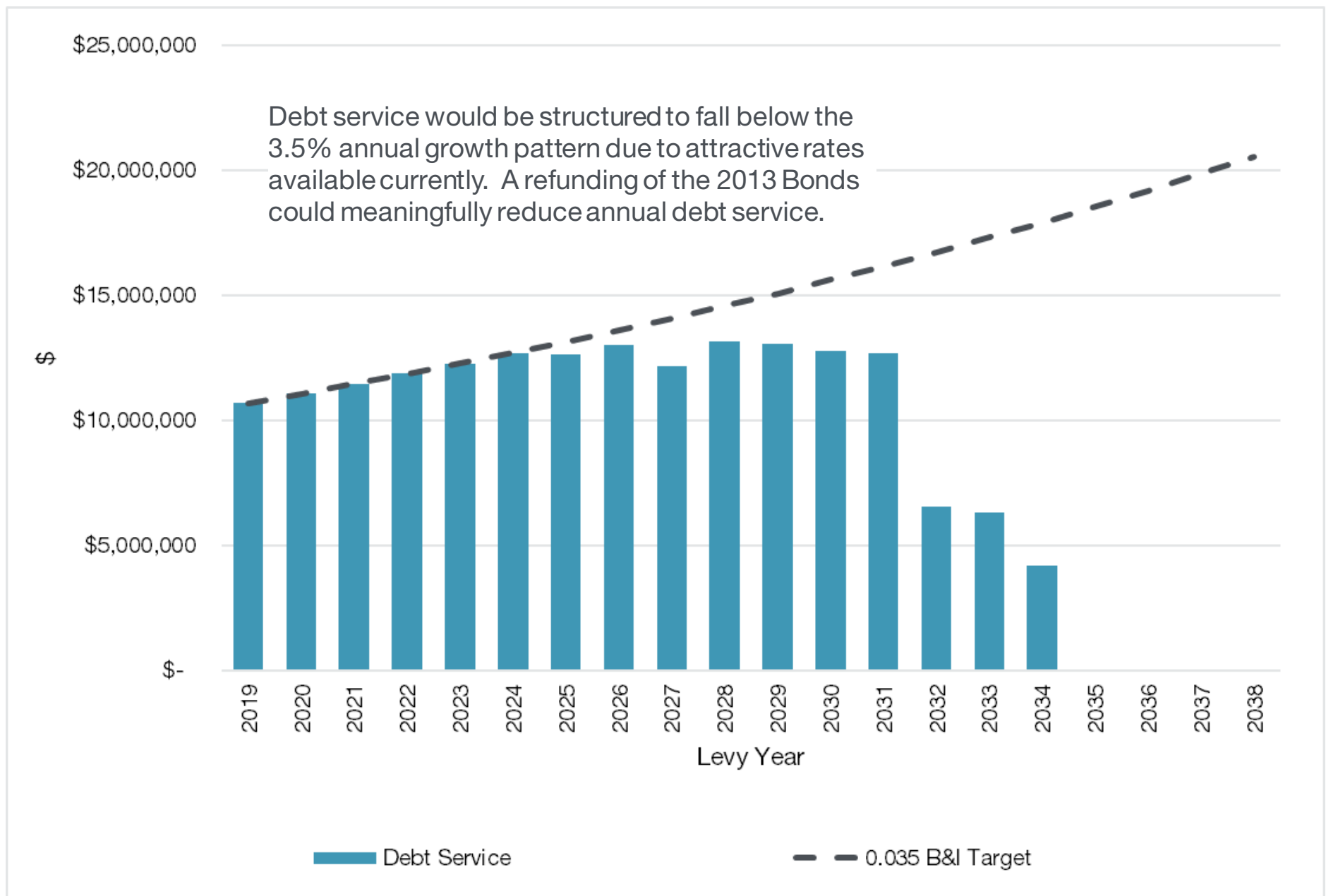
Dissecting the Wall – One Year at a Time

LEVY YEAR	FISCAL YEAR	All Current Levied Debt by District*	PROPOSED SERIES 2021, 2022, 2023 (WALL)						Total Bond and Interest Tax Levy	Y-O-Y % Chg
			Series 2003 Refunded Bond & Interest Tax Levy	Series 2021 Refunding Bond & Interest Tax Levy	Series 03 / 03A Refunded Bond & Interest Tax Levy	Series 2022 Refunding Bond & Interest Tax Levy	Series 2004 Refunded Bond & Interest Tax Levy	Series 2023 Refunding Bond & Interest Tax Levy		
2019	2021	\$ 10,685,078	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 10,685,078	8.13%
2020	2022	21,358,900	(10,400,000)	105,293	-	-	-	-	11,064,193	3.55%
2021	2023	22,943,900	-	357,600	(12,000,000)	126,199	-	-	11,427,699	3.29%
2022	2024	23,753,900	-	357,600	-	428,600	(12,840,000)	145,043	11,845,143	3.65%
2023	2025	3,413,900	-	357,600	-	428,600	-	8,047,600	12,247,700	3.40%
2024	2026	5,778,900	-	357,600	-	1,603,600	-	4,950,400	12,690,500	3.62%
2025	2027	5,779,300	-	357,600	-	6,506,600	-	-	12,643,500	-0.37%
2026	2028	5,475,900	-	3,987,600	-	3,551,600	-	-	13,015,100	2.94%
2027	2029	7,130,700	-	5,002,400	-	-	-	-	12,133,100	-6.78%
2028	2030	12,580,700	-	540,800	-	-	-	-	13,121,500	8.15%
2029	2031	13,051,475	-	-	-	-	-	-	13,051,475	-0.53%
2030	2032	12,752,413	-	-	-	-	-	-	12,752,413	-2.29%
2031	2033	12,686,475	-	-	-	-	-	-	12,686,475	-0.52%
2032	2034	6,546,475	-	-	-	-	-	-	6,546,475	-48.40%
2033	2035	6,320,950	-	-	-	-	-	-	6,320,950	-3.44%
2034	2036	4,160,000	-	-	-	-	-	-	4,160,000	-34.19%
2035	2037	-	-	-	-	-	-	-	-	-100.00%
2036	2038	-	-	-	-	-	-	-	-	
2037	2039	-	-	-	-	-	-	-	-	
2038	2040	-	-	-	-	-	-	-	-	
Total LY19-34		\$ 174,418,966	\$ (10,400,000)	\$ 11,424,093	\$ (12,000,000)	\$ 12,645,199	\$ (12,840,000)	\$ 13,143,043	\$ 176,391,302	

*Net of Series 2016 Bonds abated by the District, assumed to continue

This approach refunds each year of the wall, and requires the use of a forward-settled refunding bond. Note that we continue to shorten the amortization in each refunding series in order to limit interest rate risk.

Dissecting the Wall – One Year at a Time



This approach refunds each year of the wall, and requires the use of a forward-settled refunding bond.

Dissecting the Wall – All Three Years at Once

LEVY YEAR	All Current Levied Debt by District*	<i>Refi 03,03A,04 Refunded Bond & Interest Tax Levy</i>	<i>Series 2020 Refunding Bond & Interest Tax Levy</i>	Total Bond and Interest Tax Levy	Y-O-Y % Chg
2019	\$ 10,685,078	\$ -	\$ -	\$ 10,685,078	8.13%
2020	21,358,900	(11,025,000)	738,403	11,072,303	3.62%
2021	22,943,900	(12,000,000)	535,938	11,479,838	3.68%
2022	23,753,900	(12,840,000)	930,938	11,844,838	3.18%
2023	3,413,900	-	8,846,870	12,260,770	3.51%
2024	5,778,900	-	6,907,910	12,686,810	3.47%
2025	5,779,300	-	7,352,977	13,132,277	3.51%
2026	5,475,900	-	8,115,100	13,591,000	3.49%
2027	7,130,700	-	6,176,225	13,306,925	-2.09%
2028	12,580,700	-	-	12,580,700	-5.46%
2029	13,051,475	-	-	13,051,475	3.74%
2030	12,752,413	-	-	12,752,413	-2.29%
2031	12,686,475	-	-	12,686,475	-0.52%
2032	6,546,475	-	-	6,546,475	-48.40%
2033	6,320,950	-	-	6,320,950	-3.44%
2034	4,160,000	-	-	4,160,000	-34.19%
2035	-	-	-	-	-100.00%
2036	-	-	-	-	
2037	-	-	-	-	
2038	-	-	-	-	
LY19-	\$ 174,418,966	\$ (35,865,000)	\$ 39,604,361	\$ 178,158,327	

Should the Tax Cut & Jobs Act of 2017 be favorably amended, the district could refund the 2003, 2003 or 2004 bonds as a tax exempt advance refunding and no longer need to issue as a forward settle, and would require further analysis as to breakevens on a year-by-year or all-at-once refunding.

*Net of Series 2016 Bonds abated by the District

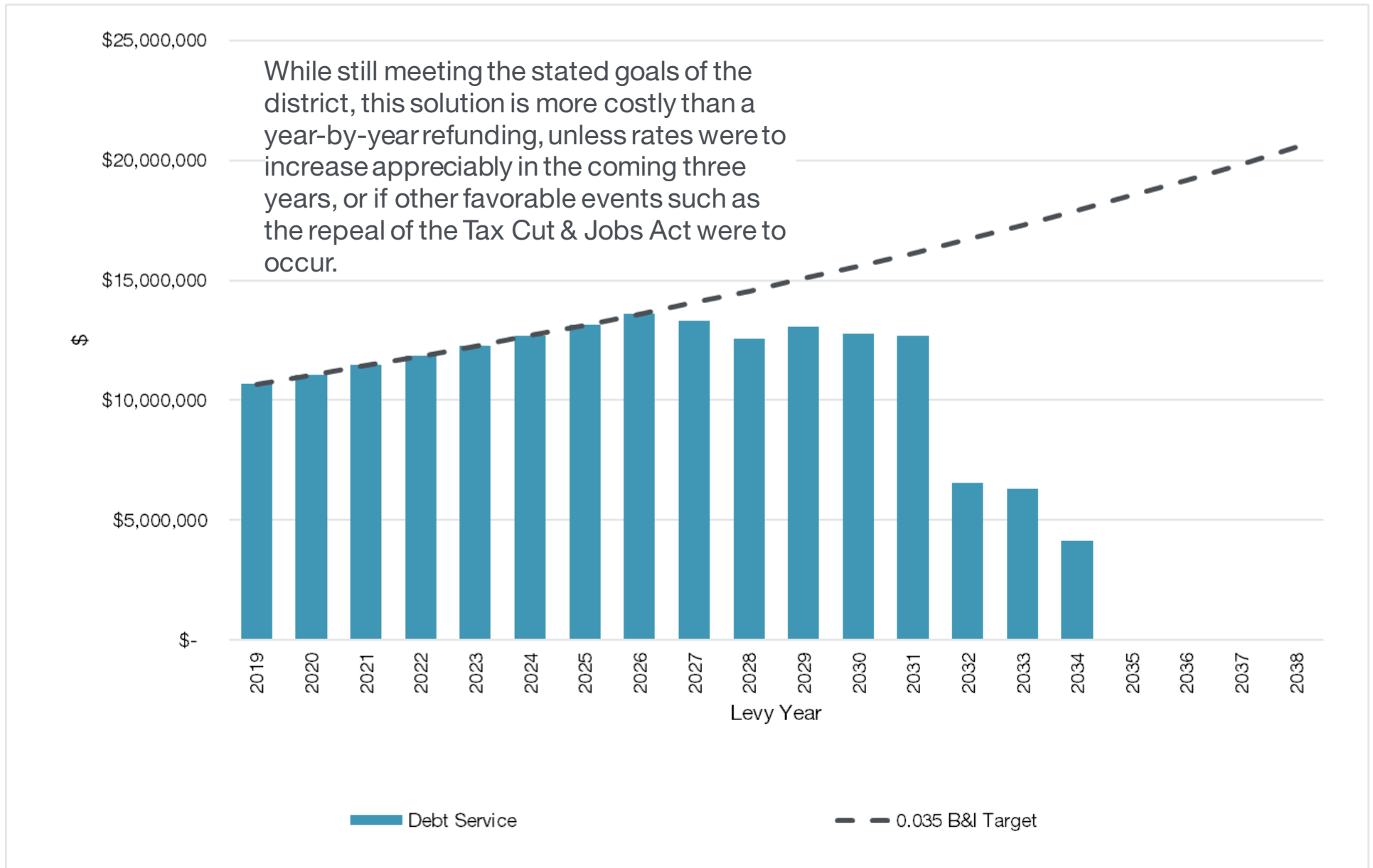
This approach refunds the wall this September, and issues taxable bonds to refund bonds from 2003 and 2004.

Waiting to Refund Wall as Tax Exempt vs. Taxable

	2021, as tax exempt	2022, as tax exempt	2023, as tax exempt
Date	10.15.21	10.15.22	10.15.23
Bond Yield Assumed	1.357%	1.007%	0.754%
Breakeven Bond Yield	2.537%	2.188%	1.935%
Difference	+118bp	+118bp	+118bp

Once the Series 2021 Bonds are priced, and if they were to be priced at a rate lower than 2.537%, the difference would be added to each succeeding series, elevating their respective breakeven points.

Dissecting the Wall – All Three Years at Once



Changing the Bond Levy into its Final Shape

Combined with a refunding of the wall, the district would have a further opportunity to refund its Series 2013 Bonds to enjoy substantial debt service savings, even issued as a taxable refunding bond. Note the District still has several bonds that can also be refunded in the future, including the Series 2014, Series 2017 and Series 2018 Bonds.

The district's levy for bonds and interest would decline, and lessen the overall increase in levy year 2024. The district's bond and interest levy is shown here as flat beginning with levy year 2025, which will serve to modestly influence lower the total impact of annual tax increases going forward, until the bonds are finally paid in levy year 2034 after which the district's tax extension will decline appreciably.

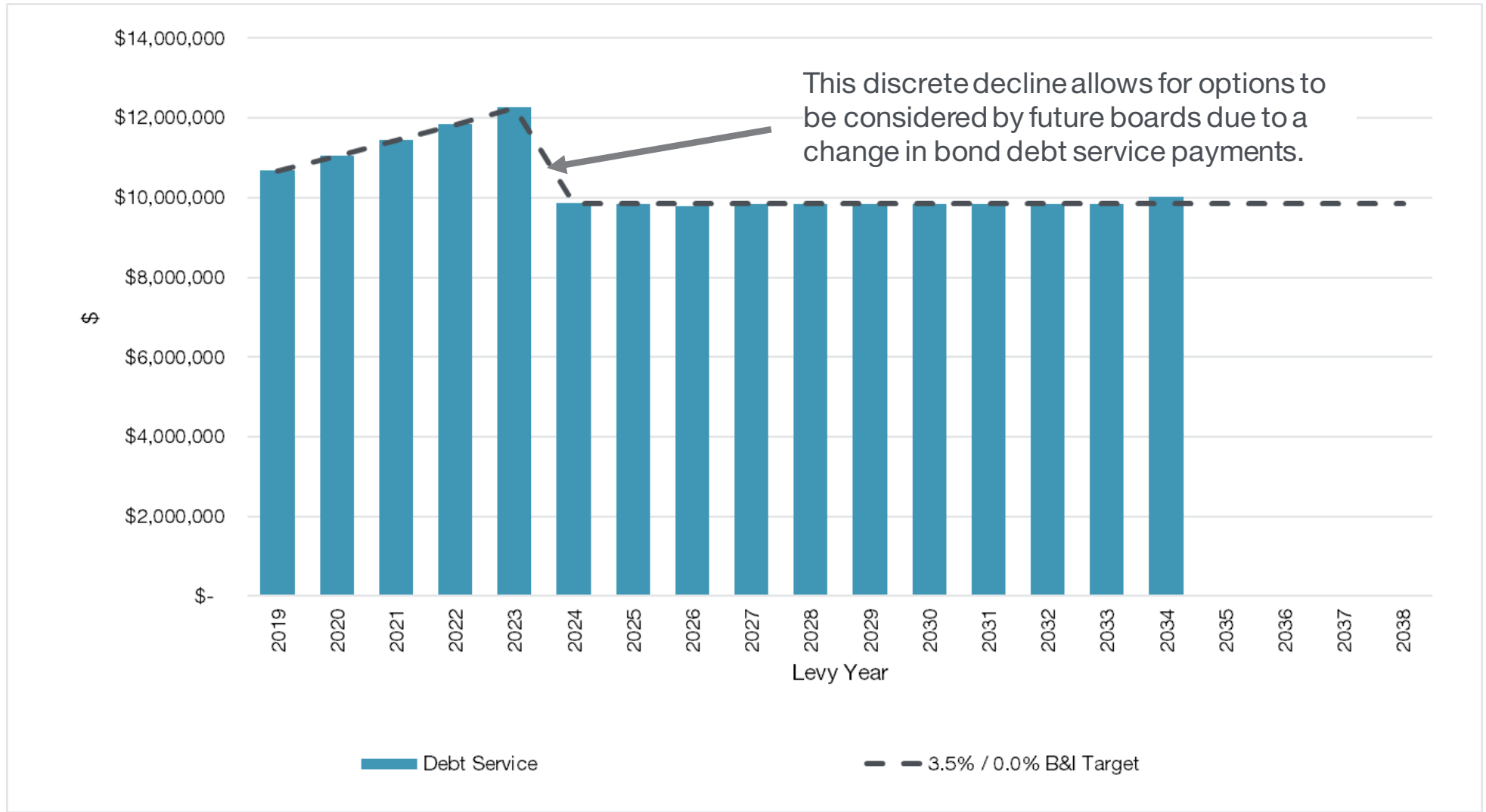
Pro Forma Savings Refunding Results

LEVY YEAR	FISCAL YEAR	All Current Levied Debt by District*	PROPOSED SERIES 2021, 2022, 2023 (WALL)				PROPOSED SERIES 2020				Total Bond and Interest Tax Levy	Y-O-Y % Chg	
			Series 2003 Refunded Bond & Interest Tax Levy	Series 2021 Refunding Bond & Interest Tax Levy	Series 03 / 03A Refunded Bond & Interest Tax Levy	Series 2022 Refunding Bond & Interest Tax Levy	Series 2004 Refunded Bond & Interest Tax Levy	Series 2023 Refunding Bond & Interest Tax Levy	Series 2013 Refunded Bond & Interest Tax Levy	Series 2020B Refunding Bond & Interest Tax Levy			
2019	2021	\$ 10,685,078	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (1,259,612)	\$ 1,252,737	\$ 10,678,203	8.06%
2020	2022	21,358,900	(10,400,000)	104,528	-	-	-	-	-	(2,519,225)	2,511,848	11,056,051	3.54%
2021	2023	22,943,900	-	355,000	(12,000,000)	125,198	-	-	-	(2,519,225)	2,535,128	11,440,001	3.47%
2022	2024	23,753,900	-	355,000	-	425,200	(12,840,000)	144,984	-	(2,519,225)	2,521,328	11,841,187	3.51%
2023	2025	3,413,900	-	355,000	-	425,200	-	8,017,400	-	(2,519,225)	2,565,128	12,257,403	3.51%
2024	2026	5,778,900	-	355,000	-	425,200	-	4,831,400	-	(2,519,225)	986,720	9,857,995	-19.58%
2025	2027	5,779,300	-	355,000	-	5,095,200	-	150,800	-	(2,519,225)	986,720	9,847,795	-0.10%
2026	2028	5,475,900	-	355,000	-	5,498,400	-	-	-	(2,519,225)	986,720	9,796,795	-0.52%
2027	2029	7,130,700	-	7,500,000	-	728,000	-	-	-	(6,519,225)	986,720	9,826,195	0.30%
2028	2030	12,580,700	-	1,799,200	-	-	-	-	-	(11,969,225)	7,436,720	9,847,395	0.22%
2029	2031	13,051,475	-	-	-	-	-	-	-	(12,440,000)	9,227,720	9,839,195	-0.08%
2030	2032	12,752,413	-	-	-	-	-	-	-	(12,140,938)	9,226,950	9,838,426	-0.01%
2031	2033	12,686,475	-	-	-	-	-	-	-	(12,075,000)	9,228,960	9,840,435	0.02%
2032	2034	6,546,475	-	-	-	-	-	-	-	-	3,303,055	9,849,530	0.09%
2033	2035	6,320,950	-	-	-	-	-	-	-	-	3,527,320	9,848,270	-0.01%
2034	2036	4,160,000	-	-	-	-	-	-	-	-	5,863,000	10,023,000	1.77%
2035	2037	-	-	-	-	-	-	-	-	-	-	-	-100.00%
2036	2038	-	-	-	-	-	-	-	-	-	-	-	-
2037	2039	-	-	-	-	-	-	-	-	-	-	-	-
2038	2040	-	-	-	-	-	-	-	-	-	-	-	-
Total LY19-34		\$ 174,418,966	\$ (10,400,000)	\$ 11,533,728	\$ (12,000,000)	\$ 12,722,398	\$ (12,840,000)	\$ 13,144,584	\$ (74,038,575)	\$ 63,146,774	\$	\$ 165,687,875	

*Net of Series 2016 Bonds abated by the District

Using current rates, the district could both save nearly \$11 million in nominal debt service, while delivering a substantially lower bond and interest levy beginning in levy year 2024.

Pro Forma Debt Service After Wall and 2013 Refundings



This solution visually depicts the fall off in the district’s bond and interest levy of about \$2,400,000, beginning with levy year 2024. A further decline could be accomplished by extending debt service beyond the current footprint.

Breakeven Analysis – Series 2013 Refunding

	2020, as taxable	2021, as tax exempt
Date	9.15.20	10.15.21
Bond Yield Assumed	2.214%	1.780%
Breakeven Bond Yield	-----	2.375%
Difference	n/a	+59.5bp

Taxable Refunding of Wall and Series 2013 Now

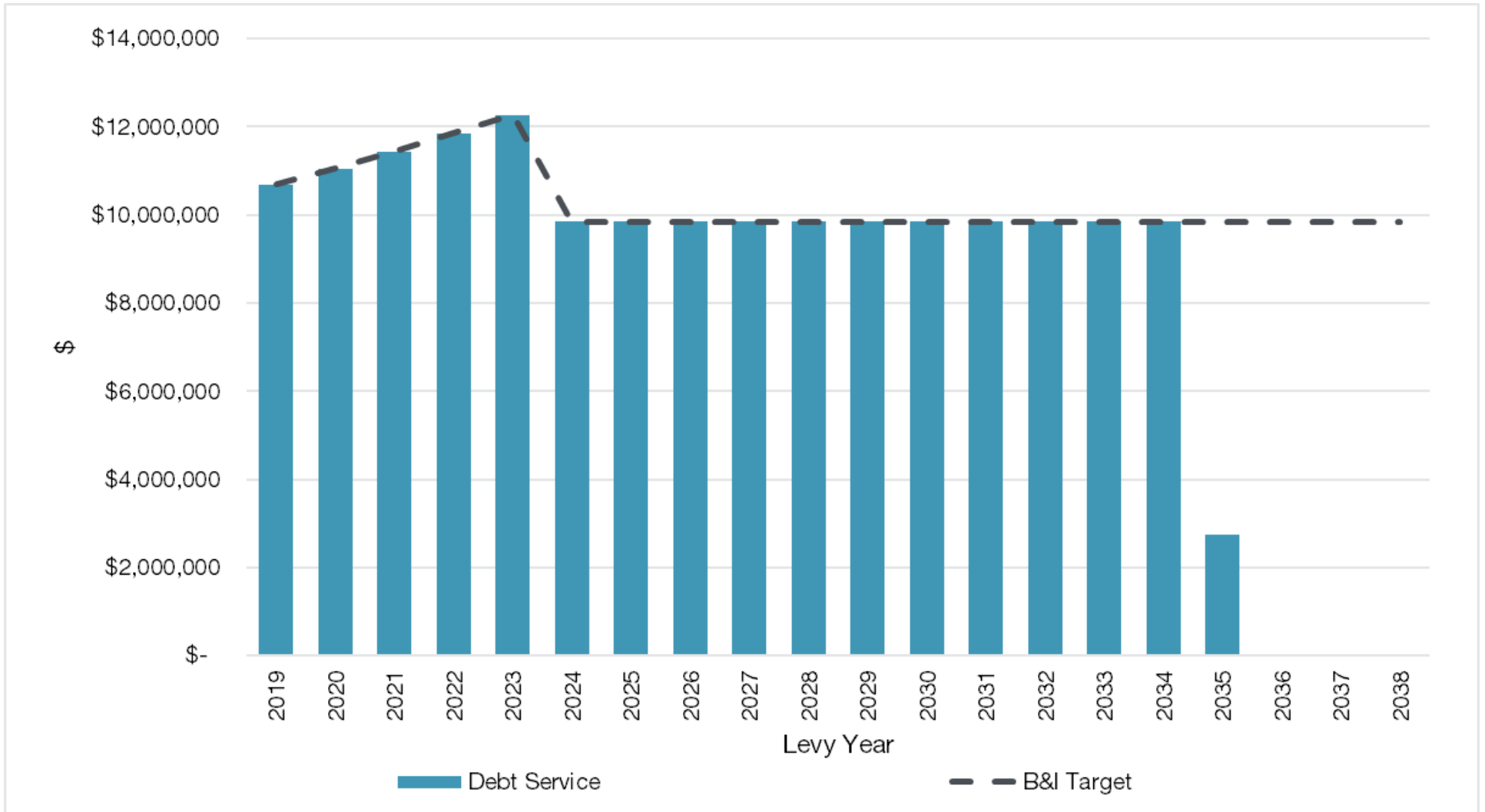
Proposed 2020 All Taxable

LEVY YEAR	FISCAL YEAR	All Current Levied Debt by District*	Series 2003	Series 03 / 03A	Series 2004	Series 2013	Series 2020	Total Bond and Interest Tax Levy	Y-O-Y % Chg
			Refunded Bond & Interest Tax Levy	Refunded Bond & Interest Tax Levy	Refunded Bond & Interest Tax Levy	Refunded Bond & Interest Tax Levy	Refunding Bond & Interest Tax Levy		
2019	2021	\$ 10,685,078	\$ -	\$ -	\$ -	\$ (1,259,613)	\$ 1,258,319	\$ 10,683,784	8.12%
2020	2022	21,358,900	(10,010,000)	-	-	(2,519,225)	2,207,382	11,037,057	3.31%
2021	2023	22,943,900	-	(10,600,000)	-	(2,519,225)	1,602,132	11,426,807	3.53%
2022	2024	23,753,900	-	-	(11,000,000)	(2,519,225)	1,602,132	11,836,807	3.59%
2023	2025	3,413,900	-	-	-	(2,519,225)	11,362,132	12,256,807	3.55%
2024	2026	5,778,900	-	-	-	(2,519,225)	6,586,964	9,846,639	-19.66%
2025	2027	5,779,300	-	-	-	(2,519,225)	6,585,464	9,845,539	-0.01%
2026	2028	5,475,900	-	-	-	(2,519,225)	6,892,664	9,849,339	0.04%
2027	2029	7,130,700	-	-	-	(6,519,225)	9,234,164	9,845,639	-0.04%
2028	2030	12,580,700	-	-	-	(11,969,225)	9,234,470	9,845,945	0.00%
2029	2031	13,051,475	-	-	-	(12,440,000)	9,236,370	9,847,845	0.02%
2030	2032	12,752,413	-	-	-	(12,140,938)	9,236,650	9,848,126	0.00%
2031	2033	12,686,475	-	-	-	(12,075,000)	9,234,760	9,846,235	-0.02%
2032	2034	6,546,475	-	-	-	-	3,300,120	9,846,595	0.00%
2033	2035	6,320,950	-	-	-	-	3,525,913	9,846,863	0.00%
2034	2036	4,160,000	-	-	-	-	5,688,153	9,848,153	0.01%
2035	2037	-	-	-	-	-	2,756,153	2,756,153	-72.01%
2036	2038	-	-	-	-	-	-	-	
2037	2039	-	-	-	-	-	-	-	
2038	2040	-	-	-	-	-	-	-	
Total LY19-34		\$ 174,418,966	\$ (10,010,000)	\$ (10,600,000)	\$ (11,000,000)	\$ (74,038,575)	\$ 99,543,940	\$ 168,314,331	

*Net of Series 2016 Bonds abated by the District

This option executes on refunding the “Wall” as well as the Series 2013 Bonds in September, 2020.

Taxable Refunding of Wall and Series 2013 Now



This solution is similar to the prior solution, but adds another tail end year of debt service in levy year 2035 and is about \$2.7 million more than our current assumptions of refunding in phases.

Execution Timetable – Refunding the Wall in Pieces / 2013 Refunding

Date	Action	Notes
July 9, 2020	Presentation to District 158 Committee of the Whole	Receive guidance / preliminary approval as to plan of finance
July 16, 2020	Board of Education adopts Parameters Resolution to sell Refunding Tax Exempt & Taxable Refunding Bonds, Series 2020 and Series 2021	As a Parameters Resolution, will provide broad set of options and sale paths to engage in order to adapt to changing market conditions.
TBD, as early as August 4, 2020	Price Taxable Refunding Bonds	Flexible execution
TBD, as early as Sep 1, 2020	Settle on Taxable Refunding Bonds	Flexible execution
October - December, 2020	Board of Education awards forward settle Series 2021 bonds as tax exempt	If not refunded prior.
December, 2020	Board of Education abates levy year 2020 property taxes from refunded bonds. Funds transferred to paying agent to cover abatement until bonds close.	Assumes bonds sold as forward settlement bonds
October - December, 2021	Board of Education adopts forward settle Series 2023 bonds as tax exempt	If TC&JA17 occurs would not need to settle as a forward
October, 2022	Settle on Series 2023 Refunding Bonds. Funds to cover abatement returned to the District.	Assumes bonds sold as forward settlement bonds

Disclosure

Piper Sandler is providing the information contained herein for discussion purposes only in anticipation of being engaged to serve as underwriter or placement agent on a future transaction and not as a financial advisor or municipal advisor. In providing the information contained herein, Piper Sandler is not recommending an action to you and the information provided herein is not intended to be and should not be construed as a “recommendation” or “advice” within the meaning of Section 15B of the Securities Exchange Act of 1934. Piper Sandler is not acting as an advisor to you and does not owe a fiduciary duty pursuant to Section 15B of the Exchange Act or under any state law to you with respect to the information and material contained in this communication. As an underwriter or placement agent, Piper Sandler’s primary role is to purchase or arrange for the placement of securities with a view to distribution in an arm’s-length commercial transaction, is acting for its own interests and has financial and other interests that differ from your interests. You should discuss any information and material contained in this communication with any and all internal or external advisors and experts that you deem appropriate before acting on this information or material.

The information contained herein may include hypothetical interest rates or interest rate savings for a potential refunding. Interest rates used herein take into consideration conditions in today’s market and other factual information such as credit rating, geographic location and market sector. Interest rates described herein should not be viewed as rates that Piper Sandler expects to achieve for you should we be selected to act as your underwriter or placement agent. Information about interest rates and terms for SLGs is based on current publically available information and treasury or agency rates for open-market escrows are based on current market interest rates for these types of credits and should not be seen as costs or rates that Piper Sandler could achieve for you should we be selected to act as your underwriter or placement agent. More particularized information and analysis may be provided after you have engaged Piper Sandler as an underwriter or placement agent or under certain other exceptions as describe in the Section 15B of the Exchange Act.

Piper Sandler Companies (NYSE: PIPR) is a leading investment bank and institutional securities firm driven to help clients Realize the Power of Partnership®. Securities brokerage and investment banking services are offered in the U.S. through Piper Sandler & Co., member [SIPC](#) and [FINRA](#); in Europe through Piper Sandler Ltd., authorized and regulated by the U.K. Financial Conduct Authority; and in Hong Kong through Piper Sandler Hong Kong Ltd., authorized and regulated by the Securities and Futures Commission. Asset management products and services are offered through separate investment advisory affiliates.

© 2020 Piper Sandler Companies. 800 Nicollet Mall, Minneapolis, Minnesota 55402-7036



Disclosure

The information contained herein is solely intended to suggest/discuss potentially applicable financing applications and is not intended to be a specific buy/sell recommendation, nor is it an official confirmation of terms. Any terms discussed herein are preliminary until confirmed in a definitive written agreement.

The analysis or information presented herein is based upon hypothetical projections and/or past performance that have certain limitations. No representation is made that it is accurate or complete or that any results indicated will be achieved. In no way is past performance indicative of future results. Changes to any prices, levels, or assumptions contained herein may have a material impact on results. Any estimates or assumptions contained herein represent our best judgment as of the date indicated and are subject to change without notice. Examples are merely representative and are not meant to be all-inclusive. The information set forth herein was gathered from sources which we believe, but do not guarantee, to be accurate. Neither the information, nor any options expressed, constitute a solicitation by us for purposes of sale or purchase of any securities or commodities. Investment/financing decisions by market participants should not be based on this information.

You should consider certain economic risks (and other legal, tax, and accounting consequences) prior to entering into any type of transaction with PMA Securities, LLC or PMA Financial Network, LLC. It is imperative that any prospective client perform its own research and due diligence, independent of us or our affiliates, to determine suitability of the proposed transaction with respect to the aforementioned potential economic risks and legal, tax, and accounting consequences. Our analyses are not and do not purport to be appraisals of the assets, or business of the Issuer or any other entity. PMA makes no representations as to the actual value which may be received in connection with a transaction nor the legal, tax, or accounting effects of consummating a transaction. PMA cannot be relied upon to provide legal, tax, or accounting advice. You should seek out independent and qualified legal, tax, and accounting advice from outside sources. This information has been prepared for informational and educational purposes and does not constitute a solicitation to purchase or sell securities, which may be done only after client suitability is reviewed and determined.

Securities, public finance and institutional brokerage services are offered through PMA Securities, LLC. PMA Securities, LLC is a broker-dealer and municipal advisor registered with the SEC and MSRB, and is a member of FINRA and SIPC. PMA Asset Management, LLC, an SEC registered investment adviser, provides investment advisory services to local government investment pools. All other products and services are provided by PMA Financial Network, LLC. PMA Financial Network, LLC, PMA Securities, LLC, and PMA Asset Management, LLC (collectively "PMA") are under common ownership. Securities and public finance services offered through PMA Securities, LLC are available in CA, CO, FL, IL, IN, IA, MI, MN, MO, NE, OH, OK, PA, SD, TX and WI. This document is not an offer of services available in any state other than those listed above, has been prepared for informational and educational purposes only and does not constitute a solicitation to purchase or sell securities, which may be done only after client suitability is reviewed and determined. All investments mentioned herein may have varying levels of risk, and may not be suitable for every investor. For more information, please visit us at www.pmanetwork.com. For institutional use only.

School Board Candidates Applicants

Scott Cratty
Katherine Policheri
Dana Wiley