

PERFORMANCE CONTRACT

This Performance Contract (this "Agreement") is made this 23 day of April, 2019 between:

PARTIES

JOHNSON CONTROLS, INC. ("JCI")
507 East Michigan Street
Milwaukee, Wisconsin 53202

and

City of La Crosse, WI ("Customer")
400 La Crosse St
La Crosse, Wisconsin 54601

RECITALS

WHEREAS, Customer desires to retain JCI to perform the work specified in Schedule 1 (Scope of Work) hereto (the "Work") relating to the installation of the improvement measures (the "Improvement Measures") described therein; and

WHEREAS, Customer is authorized and empowered under applicable Laws (as defined below) to enter into this Agreement, and has taken all necessary action under applicable Laws to enter into this Agreement; and

WHEREAS, Customer has selected JCI to perform the Work after it determined JCI's proposal was the most advantageous to Customer in accordance with all applicable procurement and other Laws.

NOW, THEREFORE, in consideration of the mutual promises set forth herein, the parties agree as follows:

AGREEMENT

- 1. SCOPE OF THE AGREEMENT.** JCI shall perform the Work set forth in Schedule 1. After the Work is Substantially Complete (as defined below) and the Certificate of Substantial Completion is executed by Customer and JCI, JCI shall provide the assured performance guarantee (the "Assured Performance Guarantee") and the measurement and verification services (the "M&V Services") set forth in Schedule 2 (Assured Performance Guarantee) and/or Schedule 2A (Assured Performance Guarantee – Utility Meters), as applicable. Customer shall make payments to JCI for the Work and the M&V Services in accordance with Schedule 4 (Price and Payment Terms).
- 2. AGREEMENT DOCUMENTS:** In addition to the terms and conditions of this Agreement, the following Schedules are incorporated into and shall be deemed an integral part of this Agreement:

Schedule 1 – Scope of Work

Schedule 2 – Assured Performance Guarantee

Schedule 3 – Customer Responsibilities

Schedule 4 – Price and Payment Terms

Attachment 1 – Notice to Proceed

Attachment 2 – Form of Change Order

Attachment 3 – Form of Certificate of Substantial Completion

Attachment 4 – Form of Certificate of Final Completion

Attachment 5 – Detailed Lighting Scope of Work

Attachment 6 – Standard Terms and Conditions (Service Contracts) – October 2018

3. **NOTICE TO PROCEED; SUBSTANTIAL COMPLETION; M&V SERVICES.** This Agreement shall become effective on the date of the last signature on the signature page below. JCI shall commence performance of the Work within ten (10) business days of receipt of Customer's Notice to Proceed, a form of which is attached hereto as Attachment 1, and shall achieve Substantial Completion of the Work by the Substantial Completion date, which shall be the earlier of:
- (a) the date on which Customer executes a Certificate of Substantial Completion substantially in the form attached hereto as Attachment 3;
 - or
 - (b) twelve (12) months after JCI's receipt of Customer's Notice to Proceed, subject to adjustments set forth in Section 4 and Section 5 below.

For purposes of this Agreement, "Substantial Completion" means that JCI has provided sufficient materials and services to permit Customer to operate the Improvement Measures. The M&V Services shall commence on the first day of the month following the month in which Customer executes a Certificate of Substantial Completion and shall continue throughout the Guarantee Term, subject to earlier termination of the Assured Performance Guarantee as provided herein. Customer acknowledges and agrees that if, for any reason, it (i) cancels or terminates receipt of M&V Services, (ii) fails to pay for M&V Services in accordance with Schedule 4, (iii) fails to fulfill any of Customer's responsibilities necessary to enable JCI to complete the Work and provide the M&V Services, or (iv) otherwise cancels, terminates or materially breaches this Agreement, the Assured Performance Guarantee shall automatically terminate and JCI shall have no liability thereunder.

4. **DELAYS AND IMPACTS.** If JCI is delayed in the commencement, performance, or completion of the Work and/or M&V Services by causes beyond its control and without its fault, including but not limited to inability to access property; concealed or unknown conditions encountered at the project, differing from the conditions represented by Customer in the bid documents or otherwise disclosed by Customer to JCI prior to the commencement of the Work; a Force Majeure (as defined below) condition; failure by Customer to perform its obligations under this Agreement; or failure by Customer to cooperate with JCI in the timely completion of the Work, JCI shall provide written notice to Customer of the existence, extent of, and reason for such delays and impacts. Under such circumstances, an equitable adjustment in the time for performance, price and payment terms, and the Assured Performance Guarantee shall be made.
5. **ACCESS.** Customer shall provide JCI, its subcontractors, and its agents reasonable and safe access to all facilities and properties in Customer's control that are subject to the Work and M&V Services. Customer further agrees to assist JCI, its subcontractors, and its agents to gain access to facilities and properties that are not controlled by Customer but are necessary for JCI to complete the Work and provide the M&V Services. An equitable adjustment in the time for performance, price and payment terms, and Assured Performance Guarantee shall be made as a result of any failure to grant such access.
6. **PERMITS, TAXES, AND FEES.** Unless otherwise specified in Schedule 3 (Customer Responsibilities), JCI shall be responsible for obtaining all building permits required for it to perform the Work. Unless otherwise specified in Schedule 1 (Scope of Work), Customer shall be responsible for obtaining all other permits, licenses, approvals, permissions and certifications, including but not limited to, all zoning and land use changes or exceptions required for the provision of the Work or the ownership and use of the Improvement Measures. JCI shall not be obligated to provide any changes to or improvement of the facilities or any portion thereof required under any applicable building, fire, safety, sprinkler or other applicable code, standard, law, regulation, ordinance or other requirement unless the same expressly regulates the installation of the Improvement Measures. Without limiting the foregoing, JCI's obligations with respect to the Work is not intended to encompass any changes or improvements that relate to any compliance matters (whether known or unknown) that are not directly related to the installation of the Improvement Measures or which have been imposed or enforced because of the occasion or opportunity of review by any governmental authority. Customer shall be responsible for and shall pay when due all assessments, charges and sales, use, property, excise, or other taxes now or hereafter imposed by any governmental body or agency upon the provision of the Work or the M&V Services, implementation or presence of the Improvement Measures, the use of the Improvement Measures or payments due to JCI under this Agreement, other than taxes upon the net income of JCI. Customer shall also be responsible for real or personal property taxes relating to equipment or material included in the Improvement Measures. Any fees, taxes, or other lawful charges paid by JCI on account of Customer shall become immediately due from Customer to JCI.

7. **WARRANTY.** JCI will perform the Work in a professional, workman-like manner. JCI will promptly re-perform any non-conforming Work for no charge, as long as Customer provides written notice to JCI within one (1) year following Substantial Completion or such other period identified in Schedule 1. If JCI installs or furnishes goods or equipment under this Agreement, and such goods or equipment are covered by an end-user warranty from their manufacturer, JCI will transfer the benefits of such warranty to Customer. The foregoing remedy with respect to the Work, together with any remedy provided by goods or equipment manufacturers, shall be Customer's sole and exclusive remedies for warranty claims. Customer agrees that the one (1) year period following Substantial Completion, or such other period identified in Schedule 1, shall be a reasonable time for purposes of submitting valid warranty claims with respect to the Work. These exclusive remedies shall not have failed of their essential purpose so long as JCI transfers the benefits of any goods or equipment end-user warranty to Customer and remains willing to re-perform any non-conforming Work for no charge within the one (1) year period described above or such other period identified in Schedule 1. **NO OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE PROVIDED BY JCI.** This warranty does not extend to any Work that has been abused, altered, or misused, or repaired by Customer or third parties without the supervision or prior written approval of JCI. Except with respect to goods or equipment manufactured by JCI and furnished to Customer hereunder, for which JCI shall provide its express written manufacturer's warranty, JCI shall not be considered a merchant or vendor of goods or equipment.
8. **CLEANUP.** JCI shall keep the premises and the surrounding area free from accumulation of waste materials or rubbish caused by the Work and, upon completion of the Work, JCI shall remove all waste materials, rubbish, tools, construction equipment, machinery, and surplus materials.
9. **SAFETY; COMPLIANCE WITH LAWS.** JCI shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Work and M&V Services. Each of JCI and Customer shall comply with all applicable laws, ordinances, rules, regulations, and lawful orders of public authorities (collectively, "Laws") in connection with its performance hereunder.
10. **ASBESTOS-CONTAINING MATERIALS AND OTHER HAZARDOUS MATERIALS.**

Asbestos-Containing Materials: Neither party desires to or is licensed to undertake direct obligations relating to the identification, abatement, cleanup, control, removal or disposal of asbestos-containing materials ("ACM"). Consistent with applicable Laws, Customer shall supply JCI with any information in its possession relating to the presence of ACM in areas where JCI undertakes any Work or M&V Services that may result in the disturbance of ACM. It is JCI's policy to seek certification for facilities constructed prior to 1982 that no ACM is present, and Customer shall provide such certification for buildings it owns, or aid JCI in obtaining such certification from facility owners in the case of buildings that Customer does not own, if JCI will undertake Work or M&V Services in the facility that could disturb ACM. If either Customer or JCI becomes aware of or suspects the presence of ACM that may be disturbed by JCI's Work or M&V Services, it shall promptly stop the Work or M&V Services in the affected area and notify the other. As between Customer and JCI, Customer shall be responsible at its sole expense for addressing the potential for or the presence of ACM in conformance with all applicable Laws and addressing the impact of its disturbance before JCI continues with its Work or M&V Services, unless JCI had actual knowledge that ACM was present and acted with intentional disregard of that knowledge, in which case (i) JCI shall be responsible at its sole expense for remediating areas impacted by the disturbance of the ACM, and (ii) Customer shall resume its responsibilities for the ACM after JCI's remediation has been completed.

Other Hazardous Materials: JCI shall be responsible for removing or disposing of any Hazardous Materials (as defined below) that it uses in providing Work or M&V Services ("JCI Hazardous Materials") and for the remediation of any areas impacted by the release of JCI Hazardous Materials. For other Hazardous Materials that may be otherwise present at Customer's facilities ("Non-JCI Hazardous Materials"), Customer shall supply JCI with any information in its possession relating to the presence of such materials if their presence may affect JCI's performance of the Work or M&V Services. If either Customer or JCI becomes aware of or suspects the presence of Non-JCI Hazardous Materials that may interfere with JCI's Work or M&V Services, it shall promptly stop the Work or M&V Services in the affected area and notify the other. As between Customer and JCI, Customer shall be responsible at its sole expense for removing and disposing of Non-JCI Hazardous Materials from its facilities and the remediation of any areas impacted by the release of Non-JCI Hazardous Materials,

unless JCI had actual knowledge that Non-JCI Hazardous Materials were present and acted with intentional disregard of that knowledge, in which case (i) JCI shall be responsible at its sole expense for the remediation of any areas impacted by its release of such Non-JCI Hazardous Materials, and (ii) Customer shall remain responsible at its sole expense for the removal of Non-JCI Hazardous Materials that have not been released and for releases not resulting from JCI's performance of the Work or M&V Services. For purposes of this Agreement, "Hazardous Materials" means any material or substance that, whether by its nature or use, is now or hereafter defined or regulated as a hazardous waste, hazardous substance, pollutant or contaminant under applicable Law relating to or addressing public or employee health and safety and protection of the environment, or which is toxic, explosive, corrosive, flammable, radioactive, carcinogenic, mutagenic or otherwise hazardous or which is or contains petroleum, gasoline, diesel, fuel, another petroleum hydrocarbon product, or polychlorinated biphenyls. "Hazardous Materials" specifically includes mold and lead-based paint and specifically excludes ACM. JCI shall have no obligations relating to the identification, abatement, cleanup, control, removal, or disposal of mold, regardless of the cause of the mold.

Environmental Indemnity: To the fullest extent permitted by Law, Customer shall indemnify and hold harmless JCI and JCI's subcontractors, and their respective directors, officers, employees, agents, representatives, shareholders, affiliates, and assigns and successors, from and against any and all losses, costs, damages, expenses (including reasonable legal fees and defense costs), claims, causes of action or liability, directly or indirectly, relating to or arising from the Customer's use, or the storage, release, discharge, handling or presence of ACM, mold (actual or alleged and regardless of the cause of such condition) or Non-JCI Hazardous Materials on, under or about the facilities, or Customer's failure to comply with this Section 10.

- 11. CHANGE ORDERS.** The parties, without invalidating this Agreement, may request changes in the Work to be performed under this Agreement, consisting of additions, deletions, or other revisions to the Work ("Change Orders"). The price and payment terms, time for performance and, if necessary, the Assured Performance Guarantee, shall be equitably adjusted in accordance with the Change Order. Such adjustments shall be determined by mutual agreement of the parties. JCI may delay performance until adjustments arising out of the Change Order are clarified and agreed upon. Any Change Order must be signed by an authorized representative of each party. If concealed or unknown conditions are encountered at the project, differing from the conditions represented by Customer in the bid documents or otherwise disclosed by Customer to JCI prior to the commencement of the Work, price and payment terms, time for performance and, if necessary, the Assured Performance Guarantee, shall be equitably adjusted. Claims for equitable adjustment may be asserted in writing within a reasonable time from the date a party becomes aware of a change to the Work by written notification. Failure to promptly assert a request for equitable adjustment, however, shall not constitute a waiver of any rights to seek any equitable adjustment with respect to such change.
- 12. CUSTOMER FINANCING; TREATMENT; TAXES.** The parties acknowledge and agree that JCI is not making any representation or warranty to Customer with respect to matters not expressly addressed in this Agreement, including, but not limited to:
- (a) Customer's ability to obtain or make payments on any financing associated with paying for the Improvement Measures, related services, or otherwise;
 - (b) Customer's proper legal, tax, accounting, or credit rating agency treatment relating to this Agreement; and
 - (c) the necessity of Customer to raise taxes or seek additional funding for any purpose.

Customer is solely responsible for its obligations and determinations with respect to the foregoing matters. In addition, the parties acknowledge and agree that Customer shall be responsible to comply, at its cost and expense, with all Laws that may be applicable to it relating to performance contracting, including, without limitation, any requirements relating to the procurement of goods and/or services and any legal, accounting, or engineering opinions or reviews required or obtained in connection with this Agreement.

13. INSURANCE. JCI shall maintain Insurance in amounts no less than those set forth below in full force and effect at all times until the Work has been completed, and shall provide a certificate evidencing such coverage promptly following Customer's request therefor.

COVERAGES	LIMITS OF LIABILITY
Workmen's Compensation Insurance or self insurance, Including Employer's Liability	Statutory
Commercial General Liability Insurance	\$5,000,000 Per Occurrence \$5,000,000 Aggregate
Comprehensive Automobile Liability Insurance	\$5,000,000 Combined-Single Limit

The above limits may be obtained through primary and excess policies, and may be subject to self-insured retentions.

Customer shall be responsible for obtaining builder's risk insurance coverage for the Improvement Measures and shall at all times be responsible for any loss or casualty to the Improvement Measures. Customer shall also maintain insurance coverage, of the types and in the amounts customary for the conduct of its business, throughout the term of this Agreement.

14. INDEMNIFICATION. To the fullest extent permitted by applicable Law, each party shall indemnify the other with respect to any third party claim alleging bodily injury, including death, or property damage to the extent such injury or damage is caused by the negligence or willful misconduct of the indemnifying party. A condition precedent to any obligation of a party to indemnify the other pursuant to this Section 14 shall be for the indemnified party to promptly advise the indemnifying party of the claim pursuant to the notice provision of this Agreement.

15. LIMITATION OF LIABILITY. NEITHER JCI NOR CUSTOMER WILL BE RESPONSIBLE TO THE OTHER FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL, REMOTE, PUNITIVE, EXEMPLARY, LOSS OF PROFITS OR REVENUE, LOSS OF USE, OR SIMILAR DAMAGES, REGARDLESS OF HOW CHARACTERIZED AND REGARDLESS OF A PARTY HAVING BEEN ADVISED OF THE POSSIBILITY OF SUCH POTENTIAL LOSSES OR RELIEF, ARISING IN ANY MANNER FROM THIS AGREEMENT, THE WORK, THE IMPROVEMENT MEASURES, THE PREMISES, THE M&V SERVICES, OR OTHERWISE. WITHOUT LIMITING JCI'S EXPRESS OBLIGATIONS UNDER THE ASSURED PERFORMANCE GUARANTEE, JCI'S LIABILITY UNDER THIS AGREEMENT, REGARDLESS OF THE FORM OF ACTION, SHALL IN NO EVENT EXCEED THE AMOUNT OF THE PAYMENTS ACTUALLY RECEIVED BY JCI UNDER SCHEDULE 4. If this Agreement covers fire safety or security equipment, Customer understands that JCI is not an insurer regarding those services, and that JCI shall not be responsible for any damage or loss that may result from fire safety or security equipment that fails to prevent a casualty loss. The foregoing waivers and limitations are fundamental elements of the basis for this Agreement between JCI and Customer, and each party acknowledges that JCI would not be able to provide the work and services contemplated by this Agreement on an economic basis in the absence of such waivers and limitations, and would not have entered into this Agreement without such waivers and limitations.

16. FORCE MAJEURE. Neither party will be responsible to the other for damages, loss, injury, or delay caused by conditions that are beyond the reasonable control, and without the intentional misconduct or negligence of that party. Such conditions (each, a "Force Majeure") include, but are not limited to: acts of God; acts of government agencies; strikes; labor disputes; fires; explosions or other casualties; thefts; vandalism; riots or war; acts of terrorism; electrical power outages; interruptions or degradations in telecommunications, computer, or electronic communications systems; changes in Laws; or unavailability of parts, materials or supplies.

17. JCI'S PROPERTY. All materials furnished or used by JCI personnel and/or JCI subcontractors or agents at the installation site, including documentation, schematics, test equipment, software and associated media remain the exclusive property of JCI or such other third party. Customer agrees not to use such materials for any purpose at any time without the express authorization of JCI. Customer agrees to allow JCI personnel and/or JCI subcontractors or agents to retrieve and to remove all such materials remaining after installation or maintenance operations have been completed. Customer acknowledges that any software furnished in

connection with the Work and/or M&V Services is proprietary and subject to the provisions of any software license agreement associated with such software.

- 18. DISPUTES.** JCI and Customer will attempt to settle any controversy, dispute, difference, or claim between them concerning the performance, enforcement, or interpretation of this Agreement (collectively, "Dispute") through direct discussion in good faith, but if unsuccessful, will submit any Dispute to non-binding mediation in the nearest major metropolitan area of the state where the project is performed. If the parties are unable to agree on a mediator or a date for mediation, either party may request JAMS, Inc. to appoint a mediator and designate the time and procedure for mediation. Such mediator shall be knowledgeable, to each party's reasonable satisfaction, with respect to matters concerning construction law. Neither JCI nor Customer will file a lawsuit against the other until not less than sixty (60) days after the mediation referred to herein has occurred, unless one or both parties is genuinely and reasonably concerned that any applicable statute of limitations is on the verge of expiring. JCI AND CUSTOMER HEREBY WAIVE THEIR RESPECTIVE RIGHTS TO A JURY TRIAL AS TO ANY CLAIM OR CAUSE OF ACTION BASED UPON, ARISING OUT OF OR DIRECTLY OR INDIRECTLY RELATED TO THIS AGREEMENT, INCLUDING CONTRACT, TORT AND STATUTORY CLAIMS, AND EACH OF THE PARTIES HERETO ACKNOWLEDGES THAT THIS WAIVER IS A MATERIAL INDUCEMENT TO ENTER INTO A BUSINESS RELATIONSHIP, THAT EACH HAS RELIED ON THIS WAIVER IN ENTERING INTO THIS AGREEMENT, AND THAT EACH WILL CONTINUE TO RELY ON THIS WAIVER IN THEIR RELATED FUTURE DEALINGS UNDER THIS AGREEMENT.
- 19. GOVERNING LAW.** This Agreement and the construction and enforceability thereof shall be interpreted in accordance with the laws of the state where the Work is conducted.
- 20. CONSENTS; APPROVALS; COOPERATION.** Whenever Customer's consent, approval, satisfaction or determination shall be required or permitted under this Agreement, and this Agreement does not expressly state that Customer may act in its sole discretion, such consent, approval, satisfaction or determination shall not be unreasonably withheld, qualified, conditioned or delayed, whether or not such a "reasonableness" standard is expressly stated in this Agreement. Whenever Customer's cooperation is required by JCI in order to carry out JCI's obligations hereunder, Customer agrees that it shall act in good faith and reasonably in so cooperating with JCI and/or JCI's designated representatives or assignees or subcontractors. Customer shall furnish decisions, information, and approvals required by this Agreement in a timely manner so as not to delay the performance of the Work or M&V Services.
- 21. FURTHER ASSURANCES.** The parties shall execute and deliver all documents and perform all further acts that may be reasonably necessary to effectuate the provisions of this Agreement.
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- 22. INDEPENDENT CONTRACTOR.** The relationship of the parties hereunder shall be that of independent contractors. Nothing in this Agreement shall be deemed to create a partnership, joint venture, fiduciary, or similar relationship between the parties.
- 23. POWER AND AUTHORITY.** Each party represents and warrants to the other that (i) it has all requisite power and authority to execute and deliver this Agreement and perform its obligations hereunder, (ii) all corporate, board, body politic, or other approvals necessary for its execution, delivery, and performance of this Agreement have been or will be obtained, and (iii) this Agreement constitutes its legal, valid, and binding obligation.
- 24. SEVERABILITY.** In the event that any clause, provision, or portion of this Agreement or any part thereof shall be declared invalid, void, or unenforceable by any court having jurisdiction, such invalidity shall not affect the validity or enforceability of the remaining portions of this Agreement unless the result would be manifestly inequitable or materially impair the benefits intended to inure to either party under this Agreement.
- 25. COMPLETE AGREEMENT.** It is understood and agreed that this Agreement contains the entire agreement between the parties relating to all issues involving the subject matter of this Agreement. No binding understandings, statements, promises or inducements contrary to this Agreement exist. With the exception of Attachment 6, this Agreement supersedes and cancels all previous agreements, negotiations, communications, commitments and understandings with respect to the subject matter hereof, whether made orally or in writing. Each of the parties to this Agreement expressly warrants and represents to the other that no promise or agreement which is not herein expressed has been made to the other, and that neither party is relying upon

any statement or representation of the other that is not expressly set forth in this Agreement. Each party hereto is relying exclusively on the terms of this Agreement, its own judgment, and the advice of its own legal counsel and/or other advisors in entering into this Agreement. Customer acknowledges and agrees that any purchase order issued by Customer associated with this Agreement is intended only to establish payment authority for Customer's internal accounting purposes. No purchase order shall be considered a counteroffer, amendment, modification, or other revision to the terms of this Agreement.

26. HEADINGS. The captions and titles in this Agreement are for convenience only and shall not affect the interpretation or meaning of this Agreement.

27. COUNTERPARTS. This Agreement may be executed in any number of counterparts, all of which when taken together shall constitute one single agreement between the parties.

28. NOTICES. All notices or communications related to this Agreement shall be in writing and shall be deemed served if and when sent by facsimile or mailed by certified or registered mail: to Johnson Controls, Inc. at the address listed on the first page of this Agreement, ATTN: Regional Solutions Manager, with a copy to Johnson Controls, Inc., ATTN: General Counsel – Building Efficiency Americas, 507 East Michigan Street, Milwaukee, Wisconsin, 53202; and to Customer at the address listed on the first page of this Agreement.

City of La Crosse, WI

Signature: Timothy W. Kabat

Printed Name: Timothy W. Kabat

Title: Mayor

Date: April 22, 2019

JOHNSON CONTROLS, INC.

Signature: David M. Peters

Printed Name: David M. Peters

Title: Regional VP&GM, Performance Infrastructure

Date: April 23, 2019

SCOPE OF WORK

I. SUMMARY OF THE SCOPE OF WORK

The following information lists and summarizes the Improvement Measures to be implemented for this project.

ECM Number	ECM Name
ECM-1-LCCH	Replace Existing City Hall Heating Plant
ECM-2-LCCH	Replace Existing City Hall Chiller and Reconfigure Existing Chilled Water Plant
ECM-4-LCCH	Retrofit City Hall Lighting to LED
ECM-1-LCC	Retrofit La Crosse Center Lighting to LED
ECM-1-LCC-ALT	Retrofit La Crosse Center Parking Ramp Lighting to LED
ECM-2-LCC	Replace La Crosse Center VAV Terminals
ECM-3-LCC	Repair La Crosse Center Arena AHUs
ECM-1-LCML	Replace and Reconfigure Main Library Cooling Plant
ECM-2-LCML	Retrofit Main Library Lighting to LED
ECM-3-LCML	Implement Demand Control Ventilation for Main Library AH-1
ECM-2-LCMSC	Retrofit Service Center Lighting to LED

II. DESCRIPTION OF THE SCOPE OF WORK

The following information provides a description of the scope of work. For more detail on the Improvement Measures noted immediately below, please refer to the corresponding attachments:

ECM-1-LCCH: REPLACE EXISTING CITY HALL HEATING PLANT

This ECM removes and replaces the two (2) existing hot water boilers and two (2) pumps with a condensing boiler plant with three (3) new sealed combustion boilers and three (3) new primary pumps. Two (2) new secondary pumps will be added to provide a primary-secondary variable flow system. Additionally, the plant shall have full digital controls installed.

Demolition Work

General Construction

- As necessary to reconfigure two (2) existing boiler pads for new boilers.

Mechanical

- Remove two (2) existing 6,000 MBH boilers located in 8th floor mechanical room.
- Remove two (2) existing 10 hp primary pumps located in 8th floor mechanical room.
- Remove piping and pipe accessories as required to remove the existing boilers and pumps, including the existing air separator. The existing expansion tank shall remain for reuse.
- Remove existing flue piping within the mechanical room and the existing flue riser. Existing flue riser shaft shall remain for reuse.

Electrical

- Disconnect and remove the existing electrical connections serving the two (2) existing boilers.
- Disconnect and remove the existing electrical connections serving the two (2) existing pumps.

Controls

- Remove the existing control panel for boiler mechanical room.
- Remove existing controls within the mechanical room and attached to the equipment for existing boilers and pumps.

New Installation Work

General Construction

- Reconfigure and re-size two (2) existing boiler pads as necessary for new boilers.

Mechanical

- Provide and install three (3) new approximately 3,000 MBH input each, natural gas or fuel oil using, sealed combustion boilers.
 - Provide and install three (3) new dedicated boiler primary pumps, one to serve each new boiler. Each pump has an approximately 1 hp motor.
 - Provide and install new sealed combustion intake and flue piping to be routed to the exterior of the building using the existing flue shaft roof penetration
 - Provide new isolation valves for each boiler and pump for future serviceability.
 - Provide condensate trap and neutralization kit for each boiler.
 - Provide factory start-up and training with each boiler.
- Provide and install two (2) new secondary hot water pumps with VFDs. Each pump has an approximately 10 hp motor.
- Clean and flush new pipe installed within boiler room.
- Reuse existing water treatment components (chemical bypass pot feeders) if applicable.
- Provide and install piping and pipe accessories required to install the new boilers and pumps. Provide new air separator and connect to the existing expansion tank.
- Provide water balancing for hot water system components (pumps etc.) within the boiler room.
- Final equipment sizing will be confirmed during design phase of project implementation.
- Provide labeling and pipe tags for all newly installed piping.
- Insulate all newly installed pipes and any pipe or duct where insulation was removed as a matter of course or during any abatement of hazardous material by customer during scope of work to meet codes in effect at the time of contract signing.
- Provide pipe jacketing for newly insulated pipe within mechanical room.
- Provide system above with capability of dual fuel operation of natural gas and fuel oil.
- Existing fuel oil system, including tank and pump(s), shall be reused.

Electrical

- Installation and materials for electrical connections, disconnects, fuses, wiring and conduit for three (3) new hot water boilers.
- Installation and materials for electrical connections, starters, disconnects, fuses, wiring and conduit for three (3) new pumps serving the three (3) new boilers.
- Installation and materials for electrical connection, VFD, disconnect, fuse, wiring and conduit for two (2) new pumps serving the HW piping loop.

Controls

- Install new control panel in place of the existing panel.
- Provide control wiring, networking of factory boiler controllers, and controls Start up and check out for three (3) new hot water boilers.
- Provide control wiring for five (5) pumps, system differential pressure sensor, networking of controller and controls start up and check out for five (5) pumps.
- Provide controls integration of newly installed controls. Existing Automated Logic control system to remain.
- Provide programing and Customer training.

Customer shall be responsible for:

- Any and all asbestos abatement prior to installation of any components as required.
- Chemical water treatment of the hydronic heating system.

ECM-2-LCCH: REPLACE EXISTING CITY HALL CHILLER AND RECONFIGURE EXISTING CHILLED WATER PLANT

This ECM replaces the existing chiller with new water-cooled York YZ magnetic bearing, variable speed, centrifugal, chiller with a new primary pump. The existing well water connection will be reused as cooling for the condenser.

Demolition Work

General Construction

- As needed to reconfigure and resize existing pump housekeeping pad and existing chiller housekeeping pad to accommodate new equipment.

Mechanical

- Demolish and remove one (1) existing water cooled chiller, including the evaporator, condenser, and compressor.
- Demolish and remove two (2) existing primary pumps serving the chiller.
- Demolish and remove existing piping and accessories serving the existing chiller enough to facilitate installation of the new chillers.
- Existing condenser well water connection and pump are to remain.
- Refrigerant shall be removed, recovered, and either disposed in accordance with the current environmental requirements in effect at the time of contract signing or returned to Customer as requested.
- Demolish seven (7) existing AHU chilled water control valves.

Electrical

- Disconnect the existing chiller unit from the existing MCC.
- Demolish the existing wiring serving the existing water-cooled chiller

Controls

- Remove existing control panel for chiller mechanical room.

New Installation Work

General Construction

- Reconfigure and resize existing pump housekeeping pad and existing chiller housekeeping pad to accommodate new equipment.

Mechanical

- Install one (1) new 200-ton water-cooled chiller in the mechanical room in the same location as the existing chiller.
- Install two (2) new primary pumps located in place of the existing pump. New pumps shall operate on lead/lag basis. Each pump approximately 5 hp motor.
- Install two (2) new secondary pumps located in place of the existing pump. New pumps shall operate on lead/lag basis. Each pump approximately 10 hp motor.
- Final sizing for equipment will be determined during the engineering phase of the project. New equipment sizes shall be based on engineering load calculations.
- Install piping and accessories as required to provide piping connections and service to the new water-cooled chiller.
- Insulate existing and new chilled water and condenser water piping to meet codes in effect at the time of contract signing.
- Install seven (7) new 2-way control valves at air handling units.
- Install and insulate piping as needed for 2-way valve installation to meet codes in effect at the time of contract signing.
- Insulate newly installed pipes, ducts and any pipe or duct where insulation was removed as a matter of course or during any abatement by customer of hazardous material during scope of work to meet codes in effect at the time of contract signing.

Electrical

- Install new wiring and connect the new water-cooled chiller unit and four (4) pumps to the existing MCC.

Controls

- Install new control panel in place of the existing panel. Existing Automated Logic control system to remain.
- Provide control wiring, networking of controller, and controls start up and check out for one (1) new chiller, four (4) new pumps, and seven (7) new control valves.
- Provide programming and Customer training for new devices.

Customer shall be responsible for:

- Any and all asbestos and lead abatement prior to installation of any components as required.

ECM-4-LCCH: RETROFIT CITY HALL LIGHTING TO LED

This measure upgrades the existing interior lighting to LED sources. The scope of work for lighting retrofits is summarized below. Retrofits will be completed only where identified in Attachment 5 and only for fixtures that are currently in-use and have lamps installed. Refer to Attachment 5 for the complete scope of work.

Retrofit Work***Lighting***

- Retrofits or replacements of the following fixtures, as specified in Attachment 5:
 - Four (4) 2-foot, 1-lamp linear T8 fluorescent with 10-watt, 1-lamp LED retrofit kits
 - One-hundred and thirty-one (131) 23-watt compact fluorescent lamps with 11-watt LED lamp replacements
 - Six (6) 250-watt high pressure sodium exterior wall packs with 70-watt LED new fixture replacements
 - Four (4) 2-foot-by-2-foot, 2-lamp u-bend T8 fluorescent with 18-watt, 2-lamp LED retrofit kits
 - Six (6) 2-foot-by-2-foot, 3-lamp linear T8 fluorescent with 30-watt, 3-lamp LED retrofit kits
 - Six-hundred and eighty-seven (687) 2-foot-by-4-foot, 2-lamp linear T8 fluorescent with 26-watt, 2-lamp LED retrofit kits
 - One-hundred and seven (107) 2-foot-by-4-foot, 3-lamp linear T8 fluorescent with 44-watt, 3-lamp LED retrofit kits
 - Forty-seven (47) 2-foot-by-4-foot, 4-lamp linear T8 fluorescent with 52-watt, 4-lamp LED retrofit kits
 - Six (6) 3-foot, 1-lamp linear T8 fluorescent with 13-watt, 1-lamp LED retrofit kits
 - Forty-three (43) 4-foot, 1-lamp linear T12 fluorescent with 13-watt, 1-lamp LED retrofit kits
 - Twelve (12) 4-foot, 1-lamp linear T8 fluorescent with 13-watt, 1-lamp LED retrofit kits
 - Forty-nine (49) 4-foot, 2-lamp linear T12 fluorescent with 26-watt, 2-lamp LED retrofit kits
 - Eighty-four (84) 4-foot, 2-lamp linear T8 fluorescent with 26-watt, 2-lamp LED retrofit kits
 - One (1) 4-foot, 4-lamp linear T12 fluorescent with 52-watt, 4-lamp LED retrofit kit
 - Forty-five (45) 4-foot, 4-lamp linear T8 fluorescent with 52-watt, 4-lamp LED retrofit kit
 - Twelve (12) globe bulb incandescent with 6.5-watt LED retrofit kit

Customer shall be responsible for:

- Any and all asbestos and lead abatement prior to installation of any components as required.

ECM-1-LCC: RETROFIT LA CROSSE CENTER LIGHTING TO LED

This measure upgrades the existing interior lighting to LED sources. The scope of work for lighting retrofits is summarized below. Retrofits will be completed only where identified in Attachment 5 and only for fixtures that are currently in-use and have lamps installed. Refer to Attachment 5 for the complete scope of work.

Demolition Work***Lighting***

- Remove and do not replace:
 - One-hundred (100) 1000-watt halogen incandescent fixtures
 - Forty-six (46) 250-watt halogen incandescent fixtures

Retrofit Work***Lighting***

- Retrofits or replacements of the following fixtures, as specified in Attachment 5:
 - One-hundred and ten (110) 1000-watt metal halide with 310-watt LED new fixture replacements
 - Forty-four (44) 1-lamp, 60-watt incandescent with 25-watt LED new fixture replacement
 - Eighteen (18) 2-foot, 2-lamp linear T8 fluorescent with 10-watt LED retrofit kit
 - Thirty (30) 2-foot, 3-lamp linear T8 fluorescent with 32-watt LED new fixture replacement
 - Thirty-five (35) 1-lamp, 200-watt incandescent with 28-watt LED lamp replacement
 - Three (3) 2-foot-by-2-foot, 2-lamp u-bend T8 fluorescent with 15-watt LED retrofit kit
 - Four (4) 2-foot-by-2-foot, 2-lamp narrow u-bend T8 fluorescent with 32-watt LED new fixture replacement
 - Ninety (90) 2-foot-by-2-foot, 3-lamp narrow u-bend T8 fluorescent with 32-watt LED new fixture replacement
 - Seventy-six (76) 2-foot-by-4-foot, 2-lamp linear T8 fluorescent with 30-watt LED retrofit kit
 - Ninety-eight (98) 2-foot-by-4-foot, 3-lamp linear T8 fluorescent with 44-watt LED retrofit kit
 - Two (2) 2-foot-by-4-foot, 4-lamp linear T8 fluorescent with 60-watt LED retrofit kit
 - Two-hundred and seventy-two (272) 4-foot, 2-lamp linear T8 fluorescent with 30-watt LED retrofit kit
 - Thirty-five (35) 8-foot, 4-lamp linear T8 fluorescent with 60-watt LED retrofit kit
 - Ninety-six (96) 400-watt metal halide with 200-watt LED new fixture replacement
 - Twenty-six (26) 32-watt compact fluorescent with 25-watt LED new fixture replacement
 - Four (4) 75-watt incandescent with 25-watt LED new fixture replacement
 - One-hundred and sixty-eight (168) 42-watt compact fluorescent with 25-watt LED new fixture replacement
 - Twenty (20) exit signs with 8-watt LED new exit sign replacements
 - Four-hundred and fifty-six (456) 25-watt incandescent step lights with 8-watt LED lamp replacements

Customer shall be responsible for:

- Any and all asbestos and lead abatement prior to installation of any components as required.

ECM-1-LCC-ALT: RETROFIT LA CROSSE CENTER PARKING RAMP LIGHTING TO LED

This measure upgrades the existing interior lighting to LED sources. Retrofits will be completed only where identified in Attachment 5 and only for fixtures that are currently in-use and have lamps installed.

Retrofit Work***Lighting***

- Retrofits or replacements of the following fixtures, as specified in Attachment 5:
 - Fifteen (15) 150-watt pole-mounted high-intensity discharge (HID) with 45-watt LED retrofit kit
 - Four (4) 150-watt wall-mounted high-intensity discharge (HID) with 45-watt LED new fixture replacement
 - Two-hundred and eighty-five (285) 150-watt canopy-mounted high-intensity discharge (HID) with 65-watt LED new fixture replacement
 - Fifty-six (56) 4-foot, 2-lamp linear T8 fluorescent with 30-watt, 2-lamp LED retrofit kit

Customer shall be responsible for:

- Any and all asbestos and lead abatement prior to installation of any components as required.

ECM-2-LCC: REPLACE LA CROSSE CENTER VAV TERMINALS

This ECM replaces thirty-two (32) variable air volume (VAV) terminals with new VAV terminals and updated DDC controls.

Demolition Work*Mechanical*

- Demolish and remove thirty-two (32) variable air volume (VAV) terminals, including control valves, fittings, and accessories.

Controls

- Disconnect and remove existing wall-mounted temperature sensors
- Disconnect existing control valves
- Disconnect existing power and communication trunk to variable air volume (VAV) terminals as required.

New Installation Work*Mechanical*

- Install thirty-two (32) variable air volume (VAV) terminals for existing zones.
- Install control valves, for hot water reheat coils, on thirty-two (32) new variable air volume (VAV) terminals.
- Provide and install ductwork and accessories as required to connect the newly installed equipment to the existing ductwork.
- Insulate newly installed pipes, ducts, and any pipe or duct where insulation was removed as a matter of course or during any abatement by customer of hazardous material during scope of work, to meet codes in effect at the time of contract signing.

Controls

- Provide thirty-two (32) variable air volume (VAV) terminals for existing zones.
 - Each VAV terminal shall have a hot water reheat coil.
 - Each VAV terminal shall have a new wall-mounted temperature sensor.
 - Terminals shall be sized for max CFM, min CFM, and coil capacities as per mechanical schedules from original construction documents:
 - Provide and install control and power wiring for thirty-two (32) new variable air volume (VAV) terminals.

VAV BOXES

UNIT NO.	SERVES ROOM	MODEL NO. UNIT	MAX CFM	MIN CFM	MAX UNIT S.P. (DACP)	MINIMUM INLET S.P.	DESIGN INLET S.P.	INLET DUCT SIZE	NO. LEVEL (BOX)	COIL SIZING AND CAPACITY DATA					REMARK REF. NO.	
										COIL TYPE	MAX GPM	COIL P.D. DROP	ENT. HW. TEMP.	ENT. AIR TEMP.		TOTAL MBH
1-1	G48	VCWE-03	135	45	0.06	0.31	0.94	5"φ	6	ST	0.2	0.10	180°F	50°F	4.8	X
1-2	1/2 G22	VCWE-32	2625	790	0.26	0.52	1.12	14"φ	14	ST	1.6	0.23	180°F	50°F	34.5	X
1-3	1/2 G22	VCWE-24	2100	630	0.34	0.60	1.16	12"φ	13	ST	1.0	0.27	180°F	50°F	27.6	X
1-4	G27	VCWE-32	3055	920	0.29	0.55	1.27	14"φ	14	ST	1.6	0.26	180°F	50°F	36.3	X
1-5	G36,G37	VCWE-06	425	130	0.30	0.55	1.13	6"φ	16	ST	0.2	0.24	180°F	50°F	8.2	X
1-6	G28,G31	VCWE-32	2755	830	0.29	0.56	1.18	14"φ	14	ST	1.6	0.26	180°F	50°F	36.3	X
1-7	1/2 G21	VCWE-32	2995	900	0.34	0.61	1.19	14"φ	15	ST	2.0	0.31	180°F	50°F	42.4	X
1-8	1/2 G21	VCWE-32	2995	900	0.34	0.67	1.35	14"φ	15	ST	2.0	0.31	180°F	50°F	42.4	X
1-9	1/2 G23	VCWE-32	2825	850	0.30	0.57	1.04	14"φ	14	ST	1.7	0.27	180°F	60°F	37.2	X
1-10	1/2 G23	VCWE-32	2825	850	0.30	0.57	1.18	14"φ	14	ST	1.7	0.27	180°F	50°F	37.2	X
1-11	1/2 G20	VCWE-32	2950	885	0.33	0.61	0.75	14"φ	14	ST	1.4	0.3	180°F	50°F	33.3	X
1-12	1/2 G20	VCWE-32	2950	885	0.33	0.61	0.92	14"φ	14	ST	1.4	0.3	180°F	50°F	33.3	X
4-1	222	VCWE-32	2675	805	0.27	0.55	1.25	14"φ	14	ST	1.2	0.24	180°F	50°F	29.9	X
4-2	221	VCWE-32	2680	805	0.27	0.55	1.36	14"φ	14	ST	1.3	0.25	180°F	50°F	31.0	X
4-3	223	VCWE-11	745	225	0.21	0.46	0.77	8"φ	13	ST	0.9	0.26	180°F	50°F	14.2	X
4-4	234	VCWE-11	570	170	0.13	0.40	0.78	8"φ	11	ST	0.9	0.16	180°F	50°F	11.6	X
4-5	220	VCWE-32	2780	835	0.29	0.58	0.99	14"φ	14	ST	1.3	0.26	180°F	50°F	31.8	X
4-6		NOT USED														
4-7	230	VCWE-03	195	120	0.17	0.42	0.85	5"φ	13	ST	0.8	0.20	180°F	50°F	7.9	X
4-8	219	VCWE-24	1810	485	0.20	0.49	0.66	12"φ	10	ST	1.3	0.17	180°F	50°F	25.6	X
4-9	205,206	VCWE-06	340	105	0.19	0.44	1.11	6"φ	14	ST	0.5	0.16	180°F	50°F	8.3	X
4-10	207	VCWE-42	3575	1075	0.30	0.57	1.35	18"φ	16	ST	3.4	0.34	180°F	50°F	55.4	X
4-11	201	VCWE-11	655	200	0.17	0.42	0.71	8"φ	11	ST	3.9	0.21	180°F	50°F	17.7	X
4-12	1/2 218	VCWE-32	2920	880	0.32	0.58	1.13	14"φ	14	ST	1.3	0.29	180°F	50°F	32.0	X
4-13	218,217	VCWE-32	2920	880	0.32	0.58	1.37	14"φ	14	ST	1.9	0.28	180°F	50°F	41.1	X
4-14	209	VCWE-06	390	120	0.25	0.51	1.14	6"φ	15	ST	0.2	0.20	180°F	50°F	6.7	X
4-15	210	VCWE-06	385	115	0.24	0.50	0.84	6"φ	15	ST	0.3	0.20	180°F	50°F	6.9	X
4-16	211	VCWE-11	960	290	0.36	0.62	0.84	8"φ	16	ST	0.3	0.40	180°F	50°F	9.7	X
4-17	212	VCWE-11	555	170	0.12	0.38	0.69	8"φ	9	ST	0.3	0.16	180°F	50°F	7.9	X
4-18	213	VCWE-11	550	165	0.12	0.38	0.69	8"φ	9	ST	0.3	0.15	180°F	50°F	7.8	X
4-19	214	VCWE-11	540	165	0.11	0.37	0.69	8"φ	8	ST	0.3	0.15	180°F	50°F	7.8	X
4-20	215	VCWE-11	960	290	0.36	0.62	0.76	8"φ	16	ST	0.3	0.40	180°F	50°F	9.7	X
4-21	216	VCWE-11	590	180	0.14	0.40	0.83	8"φ	9	ST	0.4	0.17	180°F	50°F	9.9	X

NOTES:

1. MAXIMUM UNIT STATIC PRESSURE INCLUDES: THE S.P. DROP THRU THE BOX AT FULL AIR FLOW AS WELL AS THE S.P. DROP THRU THE REHEAT COIL AT FULL AIR FLOW IN INCHES WG.
2. MINIMUM INLET STATIC PRESSURE: INCLUDES THE MAXIMUM UNIT S.P. DROP PLUS THE DOWNSTREAM DUCTWORK AND DIFFUSERS IN INCHES WG.
3. DESIGN INLET STATIC PRESSURE: IS THE STATIC PRESSURE AVAILABLE S.P. AT THE BOX INLET IN INCHES WG FROM STATIC REGAIN DUCT DESIGN PROGRAM.
4. HEATING COIL CAPACITY IS DETERMINED AT MINIMUM BOX CFM AND INCLUDES SPACE HEAT LOSS PLUS REHEAT LOAD.

REMARKS:

1. BASED ON PRODUCT BY TRANE COMPANY
2. COIL CAPACITY BASED ON 75°F ROOM TEMPERATURE AND 50°F ENTERING AIR TEMPERATURE
3. COIL LEAVING AIR TEMPERATURE SHALL NOT EXCEED 140°F
4. SEE DETAIL 6M10 FOR VAV BOX INSTALLATION
5. VAV BOX HEATING COIL SHALL HAVE A 2-WAY TEMPERATURE CONTROL VALVE
6. VAV BOX HEATING COIL SHALL HAVE A 3-WAY TEMPERATURE CONTROL VALVE

NOTE: ALL VAV BOXES SHALL HAVE INSULATED DOUBLE-WALL CONSTRUCTION WITH SOLID SHEETMETAL INTERIOR LINER AND 1" INSULATION

Figure 1: Variable Air Volume Terminal Schedule from Original Construction Documents

- Provide control valves for hot water reheat for thirty-two (32) new variable air volume (VAV) terminals.
- Provide and install new variable air volume (VAV) controls and wall-mounted temperature sensors for thirty-two (32) new variable air volume (VAV) terminals.
- Provide control wiring for variable air volume (VAV) controls, wall-mounted temperature sensors, and control valves. Connect controls into existing Trane communication trunk and map all control points to the operator terminal.
- Upgrade existing Trane controls front-end to current generation software.
 - Provide and install web based, front end supervisory panel and software
 - Replace programmable controller panel in chiller room (Chilled Water Pump)
 - Install bridge for chiller communication
- Start up and check out of new controls for thirty-two (32) variable air volume (VAV) terminals, including VAV controls, associated wall-mounted temperature sensors, hot water reheat control valves, and upgraded Trane control system front-end.

Customer shall be responsible for:

- Any and all asbestos and lead abatement prior to installation of any components as required.

ECM-3-LCC: REPAIR LA CROSSE CENTER ARENA AHUS

This ECM repairs the fans and replaces the coils on the four (4) air handling units serving the La Crosse Center Arena. Of the existing air handling units, one (1) operates at full capacity in both heating and cooling modes, one (1) operates at partial capacity in only heating mode, one (1) operates at partial capacity in only cooling mode, and one (1) has been deemed to be non-operational.

Exclusions

Excluded from the scope of work are the following:

- Vibration analysis on supply fans and relief fans.
- Repair or replacement of outside, mixed, and return air dampers.
- Repair or replacement of outside, mixed, and return air damper actuators.
- Repair or replacement of air filters or filter rack.
- Repair or replacement of fan bearings.
- Repair, replacement, removal, or new installation of airflow control devices within the custom air handling unit, including baffles, turning vanes and other devices associated with acoustic control such as attenuators.
- Patching of existing openings, repair of existing sheet metal deficiencies, replacement of missing insulation on hot water or chilled water piping within the mechanical room, or other repairs to the custom air handling units, except where required to facilitate new installation work and as described below.

Demolition Work

Mechanical

- Prior to demolition, provide Customer an air handling unit supply and return airflow report for one (1) fully-functioning air handling unit.
- Demolish and remove four (4) existing supply fan motors and four (4) existing relief fan motors.
 - Demolish and remove associated fan pulleys, sheaves, and belts on four (4) supply fans and four (4) relief fans.
 - Demolish existing starters and VFDs as necessary for each motor.
- Demolish four (4) existing heating coils.
 - Remove existing hot water control valves and sufficient hot water supply piping, up to six (6) feet from coils, to facilitate installation of new control valves.
- Demolish four (4) existing cooling coils.
 - Remove existing chilled water control valves and sufficient chilled water supply piping, up to six (6) feet from coils, to facilitate installation of new control valves.
 - Remove existing condensate pans and save for re-use with the new coils if they are in good condition.

Electrical

- Disconnect and remove wiring for eight (8) fan motors. Existing overcurrent devices and disconnect to remain. Existing conduit to remain for reuse if compliant with current electrical code and in good condition.

Controls

- Disconnect four (4) existing hot water control valves and four (4) existing chilled water control valves.

New Installation Work

Mechanical

- Provide and install four (4) supply fan motors and four (4) relief fan motors with high efficiency motors, sized to match existing motors.
 - Install VFD on each fan motor for "soft start."
 - Replace associated fan pulleys, sheaves, and belts on four (4) supply fans and four (4) relief fans.
 - Laser align fan belts.
 - Clean blower wheel, blower housing, and fan surfaces.

- Replace four (4) heating coils, sized to match existing coil capacities.
 - Install new hot water control valves.
 - Repair/Replace/Reconfigure hot water piping serving new heating coils as necessary to facilitate installation of new coils, up to six (6) feet from coil inlet and/or outlet.
 - Insulate newly installed pipes, ducts and any pipe or duct where insulation was removed as a matter of course or during any abatement of hazardous material by customer during scope of work, to meet codes in effect at the time of contract signing.
- Replace four (4) cooling coils, sized to match existing coil capacities.
 - Install new chilled water control valves.
 - Repair/Replace/Reconfigure chilled water piping serving new heating coils as necessary to facilitate installation of new coils, up to six (6) feet from coil inlet and/or outlet.
 - Reuse or Replace condensate pans based on existing condition.
 - Insulate newly installed pipes, ducts and any pipe or duct where insulation was removed as a matter of course or during any abatement of hazardous material by customer during scope of work, to meet codes in effect at the time of contract signing.
- Provide Customer an air handling unit supply and return airflow report for each of four (4) AHU's upon completion of the upgrade.

Electrical

- Provide and install power wiring for eight (8) new motors and associated VFDs and connect to existing electrical service.
- Verify correct sizing and operation of main AHU disconnect. Replace main AHU disconnect as necessary to conform to current electrical code.

Controls

- Provide four (4) new hot water control valves.
- Provide four (4) new chilled water control valves.
- Provide control wiring for new control valves and connect control valves to existing control system.
- Start-up and check out four (4) air handling units.

Customer shall be responsible for:

- Any and all asbestos and lead abatement prior to installation of any components as required

ECM-1-LCML: REPLACE AND RECONFIGURE MAIN LIBRARY COOLING PLANT

This ECM replaces the existing chilled water plant. This includes replacing one existing chiller, cooling towers, chilled water pump, and condenser water pumps. The new chiller will be a York YZ magnetic bearing, variable speed, centrifugal chiller. The 225-ton chiller has been sized to accommodate the existing cooling load for the building (approximately 185 tons) as well as limited expansion within the footprint of the old museum space (approximately 35 tons). There will be a single tower installed to support the capacity of either the new 225-ton chiller or the existing 320-ton Trane chiller running as backup. The roof curb and steel structure will be modified to accommodate new tower. Additionally, this ECM includes balancing of the outside air dampers in the seven (7) existing air handling units and reset of the control system outside air minimums.

Demolition Work

Mechanical

- Demolish and remove one (1) existing water cooled chiller, including the evaporator, condenser, and compressor in basement; the existing 320-ton Trane chiller is to remain, and the original building chiller is to be removed.
- Demolish and remove two (2) cooling towers on roof.
- Demolish and remove four (4) existing pumps including chilled water primary and condenser water pumps.
- Demolish and remove existing piping and accessories serving the existing chiller(s) enough to facilitate installation of the new chiller.
- Refrigerant shall be removed, recovered, and either disposed in accordance with the current environmental requirements in effect at the time of contract signing or returned to Customer as requested.
- Existing cooling tower sump located in the basement shall remain.

Electrical

- Disconnect power and demo wire and conduit for one (1) existing chiller (the existing 320-ton Trane chiller is to remain), two (2) cooling towers, and four (4) pumps.

Controls

- Remove existing control panel for chiller mechanical room.

New Installation Work

Mechanical

- Install one (1) new 225 ton water-cooled chiller in the lower level mechanical room in the same location as the existing chiller.
- Install one (1) new cooling tower on roof utilizing viable portions of existing framing.
- Install two (2) new primary pumps equipped with VFDs located in place of the existing pumps. New pumps shall operate on lead/lag basis. Each pump is approximately 5 hp motor.
- Install two (2) new condenser water pumps equipped with VFDs located in place of the existing pumps. New pumps shall operate on lead/lag basis. Each pump is approximately 10 hp motor.
- Install two (2) new secondary chilled water pumps equipped with VFDs located in the basement. New pumps shall operate on lead/lag basis. Each pump is approximately 10 hp motor.
- Final sizing for equipment will be determined during the engineering design phase of the project. New equipment sizes shall be based on engineering load calculations.
- Install piping and accessories as required to provide piping connections and service to the new water-cooled chiller.
- Insulate existing and new condenser water and chilled water piping, to meet codes in effect at the time of contract signing.
- Insulate newly installed pipes, ducts and any pipe or duct where insulation was removed as a matter of course or during any abatement by customer of hazardous material during scope of work, to meet codes in effect at the time of contract signing.
- Balance outside air dampers on seven (7) air handling units. Code-required minimum outside air set-points to be determined during the engineering design phase of the project.

Electrical

- Install new wiring and connect the new water-cooled chiller unit, new tower, and six (6) new pumps to the existing MDP.

Controls

- Install new control panel in place of the existing panel.
- Provide control wiring for digital temperature sensors, networking of controller and controls start up and check out for one (1) new chiller, one (1) new cooling tower, and six (6) new pumps.
- Provide programming and Customer training.
- Update control sequences and programming as required following the outside air damper balancing of seven (7) air handling units.

General

- Modify and install roof curb and steel structure as needed for installation of new cooling tower.

Customer shall be responsible for:

- Any and all asbestos and lead abatement prior to installation of any components as required

ECM-2-LCML: RETROFIT MAIN LIBRARY LIGHTING TO LED

This measure upgrades the existing interior lighting to LED sources. The scope of work for lighting retrofits is summarized below. Retrofits will be completed only where identified in Attachment 5 and only for fixtures that are currently in-use and have lamps installed. Refer to Attachment 5 for the complete scope of work.

Retrofit Work**Lighting**

- Retrofits or replacements of the following fixtures, as shown in Attachment 5:
 - One (1) 150-watt wall-mounted metal halide with 45-watt LED new fixture replacement
 - Ten (10) 13-watt, 1-lamp compact fluorescent with 5-watt, 1-lamp LED lamp replacement
 - Thirty-two (32) 200-watt incandescent with 18-watt LED retrofit kit
 - Ten (10) 250-watt pole-mounted metal halide with 80-watt retrofit kit
 - Thirty-two (32) 13-watt, 2-lamp compact fluorescent with 5-watt, 2-lamp LED lamp replacement
 - Fifty-five (55) incandescent exit signs with LED new exit sign replacements
 - Twenty-two (22) 2-foot-by-2-foot, 2-lamp u-bend T8 fluorescent with 15-watt, 2-lamp LED retrofit kit
 - Forty-six (46) 2-foot-by-2-foot, 3-lamp u-bend T8 fluorescent with 15-watt, 3-lamp LED retrofit kit
 - Eighty-three (83) 2-foot-by-4-foot, 2-lamp linear T8 fluorescent with 26-watt, 2-lamp LED retrofit kit
 - One-hundred and sixteen (116) linear fluorescent troffer with 40-watt LED retrofit kit
 - Five-hundred and eighty-six (586) 2-foot-by-4-foot, 3-lamp linear T8 fluorescent with 39-watt, 3-lamp LED retrofit kit
 - One (1) 3-foot, 1-lamp linear T8 fluorescent with 13-watt, 1-lamp LED retrofit kit
 - Three (3) 3-foot, 2-lamp linear T8 fluorescent with 13-watt, 1-lamp LED retrofit kit
 - Eighteen (18) 4-foot, 1-lamp linear T12 fluorescent with 15-watt, 1-lamp LED retrofit kit
 - Eight (8) 4-foot, 1-lamp linear T8 fluorescent with 15-watt, 1-lamp LED retrofit kit
 - Seventy-six (76) 4-foot, 2-lamp linear T12 fluorescent with 30-watt, 2-lamp LED retrofit kit
 - Sixty-one (61) 4-foot, 2-lamp linear T8 fluorescent with 30-watt, 2-lamp LED retrofit kit
 - Forty-eight (48) 8-foot, 4-lamp linear T12 fluorescent with 60-watt, 4-lamp LED retrofit kit
 - Sixteen (16) 8-foot, 4-lamp linear T8 fluorescent with 60-watt, 4-lamp LED retrofit kit
 - Eight (8) 400-watt pole-mounted metal halide with 150-watt LED new fixture replacement
 - One (1) 400-watt wall-mounted metal halide with 150-watt LED new fixture replacement
 - Forty (40) 50-watt incandescent with 5-watt LED lamp replacement
 - Five (5) 60-watt incandescent with 10-watt LED lamp replacement
 - Twenty-four (24) 60-watt incandescent with 8-watt dimmable LED lamp replacement
 - One-hundred and eight-seven (187) 18-watt, 2-lamp compact fluorescent with 9-watt LED lamp replacement
 - Twenty (20) 30-watt compact fluorescent with 8-watt LED lamp replacement
- Installation of the following new controls:
 - Two (2) astronomical time clock controls for exterior lighting circuits
 - Two (2) dual-contactor, dual-technology ceiling mounted occupancy sensors for the Auditorium space

Customer shall be responsible for:

- Any and all asbestos and lead abatement prior to installation of any components as required.

ECM-3-LCML: IMPLEMENT DEMAND CONTROL VENTILATION FOR MAIN LIBRARY AH-1

This ECM installs new occupancy sensors and CO2 based demand control ventilation for specified high occupancy spaces. The new lighting occupancy sensor will also be tied into air handler operation to provide better control of space. This ECM will include reconditioning of the existing digital controls and actuators on the AHU.

Demolition Work*General Construction*

- None.

Mechanical

- Remove two (2) existing control dampers (outside air and return air for AH-1).

Electrical

- None.

Controls

- Remove control wiring and controls for two (2) control dampers.

New Installation Work*General Construction*

- None.

Mechanical

- Install two (2) new control dampers with integral thermal dispersion air flow measurement stations (AFMS) in location of existing dampers (outside air and return air for AH-1).
- Insulate newly installed ducts and any pipe or duct where insulation was removed as a matter of course or during any abatement of hazardous material by customer during scope of work, to meet codes in effect at the time of contract signing.

Electrical

- None.

Controls

- Provide two (2) new control dampers with integral thermal dispersion air flow measurement stations (AFMS).
- Provide programming and control wiring for two (2) new control dampers with integral thermal dispersion AFMSs.
- Integrate two (2) new space mounted occupancy sensors, and two (2) new space mounted CO2 sensors in spaces. Provide control wiring and connect to existing BAS and integrate into control logic.
- Provide control of VFD and coordinate with occupancy sensor install in the lighting portion of this project.

Customer shall be responsible for:

- Any and all asbestos abatement prior to installation of any components as required.

ECM-2-LCMSC: RETROFIT SERVICE CENTER LIGHTING TO LED

This measure upgrades the existing interior lighting to LED sources. The scope of work for lighting retrofits is summarized below. Retrofits will be completed only where identified in Attachment 5 and only for fixtures that are currently in-use and have lamps installed. Refer to Attachment 5 for the complete scope of work.

Retrofit Work***Lighting***

- Retrofits or replacements of the following fixtures, as specified in Attachment 5:
 - Three (3) 150-watt pole-mounted cobra head high intensity discharge with 50-watt LED new fixture replacement
 - Four (4) 150-watt canopy-mounted high-pressure sodium with 45-watt LED retrofit kit
 - Thirty-eight (38) 150-watt wall-mounted high-pressure sodium with 45-watt LED new fixture replacement
 - Eighteen (18) 200-watt incandescent with 45-watt LED retrofit kit
 - One (1) 2-foot-by-2-foot, 2-lamp u-bend T8 fluorescent with 15-watt, 2-lamp LED retrofit kit
 - Forty-two (42) 2-foot-by-4-foot, 2-lamp linear T8 fluorescent with 26-watt, 2-lamp LED retrofit kit
 - Thirty-seven (37) 2-foot-by-4-foot, 3-lamp linear T8 fluorescent with 39-watt, 3-lamp LED retrofit kit
 - Two (2) 2-foot-by-4-foot, 4-lamp linear T8 fluorescent with 44-watt, 2-lamp LED retrofit kit
 - Three (3) 4-foot, 1-lamp linear T8 fluorescent with 13-watt, 1-lamp LED retrofit kit
 - One-hundred and sixty-one (161) 8-foot, 2-lamp linear T8 fluorescent with 26-watt, 2-lamp LED retrofit kit
 - Twenty-three (23) 4-foot, 2-lamp linear T8 fluorescent with 26-watt, 2-lamp LED retrofit kit
 - Sixty-six (66) 8-foot, 4-lamp linear T8 fluorescent with 52-watt, 4-lamp LED retrofit kit
 - Seven (7) 400-watt pole-mounted cobra head high intensity discharge with 120-watt LED new fixture replacement
 - One (1) 400-watt metal halide with 120-watt LED retrofit kit
 - Thirty-five (35) 4-lamp linear T8 fluorescent high-bay with 88-watt, 4-lamp LED retrofit kit
 - One-hundred and eleven (111) 6-lamp linear T8 fluorescent high-bay with 120-watt, 4-lamp LED retrofit kit

Customer shall be responsible for:

- Any and all asbestos and lead abatement prior to installation of any components as required.

III. GENERAL INCLUSIONS, EXCLUSIONS AND CLARIFICATIONS TO THE SCOPE OF WORK

GENERAL, MECHANICAL AND ELECTRICAL SCOPE OF WORK INCLUSIONS:

The following is included in the Scope of Work for each ECM unless stated otherwise:

- Cutting and patching required for the installation of the work indicated, patching will match existing.
- Where connecting to existing piping systems, JCI will match existing pipe materials of construction. If the pipe is insulated, JCI will match the existing insulation thickness and jacket, unless existing insulation does not meet current codes. In that case the new pipes will have insulation that meets codes in effect at the time of contract signing.
- Demolition required to install the Scope of Work identified in each ECM. The Customer may identify any salvageable equipment prior to demolition, if any equipment is identified, then JCI will turn the equipment over to the Customer as-is, all other equipment and material will be disposed of properly.
- All work shall be performed in accordance with industry standards and approved safety practices.
- All work performed during standard 40 hour work week, Monday through Friday; weekends or overtime not included.

ADDITIONAL LIGHTING INCLUSIONS:

The following is included in the Scope of Work for each Lighting ECM unless stated otherwise:

- Lamps and ballasts removed as part of the work shall be recycled and/or disposed of in compliance with applicable regulations.
- All circuit breakers, contactors, switches/controls, existing fixtures, and the electrical system in general including grounding are assumed to be operational working order and compliant with current NEC requirements.
- Johnson Controls shall provide maintenance stock of 1.5% (LED tubes & LED lamps only).
- If specified materials become either temporarily or permanently unavailable for reasons beyond the control of Johnson Controls, then the expected time for performance of the work will be extended. Johnson Controls reserves the right to provide equivalent substitutions at no price increase.
- Where ULC listed tubular LED lamp (TLED) retrofits are proposed, external drivers will be utilized where noted in the line-by-line scope of work. Existing ballasts will be removed.
- Where retrofits of existing fixtures are proposed, the scope includes wiping down prismatic lenses with dry cloth.
- Design illumination levels: In the absence of code-mandated lighting requirements, industry standards have been used as a guide, primarily the most recent edition of the Illuminating Engineering Society of North America (IESNA), IESNA Recommended Practice documents and IESNA Design Guides.
- Existing lighting systems were presumed to be designed based on IESNA recommended practices. In the event current light levels are above IESNA recommendations for the space type (i.e., over-lit), light levels will be reduced. In the event light levels are below IESNA recommendations for the space type, JCI will meet or exceed current light levels. If the space is under-lit due to an inadequate spacing or quantity of fixtures from initial design, which requires adding fixtures, adding circuits, reconfiguration or new construction, this will be brought to the attention of the customer. LED fixtures or components specified for the project are based on comparable original lumen outputs of existing equipment rather than depreciated light output values.
- Existing and post-installation illumination levels have been sampled and will be measured in accordance with procedures recommended by IESNA using a calibrated light meter.

GENERAL CONDITIONS, MECHANICAL, ELECTRICAL AND CONTROLS SCOPE OF WORK EXCLUSIONS:

The following is excluded in the Scope of Work for each ECM unless stated otherwise:

- Any information previously released either verbally or in writing shall be deemed preliminary and shall not bind JCI in any manner.
- Resolution of existing design, service, and or distribution conditions known or unknown.
- All work will be performed during normal work hours unless stated otherwise, there is no premium time included unless otherwise noted in the ECM Scope of Work.

- Correction of any existing applicable building code violations and Federal Americans with Disabilities Act (ADA) violations identified by JCI during the execution of the Work. Such violations will be brought to the attention of the Customer for remedy.
- Hazardous material abatement or removal, such as but not limited to asbestos, lead paint mold/mildew, etc. unless noted otherwise in the ECM Scope of Work.
- Temporary space conditioning unless otherwise identified in an ECM Scope of Work.
- Duct cleaning and coil cleaning unless otherwise identified in an ECM Scope of Work.
- Duct work repair and/or replacement for air handling units will be limited to the confines of the mechanical room unless otherwise identified in an ECM Scope of Work.
- Chemical treatment of chilled water and hot water systems.
- System wide flushing of existing chilled water and hot water systems.
- Any building system design issues not related to the ECM Scope of Work is the responsibility of the Customer unless noted otherwise in the ECM Scope of Work.
- Repair or replacement of defective controls, mechanical and electrical equipment and electrical distribution system, except the equipment described in the Scope of Work (Defective equipment identified by JCI during implementation of the Scope of Work will be brought to the attention of the Customer).
- Repairs/replacement of insulation, piping or ductwork found to be corroded or rusted and unacceptable for installation of components or fittings required for installation other than what is specified in the Scope of Work.
- Providing Ethernet ports for buildings or any infrastructure hardware/software needed to connect the building to the base IT network.
- Connection to the Customers Wide-Area Network to be coordinated with Client's IT Services.
- The Customer will provide, free of charge, high-speed Internet connections and the required Virtual Private Network (VPN) services to the Contractor, for monitoring, tuning, and making system changes to the building automation system connected to the HVAC Systems or Equipment.

LIGHTING SCOPE OF WORK EXCLUSIONS:

The following is excluded in the Scope of Work for each Lighting ECM unless stated otherwise:

- Lighting fixtures not identified in the ECM Scope of Work are excluded from any repair or replacement scope.
- Reconfiguration of existing lighting system layout, except where noted herein.
- Conformance to IEEE standards if the existing layout does not comply with same.
- Repair, replacement, or calibration of damaged or defective motion sensors, time clocks, switches, breakers, and wiring unless otherwise noted in the Scope of Work.
- Repair, replacement or upgrade of existing indoor or exterior emergency and/or egress lighting system unless otherwise noted in the Scope of Work.
- Replacement of defective emergency battery backup ballasts unless otherwise noted the Scope of Work.
- Repair or replacement of cracked, broken, missing, yellowed, or damaged fixture lenses or louvers unless otherwise noted in the Scope of Work.
- Lighting Exterior Pole Lighting
 - Existing light poles will be re-used. Repair of wiring to poles, if required, is not included.
 - Pole mounted lighting is reusing existing poles. Customer is responsible for pole maintenance, repair and replacement throughout the term of the guarantee.
 - Lighting Poles will be checked for contact voltage. If any hazardous voltage is noted, work on that pole will be stopped and the customer and/or the utility company be notified immediately to correct the fault before any work will be performed.
 - Repair or replacement of defective equipment, other than the equipment specifically described above. Johnson Controls will identify the location of defective equipment and notify the Customer.
 - Repair or upgrades required to rectify existing lighting or electrical system code violations unless specifically described in this scope of work

ASSURED PERFORMANCE GUARANTEE

I. PROJECT BENEFITS

A. Certain Definitions. For purposes of this Agreement, the following terms have the meanings set forth below:

Annual Project Benefits are the portion of the projected Total Project Benefits to be achieved in any one year of the Guarantee Term.

Annual Project Benefits Realized are the Project Benefits actually realized for any one year of the Guarantee Term.

Annual Project Benefits Shortfall is the amount by which the Annual Project Benefits exceed the Annual Project Benefits Realized in any one year of the Guarantee Term.

Annual Project Benefits Surplus is the amount by which the Annual Project Benefits Realized exceed the Annual Project Benefits in any one year of the Guarantee Term.

Baseline is the mutually agreed upon data and/or usage amounts that reflect conditions prior to the installation of the Improvement Measures as set forth in Section IV below.

Guarantee Term will commence on the first day of the month next following the Substantial Completion date and will continue through the duration of the M&V Services, subject to earlier termination as provided in this Agreement.

Installation Period is the period beginning on JCI's receipt of Customer's Notice to Proceed and ending on the commencement of the Guarantee Term.

Measured Project Benefits are the utility savings and cost avoidance calculated in accordance with the methodologies set forth in Section III below.

Non-Measured Project Benefits are identified in Section II below. The Non-Measured Project Benefits have been agreed to by Customer and will be deemed achieved in accordance with the schedule set forth in the Total Project Benefits table below. Customer and JCI agree that: (i) the Non-Measured Project Benefits may include, but are not limited to, future capital and operational costs avoided as a result of the Work and implementation of the Improvement Measures, (ii) achievement of the Non-Measured Project Benefits is outside of JCI's control, and (iii) Customer has evaluated sufficient information to conclude that the Non-Measured Project Benefits will occur and bears sole responsibility for ensuring that the Non-Measured Project Benefits will be realized. Accordingly, the Non-Measured Project Benefits shall not be measured or monitored by JCI at any time during the Guarantee Term, but rather shall be deemed achieved in accordance with the schedule set forth in the Total Project Benefits table below.

Project Benefits are the Measured Project Benefits plus the Non-Measured Project Benefits to be achieved for a particular period during the term of this Agreement.

Total Project Benefits are the projected Project Benefits to be achieved during the entire term of this Agreement.

B. Project Benefits Summary. Subject to the terms and conditions of this Agreement, JCI and Customer agree that Customer will be deemed to achieve a total of \$2,406,423 in Non-Measured Project Benefits and JCI guarantees that Customer will achieve a total of \$3,439,947 in Measured Project Benefits during the term of this Agreement, for Total Project Benefits of \$5,846,371, as set forth in the Total Project Benefits table below.

Total Project Benefits

Year	Guaranteed Measured Utility Cost Avoidance*	Guaranteed Non-Measured Utility Cost Avoidance*	Utility Incentive Benefits	Operations & Maintenance Cost Avoidance**	Future Capital Cost Avoidance**	Annual Project Benefits
1	\$ 128,020	\$ 2,629	\$ 145,794	\$ 59,173	\$ 600,000	\$ 935,615
2	\$ 131,861	\$ 2,707	\$ -	\$ 60,948	\$ -	\$ 195,516
3	\$ 135,816	\$ 2,789	\$ -	\$ 62,777	\$ -	\$ 201,382
4	\$ 139,891	\$ 2,872	\$ -	\$ 64,660	\$ -	\$ 207,423
5	\$ 144,088	\$ 2,958	\$ -	\$ 66,600	\$ -	\$ 213,646
6	\$ 148,410	\$ 3,047	\$ -	\$ 68,598	\$ -	\$ 220,055
7	\$ 152,863	\$ 3,139	\$ -	\$ 70,656	\$ -	\$ 226,657
8	\$ 157,449	\$ 3,233	\$ -	\$ 72,775	\$ -	\$ 233,457
9	\$ 162,172	\$ 3,330	\$ -	\$ 74,959	\$ -	\$ 240,460
10	\$ 167,037	\$ 3,430	\$ -	\$ 77,207	\$ -	\$ 247,674
11	\$ 172,048	\$ 3,533	\$ -	\$ 79,524	\$ -	\$ 255,104
12	\$ 177,210	\$ 3,639	\$ -	\$ 81,909	\$ -	\$ 262,758
13	\$ 182,526	\$ 3,748	\$ -	\$ 84,367	\$ -	\$ 270,640
14	\$ 188,002	\$ 3,860	\$ -	\$ 86,898	\$ -	\$ 278,759
15	\$ 193,642	\$ 3,976	\$ -	\$ 89,504	\$ -	\$ 287,122
16	\$ 199,451	\$ 4,095	\$ -	\$ 92,190	\$ -	\$ 295,736
17	\$ 205,435	\$ 4,218	\$ -	\$ 94,955	\$ -	\$ 304,607
18	\$ 211,598	\$ 4,345	\$ -	\$ 97,804	\$ -	\$ 313,746
19	\$ 217,946	\$ 4,475	\$ -	\$ 100,738	\$ -	\$ 323,159
20	\$ 224,484	\$ 4,609	\$ -	\$ 103,760	\$ -	\$ 332,853
Total	\$ 3,439,947	\$ 70,630	\$ 145,793	\$ 1,590,000	\$ 600,000	\$ 5,846,371

*Utility Cost Avoidance figures in the table above are based on anticipated increases in unit energy costs as set forth in the table in Section IV below.

** Operations & Maintenance Cost Avoidance and Future Capital Cost Avoidance are Non-Measured Project Benefits. Operations & Maintenance Cost Avoidance figures in the table above are based on a mutually agreed fixed annual escalation rate of three percent (3.0%).

Within sixty (60) days of the commencement of the Guarantee Term, JCI will calculate the Measured Project Benefits achieved during the Installation Period plus any Non-Measured Project Benefits applicable to such period and advise Customer of same. Any Project Benefits achieved during the Installation Period may, at JCI's discretion, be allocated to the Annual Project Benefits for the first year of the Guarantee Term. Within sixty (60) days of each anniversary of the commencement of the Guarantee Term, JCI will calculate the Measured Project Benefits achieved for the applicable year plus any Non-Measured Project Benefits applicable to such period and advise Customer of same.

Customer acknowledges and agrees that if, for any reason, it (i) cancels or terminates receipt of M&V Services, (ii) fails to pay for M&V Services in accordance with Schedule 4, (iii) fails to fulfill any of its responsibilities necessary to enable JCI to complete the Work and provide the M&V Services, or (iv) otherwise cancels, terminates or materially breaches this Agreement, the Assured Performance Guarantee shall automatically terminate and JCI shall have no liability hereunder.

C. Project Benefits Shortfalls or Surpluses.

- (i) *Project Benefits Shortfalls.* If an Annual Project Benefits Shortfall occurs for any one year of the Guarantee Term, JCI shall, at its discretion and in any combination, (a) set off the amount of such shortfall against any unpaid balance Customer then owes to JCI, (b) where permitted by applicable law, increase the next year's amount of Annual Project Benefits by the amount of such shortfall, (c) pay to Customer the amount of such shortfall, or (d) subject to Customer's agreement, provide to Customer additional products or services, in the value of such shortfall, at no additional cost to Customer.*

- (ii) Project Benefits Surpluses. If an Annual Project Benefits Surplus occurs for any one year of the Guarantee Term, JCI may, at its discretion and in any combination, (a) apply the amount of such surplus to set off any subsequent Annual Project Benefit Shortfall during the Guarantee Term, or (b) bill Customer for the amount of payments made pursuant to Section C(i)(c) above and/or the value of the products or services provided pursuant to clause C(i)(d) above, in an amount not to exceed the amount of such surplus.*

- (iii) Additional Improvements. Where an Annual Project Benefits Shortfall has occurred, JCI may, subject to Customer's approval (which approval shall not be unreasonably withheld, conditioned, or delayed), implement additional Improvement Measures, at no cost to Customer, which may generate additional Project Benefits in future years of the Guarantee Term.

II. NON-MEASURED PROJECT BENEFITS

The Project Benefits identified below were derived using engineering calculations based on industry standards and data provided by the Customer. These Project Benefits shall be Non-Measured Project Benefits (as defined above). The information in this section summarizes the Non-Measured Project Benefits.

The parties acknowledge that Customer's capital contribution of \$600,000, to be paid in full to JCI in the first year of the performance period, shall result in the receipt by Customer of certain "Capital Cost Avoidance" benefits, which benefits are Non-Measured Project Benefits, as set forth below. It is understood between the Parties that (a) any equipment included in the Work for which capital outlay funds have been allocated for replacement are included in such Capital Cost Avoidance benefits; (b) equipment to be replaced pursuant to this Project that is at or near the end of its useful life is included in Capital Cost Avoidance benefits even if not budgeted, and Customer stipulates that for such equipment, failure and replacement is imminent within the Guaranty Term; and (c) Project Benefits allocable to Capital Cost Avoidance shall be the amortized cost of the equipment being replaced over the desired period, which must be no longer than the useful life of the equipment or the Guaranty Term (calculated as total installed cost / number of years).

Non-Measured Project Benefits

Year	Non-Measured Utility Benefits	Utility Incentive Benefits	Non-Measured Operational Benefits	Future Capital Cost Avoidance	Annual Non-Measured Project Benefits
1	\$ 2,629	\$ 145,794	\$ 59,173	\$ 600,000	\$ 807,596
2	\$ 2,707	\$ -	\$ 60,948	\$ -	\$ 63,650
3	\$ 2,789	\$ -	\$ 62,777	\$ -	\$ 65,560
4	\$ 2,872	\$ -	\$ 64,660	\$ -	\$ 67,527
5	\$ 2,958	\$ -	\$ 66,600	\$ -	\$ 69,552
6	\$ 3,047	\$ -	\$ 68,598	\$ -	\$ 71,639
7	\$ 3,139	\$ -	\$ 70,656	\$ -	\$ 73,788
8	\$ 3,233	\$ -	\$ 72,775	\$ -	\$ 76,002
9	\$ 3,330	\$ -	\$ 74,959	\$ -	\$ 78,282
10	\$ 3,430	\$ -	\$ 77,207	\$ -	\$ 80,630
11	\$ 3,533	\$ -	\$ 79,524	\$ -	\$ 83,049
12	\$ 3,639	\$ -	\$ 81,909	\$ -	\$ 85,541
13	\$ 3,748	\$ -	\$ 84,367	\$ -	\$ 88,107
14	\$ 3,860	\$ -	\$ 86,898	\$ -	\$ 90,750
15	\$ 3,976	\$ -	\$ 89,504	\$ -	\$ 93,473
16	\$ 4,095	\$ -	\$ 92,190	\$ -	\$ 96,277
17	\$ 4,218	\$ -	\$ 94,955	\$ -	\$ 99,165
18	\$ 4,345	\$ -	\$ 97,804	\$ -	\$ 102,140
19	\$ 4,475	\$ -	\$ 100,738	\$ -	\$ 105,204
20	\$ 4,609	\$ -	\$ 103,760	\$ -	\$ 108,360

In the table above, each column before Annual Non-Measured Project Benefits contains rounded amounts.

Non-Measured Utility Benefits	ECM	Year 1 Benefits	Escalation
Implement Demand Control Ventilation for Main Library AH-1	ECM-3-LCML	\$ 165	3.00%
Replace La Crosse Center VAV Terminals	ECM-2-LCC	\$ 2,464	3.00%
Repair La Crosse Center Arena AHUs	ECM-3-LCC	\$ 0	3.00%
Total Non-Measured Utility Benefits =		\$ 2,632	

ECM-3-LCML Implement Demand Control Ventilation for Main Library AH-1

ASSUMPTIONS:	
Airside:	72 °F is the Indoor Air Temperature (IAT) 55 °F is the coil Discharge Air Temperature (DAT) 1,200 cfm, BASELINE minimum amount of Outside Air (OA) 600 cfm, DCV minimum amount of Outside Air (OA) 3,000 cfm, the design amount of air flow 75% Amount of Design cfm that's supplied to exterior spaces 1 Reheat Coils (1="Yes", 2="No") 0.99 horsepower rating of supply air fan 1,800 rpm rating of supply air fan 100.0% Existing motor full load efficiency 100.0% Proposed motor full load efficiency 100.0% Proposed VFD full load efficiency
Cooling:	1 1 If Chiller is Electric: 2 If Chiller is district cooling 1.200 kW/Ton rating of chiller plant (If Electric Chiller) 1 Unit-of-Clg/Ton seasonal average rating of District chiller plant Ton-Hr Plant cooling unit (Ton-Hr for District)
Heating:	88% Efficiency of Heating plant 100,000 BTU per fuel unit Therms Fuel Unit
Energy Rates:	\$0.0663 Electrical Consumption Rate \$0.6270 Average Heating Fuel C (Nat Gas \$/therm) na Average Cooling Cost (District \$/ton-hr)
EQUATIONS USED:	
<u>FAN LAW:</u>	$HP2 = (CFM2/CFM1)^3 \times HP1$
<u>MTR kW:</u>	$(HP \times .746) \div (Mtr\ Eff. \times Drv.\ Eff.)$
<u>Mixed Air Temp:</u>	$[OAT \times \%OA] + [IAT \times (1 - \%OA)]$
<u>Cooling BTU:</u>	$CFM \times 1.08 \times (MAT - DAT)^\circ F$
<u>Cooling kW:</u>	$(BTU \div 12,000\ BTU/TON) \times kW/ton$
<u>Reheat Savings:</u>	$Cooling \{Existing\ BTUH - Proposed\ BTUH\} \div (Heat-Content\ BTU/Fuel-Unit \times Eff.)$
<u>Heating BTU:</u>	$CFM \times 1.08 \times (DAT - MAT)^\circ F$
<u>Heating Fuel/Yr.:</u>	$\{BTU \times Run\ Hours\} \div (Heat-Content\ BTU/Fuel-Unit \times Eff.)$
<u>Reheat Savings (H):</u>	$CFM \times 1.08 \times (IAT - MAT)$

La Crosse Library - Occupancy and DCV		
Electrical Energy Savings:	534	KWH/yr
Electrical Dollar Savings:	\$31	\$/yr
Cooling Energy Savings:	0	Ton-Hr/yr
Cooling Dollar Savings:	\$0	\$/yr
Heating Fuel Savings:	217	Therms/Yr.
Heating Fuel Dollar Savings:	\$134	\$/yr
Total Dollar Savings:	\$165	

ECM-3-LLC Replace La Crosse Center VAV Terminals

Input Constants	
Zone Balance Temp	42
Winter Space Temp	70
Summer Space Temp	70
Summer Indoor Enthalpy	25
Supply Fan kW	29.8
Return Fan kW	0
Supply CFM	26,500
Summer Des. OA Temp	91.7
Winter Des. OA Temp.	-13.7
Minimum Flow (Box)	30%
Exist. Min. % OA Flow	100%
Minimum % OA (Allowed)	61%
Cooling System kW/ton	0.7
Gas Cost (\$/therm)	0.481628
Electricity Cost (\$/kWh)	0.064
Steam Cost (\$/Mlbs)	0.00
Opr Hrs/Week	80
Reheat CFM	0
Reheat DT	0
Est. Peak CFM	100%
Periph % Cooling CFM	0.00
Core % Cooling CFM	1.00
Periph % Heating CFM	0.00
Core % Heating CFM	1.00

OA Temp	OA Enthalpy	Total Hours	Opr. Hours	% Load (VAV)
97	37.9	6	3	78%
92	36.9	42	20	78%
87	33.2	137	65	78%
82	31.9	287	137	78%
77	29.7	451	215	78%
72	27.4	605	288	78%
67	25.6	689	328	78%
62	23.6	726	346	78%
57	21.4	639	304	78%
52	18.7	538	256	78%
47	—	523	249	80%
42	—	510	243	80%
37	—	631	300	80%
32	—	827	394	80%
27	—	663	316	80%
22	—	462	220	80%
17	—	324	154	80%
12	—	250	119	80%
7	—	179	85	80%
2	—	128	61	80%
-3	—	81	39	80%
-8	—	49	23	80%
-13	—	13	6	80%
Total	0	8,760	4,171	

Constant Volume System						
OA Temp	Fan kWh	OA CFM	Vent kWh	Vent Mlbs	Reheat Mlbs	Reheat kWh
97	85	26,500	110	0	0	0
92	596	26,500	796	0	0	0
87	1,944	26,500	1,660	0	0	0
82	4,073	26,500	3,453	0	0	0
77	6,400	26,500	4,198	0	0	0
72	8,585	26,500	3,742	0	0	0
67	9,777	26,500	3,201	0	0	0
62	10,302	26,500	0	0	0	0
57	9,068	26,500	0	0	0	0
52	7,634	26,500	0	0	0	0
47	7,422	26,500	0	0	0	0
42	7,237	26,500	0	0	0	0
37	8,954	26,500	0	88	0	0
32	11,736	26,500	0	132	0	0
27	9,408	26,500	0	120	0	0
22	6,556	26,500	0	93	0	0
17	4,598	26,500	0	72	0	0
12	3,548	26,500	0	61	0	0
7	2,540	26,500	0	48	0	0
2	1,816	26,500	0	37	0	0
-3	1,149	26,500	0	25	0	0
-8	695	26,500	0	16	0	0
-13	184	26,500	0	5	0	0
Total	124,309		17,160	697	0	0

Variable Volume System						
OA Temp	% Fan Power	Fan kWh	OA CFM	Vent kWh	Vent Mlbs	Reheat Mlbs
97	73%	62	16,271	67	0	0
92	73%	434	16,271	489	0	0
87	73%	1,416	16,271	1,020	0	0
82	73%	2,966	16,271	2,120	0	0
77	73%	4,661	16,271	2,578	0	0
72	73%	6,252	16,271	2,298	0	0
67	73%	7,120	16,271	1,965	0	0
62	73%	7,502	16,271	0	0	0
57	73%	6,603	16,271	0	0	0
52	73%	5,560	16,271	0	0	0
47	75%	5,590	16,271	0	0	0
42	75%	5,451	16,271	0	0	0
37	75%	6,744	16,271	0	54	0
32	75%	8,839	16,271	0	81	0
27	75%	7,086	16,271	0	74	0
22	75%	4,938	16,271	0	57	0
17	75%	3,463	16,271	0	44	0
12	75%	2,672	16,271	0	38	0
7	75%	1,913	16,271	0	29	0
2	75%	1,368	16,271	0	23	0
-3	75%	866	16,271	0	15	0
-8	75%	524	16,271	0	10	0
-13	75%	139	16,271	0	3	0
Total		92,170		10,536	428	0

OA Temp	CHW Temp	Tmix	Total Load	Tsupp	CV DT Reheat	VAV DLoad	VAV Tsupp	VAV DT Reheat	New OA CFM
97	44	97	0.80	58.00	3.00	-0.02	58.27	0.00	16,271
92	44	92	0.80	58.00	3.00	-0.02	58.27	0.00	16,271
87	44	87	0.80	58.00	3.00	-0.02	58.27	0.00	16,271
82	44	82	0.80	58.00	3.00	-0.02	58.27	0.00	16,271
77	44	77	0.80	58.00	3.00	-0.02	58.27	0.00	16,271
72	44	72	0.80	58.00	3.00	-0.02	58.27	0.00	16,271
67	44	67	0.80	58.00	3.00	-0.02	58.27	0.00	16,271
62	44	62	0.80	58.00	3.00	-0.02	58.27	0.00	16,271
57	44	57	0.80	58.00	3.00	-0.02	58.27	0.00	16,271
52	44	52	0.80	58.00	3.00	-0.02	58.27	0.00	16,271
47	0	47	0.80	58.00	3.00	0.00	58.00	0.00	16,271
42	0	42	0.80	58.00	3.00	0.00	58.00	0.00	16,271
37	0	37	0.80	58.00	3.00	0.00	58.00	0.00	16,271
32	0	32	0.80	58.00	3.00	0.00	58.00	0.00	16,271
27	0	27	0.80	58.00	3.00	0.00	58.00	0.00	16,271
22	0	22	0.80	58.00	3.00	0.00	58.00	0.00	16,271
17	0	17	0.80	58.00	3.00	0.00	58.00	0.00	16,271
12	0	12	0.80	58.00	3.00	0.00	58.00	0.00	16,271
7	0	7	0.80	58.00	3.00	0.00	58.00	0.00	16,271
2	0	2	0.80	58.00	3.00	0.00	58.00	0.00	16,271
-3	0	-3	0.80	58.00	3.00	0.00	58.00	0.00	16,271
-8	0	-8	0.80	58.00	3.00	0.00	58.00	0.00	16,271
-13	0	-13	0.80	58.00	3.00	0.00	58.00	0.00	16,271

Formulas	
(1) % Load=	Periph % Design CFM x (T—dOA—T—dbal)/(T—ddes—T—dbal) + 0.8 x Core % DDesign CFM (assumes an average 80% internal zone heating and cooling load)
(2) Vent kWh=	Supp. CFM x % OA x 4.5 x (h—dOA—h—dindoor) x hours x kW/ton /12,000 Btuh/ton
(3) Vent Mlbs=	Supp. CFM x % OA x 1.08 x (T—dindoor—T—dOA) x hours / 970,000 Btuh/Mlb
(4) % Fan Power=	% Load^1.5/ (Drive Eff.=95%)
(5) CAV Reheat DT=	Troom - % Load x (Troom-55) - 55
(6) VAV Reheat DT=	Tsupp + DTreheat CAV - Troom - % Load x (Troom-55) -55
(7) CAV Reheat Load=	Reheat DT x Reheat CFM x 1.08 x Opr. Hrs. / 970,000
(8) VAV Reheat Load=	Reheat DT x Reheat CFM x VAV % Load x 1.08 x Opr. Hrs. / 970,000
(9) Reheat Cooling Load=	Reheat CFM x VAV % Load x 1.08 x (Tmix - 55) x Opr. Hrs. x kW/ton / 12000
(10) % Cooling Load=	Core % Design CFM x 0.8 (avg Load) + Peripheral % Design CFM x % Load (see note-1)
(11) % Heating Load=	Core % Design CFM x 0.8 (avg Load) + Peripheral % Design CFM x % Load (see note-1)

	Electricity (kWh)	Steam (Mlbs)	ABR (\$)
Savings	38,763	269	\$2,464

Non-Measured Operational Benefits	ECM	Year 1 Benefits	Escalation
The Non-Measured Operational Benefits of ECM-2-LCCH are a result of Operational Subcontracted Maintenance and Repair Costs avoided due to the new chiller	ECM-2-LCCH	\$ 10,300	3.00%

Non-Measured Operational Benefits	ECM	Year 1 Benefits	Escalation
The Non-Measured Operational Benefits of ECM-4-LCCH are the result of Operational Material Savings due to Lighting Replacement	ECM-4-LCCH	\$ 4,708	3.00%
The Non-Measured Operational Benefits of ECM-1-LCC are the result of Operational Material Savings due to Lighting Replacement	ECM-1-LCC	\$ 26,122	3.00%
The Non-Measured Operational Benefits of ECM-1-LCC-ALT are the result of Operational Material Savings due to Lighting Replacement	ECM-1-LCC-ALT	\$ 5,768	3.00%
The Non-Measured Operational Benefits of ECM-2-LCML are the result of Operational Material Savings due to Lighting Replacement	ECM-2-LCML	\$ 7,687	3.00%
The Non-Measured Operational Benefits of ECM-2-LCMSC are the result of Operational Material Savings due to Lighting Replacement	ECM-2-LCMSC	\$ 4,588	3.00%
Total Non-Measured Operational Benefits =		\$ 59,173	

Chiller

Customer shall see a reduction in the cost of ongoing maintenance for the chilled water system as a direct result of the implementation of ECM-2-LCCH. Savings were derived from the expected costs of known repairs planned for the equipment as provided by Customer.

Lighting Material Savings (ECM-4-LCCH, ECM-1-LCC, ECM-1-LCC-ALT, ECM-2-LCML, ECM-2-LCMSC)

Customer shall see a reduction in the cost of lighting materials as a direct result of the implementation of ECM-4-LCCH, ECM-1-LCC, ECM-1-LCC-ALT, ECM-2-LCML, and ECM-2-LCMSC. O&M cost avoidance for lighting materials derive from the installation of new lighting equipment which include cost avoidance from reduced expenses for lamps and ballasts realized as a result of the replacement of existing fluorescent lamps with LED lamps and the elimination of existing ballast materials. LED lamps have longer rated lives with warranties as indicated in the warranty submittal.

Material savings were calculated by the following equations:

Material Savings (Project Term)

Lamp Unit Cost per Hour = Average Lamp Cost ÷ Average Lamp Life.

Ballast Unit Cost per Hour = Average Ballast Cost ÷ Average Ballast Life.

Existing Annual Lamp Material Cost = Existing Burn Hours × Quantity of Lamps × Lamp Unit Cost per Hour.

Existing Annual Ballast Material Cost = Existing Burn Hours × Quantity of Ballasts × Ballast Unit Cost per Hour.

Proposed Annual Lamp Material Cost = Existing Burn Hours × Quantity of Lamps × Lamp Unit Cost per Hour.

Proposed Annual Ballast Material Cost = Existing Burn Hours × Quantity of Ballasts × Ballast Unit Cost per Hour.

Proposed Annual Material Cost = Proposed Burn Hours × ((Quantity of Lamps × Lamp Unit Cost per Hour) + (Quantity of Ballasts × Ballast Unit Cost per Hour)).

Annualized Project Term Material Savings = ((Project Term × (Existing Annual Lamp Material Cost + Existing Annual Ballast Material Cost)) - ((Project Term - Proposed Lamp Warranty Period) × Proposed Annual Lamp Material Cost) + ((Project Term - Proposed Ballast Warranty Period) × Proposed Annual Ballast Material Cost)) ÷ Project Term.

Utility Incentive Benefits	ECM	Year 1 Benefits	Escalation
The Focus on Energy Incentive Benefit is the result of lighting energy savings	ECM-4-LCCH	\$ 11,628	0%

The Xcel Energy Bonus Incentive Benefit is the result of lighting energy savings	ECM-4-LCCH	\$ 3,600	0%
The Focus on Energy Incentive Benefit is the result of lighting energy savings	ECM-1-LCC	\$ 63,729	0%
The Xcel Energy Bonus Incentive Benefit is the result of lighting energy savings	ECM-1-LCC	\$ 3,600	0%
The Focus on Energy Incentive Benefit is the result of lighting energy savings	ECM-1-LCC-ALT	\$ 17,657	0%
The Xcel Energy Bonus Incentive Benefit is the result of lighting energy savings	ECM-1-LCC-ALT	\$ 3,600	0%
The Focus on Energy Incentive Benefit is the result of lighting energy savings	ECM-2-LCML	\$ 21,573	0%
The Xcel Energy Bonus Incentive Benefit is the result of lighting energy savings	ECM-2-LCML	\$ 3,600	0%
The Focus on Energy Incentive Benefit is the result of lighting energy savings	ECM-2-LCMSC	\$ 13,207	0%
The Xcel Energy Bonus Incentive Benefit is the result of lighting energy savings	ECM-2-LCMSC	\$ 3,600	0%
Total Non-Measured Utility Incentive Benefits =		\$ 145,794	

The Non-measured Project Benefits described in the table above run for the entire performance period. Focus on Energy Incentive Benefits and Xcel Energy Bonus Incentive Benefits are estimated based on funding formulas current at the time of development but are not part of the financial guarantee. Utility Incentive Benefits are a one-time rebate anticipated to occur during Year 1 of the Project Benefits Term.

Post-installation, the proposed efficiency rating in scope of work will be compared with the ECMs As-built documentation to confirm actual units installed. The achieved non-measured benefits will be adjusted one-time only and documented in the Post-Installation Report if proposed unit efficiency does not meet or exceed efficiency listed in scope of work.

Customer agrees that the Non-Measured Project Benefits are reasonable and that the installation of the Improvement Measures will enable Customer to take actions that will result in the achievement of such Non-Measured Project Benefits.

III. MEASUREMENT AND VERIFICATION METHODOLOGIES

The following is a brief overview of the measurement and verification methodologies applicable to the Improvement Measures set forth below. JCI shall apply these methodologies, as more fully detailed in the guidelines and standards of the International Measurement and Verification Protocol (IPMVP), in connection with the provision of M&V Services hereunder.

OPTION A Retrofit Isolation: Key Parameter Measurement

Measured Project Benefits are determined by partial field measurement of the energy use of the system(s) to which an Improvement Measure was applied separate from the energy use of the rest of the facility.

Partial measurement means that some but not all parameters will be measured. Careful review of the design and installation of Improvement Measures is intended to demonstrate that the stipulated values fairly represent the probable actual values. Agreed-upon values will be shown in the measurement and verification plan. Engineering calculations using measurements and stipulations are used to calculate Measured Project Benefits for the duration of the Guarantee Term.

Measured Project Benefits from the following Improvement Measures will be calculated using Option A:

ECM Number	ECM Name	Year 1 Savings
ECM-1-LCCH	Replace Existing City Hall Heating Plant	\$ 7,672
ECM-2-LCCH	Replace Existing City Hall Chiller and Reconfigure Existing Chilled Water Plant	\$ 9,606
ECM-4-LCCH	Retrofit City Hall Lighting to LED	\$ 7,922
ECM-1-LCC	Retrofit La Crosse Center Lighting to LED	\$ 56,193
ECM-1-LCC-ALT	Retrofit La Crosse Center Parking Ramp Lighting to LED	\$ 14,768
ECM-1-LCML	Replace and Reconfigure Main Library Cooling Plant	\$ 8,877
ECM-2-LCML	Retrofit Main Library Lighting to LED	\$ 16,745
ECM-2-LCMSC	Retrofit Service Center Lighting to LED	\$ 6,236
Total		\$ 128,020

Lighting Retrofits (ECM-4-LCCH, ECM-1-LCC, ECM-1-LCC-ALT, ECM-2-LCML, ECM-2-LCMSC)

The savings for this ECM are generated through a reduction in energy used by the lighting system; therefore the measurement boundary is the lighting system itself.

Equations for Calculating Lighting Retrofit Savings (Option A)

Demand (kW)

$$\text{Connected kW Saving} = \sum_u [(kW/\text{Fixture}_{\text{baseline}} \times \text{Quantity}_{\text{baseline}} - kW/\text{Fixture}_{\text{post}} \times \text{Quantity}_{\text{post}})]_{t,u}$$

where:

- kW/fixture_{baseline} = lighting baseline demand per fixture for usage group u
- kW/fixture_{post} = lighting demand per fixture during post-installation period for usage group u
- Quantity_{baseline} = quantity of affected fixtures before the lighting retrofit for usage group u
- Quantity_{post} = quantity of affected fixtures after the lighting retrofit for usage group u

Examples of usage groups include hallways and offices.

Energy (kWh)

$$kWh\ Savings_{Lighting} = \sum_u [Connected\ kW\ Savings_u \times Hours\ of\ Operation]_{t,u}$$

where:

$kW\ Savings_u$ = kilowatt savings realized during the post-installation time for usage group u

$Hours\ of\ Operation$ = number of operating hours during the time period t for the usage group u

The lighting system annual run hours by space type are agreed to be as summarized in the table below. The run hours are based on building operating schedules and information provided by facility staff during walk-throughs. These values are considered non-measured and agreed upon by the Customer. Refer to Attachment 5 for a space-by-space listing of run hours.

Building	Area	Existing Burn Hours Assigned	Proposed Burn Hours
City Hall	Elevators	8,760	8,760
	Police Station Common Areas	8,760	4,380
	Exterior Wallpacks	4,380	2,500
	Police Station, all other areas	2,500	2,500
	Main Lobby	2,500	2,500
	Grounds Department Basement Rooms	2,500	1,000
	Police Firing Range	1,000	2,000
	City Hall, all other areas	2,000	4,084
La Crosse Center	South Hall A, Metal Halide Lighting	4,084	4,000
	South Hall A, Halogen Incandescent Lighting	4,000	4,300
	South Hall B	4,300	4,400
	South Hall Lobby	4,400	3,800
	Arena, Metal Halide Lighting	3,800	2,500
	Arena, Halogen Incandescent Lighting	2,500	1,500
	Common Areas	1,500	1,000
	Offices	1,000	8,760
La Crosse Center Parking Ramp	Elevator	8,760	8,760
	24/7 Canopy Lighting	8,760	8,760
	All other lighting	4,380	4,380
Main Library	Public Reading Rooms	3,850	3,850
	Exterior Lighting	4,300	4,300
	Elevators	8,760	8,760
	Basement Offices and Auditorium	2,000	2,000
	Basement Storage Spaces	1,000	1,000
	Basement Utility Rooms	500	500
	Winding Rivers Room	1,500	1,500

Building	Area	Existing Burn Hours Assigned	Proposed Burn Hours
Municipal Services Center	Maintenance Shop	6,370	6,370
	Exterior Lighting	4,300	4,300
	Parts	3,000	3,000
	MTU Office, Streets Office	2,500	2,500
	Vehicle Storage	2,125	2,125
	Sign Shop	2,000	2,000
	Bus Parking	1,820	1,820
	Lunch Room	1,500	1,500

Lighting Sampling Plan

The existing power draw will be measured using a true RMS meter. The pre-installation and post-installation sample plan will adhere to typical 80/20 guidelines (sample sized based on 80% confidence, 20% precision, and a coefficient of variation of 0.5). Fixtures with similar lamps and ballasts, counts and types, will be grouped together with a lamp/ballast code. Measured wattages will be used where collected. In some situations, such as when a certain type of lighting fixture is not available by itself on a switch, typical wattages as published by ANSI (American National Standards Institute) will be used. These values will be measured only once prior to retrofit and then again after the retrofit. Measurements will be taken at the same location during installation. The lighting savings calculations will be updated for the values and reported in the annual report. The tables below are the expected sample plans:

ECM-4-LCCH Lighting Retrofits

Pre-Construction Component Code	Pre-Construction Population	Existing System kW	Projected kWh Savings	Percentage of Connected Load	Percentage of Saving Contribution	Population Sample Size for Coefficient of Variation: 0.5	Minimum Required Fixture Samples
2x4 2L T8 Troffer	687	39.905	49,031.06	36%	42%	11	11
23w CFL	131	38.645	27,848.96	35%	24%	11	11
2x4 3L T8 Troffer	95	8.315	9,121.31	8%	8%	10	10
2x4 4L T8 Troffer	44	4.528	5,005.20	4%	4%	9	9
Totals				83%	78%		

ECM-1-LCC Lighting Retrofits

Pre-Construction Component Code	Pre-Construction Population	Existing System kW	Projected kWh Savings	Percentage of Connected Load	Percentage of Saving Contribution	Population Sample Size for Coefficient of Variation: 0.5	Minimum Required Fixture Samples
1000w MH Highbay	110	111.65	323,871.63	33%	38%	10	10
1000w Halogen Pars Dim	100	100	250,000.00	29%	29%	10	10
400w Metal Halide Highbay	96	33.792	98,424.73	10%	12%	10	10
4' 2L T8 Linear	272	15.776	17,607.59	5%	2%	11	11
Dimm 2L 42w PL 10"can	168	15.624	43,365.67	5%	5%	11	11
Totals				82%	86%		

ECM-1-LCC-ALT Lighting Retrofits

Pre-Construction Component Code	Pre-Construction Population	Existing System kW	Projected kWh Savings	Percentage of Connected Load	Percentage of Saving Contribution	Population Sample Size for Coefficient of Variation: 0.5	Minimum Required Fixture Samples
150w Canopy	285	52.725	212,693.90	89%	92%	11	11
Totals				89%	92%		

ECM-2-LCML Lighting Retrofits

Pre-Construction Component Code	Pre-Construction Population	Existing System kW	Projected kWh Savings	Percentage of Connected Load	Percentage of Saving Contribution	Population Sample Size for Coefficient of Variation: 0.5	Minimum Required Fixture Samples
Main Area	540	43.246	98,489.72	35%	40%	11	11
Childrens	168	11.375	25,362.98	9%	10%	11	11
Exterior Poles	18	6.49	18,895.06	5%	8%	7	7
Auditorium	75	5.903	5,393.73	5%	2%	10	10
Collection Mgmt	75	5.733	12,453.53	5%	5%	10	10
Winding Rivers Rm	51	4.998	3,868.67	4%	2%	10	10
Book sale Rm	67	4.883	3,018.36	4%	1%	10	10
Archives	68	4.408	9,573.03	4%	4%	10	10
Boiler room	23	4.317	1,903.91	3%	1%	8	8
Bathrooms & Storage	52	3.506	2,194.03	3%	1%	10	10
Basement Storage	22	3.366	1,986.93	3%	1%	8	8
Circulation	32	2.976	6,794.17	2%	3%	9	9
Throughout Building	55	2.75	23,078.22	2%	9%	10	10
Totals				84%	87%		

ECM-2-LCMSC Lighting Retrofits

Pre-Construction Component Code	Pre-Construction Population	Existing System kW	Projected kWh Savings	Percentage of Connected Load	Percentage of Saving Contribution	Population Sample Size for Coefficient of Variation: 0.5	Minimum Required Fixture Samples
6L Highbay	111	20.535	30,861.74	34%	32%	10	10
150w HPS	42	7.77	24,877.65	13%	26%	9	9
4' 2L T8 8' strip	161	7.5992	8,693.27	12%	9%	11	11
4' 4L T8 8' strip	66	6.6528	6,748.72	11%	7%	10	10
4L Highbay	35	4.34	2,949.31	7%	3%	9	9
200w Incandescent	18	3.6	2,749.50	6%	3%	7	7
Totals				83%	81%		

ECM-1-LCCH Replace Existing City Hall Heating Plant

The savings for this ECM are generated through a gain in efficiency with the new equipment compared to the existing equipment.

The baseline efficiency is based on manufacturer's data, engineering judgment and the age of the equipment. It is agreed that the efficiency is to be 75% and will not be measured. Boiler Radiant Jacket and Boiler Distribution Losses listed below are also estimated and will not be measured. The calculation below will be annually updated with the measured boiler combustion efficiency and the savings calculation updated and reported in the annual report. Boilers operating schedule will be reviewed annually.

Savings calculations assume that natural gas is the primary fuel and that fuel oil is used only during curtailment or emergencies.

Savings Summary	Existing	Proposed	Savings	Savings
MMBtu/yr	7,721	6,210	1,271	\$7,672.00
Total				\$7,672.00

Inputs		
Utility Rate	\$0.604	per therm
Consumption From Bills	77,206	therms
Non Boiler Consumption of Natural Gas		
% of DHW use	1%	(Assumption)

Heating System Efficiency	
Assumed Current Boiler Combustion Efficiency (%)	75.0%
Proposed Boiler Combustion Efficiency (%)	82.69%
Assumed Current Boiler Radiant Jacket Losses (%)	9.0%
Proposed Boiler Radiant Jacket Losses (%)	1.0%
Current Boiler Distribution Losses (%)	5.0%
Proposed Boiler Distribution Losses (%)	5.0%
Oil Usage Information	
Annual Fuel Consumption (MMBtu)	0.00
Proposed Oil Savings from other measures (MMBtu)	0.00
Estimated Non-Boiler Oil Consumption (MMBtu)	0.00
Gas Usage Information	
Annual Gas Consumption (Therms)	77,206
Proposed Gas Savings from other measures (Therms)	0.00
Estimated Non-Boiler Gas Consumption (Therms)	772
Calculation	
Net Applicable Fuel Usage (MMBtu)	7,643
Current Boiler Fuel-to-Heat Efficiency (%)	64%
Proposed Boiler Fuel-to-Heat Efficiency (%)	80%
Fuel Savings (MMBtu)	1,270.91

Formulae

1. Net Applicable Fuel Usage (MMBtu) = (Current Oil Consumption - Proposed Oil Savings from other measures - Non-Boiler Oil Consumption) + (Current Gas Consumption - Proposed Gas Savings from other measures - Non-Boiler Gas Consumption)

2. Fuel-to-Heat Efficiency = Boiler Combustion Efficiency x (1-Boiler Radiant Jacket Losses) x (1-Boiler Distribution Losses)

3. Fuel Savings = Net Applicable Fuel Usage - (Net Applicable Fuel Usage x (Current Fuel-to-Heat Efficiency/Proposed Fuel-to-Heat Efficiency))

ECM-1-LCML Replace Existing Library Chiller and Reconfigure Existing Chilled Water Plant

The savings for this FIM are generated through a gain in efficiency with the new equipment compared to the existing equipment.

The baseline efficiency is based on manufacturer's data, engineering judgment and the age of the equipment. It is agreed that the efficiency is to be 0.85 kW per Ton and will not be measured. The output from the calculation file below will be annually updated with the measured efficiency and/or actual energy usage and reported in the annual report. Chillers will be confirmed annually to meet the operation sequence used to calculate the savings.

	Actual Chiller kW	Actual Chiller kWh	Est. old kW Ton @ 0.85	Est new kW Ton @ 0.65	kWh @ new kW/Ton	kW \$ Savings
JAN	0	0	0	0	0	\$0.00
FEB	0	0	0	0	0	\$0.00
MAR	0	0	0	0	0	\$0.00
APR	88	4,400	104	67	3,350	\$564.11
MAY	100	45,000	118	76	34,258	\$641.04
JUN	112	64,400	132	85	49,027	\$717.96
JUL	102	56,100	120	78	42,708	\$653.86
AUG	102	56,100	120	78	42,708	\$653.86
SEP	104	36,400	122	79	27,711	\$666.68
OCT	86	17,200	101	65	13,094	\$551.29
NOV	0	0	0	0	0	\$0.00
DEC	0	0	0	0	0	\$0.00
	694	279,600			212,855	\$4,448.80

High efficiency Chiller Consumption Savings	
Percent kWh Reduced	24%
Current Blended rate	\$0.0663
kWh Saved	66,745
Dollars Saved	\$4,428

High efficiency Chiller Demand Savings	
Current kW Demand Rate	\$15.44
Total kW Saved	288
Dollars Saved	\$4,449

Total Dollars saved	\$8,877
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Formulas
Monthly kW \$ Savings = (Est. old kW per Ton - Est. new kW per Ton) x Actual Chiller kWh
kWh Saved = Total Actual Chiller kWh - kWh @ new kW/Ton
Total kW Saved = Total kWh @ new kW/Ton / Total Actual Chiller kWh

ECM-2-LCCH Replace Existing City Hall Chiller and Reconfigure Existing Chilled Water Plant

The savings for this FIM are generated through a gain in efficiency with the new equipment compared to the existing equipment.

The baseline efficiency is based on manufacturer's data, engineering judgment and the age of the equipment. It is agreed that the efficiency is to be 0.85 kW per Ton and will not be measured. The output from the calculation file below will be annually updated with the measured efficiency and/or actual energy usage and reported in the annual report. Chillers will be confirmed annually to meet the operation sequence used to calculate the savings.

	Actual Chiller kW	Actual Chiller kWh	Est. old kW Ton @ 0.98	Est new kW Ton @ 0.66	kWh @ new kW/Ton	kW \$ Savings
JAN	0	0	0	0	0	\$0.00
FEB	0	0	0	0	0	\$0.00
MAR	0	0	0	0	0	\$0.00
APR	88	1,180	120	80	800	\$634.89
MAY	100	36,400	106	71	24,683	\$559.57
JUN	112	50,400	129	85	34,176	\$677.94
JUL	102	76,450	142	94	51,840	\$747.88
AUG	102	60,800	155	103	41,228	\$817.83
SEP	104	46,000	117	78	31,192	\$618.75
OCT	86	0	0	0	0	\$0.00
NOV	0	0	0	0	0	\$0.00
DEC	0	0	0	0	0	\$0.00
	694	271,230			183,919	\$4,056.87

High efficiency Chiller Consumption Savings	
Percent kWh Reduced	32%
Current Blended rate	\$0.0636
kWh Saved	87,311
Dollars Saved	\$5,549

High efficiency Chiller Demand Savings	
Current kW Demand Rate	\$15.72
Total kW Saved	258
Dollars Saved	\$4,057

Total Dollars saved	\$9,606
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Formulas
Monthly kW \$ Savings = (Est. old kW per Ton - Est. new kW per Ton) x Actual Chiller kWh
kWh Saved = Total Actual Chiller kWh - kWh @ new kW/Ton
Total kW Saved = Total kWh @ new kW/Ton / Total Actual Chiller kWh

OPTION B
Retrofit Isolation: All Parameter Measurement

Measured Project Benefits are determined by field measurement of the energy use of the systems to which an Improvement Measure was applied separate from the energy use of the rest of the facility. Short-term, long-term or continuous measurements are taken throughout the pre and post-retrofit periods. Engineering calculations using short term, long-term or continuous pre and post-retrofit measurements are used to calculate the Measured Project Benefits for the duration of the Guarantee Term.

Measured Project Benefits from the following Improvement Measures will be calculated using Option B:

ECM Number	ECM Name
None	None

OPTION C
Whole Facility

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

Measured Project Benefits from the following Improvement Measures will be calculated using Option C:

ECM Number	ECM Name
None	None

OPTION D
Calibrated Simulation

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

Option D may be used to assess the performance of all Improvement Measures in a facility, akin to Option C. However, different from Option C, multiple runs of the simulation tool in Option D allow estimates of the Measured Project Benefits attributable to each Improvement Measure within a multiple Improvement Measure project.

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

Measured Project Benefits from the following Improvement Measures will be calculated using Option D:

ECM Number	ECM Name
None	None

CHANGES IN USE OR CONDITION; ADJUSTMENT TO BASELINE AND/OR ANNUAL PROJECT BENEFITS

Customer agrees to notify JCI, within fourteen (14) days, of (i) any actual or intended change, whether before or during the Guarantee Term, in the use of any facility, equipment, or Improvement Measure to which this Schedule applies; (ii) any proposed or actual expansions or additions to the premises or any building or facility at the premises; (iii) a change to utility services to all or any portion of the premises; or (iv) any other change or

condition arising before or during the Guarantee Term that reasonably could be expected to change the amount of Project Benefits realized under this Agreement.

Such a change, expansion, addition, or condition would include, but is not limited to: (a) changes in the primary use of any facility, Improvement Measure, or portion of the premises; (b) changes to the hours of operation of any facility, Improvement Measure, or portion of the premises; (c) changes or modifications to the Improvement Measures or any related equipment; (d) changes to the M&V Services provided under this Agreement; (e) failure of any portion of the premises to meet building codes; (f) changes in utility suppliers, utility rates, method of utility billing, or method of utility purchasing; (g) insufficient or improper maintenance or unsound usage of the Improvement Measures or any related equipment at any facility or portion of the premises (other than by JCI); (h) changes to the Improvement Measures or any related equipment or to any facility or portion of the premises required by building codes or any governmental or quasi-governmental entity; or (i) additions or deletions of Improvement Measures or any related equipment at any facility or portion of the premises.

Such a change or condition need not be identified in the Baseline in order to permit JCI to make an adjustment to the Baseline and/or the Annual Project Benefits. If JCI does not receive the notice within the time period specified above or travels to either Customer's location or the project site to determine the nature and scope of such changes, Customer agrees to pay JCI, in addition to any other amounts due under this Agreement, the applicable hourly consulting rate for the time it took to determine the changes and to make any adjustments and/or corrections to the project as a result of the changes, plus all reasonable and documented out-of-pocket expenses, including travel costs. Upon receipt of such notice, or if JCI independently learns of any such change or condition, JCI shall calculate and send to Customer a notice of adjustment to the Baseline and/or Annual Project Benefits to reflect the impact of such change or condition, and the adjustment shall become effective as of the date the change or condition first arose. Should Customer fail to promptly provide JCI with notice of any such change or condition, JCI may make reasonable estimates as to the impact of such change or condition and as to the date on which such change or condition first arose in calculating the impact of such change or condition, and such estimates shall be conclusive.

IV. BASELINE USAGE AND UTILITY RATES

The unit utility costs for the Baseline period are set forth below as "Base Utility Cost" and shall be used for all calculations made under this Schedule. The Base Utility Cost shall be escalated annually, beginning in Year 1, by the actual utility cost escalation but such escalation shall be no less than the mutually agreed "floor" escalation rate of three percent (3.0%).

BASELINE USAGE

The calculations for baseline utility costs are further explained below. Baseline energy usage data for all buildings was obtained from Xcel Energy and analyzed against billed utility rates included within the data tables.

Baseline Electric: January December, 2018 Natural Gas: January to December, 2017		Energy			Total Annual Utility MMBtu
		Electric Consumption kWh	Annual Electric Demand kW	Natural Gas therm	
La Crosse City Hall	Dollars	\$89,495	\$44,739	\$47,189	\$181,423
	Units	1,450,720	330	80,516	
La Crosse Center	Dollars	\$187,309	\$109,927	\$76,737	\$373,974
	Units	3,035,813	737	164,095	
La Crosse Main Library	Dollars	\$70,911	\$38,565	\$29,252	\$138,727
	Units	1,101,600	270	47,370	
La Crosse MSC	Dollars	\$21,335	\$11,439	\$28,212	\$60,986
	Units	334,240	90	46,521	
Sites Total	Dollars	\$369,050	\$204,670	\$181,390	\$755,111
	Units	5,922,373	1,427	338,502	

RATE SUMMARY

The unit utility costs for the Baseline period are set forth below as "Base Utility Cost" and shall be used for all calculations made under this Schedule, prior to utility cost escalation. The Base Utility Cost for electric, natural gas, and fuel represents the 12 or 24 month average utility costs between January 2017 and December 2018 as described in detail in the following table.

Building	Address	Account	Rate Code	Tariff	Unit	Rate
La Crosse Center	300 HARBORVIEW PLZ	4374326	207	Xcel	Gas Used (therm)	\$0.4676
			B13		Blended Electric Usage (kWh)	\$0.0617
					Blended Electric Demand (kW)	\$14.80
La Crosse Main Library	800 MAIN ST	4892112	202	Xcel	Gas Used (therm)	\$0.6087
			B13		Blended Electric Usage (kWh)	\$0.0644
					Blended Electric Demand (kW)	\$14.99
La Crosse City Hall	400 LA CROSSE ST	6834747	202	Xcel	Gas Used (therm)	\$0.5861
			B13		Blended Electric Usage (kWh)	\$0.0617
					Blended Electric Demand (kW)	\$15.26
La Crosse MSC	2000 MARCO DR	5863027	207	Xcel	Gas Used (therm)	\$0.6182
			B06		Blended Electric Usage (kWh)	\$0.0638
					Blended Electric Demand (kW)	\$12.22

V. PRIMARY HVAC OPERATIONS SCHEDULE PRE & POST RETROFIT**CITY HALL**

	Typical HVAC Occupied Hours	
	Time Occupied	Time Unoccupied
Monday	7:30am	5:00pm
Tuesday	7:30am	5:00pm
Wednesday	7:30am	5:00pm
Thursday	7:30am	5:00pm
Friday	7:30am	5:00pm
Saturday	Unocc	Unocc
Sunday	Unocc	Unocc
Holidays	Unocc	Unocc

Occupied Room Setpoint During Heating Season: 70 degrees F
 Unoccupied Room Setpoint During Heating Season: 65 degrees F
 Heating season is September to May
 Occupied Room Setpoint During Cooling Season: 74 degrees F
 Unoccupied Room Setpoint During Cooling Season: 85 degrees F
 Cooling season is May to September

LA CROSSE CENTER

	Typical HVAC Occupied Hours	
	Time Occupied	Time Unoccupied
Monday	Box Office: 11:00am Event Spaces: by event	Box Office: 5:00pm Event Spaces: by event
Tuesday	Box Office: 11:00am Event Spaces: by event	Box Office: 5:00pm Event Spaces: by event
Wednesday	Box Office: 11:00am Event Spaces: by event	Box Office: 5:00pm Event Spaces: by event
Thursday	Box Office: 11:00am Event Spaces: by event	Box Office: 5:00pm Event Spaces: by event
Friday	Box Office: 11:00am Event Spaces: by event	Box Office: 5:00pm Event Spaces: by event
Saturday	By Event	By Event
Sunday	By Event	By Event
Holidays	By Event	By Event

Occupied Room Setpoint During Heating Season: 70 degrees F
 Unoccupied Room Setpoint During Heating Season: 72 degrees F
 Heating season is September to May
 Occupied Room Setpoint During Cooling Season: 70 degrees F

Unoccupied Room Setpoint During Cooling Season: 72 degrees F
 Cooling season is May to September

MAIN LIBRARY

	HVAC Occupied Hours	
	Time Occupied	Time Unoccupied
Monday	9:00am	8:00pm
Tuesday	9:00am	8:00pm
Wednesday	9:00am	8:00pm
Thursday	9:00am	8:00pm
Friday	9:00am	6:00pm
Saturday	9:00am	5:00pm
Sunday	1:00pm	5:00pm
Holidays	UNOCC	UNOCC

Occupied Room Setpoint During Heating Season: 68 to 70 degrees F
 Unoccupied Room Setpoint During Heating Season: 60 degrees F
 Heating season is September to May
 Occupied Room Setpoint During Cooling Season: 70 to 72 degrees F
 Unoccupied Room Setpoint During Cooling Season: 75 degrees F
 Cooling season is May to September

MUNICIPAL SERVICES CENTER

	HVAC Occupied Hours	
	Time Occupied	Time Unoccupied
Monday	MTU: 4:00am Parks & Streets: 6:00am	MTU: 10:00pm Parks & Streets: 6:30pm
Tuesday	MTU: 4:00am Parks & Streets: 6:00am	MTU: 10:00pm Parks & Streets: 6:30pm
Wednesday	MTU: 4:00am Parks & Streets: 6:00am	MTU: 10:00pm Parks & Streets: 6:30pm
Thursday	MTU: 4:00am Parks & Streets: 6:00am	MTU: 10:00pm Parks & Streets: 6:30pm
Friday	MTU: 4:00am Parks & Streets: 6:00am	MTU: 10:00pm Parks & Streets: 6:30pm
Saturday	MTU: 4:00am Parks & Streets: 6:00am	MTU: 10:00pm Parks & Streets: 6:30pm
Sunday	MTU: 4:00am Parks & Streets: Unocc	MTU: 2:00am Parks & Streets: Unocc
Holidays	MTU: 4:00am Parks & Streets: Unocc	MTU: 2:00am Parks & Streets: Unocc

Occupied Room Setpoint During Heating Season: 68 to 70 degrees F
 Unoccupied Room Setpoint During Heating Season: 60 degrees F
 Heating season is September to May

Occupied Room Setpoint During Cooling Season: 70 to 72 degrees F
Unoccupied Room Setpoint During Cooling Season: 75 degrees F
Cooling season is May to September

VI. MEASUREMENT & VERIFICATION SERVICES

JCI will provide the M&V Services set forth below in connection with the Assured Performance Guarantee.

1. During the Installation Period, a JCI Performance Assurance Specialist will track Measured Project Benefits. JCI will report the Measured Project Benefits achieved during the Installation Period, as well as any Non-Measured Project Benefits applicable to the Installation Period, to Customer within 60 days of the commencement of the Guarantee Term.
2. Within 60 days of each anniversary of the commencement of the Guarantee Term, JCI will provide Customer with an annual report containing:
 - A. an executive overview of the project's performance and Project Benefits achieved to date;
 - B. a summary analysis of the Measured Project Benefits accounting; and
 - C. depending on the M&V Option, a detailed analysis of the Measured Project Benefits calculations.
3. During the Guarantee Term, a JCI Performance Assurance Specialist will monitor the on-going performance of the Improvement Measures, as specified in this Agreement, to determine whether anticipated Measured Project Benefits are being achieved. In this regard, the Performance Assurance Specialist will periodically assist Customer, on-site or remotely, with respect to the following activities:
 - A. review of information furnished by Customer from the facility management system to confirm that control strategies are in place and functioning;
 - B. advise Customer's designated personnel of any performance deficiencies based on such information;
 - C. coordinate with Customer's designated personnel to address any performance deficiencies that affect the realization of Measured Project Benefits; and
 - D. inform Customer of opportunities to further enhance project performance and of opportunities for the implementation of additional Improvement Measures.
4. For specified Improvement Measures utilizing, JCI will:
 - A. conduct pre and post installation measurements required under this Agreement;
 - B. confirm the building management system employs the control strategies and set points specified in this Agreement; and
 - C. analyze actual as-built information and adjust the Baseline and/or Measured Project Benefits to conform to actual installation conditions (e.g., final lighting and water benefits calculations will be determined from the as-built information to reflect the actual mix of retrofits encountered during installation).
 - D. confirm that the appropriate metering and data points required to track the variables associated with the applicable Improvement Measures' benefits calculation formulas are established; and
 - E. set up appropriate data capture systems (e.g., trend and totalization data on the facility management system) necessary to track and report Measured Project Benefits for the applicable Improvement Measure.
 - F. Trend data records maintained in the ordinary course of system operation shall be used and relied upon by Johnson Controls in connection with Project Benefit calculations. Johnson Controls will use commercially reasonable efforts to ensure the integrity of the data collected to calculate the required metrics. In the event data are lost due to equipment failure, power failure or other interruption in data collection, transmission or storage, Johnson Controls will use reasonable engineering methods to estimate the impact of or replace the lost data.

CUSTOMER RESPONSIBILITIES

In order for JCI to perform its obligations under this Agreement with respect to the Work, the Assured Performance Guarantee, and the M&V Services, Customer shall be responsible for:

1. Providing JCI, its subcontractors, and its agents reasonable and safe access to all facilities and properties that are subject to the Work and/or M&V Services;
2. Providing for shut down and scheduling of affected locations during installation, including timely shutdowns of chilled water and hot water systems as needed to accomplish the Work and/or M&V Services;
3. Providing timely reviews and approvals of design submissions, proposed change orders, and other project documents;
4. Providing the following information with respect to the project and project site as soon as practicable following JCI's request:
 - a. surveys describing the property, boundaries, topography and reference points for use during construction, including existing service and utility lines;
 - b. geotechnical studies describing subsurface conditions, and other surveys describing other latent or concealed physical conditions at the project site;
 - c. temporary and permanent easements, zoning and other requirements and encumbrances affecting land use, or necessary to permit the proper design and construction of the project and enable JCI to perform the Work;
 - d. a legal description of the project site;
 - e. as-built and record drawings of any existing structures at the project site; and
 - f. environmental studies, reports and impact statement describing the environmental conditions, including hazardous conditions or materials, in existence at the project site.
5. Securing and executing all necessary agreements with adjacent land or property owners that are necessary to enable JCI to perform the Work;
6. Providing assistance to JCI in obtaining any permits, approvals, and licenses that are JCI's responsibility to obtain as set forth in Schedule 1;
7. Obtaining any permits, approvals, and licenses that are necessary for the performance of the Work and are not JCI's responsibility to obtain as set forth in Schedule 1;
8. Properly maintaining, and performing appropriate preventative maintenance on, all equipment and building systems affecting the Assured Performance Guarantee in accordance with manufacturers' standards and specifications;
9. Providing the utility bills, reports, and similar information reasonably necessary for administering JCI's obligations under the Assured Performance Guarantee within five (5) days of Customer receipt and/or generation or JCI's request therefor;
10. Providing suitable space during construction for parking, material laydown, and dumpsters.
11. Providing all records relating to energy and/or water usage and related maintenance of the premises and relevant equipment requested by JCI;
12. Providing and installing utility sub-meters on all new construction and/or additions built during the Guarantee Term as recommended by JCI or, alternatively, paying JCI's applicable fees for calculating necessary adjustments to the Assured Performance Guarantee as a result of the new construction;

13. Providing and maintaining a dedicated telephone line and/or TCP/IP remote connection to facilitate remote monitoring of relevant equipment;
14. Promptly notifying JCI of any change in use or condition described in Section III of Schedule 2 or any other matter that may impact the Assured Performance Guarantee;
15. Taking all actions reasonably necessary to achieve the Non-Measured Project Benefits;
16. If any equipment under control is changed out, it is the responsibility of the customer to move the controls and the controls programming to the new equipment.

PRICE AND PAYMENT TERMS

Customer shall make payments to JCI pursuant to this Schedule 4.

1. Work. The price to be paid by Customer for the Work shall be \$4,288,020. Payments (including payment for materials delivered to JCI and work performed on and off-site) shall be made to JCI as follows:

First payment due:	50%	\$2,144,010 due April 30, 2019
Second payment due:	20%	\$857,604 due June 30, 2019
Third payment due:	10%	\$428,802 due August 31, 2019
Fourth payment due:	10%	\$428,802 due October 31, 2019
Final payment due:	10%	\$428,802 due December 31, 2019

2. M&V Services. The total price for JCI's M&V Services, as detailed on Schedule 2 of this Agreement, is \$73,058. This amount will be paid to JCI in annual installments of \$23,637 escalating annually at a rate of three percent (3.0%). These payments will be due and payable when Customer receives JCI's invoice and in advance of the services JCI is to provide, and shall be made throughout the Guarantee Term.

First Annual amount due:	\$23,637
Second Annual amount due:	\$24,346
Third Annual amount due:	\$25,076

Due Date: The first day of the Guarantee Term, and annually on the anniversary date thereafter.

At the end of Project Benefits Year 3, as described in Schedule 2, the M&V will transition from Option A to stipulated benefits for the remainder of the Guarantee Term. During Year 3, the Customer may elect to continue Option A at the current pricing and escalation rate.

NOTICE TO PROCEED

Johnson Controls, Inc.
507 East Michigan Street
Milwaukee, Wisconsin 53202
ATTN: Jeffrey J. Roepsch

Re: Notice to Proceed for 9PZK-0002 City of La Crosse PC - Buildings

Dear Jeff Van Ess:

This Notice to Proceed is being issued by City of La Crosse, WI ("Customer") to Johnson Controls, Inc. ("JCI") pursuant to that certain Performance Contract entered into between Customer and JCI for the purpose of notifying JCI to commence work under such contract.

In the event that this Notice to Proceed is delivered by Customer prior to the execution of the Performance Contract by Customer and JCI, Customer understands and expects JCI will incur significant costs and expenses in complying with this Notice to Proceed. In the event the Performance Contract is not executed by the parties, for any reason, Customer agrees to pay JCI for its costs and fees incurred in complying with this Notice to Proceed on a time and material basis. Customer also agrees JCI shall be entitled to a reasonable markup thereon for profit and overhead. Customer agrees to pay amounts billed by JCI no later than five (5) days after Customer receives JCI's payment application. JCI will continue to submit payment applications to Customer until the Performance Contract is executed. Once the Performance Contract is executed, JCI will begin submitting its payment applications to Customer in accordance with the terms and conditions set forth therein. Any amounts already paid by Customer will be credited towards the Performance Contract price.

By signing and dating this Notice to Proceed, the parties hereto agree to these terms and represent and warrant they have the authority to execute this Notice to Proceed on behalf of their respective organizations.

City of La Crosse, WI ("Customer")

Signature: _____

Printed Name: _____

Title: _____

Date: _____

ACKNOWLEDGED & AGREED TO:

JOHNSON CONTROLS, INC.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

CHANGE ORDER

Performance Contract dated _____, 20____ between Johnson Controls, Inc. and Customer	Change Order No. _____	Date (mo/day/yr) _____
Customer [Insert Customer Name]		
The above referenced Performance Contract is hereby modified to the extent described below in accordance with the Terms and Conditions of the CHANGE ORDERS section thereof.		
Scope of Work changed as follows: 		
Total amount of this Change Order		\$ _____
Total Performance Contract amount as revised by this Change Order		\$ _____
The time for completion is: <input type="checkbox"/> increased, <input type="checkbox"/> decreased, <input type="checkbox"/> unchanged. The new completion date resulting from this Change Order is:		(mo, day, yr) _____
[check if applicable] Assured Performance Guarantee changed as follows: 		
Unless specifically changed by this Change Order, all terms, conditions and provisions of the above referenced Performance Contract remain unchanged and in full effect.		
JOHNSON CONTROLS, INC.	CUSTOMER	
Signature: _____	Signature: _____	
Printed Name: _____	Printed Name: _____	
Title: _____	Title: _____	

CERTIFICATE OF SUBSTANTIAL COMPLETION

PARTIES: JOHNSON CONTROLS, INC. ("JCI")
507 East Michigan Street
Milwaukee, Wisconsin 53202

City of La Crosse, WI ("Customer")
400 La Crosse St
La Crosse, Wisconsin 54601

PROJECT: 9PZK-0002 City of La Crosse PC - Buildings; Performance Contract dated _____, 2019 between JCI and Customer

By executing this Certificate of Substantial Completion, Customer acknowledges the following:

- a. The work set forth in the Performance Contract is substantially complete.
- b. Customer has received the manuals, warranty information, and training required under the Performance Contract.
- c. The following punch list items must be completed by JCI (check as applicable):

- punch list attached
- punch list complete

d. Upon completion of the punch list items, or if such punch list items are complete, JCI and Customer shall sign the Certificate of Final Completion attached hereto.

Dated _____, 20_____.

CUSTOMER:
Signature: _____
Printed Name: _____
Title: _____

JOHNSON CONTROLS, INC.
Signature: _____
Printed Name: _____
Title: _____

CERTIFICATE OF FINAL COMPLETION

PARTIES: JOHNSON CONTROLS, INC. ("JCI")
507 East Michigan Street
Milwaukee, Wisconsin 53202

City of La Crosse, WI ("Customer")
400 La Crosse St
La Crosse, Wisconsin 54601

PROJECT: 9PZK-0002 City of La Crosse PC - Buildings; Performance Contract dated _____
_____, 2019 between JCI and Customer

By executing this Certificate of Final Completion, Customer acknowledges the following:

- a. The work set forth in the Performance Contract has been reviewed and determined by Customer to be fully complete.
- b. Customer accepts the work as complete and hereby releases JCI's obligations under any performance and payment bonds posted for the project as of the date set forth below.

Dated _____, 20____.

CUSTOMER:

Signature: _____

Printed Name: _____

Title: _____

JOHNSON CONTROLS, INC.

Signature: _____

Printed Name: _____

Title: _____