

## CHANGE ORDER

Performance Contract dated <b>April 23, 2019</b> between Johnson Controls, Inc. and Customer	Change Order No. 4	Date (mo/day/yr) 5/14/2021
Customer City of La Crosse, WI		
<p>The parties wish to add to the Scope of the Work in the Contract. JCI has amended its original scope of work by recommending certain additional Energy Conservation Measures (ECM), which are identified in Schedule 1d. JCI has included an additional Assured Performance Guarantee as described in attached Schedule 2d. After the execution of Change Order 4, JCI shall provide a new Schedule of Values and Construction Schedule that shall apply to the additional Scope of Work. The additional Contract Price and the time for completion provided below modify the Contract Price and time for completion provided in the Contract. The Guarantee Term of the Assured Performance Guarantee of this Change Order 4 shall begin upon substantial completion of the Change Order No. 4 Scope of Work as outlined below. JCI has amended the Price and Payment Terms of the original Agreement to reflect the additional price based on the Scope of Work, attached as Schedule 4d.</p> <p>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.</p>		
Scope of Work changed as follows:		
Refer to Schedule 1d – Scope of Work (below) Refer to Schedule 3d – Customer Responsibilities (below) Refer to Schedule 4d – Price and Payment Terms (below)		
Current total Performance Contract amount	\$ 6,150,851	
Total amount of this Change Order	\$ 2,877,458	
Total Performance Contract amount as revised by this Change Order	\$ 9,028,309	
The time for completion is: <input checked="" type="checkbox"/> increased, <input type="checkbox"/> decreased, <input type="checkbox"/> unchanged. The completion date for the scope of work described in this Change Order is:		(mo, day, yr) <b>12 months from the date of a Notice to Proceed with this Change Order 4</b>
<input checked="" type="checkbox"/> [check if applicable] Assured Performance Guarantee changed as follows:		
The Assured Performance Guarantee for the scope of work described in Schedule 1d is independent of the prior Assured Performance Guarantee identified in Schedule 2 in the original contract and modified in Schedule 2a in Change Order 1. Refer to Schedule 2d – Assured Performance Guarantee (below) for the Guarantee which applies to the Change Order 4 scope of work.		
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:	

## 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. The matrix identifies measures included in the Work with an “X”.

ECM Number	ECM Name	Facility												
		Black River Beach Neighborhood Center	Myrick Park Center	Southside Neighborhood Center	Copeland Park Octoberfest Shelter	Copeland Park Enclosed Shelter	Copeland Park Tennis Courts	Copeland Park Stadium	La Crosse Fire Station #1	La Crosse Fire Station #3	North Neighborhood Library	South Neighborhood Library	Main Street Parking Ramp	City of La Crosse Street Lighting
ECM-31	Retrofit Facility Lighting to LED	X	X	X	X	X	X		X		X	X	X	
ECM-32	Retrofit Street Lighting to LED													X
ECM-33	Install New Solar PV							X	X	X				
ECM-34	Replace Existing Boilers								X		X	X		

### II. DESCRIPTION OF THE SCOPE OF WORK

The following information provides a description of the scope of work, arranged first by ECM number, then by facility.

#### ECM-31: RETROFIT FACILITY LIGHTING TO LED

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

## Retrofit Work

Black River Beach Neighborhood Center					
Facility Zone	Fixture Count	Existing Fixture Description	New Fixture Description	Replacement Type	LED CCT
Lobby Closet	1	2' 3L T8 Troffer	ESL-Ti-K22-S-26W-2L-F40	Retrofit	4000K
Bathrooms	2	3' 1L Linear	ESL-Ti-3-S-13W-1L-F40	Retrofit	4000K
Lobby, Birch, Cotton, Bathrooms	8	4' 1L T8 Strip	ESL-Ti-K24-S-13W-1L-F40	Retrofit	4000K
Birchwood, Cottonwood	14	4' 2L T8 8' Strip	ESL-Ti-K24-S-26W-2L-F40	Retrofit	4000K
Boiler Rm	5	4' 2L T8 Strip	ESL-Ti-K24-S-26W-2L-F40	Retrofit	4000K
Maplewood	39	4' 3L T5 Strip BiLevel Direct/Indirect	KT-LED22T5HO-48G-835-E	Retrofit	4000K
Offices, Lobby	11	4' 3L T5 Troffer BiLevel	ESL-SPE-940-24-4575W-2765K	Retrofit	4000K
Kitchen and Maple W Closet	7	4' 3L T8 Troffer	ESL-Ti-K24-S-39W-3L-F40	Retrofit	4000K
Entries, Lobby, Hallway	22	4" Can 1L 26w VPL	ESL-CCR-R56-15W-140	Retrofit	4000K
Birchwood, Cottonwood	15	4" Can 1L 26w VPL	ESL-CCR-R56-15W-140	Retrofit	4000K

Myrick Park Center					
Facility Zone	Fixture Count	Existing Fixture Description	New Fixture Description	Replacement Type	LED CCT
Bathrooms	2	4' 1L T5 Strip	KT-LED22T5HO-48G-840-E	Retrofit	4000K
Entries	5	4' 1L T8 Linear	ESL-Ti-K24-S-13W-1L-F40	Retrofit	4000K
Marshview, Maint, Bath, E. Office	13	4' 2L T5 Troffer	ESL-SPE-930-24-2545W-2765K	Retrofit	4000K
N. West Office	12	4' 2L T8 4' Strip	ESL-Ti-K24-S-26W-2L-F40	Retrofit	4000K
Entries	5	4' 2L T8 8' Strip	ESL-Ti-K24-S-26W-2L-F40	Retrofit	4000K
Wis Corps	13	4' 3L T5 Strip BiLevel Direct/Indirect	ESL-BiLevTiHO-K24-S-90W-3L-F35	Retrofit	4000K
Marshview	32	4' 3L T5 Strip BiLevel Direct/Indirect	ESL-BiLevTiHO-K24-S-90W-3L-F35	Retrofit	4000K
Wis Corps & LaCrosse Rm	14	4' 3L T5 Troffer BiLevel	ESL-SPE-940-24-4575W-2765K	Retrofit	4000K
Discovery	15	4' 3L T8 Troffer Bi Level	ESL-SPE-940-24-4575W-2765K	Retrofit	4000K
Wis Corps Storage	1	4' 4L T8 8' Strip	ESL-Ti-K24-S-52W-4L-F40	Retrofit	4000K
Exterior	2	50w Wallpack	ESL-CL-18W-440SM	Retrofit	4000K
East Entry and Hallway	6	6" Can 1L 26w PL	ESL-CCR-R56-15W-140	Retrofit	4000K
Rear, Side, Front Entry, Rooms	13	8" Can 2L 26w PL	ESL-PL-9W-40-Q	Retrofit	4000K

Southside Neighborhood Center					
Facility Zone	Fixture Count	Existing Fixture Description	New Fixture Description	Replacement Type	LED CCT
Computer Lab, office closet	6	4' 2L T8 4' Strip	ESL-Ti-K24-S-26W-2L-F40	Retrofit	4000K
Bathrooms	4	4' 2L T8 Troffer	ESL-Ti-K24-S-26W-2L-F40	Retrofit	4000K
Hall	24	4' 3L T8 Strip BiLevel Direct/Indirect	ESL-Ti-K24-S-39W-3L-F40	Retrofit	4000K
Office, CompLab, Foundation Rm	14	4' 3L T8 Troffer Bi Level	ESL-Ti-K24-S-39W-3L-F40 Bi Level	Retrofit	4000K
Hallway	4	4' 4L T8 8' Dir/InDir	ESL-Ti-K24-S-72W-4L-F40	Retrofit	4000K
Kitchen	3	4' 4L T8 8' BiLevel Dir/InDir	ESL-Ti-K24-S-72W-4L-F40	Retrofit	4000K
Exterior Parking	4	70w Post Top Globe	ESL-CL-18W-440SM	Retrofit	4000K
Hall Room &	18	8" Can 2L 26w PL	ESL-OPT-8-20W-140-10V	Retrofit	4000K
Exterior Sconce	2	Exterior Sconce 2L 26w PL	ESL-PL-9W-40-Q	Retrofit	4000K

Copeland Park Octoberfest Shelter					
Facility Zone	Fixture Count	Existing Fixture Description	New Fixture Description	Replacement Type	LED CCT
Rink Canopy	8	150w Wallpack	ESL-WP-45W-440-BZ	Retrofit	4000K
Rink Lights	24	250w HID Lowbay	ESL-RHB-100200W-140-BK-60D w/ESL-RHB1-WG	Retrofit	4000K

Copeland Park Enclosed Shelter					
Facility Zone	Fixture Count	Existing Fixture Description	New Fixture Description	Replacement Type	LED CCT
Shelter	16	100w Canopy	ESL-CP-45W-340	Retrofit	4000K
Shelter	4	4' 2L T8 4' Strip	ESL-Ti-K24-S-26W-2L-F40	Retrofit	4000K
Shelter	5	4' 4L T8 4' Strip	ESL-Ti-K24-S-52W-4L-F40	Retrofit	4000K
Bathrooms	4	4' 4L T8 4' Strip	ESL-Ti-K24-S-52W-4L-F40	Retrofit	4000K
Shelter	6	70w Night Lights 24x7	ESL-WP-25W-340	Retrofit	4000K

Copeland Park Tennis Courts					
Facility Zone	Fixture Count	Existing Fixture Description	New Fixture Description	Replacement Type	LED CCT
Tennis Court Floods	4	250w HID Shoebox-SlipFitter	ESL-AL-110W-240-BKSF	Retrofit	4000K

La Crosse Fire Station #1					
Facility Zone	Fixture Count	Existing Fixture Description	New Fixture Description	Replacement Type	LED CCT
Front Entry, Reception	2	2' 2L T8 U Bend Troffer	ESL-Ti-K22-S-26W-2L-F40	Retrofit	4000K
Basement Hallways	14	2' 3L T8 Troffer	ESL-Ti-K22-S-26W-2L-F40	Retrofit	4000K
Basement Offices	16	2' 3L T8 Troffer Bi Level	ESL-Ti-K22-S-30W-3L-F40	Retrofit	4000K
Front Sign	3	4' 1L T12 HO	KT-LED21T8-48P2S-840-D	Retrofit	4000K
Shop, Weight Rm	8	4' 2L T8 4' Strip	ESL-Ti-K24-S-26W-2L-F40	Retrofit	4000K
Reception, Weight Room	17	4' 2L T8 Troffer	ESL-Ti-K24-S-26W-2L-F40	Retrofit	4000K
2nd Floor Bathroom	2	4' 2L T8 Troffer	ESL-Ti-K24-S-26W-2L-F40	Retrofit	4000K
Apparatus Floor, Basement Classroom	15	4' 3L to 2L T8 Troffer	ESL-Ti-K24-S-44W-2L-F40	Retrofit	4000K
2nd Floor	46	4' 3L to 2L T8 Troffer	ESL-Ti-K24-S-44W-2L-F40	Retrofit	4000K
Boiler Rm, Weight Rm, SCBA Rm	7	4' 4L T8 8' Strip	ESL-Ti-K24-S-52W-4L-F40	Retrofit	4000K
Apparatus Floor	27	4' 4L T8 8' Strip HBF	ESL-Ti-K24-S-72W-4L-F40	Retrofit	4000K
Shop	16	4' 4L T8 8' Strip HBF	ESL-Ti-K24-S-72W-4L-F40	Retrofit	4000K
Inspection Storage	2	8' 2L T12 Strip	ESL-Ti-K24-S-52W-4L-F40	Retrofit	4000K

North Neighborhood Library					
Facility Zone	Fixture Count	Existing Fixture Description	New Fixture Description	Replacement Type	LED CCT
1st Floor	11	13w CFL	8w A19 LED	Retrofit	4000K
Front Entry Case	1	4' 1L T8 Linear	ESL-Ti-K24-S-13W-1L-F40	Retrofit	4000K
1st Floor	4	4' 2L T8 4' Strip	ESL-Ti-K24-S-26W-2L-F40	Retrofit	4000K
Basement	21	4' 2L T8 4' Strip	ESL-Ti-K24-S-26W-2L-F40	Retrofit	4000K
Bathrooms	2	4' 2L T8 Linear to 1L	ESL-Ti-K14-S-22W-1L-F40	Retrofit	4000K
1st Floor	15	4' 2L T8 Strip Direct/Indirect	ESL-Ti-K24-S-30W-2L-F40	Retrofit	4000K
1st Floor	1	4' 2L T8 Strip Direct/Indirect 24x7	ESL-Ti-K24-S-30W-2L-F40	Retrofit	4000K
1st Floor	6	4' 4L T8 4' Strip	ESL-Ti-K24-S-52W-4L-F40	Retrofit	4000K
Basement	1	4' 4L T8 4' Strip	ESL-Ti-K24-S-52W-4L-F40	Retrofit	4000K

North Neighborhood Library					
Facility Zone	Fixture Count	Existing Fixture Description	New Fixture Description	Replacement Type	LED CCT
Front Sign	3	6' 1L T12 HO	KT-LED31T8-72P2S-840-D	Retrofit	4000K
Back Entrance	1	70w Canopy	ESL-CP-27W-340	Retrofit	4000K

South Neighborhood Library					
Facility Zone	Fixture Count	Existing Fixture Description	New Fixture Description	Replacement Type	LED CCT
1st Floor	15	13w CFL	8w A19 LED BAA	Retrofit	4000K
Basement	3	150w Incandescent	ESL-CL-36W-450SM	Retrofit	4000K
1st Floor/Basement	6	2L 60w A19 10" Globe	ESL-DDSK-R9-10W-130-WH	Retrofit	4000K
1st Floor	4	2L 7w PL 10" Globe	ESL-DDSK-R5-10W-130-WH	Retrofit	4000K
Front Entrance Case	1	4' 1L T12 Linear	ESL-Ti-K24-S-13W-1L-F40	Retrofit	4000K
Basement	4	4' 2L T12 Troffer	ESL-Ti-K24-S-26W-2L-F40	Retrofit	4000K
1st Floor	3	4' 2L T8 4' Strip	ESL-Ti-K24-S-26W-2L-F40	Retrofit	4000K
1st Floor	8	4' 2L T8 4' Strip	ESL-Ti-K24-S-26W-2L-F40	Retrofit	4000K
1st Floor	2	4' 2L T8 Emg Strip Direct/Indirect 24x7	ESL-Ti-K24-S-30W-2L-F40	Retrofit	4000K
1st Floor	30	4' 2L T8 Strip Direct/Indirect	ESL-Ti-K24-S-30W-2L-F40	Retrofit	4000K
1st Floor	10	4' 2L T8 Strip Direct/Indirect 24x7	ESL-Ti-K24-S-30W-2L-F40	Retrofit	4000K
Basement	16	52w Incandescent	8w A19 LED BAA	Retrofit	4000K
Front Entry Exterior Sconce	4	52w Incandescent A19	ESL-CL-9W-430SM	Retrofit	4000K
Front Entry Exterior Can	3	52w Incandescent A19	ESL-CL-9W-430SM	Retrofit	4000K
Front Sign	3	6' 1L T12 HO	KT-LED31T8-72P2S-840-D	Retrofit	4000K
1st Floor	2	Exit Signs e26 25w	ESL-CL-18W-430SM	Retrofit	4000K

Main Street Parking Ramp					
Facility Zone	Fixture Count	Existing Fixture Description	New Fixture Description	Replacement Type	LED CCT
Ramp	3	150w 8" Can	ESL-OPT-8-30W-150	Retrofit	4000K
Ramp	1	150w Canopy	ESL-CP-40W-350	Retrofit	4000K
Ramp	3	150w Wallpack	ESL-WP-45W-250	Retrofit	4000K
Ramp	61	2 Lamp T8 Vaportite 12x7	ESL-Ti-K24-S-36W-2L-F50	Retrofit	4000K
Ramp	81	2 Lamp T8 Vaportite 24x7	ESL-Ti-K24-S-36W-2L-F50	Retrofit	4000K

*ECM-Specific Inclusions, Exclusions, and Clarifications to the Scope of Work*

- Customer shall be responsible for any and all hazardous material abatement prior to installation of any components as required.
- 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; repairs to bring the electrical system into operational working order and compliant with current NEC are excluded.
- Lighting fixtures not identified in the Scope of Work are excluded from any repair or replacement scope.
- Reconfiguration of existing lighting system layout is excluded, except where noted in the Scope of Work.
- Conformance to IESNA standards is excluded 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 is excluded.
- Repair, replacement, or upgrade of existing indoor or exterior emergency and/or egress lighting system unless otherwise noted in the Scope of Work is excluded.
- Replacement of defective emergency battery backup ballasts unless otherwise noted the Scope of Work is excluded.
- Repair or upgrades required to rectify existing lighting or electrical system code violations unless specifically described in this Scope of Work is excluded.
- Repair or replacement of cracked, broken, missing, yellowed, or damaged fixture lenses or louvers unless otherwise noted in the Scope of Work is excluded.

**ECM-32: RETROFIT STREET LIGHTING TO LED**

This ECM includes the retrofit of specified existing HID street lighting with LED sources by fixture as outlined in the table below. Retrofits will be completed for the fixture types listed in the quantities listed and only for fixtures that are currently in-use and have lamps installed. Additionally, street lighting cabinets will be upgraded as listed to facilitate the Customer's change from the utility company's unmetered street lighting electric rate to the metered street lighting rate.

*Retrofit Work*

**Street Lighting**

Street lighting fixture retrofits shall be as follows:

Fixture Type	Fixture Code	Fixture Count	Retrofit Description	Replacement Type	LED CCT
150w Cobra	CH-150	168	RWL2-M-50-40-U-D-X- w/out shorting	New Head	TBD*
250w Cobra	CH-250	147	RWL2-M-80-40-U-D-X- w/out shorting	New Head	TBD*
400w Cobra	CH-400	47	RWL2-M-135-40-U-D-X- w/out shorting	New Head	TBD*
400w Deco Airport	CH-400 DECO	13	ESL-MUR-120W-350	Retrofit	TBD*
150 Acorn/Tear Drop	AC	571	Lumecon L-RETRO-T-55	Retrofit	TBD*
5 Head Globe	5G	105	KT-LED25A23-O-E26-830	Retrofit	TBD*
		420	KT-LED14A21-O-E26-830	Retrofit	TBD*
3 Head Globe	3G	18	KT-LED35A25-O-E26-830	Retrofit	TBD*
2 Head Globe	2G	43	KT-LED35A25-O-E26-830	Retrofit	TBD*
1 Head Globe	1G	3	KT-LED25A23-O-E26-830	Retrofit	TBD*
150w Matchstick	MS	552	Halophane GPD3 P30 30K MVOLT	Retrofit	TBD*
Shoe Box- Copeland/Badger	SB	51	CREE PDRLX-ARE-EDR-2M-R3-04-E- UL-SV-525-40K	New Fixture and Pole	TBD*

\*Pricing and savings have been determined based on LED Correlated Color Temperature (CCT) of between 2700K and 4000K. Actual installed CCT to be determined during the final design phase of the scope of work.

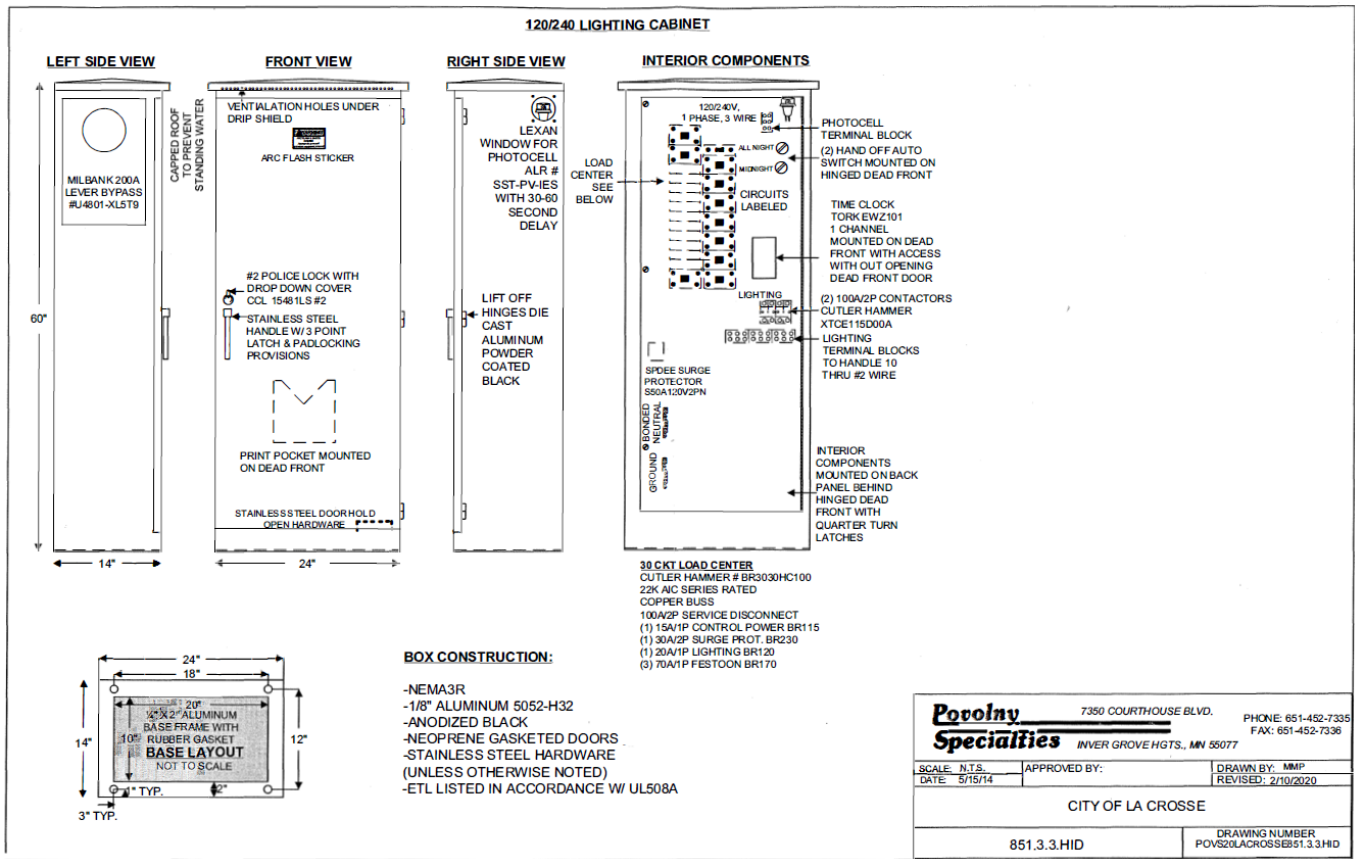
Johnson Controls has included an allowance to replace a total of two hundred eighty-five (285) Acorn/Tear Drop lenses and lens gaskets in the project scope. The locations of the lens replacement work will be mutually determined between a City of La Crosse Engineering Department representative and JCI prior to construction.

### Street Lighting Cabinets

The street lighting control cabinet scope of work is as follows:

- Replace fifty-six (56) existing unmetered street lighting control cabinets with new Povolny Specialties 851.3.3.HID street lighting control cabinets.
  - Povolny 851.3.3.HID Street Lighting Control Cabinet to be manufactured in accordance with the following shop drawing, previously approved by Customer:





- New cabinets shall be installed on existing cabinet bases where condition of the existing cabinet base remains usable; fourteen (14) cabinet bases are estimated to require replacement, any additional are at an additional cost. New bases to meet Customer specification for "Control Cabinet Base Detail" (detail D-9-2).
- Utility Company to install new electric meter in the provided meter socket for each cabinet; relocation of utility feeders shall be by the Utility Company and shall be the Customers responsibility.
- Provide new meter on six (6) existing street lighting control cabinets with meter sockets but without meters.
  - Utility Company to install new electric meter in the provided meter socket for each cabinet; relocation of utility feeders shall be by the Utility Company and shall be the Customers responsibility.
  - JCI to reconnect street lighting circuits within the control cabinet to the utility feed through the meter socket.

*ECM-Specific Inclusions, Exclusions, and Clarifications to the Scope of Work*

- Customer shall be responsible for any and all hazardous material abatement prior to installation of any components as required.
- 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; repairs to bring the electrical system into operational working order and compliant with current NEC are excluded.
- If additional Acorn/Tear Drop lenses and gaskets, over and above the two hundred eighty-five (285) included in the scope of work, are deemed by the City to require replacement the contract price will be adjusted accordingly through a written change order.
- Relocation of utility feeders at 56 street lighting cabinets, if required by the Utility Company, shall be performed by the Utility Company and any cost associated with this work shall be the Customers responsibility.

- Twelve (12) existing street lighting control cabinets with utility electric meters currently installed are excluded from the street lighting control cabinet replacement work.
- All street lighting to be installed on existing poles except where noted in the Scope of Work. Customer shall be responsible for replacing any poles determined to be unsuitable for reuse.
- All street lighting to be installed on existing pole bases. Customer shall be responsible for replacing any pole bases determined to be unsuitable for reuse.
- 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. Due to existing conditions (e.g. current pole spacing, existing pole heights, existing fixture conditions, foliage, etc.) meeting IESNA Recommended Practice documents for street lighting (RP-8) may not be possible in many locations; however, the recommended fixture retrofits and replacements will meet or exceed the existing lighting illuminance conditions.
- Final design for street lighting includes:
  - Verification of fixture counts included above
  - Photometric analysis for the four (4) most predominant fixture retrofit strategies (by retrofit count), analysis to be completed in software of JCI's selection consistent with industry standard practice
  - Mockup of the four (4) most predominant fixture retrofit strategies (by retrofit count), including: measurement of existing pre-retrofit illuminance (in accordance with IESNA's recommended practices using a calibrated light meter); installation of proposed retrofits for visual acceptance by Customer; and measurement of post-retrofit illuminance. Pre-installation illuminance measurements and post-installation illuminance measurements shall be provided as part of the street lighting submittals for Customer approval.
- Upon completion of all retrofits, additional illuminance measurements shall be taken at random locations, selected in accordance with the Measurement & Verification sampling plan, to establish post-installation baseline lighting levels. Baseline illuminance measurements shall be included in the Operations and Maintenance Manual along with warranty information for each product installed.
- Existing light poles will be re-used except where noted in the Scope of Work. Repair of wiring to poles, if required, is excluded.
- 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 will be notified immediately to correct the fault before any work will be performed.
- Reconfiguration of existing lighting system layout is excluded.
- Repair or upgrades required to rectify existing lighting or electrical system or other code violations are excluded unless specifically described in this scope of work.
- Delays caused by the utility company not installing the meters in a timely manner are excluded.

### **ECM-33: INSTALL NEW SOLAR PV**

This ECM includes the installation of a new solar photovoltaic (PV) system which will be located on existing roofs at the Copeland Park Stadium, La Crosse Fire Station #1, and La Crosse Fire Station #3. The systems will be connected via a net-metering agreement to the existing electric meters serving each facility. The new PV system will reduce the net consumption of electricity at the facilities by producing electricity using solar energy. A reduction in electric demand is also anticipated as a result of the generating capacity of the new PV system.

#### *New Installation Work*

##### Impacted Facilities:

- Design and final engineering for each proposed photovoltaic system, including permit drawings and structural review.
- Provide and install photovoltaic modules arranged at each facility to comprise the system size, azimuth, and tilt as noted in the table below. Modules to be JA Solar JAM72S01-385 mono-crystalline modules or equal, quantities to be determined during final design.

- Provide and install AC-to-DC inverters as identified in the table below. Inverters to be SolarEdge inverters or equal, quantities and sizes to be determined during final design.
- Photovoltaic modules to be mounted to appropriate mounting hardware on existing roof surfaces. Mounting hardware to be either a ballasted racking system installed on existing flat roof surfaces or flush mount rail system for sloped roof surfaces, final racking to be determined during final design.
- Provide a Performance Data Acquisition system including data logger with a minimum of one year of data storage, current transformers, irradiance sensors, data output connections, and kiosk software, Irradiance sensors to be installed at each facility in the plane of the array.
- Provide one high-accuracy pyranometer to monitor global horizontal irradiance, located at La Crosse Fire Station #3, to be connected to that facility's Performance Data Acquisition system.

Facility	Array Size	Array Azimuth	Array Tilt	Inverter	Service Voltage
Copeland Park Stadium	68.9 kW(dc) / 60.0 kW(ac)	One (1) segment at 232 degrees, one (1) segment at 180 degrees	One (1) segment flush with bleacher canopy slope, approximately 3 degrees, one (1) segment flush with concession roof slope, approximately 18 degrees	SolarEdge SE	480/277V
La Crosse Fire Station #1	41.8 kW(dc) / 36.0 kW(ac)	Four (4) segments at 180 degrees	Four (4) segments at 10 degrees	SolarEdge SE	120/208V
La Crosse Fire Station #3	29.5 kW(dc) / 30.0 kW(ac)	Three (3) segments at 180 degrees	Three (3) segments at 10 degrees	SolarEdge SE	120/240V

#### *ECM-Specific Inclusions, Exclusions, and Clarifications to the Scope of Work*

- Customer shall be responsible for any and all hazardous material abatement prior to installation of any components as required.
- 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; repairs to bring the electrical system into operational working order and compliant with current NEC are excluded.
- Scope includes electrical cabling required to connect photovoltaic modules into strings and arrays of panels per manufacturer recommended and code compliant cabling. Electrical connections from arrays to inverters and from inverters to the electric meter to be in code compliant conduit.
- Johnson Controls shall install the new PV systems with existing roof manufacturer standards to maintain current and any new roof warranty(ies) as it relates to the solar panel installation. At impacted locations, existing structural steel, joists, roof decks, parking lots, walkways are anticipated to be adequate for solar panel installation. If during the design phase Johnson Controls, encounter structural issues, geo-tech issues, drainage issues, septic system issues with any of roofs, roof framing, parking lots and walkways, JCI shall relocate the problem areas of solar arrays to a different location in order to maintain the total system size. An adjustment to the guarantee will occur if the new location is on a different electric rate.
- In the event that any of the proposed locations are determined to not be a viable option without significant modifications as determined above, the scope of work for this ECM shall be reduced by deduct change order and the costs associated with the reduced scope shall be credited to the Customer. The guaranteed savings shall also be adjusted accordingly by a formal written amendment to the Agreement. Alternatively, customer may, at customer's option, provide an equitable adjustment change order to Johnson Controls for any necessary modifications not included in the scope of work required to accommodate the installation.

#### **ECM-34: REPLACE EXISTING BOILERS**

This ECM includes the replacement of existing boilers at the North Neighborhood Library, South Neighborhood Library, and La Crosse Fire Station #1.

*Mechanical Work***North Neighborhood Library**

Remove the existing boiler, provide and replace the boiler with Two (2) Elite Fire Tube Ultra 299 MBH High Efficiency, Wall Hung Boilers, meeting the following specifications:

- 96% Efficiency Gas Fired, Modulating, Sealed Combustion Water Tube Condensing Boilers
- 10:1 turndown, Modular Design
- ASME Stamped for 80 PSI Operation
- Natural Gas, CSD-1 & FM Approval, 120/1/60 VAC (12 FLA)
- 4" Diameter Venting Outlet/CA Inlet Connection

The Work includes:

- Qty (2) – Elite Fire Tube Ultra 299 MBH High Efficiency, Wall Hung Boiler
- Qty (1) set – Outdoor Air/Header Sensors for internal outdoor air reset on the boiler controller
- Qty (1) – Condensate Neutralizer Kit
- Qty (2) – Natural Gas Regulator Rated for 2 PSI
- Qty (1) – BACnet Communications Module
- Qty (1) – Caleffi 2" Air/Dirt/Mag Separator to protect the boiler from existing system contamination, the proposed separator filters 100% of the water flowing through the system.
- Qty (1) – 35 Gallon Bladder Type Expansion Tank non ASME
- Electrical connection of new boiler including new emergency e-stop button(s) to meet State Mechanical Code in effect at the time of contract signing.
- Qty (2) – Demolish and remove 250 gallon raised oil tanks located in basement mechanical room and associated piping; patch openings in ceiling and walls with sheet metal patch with insulation fill
- (1) – Start Up & Owner Training (One Trip)

Revised piping to the following:

- New water piping larger than 2-inch shall be schedule 40, A53 carbon steel with grooved fittings with zero flex couplings.
- New water piping 2-inch and less shall be type "L" copper tube with press style fittings.
- New water piping will be insulated with fiberglass insulation with a white kraft jacket to meet state mechanical code requirements in effect at the time of contract signing.
- New boiler intake and exhaust shall be schedule 40 PVC with solvent cement joint fittings.
- New natural gas piping 2-inch and less shall be schedule 40, A53 T&C piping with 150# black malleable fittings.
- New natural gas piping larger than 2-inch will be schedule 40, A53 with standard butt weld fittings.

Boiler Controls:

The boiler controls will consist of standalone controls utilizing the installed outdoor air sensor for temperature reset and the header sensor for maintaining loop temperature. The boilers will be capable of a BACnet interface if the Customer decides to add digital controls to the building in the future.

**South Neighborhood Library**

Remove the existing boiler, provide and replace the boiler with two (2) Elite Fire Tube Ultra 199 MBH High Efficiency, Wall Hung Boilers, meeting the following specifications:

- 96% Efficiency Gas Fired, Modulating, Sealed Combustion Water Tube Condensing Boilers
- 10:1 turndown, Modular Design
- ASME Stamped for 80 PSI Operation
- Natural Gas, CSD-1 & FM Approval, 120/1/60 VAC (12 FLA)
- 4" Diameter Venting Outlet/CA Inlet Connection

The Work includes:

- Qty (2) – Elite Fire Tube Ultra 199 MBH High Efficiency, Wall Hung Boiler
- Qty (1) set – Outdoor Air/Header Sensors for internal outdoor air reset on the boiler controller

- Qty (1) – Condensate Neutralizer Kit
- Qty (2) – Natural Gas Regulator Rated for 2 PSI
- Qty (1) – BACnet Communications Module
- Qty (1) – Caleffi 2” Air/Dirt/Mag Separator to protect the boiler from existing system contamination, the proposed separator filters 100% of the water flowing through the system.
- Qty (1) – 35 Gallon Bladder Type Expansion Tank non ASME
- Electrical connection of new boilers including new emergency e-stop button(s) to meet State Mechanical Code in effect at the time of contract signing.
- (1) – Start Up & Owner Training (One Trip)

Revised piping to the following:

- New water piping larger than 2-inch shall be schedule 40, A53 carbon steel with grooved fittings with zero flex couplings.
- New water piping 2-inch and less shall be type “L” copper tube with press style fittings.
- New water piping will be insulated with fiberglass insulation with a white kraft jacket to meet state mechanical code requirements in effect at the time of contract signing.
- New boiler intake and exhaust shall be schedule 40 PVC with solvent cement joint fittings.
- New natural gas piping 2-inch and less shall be schedule 40, A53 T&C piping with 150# black malleable fittings.
- New natural gas piping larger than 2-inch will be schedule 40, A53 with standard butt weld fittings.

Boiler Controls:

The boiler controls will consist of standalone controls utilizing the installed outdoor air sensor for temperature reset and the header sensor for maintaining loop temperature. The boilers will be capable of a BACnet interface if the Customer decides to add digital controls to the building.

### **La Crosse Fire Station #1**

Remove the existing three (3) Triangle Tube 367 mbh input boilers. Provide and replace with two (2) new Riello AR-512 boilers, meeting the following specifications:

- High Efficiency Gas Fired, Modulating, Sealed Combustion Water Tube Condensing Boilers
- 10:1 turndown
- 7” Touchscreen Display
- ASME Stamped for 80 PSI Operation
- Natural Gas, CSD-1 & FM Approval, 120/1/60 VAC
- 4” Diameter Venting Outlet/CA Inlet Connection
- Integral Boiler Pump within Cabin

The Work Includes:

- Qty (2) – Riello Array 512 MBH Input Condensing Water Tube Boiler
- Qty (2) – Condensate Neutralizer Kit
- Qty (2) – Natural Gas Regulator rated for 2 PSI
- Qty (1) – Outdoor Air/Header Sensor kits
- Qty (2) – Metraflex 2” Low Loss Wye Strainer
- Qty (2) – Riello 4” motorized combustion air dampers (freeze protection)
- Qty (2) – Riello 4” HeatFab AL29-4C Boiler Exhaust Venting Adaptor
- Qty (1) – BACnet Communication Module
- Electrical connection of new boiler including new emergency e-stop button(s) to meet State Mechanical Code in effect at the time of contract signing.
- (1) – Start Up & Owner Training (One Trip)

Revised piping to the following:

- New water piping larger than 2-inch shall be schedule 40, A53 carbon steel with grooved fittings with zero flex couplings.
- New water piping 2-inch and less shall be type “L” copper tube with press style fittings.

- New water piping will be insulated with fiberglass insulation with a white kraft jacket to meet state mechanical code requirements in effect at the time of contract signing.
- New boiler intake and exhaust shall be schedule 40 PVC with solvent cement joint fittings.
- New natural gas piping 2-inch and less shall be schedule 40, A53 T&C piping with 150# black malleable fittings.
- New natural gas piping larger than 2-inch will be schedule 40, A53 with standard butt weld fittings.

#### Boiler Controls:

The boilers will consist of and operate on their internal boiler controllers, daisy chained between the two boilers. The “master” boiler control will have the (OA) outdoor air sensor pulled into the controls to perform a reset on water temperature provided to the hydronic system. The header temperature sensor will be installed in the common piping header wired back to the “Master” boiler controller. The controllers will be capable of a BACnet interface if the Customer decides to add digital controls to the building in the future.

#### *ECM-Specific Inclusions, Exclusions, and Clarifications to the Scope of Work*

- Customer shall be responsible for any and all hazardous material abatement prior to installation of any components as required.
- Customer shall be responsible for emptying any oil tanks prior to demolition. Any and all existing damage, contamination or other hazards related to the fuel oil system are excluded from the scope of work.
- State approvals and permits are excluded.

### **III. GENERAL INCLUSIONS, EXCLUSIONS and CLARIFICATIONS to the Scope of Work**

#### **GENERAL CONDITIONS, 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 electrical systems, JCI will match existing conduit and wiring materials of construction, unless existing installation does not meet current codes. In that case the new conduit and wiring will be installed 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.
- Upon project close-out, manufacturer documentation (e.g. installation, operations, and maintenance manuals; etc.) shall be provided to the Customer.

#### **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.
- 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 upon written approval from the Customer.
- Where ULC listed Type B tubular LED lamp (TLED) retrofits are to be provided, tubular lamps will be provided and wired to line voltage. Existing ballasts will be removed.
- Where ULC listed Type C tubular LED lamp (TLED) retrofits are to be provided, 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 to be provided, 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 illumination levels and post-installation illumination levels will be sampled, both 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.
- Structural modifications (e.g. additional structural steel, roof trusses) deemed by licensed Structural Engineer to be required in order to accommodate the installation of the new photovoltaic systems;
- 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.
- Power will be interrupted during the time of system interconnection and testing. All power shutdowns will be coordinated with Customer personnel. Temporary power will not be provided during shutdown.
- Underground or overhead utility redistribution due to excavation or site work.
- Upgrade of the existing transmission line due to new PV systems.
- Utility interconnection costs, fees, and assessments. Including disconnect / reconnect fees associated with the street lighting control cabinets.
- 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 mechanical, electrical or controls equipment and the 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).
- 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 and for the Solar PV data acquisition systems.
- Repairs/replacement of insulation, piping, electrical or ductwork found to be corroded or rusted or otherwise unacceptable for installation of components or fittings required for installation other than what is specified in the 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.** Project Benefits in this Change Order are independent of earlier phases of work. Subject to the terms and conditions of the Agreement dated April 23, 2019, JCI and Customer agree that Customer will be deemed to achieve a total of \$2,778,916.46 in Non-Measured Project Benefits and JCI guarantees that Customer will achieve a total of \$444,529.44 in Measured Project Benefits during the term of this Agreement, for Total Project Benefits of \$3,223,445.90, as set forth in the Total Project Benefits table below.



### Total Project Benefits

Year	Measured Utility Cost Avoidance*	Non-Measured Utility Cost Avoidance*	Utility Incentive Benefits***	Operations & Maintenance Cost Avoidance**	Future Capital Cost Avoidance**	Annual Project Benefits
1	\$24,388.92	\$123,352.58	\$101,386.00	\$13,481.93	\$133,935.00	\$396,544.43
2	\$25,054.00	\$127,043.05	\$0.00	\$13,886.39	\$0.00	\$165,983.44
3	\$25,737.04	\$130,843.93	\$0.00	\$14,302.98	\$0.00	\$170,883.95
<b>Subtotal</b>	<b>\$75,179.96</b>	<b>\$381,239.56</b>	<b>\$101,386.00</b>	<b>\$41,671.30</b>	<b>\$133,935.00</b>	<b>\$733,411.82</b>
4	\$26,438.50	\$134,758.53	\$0.00	\$14,732.07	\$0.00	\$175,929.10
5	\$27,158.90	\$138,790.24	\$0.00	\$15,174.03	\$0.00	\$181,123.17
6	\$27,898.72	\$142,942.58	\$0.00	\$15,629.25	\$0.00	\$186,470.55
7	\$28,658.49	\$147,219.14	\$0.00	\$16,098.13	\$0.00	\$191,975.76
8	\$29,438.73	\$151,623.64	\$0.00	\$16,581.07	\$0.00	\$197,643.44
9	\$30,240.00	\$156,159.92	\$0.00	\$17,078.50	\$0.00	\$203,478.42
10	\$31,062.84	\$160,831.92	\$0.00	\$17,590.86	\$0.00	\$209,485.62
11	\$31,907.85	\$165,643.69	\$0.00	\$18,118.58	\$0.00	\$215,670.12
12	\$32,775.59	\$170,599.42	\$0.00	\$18,662.14	\$0.00	\$222,037.15
13	\$33,666.69	\$175,703.41	\$0.00	\$19,222.00	\$0.00	\$228,592.10
14	\$34,581.75	\$180,960.11	\$0.00	\$19,798.67	\$0.00	\$235,340.53
15	\$35,521.42	\$186,374.07	\$0.00	\$20,392.63	\$0.00	\$242,288.12
<b>Total</b>	<b>\$444,529.44</b>	<b>\$2,292,846.23</b>	<b>\$101,386.00</b>	<b>\$250,749.23</b>	<b>\$133,935.00</b>	<b>\$3,223,445.90</b>

\* 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 and Future Capital Cost Avoidance figures in the table above are based on a mutually agreed fixed annual escalation rate of three percent (3.00%) starting in Year 1.

\*\*\* Utility Incentive Benefits are a one-time rebate anticipated to occur during Year 1 of the Project Benefits Term and are not guaranteed by JCI.

M&V Term will only be for the first THREE years. At the end of Year 3 of the Performance Period, if the Customer and JCI agree on renewal of M&V Services, the annual payments listed in Schedule 4 will be due and payable at a (3% Annual Escalation) when the customer receives JCI's invoice and advance of the services JCI is to provide. If the customer chooses not to renew the M&V services after Year 3, the savings for the remainder off the guarantee period will be stipulated in the amounts listed above.

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, assuming the customer is paying for M&V services.

**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 \$133,935 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	\$123,352.58	\$101,386.00	\$13,481.93	\$133,935.00	\$372,155.51
2	\$127,043.05	\$0.00	\$13,886.39	\$0.00	\$140,929.44
3	\$130,843.93	\$0.00	\$14,302.98	\$0.00	\$145,146.91
4	\$134,758.53	\$0.00	\$14,732.07	\$0.00	\$149,490.60
5	\$138,790.24	\$0.00	\$15,174.03	\$0.00	\$153,964.27
6	\$142,942.58	\$0.00	\$15,629.25	\$0.00	\$158,571.83
7	\$147,219.14	\$0.00	\$16,098.13	\$0.00	\$163,317.27
8	\$151,623.64	\$0.00	\$16,581.07	\$0.00	\$168,204.71
9	\$156,159.92	\$0.00	\$17,078.50	\$0.00	\$173,238.42
10	\$160,831.92	\$0.00	\$17,590.86	\$0.00	\$178,422.78
11	\$165,643.69	\$0.00	\$18,118.58	\$0.00	\$183,762.27
12	\$170,599.42	\$0.00	\$18,662.14	\$0.00	\$189,261.56
13	\$175,703.41	\$0.00	\$19,222.00	\$0.00	\$194,925.41
14	\$180,960.11	\$0.00	\$19,798.67	\$0.00	\$200,758.78
15	\$186,374.07	\$0.00	\$20,392.63	\$0.00	\$206,766.70

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

Non-Measured Utility Benefits	ECM	Year 1 Benefits	Escalation
Retrofit Street Lighting to LED	ECM-32	\$121,717.28	3.00%
Install New Solar PV – La Crosse Fire Station #1	ECM-33	\$384.30	3.00%
Install New Solar PV – Copeland Park Stadium	ECM-33	\$1,251.00	3.00%
<b>Total Non-Measured Utility Benefits =</b>		<b>\$123,352.58</b>	

### ECM-32 Retrofit Street Lighting to LED

The calculated savings shall be determined based on the Utility Company's published rates as of the date of this Change Order. Existing HID street lighting is currently billed under Rate Code B33 in three separate rate groups. Proposed metered LED street lighting will be billed under Rate Code B36.

Existing Rate Code	Lamp Type	Wattage	Qty of Lamps	Monthly Per-Lamp Cost, Rate B33	LED Equivalent Wattage	Annual Total Cost, Rate B33	Annual Total Cost, Rate B36	Savings
B33-1	HPS	100W	2	\$6.90	28W	\$ 165.60	\$17.32	\$ 148.28
B33-1	HPS	150W	421	\$8.65	55W	\$43,699.80	\$7,161.32	\$36,538.48
B33-1	HPS	250W	84	\$12.60	80W	\$12,700.80	\$2,078.34	\$10,622.46
B33-1	HPS	400W	81	\$17.00	120W	\$16,524.00	\$3,006.18	\$13,517.82
B33-1N	HPS	100W	2	\$6.90	28W	\$ 165.60	\$17.32	\$ 148.28
B33-1N	HPS	150W	97	\$8.65	55W	\$10,068.60	\$1,650.00	\$8,418.60
B33-1N	HPS	250W	9	\$12.60	80W	\$1,360.80	\$222.68	\$1,138.12
B33-2	HPS	50W	179	\$1.75	14W	\$3,759.00	\$775.05	\$2,983.95
B33-2	HPS	70W	76	\$2.35	25W	\$2,143.20	\$587.63	\$1,555.57
B33-2	HPS	100W	39	\$3.50	28W	\$1,638.00	\$337.73	\$1,300.27
B33-2	HPS	150W	791	\$5.40	55W	\$51,256.80	\$13,455.12	\$37,801.68
B33-2	HPS	250W	154	\$8.40	80W	\$15,523.20	\$3,810.30	\$11,712.90
B33-2	HPS	400W	10	\$13.30	120W	\$1,596.00	\$371.13	\$1,224.87
Per-Meter Monthly Charge (\$7.25 per month for 62 meters)						\$ 0.00	\$5,394.00	(\$5,394.00)
<b>Total</b>						<b>\$160,601.40</b>	<b>\$38,884.12</b>	<b>\$121,717.28</b>

The above savings are based upon Customer taking necessary actions with the Utility Company to facilitate the rate change from the current B33 rates to the B36 rates as shown in Section IV. JCI and Customer agree that these savings occur once the retrofit of street lighting to LED is installed.

The pre-installation wattage shall be as noted in the table above based on the installed lamps, in accordance with the B33 utility rate. A measured adjustment to the above non-measured savings will be made following installation of retrofits by comparing the estimated wattages of the retrofits above to the measured post-installation wattages for a sample of retrofits. The savings will then be adjusted to the measured wattages, in accordance with the B36 utility rate. The post-installation sample plan will adhere to typical 80/20 guidelines (sample size 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. The lighting savings calculations will be updated for the values and reported in the annual report. The table below is the expected sample plan:

Fixture Type and Post-Installation Component Code	Post-Installation Population	Projected System kW Savings	Projected kWh Savings	Percentage of Saving Contribution	Cumulative Percentage of Saving Contribution	Population Sample Size for Coefficient of Variation: 0.5
Acorn (AG): Lumecon L-RETRO-T-55	592	75.332	323,927.6	27.60%	27.60%	11
Matchstick (MS): Halophane GPD3 P30 30K MVOLT	552	70.242	302,040.6	25.74%	53.34%	11
250w Cobrahead (CH-250): RWL2-M-80-40-U-D-X- w/out shorting	147	31.017	133,373.1	11.36%	64.70%	11
5 Head Globe (5G): (1)KT-LED25A23-O-E26-830 / (4) KT-LED14A21-O-E26-831	105	28.23975	121,430.925	10.35%	75.05%	10
150w Cobrahead (CH-150): RWL2-M-50-40-U-D-X- w/out shorting	168	22.26	95,718	8.16%	83.21%	11

### ECM-33 Install New Solar PV

The calculated demand savings for solar photovoltaic installations depend on peak solar generation occurring at the same time as peak building demand. Due to the unpredictability of weather and building usage patterns, these values are calculated based on historical weather data (Typical Meteorological Year, or TMY) and assumed building energy demand profiles and will not be measured. A benefit will only be realized for buildings where the electric rates charge for demand.

The utility rates are explained in Section IV below. The monthly demand charges are calculated as follows:

$$\text{Demand Charges (\$)} = \text{Monthly Distribution Demand Charges (\$)} + \text{Monthly Peak Demand Charges (\$)}$$

$$\text{Distribution Demand Charge (\$)} = [\text{Max (Annual Distribution Demand (kW))} * \text{Distribution Demand Rate } (\frac{\$}{\text{kW}})]$$

$$\text{Monthly Peak Demand Charge (\$)} = \text{Monthly Peak Demand (kW)} * \text{Seasonal Peak Demand Rate } (\frac{\$}{\text{kW}})$$

The estimated energy production for this ECM is based on a computer simulation performed using the HelioScope software. Hourly simulation results from the HelioScope software were then fed into the Energy Toolbase software to determine the demand savings by comparing the estimated demand profile of the building before solar is installed to the estimated demand profile after solar is installed. Below are the baseline monthly estimated demand charges before and after installation, and the anticipated demand savings for each site:

<b>Copeland Park Stadium</b>			
<b>Typical Month</b>	<b>Estimated Baseline Demand Charges</b>	<b>Estimated Future Demand Charges</b>	<b>Estimated Demand Savings Contribution</b>
January	\$130	\$118	\$13
February	\$130	\$118	\$13
March	\$152	\$140	\$13
April	\$515	\$426	\$90
May	\$1,340	\$1,273	\$68
June	\$2,025	\$1,681	\$344
July	\$1,895	\$1,571	\$325
August	\$1,440	\$1,337	\$104
September	\$985	\$739	\$247
October	\$471	\$459	\$13
November	\$141	\$129	\$13
December	\$141	\$129	\$13
<b>Total</b>	<b>\$9,365</b>	<b>\$8,115</b>	<b>\$1,251</b>

<b>La Crosse Fire Station #1</b>			
<b>Typical Month</b>	<b>Estimated Baseline Demand Charges</b>	<b>Estimated Future Demand Charges</b>	<b>Estimated Demand Savings Contribution</b>
January	\$520	\$520	\$0
February	\$509	\$502	\$7
March	\$432	\$379	\$53
April	\$421	\$390	\$31
May	\$465	\$435	\$30
June	\$623	\$575	\$48
July	\$623	\$575	\$48
August	\$597	\$510	\$87
September	\$610	\$575	\$35
October	\$454	\$435	\$19
November	\$487	\$487	\$0
December	\$575	\$546	\$29
<b>Total</b>	<b>\$6,316</b>	<b>\$5,929</b>	<b>\$387</b>

<b>Non-Measured Operational Benefits</b>	<b>ECM</b>	<b>Year 1 Benefits</b>	<b>Escalation</b>
The Non-Measured Operational Benefits of ECM-31 at Black River Beach Neighborhood Center are the result of Operational Material Savings due to Lighting Replacement	ECM-31	\$315.18	3.00%
The Non-Measured Operational Benefits of ECM-31 at Myrick Park Center are the result of Operational Material Savings due to Lighting Replacement	ECM-31	\$330.12	3.00%
The Non-Measured Operational Benefits of ECM-31 at Southside Neighborhood Center are the result of Operational Material Savings due to Lighting Replacement	ECM-31	\$195.70	3.00%
The Non-Measured Operational Benefits of ECM-31 at Copeland Park Octoberfest Shelter, Copeland Park Enclosed Shelter, and Copeland Park Tennis Courts are the result of Operational Material Savings due to Lighting Replacement	ECM-31	\$761.69	3.00%
The Non-Measured Operational Benefits of ECM-31 at La Crosse Fire Station #1 are the result of Operational Material Savings due to Lighting Replacement	ECM-31	\$412.77	3.00%
The Non-Measured Operational Benefits of ECM-31 at North Neighborhood Library are the result of Operational Material Savings due to Lighting Replacement	ECM-31	\$146.26	3.00%
The Non-Measured Operational Benefits of ECM-31 at South Neighborhood Library are the result of Operational Material Savings due to Lighting Replacement	ECM-31	\$196.22	3.00%
The Non-Measured Operational Benefits of ECM-31 at Main Street Parking Ramp are the result of Operational Material Savings due to Lighting Replacement	ECM-31	\$824.00	3.00%
The Non-Measured Operational Benefits of ECM-32 for Street Lighting are the result of Operational Material Savings due to typical annual street lighting re-lamping costs avoided due to LED lighting replacement	ECM-32	\$10,000.00	3.00%
<b>Total Non-Measured Operational Benefits =</b>		<b>\$13,181.94</b>	

### **Lighting Material Savings (ECM-31 and ECM-32)**

Customer shall see a reduction in the cost of lighting materials as a direct result of the implementation of ECM-31 and ECM-32. 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-31	\$9,514.00	0%
The Xcel Energy Bonus Incentive Benefit is the result of lighting energy savings	ECM-31	\$4,756.00	0%
The Focus on Energy Incentive Benefit is the result of street lighting energy savings	ECM-32	\$45,394.00	0%
The Xcel Energy Bonus Incentive Benefit is the result of street lighting energy savings	ECM-32	\$22,697.00	0%
The Focus on Energy Incentive Benefit is the result of renewable energy generation	ECM-33	\$19,025.00	0%
<b>Total Non-Measured Utility Incentive Benefits =</b>		<b>\$101,386.00</b>	

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 and are not guaranteed by JCI.

*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.

#### M&V Option Summary Table

ECM Number	ECM Name	Facility										
		Black River Beach Neighborhood Center	Myrick Park Center	Copeland Park Octoberfest Shelter	Copeland Park Enclosed Shelter	Copeland Park Tennis Courts	Copeland Park Stadium	La Crosse Fire Station #1	La Crosse Fire Station #3	North Neighborhood Library	South Neighborhood Library	Main Street Parking Ramp
ECM-31	Retrofit Facility Lighting to LED	A	A	A	A	A		A		A	A	A
ECM-33	Install New Solar PV						A*	A*	A			

*\* The energy consumption savings shall be the measured utility benefit under Option A; energy demand savings, if the facility is subject to demand charges, shall be the non-measured utility benefit.*

#### Option A Partially Measured Retrofit Isolation

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, along with analysis of the significance of the error they may introduce. 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-31 Retrofit Facility Lighting to LED**

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)**

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

where:

- kW/fixture<sub>baseline</sub> = lighting baseline demand per fixture for usage group u
- kW/fixture<sub>post</sub> = lighting demand per fixture during post-installation period for usage group
- Quantity<sub>baseline</sub> = quantity of affected fixtures before the lighting retrofit for usage group u
- Quantity<sub>post</sub> = quantity of affected fixtures after the lighting retrofit for usage group u

**Energy (kWh)**

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

where:

- kW Savings<sub>u</sub> = 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.

Facility	Area	Existing Burn Hours Assigned	Proposed Burn Hours
Black River Beach Neighborhood Center	Lobby Closet	2250	2250
	Bathrooms	2250	2250
	Lobby, Birch, Cotton, Bathrooms	2250	2250
	Birchwood, Cottonwood Pendants	2250	2250
	Boiler Rm	2250	2250
	Maplewood	1500	1500
	Offices, Lobby	1500	1200
	Kitchen and Maple W Closet	2250	2250
	Entries, Lobby, Hallway	2250	2250
	Birchwood, Cottonwood Cans	1500	1500
Myrick Park Center	Bathrooms	2000	2000
	Entries	2000	2000
	Marshview, Maint, Bath, E. Office	2000	1500
	N. West Office	1500	1500

Facility	Area	Existing Burn Hours Assigned	Proposed Burn Hours
	Wis Corps	1500	1500
	Marshview	1500	1500
	Wis Corps & LaCrosse Rm	1500	1200
	Discovery	2000	1600
	Wis Corps Storage	500	500
	Exterior	4300	4300
	East Entry and Hallway	2500	2500
	Rear, Side, Front Entry, Rooms	2500	2500
Southside Neighborhood Center	Computer Lab, office closet	1500	1500
	Bathrooms	2000	2000
	Hall	1500	1500
	Office, CompLab, Foundation Rm	2000	2000
	Hallway	2000	2000
	Kitchen	500	500
	Exterior Parking	4300	4300
	Hall Room	2000	2000
	Exterior Sconce	4300	4300
Copeland Park Octoberfest Shelter	Rink Canopy	4300	4300
	Rink Lights	2000	2000
Copeland Park Enclosed Shelter	Shelter Canopy	1000	1000
	Shelter	500	500
	Bathrooms	500	500
	Shelter Night Lights	8760	8760
Copeland Park Tennis Courts	Tennis Court Floods	500	500
La Crosse Fire Station #1	Front Entry, Reception	2000	2000
	Basement Hallways	2000	2000
	Basement Offices	2000	2000
	Front Sign	4300	4300
	Shop, Weight Rm	500	500
	Reception, Weight Room	2000	2000
	2nd Floor Bathroom	1000	1000
	Apparatus Floor, Basement Classroom	2000	2000
	2nd Floor (unassigned to other spaces)	750	750
	Boiler Rm, Weight Rm, SCBA Rm	500	500
	Apparatus Floor	2000	2000
	Shop	2000	2000
	Inspection Storage	500	500
	1st Floor	2000	2000

Facility	Area	Existing Burn Hours Assigned	Proposed Burn Hours
North Neighborhood Library	Front Entry Case	2000	2000
	Basement	500	500
	Bathrooms	2000	2000
	1st Floor Security Light	8760	8760
	Basement	500	500
	Front Sign	4300	4300
	Back Entrance	4300	4300
South Neighborhood Library	1st Floor	2000	2000
	Basement	2000	2000
	1st Floor/Basement	2000	2000
	Front Entrance Case	2000	2000
	Basement Storage	500	500
	1st Floor Storage	500	500
	1st Floor Security Light	8760	8760
	Front Entry Exterior Sconce	8760	8760
	Front Entry Exterior Can	4300	4300
	Front Sign	4300	4300
Main Street Parking Ramp	Ramp	4380	4380
	Ramp Security Light	8760	8760

### 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 size 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. Additionally, due to the small quantities of lamps at individual facilities, all facilities are grouped together for sampling purposes. 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 table below is the expected sample plan:

Pre-Installation Component Code	Pre-Installation Population	Projected System kW Savings	Projected kWh Savings	Percentage of Saving Contribution	Cumulative Percentage of Saving Contribution	Population Sample Size for Coefficient of Variation: 0.5
2 Lamp T8 Vaportite 24x7	81	2.1222	18,590.472	16.04%	16.04%	10
4' 3L T5 Strip BiLevel Direct/Indirect	84	9.75525	14,632.875	12.62%	28.66%	10

Pre-Installation Component Code	Pre-Installation Population	Projected System kW Savings	Projected kWh Savings	Percentage of Saving Contribution	Cumulative Percentage of Saving Contribution	Population Sample Size for Coefficient of Variation: 0.5
4' 4L T8 8' Strip HBF	76	5.4264	10,852.8	9.36%	38.02%	10
250w HID Lowbay	24	4.56	9,120	7.87%	45.89%	8
2 Lamp T8 Vaportite 12x7	61	1.5982	7,000.116	6.04%	51.93%	10
150w Wallpack	11	1.51525	6,515.575	5.62%	57.55%	6
4' 3L T5 Troffer BiLevel	25	3.07725	5,206.5	4.49%	62.04%	8
70w Night Lights 24x7	6	0.3525	3,087.9	2.66%	64.70%	5
8" Can 2L 26w PL	31	1.23515	2,772.875	2.39%	67.10%	9
4' 3L to 2L T8 Troffer	61	2.495205	2,638.3725	2.28%	69.37%	10
4' 2L T8 Strip Direct/Indirect 24x7	11	0.2915	2,553.54	2.20%	71.58%	6
4' 2L T8 Strip Direct/Indirect	45	1.1925	2,385	2.06%	73.63%	9
100w Canopy	16	2.288	2,288	1.97%	75.61%	7
4' 2L T5 Troffer	13	0.89375	2,094.625	1.81%	77.41%	7
52w Incandescent A19	7	0.29785	2,039.847	1.76%	79.17%	5
150w 8" Can	3	0.4605	2,016.99	1.74%	80.91%	3

### ECM-33 Install New Solar PV

The electrical production for this ECM will be verified using IPMVP Option A, Retrofit Isolation with Key Parameter Measurement. The electrical production for this ECM is generated through a production of electricity through the solar photovoltaic arrays; therefore, the measurement boundary is the Solar PV system itself.

Parameter	Measurement Frequency	Measurement Description
Irradiance (kWh/m <sup>2</sup> )	ongoing	The irradiance shall be the Annual Total Collector Irradiance and will be measured using a pyranometer in the plane of array. The value will be totalized, and the totalized value will be recorded on an hourly basis using the system software. One pyranometer will be installed at the same tilt and azimuth angle as the PV array. This pyranometer will be the primary, will have a rated accuracy of +/- 5%, and will be used to account for factors that increase and/or decrease the Global Horizontal Irradiance as incident on the surface of the array (e.g. array tilt and azimuth, dirt, shading, etc.). A second pyranometers will be the backup and will have a rated accuracy of +/- 2%. This pyranometer will be used to measure Global Horizontal Irradiance as a backup to the primary pyranometer.
AC Energy (kWh)	ongoing	The AC energy will be measured using revenue-grade AC meters located near the AC interconnection point of each PV system.

The estimated energy production for this ECM is based on a computer simulation performed using the HelioScope software. Below is the baseline monthly and annual solar irradiance (plane of array) for La Crosse, based on the NSRDB TMY2 weather data for La Crosse Municipal Airport. Also shown in the table below is the Year 1 Energy production estimate for the combined output of the PV systems.

PV Array	Baseline Global Horizontal Irradiance (kWh/m <sup>2</sup> )	Baseline Annual Total Collector Irradiance (kWh/m <sup>2</sup> )	Year 1 AC Energy output (kWh)
Copeland Park Stadium PV Array	1,367.4	1,291.1	70,266
La Crosse Fire Station #1 PV Array	1,367.4	1,204.4	40,504
La Crosse Fire Station #3 PV Array	1,367.4	1,217.7	29,678
<b>All Sites Annual Total</b>	<b>NA</b>	<b>NA</b>	<b>3,713.2</b>

Below is the Baseline AC Energy Output for the combined PV systems, by Project Year. These numbers include degradation of 3% during the first year then 0.5% per year thereafter from the 2nd until 20th year of the manufacturer's warranty period were accounted for in the savings model.

Project Year	Baseline AC Energy output(kWh)
1	140,448
2	139,746
3	139,047
4	138,352
5	137,660
6	136,972
7	136,287
8	135,606
9	134,928
10	134,253
11	133,582
12	132,914
13	132,249
14	131,588
15	130,930
16	130,275
17	129,624
18	128,976
19	128,331
20	127,689

The energy production guarantee shall assume the monthly baseline (reference) solar irradiance as shown above. On an annual basis (recorded monthly), the total measured AC Energy output of the PV systems will be adjusted based on the actual measured plane-of-array solar irradiance received compared to the baseline (reference) plane-of-array solar irradiance, as per the following formula:

$$P_{Adjusted} = (P_{Measured}) \left( \frac{Q_{reference}}{Q_{actual}} \right)$$

Where P is energy measured in kWh and Q is solar irradiance measured in kWh/m<sup>2</sup>, either the actual measured or the reference as shown. If the adjusted amount of measured energy produced is less than the baseline energy for a given Project Year, the amount of kWh shortfall will be multiplied by the applicable \$/kWh electricity rate for the Student Community Center for that Project Year, and the result will be the PV ECM Project Benefit Shortfall for that year. If the adjusted amount of measured energy produced is greater than the baseline energy for a given Project Year, the amount of kWh surplus will be multiplied by the applicable \$/kWh electricity rate for the site for that Project Year, and the result will be the PV ECM Project Benefit Surplus for that year.

### **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 CALCULATIONS 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 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%).

The baseline usage and utility rates listed in the Agreement are amended as a result of this Change Order by adding the additional facility baselines and current utility rates to the Agreement.

##### 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.

		Electric Consumption kWh
BRBNC - Black River Beach Neighborhood Center	Dollars	\$9,452
	Units	84,040
MPC - Myrick Park Center	Dollars	\$12,479
	Units	106,054
SSNC - South Side Neighborhood Center	Dollars	\$3,289
	Units	26,775
CPOS - Copeland Park Oktoberfest Shelter	Dollars	\$2,835
	Units	21,760
CPES - Copeland Park Enclosed Shelter	Dollars	\$871
	Units	5,955
CPS - Copeland Park Stadium	Dollars	\$14,529
	Units	82,280
LCFS1 - La Crosse Fire Station 1	Dollars	\$19,257
	Units	210,920
LCFS3 - La Crosse Fire Station 3	Dollars	\$7,931
	Units	67,520
NNL - North Neighborhood Library	Dollars	\$6,509
	Units	50,921
SNL - South Neighborhood Library	Dollars	\$6,466
	Units	48,965
MSPR - Main Street Parking Ramp	Dollars	\$7,979
	Units	86,785

##### 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.

Facility	Account	Premise	Rate Code	Unit	Effective Rate
<b>Black River Beach Neighborhood Center</b>	52-6054173-7	304194393	B15	kWh	\$0.06774
<b>Copeland Park Stadium</b>	52-6054173-7	302937321	B15	kWh	\$0.06590
<b>La Crosse Fire Station 1 - Lighting</b>	52-4712246-9	303092584	B15	kWh	\$0.06774
<b>La Crosse Fire Station 1 – Solar</b>	52-4712246-9	303092584	B15	kWh	\$0.06548



Facility	Account	Premise	Rate Code	Unit	Effective Rate
North Neighborhood Library	52-4892112-8	302833164	B15	kWh	\$0.06774
South Neighborhood Library	52-4892112-8	303071074	B15	kWh	\$0.06774
Main Street Parking Ramp	52-0011625805-1	303030573	B15	kWh	\$0.06774
Myrick Park Center	52-6054173-7	304161237	B06	kWh	\$0.06774
South Side Neighborhood Center	52-6054173-7	302514845	B06	kWh	\$0.12133
Copeland Park Oktoberfest Shelter	52-6054173-7	302672654	B06	kWh	\$0.12133
Copeland Park Enclosed Shelter	52-6054173-7	302369749	B06	kWh	\$0.12133
La Crosse Fire Station 3	52-4712246-9	303618390	B06	kWh	\$0.11766

Facility	Account	Premise	Rate Code	Unit	Rate
Unmetered HID Street Lighting	NA	NA	B33-1: HPS, 100W	Per Lamp, Per Month	\$6.90
			B33-1: HPS, 150W		\$8.65
			B33-1: HPS, 250W		\$12.60
			B33-1: HPS, 400W		\$17.00
			B33-1N: HPS, 100W		\$6.90
			B33-1N: HPS, 150W		\$8.65
			B33-1N: HPS, 250W		\$12.60
			B33-2: HPS, 100W		\$3.50
			B33-2: HPS, 150W		\$5.40
			B33-2: HPS, 250W		\$8.40
			B33-2: HPS, 35W		\$1.15
			B33-2: HPS, 400W		\$13.30
			B33-2: HPS, 50W		\$1.75
			B33-2: HPS, 70W		\$2.35
Metered Street Lighting	NA	NA	B36	kWh	\$0.06850

The existing utility rate schedules for the Customer's facilities with installed solar PV (i.e. Southside Neighborhood Center, Copeland Park Stadium, La Crosse Fire Station #1, and La Crosse Fire Station #3) will be modified by the Customer's Utility Company by a net-metering schedule that limits the size of renewable resource generators to a maximum of 100 kilowatts (AC) per site. All proposed photovoltaic systems shall remain under this size and allow for utility bill credit equal to the savings as described in Schedule 2d.

However, should photovoltaic system size exceed 100 kilowatts (AC) but not exceed 200 kilowatts (AC) at any site, the existing rate schedules for the Customer's facilities will be modified by the Customer's Utility Company to a "self-supply" arrangement. Excess energy generated under the self-supply arrangement must be delivered to the grid and no utility bill credit will be provided for excess energy generation.

## VI. MEASUREMENT & VERIFICATION SERVICES

JCI will provide the M&V Services set forth below in connection with the Assured Performance Guarantee for the work described in Schedule 1d. These services are independent of the services under the Agreement dated April 23, 2019 and all prior change orders.

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, as long as M&V services are in effect, 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, 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 the following in addition to Customer Responsibilities outlined in Schedule 3 of the Agreement dated April 23, 2019 and as amended in prior Change Orders:

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 street closures 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. Promptly notifying JCI of any change in use or condition described in Section III of Schedule 2d or any other matter that may impact the Assured Performance Guarantee;
5. Taking all actions reasonably necessary to achieve the Non-Measured Project Benefits;

## PRICE AND PAYMENT TERMS

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

1. Work. The price to be paid by Customer for the Work described in Schedule 1d shall be \$2,877,458. 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%	\$1,438,729 due June 15, 2021
Second payment due:	10%	\$287,746 due July 31, 2021
Third payment due:	10%	\$287,746 due August 31, 2021
Fourth payment due:	10%	\$287,746 due September 30, 2021
Fifth payment due:	10%	\$287,746 due October 31, 2021
Final payment due:	10%	\$287,745 due November 30, 2021

If, during the course of construction, additional street lighting fixtures are located and the City desires to upgrade those fixtures Johnson Controls will work in conjunction with the City to address Scope and Price modifications through the contract Change Order process. If construction is delayed the payment schedule above may be adjusted accordingly.

2. M&V Services. The total price for JCI's additional M&V Services, not included in Paragraph 1 above, as detailed on Schedule 2d of this Agreement, is \$41,515. This amount will be paid to JCI in annual installments of \$13,432 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:	\$13,432
Second Annual amount due:	\$13,834
Third Annual amount due:	\$14,249

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 2d, the M&V will transition 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.  
12000 West Wirth Street  
Wauwatosa, Wisconsin 53222  
ATTN: Jim Bieser

Re: Notice to Proceed for 9PZK-0002 City of La Crosse PC – Buildings, Change Order No. 4

Dear Jim Bieser:

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: \_\_\_\_\_

### 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, Change Order No.4; Performance Contract dated April 23, 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 Change Order 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 [redacted], 20 [redacted].

**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, Change Order No.4; Performance Contract dated April 23, 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 Change Order 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 [redacted], 20 [redacted].

**CUSTOMER:**

**JOHNSON CONTROLS, INC.**

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_