

# performance contract agreement



## performance guarantee program

Number: PC13006

### PARTIES:

1. **OWNER** **Southern Lehigh School District**  
Address: Street 5775 Main Street  
City, State, Zip Center Valley, PA 18034
  
2. **CONTRACTOR.** **CM3 Building Solutions, Inc.**  
Address: Street 185 Commerce Dr.  
City, State, Zip Fort Washington, PA, 19034

**CONTRACT DOCUMENTS:** Incorporated into this Agreement, as if set out in full, are the following documents and/or agreements, which are hereinafter collectively referred to as the "CONTRACT DOCUMENTS":

- Attachment A, Scope of Work
- Attachment B, Cash Flow Analysis
- Attachment C, Support Services Agreement
- Attachment D, Construction Progress Payment Schedule
- Attachment E, Insurance Certificate
- Attachment F, Energy Accounting Baseline
- Attachment G, Baseline Event log
- Attachment H, Measurement and Verification Protocol
- Attachment I, OWNER Request for Proposal

### ARTICLE 1 – DEFINITIONS AND INTERPRETATIONS

1.1 Definitions. As used in the Agreement, the following terms shall have the following meanings:

“Agreement” means the Contract Document, all Scope Change Orders, and Attachments A through H, which by this reference is incorporated herein.

“Applicable Laws” means all laws, ordinances, judgments, decrees, injunctions, writs, rules, regulations, orders and interpretations of any Governmental Authority, including Applicable Permits, as may be in effect at the time of CONTRACTOR’S performance under the Agreement.

“Applicable Permits” means all Permits required to be obtained or maintained in connection with the completion of the Project.

“Contract Document” means this document consisting of Articles 1 through 17 and Attachments A through H.

“Contract Price” shall have the meaning set forth in Article 4.1.

“CONTRACTOR” shall mean CM3 Building Solutions, Inc.

“Energy Accounting Baseline” 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 is the calculated or measured energy usage by a piece of equipment or a site prior to the implementation of the Energy Conservation Measures. Baseline physical conditions, such as equipment counts, nameplate data, and control strategies, will typically be determined through surveys, inspections, and/or metering at the site.

“Energy Baseline Adjustment” refers to a modification of the Energy Accounting Baseline. Said modifications include but are not limited to the following: The addition or removal of energy consuming equipment, variances in weather severity, reassignment of space, addition or removal of portable buildings, addition or removal of computers.

“Energy Conservation Measure” shall mean the installation of equipment or systems, or modification of equipment or systems as described in Attachment A.

“Facility” shall mean all buildings / sites identified in the Request for Proposal (RFP) issued by the OWNER and the Proposal submitted by CONTRACTOR responding to said RFP as detailed in Attachment A.

“Final Acceptance of the Work” shall mean the completion of the project installation included in Attachment A and signoff by both the OWNER and CONTRACTOR on all punch list items.

“Force Majeure Event” shall have the meaning set forth in Article 3.3.3.

“Guarantee Period” shall commence on the first (1st) day of the month following the date of final 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 20 years.

“Guaranteed Savings” is defined as the amount of avoided Energy and Operational Costs necessary to pay for the cost of the Work and Support Services incurred by OWNER in each Guarantee Year.

“Governmental Authority” means any federal, state, local, municipal or other governmental body or agency or subdivision thereof, including any legislative or judicial body, having or asserting jurisdiction over the OWNER, CONTRACTOR, or any of their respective agents or parent corporation or over any part of all of the construction of the Facility on the Facility.

“Installation Period Savings” shall mean all energy and operational cost avoidance realized by OWNER that result from activities undertaken by CONTRACTOR prior to Final Retrofit Acceptance resulting in the start of Year One of the Guarantee Period, including any utility rebates or other incentives realized as a direct result of the installed energy conservation measures or Support Services provided by CONTRACTOR. Installation period savings will be applied toward the Guaranteed Savings for the First Guarantee Year.

“OWNER” shall mean The Southern Lehigh School District.

“Performance Guarantee” shall have the meaning set forth in Article 6.

“Scope Change” means any addition to, deletion from, suspension of or other modification to the requirements of the Agreement which necessitates a change in one or more of the Contract Price, the Guaranteed Completion Date or the Project Schedule in accordance with terms of Article 10.

“Scope Change Order” means a written order to CONTRACTOR issued and signed by the OWNER after the execution and delivery of the Agreement authorizing a Scope Change and, if appropriate, an adjustment in one or more of the Contract Price, the Guaranteed Completion Date, the Project Schedule, the Guaranteed Savings or any other amendment of the terms and conditions of this Agreement.

“Scope Change Order Notice” means a written notice to the OWNER issued by CONTRACTOR requesting a Scope Change Order in connection with the performance of the Work.

“Standards of Service and Comfort” shall have the meaning defined in Article 14.

“Stipulated Cost Avoidances” are agreed upon cost reductions that are achieved through the repair and/or replacement of equipment or systems, and/or revised methods of operation that result in product, maintenance, operating or capital cost avoidances. Stipulated Cost Avoidances refer to any or all of the Operational and Energy Cost Avoidances that will be annually recognized as achieved for the term of the agreement without being subjected to an audit. Stipulated Cost Avoidances are delineated in the Cash Flow Analysis (Attachment B), and marked as such.

“Subcontractor” shall have the meaning set forth in Article 9.1.

“Support Services Agreement” shall have the meaning set forth in Attachment C.

“Total Cost Avoidance” refers to the combined energy and operational cost avoidances achieved through the addition, repair and/or replacement of equipment or systems, and/or re-controlled methods of operation that result in energy and/or operational cost avoidances.

“Work” shall have the meaning set forth in Article 2.1.

ARTICLE 2 - CONDITIONS AND SCOPE OF WORK

2.1 CONTRACTOR hereby agrees to provide to the OWNER the labor and materials required to install the energy conservation related equipment and/or improvements listed on Attachment A hereto in accordance with the Scope of Work for the installation of same prepared by CONTRACTOR. Hereinafter all such labor and materials shall be referred to as the "WORK". CONTRACTOR further agrees to perform the WORK in a good and workmanlike manner.

2.2 As a condition precedent to CONTRACTOR providing and installing the labor and materials described in paragraph 2.1 hereof, OWNER shall agree to the Standards of Service and Comfort as detailed in Article 14.

2.3 As a condition precedent to CONTRACTOR providing and installing the labor and materials described in paragraph 2.1 hereof, OWNER shall enter into a Support Services Agreement as defined in Attachment C and incorporated herein for all purposes.

ARTICLE 3 - TIME OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

3.1 The WORK to be performed under this agreement shall be commenced on or about October 1, 2013.

3.2 Both parties shall endeavor to accomplish substantial completion of the WORK by April 30, 2014. The Date of Substantial Completion shall be the date when the WORK is sufficiently complete that the OWNER can occupy or utilize the WORK for the purpose for which it is intended. When the OWNER agrees that the WORK is substantially complete, CONTRACTOR will issue a Certificate of Substantial Completion to be signed by the OWNER.

3.3 The completion date for the WORK shall be extended by Scope Change Order for such amount of time as shall be reasonably required, and as determined by OWNER, if the progress of the WORK is delayed by:

3.3.1 any act or failure to act of the OWNER, any agent of the OWNER, any separate contractor employed by the OWNER or any employee of such OWNER, agent or separate contractor;

3.3.2 changes ordered in the WORK or made necessary by unforeseen or concealed conditions;

3.3.3 act of God or the public enemy, acts of terrorism, fire, explosion, perils of the sea, flood, typhoon, earthquake, volcanic eruption, landslide, hurricane, tornado, drought, war, riots, explosion, civil insurrection, sabotage, accident, embargo, governmental priority, requisition, or shortage or failure of supply of materials or labor, or strikes or other labor trouble, or any occurrence, act, cause or thing beyond the control of CONTRACTOR, shall excuse any such failure on the part of CONTRACTOR, and CONTRACTOR shall have no obligation or liability whatsoever arising out of or in connection with any such failure.

ARTICLE 4 - CONTRACT SUM

4.1 The total of all Installation Contract Payments shall be **One million eight hundred forty-four thousand one hundred fifty-seven Dollars. (1,844,157).**

4.2 The OWNER is also responsible for the payment of all sums as associated with the Support Services Agreement as defined by Article 15 and Attachment C.

ARTICLE 5 - PAYMENT

5.1 Unless the WORK is substantially completed within a period of thirty (30) days after commencement resulting in a single first and last payment, the OWNER shall make monthly progress payments to CONTRACTOR in the manner set forth in this article.

5.2 The OWNER shall make an initial payment of 10 (%) percent of the contract amount within thirty (30) days of the signing of this agreement.

5.3 On or before the tenth (10<sup>th</sup>) day of each month, CONTRACTOR shall submit an application for payment based on the value of the WORK completed as of the last day of the calendar month preceding the month in which payment is due. Attached hereto as Attachment D is a schedule of the proposed payment amounts based upon CONTRACTOR'S estimate of the monthly completion of the WORK.

5.4 Not later than the thirtieth (30<sup>th</sup>) day of each month the OWNER will make full payment to CONTRACTOR of the amount set forth in CONTRACTOR'S application for payment. In the event the OWNER disputes the value of the WORK claimed in the application as satisfactorily completed, the OWNER shall promptly pay on the basis of its estimate of value and shall notify CONTRACTOR in writing of the dispute. Disputes shall be resolved in accordance with provisions set forth in Article 16 of this contract.

5.5 The entire unpaid balance of the contract price for the WORK shall be due and payable thirty (30) days after Substantial Completion of the WORK.

5.6 Payments may be withheld on account of (1) defective WORK, limited to the amount of 120% of the amount reasonably estimated to remedy the work, (2) failure of CONTRACTOR to make payments properly to the Subcontractors or for labor, materials or equipment, or (3) the persistent failure of CONTRACTOR to carry out the WORK in accordance with the Contract Documents granted that the OWNER first provides written notice of the perceived persistent failure and CONTRACTOR is afforded ten (10) days written notice of said cure said persistent failure. If CONTRACTOR does not cure the persistent failure identified under this Article, the OWNER shall then give notice of its intent to withhold payment.

5.7 Final payment shall not become due until CONTRACTOR has delivered to OWNER a complete release of all liens arising out of the WORK or receipts in full covering all labor, materials and equipment for which a lien could be filed, or a bond satisfactory to OWNER to indemnify OWNER against such lien.

ARTICLE 6 – PERFORMANCE GUARANTEE

6.1 Guaranteed Period and Amount

6.1.1 During the initial term of this program, which shall be Twenty year(s), CONTRACTOR'S program guarantees to OWNER that the OWNER will realize the total energy and operational cost avoidance through the combined value of all installed Work over the term of the contract as defined in Attachment A and B. In no event shall the savings guarantee provided herein exceed the total installation, maintenance, and financing costs for the Work under this Agreement.

6.1.2 The initial term will begin on the first (1st) day of the month following the date of final acceptance of the Work installed.

6.1.3 CONTRACTOR'S program will achieve this total cost avoidance through reductions in energy consumption and stipulated operational and maintenance cost avoidances. Methodology for calculating the energy usage reduction is detailed in Attachment H. Energy Cost Avoidance will be determined using:

6.1.3.1 Standard Energy Accounting adjustments for; degree hours, occupancy, hours of operation, conditioned square feet and production as applicable, and compared to a mutually agreed upon Energy Accounting Baseline (Attachment F), and incorporated herein for all purposes.

6.1.3.2 Actual measured and/or verified energy and operational reductions using standard Energy Engineering practices and calculations.

6.2 Guarantee Verification

6.2.1 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 H and/or additional methodologies defined by CONTRACTOR that may be negotiated with OWNER at any time and subject to written mutual agreement. At the end of each Guarantee Year OWNER will have thirty (30) days to review the guarantee savings reconciliation report and provide written notice to CM3 of non-acceptance of the Guarantee Savings for that Guarantee Year.

6.2.2 If actual cost avoidance falls short of the projected cost avoidance for any annual segment of the term, CONTRACTOR, upon thirty (30) days notice of a shortfall, will reimburse the OWNER the difference between the actual and Guaranteed cost avoidance up to the OWNER'S annual program expense, as set forth in the attached Cash Flow Analysis; or at the OWNER'S option and as mutually agreed, deliver to the OWNER a credit for additional services.

6.2.2.1 Deleted

6.2.2.2 Deleted

6.2.3 The OWNER will retain any cost avoidance that exceeds the minimum cost avoidance stated in Article 6.1.1

6.2.4 Adjustments - The following items are grounds for modification of the Performance Guarantee in the form of an Energy Accounting Baseline Adjustment or termination of the contract upon proper written notice:

6.2.4.1 Significant and/or ongoing deviations to the agreed upon Standards of Service & Comfort found at Article 14.

6.2.4.2 The addition/removal of any energy consuming devices that would affect the units of energy differently than in the base period used to establish the Energy Accounting Baseline.

6.2.4.3 Override of the software programs which are agreed upon and programmed into the CONTRACTOR Facility Management System, i.e., set points, operating parameters, etc. that would affect the energy consumption of the equipment/systems being controlled.

6.2.4.4 Failure to maintain thermostat set points as agreed to and described in the Standards of Service & Comfort.

6.2.4.5 Failure of the OWNER to maintain the building to current standards or failure to maintain the energy consuming devices to manufacturers' accepted standards of performance.

6.2.4.6 Any and all significant deviations from the Energy Accounting Baseline. Such deviations include, but are not limited to, weather, addition or removal of portable buildings, addition or removal of computers.

6.2.5 Deleted

6.2.6 In the event that during the term of this Performance Guarantee, any utility providing the OWNER with energy modifies its method of billing or its metering, CONTRACTOR will adjust the energy cost avoidance calculations and the Performance Guarantee to account for these modifications.

#### ARTICLE 7 - OWNER'S RESPONSIBILITIES

7.1 Except for permits and fees which are the responsibility of CONTRACTOR under the Contract Documents, OWNER shall secure and pay for necessary approvals, easements, assessments and charges required for the construction, use or occupancy of permanent structures or permanent changes in existing facilities.

7.2 OWNER agrees to repair or replace, as necessary, any defective existing equipment that is intended to be reused.



7.3 OWNER will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the completed WORK and to determine in general if the WORK is being performed in a manner indicating that the WORK, when completed, will be in accordance with the Contract Documents. However, OWNER will not be required to make exhaustive or continuous on-site inspections to check quality or quantity of the WORK.

7.4 The OWNER shall provide all information or services under its control necessary for the performance of the WORK and for the work required by the Contract Documents with reasonable promptness. The OWNER shall designate in writing its representative or representatives who shall have authority to approve change orders and render decisions on its behalf and on whose action and approvals CONTRACTOR may rely, except when formal approval of the OWNER'S governing body is required by law. The OWNER shall deliver said written designation and any subsequent amendments to CONTRACTOR upon the commencement of the WORK or prior to the effective date of any subsequent amendment to said written designation.

7.5 In the event that the OWNER fails to pay CONTRACTOR at the time the payment of any amount becomes due under the terms of the Contract Documents, CONTRACTOR may at any time after five (5) calendar days following mailing or the facsimile transmission of a written notice from CONTRACTOR to the OWNER at the address set forth above advising that a required payment has not been made, stop the work required by the Contract Documents until payment of the amount owing, including interest thereon, has been received. A change order shall thereafter be issued extending the contract time to reflect such period of shutdown and increasing the contract sum by the amount of any costs of shutdown and standby, delay and start-up of work incurred by CONTRACTOR.

7.6 Deleted.

7.7 The OWNER shall indemnify CONTRACTOR and its subcontractors, suppliers, employees, directors, shareholders, and agents harmless from and against all claims, damages, losses and expenses arising out of or resulting from activities, facilities, or equipment of the OWNER or its other contractors, or of its or their suppliers, employees or agents, provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death or to injury to or destruction of property including the loss of use resulting there from and (b) is caused in whole or in part by any negligent or willful act or omission of the OWNER or its other contractors or of its or their suppliers, employees or agents.

7.8 The OWNER shall notify CONTRACTOR in writing of any or all uses or restrictions in usage of all areas of the site. The OWNER shall also notify CONTRACTOR in writing of any or all special requirements for providing protection for occupants at the site. The OWNER shall indemnify CONTRACTOR and its subcontractors, suppliers, employees, directors, shareholders, and agents harmless from and against all claims, damages, losses and expenses arising out of or resulting from use of site not indicated by OWNER as being restricted and from all above contracted costs arising from unknown or concealed construction conditions.



7.9 The OWNER shall provide to CONTRACTOR copies of all utility bills and data on a monthly basis. Failure to provide monthly utility bills and data within 30 days of owner's receipt of utility data shall be grounds for CONTRACTOR to modify the Performance Guarantee in the form of an Energy Accounting Baseline Adjustment or termination the contract.

ARTICLE 8 - CONTRACTOR'S RESPONSIBILITIES

8.1 CONTRACTOR shall supervise and direct the WORK, using CONTRACTOR'S best skill and attention. CONTRACTOR shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the WORK, unless the Contract Documents give other specific instructions concerning these matters.

8.2 Unless otherwise provided in the Contract Documents, CONTRACTOR shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery necessary for the proper execution and completion of the WORK.

8.3 For a period of one (1) year from the date of substantial completion, CONTRACTOR warrants to OWNER that materials and equipment furnished under the Contract Documents will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the WORK will be free from defects, and that the WORK will conform with the requirements of the Contract Documents. CONTRACTOR'S warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the contractor, improper or insufficient maintenance, improper operations, or normal wear and tear under normal usage. If required by OWNER, CONTRACTOR shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

8.4 Unless otherwise provided in the Contract Documents, CONTRACTOR shall pay sales, consumer, use and other similar taxes based on the WORK to the extent such taxes have been legally enacted at the date of this agreement, unless otherwise provided in the Contract Documents.

8.5 CONTRACTOR shall be responsible to OWNER for the acts and omission of CONTRACTOR'S employees, Subcontractors and their agents and employees, and other persons performing portions of the WORK under a contract with CONTRACTOR.

8.6 CONTRACTOR shall keep the premises and surrounding areas free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the WORK, CONTRACTOR shall remove from the site where the WORK was performed and from the surrounding area, all waste materials, rubbish, CONTRACTOR'S tools, construction equipment, machinery and surplus material.

8.7 CONTRACTOR shall provide the OWNER access to the WORK in preparation and progress wherever located.

8.8 CONTRACTOR shall pay all royalties and license fees; shall defend suits or claims for infringement or patent rights and shall hold the OWNER harmless on account thereof.

8.9 The CONTRACTOR shall indemnify the OWNER and its agents and employees harmless from and against all claims, damages, losses and expenses arising out of or resulting from activities, facilities, or equipment of the CONTRACTOR or its Subcontractors, or of its or their suppliers, employees or agents, provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death or to injury to or destruction of property including the loss of use resulting there from and (b) is caused in whole or in part by any negligent or willful act or omission of the CONTRACTOR or its other subcontractors or of its or their suppliers, employees or agents.

8.10 CONTRACTOR shall provide the OWNER with all surety bonds required by the laws of the state in which the WORK is to be performed. If so required, surety bonds cover only the installation portion of the agreement and do not apply in any way to energy savings or cost avoidance guarantees, payments or maintenance provisions.

8.11 CONTRACTOR shall, in the performance of the work required by the Contract Documents, comply with applicable safety and health regulations.

8.12 CONTRACTOR shall promptly correct WORK properly rejected by OWNER for failing to conform to the requirements of the Contract Documents.

8.13 CONTRACTOR shall notify OWNER in writing of any or all uses or restrictions in use of all areas of the site that will adversely affect the progress of the WORK. CONTRACTOR and its subcontractors will make right all changes or modifications to the site and structures made necessary to accomplish the WORK and required by the terms of the contract.

#### ARTICLE 9 - SUBCONTRACTS

9.1 All vendors, suppliers, material men, consultants and subcontractors at any tier providing equipment, materials or services to CONTRACTOR in connection with the Project are referred to as "Subcontractors."

9.2 CONTRACTOR shall have the option of subcontracting portions of the WORK to other persons or entities. CONTRACTOR shall not be required to contract with any subcontractor to whom it has a reasonable objection. Unless otherwise stated in the Contract Documents or the bidding requirements, CONTRACTOR, as soon as practicable after the signing of this agreement, shall furnish in writing to OWNER the names of the Subcontractors for each of the principal portions of the WORK, if any. CONTRACTOR shall not contract with any Subcontractor to whom OWNER has made reasonable and timely objections.

9.3 Contracts between CONTRACTOR and Subcontractors shall (1) require each Subcontractor, to the extent of the WORK to be performed by the Subcontractor, to be bound to CONTRACTOR by the terms of the Contract Documents, and to assume toward OWNER all the obligations and responsibilities which CONTRACTOR, by the Contract Documents, assumes toward OWNER, and (2) allow to the Subcontractor the benefit of all rights, remedies and redress afforded to CONTRACTOR by these Contract Documents.

9.4 CONTRACTOR shall, for the protection of the OWNER, obtain from all Subcontractors guarantees and warranties on all machinery, equipment, services, materials, supplies and other items used and installed under the Agreement. Contractor shall obtain from each Subcontractor, at no additional cost to Owner, guarantees and warranties which shall remain in effect for the maximum practicable period of time.

9.5 CONTRACTOR in accordance with Article 12 and its subparts, shall require all Subcontractors to be covered by the insurance specified in Article 12 and its subparts during the time in which they are engaged in the Project.

#### ARTICLE 10 - CHANGES IN THE WORK

10.1 A material addition to, deletion from, suspension of or other modification to the requirements or provisions of the Agreement shall constitute a Scope Change, but a refinement, correction or detailing shall not constitute a Scope Change.

10.2 The OWNER, without invalidating the Agreement, may order Scope Changes to the Work, in which event one or more of the Contract Price, the Guaranteed Completion Date, or the Project Schedule shall be adjusted as necessary. All Scope Changes shall be authorized by a Scope Change Order and only the OWNER may issue Scope Change Orders.

#### 10.3 Procedure for Scope Changes

10.3.1 As soon as CONTRACTOR becomes aware of any circumstances which CONTRACTOR has reason to believe may constitute a Scope Change, CONTRACTOR shall issue to the OWNER a Scope Change Order Notice at CONTRACTOR'S expense. All Scope Change Order Notices shall include preliminary documentation sufficient to enable the OWNER to determine (i) the factors necessitating the possibility of a Scope Change; (ii) the impact that the Scope Change is likely to have on the Contract Price; (iii) the impact that the Scope Change is likely to have on scheduling; and (iv) such other information that the OWNER may reasonably request in connection with such Scope Change (including, without limitation, material and labor cost information).

10.3.2 If the OWNER agrees that a Scope Change is in order and accepts CONTRACTOR'S statement of the effect of such Scope Change on the Contract Price, or the Project Schedule, the OWNER shall issue a Scope Change Order. The OWNER shall issue a Scope Change Order for each Scope Change.

10.4 Any Scope Change necessitated by any changes in Applicable Laws enacted after the date of the Agreement shall be treated as a Scope Change under Article 10 as applicable.

10.5 In the event and to the extent that a Force Majeure Event affects CONTRACTOR'S ability to meet the Completion Date, the Contract Price or the Project Schedule, an equitable adjustment in one or more of the Completion Date, Contract Price and Project Schedule shall be made by agreement of the OWNER and CONTRACTOR. The adjustment will take into account the reasonable and necessary costs incurred by CONTRACTOR in the exercise of diligence to avoid or mitigate a Force Majeure Event.

10.6 In the event and to the extent a failure of the OWNER to perform, or cause performance of, its obligations in accordance with the Agreement causes a delay in CONTRACTOR'S performance of the Work which impairs CONTRACTOR'S ability to meet the Completion Date, Contract Price, Project Guarantee or Performance Guarantee, or adversely impacts CONTRACTOR'S cost of performance of the Work, an equitable adjustment in one or more of the Completion Date or Contract Price shall be made by agreement of the OWNER and CONTRACTOR pursuant to this Article 10.

10.7 An increase or decrease in Contract Price, if any, required pursuant to this Article 10 as a result of a Scope Change shall be determined by the mutual agreement of the Parties, and shall be paid (or reimbursed) in one or more payments in accordance with this Article 10. Such increase or decrease shall be calculated:

- (a) As a lump sum, in an amount proposed by CONTRACTOR (properly itemized and supported by sufficient substantiating data to permit evaluation) and accepted by the OWNER; or
- (b) By unit pricing; or
- (c) By cost and percentage or by cost and fixed fee. CONTRACTOR shall provide the OWNER with such purchase orders, invoices and other documents and records needed to enable the OWNER to verify, to its reasonable satisfaction, CONTRACTOR'S costs or savings associated with affecting such Scope Change. All equipment, materials, labor, equipment rental and other items required as a result of such Scope Change shall be purchased by CONTRACTOR at competitive market prices. Pricing with respect to components shop fabricated by CONTRACTOR or for field service engineering shall be set at competitive market rates.

10.8 If the Parties are unable to mutually agree to a modification as set forth under Article 10.6 and its subparts, the Parties shall resolve all disputes in accordance with Article 16.

10.9 If a Scope Change is initiated under this Article 10, then the Scope Change and the modifications made pursuant to such Scope Change shall be effective upon the OWNER'S issuance of a Scope Change Order with respect thereto. Notwithstanding a dispute regarding any proposed Scope Change or any adjustment of one or more of the Completion Date, the Contract Price or the Project Schedule with respect to a Scope Change, CONTRACTOR shall, to the extent expressly request by the OWNER, proceed with the performance of such Scope Change promptly following the OWNER'S execution of the corresponding Scope Change Order. In the event of such dispute with regard to the Contract Price, the Parties shall proceed as specified in Article 10.7.

10.10 Any modification to the Performance Guarantee will be in accord with Article 6 and its subparts and Attachments F through H.

ARTICLE 11 - HAZARDOUS MATERIALS

11.1 The scope of work or service to be performed by CONTRACTOR pursuant to the Contract Documents, and the compensation to be paid to CONTRACTOR hereunder for work or services performed pursuant to the Contract Documents, expressly excludes any work or service of any nature associated or connected with the identification, abatement, cleanup, control or removal of environmentally hazardous materials preexisting anywhere on the site. "Hazardous Materials" to include, but not be limited to, asbestos and PCBs discovered in or on the premises. OWNER agrees that all duties and obligations in connection with any hazardous materials located in or on the premises are strictly OWNER'S responsibilities except for such hazardous materials that CONTRACTOR may bring on site.

11.2 OWNER warrants and represents, except as otherwise defined herein, to the best of OWNER'S knowledge there are no hazardous materials in or on the premises which will affect, be affected by, come in contact with, or otherwise impact upon or interfere with the work to be performed by CONTRACTOR pursuant to the Contract Documents. Should CONTRACTOR become aware or suspect the presence of hazardous materials during performance of its work under the Contract Documents, CONTRACTOR will be authorized to cease work in the affected area immediately, and will promptly notify OWNER of the conditions discovered. Should CONTRACTOR stop work because of the discovery or suspicion of hazardous materials, the time for performance of CONTRACTOR' work or service will be extended to cover the period required for abatement, cleanup, or removal of the hazardous materials.

11.3 CONTRACTOR will not be held responsible for any claims, damages, costs, or expenses of any kind associated with the period during which CONTRACTOR has stopped work as a result of hazardous materials preexisting anywhere on the site. If appropriate, CONTRACTOR will be entitled to an equitable adjustment of the contract price set forth in the Contract Documents for any increased costs or other charges incurred by CONTRACTOR in connection with the existence of its rights under this paragraph. OWNER will be responsible for taking all necessary steps to correct, abate, clean up or control hazardous materials in accordance with all applicable statutes and regulations.

11.4 Except for any damages or injuries arising from the negligence of CONTRACTOR, OWNER specifically agrees to indemnify and hold CONTRACTOR, its officers, directors, shareholders, agents and employees harmless from and against any and all claims, demands, damages or causes of action and associated costs in any way arising out of the release of hazardous materials preexisting anywhere on the site into the air, soil, or any water system or water course, or any actions taken in connection with same, or any failure to act.

ARTICLE 12 - INSURANCE

12.1 CONTRACTOR shall purchase from and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the WORK is to be performed, insurance for protection from claims under workers' or workmen's compensation acts and other employee benefit acts which are applicable, claims for damages because of bodily injury, including death, and from claims for damages, other than to the WORK itself, to property which may arise out of or result from CONTRACTOR'S performance of the WORK, whether such performance be by CONTRACTOR or by a Subcontractor or anyone directly or indirectly employed by any of them.

12.2 This insurance shall be written for not less than limits of liability specified in Attachment E hereto or required by law, whichever coverage is greater. Certificates of such insurance shall be filed with OWNER prior to commencement of the Work.

ARTICLE 13 - TERMINATION OF THE CONTRACT

13.1 If OWNER fails to recommend construction progress payments for a period of thirty (30) days after a request for payment is received, through no fault of CONTRACTOR, or if OWNER fails to make payment thereon for a period of ten (10) days after payment is due pursuant to the terms of the Contract Documents, CONTRACTOR may, upon five (5) additional calendar days' written notice to OWNER, terminate the agreement and related agreements and recover from OWNER payment for all WORK executed and for proven loss with respect to materials, equipment, tools and construction equipment and machinery, including reasonable overhead, profit and damages applicable to work to be done pursuant to the Contract Documents.

13.2 If OWNER fails to provide copies of utility bills to CM3 within thirty (30) days of the owner's receipt of said bills, CONTRACTOR may give thirty (30) days notice to OWNER that it intends to terminate the contract, including the Performance Guarantee. If OWNER fails to provide the missing utility bills within this thirty (30) day period, CONTRACTOR may, at its sole discretion, terminate the contract, including the Performance Guarantee.

13.3 If CONTRACTOR defaults or persistently fails or neglects to carry out the WORK, OWNER, after seven days' written notice to CONTRACTOR, and without prejudice to any other remedy, OWNER may then make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due CONTRACTOR, provided CONTRACTOR fails within said seven (7) days period to cure such neglect or to begin curing such neglect. Alternatively, at OWNER'S option, and again, only following seven (7) days written notice to CONTRACTOR and CONTRACTOR'S failure to begin curing such neglect OWNER may, if sufficient cause exists to justify such action, terminate the Contract and finish the WORK. If the unpaid balance of the contract sum exceeds the reasonable and necessary costs of finishing the WORK, such excess shall be paid to CONTRACTOR, but if such reasonable and necessary costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER.



**ARTICLE 14 - STANDARDS OF SERVICE AND COMFORT**

14.1 The Standards of Service and Comfort establish the agreed upon parameters within the annual Energy Accounting Baseline for future operation of the facility necessary to achieve the Performance Guarantee. Cost Avoidance projections are based upon the specific operating times for equipment and temperatures as defined in Article 14.

14.2 Parameters - The parameters are standards within the baseline for occupancy hours, heating availability, cooling availability, minimum and maximum acceptable temperatures during occupied and unoccupied periods for both heating and cooling. Operations that vary from these parameters that jeopardize the Energy Performance of the facility will be grounds for adjusting the baseline and the Performance Guarantee.

14.2.1 Operating Hours

14.2.1.1 Occupancy Hours - For the purpose of this policy, occupied hours shall be defined as those periods during which occupied ventilation, heating and cooling temperatures must be observed. The Occupancy Hours are identified by facility according to the following Schedules:

**Occupancy Schedule**

Facility Name: Occupancy Hours established by OWNER request for proposal. Attachment I.								
Time of Day	Sunday	Monday	Tuesday	Wed	Thursday	Friday	Saturday	Holidays
Begin	Unocc	6:00AM	6:00AM	6:00AM	6:00AM	6:00AM	Unocc	Unocc
End	Unocc	10:00PM	10:00PM	10:00PM	10:00PM	10:00PM	Unocc	Unocc



14.2.1.2 Lighting Hours - For the purpose of this policy, lighting hours shall be defined as those periods during which occupancy lighting must be observed. The Lighting Hours are identified by facility according to the following calendar:

Lighting Schedule	Hours per Year (Per OWNER Request for Proposal)
Classrooms	1900
Offices	2500
Corridors/Stairways	3800
Restrooms	3900
Gymnasiums	3200
Locker Rooms	3400
Library	2800
Auditoriums	800
Cafeterias	3200
Kitchens	1500
Exit Signs	8760
Storage/Service Areas	400
Other Lighting	1800

14.2.1.3 Scheduled Exceptions to Unoccupied Hours - The following activities, which occur on a non-weekly schedule but occur on a scheduled basis, will be considered as Occupied Hours for baseline purposes, during which temperatures will be maintained according to Occupied Parameters:

**Exceptions to Unoccupied Hours**

Facility Name	Activity	Scheduled Duration
Scheduled Exceptions to Unoccupied Hours Shall be Considered as Consistent with the 2012-2013 Southern Lehigh School District Calendar of Activities.		

14.2.1.4 Unscheduled Exceptions to Unoccupied Hours - Modifications to the occupancy schedule for temporary activities during the normally unoccupied hours should be documented and written notice provided to CONTRACTOR by means of Attachment G, Baseline Event Log. This Log should be updated as exceptions occur and made available to CONTRACTOR upon request.

#### 14.2.2 Temperatures

14.2.2.1 Cooling Temperature - If mechanical cooling is required to maintain temperature in the cooling mode, the temperature set point during the occupied periods shall be no lower than 72 degrees. Occupants may operate at temperatures above this set point at their discretion. During unoccupied periods in the cooling mode, the temperature set point shall be no lower than 78 degrees.

14.2.2.2 Heating Temperature - If mechanical heating is required to maintain temperature in the heating mode, the temperature set point during the occupied mode shall be no higher than 68 degrees. Occupants may operate at temperatures below this set point at their discretion. During unoccupied periods in the heating mode, the temperature set point shall be no higher than 60 degrees.

14.3 Equipment - The addition of loads, not defined in the Energy Accounting Baseline, and the use of portable heating devices (space heaters) will not be allowed within any facility. Exceptions can only be made in emergency situations and then only to avoid structural damage to the facility. CONTRACTOR must be notified within 24 hours of such emergency situations.

14.3.1 As the addition of such loads, including portable heating devices, impact the cost avoidance as measured against the Energy Accounting Baseline, CONTRACTOR will take an Energy Accounting Baseline Adjustment in the event load and/or heating devices are added. The calculation of said impact will be negotiated by CONTRACTOR and OWNER.

### ARTICLE 15 - SUPPORT SERVICES AGREEMENT

15.1 The OWNER will maintain, with CONTRACTOR, a Support Services Agreement (Attachment C) as outlined in this proposal for the entire term of the Performance Guarantee. The OWNER agrees to continue to support their other related equipment in accordance with the manufacturer's standards. In the event that the OWNER terminates the Support Services Agreement, the Performance Guarantee and any annual energy cost avoidance obligations will be void as of the effective date of the cancellation.

15.2 OWNER shall make annual payments for the Support Services Agreement as detailed in the Cash Flow Analysis (Attachment B).

### ARTICLE 16 - RESOLUTION OF DISPUTES

16.1 Submission to Jurisdiction and Venue. The parties agree that the Court of Common Pleas for Lehigh County, Pennsylvania shall have exclusive jurisdiction and venue over any dispute arising out of or related to or touching upon the agreement.

16.2 Choice of Law. The agreement is made under and shall in all respects be governed by and construed in accordance with the laws of the Commonwealth of Pennsylvania.

ARTICLE 17 - MISCELLANEOUS PROVISIONS

17.1 If any provision of this Agreement shall be held to be invalid, illegal, or unenforceable, the validity, legality and enforceability of the remaining provisions shall not be affected or impaired thereby.

17.2 Unless otherwise indicated in the Contract Documents, all notices provided for in the Contract Documents must be in writing and must be delivered in person or by depositing the same in the United States mail, addressed to the party to be notified, postage prepaid and registered or certified with return receipt requested or by facsimile transmission. Notices by mail shall be deemed received upon mailing in accordance with the foregoing requirements. Notices shall be sent to the addresses set forth at the beginning of this agreement. Either party may change the address to which notices are to be sent by giving the other party notice of the new address in the manner provided in this section.

17.3 This agreement may not be assigned by either party in whole or in part without the prior written consent of the other party, which consent may not be unreasonably withheld or delayed.

Agreed and accepted:

CM3 BUILDING SOLUTIONS, INC.

SOUTHERN LEHIGH SCHOOL DISTRICT

Signature: \_\_\_\_\_  
Print Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

Signature: \_\_\_\_\_  
Print Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

## ATTACHMENT A – SCOPE OF WORK

### HIGH SCHOOL ENERGY CONSERVATION MEASURES

**ECM Title:**           **Retrofit Existing Light Fixtures**

**Description:**

The survey of the building turned up very limited possibilities for lighting retrofits within the building. Most of the retrofits were found outside the building in the parking lot and the exterior wall mounted fixtures.

- Replace 70 existing incandescent lamps with compact fluorescent lamps.
- Existing (1) Lamp 20W T12 with 2' standard magnetic ballast fixture located in classroom, Relamp/Reballast with (1) 17W T8 lamp and High Efficient Low Ballast Factor ballast.
- Existing (1) Lamp 30W T12 with 3' standard magnetic ballast fixture located in showcase, Relamp/Reballast with (1) 25W T8 lamp and High Efficient Low Ballast Factor ballast.
- Existing (1) Lamp 34W SuperSaver T12 with 4' magnetic ballast linear fixture located in library, Relamp/Reballast with (1) High Performance T8 lamps and High Efficient Low Ballast Factor ballast
- Existing (2) Lamp 20W T12 with 2' standard magnetic ballast fixture located in janitor closet, Relamp/Reballast with (2) 17W T8 lamps and High Efficient Low Ballast Factor ballast.
- Existing (2) Lamp 30W T12 with 3' standard magnetic ballast fixture located in showcase, Relamp/Reballast with (2) 25W T8 lamp and High Efficient Low Ballast Factor ballast.
- Existing (2) Lamp 34W SuperSaver T12 with 4' magnetic ballast linear fixture located in mechanical rooms, Relamp/Reballast with (2) High Performance T8 lamps and High Efficient Low Ballast Factor ballast
- Replace 9 existing 100 Watt High Pressure Sodium Wall Packs with new 60 Watt LED Wall Packs controlled by Photocell.
- Replace 8 existing 100 Watt High Pressure Sodium Cobra Heads with new 50 Watt LED Cobra Head controlled by Photocell.
- Replace 31 existing 400 Watt High Pressure Sodium Cobra Heads with new 140 Watt LED Cobra Head controlled by Photocell.
- Replace 1 existing 70 Watt High Pressure Sodium Wall Packs with new 30 Watt LED Wall Packs controlled by Photocell.
- Replace 7 existing 100 Watt High Pressure Sodium Flood Lights with new 22 Watt LED Flood Lights controlled by Photocell.
- Replace 1 existing 400 Watt Metal Halide Flood Light and one 400 Watt Mercury Vapor Flood Light with new 78 Watt LED Wall Packs controlled by Photocell.
- Replace 9 existing 700 Watt Metal Halide with new 30 Watt LED bollard controlled by Photocell.

**ECM Title: Re-Commissioning Existing BAS**

**Description:**

Southern Lehigh Senior High School currently has a Johnson Controls System. It is a Direct Digital Control (DDC) system serving the entire building. The building currently has night setback for the indoor air temperatures to 82°F for summer and 60°F for winter. The chillers are locked out at 58°F. There are approximately sixty-six face and by-pass unit ventilators in the classrooms that have modulating hot water valves for the heating and a modulating actuator for the by-pass damper. These two output devices actually share a common analog output from the UNT controller via two switching relays. The units also have a two position actuator for the chilled water valve. Currently the motion sensors in the rooms do not shut down the outside air dampers when the room is unoccupied. The Air handling units are both Multizone and constant volume.

**New Centralized Server**

CM3 Building Solutions, Inc. is pleased to propose installing a new dedicated server for the entire school district. This centralized server will allow any user on any computer in the school district to access any control system in the school district.

**BUILDING RE-COMMISSIONING:**

Currently the school district has an existing JCI DDC controls system. In addition each classroom had a motion sensor and the dampers were not going closed when the rooms were unoccupied. The programming for the unit ventilator UNT's indicate that none of the inputs are programmed for a motion sensor. This system is still in good working condition except for the cost to purchase new UNT's when old ones fail. CM3 will put in place a migration plan for the high school as old controllers fail. The system will also be reprogrammed to take advantage of energy conservation programs that currently are not installed.

CM3 proposes to re-commission this DDC system to achieve greater operating efficiency and energy savings. This upgrade will allow for BAS interface from any PC on the District network. The following existing HVAC equipment will be re-commissioned:

- (2) Boilers
- (2) Air cooled chillers
- (2) HW pumps
- (4) CHW pumps
- (10) AHU's
- (6) RTU
- (66) Unit ventilators
- (20) Exhaust Fans

The BAS re-commissioning also includes the identification for replacement of a portion of valves, actuators, sensors, DDC controllers and pneumatic devices that are found to be non-functional as part of the re-commissioning of the system. Once the list is created, it will be submitted to the District for a decision on how the repairs will be made (i.e. replacement by District personnel or CM3).

### **Building System Operation**

There will be three main operational modes for the building with the new BAS system. The three modes are day, maintenance, and night. Each one of these modes will have different types of parameters to focus on the current operation of the building.

#### **Day Mode:**

During the Day mode the heating set point will be 68 degrees and the cooling set point will be 72. The outside air dampers will bring in the required outside air and all exhaust fans will be running.

#### **Maintenance Mode:**

After school when portions of the building are only being used for cleaning and or maintenance, the building will be allowed to coast toward night set points. The AHU's will shut outside air dampers completely unless free cooling is engaged and the exhaust fans will be shut down. The temperature set points will be changed to 65 degrees and the cooling set point will be 77.

#### **Night Mode:**

During the Night Mode all equipment will be turned off and the heating set point will be 55 degrees and the cooling set point will be 85. The fans systems will cycle on and off to maintain these setting. The outside air dampers will remain closed and the exhaust fans will remain off during this period.

### **GENERAL FUNCTIONS OF THE EMS**

#### **HOT WATER RESET**

These controls reset the temperature of hot water supplied to space heating coils as a function of load or outside air temperature. Energy is saved by eliminating overheating, reducing piping heat loss, and improving boiler and heat exchanger performance due to reduced casing and stack losses.

#### **CHILLED WATER RESET**

These controls will reset the temperature of chilled water supplied to the cooling coils from the chiller as a function of load and/or outside air temperature. As with hot water reset controls, chilled water reset controls save energy by reducing piping thermal losses. Also, by increasing the existing water temperatures, suction pressure is increased and chiller performance is improved. While the primary savings for hot water reset is due to the reduction in piping thermal losses, the primary savings for chilled water reset is a result of the chiller efficiency improvement. This is due to the sensitivity of the chiller's COP to suction temperature.

### **OUTSIDE AIR LOCKOUT**

The heating hot water pumps and the heating systems should be completely shut off when the outside air temperature is greater than 60°F, or a temperature deemed appropriate. This will save heating and electricity, and can help to minimize overheating in crowded areas of the building. This concept also applies to the cooling systems. The mechanical cooling would be off until the outside air temperature reaches 60°F. These temperature set points will be adjustable and cooling and heating will occur simultaneously on few occasions.

### **UNOCCUPIED TEMPERATURE SETBACK**

The equipment should operate to maintain setback conditions in the spaces when they are not occupied. Outside air dampers should be closed. In areas where air quality or shutting off fans is considered to be too great a risk, the fans can remain running and the AHU or zone valves can be modulated to provide the setback. In most cases, the leakage through the outside air dampers will be enough to maintain air quality in the buildings. Appropriate freeze controls for all of the AHU's will be confirmed.

### **AIR HANDLER CONTROL**

The proposed EMS will include operator controlled start/stop control of the units and status points for the fan motors. It will also include control of the outside air dampers. In most cases, control of the hot water and chilled water coil valves is included. The EMS will control the temperature of the supply air based on inputs from the space temperature sensors. The unit's operating schedules will be controlled, as determined through cooperation with the school's operating personnel.

### **OPTIMAL START**

The building will utilize an Optimal Start routine that will determine the time to start the equipment based on outdoor conditions in order to bring the building up to the set point temperature before the occupied period. The software will use the space temperature sensors to "learn" when to start the equipment based on the outside air temperature. This type of control can be replaced with operator determined start/stop schedules where deemed appropriate. The implementation of this ECM would result in optimum energy cost savings, without reducing comfort.

### **Enthalpy Economizer**

The outside air temperature will be monitored to allow the proper selection of when mechanical cooling will start and when outside air should be closed to minimum. The outside air enthalpy will be monitored and at 20 BTU/LB of dry air the water side economizer will be enabled. At 24 BTU/LB of dry air the Mechanical Cooling will be enabled but the system will still be allowed to bring in maximum amounts of outside air since that outside air still has a lower BTU/LB than the return air from the spaces. When the outside air reaches 28 BTU/LB of dry air or above the return air enthalpy, then the outside air dampers will be positioned to the minimum outside air position for required building ventilation.



## **Training**

On-site training will be provided to the facilities to staff on the proper operation of the control system, in addition one designated member of the staff will be sent to a factory authorized training center.

**ECM Title:           Boiler Reset Control**

### **Description:**

#### **Boiler Reset Control thru the BAS**

Currently the boiler controller is set at one temperature throughout the year. Typically this set point is 190 to 210 degrees. When the boiler is started during mild outside air conditions the boiler will still attempt to attain the 210 degree set point even if the building only needs 160 degree water. This will cause the boiler the inability to modulate the burner correctly, which causes the burner to start and stop an excessive amount and wastes gas.

The proposed boiler burner control systems will include the following:

- Remove the existing temperature control thermostat on each boiler.
- Replace the controller with a temperature sensor connected to the BAS system.
- Install a new 135 ohm output controller to an analog output from the BAS system. This will send the analog signal to the boiler to modulate the burner.
- All the existing limit controls and high limit safeties will remain.
- New reset schedules will be setup in the BAS system to control the boilers at these new temperatures.
- Testing and Commissioning of the complete system will be included.

This measure will save fossil fuel consumption at the building by reducing burner pre purge and post purge cycles and accurate hot water control.

**ECM Title:           Demand Control plus Variable Volume Single Zone Control**

### **Description:**

#### **Demand Control**

Air Handling Units serving the Gym and Cafeteria operated with approximately 15-20% outside air. This constant volume unit is sized to move enough air for peak load conditions when these areas are fully occupied, which occur only during a small portion of total operating times. It was also observed in this building that there was an issue with humidity control in these areas due to the areas needed minimum cooling and the discharge air on the units were around 70 degrees. When air handlers are only cooled to 65 to 70 degrees the units will not remove the moisture from the air causing 'high humidity' in the room. This can lead to mold and other moisture related problems.

We propose to install a new VFD drive for supply air fans. This new VFD drive will modulate the air flow based on the requirement for heating and cooling for the unit. The new CO<sub>2</sub> sensors in the return air duct will monitor the amount of CO<sub>2</sub>, which translates into the presence of people in that area. The CO<sub>2</sub> sensors will modulate the outside and return air dampers to maintain a safe level of CO<sub>2</sub>. When there are no people in the area, the outside air dampers shall be closed and return air dampers opened to circulate the return air. This will prevent introducing any outside air during unoccupied periods, resulting in energy savings by not heating or cooling the outside air continuously.

This retrofit will include the following:

- Supply and installation of a CO<sub>2</sub> sensor in the return air duct
- Install new VFD drive for the Unit
- Control programming for the requirements of this ECM
- Commissioning of the new system

The new control sequence will reset the supply discharge air temperature based on the outside air temperature. The fan speed will be controlled like a single zone VAV box to supply the minimum air with the required moisture removed to the space. This will lower the total humidity in the building space.

**ECM Title:               INSTALL VSD ON KITCHEN EXHAUST FAN AND INSTALL HOOD SENSORS**

**DESCRIPTION:**

The School District currently utilizes a constant volume H&V unit, and a constant volume exhaust hood which serve the kitchen. This system operates at full load even when there is no activity in the kitchen it also requires operating the exhaust fan at full load. This not only wastes fan energy, but also the heating and air-conditioning. When the hood is not utilized but occupancy and schedules dictate that the kitchen area requires conditioning; an opportunity exists to reduce airflow and consequently, conserve energy.

CM3 recommends installing the Melink Intelli-Hood control system to control the hood exhaust and make-up air fans to ensure the optimal hood performance and to conserve energy. The control system will include the input/output processor, keypad. Variable frequency drives will be mounted on the utility cabinet. The temperature sensor will be mounted in the exhaust collar and the optic sensor will be mounted inside the ends of the hood with air-purge unit mounted on top.

**THE GENERALIZED SCOPE OF WORK IS AS FOLLOWS:**

- Provide a variable speed drive in a NEMA approved enclosure at H&V and kitchen exhaust fan EF.
- Reconfigure existing power wiring through the variable speed drives.
- Provide a motion sensor and an optical sensor at the kitchen exhaust hood to determine use.
- Provide variable speed drive control points for start/stop, speed and alarm.

- Provide control logic and software to accomplish sequences and incorporate into DDC system.
- Balance system, commission control components and sequences, and calibrate control loops.

**ECM TITLE:               INSTALL NEW A/C IN PHONE ROOM**

**DESCRIPTION:**

During our survey of the building, multiple personnel indicated that the phone room was in need of air conditioning. Currently they have a small floor unit that blows the hot air from the condensing coil to above the ceiling. As part of this proposal, CM3 recommends installing a new 2 ton split A/C unit to serve this server room and remove the temporary unit that is currently serving this room. By adding additional cooling for this room, the cooling requirements for the phone server equipment will be met and it will allow the chiller to be shut off during the heating season.

**ECM TITLE:               INSTALL NEW HOT WATER HEATERS**

**DESCRIPTION:**

The current hot water heaters have been failing for multiple reasons. These maintenance cost exceed \$6,000 per year. One of the reasons that the hot water heaters have had issues is due to the existing flue configuration. This current flue is too long and is a shared flue for both water heaters. Due to this fact CM3 will recommend the installation of all new flues.

CM3 recommends installing two new 500,000 BTU hot water heaters. These two hot water heaters will be located in the same location as the existing Aerco Hot Water Heaters. New flues will be run across the boiler room and will exit at the same exhaust point as the emergency generator.

**ECM TITLE:               BUILDING ENVELOPE**

**DESCRIPTION:**

CM3 conducted an on-site building envelope inspection which included a visual inspection, a smoke pencil air leakage test, and interior infrared thermography by a Level 1 Certified Thermographer to confirm energy loss and moisture issues for the buildings included in the RFP. In addition to the on-site inspection, CM3 reviewed building construction and building performance issues with facility management to understand current conditions and priority needs. An analysis of historical energy costs was also completed to determine how the condition of the building envelope currently affects energy consumption. Potential financial savings projections associated with air sealing determined the project's economic benefit.

**INSPECTION**

On-site testing and the analysis of historical energy consumption indicate there is an opportunity to improve indoor air quality, occupant comfort, and energy use by upgrading existing air barrier systems. Our inspection of the four buildings totaling 528,265 square feet revealed gaps, cracks, and holes in the building envelope. When converted to their square feet equivalency, these holes total the following.

## RECOMMENDATIONS

Building envelope sealing, weather-stripping, and interior compartmentalization is recommended to eliminate the infiltration and exfiltration of air to reduce energy loss while improving occupant safety and comfort. The scope of work includes replacement of weather-stripping and seals in many of the following building components, which may have failed to varying degrees.

- Roof exhausts, skylights, hatches
- Roof level changes
- Windows & Doors
- Rooftop HVAC equipment
- Soffits & Shafts
- Roof/wall intersections

### **ECM Title: Emergency Power to Server and Phone Rooms**

#### **Description:**

This ECM will be to run new emergency power to the following rooms:

- A. Install new conduit, wire and outlet from Panel 4NE to Server Room 35. The outlets will have eight 20 amp plugs mounted in two boxes for each circuit.
- B. Install new conduit, wire and outlet from Panel 4NE to Phone Closet. The outlet will have four 20 amp plugs mounted in one box for each circuit.

### **ECM Title: Emergency Power to IDF Rooms**

#### **Description:**

This ECM will be to run new emergency power to the following rooms:

- A. Install new conduit, wire and outlet from Panel 4NE to IDF-1 the storage room behind the concession stand by the Gym. The outlet will have four 20 amp plugs mounted in one box.
- B. Install new conduit, wire and outlet from Panel 4NE to IDF-2 in room 45. The outlet will have four 20 amp plugs mounted in one box.
- C. Install new conduit, wire and outlet from Panel 4NE to IDF-3 in the main office. The outlet will have four 20 amp plugs mounted in one box.
- D. Install new conduit, wire and outlet from Panel NE to IDF-4 in the electrical closet. The outlet will have four 20 amp plugs mounted in one box.
- E. Install new conduit, wire and outlet from Panel 4NE to IDF-5 In room 125. The outlet will have four 20 amp plugs mounted in one box.
- F. Install new conduit, wire and outlet from Panel 4NE to IDF-6 in room 212. The outlet will have four 20 amp plugs mounted in one box.

## **INTERMEDIATE SCHOOL ENERGY CONSERVATION MEASURES**

**ECM Title: Retrofit existing Light Fixtures**

**Description:**

The survey of the building turned up very limited possibilities for lighting retrofits within the building. Most of the retrofits were found outside the building in the parking lot and the exterior wall mounted fixtures.

- Replace 56 existing 400 Watt High Pressure Sodium Cobra Heads with new 140 Watt LED Cobra Head controlled by Photocell.
- Replace 38 existing 70 Watt High Pressure Sodium Wall Packs with new 30 Watt LED Wall Packs controlled by Photocell.

**ECM Title: Re-Commissioning Existing BAS**

**Description:**

The School currently has a Honeywell Controls System. It is a Direct Digital Control (DDC) system serving the entire building. The building currently has night setback for the indoor air temperatures to 82°F for summer and 60°F for winter. The chillers are locked out at 58°F. The Air handling units are both VAV and constant volume.

**New Centralized Server**

CM3 Building Solutions, Inc. is pleased to propose installing a new dedicated server for the entire school district. This centralized server will allow any user on any computer in the school district to access any control system in the school district.

**BUILDING RE-COMMISSIONING:**

Currently the school district has an existing Honeywell DDC controls system. The system will also be reprogrammed to take advantage of energy conservation programs that currently are not installed.

CM3 proposes to re-commission this DDC system to achieve greater operating efficiency and energy savings. This upgrade will allow for BAS interface from any PC on the District network.

The following existing HVAC equipment will be re-commissioned:

- (2) Boilers
- (2) Air cooled chillers
- (2) HW pumps
- (2) CHW pumps
- (12) RTU's
- (88) Variable Air Volume Boxes (VAV)

### **Building System Operation**

There will be three main operational modes for the building with the new BAS system. The three modes are day, maintenance, and night. Each one of these modes will have different parameters to focus on the current operation of the building.

#### **Day Mode:**

During the Day mode the heating set point will be 68 degrees and the cooling set point will be 72. The outside air dampers will bring in the required outside air and all exhaust fans will be running.

#### **Maintenance Mode:**

After school when portions of the building are only being used for cleaning and or maintenance. The building will be allowed to coast toward night set points. The Air Handling Units AHU's will shut outside air dampers completely unless free cooling is engaged and the exhaust fans will be shut down. The temperature set points will be changed to 65 degrees and the cooling set point will be 77.

#### **Night Mode:**

During the Night Mode all equipment will be turned off and the heating set point will be 55 degrees and the cooling set point will be 85. The fans systems will cycle on and off to maintain these setting. The outside air dampers will remain closed and the exhaust fans will remain off during this period.

### **GENERAL FUNCTIONS OF THE EMS**

#### **HOT WATER RESET**

These controls reset the temperature of hot water supplied to space heating coils as a function of load and/or outside air temperature. Energy is saved by eliminating overheating, reducing piping heat loss, and improving boiler and heat exchanger performance due to reduced casing and stack losses.

#### **CHILLED WATER RESET**

These controls will reset the temperature of chilled water supplied to the cooling coils from the chiller as a function of load and/or outside air temperature. As with hot water reset controls, chilled water reset controls save energy by reducing piping thermal losses. Also, by increasing the existing water temperatures, suction pressure is increased and chiller performance is improved. While the primary savings for hot water reset is due to the reduction in piping thermal losses, the primary savings for chilled water reset is a result of the chiller efficiency improvement. This is due to the sensitivity of the chiller's COP to suction temperature.

## **OUTSIDE AIR LOCKOUT**

The heating hot water pumps and the heating systems should be completely shut off when the outside air temperature is greater than 60°F, or a temperature deemed appropriate. This will save heating and electricity, and can help to minimize overheating in crowded areas of the building. This concept also applies to the cooling systems. The mechanical cooling would be off until the outside air temperature reaches 60°F. These temperature set points will be adjustable and cooling and heating will occur simultaneously on few occasions.

## **UNOCCUPIED TEMPERATURE SETBACK**

The equipment should operate to maintain setback conditions in the spaces when they are not occupied. Outside air dampers should be closed. In areas where air quality or shutting off fans is considered to be too great a risk, the fans can remain running and the AHU or zone valves can be modulated to provide the setback. In most cases, the leakage through the outside air dampers will be enough to maintain air quality in the buildings. Appropriate freeze controls for all of the AHU's will be confirmed.

## **AIR HANDLER CONTROL**

The proposed EMS will include operator controlled start/stop control of the units and status points for the fan motors. It will also include control of the outside air dampers. In most cases, control of the hot water and chilled water coil valves is included. The EMS will control the temperature of the supply air based on inputs from the space temperature sensors. The unit's operating schedules will be controlled, as determined through cooperation with the school's operating personnel.

## **OPTIMAL START**

The building will utilize an Optimal Start routine that will determine the best time to start the equipment based on outdoor conditions in order to bring the building up to the set point temperature before the occupied period. The software will use the space temperature sensors to "learn" when to start the equipment based on the outside air temperature. This type of control can be replaced with operator determined start/stop schedules where deemed appropriate. The implementation of this ECM would result in optimum energy cost savings, without reducing comfort. The following is a description of the DDC system proposed for this project and a detailed list of the points to be controlled under the new expanded control system:

## **Enthalpy Economizer**

The Outside air temperature will be monitored to allow the proper selection of when mechanical cooling will start and when outside air should be closed to a minimum. The outside air enthalpy will be monitored and at 20 BTU/LB of dry air the water side economizer will be enabled. At 24 BTU/LB of dry air the Mechanical Cooling will be enabled but the system will still be allowed to bring in maximum amounts of outside air since that outside air still has a lower BTU/LB than the return air from the spaces. When the outside air reaches 28 BTU/LB of dry air or above the return air enthalpy, then the outside air dampers will be positioned to the minimum outside air position for required building ventilation.



## Training

On-site training will be provided to the facilities to staff on the proper operation of the control system, in addition one designated member of the staff will be sent to a factory authorized training center.

**ECM Title:                      Boiler Reset Control**

### **Description:**

#### **Boiler Reset Control thru the BAS**

Currently the boiler controller is set at one temperature throughout the year. Typically this set point is 190 to 210 degrees. When the boiler is started during mild outside air conditions the boiler will still attempt to attain the 210 degree set point even if the building only needs 160 degree water. This will cause the boiler the inability to modulate the burner correctly, which causes the burner to start and stop an excessive amount and wastes gas or fuel oil.

The proposed boiler burner control systems will include the following:

- Remove the existing temperature control thermostat on each boiler.
- Replace the controller with a temperature sensor connected to the BAS system.
- Install a new 135 ohm output controller to an analog output from the BAS system. This will send the analog signal to the boiler to modulate the burner.
- All the existing limit controls and high limit safeties will remain.
- New reset schedules will be setup in the BAS system to control the boilers at these new temperatures.
- Testing and Commissioning of the complete system will be included.

This measure will save energy consumption at the building by reducing burner pre purge and post purge cycles and accurate hot water control.

**ECM TITLE:                      BUILDING ENVELOPE**

### **DESCRIPTION:**

CM3 conducted an on-site building envelope inspection which included a visual inspection, a smoke pencil air leakage test, and interior infrared thermography by a Level 1 Certified Thermographer to confirm energy loss and moisture issues for the buildings included in the RFP.

In addition to the on-site inspection, CM3 reviewed building construction and building performance issues with facility management to understand current conditions and priority needs. An analysis of historical energy costs was also completed to determine how the condition of the building envelope currently affects energy consumption. Potential financial savings projections associated with air sealing determined the project's economic benefit.

## INSPECTION

On-site testing and the analysis of historical energy consumption indicate there is an opportunity to improve indoor air quality, occupant comfort, and energy use by upgrading existing air barrier systems.

Our inspection of the four buildings totaling 528,265 square feet revealed gaps, cracks, and holes in the building envelope. When converted to their square feet equivalency, these holes total the following

## RECOMMENDATIONS

Building envelope sealing, weather-stripping, and interior compartmentalization is recommended to eliminate the infiltration and exfiltration of air to reduce energy loss while improving occupant safety and comfort. The scope of work includes replacement of weather-stripping and seals in many of the following building components, which may have failed to varying degrees.

- Roof exhausts, skylights, hatches
- Roof level changes
- Windows & Doors
- Rooftop HVAC equipment
- Soffits & Shafts
- Roof/wall intersections

**ECM Title:           Emergency Power to IDF Rooms**

**Description:**

This ECM will be to run new emergency power to the following rooms:

- A.     Install new conduit, wire and outlet from Panel EA to IDF-1 located in the data closet in between rooms 224 and 226. The outlet will have four 20 amp plugs mounted in one box.
- B.     Install new conduit, wire and outlet from Panel EK to IDF-2 in the data room in the basement under the library. The outlet will have four 20 amp plugs mounted in one box.
- C.     Install new conduit, wire and outlet from Panel EK to IDF-3 in the data room near the Cafeteria. The outlet will have four 20 amp plugs mounted in one box.

## **LIBERTY BELL ENERGY CONSERVATION MEASURES**

**ECM Title:           Retrofit existing Light Fixtures**

**Description:**

The survey of the building turned up very limited possibilities for lighting retrofits within the building. Most of the retrofits were found outside the building in the parking lot and the exterior wall mounted fixtures.

- Existing (2) Lamp 20W T12 with 2' standard magnetic ballast fixture located in Toilet room, Relamp/Reballast with (2) 17W T8 lamps and High Efficient Low Ballast Factor ballast.
- Existing (2) Lamp 34W SuperSaver T12 with 4' magnetic ballast linear fixture located in storage room, Relamp/Reballast with (2) High Performance T8 lamps and High Efficient Low Ballast Factor ballast
- Replace 22 existing 175 Watt Metal Halide Wall Packs with new 60 Watt LED Wall Packs controlled by Photocell.
- Replace 16 existing 250 Watt Metal Halide Cobra Heads with new 90 Watt LED Cobra Head controlled by Photocell.
- Replace 7 existing 70 Watt Metal Halide Wall Packs with new 30 Watt LED Wall Packs controlled by Photocell.

**ECM Title:           RECOMMISSIONING EXISTING BAS**

**Description:**

Liberty Bell has an original Honeywell DDC control system. This system was modified in 2006 to interface to a new District Wide Graphic Front-end System. The new district wide system was based on the JCI FX controls that have the capability of interfacing to Lon, BACNET, and other building controls protocols. The building still has Honeywell controls in 4 rooftop units and in all the unitary controllers. The building currently has night setback for the indoor air temperatures to 80°F for summer and 60°F for winter.

There are approximately 24 unit ventilators in the classrooms that have modulating hot water valves for the heating and modulating chilled water valves for cooling.

The Air handling units are both VAV and constant volume. On the VAV system, about 60% of the current VAV boxes are not functioning for one reason or another.

### **New Centralized Server**

CM3 Building Solutions, Inc. is pleased to propose installing a new dedicated server for the entire school district. This centralized server will allow any user on any computer in the school district to access any control system in the school district.

### **BUILDING RE-COMMISSIONING:**

Currently the school district has an existing JCI and Honeywell DDC controls system. It was noticed during the survey that over 60 % of the VAV boxes were nonoperational for various reasons. In addition each classroom had a motion sensor and the dampers were not fully closing when the rooms were unoccupied. This system is still in good working condition. The system will also be reprogrammed to take advantage of energy conservation programs that currently are not installed.

CM3 proposes to re-commission this DDC system to achieve greater operating efficiency and energy savings. This upgrade will allow for a BAS interface from any PC on the District network.

The following existing HVAC equipment will be re-commissioned:

- (2) Boilers
- (2) Air cooled chillers
- (2) HW pumps
- (2) CHW pumps
- (7)RTU's (3) JCI UNT-1144 (4) Honeywell W7750B2003
- (24) Unit ventilators Honeywell W7753A2002
- (33) Variable Air Volume Boxes (VAV)

The BAS re-commissioning also includes the identification for replacement of a portion of valves, actuators, sensors, DDC controllers and pneumatic devices that are found to be non-functional as part of the re-commissioning of the system. Once the list is created, it will be submitted to the District for a decision on how the repairs will be made (i.e. replacement by District personnel or CM3).

### **Building System Operation**

There will be three main operational modes for the building with the new BAS system. The three modes are day, maintenance, and night. Each one of these modes will have different parameters to focus on the current operation of the building.

#### **Day Mode:**

During the Day mode the heating set point will be 68 degrees and the cooling set point will be 72. The outside air dampers will bring in the required outside air and all exhaust fans will be running.

#### **Maintenance Mode:**

After school when portions of the building are only being used for cleaning and or maintenance. The building will be allowed to coast toward night set points. The AHU's will shut outside air dampers completely unless free cooling is engaged and the exhaust fans will be shut down. The temperature set points will be changed to 65 degrees and the cooling set point will be 77.

### **Night Mode:**

During the Night Mode all equipment will be turned off and the heating set point will be 55 degrees and the cooling set point will be 85. The fan systems will cycle on and off to maintain these settings. The outside air dampers will remain closed and the exhaust fans will remain off during this period.

## **GENERAL FUNCTIONS OF THE EMS**

### **HOT WATER RESET**

These controls reset the temperature of hot water supplied to space heating coils as a function of load or outside air temperature. Energy is saved by eliminating overheating, reducing piping heat loss, and improving boiler and heat exchanger performance due to reduced casing and stack losses.

### **CHILLED WATER RESET**

These controls will reset the temperature of chilled water supplied to the cooling coils from the chiller as a function of load and/or outside air temperature. As with hot water reset controls, chilled water reset controls save energy by reducing piping thermal losses. Also, by increasing the existing water temperatures, suction pressure is increased and chiller performance is improved. While the primary savings for hot water reset are due to the reduction in piping thermal losses, the primary savings for chilled water reset are a result of the chiller efficiency improvement. This is due to the sensitivity of the chiller's COP to suction temperature.

### **OUTSIDE AIR LOCKOUT**

The heating hot water pumps and the heating systems should be completely shut off when the outside air temperature is greater than 60°F, or a temperature deemed appropriate. This will save heating and electricity, and can help to minimize overheating in crowded areas of the building. This concept also applies to the cooling systems. The mechanical cooling would be off until the outside air temperature reaches 60°F. These temperature set points will be adjustable and cooling and heating will occur simultaneously on few occasions.

### **UNOCCUPIED TEMPERATURE SETBACK**

The equipment should operate to maintain setback conditions in the spaces when they are not occupied. Outside air dampers should be closed. In areas where air quality or shutting off fans is considered to be too great a risk, the fans can remain running and the AHU or zone valves can be modulated to provide the setback. In most cases, the leakage through the outside air dampers will be enough to maintain air quality in the buildings. Appropriate freeze controls for all of the AHU's will be confirmed.

## **AIR HANDLER CONTROL**

The proposed EMS will include operator controlled start/stop control of the units and status points for the fan motors. It will also include control of the outside air dampers. In most cases, control of the hot water and chilled water coil valves is included. The EMS will control the temperature of the supply air based on inputs from the space temperature sensors. The unit's operating schedules will be controlled, as determined through cooperation with the school's operating personnel.

## **OPTIMAL START**

The building will utilize an Optimal Start routine that will determine the time to start the equipment in order to bring it up to the set point temperature before the occupied period. The software will use the space temperature sensors to "learn" when to start the equipment based on the outside air temperature. This type of control can be replaced with operator determined start/stop schedules where deemed appropriate. The implementation of this ECM would result in optimum energy cost savings, without reducing comfort. The following is a description of the DDC system proposed for this project and a detailed list of the points to be controlled under the new expanded control system:

## **Enthalpy Economizer**

The Outside air temperature will be monitored to allow the proper selection when mechanical cooling will start and when outside air should be closed to a minimum. The outside air enthalpy will be monitored and at 20 BTU/LB of dry air the water side economizer will be enabled. At 24 BTU/LB of dry air the Mechanical Cooling will be enabled but the system will still be allowed to bring in maximum amounts of outside air since that outside air still has a lower BTU/LB than the return air from the spaces. When the outside air reaches 28 BTU/LB of dry air or above the return air enthalpy, then the outside air dampers will be positioned to the minimum outside air position for required building ventilation.

**Training** - On-site training will be provided to the facilities to staff on the proper operation of the control system, in addition one designated member of the staff will be sent to a factory authorized training center.

**ECM Title:**                      **Boiler Reset Control**

## **Description:**

### **Boiler Reset Control thru the BAS**

Currently the boiler controller is set at one temperature throughout the year. Typically this set point is 190 to 210 degrees. When the boiler is started during mild outside air conditions the boiler will still attempt to attain the 210 degree set point even if the building only needs 160 degree water. This will cause the boiler the inability to modulate the burner correctly, which causes the burner to start and stop an excessive amount and wastes gas or fuel oil.

The proposed boiler burner control systems will include the following:

- Remove the existing temperature control thermostat on each boiler.
- Replace the controller with a temperature sensor connected to the BAS system.
- Install a new 135 ohm output controller to an analog output from the BAS system. This will send the analog signal to the boiler to modulate the burner.
- All the existing limit controls and high limit safeties will remain.
- New reset schedules will be setup within the BAS system to control the boilers at these new temperatures.
- Testing and Commissioning of the system will be included.

This measure will save energy consumption at the building by reducing burner pre purge and post purge cycles and accurate hot water control.

**ECM Title: Demand Control plus Variable Volume Single Zone Control**

**Description:**

**Demand Control**

Air Handling Units serving the Gym and Cafeteria operated with approximately 15-20% outside air. During the summer these dampers were manually set to 0%. This constant volume unit is sized to move enough air for peak load conditions when these areas are fully occupied, which occur only during a small portion of total operating times. It was also observed in this building that there is an issue with regard to humidity control due to minimum cooling and the discharge air on the units operating around 70 degrees. When air handlers are only cooled to 65 to 70 degrees the units will not remove enough moisture from the air causing "high humidity" in the room. This can lead to mold and other moisture related problems. We propose to install a new VFD drive for supply air fans. This new VFD drive will modulate the air flow based on the requirement for heating and cooling for the unit. The new CO<sub>2</sub> sensors in the return air duct will monitor the amount of CO<sub>2</sub>, which translates into the presence of people in that area. The CO<sub>2</sub> sensors will modulate the outside and return air dampers to maintain a safe level of CO<sub>2</sub>. When there are no people in the area, the outside air dampers shall be closed and return air dampers opened to circulate the return air. This will prevent introducing any outside air during unoccupied periods, resulting in energy savings by not heating or cooling the outside air continuously.

This retrofit will include the following:

- Supply and installation of a CO<sub>2</sub> sensor in the return air duct
- Install new VFD drive for the Unit
- Control programming for the requirements of this ECM
- Commissioning of the new system

The new control sequence will reset the supply discharge air temperature based on the outside air temperature. The fan speed will be controlled like a single zone VAV box to supply the minimum air with the required moisture removed to the space. This will lower the total humidity in the building space.



**ECM Title: Building Rebalancing**

**Description:**

**Building Rebalancing**

During the survey of this school, it was observed that many of the VAV boxes were not functioning correctly and many of the flow sensors appeared off. In addition many of the failed boxes were 100% opened all the time causing the supply air on all the units to be set above 65 degrees. This causes the air handling units not to be able to remove the moisture from the air causing moisture related issues.

In this proposal, CM3 recommends air balancing the (7) air handling units and the (39) Unit Ventilators. Performing air balancing will improve the overall comfort in these areas and optimize the performance of this equipment.

We will at the same time review and balance the system for the chilled water flow, there also appeared to be issues with the existing flow of the system.

**ECM TITLE: INSTALL VSD ON KITCHEN EXHAUST FAN AND INSTALL HOOD SENSORS**

**DESCRIPTION:**

The School District currently utilizes a constant volume H&V unit, and a constant volume exhaust hood which serve the kitchen. This system operates at full load even when there is no activity in the kitchen it also requires operating the exhaust fan at full load. This not only wastes fan energy, but also the heating and air-conditioning. When the hood is not utilized, but occupancy and schedules dictate that the kitchen area requires conditioning; an opportunity exists to reduce airflow and consequently conserve energy.

CM3 recommends installing the Melink Intelli-Hood control system to control the hood exhaust and make-up air fans to ensure the optimal hood performance and to conserve energy. The control system will include the input/output processor, keypad. Variable frequency drives will be mounted on the utility cabinet. The temperature sensor will be mounted in the exhaust collar and the optic sensor will be mounted inside the ends of the hood with air-purge unit mounted on top.

**THE GENERALIZED SCOPE OF WORK IS AS FOLLOWS:**

- Provide a variable speed drive in a NEMA approved enclosure at H&V and kitchen exhaust fan EF.
- Reconfigure existing power wiring through the variable speed drives.
- Provide a motion sensor and an optical sensor at the kitchen exhaust hood to determine use.
- Provide variable speed drive control points for start/stop, speed and alarm.
- Provide control logic and software to accomplish sequences and incorporate into DDC system.
- Balance system, commission control components and sequences, and calibrate control loops.

**ECM TITLE: BUILDING ENVELOPE**

**DESCRIPTION:**

CM3 conducted an on-site building envelope inspection which included a visual inspection, a smoke pencil air leakage test, and interior infrared thermography by a Level 1 Certified Thermographer to confirm energy loss and moisture issues for the buildings included in the RFP.

In addition to the on-site inspection, CM3 reviewed building construction and building performance issues with facility management to understand current conditions and priority needs. An analysis of historical energy costs was also completed to determine how the condition of the building envelope currently affects energy consumption. Potential financial savings projections associated with air sealing determined the project's economic benefit.

**INSPECTION**

On-site testing and the analysis of historical energy consumption indicate there is an opportunity to improve indoor air quality, occupant comfort, and energy use by upgrading existing air barrier systems.

Our inspection of the four buildings totaling 528,265 square feet revealed gaps, cracks, and holes in the building envelope. When converted to their square feet equivalency, these holes total the following

**RECOMMENDATIONS**

Building envelope sealing, weather-stripping, and interior compartmentalization is recommended to eliminate the infiltration and exfiltration of air to reduce energy loss while improving occupant safety and comfort. The scope of work includes replacement of weather-stripping and seals in many of the following building components, which may have failed to varying degrees.

- Roof exhausts, skylights, hatches
- Roof level changes
- Windows & Doors

- Rooftop HVAC equipment
- Soffits & Shafts
- Roof/wall intersections

**ECM Title: Transformer Replacement**

**Description:**

This ECM is to replace existing inefficient transformers with new energy efficient transformers.

While the Southern Lehigh facilities are unique, the electrical infrastructure is based on industry standard transformers, typical of most facilities across the United States and the world. Replacing the old, inefficient transformers with state-of-the-art transformers, would yield substantial energy savings and renew a key component of the infrastructure that powers all connected equipment.

Transformers are comprised of two major components: a steel core and windings made of aluminum or copper.

Because transformers are in operation 24-hours/day, 365-days/year, they produce energy losses around the clock. Core losses, also known as no load losses, are constant. The core remains energized at all times, regardless of any load. Coil losses, also known as load losses, vary with the load placed upon them.

Because transformers are in operation 24-hours/day, 365-days/year, they produce energy losses around the clock. Core losses, also known as no load losses, are constant. The core remains energized at all times, regardless of any load. Coil losses, also known as load losses, vary with the load placed upon them.

Transformer loading. The majority of transformers are very likely operating at a small fraction of their nameplate capacity. Powersmiths field analysis identified this low load situation and designed the E-Saver-C3 transformer to meet these real-world conditions. The green line, which is the efficiency curve of the Powersmiths E-Saver-C3 transformer, has been engineered to carve out losses. Note that the Powersmiths transformer’s peak efficiency matches the real- world loading profile.

Liberty Bell				
Transformer Designation	Type	Primary Voltage	Secondary Voltage	KVA
T1	Dry	480V-3	120/208	30
T2	Dry	480V-3	120/208	30
T3	Dry	480V-3	120/208	30
T4	Dry	480V-3	120/208	30
T5	Dry	480V-3	120/208	30
T6	Dry	480V-3	120/208	30
T7	Dry	480V-3	120/208	30
T8	Dry	480V-3	120/208	30
T9	Dry	480V-3	120/208	5
T10	Dry	480V-3	120/208	50

**ECM Title:               Emergency Power to IDF Rooms**

**Description:**

This ECM will be to run new emergency power to the following rooms:

- D. Install new conduit, wire and outlet from Panel EA to IDF-1 located in the data closet in between rooms 224 and 226. The outlet will have four 20 amp plugs mounted in one box.
- E. Install new conduit, wire and outlet from Panel EK to IDF-2 in the data room in the basement under the library. The outlet will have four 20 amp plugs mounted in one box.
- F. Install new conduit, wire and outlet from Panel EK to IDF-3 in the data room near the Cafeteria. The outlet will have four 20 amp plugs mounted in one box.

## **MIDDLE SCHOOL ENERGY CONSERVATION MEASURES**

**ECM Title:            Retrofit existing Light Fixtures**

**Description:**

The survey of the building turned up very limited possibilities for lighting retrofits within the building. Most of the retrofits were found outside the building in the parking lot and the exterior wall mounted fixtures.

- Replace 43 existing incandescent lamps with compact fluorescent lamps.
- Existing (1) Lamp 20W T12 with 2' standard magnetic ballast fixture located in toilet rooms, Relamp/Reballast with (1) 17W T8 lamp and High Efficient Low Ballast Factor ballast.
- Existing (2) Lamp 34W SuperSaver T12 with 4' magnetic ballast linear fixture located in control room Relamp/Reballast with (2) High Performance T8 lamps and High Efficient Low Ballast Factor ballast
- Existing 10 (2) Lamp 96W SlimLine T12 with 8' magnetic ballast linear fixture located in storage and stage, Relamp/Reballast with (2) High Performance 4' T8 lamps with reflector kits and High Efficient Low Ballast Factor ballast
- Replace 13 existing 100 Watt High Pressure Sodium Wall Packs with new 60 Watt LED Wall Pack controlled by Photocell.
- Replace 33 existing 400 Watt High Pressure Sodium Cobra Heads with new 140 Watt LED Cobra Head controlled by Photocell.
- Replace 2 existing 1000 Watt Metal Halide Cobra Heads with new 280 Watt LED Cobra Head controlled by Photocell.
- Replace 5 existing 70 Watt High Pressure Sodium Wall Packs with new 30 Watt LED Wall Packs controlled by Photocell.

**ECM Title: RECOMMISSIONING EXISTING BAS**

**Description:**

This school currently has a Honeywell Excel 5000 direct digital control (DDC) system that controls the unitary equipment and Johnson Controls UNT controllers for the air handling units. This change was made during the 2006 performance contract. In addition the Johnson Controls System has FX60 that interfaces to the AX graphic system. During our survey we found the chiller control board (York ISN direct DC center LDC) was not functioning properly. This appears to be part of the reason for the improper staging of the chillers and associated valves and pumps. There are control strategy issues with the equipment throughout the buildings' HVAC equipment. Also, there is currently no chilled water reset.

There are approximately 39 unit ventilators in the classrooms that have modulating hot water valves for heating and modulating chilled water valves for cooling.

The Air handling units are both VAV and constant volume. On the VAV system, about 20% of the current VAV boxes are not functioning for one reason or another.

**New Centralized Server**

CM3 Building Solutions, Inc. is pleased to propose installing a new dedicated server for the entire school district. This centralized server will allow any user on any computer in the school district to access any control system in the school district.

**BUILDING RE-COMMISSIONING:**

Currently the school district has an existing JCI and Honeywell DDC control system. It was noticed during the survey that over 20 % of the VAV boxes were nonoperational for a variety of reasons. In addition each classroom had a motion sensor and the dampers were moving toward a closed position when the rooms were unoccupied. This system is still in good working condition. The system will also be reprogrammed to take advantage of energy conservation programs that currently are not installed.

CM3 proposes to re-commission this DDC system to achieve greater operating efficiency and energy savings. This upgrade will allow for BAS interface from any PC on the District network. The following existing HVAC equipment will be re-commissioned:

- (2) Boilers
- (2) Air cooled chillers
- (2) HW pumps
- (4) CHW pumps
- (11) RTU's JCI UNT-1144
- (39) Unit ventilators Honeywell W7753A2002
- (66) Variable Air Volume Boxes (VAV)

The BAS re-commissioning also includes the identification for replacement of a portion of valves, actuators, sensors, DDC controllers and pneumatic devices that are found to be non-functional as part of the re-commissioning of the system. Once the list is created, it will be submitted to the District for a decision on how the repairs will be made (i.e. replacement by District personnel or CM3).

### **Building System Operation**

There will be three main operational modes for the building with the new BAS system. The three modes are day, maintenance, and night. Each one of these modes will have different types of parameters to focus on the current operation of the building.

#### **Day Mode:**

During the Day mode the heating set point will be 68 degrees and the cooling set point will be 72. The outside air dampers will bring in the required outside air and all exhaust fans will be running.

#### **Maintenance Mode:**

After school when portions of the building are only being used for cleaning and or maintenance. The building will be allowed to coast toward night set points. The Air Handling Units AHU's will shut outside air dampers completely unless free cooling is engaged and the exhaust fans will be shut down. The temperature set points will be changed to 65 degrees and the cooling set point will be 77.

#### **Night Mode:**

During the Night Mode all equipment will be turned off and the heating set point will be 55 degrees and the cooling set point will be 85. The fans systems will cycle on and off to maintain these setting. The outside air dampers will remain closed and the exhaust fans will remain off during this period.

### **GENERAL FUNCTIONS OF THE EMS**

#### **HOT WATER RESET**

These controls reset the temperature of hot water supplied to space heating coils as a function of load and/or outside air temperature. Energy is saved by eliminating overheating, reducing piping heat loss, and improving boiler and heat exchanger performance due to reduced casing and stack losses.

#### **CHILLED WATER RESET**

These controls will reset the temperature of chilled water supplied to the cooling coils from the chiller as a function of load and/or outside air temperature. As with hot water reset controls, chilled water reset controls save energy by reducing piping thermal losses. Also, by increasing the existing water temperatures, suction pressure is increased and chiller performance is improved. While the primary savings for hot water reset is due to the reduction in piping thermal losses, the primary savings for chilled water reset is a result of the chiller efficiency improvement. This is due to the sensitivity of the chiller's COP to suction temperature.



### **OUTSIDE AIR LOCKOUT**

The heating hot water pumps and the heating systems should be completely shut off when the outside air temperature is greater than 60°F, or a temperature deemed appropriate. This will save heating and electricity, and can help to minimize overheating in crowded areas of the building. This concept also applies to the cooling systems. The mechanical cooling would be off until the outside air temperature reaches 60°F. These temperature set points will be adjustable and cooling and heating will occur simultaneously on few occasions.

### **UNOCCUPIED TEMPERATURE SETBACK**

The equipment should operate to maintain setback conditions in the spaces when they are not occupied. Outside air dampers should be closed. In areas where air quality or shutting off fans is considered to be too great a risk, the fans can remain running and the AHU or zone valves can be modulated to provide the setback. In most cases, the leakage through the outside air dampers will be enough to maintain air quality in the buildings. Appropriate freeze controls for all of the AHU's will be confirmed.

### **AIR HANDLER CONTROL**

The proposed EMS will include operator controlled start/stop control of the units and status points for the fan motors. It will also include control of the outside air dampers. In most cases, control of the hot water and chilled water coil valves is included. The EMS will control the temperature of the supply air based on inputs from the space temperature sensors. The unit's operating schedules will be controlled, as determined through cooperation with the school's operating personnel.

### **OPTIMAL START**

The building will utilize an Optimal Start routine that will determine the time to start the equipment in order to bring it up to the set point temperature before the occupied period. The software will use the space temperature sensors to "learn" when to start the equipment based on the outside air temperature. This type of control can be replaced with operator determined start/stop schedules where deemed appropriate. The implementation of this ECM would result in optimum energy cost savings, without reducing comfort.

### **Enthalpy Economizer**

The Outside air temperature will be monitored to allow the proper selection on when mechanical cooling will start and when outside air should be closed to minimum. The outside air enthalpy will be monitored and at 20 BTU/LB of dry air the water side economizer will be enabled. At 24 BTU/LB of dry air the Mechanical Cooling will be enabled but the system will still be allowed to bring in maximum amounts of outside air since that outside air still has a lower BTU/LB than the return air from the spaces. When the outside air reaches 28 BTU/LB of dry air or above the return air enthalpy, then the outside air dampers will be positioned to the minimum outside air position for required building ventilation.

### **Training**

On-site training will be provided to the facilities to staff on the proper operation of the control system, in addition one designated member of the staff will be sent to a factory authorized training center.

**ECM Title: Boiler Reset Control**

**Description:**

**Boiler Reset Control thru the BAS**

Currently the boiler controller is set at one temperature throughout the year. Typically this set point is 190 to 210 degrees. When the boiler is started during mild outside air conditions the boiler will still attempt to attain the 210 degree set point even if the building only needs 160 degree water. This will cause the boiler the inability to modulate the burner correctly, which causes the burner to start and stop an excessive amount and wastes gas or fuel.

The proposed boiler burner control systems will include the following:

- Remove the existing temperature control thermostat on each boiler.
- Replace the controller with a temperature sensor connected to the BAS system.
- Install a new 135 ohm output controller to an analog output from the BAS system. This will send the analog signal to the boiler to modulate the burner.
- All the existing limit controls and high limit safeties will remain.
- New reset schedules will be setup in the BAS system to control the boilers at these new temperatures.
- Testing and Commissioning of the complete system will be included.

This measure will save energy consumption at the building by reducing burner pre purge and post purge cycles and accurate hot water control.

**ECM Title: Demand Control plus Variable Volume Single Zone Control**

**Description:**

**Demand Control**

Air Handling Units serving the Gym and Cafeteria operated with approximately 5% outside air. This constant volume unit is sized to move enough air for peak load conditions when these areas are fully occupied, which occur during only a small portion of total operating times. It was also observed in this building that there is an issue with humidity control in these areas due to the areas needing minimum cooling and the discharge air on the units set at around 70 degrees. When air handlers are only cooled to 65 to 70 degrees the units will not remove the moisture from the air causing "high humidity" in the room. This can lead to mold and other moisture related problems. We propose to install a new VFD drive for supply air fans. This new VFD drive will modulate the air flow based on the requirement for heating and cooling for the unit. The new CO<sub>2</sub> sensors in the return air duct will monitor the amount of CO<sub>2</sub>, which translates into the presence of people in that area. The CO<sub>2</sub> sensors will modulate the outside and return air dampers to maintain a safe level of CO<sub>2</sub>. When there are no people in the area, the outside air dampers shall be closed and return air dampers opened to circulate the return air. This will prevent introducing any outside air during unoccupied periods, resulting in energy savings by not heating the outside air continuously.

This retrofit will include the following:

- Use existing CO<sub>2</sub> sensor in the return air duct
- Use existing VFD drive for the Unit.

- Control programming for the requirements of this ECM
- Commissioning of the new system.

The new control sequence will reset the supply discharge air temperature based on the outside air temperature. The fan speed will be controlled like a single zone VAV box to supply the minimum air with the required moisture removed to the space. This will lower the total humidity in the building space.

**ECM Title: Building Rebalancing**

**Description:**

**Building Rebalancing**

During our survey of this school, it was observed that some of the VAV boxes were not functioning correctly and many of the flow sensors appeared off. This causes the air handling units not to be able to remove the moisture from the air causing moisture related issues.

CM3 recommends to air balance the (11) Rooftop units, (66) VAV boxes, (6) static pressure zones and (39) Unit Ventilators. Performing this air balance will improve the overall comfort in these areas and optimize the performance of this equipment.

We will at the same time review and balance the system for the new chillers water flow.

**ECM TITLE: INSTALL VSD ON KITCHEN EXHAUST FAN AND INSTALL HOOD SENSORS**

**DESCRIPTION:**

The School District currently utilizes a constant volume H&V unit, and a constant volume exhaust hood which serve the kitchen. This system operates at full load even when there is no activity in the kitchen. It also requires operating the exhaust fan at full load. This not only wastes fan energy, but also the heating and air-conditioning. When the hood is not utilized but occupancy and schedules dictate that the kitchen area requires conditioning; an opportunity exists to reduce airflow and consequently, conserves energy.

CM3 recommends installing the Melink Intelli-Hood control system to control the hood exhaust and make-up air fans to ensure the optimal hood performance and to conserve energy. The control system will include the input/output processor, keypad. Variable frequency drives will be mounted on the utility cabinet. The temperature sensor will be mounted in the exhaust collar and the optic sensor will be mounted inside the ends of the hood with air-purge unit mounted on top.

**THE GENERALIZED SCOPE OF WORK IS AS FOLLOWS:**

- Provide a variable speed drive in a NEMA approved enclosure at H&V and kitchen exhaust fan EF.
- Reconfigure existing power wiring through the variable speed drives.
- Provide a motion sensor and an optical sensor at the kitchen exhaust hood to determine use.
- Provide variable speed drive control points for start/stop, speed and alarm.
- Provide control logic and software to accomplish sequences and incorporate into DDC system.
- Balance system, commission control components and sequences, and calibrate control loops.

**ECM TITLE:                   INSTALL TWO NEW AIR COOLED CHILLER**

**DESCRIPTION:**

Cooling for Southern Lehigh Middle School is provided by two (2) York package air cooled chillers located outside the industrial arts room. The chillers, model number YEAJ777PX6-46PA, were installed during the 2000 renovation and have a capacity of 252 tons each.

Pumps: Two (2) 7.5 horsepower chilled water pumps, circulates the Primary chilled water thru the chillers. The primary pumps 604 gallons per minute at 30 feet of head. There is no variable speed drive on these pumps. The secondary chilled water pumps supply chilled water to the building and all the equipment that uses chilled water. The secondary pumps are designed to operate at 1310 GPMs at 75 feet of head. The pumps' flow is modulated base on the system pressure by a VFD.

During the survey process, a building load analysis was conducted which yielded a required tonnage of 200 tons for most of the cooling season. Based on this information, it became apparent that downsizing the existing chillers was an opportunity to drive efficiencies as well as lower installed cost.

CM3 will remove the existing Primary Chilled water pumps and chillers and install two new 190 Ton Chillers per the following.

- Disconnect Main Electrical Feed for two 250 ton Chillers
- Disconnect and remove all associated Electrical for the two existing primary pumps
- Disconnect and remove the two existing primary chilled water pumps
- Remove two existing Chillers and Piping and primary pumps back to the main feeds for each chiller
- Provide two new 190 ton chillers manufactured by Carrier per the following;
  1. Full charge of refrigerant R-410A
  2. Factory run test (test report ships with chiller)
  3. Rotary scroll compressors
  4. Shell and tube heat exchanger
  5. Insulation for cooler and suction line

6. Unit mounted control panel with:
  - Microprocessor ComfortLink controller CCN network ready
  - Scrolling marquee display
  - Flow switch, paddle type, factory installed & tested
  - Temperature and Pressure display
  - UPC-Open BACNET protocol
7. Low water temp protection, low pressure protection, compressor lead/lag control, unit-mounted control panel, anti-cycling protection
8. Painted G90 galvanized steel panels
9. Standard sound
  - Low sound packages are available as and add if desired
10. Across the line motor starters
11. Unit mounted non-fused disconnect
12. Coil trim panels
13. Control Transformer for Single Point Power and Controls
14. Aluminum tube condenser coil with aluminum fins (**Microchannel**)
15. Cooler heater low ambient heater protection – factory installed
16. **ADD:** Hydronic package including:
  - Single 10hp pump with sensor less VFD rated for 150 psi operating pressure
  - Chilled water pump start/stop control logic with run time equalization rotation and automatic change over after failure
  - Vertical inline pump with flanged connections and mechanical seals
  - TEFC pump motor, outdoor duty
  - Automatic reset thermal overload protection
  - Grooved Victaulic piping connections – flange can be field attached via vic/flange adapter or welded flange by MC
  - Assembly enclosure insulated and freeze protected to –20 deg. F
  - Interconnecting piping, steel schedule 40
  - Y-strainer with ball valve blow down with minimum 8 mesh stainless steel strainer
  - Pressure temperature taps
17. Triple duty balancing/shut off/check valve
18. One year parts and labor warranty on entire machine
19. Five year compressor parts only warranty
20. Start-up and training (straight time only)
  - Set two new Chillers on existing chiller pads
  - Extend existing Chilled water line to connect to new chillers, and assure proper piping for a primary secondary loop
  - Insulate all new exterior piping with metal claded jacket
  - Install a differential pressure transmitter on the chilled water system connected across
  - Connection of chiller into the existing BAS system with new graphics programming as required.
  - Supply of all required permits
  - Remove all trash from site. Provide a trash dumpster, if necessary
  - Commissioning of all systems
  - Training on proper equipment operation and maintenance

**ECM TITLE:                SHOULDER BOILER**

**DESCRIPTION:**

The existing Cleaver Brooks fire tube boilers are in great condition but are oversized for the supply of comfort of the school for most of the year. In many facilities we will see boilers sized at 30 BTU per square foot. These boilers are sized at 50 BTU per square foot. In addition these boilers should never have the return water temperature run below 130 degree or you could get an effect of condensation in each boiler that could deteriorate the boiler and stack at a quicker rate. This ECM would install a new shoulder month boiler and connect it into the primary hot water piping. A new condensing boiler size at 2,000,000 BTU that will allow the reheat hot water in the summer to be run down to much lower supply temperatures and being able to take full advantage of a condensing boiler. The new flue will be 8 inches and will run out the roof with a proper goose neck or thru the wall.

The new condensing boiler will allow the water temperature in the building for the reheat coils to be lowered to 80 to 90 degrees. This will save heating energy due to the piping losses and will be lowered significantly due to the lower temperature differential. In addition the condensing boilers operate at the highest efficiencies when the water temperature is below 90 degrees.

**ECM TITLE:                BUILDING ENVELOPE**

**DESCRIPTION:**

CM3 conducted an on-site building envelope inspection which included a visual inspection, a smoke pencil air leakage test, and interior infrared thermography by a Level 1 Certified Thermographer to confirm energy loss and moisture issues for the buildings included in the RFP.

In addition to the on-site inspection, CM3 reviewed building construction and building performance issues with facility management to understand current conditions and priority needs. An analysis of historical energy costs was also completed to determine how the condition of the building envelope currently affects energy consumption. Potential financial savings projections associated with air sealing determined the project's economic benefit.

## INSPECTION

On-site testing and the analysis of historical energy consumption indicate there is an opportunity to improve indoor air quality, occupant comfort, and energy use by upgrading existing air barrier systems.

Our inspection of the four buildings totaling 528,265 square feet revealed gaps, cracks, and holes in the building envelope. When converted to their square feet equivalency, these holes total the following

## RECOMMENDATIONS

Building envelope sealing, weather-stripping, and interior compartmentalization is recommended to eliminate the infiltration and exfiltration of air to reduce energy loss while improving occupant safety and comfort. The scope of work includes replacement of weather-stripping and seals in many of the following building components, which may have failed to varying degrees.

- Roof exhausts, skylights, hatches
- Roof level changes
- Windows & Doors
- Rooftop HVAC equipment
- Soffits & Shafts
- Roof/wall intersections

### **ECM Title: Transformer Replacement**

#### **Description:**

This ECM is to replace existing energy inefficiency transformer with new energy efficient transformers.

While the Southern Lehigh facilities are unique, the electrical infrastructure is based on industry standard transformers, typical of most facilities across the United States and the world. Replacing the old, inefficient transformers with state-of-the-art transformers, would yield substantial energy savings and renew a key component of the infrastructure that powers all connected equipment.

Transformers are comprised of two major components: a steel core and windings made of aluminum or copper. Because transformers are in operation 24-hours/day, 365-days/year, they produce energy losses around the clock. Core losses, also known as no load losses, are constant. The core remains energized at all times, regardless of any load. Coil losses, also known as load losses, vary with the load placed upon them. Because transformers are in operation 24-hours/day, 365-days/year, they produce energy losses around the clock. Core losses, also known as no load losses, are constant. The core remains energized at all times, regardless of any load. Coil losses, also known as load losses, vary with the load placed upon them.



Transformer loading. The majority of transformers are very likely operating at a small fraction of their nameplate capacity. Powersmiths field analysis identified this low load situation and designed the E-Saver-C3 transformer to meet these real-world conditions. The green line, which is the efficiency curve of the Powersmiths E-Saver-C3 transformer, has been engineered to carve out losses. Note that the Powersmiths transformer's peak efficiency matches the real-world loading profile.

Middle School				
Transformer Designation	Type	Primary Voltage	Secondary Voltage	KVA
T1	Dry	480V-3	120/208	30
T2	Dry	480V-3	120/208	45
T3	Dry	480V-3	120/208	30
T4	Dry	480V-3	120/208	30
T5	Dry	480V-3	120/208	30
T6	Dry	480V-3	120/208	30
T7	Dry	480V-3	120/208	30
T8	Dry	480V-3	120/208	150
T8A	Dry	480V-3	120/208	150
T8B	Dry	480V-3	120/208	150
T9				???
T10	Dry	480V-3	120/208	9
T11	Dry	480V-3	120/208	75
T12	Dry	480V-3	120/208	9

**ECM Title: Emergency Power to IDF Rooms**

**Description:**

This ECM will be to run new emergency power to the following rooms:

- A. Install new conduit, wire and outlet from Panel EK to IDF-1 the office area. The outlet will have four 20 amp plugs mounted in one box.
- B. Install new conduit, wire and outlet from Panel EK to IDF-2 in electrical Room. The outlet will have four 20 amp plugs mounted in one box.
- C. Install new conduit, wire and outlet from Panel EK to IDF-3 in the main office area. The outlet will have four 20 amp plugs mounted in one box.
- D. Install new conduit, wire and outlet from Panel EK to IDF-4 in wire room near the library. The outlet will have four 20 amp plugs mounted in one box.

**CM3 Performance Contract Agreement / Performance Guarantee Program**

**Southern Lehigh School District 20 Year Cash Flow Analysis**

	Escalation	Install Pd.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	TOTALS
<b>Energy Cost Avoidance</b>																							
Electrical	2.0%	\$ -	\$ 62,734	\$ 63,989	\$ 63,989	\$ 65,269	\$ 66,574	\$ 68,572	\$ 70,629	\$ 72,748	\$ 74,930	\$ 77,178	\$ 79,493	\$ 81,878	\$ 84,334	\$ 86,864	\$ 89,470	\$ 92,154	\$ 94,919	\$ 97,767	\$ 100,700	\$ 103,721	\$ 1,597,913
Gas	2.0%	\$ 38,962	\$ 39,741	\$ 40,536	\$ 41,346	\$ 42,173	\$ 43,017	\$ 43,877	\$ 44,755	\$ 45,650	\$ 46,563	\$ 47,494	\$ 48,444	\$ 49,413	\$ 50,401	\$ 51,409	\$ 52,951	\$ 54,540	\$ 56,176	\$ 57,861	\$ 59,597	\$ 954,908	
Water / Sewer	3.0%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total Energy Cost Avoidance</b>		<b>\$ -</b>	<b>\$ 101,696</b>	<b>\$ 103,730</b>	<b>\$ 104,525</b>	<b>\$ 106,615</b>	<b>\$ 108,748</b>	<b>\$ 111,588</b>	<b>\$ 114,506</b>	<b>\$ 117,502</b>	<b>\$ 120,580</b>	<b>\$ 123,741</b>	<b>\$ 126,987</b>	<b>\$ 130,322</b>	<b>\$ 133,747</b>	<b>\$ 137,266</b>	<b>\$ 140,879</b>	<b>\$ 145,106</b>	<b>\$ 149,459</b>	<b>\$ 153,943</b>	<b>\$ 158,561</b>	<b>\$ 163,318</b>	<b>\$ 2,552,820</b>
<b>Operational Cost Avoidance - Stipulated Cost Avoidance</b>																							
Lighting Product Extended Warranty	3.0%	\$ 12,092	\$ 12,455	\$ 12,828	\$ 13,213	\$ 13,610	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 64,198
PPL Rebate (Lighting Retrofit Only)		\$ 65,538	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 65,538
PPL Rebate (Chiller Replacement Only)		\$ 5,971	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 5,971
Reduction In HS DHW Maintenance	3.0%	\$ 7,000	\$ 7,210	\$ 7,426	\$ 7,649	\$ 7,879	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 37,164
Reduction In MS Chiller Maintenance		\$ 12,000	\$ 12,360	\$ 12,731	\$ 13,113	\$ 13,506	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 63,710
<b>Total Operational Cost Avoidance</b>		<b>\$ -</b>	<b>\$ 102,601</b>	<b>\$ 32,025</b>	<b>\$ 32,986</b>	<b>\$ 33,975</b>	<b>\$ 34,994</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 236,581</b>
<b>Total Energy &amp; Operational Cost Avoidance</b>		<b>\$ -</b>	<b>\$ 204,297</b>	<b>\$ 135,755</b>	<b>\$ 137,510</b>	<b>\$ 140,591</b>	<b>\$ 143,742</b>	<b>\$ 111,588</b>	<b>\$ 114,506</b>	<b>\$ 117,502</b>	<b>\$ 120,580</b>	<b>\$ 123,741</b>	<b>\$ 126,987</b>	<b>\$ 130,322</b>	<b>\$ 133,747</b>	<b>\$ 137,266</b>	<b>\$ 140,879</b>	<b>\$ 145,106</b>	<b>\$ 149,459</b>	<b>\$ 153,943</b>	<b>\$ 158,561</b>	<b>\$ 163,318</b>	<b>\$ 2,789,401</b>
<b>Annual Payment*</b>			\$ 1,844,157	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 1,844,157
<b>Annual Measurement &amp; Verification</b>	3.0%	\$ 4,800	\$ 4,944	\$ 5,092	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 14,836
<b>Total Expenses</b>		<b>\$ 1,848,957</b>	<b>\$ 4,944</b>	<b>\$ 5,092</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,858,993</b>
<b>Net Cumulative Cash Flow</b>		<b>\$ -</b>	<b>\$ (1,644,660)</b>	<b>\$ 130,811</b>	<b>\$ 132,418</b>	<b>\$ 140,591</b>	<b>\$ 143,742</b>	<b>\$ 111,588</b>	<b>\$ 114,506</b>	<b>\$ 117,502</b>	<b>\$ 120,580</b>	<b>\$ 123,741</b>	<b>\$ 126,987</b>	<b>\$ 130,322</b>	<b>\$ 133,747</b>	<b>\$ 137,266</b>	<b>\$ 140,879</b>	<b>\$ 145,106</b>	<b>\$ 149,459</b>	<b>\$ 153,943</b>	<b>\$ 158,561</b>	<b>\$ 163,318</b>	<b>\$ 930,408</b>

## ATTACHMENT C – SUPPORT SERVICES AGREEMENT

### Scope of Coverage

Service to be provided at the following locations:

All locations listed in Attachment A, Scope of Work.

Annual reconciliation of the Energy portion of the Performance Guarantee.

### Measurement & Verification Service Coverage Includes:

- Annual Measurement and Verification of Energy Savings for the first three years of the Contract or until it is declared by OWNER that the Energy Savings have been realized. Upon declaration by OWNER of Achievement of Savings, the Measurement and Verification Annual Support Services Agreement may be terminated by the OWNER.
- Measurement and Verification Protocols are detailed in Attachment H of this Performance Contract Agreement.

Annual Costs:      Year One - \$4,800  
                                 Year Two - \$4,944  
                                 Year Three - \$5,092

## **ATTACHMENT D – CONSTRUCTION PROGRESS PAYMENT SCHEDULE**

The Construction Progress Payment Schedule will include the following disbursement amounts:

OWNER will make an initial payment to CONTRACTOR of ten percent (10%) of the project installed cost for project mobilization within thirty days of the signing of this agreement.

OWNER Payments to CONTRACTOR will be made via monthly progress payments up to the total contract amount with 10% retainage deducted up to 50% of the contract completion. Beyond 50% project completion, 5% retainage will be maintained until completion of the final punch list and acceptance by the OWNER.

Invoices will be submitted in a timely manner to insure that the OWNER, or the OWNER'S representative, can verify work completion prior to monthly payment. OWNER and CONTRACTOR will agree to a Schedule of Values for Project Scope of Work prior to commencement of installation.



## ATTACHMENT F-ENERGY ACCOUNTING BASELINE

In order to establish a measured baseline of energy consumption / usage by the OWNER, CONTRACTOR has used the energy bills provided by the OWNER in the Request for Proposal document. These bills have been compiled and totaled for energy usage amounts in both units of energy and dollars. The measurement and verification process will compare usage during the guarantee period against this base year data. Adjustments for weather and changes in building utilization will be accounted for utilizing the measurement and verification protocols detailed in Attachment H.

Baseline energy usage / consumption data was provided from April 2012 through March 2013. All energy units consumed during this period, whether provided in the OWNER RFP Document or not, are included in the baseline year total energy unit consumption.

The OWNER will also provide utility information to CONTRACTOR for the time period April 2013 up to the time of contract execution. This is to insure that the usage detailed in the OWNER Request for Proposal Document is free of any billing / usage anomalies





## ATTACHMENT H – Measurement & Verification Methodology

Guarantee Savings will be determined in accordance with the methodology(s), operating parameters, formulas, and constants as described below and/or additional methodologies defined by CONTRACTOR that may be negotiated with OWNER 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 Base Year energy usage for the Facilities through the use of energy accounting software. The difference between the adjusted Base Year Energy usage and the Guarantee Year energy usage will be multiplied by the applicable energy rate 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 CONTRACTOR involvement. A Baseline Period will be specified (Attachment F) for the purpose of utility bill analysis.

**Stipulated Operational Cost Avoidance.** The agreed-upon Operational Cost avoidance as described in Attachment B (Cash Flow) 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 or on the commencement date for Support Services (Attachment C), whichever comes first. These savings are representative of information provided by the OWNER consisting of either whole or partially budgeted operational costs and as such, it is hereby understood and agreed that the OWNER is wholly responsible for assuring that these budgeted operational costs are accurate and achievable.

**Base Year Adjustments.** Base Year shall be adjusted to reflect: changes in occupied square footage; changes in energy-consuming equipment; changes in the Facilities; changes in Energy and Operational Savings Guarantee Practices adversely affecting energy consumption and/or demonstrated operational changes; changes in weather between the Base Year and the Guarantee Year; and documented or otherwise conclusively established metering errors for the Base year and/or any Guarantee Year adversely affecting energy usage measurement.

## CM3 Performance Contract Agreement / Performance Guarantee Program

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**Facility Operational Changes.** Except in the case of emergencies, OWNER agrees it will not, without the consent of an Authorized Representative of CONTRACTOR: make any significant deviations from the applicable Energy and Operational Savings 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 Savings 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 Savings Guarantee Practices.

**Hours and Practices.** To achieve these energy savings, CONTRACTOR and OWNER agree upon the operating practices listed in Section 14.

**Activities and Events Adversely Impacting Savings.** OWNER shall promptly notify CONTRACTOR of any activities known to OWNER which adversely impact CONTRACTOR'S ability to realize the Guaranteed Savings and CONTRACTOR 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 CONTRACTOR'S reasonable control.

**REQUEST FOR PROPOSALS**  
**for**  
**ENERGY-EFFICIENCY RELATED FACILITIES IMPROVEMENTS**  
**PER THE TERMS OF ACT 39 OF 2010**  
**THE PENNSYLVANIA GUARANTEED ENERGY SAVINGS ACT**  
**for the**  
**SOUTHERN LEHIGH SCHOOL DISTRICT**

**CENTER VALLEY, PA**

**APRIL 22, 2013**

**Request for Proposals for  
Energy Efficiency Related Facilities Improvements  
Per the Terms of Act 39 of 2010  
The Pennsylvania Guaranteed Energy Savings Act  
for the  
Southern Lehigh School District  
Center Valley, PA  
April 22, 2013**

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**Exhibits**

Will be supplied at  
Mandatory Pre-Proposal Meeting

- A. Buildings List and Floor Plans
- B. Non-Collusion Affidavit
- C. PDE Specification Requirements and Personnel Clearances Requirements
- D. Utilities Data (Calendar Year 2012)
- E. Technical Details & Specifications with ECM Considerations
- F. Building Operational Parameters
- G. M&V Procedures
- H. Schedule of Key Activities

## **NOTICE TO PROSPECTIVE ESCOs**

### **REQUEST FOR PROPOSALS**

for a

### **ENERGY/OPERATING COST REDUCTION PROGRAM**

per the terms of the

### **PENNSYLVANIA GUARANTEED ENERGY SAVINGS ACT ACT 39 OF 2010**

The Southern Lehigh School District (SLSD) is issuing this Request for Proposals (RFP) through Provident Energy Consulting (PEC) for the selection of an Energy Services Contracting Organization (ESCO). Proposals are invited in accordance with this RFP. **Proposals must be received no later than July 10, 2013 at 12:00 noon.**

**A pre-proposal meeting will be held on May 1, 2013 at 10:00 AM at the:**

**Southern Lehigh School District, 5775 Main Street Center Valley, PA 18034.**

**Absence of ESCO participation in the pre-proposal meeting will be deemed as non-participation in this RFP process and result in disqualification from the process.**

SLSD reserves the right to amend the RFP based on questions and issues raised prior to and at the pre-proposal meeting and based on issues timely raised after the pre-proposal meeting. ESCOs represented at the pre-proposal meeting will receive any such amendments in writing.

SLSD has engaged PEC as its consultant to manage this RFP process and any subsequent Performance Contract (PC). All questions concerning this process and the PC should be directed to:

Joseph S. Solomon  
Provident Energy Consulting (PEC)  
55 State Road – 1<sup>st</sup> floor  
Media, PA 19063  
610-565-0633 (off)  
610-565-7853 (fax)  
[pec@providentenergy.net](mailto:pec@providentenergy.net)

# PROPOSAL INSTRUCTIONS

## 1.0 INTRODUCTION

- 1.1 Southern Lehigh School District (SLSD) is inviting proposals from Energy Service Contracting Organizations (ESCOs) offering services and qualifications in the following areas:
  - 1.1.1 Energy conservation and facilities operating cost reduction
  - 1.1.2 Facility modernization and technology utilization improvements
  - 1.1.3 Occupancy comfort improvements
  - 1.1.4 Project financing assistance and financial risk reduction
- 1.2 The intent of this RFP is to solicit price and technical qualification proposals from ESCOs that propose an energy efficiency program per the terms of Act 39 of 2010. The energy efficiency program should include a performance-based contract for the financing, installation, and maintenance of energy cost-reduction equipment, energy conservation measures facilities (ECMs), and other improvements at the facilities operated by SLSD. Building floor plans and additional building information are included in **Exhibit A**.
- 1.3 SLSD's intention is to review the submittals for these buildings and use them as a determinant in awarding a Guaranteed Energy Savings contract to an ESCO to develop a comprehensive energy savings program that encompasses the most appropriate SLSD facilities based on project economics and economies of scale. SLSD is requesting proposals include a facilities energy use audit with creative and alternative solutions for facility improvements, lighting revisions, operational improvements, and alternatives for fuel supply, as appropriate.
- 1.4 SLSD reserves the right to modify the terms of this RFP and the areas of the buildings to be considered during the RFP process. All such changes will be made by written addendum issued to all registered ESCOs after the pre-proposal meeting. Additional information will be presented at the pre-proposal meeting. The availability of facility plans and/or specifications will also be reviewed at the pre-proposal meeting.
- 1.5 Under this solicitation, it is expected that only one (1) ESCO will be selected to perform all of the work for SLSD. The ESCO or ESCOs selected for final negotiations will be required to demonstrate how they will implement and achieve the project goals. Hence, proposals should clearly describe the proposed services, ESCO contract structure, sub-contractors, as well as how these fit in the energy performance contract proposal structure and with the guaranteed savings agreement.

- 1.6 Proposals must include financing provided directly by the ESCO or through a third party. If financing is proposed through a third party, the proposal should clearly explain how it is connected to other elements of the energy performance contract. While the project cost to SLSD is an important factor, it shall not be the sole determining factor for selection. SLSD may choose to finance the program and any/all improvements by utilizing the ESCO financing proposal and/or by utilizing its own financing.
- 1.7 SLSD will not reimburse any ESCO for any costs associated with developing a proposal.

## 2.0 RFP PROCEDURES

- 2.1 **A pre-proposal meeting will be held in the Conference Room of the SLSD Administration Building at 10:00 a.m., May 1, 2013.** Absence of ESCO participation in the pre-proposal meeting will be considered as non-participation. SLSD is located 5775 Main Street Center Valley, PA 18034.
- 2.2 **Point of Contact:** Any questions regarding this RFP process or SLSD information shall be submitted in writing by email, fax or mail to:  
  
**Joseph S. Solomon, Provident Energy Consulting,**  
55 State Road – 1st Floor. Media, PA 19063  
610.565.0633 (off), 610.565.7853 (fax), pec@providentenergy.net
- 2.3 Proposals must be received by **July 10, 2013 at 12:00 noon.** Late Proposals will be returned unopened. **An original and one (1) copy of the Proposal are required,** to be delivered in a sealed envelope as indicated below:  
  
**“PROPOSAL: SLSD Performance Contract”.**  
**Todd Bergey, Director of Supportive Services**  
**5775 Main Street Center Valley, PA 18034**  
  
In addition, please deliver two (2) copies to:  
  
**Provident Energy Consulting, LLC**  
**55 State Rd – 1<sup>st</sup> Floor Media, PA 19063**
- 2.4 **Bid Security:** The ESCO must include with their Proposal a security bid bond or other acceptable form equal to 10% of the proposed initial investment (installation cost) as calculated at the time the Proposals are received. This security bond shall secure SLSD from loss or damage by reason of withdrawal. (AIA form or equivalent.)
- 2.5 Any Proposal may be withdrawn or modified by written request of the ESCO, provided such request is received by SLSD at the above address prior to the date and time set for receipt of proposals.



- 2.6 The Pennsylvania Right to Know Law provides for public access to documents considered “public records” under the law. The Right to Know Law and court cases and decisions there under provide that any proposal submitted will become a “public record,” subject to public review, once a contract is awarded.
- 2.7 Right to Reject Proposals: This RFP does not commit SLSD to award a contract, pay any cost incurred in the preparation of a proposal in response to this RFP or to procure or contract for any services. SLSD intends to award a contract on the basis of the best interest and advantage to SLSD in the sole judgment of the Board of School Directors and the SLSD Administration, and reserves the right to: accept or reject any or all Proposals received as a result of this request (in entirety or partial); negotiate with any/all qualified ESCOs; or cancel this RFP in part or in its entirety, if it is in the best interest of SLSD to do so. SLSD also reserves the right to reject, as non-responsive, any Proposals that do not contain the information requested. In addition, SLSD reserves the right to reject, as non-responsive, any Proposals that are not organized and formatted as described in this RFP.
- 2.8 Cost of Proposal Preparation: The cost of Proposal development, including site visits and preliminary engineering analyses, will not be reimbursed by SLSD.
- 2.9 Non-Collusion Affidavit: All proposers are required to submit a completed Non-Collusion Affidavit, PA Anti-bid Rigging Act, 10/20/03, with their proposal. A copy is provided in **Exhibit B**.
- 2.10 Specification Requirements: Incorporated by reference in **Exhibit C** are requirements of the Pennsylvania Department of Education (PDE), relating to the Child Abuse Clearances and Criminal Record Checks.
- 2.11 Pre-proposal Inspections: All contracts are awarded with the understanding that the ESCO and all sub-contractors have acquainted themselves with all the requirements of the contracts, Act 39 of 2010, the provisions of this RFP, the conditions of SLSD’s sites, and have obtained all information necessary for the completion of this project. The ESCO shall not at any time after the submission of his bid, make any claim whatsoever based on insufficient data or a misunderstanding of the requirements, nature, conditions, or extent of the work under the contract. Prior to any ESCO, sub-contractor, or supplier visiting the site for the purposes of acquainting himself with the conditions, the contractor shall contact SLSD’s designated agent for notification and approval of their scheduled visit. The premises shall be left in the same condition as before the contractor’s visit.
- 2.12 Pre-proposal inspection site visits are permitted during normal school days **with prior scheduling and permission**. All parties involved with visits to SLSD buildings and all such activities must not disturb the students, staff, or the educational process. ESCOs must follow SLSD security regulations: sign in at the main office and obtain and wear a visitor ID badge at all times while

in a building. **Site visits are to be scheduled through Mr. Bergey.**

- 2.13 Notice to all ESCOs: During the Proposal period, ESCOs may be furnished bulletins for additions, corrections, or modifications to this RFP. These "Addenda" are to be included in the Proposal and are to be part of the contract. Failure of the ESCO to acknowledge any/all notices on his Proposal may be sufficient cause for rejection of the Proposal.

### 3.0 **CONDITIONS OF CONTRACT**

- 3.1 Terms of Contract: The term of the contract will **cover up to a 20 year period, with cash flows of both 15 and 20 years** for SLSD review and consideration. It will be a fixed price contract.

- 3.2 Assignment/Sub-Contractors: It is mutually understood and agreed that the successful ESCO shall not assign, transfer, convey, sublet, or otherwise dispose of the purchase order, contract, or his right, title, or interest therein, or his power to execute such purchase order to contract to any other person, company, or corporation without the previous written consent of SLSD. SLSD may withhold its consent to any assignment for any reason or no reason at all. ESCO proposals should include complete information on all sub-contractors to be used on this project. SLSD must approve any changes in sub-contractors before/after contract award.

- 3.3 Performance Interference: ESCO should notify SLSD immediately of any occurrence or conditions that interfere with the full performance of the contract, and confirm it in writing within twenty-four (24) hours.

- 3.4 Safety Standards: All items supplied on this contract shall comply with the current applicable Occupational Safety and Health Standards of the State of Pennsylvania Industrial Commission, the National Electrical Code, the National Fire Protection Association Standards and the Administrative Code, the Pennsylvania Uniform Construction Code, and any applicable Local, State, or Federal codes, regulations or ordinances.

- 3.5 Indemnity and Hold Harmless: ESCO and sub-contractors agrees to indemnify, defend, and hold harmless SLSD against:

3.5.1 Any and all losses and liabilities for personal injury, death, or property damage arising out of, or as a consequence of, any work performed under the contract;

3.5.2 Any and all expenses related to claims or lawsuits resulting from the above, including costs and attorney(s) fees; and

3.5.3 Any and all penalties and damages incurred by reason of contractor's failure to obtain any permit or license under, or comply with any applicable laws, ordinances, or regulations.

- 3.6 Insurance: (Note that the following insurance limits are generic and that final limits of insurance liability will be negotiated with the selected ESCO, and are dependent on the final scope of the P.C.) The successful bidder shall submit evidence satisfactory to SLSD, within ten (10) days after notification of award, that it has project specific insurance coverage with Worker's Compensation Insurance, Special Liability and Property Damage Insurance, and Automobile and Truck Insurance in the limits described below, with the insurance carriers licensed and authorized to do business in the Commonwealth of Pennsylvania (as approved by SLSD).

**SLSD shall be named as an additional insured on all policies.** Such insurance limits shall remain in full force and effect during the term of the contract (the installation portion), and no change in the coverage shall take place without prior approval of SLSD. The certificates of such insurance shall carry an endorsement that the Insurance Company will defend SLSD and PEC as a party in the event SLSD and/or PEC becomes party to any litigation as a result of any activities of the contractor, sub-contractors, or any direct or indirect employee of same under the terms of this contract for injuries to property or person. It must include the name and address of the insurance company the policy number, and liability coverage amounts. ESCO must provide certification of insurance company compliance within ten (10) days after notification of award.

Submit certification to:

**Todd Bergey, Director of Supportive Services  
Southern Lehigh School District  
5775 Main Street Center Valley, PA 18034**

**A copy of the certification is also to be submitted in the RFP response.**

The Certificate of Insurance Requirements are presented in the following table.

**SOUTHERN LEHIGH SCHOOL DISTRICT**

**CERTIFICATE OF INSURANCE REQUIREMENTS**

<b>COMMERCIAL GENERAL LIABILITY</b>	\$1,000,000	- Each Occurrence
	\$3,000,000	- General Aggregate
	\$3,000,000	- Products - COMP/OPAGG
	\$1,000,000	- Personal/Adver. Injury
	\$ 10,000	- Medical Exp (any one person)
	\$ 100,000	- Damage to Rented Premises (Each Occurrence)
<b>AUTOMOBILE LIABILITY (any auto)</b>		
\$1,000,000	- Combined Single Limit (Each Accident)	
<b>WORKER'S COMPENSATION</b>		
<u>Statutory PA Limits</u>		
\$100,000	- E.L. Each Accident	
\$100,000	- E.L.Disease – Each Empl.	
\$500,000	- E.L. Disease-Policy Limit	
<b>EMPLOYER'S LIABILITY</b>		
\$100,000	- Each Accident	
\$500,000	- Disease Policy Limit	
\$100,000	- Disease Each Employee	
<b>PROFESSIONAL LIABILITY</b>		
\$1,000,000	- Aggregate	
<b>ERRORS AND OMISSIONS</b>		
\$1,000,000	- Aggregate	
<b>EXCESS/UMBRELLA LIABILITY</b>		
\$1,000,000	- Each Occurrence	
\$1,000,000	- Aggregate	

- Currently dated Certificate
- Named Insured is the name of the organization.
- Policy Period for all insurance policies encompasses the dates of use by the third party
- Limits of insurance required as specified
- Southern Lehigh School District must be named as Additional Insured
- 30 days advance notice must be specified in the cancellation notification clause.
- Original certificates must be produced when faxed copies are used to expedite verification/review process
- Insurance companies providing coverage must be rated A- or better in the current AM Best's Rating Guide

**Additional Requirements for Third Parties Working With and/or Transporting Students**

- General Liability insurance policies must specify coverage for abuse/molestation and corporal punishment
- Professional Liability for medical professionals (schools)
- Errors and Omissions (schools)

- 3.7 Licenses and Permits: ESCO shall maintain in current status all federal, state, and local licenses and permits required for the operation of the businesses conducted by the ESCO, including but not limited to those specific to this project. ESCO shall be responsible for obtaining any and all permits required to perform this installation. The installation shall be in complete compliance with all federal, state, and local building codes, electrical codes, plumbing codes, fire codes, and state fire marshal codes. The ESCO shall be responsible for the costs of all permits.
- 3.8 Performance and Payment Bonds: The successful proposer will be required to submit a statutory Payment Bond and Performance Bond within ten (10) days of notification of award of contract equal to 100% of the installation portion of the contract in year 1 (and subsequent years, if the installation is not completed in year 1). The annual energy savings guarantee will be enforced in years 2 through 15 or 20, or the end of the Agreement. A bond is not required during this guarantee period.
- 3.9 Site Inspections: ESCOs shall visit the sites and familiarize themselves with all conditions that may affect performance and prices. Submission of a proposal will constitute an agreement by the ESCO that the ESCO did, in fact, review the Request for Proposal in detail and is aware of all conditions affecting performance and prices.
- 3.10 Asbestos and Hazardous Materials: Any asbestos and/or hazardous materials encountered that would be affected by any proposed retrofits must immediately be brought to the attention of:  
**Todd Bergey, Director of Supportive Services**
- Notification must be confirmed in writing within twenty-four (24) hours. The ESCO selected will not be responsible for the removal of any encountered asbestos.
- 3.11 Telephone, Telegraph and Facsimile Proposals: Telephone, telegraph and/or facsimile proposals will not be accepted. Only written RFP information is valid, i.e., verbal or telephonic information is not valid.
- 3.12 Evaluation: Proposal evaluation will be made by the SLSD team. SLSD may award the proposal that it deems in the best interest of SLSD in its sole judgment. SLSD reserves the right to make an “all or nothing” award.
- 3.13 Prevailing Wages: The successful contractor will pay no less than the wage rates as determined by the Pennsylvania Secretary of Labor and Industry and shall comply with the conditions of the Pennsylvania Prevailing Wage Act, as amended, and the regulations issued pursuant thereto, to assure the full and proper payment of said rates. Payroll certifications will be required with all invoices including labor. The gathering of and adherence to prevailing wage information is the responsibility of the participating ESCO.

- 3.14 Discrimination Prohibited: The successful ESCO agrees to comply with the provisions of the Pennsylvania Human Relations Act, as amended, which prohibits discrimination because of race, color, religious creed, ancestry, age, sex, national origin, handicap or disability.
- 3.14.1 In addition, the successful bidder agrees that:
- 3.14.1.1 In the hiring of employees for the performance of the work under the contract, or any sub-contract hereunder, the contractor or sub-contractor shall not, by any reason of race, color, religious creed, ancestry, age, sex, national origin, handicap, or disability, discriminate against any citizen of the United States of America who is qualified and available to perform the work to which the employment related;
  - 3.14.1.2 Neither the contractor or sub-contractor, nor any person on his behalf, shall in any manner discriminate against or intimidate any employee hired for the performance of work under this contract on account of race, creed, or color;
  - 3.14.1.3 There may be deducted from the amount payable to the contractor under the contract, a penalty of One Hundred (\$100.00) Dollars for each person for each calendar day during which such person was discriminated against or intimidated, in violation of the provisions of the contract; and
  - 3.14.1.4 The contract may be cancelled or terminated by SLSD and all money due or owing may be forfeited, for a second or any subsequent violation of the terms or conditions of this portion of the contract.
- 3.15 Disputes and Claims: All disputes, claims, and other matters pertaining to this RFP or resulting contract are subject to provisions of Pennsylvania Law. By submitting a Proposal, the ESCO agrees that Pennsylvania Law shall apply to any disputes, and that jurisdiction over any and all legal actions relating to this Request for Proposal and, for any successful ESCO which is awarded a contract, the contract shall be in the Commonwealth of Pennsylvania and that venue shall be in Lehigh County, PA.
- 3.16 Proposal materials: Proposals and other materials submitted shall become the property of SLSD. SLSD shall bear no cost for the Proposal presentations by the vendor.
- 3.17 Standard of Quality: Any various materials and products specified by name or description are given to establish a standard of quality and cost for Proposal purposes. It is not the intent to limit the ESCO, the Proposals, or the evaluation of the Proposals to any one material or product specified, but

rather to describe a minimum standard that is acceptable. Where the proprietary names are used, they shall assume to be followed by the words “or alternatives of quality to meet specification.” A Proposal containing an alternative that does not meet specifications may be declared non-responsive. A Proposal containing an alternative may be accepted, but if an award is made to that ESCO, the ESCO will be required to replace any alternative which does not meet the specification.

- 3.18 **Personnel Clearances:** The ESCO must provide proof of the Pennsylvania State Police “Request for Criminal Record Check”, Pennsylvania Child Abuse History clearances, and the FBI fingerprint requirement to SLSD for each workman or employee who will perform services under this contract. This requirement shall also apply to all subcontractors and employees performing services under this contract. This information shall be completed and submitted to SLSD prior to commencement of work under this contract. Additional information on these clearances is provided in **Exhibit C** after the PDE Specification Requirements.

#### 4.0 **SLSD CONTRACT INFORMATION**

- 4.1 SLSD anticipates major reductions in future utility costs through the implementation of this energy conservation and asset modernization program. The ESCO selected as a result of this RFP will be expected to provide any/all of the following services:

4.1.1 Provide energy services for facilities, including but not limited to:

4.1.1.1 The performance of an investment grade energy audit;

4.1.1.2 The design and specification of equipment and systems to be used in providing energy/operational efficiency improvements;

4.1.1.3 Calculation and written verification of all utility cost reduction goals, including preparation of a baseline model for energy conservation based on the existing facility equipment or systems and historical utility data as included in **Exhibit D**;

4.1.1.4 Services associated with the procurement/installation of new equipment;

4.1.1.5 Commissioning of the equipment;

4.1.1.6 Ongoing measurement and verification of energy savings consistent with IPMVP and other accepted means;

4.1.1.7 Training programs on installed systems for in-house staff (ESCOs must detail training allowances in their proposal);

- 4.1.1.8 Warranty service on equipment installed, including, if required, in-warranty preventive maintenance;
- 4.1.1.9 Services in connection with arrangement of equipment financing;
- 4.1.1.10 Performance guarantees on all proposed energy and operational savings.
- 4.1.2 Identify the most effective measures that can be implemented to reduce consumption and costs for heating, cooling, ventilation, lighting, water use, water heating, and other energy used in each facility. ECMs suggested for consideration by SLSD are included in **Exhibit E**. In addition, building operational parameters can be found in **Exhibit F**. However, ESCOs should identify their own most effective measures by addressing:
  - 4.1.2.1 Energy equipment or other resources yielding conservation or cost reduction potential for electricity, gas, oil, steam, and water;
  - 4.1.2.2 Measures to control, modify, add, or replace existing equipment and systems, and
  - 4.1.2.3 Provide and assessment of costs and energy impacts from a potential solar photovoltaic or thermal program.
- 4.1.3 Provide preventative, ongoing, and emergency HVAC, heating and cooling maintenance for SLSD.
- 4.1.4 Identify their experience and qualifications to manage an energy efficiency project by providing at least five (5) references and supply project summary information on each.
- 4.1.5 Provide financing and/or quote a lease rate for financing the energy conservation measures, recognizing that SLSD reserves the right to provide their own third party financing during final negotiations.
- 4.2 In addition to the above, the following conditions must be met:
  - 4.2.1 One hundred percent (100%) of all energy and operational cost savings shall be retained by SLSD.
  - 4.2.2 Savings calculations shall be based on current applicable prices for SLSD with inflation cost increases as given in this RFP.
  - 4.2.3 ESCO shall guarantee that the total program costs shall be one hundred percent (100%) covered by the SLSD approved energy, capital, and operational cost savings. This guarantee shall apply to



each year during which the contract for guaranteed energy savings is in effect. If not, the ESCO shall pay SLSD the difference each year. Note: SLSD may utilize additional capital, and/or may, at its sole discretion, opt to supplement the program or secure its own financing.

- 4.2.4 Reconciliation of guaranteed sums shall be on an annual basis and include full descriptions of cost reduction achievements commencing one (1) year from the date of completion of total program and equipment installation and continuing for the duration of the guarantee period or until cancelled by SLSD at their option. Measurement and verification procedures shall be consistent with accepted standards with the **International Performance Measurement & Verification Protocol (IPMVP)** as the accepted standard. Note that PEC prefers to use IPMVP Option C, full building pre/post metering for M&V whenever possible. Additional information regarding procedures to be used as part of the M&V activity are noted in **Exhibit G**.
- 4.2.5 The savings guarantee shall be a first-party direct guarantee from the ESCO to SLSD. A third party guarantee, such as from a non-contractor insurance company, will not be accepted.
- 4.2.6 The ESCO shall demonstrate a staff capability that can fully maintain all proposed equipment with emergency service within an eight (8) hour response time.
- 4.2.7 SLSD shall own all installed equipment. Equipment shall be free and clear of all liens and encumbrances upon transfer of ownership to SLSD. In addition, SLSD may retain salvage rights to all equipment and material removed pursuant to an awarded contract.
- 4.2.8 All installations and system modifications designs shall be under the direction of appropriately licensed design professionals. **SLSD will require all design documents to be signed and sealed by a PA licensed architect (RA) or engineer (PE) as appropriate.**
- 4.3 The ESCO must work in conjunction with SLSD personnel in coordinating all functions of the project, including the completion of all paperwork necessary for obtaining permits and providing assistance in obtaining state building aid and any other available forms of energy aid.
- 4.4 The ESCO should be aware that SLSD may currently have a service contract for control system or HVAC system maintenance. **Exhibit H** notes any SLSD service contract information currently in place and is presented simply for review.
- 4.5 **The ESCO must work in conjunction with PEC, with whom SLSD has an Agreement to develop and manage this proposed Performance Contract process. The ESCO must include a project advisory and coordination fee as part of its cost proposal that anticipates the involvement**

of PEC as the project manager for any SLSD awarded energy project. The fee for such services is **three percent (3.0%)** of the project installed cost, payable to Provident Energy Consulting as part of the submitted milestone payment schedule.

## 5.0 TECHNICAL PROPOSAL INFORMATION

- 5.1 Technical Issues: The technical issues to be addressed by the proposal are to be determined and detailed by the ESCO in their proposals. However, PEC in conjunction with SLSD representatives has initially reviewed potential energy conservation measures (ECMs) which may be suitable in the various buildings. ESCOs technical proposals should consider those ECMs and include them as appropriate and should also include, but should not be limited to, the following general measures:
- 5.1.1 Provide a more comfortable environment for building occupants. This may include repair or modernization of existing heating, ventilation, air conditioning, insulation, or lighting systems. The specific nature of repair or modernization will be left up to the ESCO.
  - 5.1.2 Extend and integrate the existing energy management and monitoring systems with aim of providing a functionally unified, web-based, district-wide system (DDC to the extent feasible).
  - 5.1.3 Direct all efforts toward standardization of equipment, practices, and procedures throughout SLSD facilities with respect to all suggestions for ECMs made by ESCOs.
  - 5.1.4 Provide maintenance services, as required, for any equipment included as part of this Proposal. Maintenance services may also include other areas that are currently performed by or for SLSD. Maintenance services may be provided by the ESCO through the current vendors, or as equal services by the ESCO.
  - 5.1.5 Provide necessary training programs, which will enhance the overall efficiency of SLSD operations.
  - 5.1.6 Demonstrate that the ESCO has successfully implemented similar programs of at least 50% of the proposed project cost for a minimum of five (5) other similar clients.
  - 5.1.7 Ensure that all applicable laws and standards are adhered to.
  - 5.1.8 Address specifically the HVAC system, controls, lighting, deferred maintenance items, and improvements to life safety as applicable.
  - 5.1.9 Ensure that lighting foot-candle levels at least meet the minimum IES requirements for applicable facilities)

- 5.1.10 Describe any elimination of lighting, dual switching and/or the methods of controlling multiple lamps with single ballasts in the technical section of the Proposal.
- 5.1.11 Removal of any PCB containing ballasts will be the responsibility of the ESCO and properly disposed of by incineration.
- 5.1.12 Proposals must include a clear indication of how base line energy costs and projected energy savings will be adjusted due to changes in utility purchasing costs (for example due to consortium purchasing). Savings and guarantees should be stated in energy units (KWH, KW, mmBTU, Gals. etc.) as well as costs (\$). Ultimate guarantees will be based on the actual savings of engineering energy units, subsequently converted to dollars.
- 5.1.13 When savings are taken for change from electric devices to gas devices or other alternative fuel, clear calculations must be included showing the net energy costs saved, as appropriate.
- 5.1.14 Proposals should address the changes in heating and cooling loads due to substantial lighting power reductions, i.e. additional heating required, less cooling required, as appropriate.
- 5.1.15 If alternate switching patterns for lighting are proposed, these must be approved in advance by SLSD.

## 5.2 Proposal Inclusion:

- 5.2.1 An overview of the project scope of work should be provided, including general issues regarding the facilities, proposed ECMs, and projected savings and costs. This summary should be on a system-wide basis.
- 5.2.2 A description of the proposed ECMs, including their costs and savings, should be presented for each building being impacted. A summary table of ECM costs and savings by building should accompany this description: For each affected building:
  - 5.2.2.1 Describe the ECM by providing an understanding of what the ECM entails from an equipment and technical standpoint, why it will save energy, what forms of energy it will save, and how it should be operated;
  - 5.2.2.2 Provide detailed information about the energy savings and costs for each proposed ECM, specified in energy units (kWh, kW, mmBTU, gallons, etc.) and dollars. These values, by ECM and by building, should be included in the summary table.

- 5.2.2.3 Provide a discussion of the O&M impact of each ECM in such a way that the reviewer of the Proposal can comfortably conclude that these savings are well founded. Reduction in staff labor time should not be included in proposed O&M cost reductions, as SLSD staffing reductions are not anticipated.
- 5.2.2.4 Provide any other information that may be helpful in demonstrating why an ECM or packaged bundle is being proposed, including any intangibles, such as asbestos concerns or other environmental considerations that may be viewed favorably by SLSD.
- 5.2.3 Provide an overall Excel spreadsheet format cash flow table showing all district-wide costs and savings from year 1 to year 15 or end of proposed contract period. Cost escalator percentages should be clearly indicated.
- 5.3 Financial Proposal: The financial issues to be addressed by the Proposal must include, but should not be limited to, the following:
  - 5.3.1 Ensure that SLSD does not incur initial start-up costs. The ESCO will provide a financial package which will allow payments over a specified term. This will allow SLSD to pay for the program within current budget allocations. SLSD will make no payments until installation is complete and an acceptance certificate is signed. Financial terms must be in compliance with Act 39.
  - 5.3.2 Offer a savings guarantee as part of the ESCO's Proposal, which shall be in accordance with the Pennsylvania Guaranteed Energy Savings Act, Act 39 of 2010, as amended, 62 Pa.C.S. §3751, et al.
  - 5.3.3 Ensure that SLSD shall retain all energy and operational savings. Operational savings calculations and assumptions must be described in detail in the Proposal. Operational savings should normally not rely on avoided manpower costs, as it is unlikely SLSD will reduce staff as a result of ECM implementation. ESCOs should be conservative on any O&M costs included in their proposals.
  - 5.3.4 Typical operational costs may include but are not limited to:
    - 5.3.4.1 System replacement cost saving: The cost of system replacement financially represents the cost of capitalizing the mechanical system or other systems and is sometimes included in PCs at the SLSD's request. These savings are sometimes called "capital cost avoidance". **This cost saving method should not be used in the initial proposals for this project.** It may subsequently be considered by SLSD at their option.

- 5.3.4.2 Purchase services: Actual purchased outside services from ESCOs that will be eliminated or reduced through the implementation of a performance contract. Examples include control system and mechanical systems service contracts or other forms of extended maintenance or service contracts which presently exist in SLSD (as noted in **Exhibit H**).
- 5.3.4.3 Major equipment failure: Not to be confused with “system replacement,” this potential area of savings occurs when a system requires major repairs to equipment, such as failed compressors, etc. These costs occur annually and vary from year to year. This cost of operational savings can be achieved through equipment replacement and/or comprehensive repair service coverage by the ESCO. Any savings related to this area should be thoroughly documented to ensure that the projected savings are achievable. (This is similar to 5.3.4.1 and it is currently felt this cost saving measure will **not** be used.)
- 5.3.4.4 Parts, materials, and tools: Actual purchased parts, materials, and tools that will be eliminated or reduced through the implementation of a performance contract. Examples would include: filters, tools, lamps, ballasts, etc.
- 5.3.4.5 In-house staff: Savings for in-house staff are often assumed through the implementation of a performance contract. The savings typically result from the reduced need for spot lamp and ballast replacement (because of new and retrofitted fixtures under warranty), and other owner maintenance functions avoided from the implementation of contracted services. These savings may exist but are rarely used by PEC to justify a performance contract. Typically, when the need for building custodians and maintenance personnel are reduced, they will attend to other needs of SLSD. **SLSD will not consider these labor costs as savings.** PEC/SLSD does consider O&M savings due to the lighting ECMs, i.e. typical SLSD annual lamp and ballast replacement material costs, to be appropriate, and typically allows them for a 5 to 7 year period.
- 5.3.5 SLSD’s obligation to pay for the services provided must be structured on an energy performance-contracting basis. The ESCO must submit a proposed Energy Services Agreement and, if necessary, ancillary agreements that specifically meet the needs of SLSD.
- 5.3.6 The ESCO’s attention is directed to the Pennsylvania Guaranteed Energy Savings Act, Act 39 of 2010 of the Pennsylvania law governing energy performance contracting in connection with governmental units. All proposed energy performance contracts and financing

arrangements proposed must be capable of being implemented under State of Pennsylvania laws and regulations, including the condition that the term of any agreement be less than 15 years.

- 5.3.7 Reconciliation of guaranteed sums shall be on an annual basis, commencing one (1) year from the date of completion of total and complete program installation, using the **International Performance Measurement & Verification Protocol (IPMVP), with “Option C” preferred**. The ESCO’s guarantee shall be a first party direct guarantee from the ESCO to SLSD. A third party guarantee, such as from a non-contractor insurance company, shall not be accepted.
- 5.3.8 Monies due to SLSD may be in the form of credits applied to future payments, or as determined solely to be in the interest of SLSD.
- 5.3.9 SLSD may retain salvage rights to all equipment and material removed pursuant to this proposal. If not claimed as salvage by SLSD, all materials are to be properly disposed by the ESCO.
- 5.3.10 Upon review of Proposals received in response to this RFP, SLSD expects to select a single ESCO to provide the energy services.

## 6.0 PROPOSAL FORMAT AND CONTENTS

Proposals must be submitted in the format outline in this section. Each of the described parts and sections must be completed in full. Each proposal will be reviewed to determine if it is complete prior to the actual evaluation. SLSD reserves the right to eliminate from further consideration any proposal deemed to be substantially or materially non-responsive to the requests for information contained herein. Each of the parts and sections described below should begin on a separate page, and each page should clearly state the name of the ESCO.

- 6.1 Section 1: Official Statement of ESCO – The ESCO shall include a statement that the proposal is a firm offer for a minimum 90-day period from the proposal due date. The proposal shall also provide the following information: Name, Title, Address, and Telephone number of the individual(s) with authority to negotiate and contractually bind the ESCO and also who may be contacted during the period of proposal evaluation. The individual authorized to bind the ESCO must sign the statements.

- 6.1.1 Section 1A: Security Bond and Non-Collusion Affidavit

- 6.2 Section 2: Executive Summary

- 6.3 Section 3: ESCO Background and Qualifications

- 6.3.1 Section 3A: References

Provide a minimum of five (5) references for projects where the ESCO

has provided a performance contract of at least 50% of the cost of this project that included a minimum of financial guarantee, bundled energy retrofits, ongoing support services, and project financing. Provide a list of similar guaranteed performance contracting energy efficiency programs sold by the ESCO, to include:

6.3.1.1 Customer's name and location.

6.3.1.2 Total Project cost and savings.

6.3.1.3 Name, title, and telephone numbers of project references.

6.3.1.4 Brief description of the project's scope of services and status.

The right to call the references provided by the ESCO will be presumed by SLSD.

#### 6.4 Section 4: Technical

Proposals should contain the following information about the ESCO's technical approach to meeting SLSD comfort, energy efficiency, and operating costs reduction objectives:

6.4.1 List specific technical solutions or ECMs (FIMs) you propose to implement in the facility. Include specifications of each of the conservation measures in regards to the following: manufacturer, quantity, and location within the building.

6.4.2 Include specific ongoing support training and/or maintenance the ESCO proposes to implement as part of this program.

6.4.3 Include any additional information, as desired, about the ESCO's technical approach to the project. ESCOs should highlight their unique qualifications, technical expertise, and expansion capabilities.

#### 6.5 Section 5: Project Implementation

6.5.1 Section 5A: Implementation Plan – Provide a complete project implementation plan showing the achievement of major project milestones including, but not limited to:

6.5.1.1 Start of implementation.

6.5.1.2 Execution of energy performance contract.

6.5.1.3 Engineering.

6.5.1.4 Obtaining all required permits and government approvals.

- 6.5.1.5 Procurement of all major equipment.
- 6.5.1.6 Commencement and completion of construction.
- 6.5.1.7 Training of personnel.
- 6.5.2 Section 5B: Project Team – The Proposal must contain information about the ESCO’s project team and proposed assignment of responsibility for the major tasks involved in the total project. Describe the overall make-up of the project team and each member’s areas of responsibility with address, telephone numbers, and names of contact persons and of lead personnel. Include a chart depicting the management structure envisioned for the project. Resumes should be provided for each member of the project team, including all on-going support personnel, including measurement and verification. Include clear designation and company information for all sub-contractors.
- 6.6 Section 6: Financial Justification – Detailed financial information shall be required, as follows:
  - 6.6.1 Type and source of financing, should the SLSD consider ESCO financing.
  - 6.6.2 Interest rate (including any associated annual fees/costs.) **For purposes of this PC, use a 3.00% rate with lease payments not to exceed total savings in any year.** Note: SLSD reserves the option to finance this contract directly from available funds.
  - 6.6.3 Cash flow analysis. Note: Provide separate line items for electric, fossil fuel and each O&M savings (as appropriate). Provide a separate line item for annual M&V costs.
  - 6.6.4 Include separate submission of proposed individual ECMs/FIMs costs with corresponding energy and operational cost savings in electronic format as indicated in the Addendum.
  - 6.6.5 If proposing substantial lighting upgrades, submit the lighting line-by-line spreadsheets in electronic format.
  - 6.6.6 The term of the proposed agreement. Proposals should be structured with **both 15 and 20 year terms.**
  - 6.6.7 A guarantee of annual energy savings in energy units and dollars.
  - 6.6.8 Any other terms of information relevant to the financial aspects of the proposed transaction.



- 6.7 ESCO must agree to guarantee any proposed pricing and/or contract terms for a period of ninety (90) days from the proposal due date.
- 6.8 Appendix 1: ESCO Financial Information – Include the most recent annual reports, financial statements, or other financial information sufficient to permit SLSD to evaluate the financial strength of the ESCO. If the ESCO is a joint venture or other entity with no prior financial history, submit information with respect to constituent or parent entities, as appropriate.
- 6.9 Appendix 2: Sample Contract – ESCO shall provide a sample contract, including all appropriate attachments and exhibits.
- 6.10 Appendix 3: Sample Measurement and Verification Plan – ESCOs shall provide description of the method to be used to measure energy savings achieved in SLSD through the efforts of the ESCO (including any methods to be used to adjust for factors such as weather or changes in the use or structure of the buildings should be included in the Proposal). The following sections of the plan, at a minimum, shall be completed:
  - 6.10.1 The base line, which will be utilized for auditing purposes.
  - 6.10.2 Current operating schedules and conditions.
  - 6.10.3 Proposed weather adjustment practices, which will be utilized to calculate and/or verify annual cost savings that have been achieved by the implementation of Energy conservation Measures resulting from the implementation of this project.
  - 6.10.4 Reference to the types of M&V options to be applied per the IPMVP procedures/protocols.

## **EXHIBITS AND ATTACHMENTS**

# **EXHIBIT A**

## **Southern Lehigh School District Project Buildings and Floor Space Metrics**

## **EXHIBIT A**

### **Southern Lehigh School District Project Buildings and Floorspace Metrics**

#### **General Information**

Following is a list of the district facilities, as well as floor plans, and additional information.

#### **LIST OF FACILITIES:**

1. High School  
5800 Main Street  
Center Valley PA 18034
  
2. Middle School  
5775 Main Street  
Center Valley, PA 18034
  
3. Intermediate School  
5438 Route 378  
Bethlehem PA 18015
  
4. Liberty Bell Elementary  
960 West Oxford Street  
Coopersburg PA 18036

Southern Lehigh School District

Facility Information Metrics

Usage and Floorspace

Facility	Energy Usage Apr 2012 – Mar 2013			Energy Rates - FY 2013-14	
	Square Footage	Electricity kWh	Natural Gas DS DTH	Electricity (\$/kWh)	Natural Gas (\$/DTH)
HS	200,000	2,130,000	7,975	0.0852	10.66
MS	123,000	1,119,000	4,391	0.1012	12.22
IS	146,000	1,474,500	4,243	0.1036	11.55
Liberty Bell	59,265	619,600	2,296	0.1034	11.21

## **EXHIBIT B**

### **NON-COLLUSION AFFIDAVIT**

#### INSTRUCTIONS FOR NON-COLLUSION AFFIDAVIT

1. This Non-Collusion Affidavit is material to any contract awarded pursuant to this bid. According to the Pennsylvania Antibid-Rigging Act, 73 P.S. 1611 et seq., governmental agencies may require Non-Collusion Affidavits to be submitted together with bids.
2. This Non-Collusion Affidavit must be executed by the member, officer or employee of the bidder making the final decision on prices and the amount quoted in the bid.
3. Bid rigging and other efforts to restrain competition, and the mixing of false sworn statements in connection with the submission of bids are unlawful and may be subject to criminal prosecution. The person who signs the Affidavit should examine it carefully before signing and assure himself or herself that each statement is true and accurate, making diligent inquiry, as necessary, of all other persons employed by or associated with the bidder with responsibilities for the preparation, approval or submission of the bid.
4. In the case of a bid submitted by a joint venture, each party to the venture must be identified in the bid documents, and an Affidavit must be submitted separately on behalf of each party.
5. The term "complementary bid" as used in the Affidavit has the meaning commonly associated with that term in the bidding process, and includes the knowing submission of bids higher than the bid of another firm, any intentionally high or noncompetitive bid, and any other form of bid submitted for the purpose of giving a false appearance of competition.
6. Failure to file an Affidavit in compliance with these instructions will result in disqualification of the bid.

NON-COLLUSION AFFIDAVIT

Contract/Bid No. \_\_\_\_\_

State of \_\_\_\_\_: s.s. County of \_\_\_\_\_:

I state that I am \_\_\_\_\_ of \_\_\_\_\_  
(Title) (Name of my firm)

and that I am authorized to make this affidavit on behalf of my firm, and it's owners, directors, and officers. I am the person responsible in my firm for the price(s) and the amount of this bid.

I state that:

(1) The price(s) and amount of this bid have been arrived at independently and without consultation, communication or agreement with any other contractor, bidder or potential bidder.

(2) Neither the price(s) nor the amount of this bid, and neither the approximate price(s) nor approximate amount of this bid, have been disclosed to any other firm or person who is a bidder or potential bidder, and they will not be disclosed before bid opening.

(3) No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a bid higher than this bid, or to submit any intentionally high or noncompetitive bid or other form of complementary bid.

(4) The bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive bid.

(5) \_\_\_\_\_, it's affiliates,  
(Name of my firm)

Subsidiaries, officers, directors and employees are not currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by State or Federal law in any School District jurisdiction, involving conspiracy or collusion with respect to bidding on any public contract, except as follows:

\_\_\_\_\_  
\_\_\_\_\_

I state that \_\_\_\_\_ understands and  
(Name of my firm)

acknowledges that the above representations are material and important, and will be relied on by

Southern Lehigh School District  
(Name of public entity)

in awarding the contract(s) for which this bid is submitted. I understand and my firm understands that any misstatement in this affidavit is and shall be treated as fraudulent concealment from Southern Lehigh School District of the true facts relating to the submission of bids for this contract.

\_\_\_\_\_  
(Name and Company Position)

SWORN TO AND SUBSCRIBED  
BEFORE ME THIS \_\_\_ DAY  
OF \_\_\_\_\_, 20\_\_

\_\_\_\_\_ Notary Public My Commission Expires \_\_\_\_\_

## **EXHIBIT C**

### **P.D.E. SPECIFICATION REQUIREMENTS**

### **P.D.E. PERSONNEL CLEARANCE REQUIREMENTS**

**NOTE: Participating ESCOs are responsible for the completion/submittal of any and all necessary forms for Child Abuse Clearance and Criminal Record Checks.**



## **EXHIBIT D**

### **UTILITY DATA**

#### **Apr 2012 – Mar 2013 Actual Usage 2013-14 School Year Estimated Rates**

**Historic utility data for Apr 2012 – Mar 2013 as well as 2013-14 budgetary rates for natural gas and electricity will be made available to participating ESCOs electronically from Provident Energy Consulting. This information will be made available to all participating ESCOs following the mandatory pre-proposal conference.**

**EXHIBIT E**

**TECHNICAL DETAILS AND SPECIFICATIONS**

**WITH**

**ECM/FIM CONSIDERATIONS**

## TECHNICAL DETAILS & SPECIFICATIONS

Southern Lehigh School District has certain technical requirements which are included in the project specifications and will be further negotiated with the final ESCO for inclusion in the Agreement for this Performance Contract as applicable. These involve preferences on certain equipment manufacturers and installation requirements for various ECMs. There are also utility cost parameters for inclusion in any savings and cash flow calculations. In addition, there are renovation projects planned in SLSD which will likely impact ECMs. These factors are briefly summarized below:

1. The \$/kWh (electricity) and \$/mmBTU (natural gas and oil) will be made available in an excel file that contains the annual data. This information will be made available to those in attendance at the mandatory pre-proposal meeting.
2. Inflation allowances for Utility costs for this P.C. proposal are as follows:
  - a. Fuel oil, Natural Gas, Electricity: + 2% per year
  - b. Water & Sewer: + 3% per year
3. Lighting levels are to be per the latest standards for schools, except where noted as higher due to current use. The basis of lighting design is to be the "Illuminating Engineers Society of North America (IESNA), Lighting for Educational Facilities", 2006 edition.
4. ESCOs should be conservative in savings claims based on occupancy sensors, as actual "on" times can vary substantially throughout SLSD. ESCOs should verify "on" times with data logger samples of representative spaces in actual use whenever possible, and should include the logger data with their proposal. In the absence of data logging, the following estimated "on time" savings should be used: classrooms = 10%, cafeterias, gyms & M.P. rooms = 20%
5. Any newly installed light fixtures, i.e. replacements, are to be suspended from building structure, not merely supported by ceiling grid.
6. SLSD is open to suggestions with respect to manufacturers as appropriate to the ECM being proposed.

## **SLSD ECM/FIM CONSIDERATIONS**

SLSD and PEC reviewed current conditions and potential energy saving needs in the included buildings and generated the following ECM insights for consideration. It is expected that ESCOs will review these facilities as part of their energy audit and determine the most cost effective ECMs to include in their proposals. Generally, there are several ECM considerations as follows:

- 1) Lighting Replacement/Retrofit
- 2) Limited/No occupancy sensors currently in place
- 3) Chiller/Cooling solution desired at the MS
- 4) Generator solution to handle server rooms and pone systems (at a minimum)
- 5) Water conservation applications exist with limitations, such as sinks only; wiring constraints may limit applications for automatic flush urinals.
- 6) Balancing & Commissioning
- 7) Building Automation Controls enhancements

Additional needs and feedback on “Wish List” items will be noted by the SLSD Facilities staff at the pre-proposal meeting.

## **EXHIBIT F**

### **BUILDING OPERATIONAL PARAMETERS**

# SOUTHERN LEHIGH SCHOOL DISTRICT

## BUILDING OPERATIONAL PARAMETERS

The following operational parameters are to be used in the preparation of ESCO proposals and must be clearly shown, where applicable, in the energy savings calculations included in the proposals. In addition, the utility rates used in energy savings calculations must be clearly shown.

A. OPERATING HOURS (hours per year):

1. Classroom lighting	1900
2. Office lighting	2500
3. Corridor/stairwell lighting	3800
4. Restroom lighting	3900
5. Gym lighting	3200
6. Locker room lighting	3400
7. Library lighting	2800
8. Auditorium lighting	800
9. Cafeteria lighting	3200
10. Kitchen lighting	1500
11. Exit Sign lighting	8760 (24x365)
12. Storage/service areas	400
13. Other lighting	1800 for educational areas

B. OPERATIONAL CONSIDERATIONS:

1. Cleaning activities occur until 10:30 p.m. in all buildings except the HS – The HS is 24 hours Mon – Fri.
2. After school programs operate until 9:30 p.m. in all buildings Mon – Fri. Also, the HS & MS are used from 6 am to 9 pm on Saturdays.
3. Parking lot lighting is consistent with other SD lighting.
4. Exterior security lighting is consistent with other SD lighting.

C. HVAC PARAMETERS

(These represent assumed averages for use in P.C. project calculations.)

1. Occupied period: 6:00 a.m. to 10:00 p.m. with typical set points as follows:
  - i. Heating season: Nov-Apr; Set points = 68 – 74 F;
  - ii. Cooling season: May-Oct; Set points = 68 - 74 F (comp. rm. = 72 F);
2. Unoccupied period: 10:00 PM to 6:00 AM;
  - i. Typical set points = 59-65 F heating, and 79-85 F cooling.
  - ii. Overrides are standard procedure set by custodians daily to meet cleaning needs.

D. CONSTRUCTION TIMES:

It is understood that the project construction schedule will meet the following SLSD schedules (i.e. work can proceed during the following periods):

Summer Schedule, June 14 (+/-) thru August

Weekdays: 6:30 a.m. – 4:00 p.m.; HS 6 a.m. to 9 p.m.

School Year Schedule, September to June 14 (+/-)

School hours: 7:00 am – 3:30 pm, Monday-Friday

PC Project work hours permitted:

Weekdays: 6:30 a.m. – 10:30 p.m. (mechanical, non-student areas)  
3:30 p.m. – 10:30 p.m. (instructional areas w/ prior permission)

PC work may not negatively affect occupied spaces during school hours but SLSD is willing to work with ESCO during school hours within reason and must check with **Mr. Bergey** first.

Saturday work schedules are permitted with prior scheduling without extra charges from SLSD. Sunday and Holiday times must be scheduled with SLSD by permission and may involve overtime charges for SLSD staff.

System shutdowns will be permitted during non-student periods only, and only with favorable weather conditions pertinent to the system.

## **EXHIBIT G**

### **MEASUREMENT & VERIFICATION PROCEDURES**



## PERFORMANCE CONTRACT MEASUREMENT & VERIFICATION PROCEDURES

**Lighting Modernization Savings:** By upgrading the existing T-12 or early T8 lamps and ballast to the latest T-8 technology lighting, or replacing HID lamps with T5 fluorescent lights, a reduction in utility consumption will result. This is based on the improved efficiency of the new equipment and the annual runtime or burn hours of the lighting systems.

**Motor Efficiency Retrofit Savings:** By upgrading existing motors, either by replacement with more energy efficient motors or variable frequency drive motors, a reduction in utility consumption will result, based on improved efficiency of the new equipment and annual runtime of the motors.

The following procedures shall be used as a method of verifying use (KWH) and demand (kW) savings as outlined in ESCO proposals. This method determines savings by measuring system performance before and after a retrofit and multiplying it by the hours of operation as stipulated in the RFP. In this context, the word "system" refers to a lighting fixture, motor, or associated circuit.

1. The ESCO/contractor and a designated customer representative will choose the systems to be metered before and after the retrofit. These systems, mutually agreed to, will be a small sample that accurately represent typical systems in the facility.
2. A fluke 77 digital multi-meter with a minimum accuracy of + or – 2%, or equal, will be used to measure both voltage and amperage at the lighting fixtures/motors. The ESCO must furnish a recent/current calibration certificate for the meter to be used.
3. For Lighting Modernization: The fixture sample will typically consist of five (5) samples per fixture type or a circuit, whichever is more appropriate. The sample will be randomly selected by the owner and the ESCO. Typical room lighting circuits will be measured at the switch in the room to eliminate any extraneous connections to the lighting load.
4. For Motor Retrofit Savings: The sample will consist of two (2) samples per motor type. The sample will be randomly selected by the owner and the ESCO/contractor.
5. Power readings will be taken on each chosen system at the fixture, motor, or at the location of the circuit breaker panel (if approved in advance by the owner's representative) before the retrofit of the fixtures/motors. Systems should be turned on and operating for at least 15 minutes prior to the readings being taken (or as appropriate to the system). Readings will be witnessed and signed-off by the ESCO and the customer representative. A written record will be submitted to the owner and PEC for review and filing.
6. When pre-retrofit readings are taken, it must be agreed that the circuit controls only lighting fixtures designated for retrofit or replacement. If any other equipment is controlled by the circuit breaker being monitored, then this circuit cannot be used as a method of verification.
7. The difference between the pre and post measurements will result in the kW saved.
8. Kilowatt hours will be calculated in conjunction with the hours of lighting operation, as mutually agreed upon by the owner and the ESCO.
9. Only fully functioning systems will be sampled.
10. Following the retrofit of fixtures on each designated circuit, power readings will be recorded by the ESCO and a customer representative in the same manner as the original readings.

## EXHIBIT H

### SCHEDULE OF KEY ACTIVITIES

#### Energy Efficiency and Facility Improvement Project under the Pennsylvania Guaranteed Energy Savings Act

<b><u>Key Dates</u></b>	<b><u>Activity</u></b>
1-May-13	10 AM - Mandatory Pre-Proposal Meeting
22-May-13	Deadline for Questions from Interested Bidders
12-Jun-13	Responses to Questions from Interested Bidders
10-Jul-13	12 Noon - Proposals Due
24-Jul-13	Clarifying Questions to Bidders, as necessary
31-Jul-13	Responses to Questions from Bidders, as necessary
7-Aug-13	Report to Administration
21-Aug-13	Update Facilities Committee
9-Sep-13	Recommendation to Full Board
16-Sep-13	Finalize Contract with Recommended Energy Services Company
23-Sep-13	Project Initiation and Implementation