City of Milwaukee

Investment Grade Audit Report, Phase 1

2024

Johnson Controls

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Disclaimer

The information contained with this Investment Grade Audit report has been prepared in accordance with the requirements of the Investment Grade Energy Audit of City of Milwaukee Phase I. All content within this report is current as of the date of revision noted on the report; however, for the purposes of a Guaranteed Energy Savings contract based on the results of this report, the terms, conditions, and content of the GES contract shall supersede this report.

Schedule A: Equipment installed by Johnson Controls (and their subcontractors)

The following information provides a description of the scope of work.

Police Department District 3 (PD)

ECM Summary Table:
The following table describes the Energy Conservation Measures included in the scope of work for the Police Department.

ECM#	Energy Conservation Measure (ECM) Description
PD-17	**LED Lighting Retrofit**
PD-19	**Solar PV - 120 kWac**

ECM: PD-17 LED Lighting Retrofit

The Police Station #3 has existing troffers, wraps, strip fixtures, and direct/indirect fixtures throughout the building. Space types include a variety of fluorescent and LED technologies.

We are proposing direct-wire TLED tubes and LED lamps. This includes Sixteen (16) wall switch occupancy sensors identified in Appendix 1 for select areas. The incandescent, screw-in and pin-based CFL fixtures will be re-lamped with LED lamps. Recessed cans will be upgraded with LED retrofit can kits. Existing LED technologies will remain as-is. Please see digitally attached Lighting room line by line survey for scope details in Appendix 1.

Bldg	No Retrofit	Retrofit	Relamp	Retrofit with a Kit or Reflector	New/ Replacement Fixture	Total Count
Police Station #3 Data Comm Center Interior	838	420	94	98	0	1450
Police Station #3 Data Comm Center Exterior	41	0	3	0	0	44

- “No Retrofit” is leaving the existing fixture as-is.
- “Retrofit w/ LEDs” is upgrading existing to fixtures with LED technology, typically involving removing existing ballasts.
- "Relamp" is installing a compatible LED lamp that uses existing fixture components as-is.
- “Retrofit with a Kit” is removing internal fixture components, leaving existing housing, and installing a LED kit designed for existing fixture profile. Some kits may alter finished appearance of fixture.
- “New/Replacement Fixture” is installing a new fixture in place of the existing.

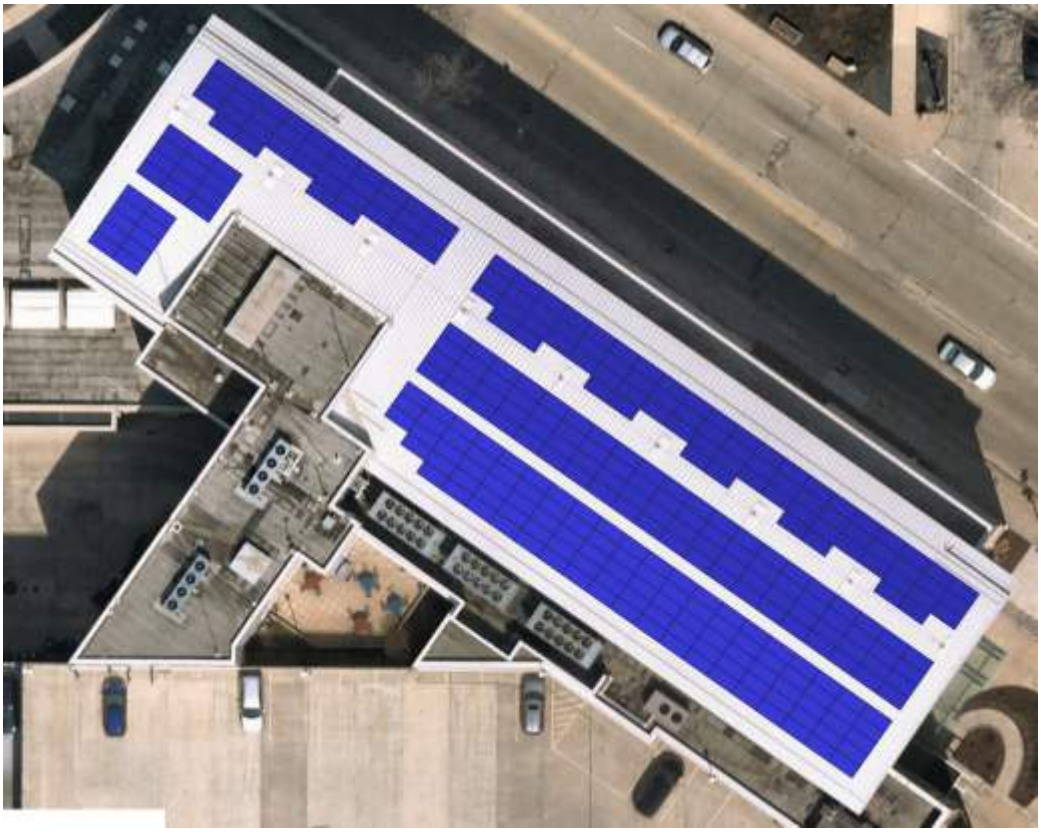
ECM: PD-19 Solar PV - 120 kWac

Overview

Provide and install a roof-mounted solar photovoltaic (PV) systems at the location shown below. The final Solar PV modules, PV inverters, PV ac and dc system sizes, and PV array layout may be adjusted during final engineering and construction due to the final selection and availability of equipment and array dimensions. Project is a turnkey installation that includes WE Energies interconnection, state licensed PE stamped drawings verifying the integrity and code compliance of proposed PV system and interconnection with facility, provide stamped PE structural

engineering documentation and a letter certifying that the existing structure(s) shall support the load of the proposed solar system(s).

Roof-mounted array, racking system will be clamped to standing seam roof, at a total PV system size of 165.1kWdc / 120kWac



Solar PV Scope of Work

This project will utilize (303) JA Solar, JAM72D30-545/MB (545W) Modules, (153) SolarEdge S1201 optimizers and (1) SolarEdge SE120KUS PV Inverter. The PV modules will be mounted to module racking systems at a fixed angle from the horizon but in alignment with the curved roof surface.

The solar PV consists of the following materials:

- Rows of roof-mounted PV modules with rail-and-clamp based module racking system, mounted at the same angle as the roof surface.
- Racking system will consist of structural metal rails and clamps which will secure the PV modules. The PV racking system will be clamped to the metal roof standing seams using non-penetrating clamps. Roof warranty will not be affected by solar installation.
- (1) PV inverter will be installed against mechanical penthouse room exterior wall
- PV inverter AC output conductors routed along the top of the roof utilizing stand-offs and against building exterior walls to the main AC disconnect switch
- PV system main AC disconnect switch mounted against the building exterior wall at ground level for 24-hour utility and emergency services access
- Interconnection of PV AC conductors into existing customer-owned main facility electrical distribution panel

The energy generated by the PV system will be metered on site by the data acquisition system (DAS) included as part of this project and will be installed per the electric utility's specifications and requirements.

The solar PV DAS consist of the following materials:

- One (1) AlsoEnergy solar PV data acquisition / monitoring system consisting of the following:
    - One data acquisition system gateway or "brain"
    - One new customer-owned revenue-grade generation meter to meter the generation of the PV system (connected directly to the data acquisition system)
    - One network switch to allow all data acquisition equipment to connect to the internet via a single network communication RJ-45 cable (Cat 5e or equal) to available RJ45 network port within (300) feet of the data acquisition system gateway.
    - As part of the solar PV data acquisition / monitoring system, One (1) AlsoEnergy weather station at each of the sites which connects directly to the data acquisition system at that system site and includes the following sensors:
        - One (1) Irradiance Sensor mounted in a horizontal plane
        - At the Police Station #3 site, the subcontractor shall install a single Pyranometer (Kipp Zonen). There will be 1 total pyranometer(s) included in the project.

Material Requirements

- Fasteners and hardware throughout system shall be stainless steel or material of equivalent corrosion resistance.
- Racking components shall be anodized aluminum, hot-dipped galvanized steel, or material of equivalent corrosion resistance.
- Unprotected steel not to be used in any components.
- Electrical conduit installed in exterior environments shall be installed with weathertight conduit and fittings.

Installation

- The Solar PV system installation shall be led by a NABCEP Certified PV Installation Professional.
- Installation shall be per contract documents.
- The PV system shall include, at a minimum, one fused DC disconnect, and one fused AC disconnect for safety and maintenance concerns.
- String combiner boxes must include properly sized fusing, and all metal equipment and components must be bonded and grounded as required by NEC.
- System wiring and conduit must comply with NEC stipulations, and all indoor and outdoor wiring, outdoor-rated or otherwise, must be enclosed in EMT conduit or covered raceway, except adjacent panel connections and under-array home run wiring.
- Wall penetrations must be sealed in compliance with NEC and NFPA regulations.
- Wiring materials and methods must adhere to industry-standard best practices, and all inter-module connections must require the use of a specialized tool for disconnecting.

Interconnection Agreement

- JCI shall coordinate with the Utility and pay all costs and provide all engineering and information in order to obtain an interconnection agreement.

Roofing & Roof Protection

- Protect existing roof materials to maintain existing roof system warranties. Any clamps used to attach PV racking to roof must be non-penetrating and must not damage the roofing material.

- Roofing penetrations and penetration sealing, if necessary, to be approved by Customer and Johnson Controls before any roof penetrations are made.
- Existing roof warranties shall not be voided based on the work performed.

As-Built Documentation

- As-built documentation which represents the actual quantity and configuration of the work installed under the project. This documentation shall be forwarded to Customer upon completion of the project. This documentation is also used for Measurement and Verification purposes.

Central Repair Garage (CRG)

ECM Summary Table:
The following table describes the Energy Conservation Measures included in the scope of work for the Central Repair Garage.

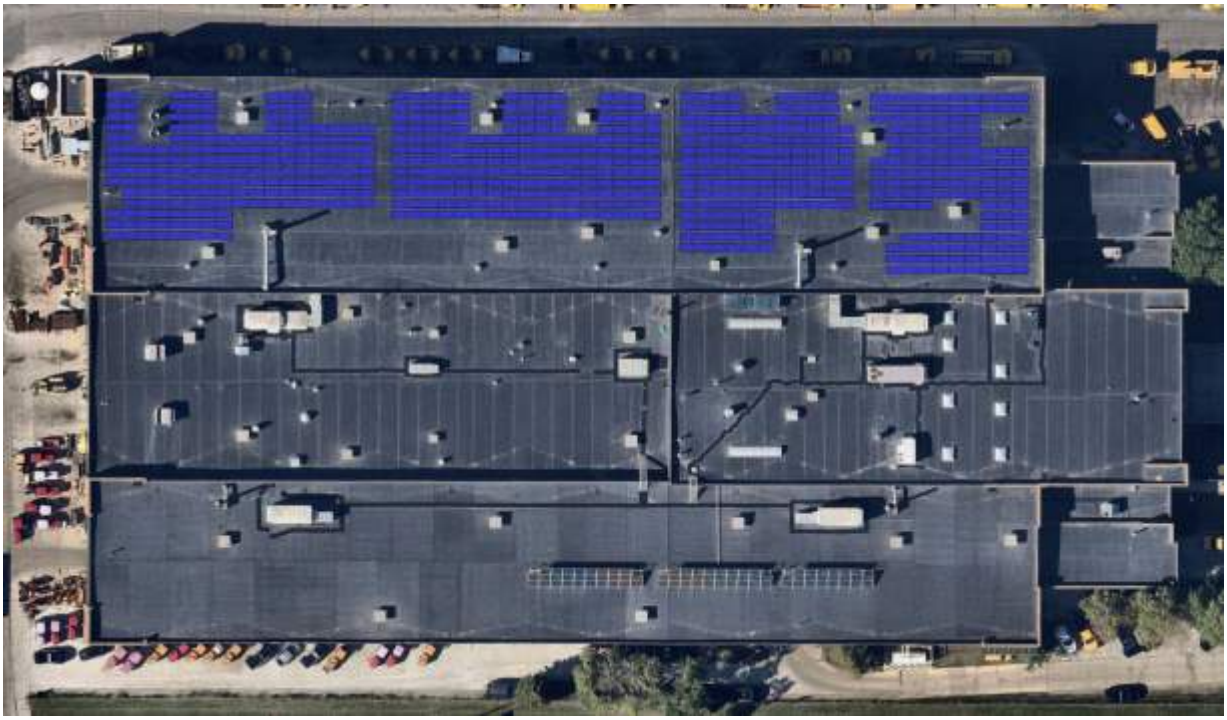
ECM#	Energy Conservation Measure (ECM) Description
CRG-10a	Solar PV - 250 kWac
CRG-11	LED Lighting Retrofit

ECM: CRG-10a Solar PV - 250 kWac

Overview

Provide and install a roof-mounted solar photovoltaic (PV) systems at the location shown below. The final Solar PV modules, PV inverters, PV ac and dc system sizes, and PV array layout may be adjusted during final engineering and construction due to the final selection and availability of equipment and array dimensions. Project is a turnkey installation that includes WE Energies interconnection, state licensed PE stamped drawings verifying the integrity and code compliance of proposed PV system and interconnection with facility, provide stamped PE structural engineering documentation and a letter certifying that the existing structure(s) shall support the load of the proposed solar system(s).

Roof-mounted fixed-tilt ballasted array at a total PV system size of 346.1kWdc / 250kWac



Solar PV Scope of Work

This project will utilize (635) JA Solar, JAM72D30-545/MB (545W) Modules, and (4) Sunny Tripower_Core1 62-US-41 (SMA) PV Inverters. The PV modules will be mounted to module racking systems at a fixed angle from the horizon.

The solar PV consists of the following materials:

- Rows of fixed tilt ballasted roof-mounted PV modules with module racking system and mounted at an angle of 9° up from the flat roof surface.
- Racking system will consist of structural metal bars which connect and secure the PV modules together with integrated pans where concrete ballast blocks will be placed to hold the system down and prevent movement. There may be penetrations into the roof required to secure the racking system which will be determined during the final racking system design.
- Rubber feet or slip sheets of material matching the roofing surface material to be placed between new Solar PV equipment in any location where metal parts of that equipment would come into contact with the roof surface
- (4) PV inverters and AC combiner panelboard will be installed against mechanical penthouse room exterior wall
- PV system AC output conductors routed from AC combiner panelboard along the top of the roof utilizing stand-offs and against building exterior walls to the main AC disconnect switch
- PV system main AC disconnect switch mounted against the building exterior wall at ground level for 24-hour utility and emergency services access
- Interconnection of PV AC conductors into existing customer-owned main facility electrical distribution panel

The energy generated by the PV system will be metered on site by the data acquisition system (DAS) included as part of this project and will be installed per the electric utility's specifications and requirements.

The solar PV DAS consist of the following materials:

- One (1) Also Energy solar PV data acquisition / monitoring system consisting of the following:
    - One data acquisition system gateway or “brain”
    - One new customer-owned revenue-grade generation meter to meter the generation of the PV systems (connected directly to the data acquisition system)
    - One network switch to allow all data acquisition equipment to connect to the internet via a single network communication RJ-45 cable (Cat 5e or equal) to available RJ45 network port within (300) feet of the data acquisition system gateway.
    - As part of the solar PV data acquisition / monitoring system, One (1) AlsoEnergy weather station at each of the sites which connects directly to the data acquisition system at that system site and includes the following sensors:
        - One (1) Irradiance sensor in the plane of the largest array.

Material Requirements

- Fasteners and hardware throughout system shall be stainless steel or material of equivalent corrosion resistance.
- Racking components shall be anodized aluminum, hot-dipped galvanized steel, or material of equivalent corrosion resistance.
- Unprotected steel not to be used in any components.
- Electrical conduit installed in exterior environments shall be installed with weathertight conduit and fittings.

Installation

- The Solar PV system installation shall be led by a NABCEP Certified PV Installation Professional.
- Installation shall be per contract documents.
- The PV system shall include, at a minimum, one fused DC disconnect and one fused AC disconnect for safety and maintenance concerns.
- String combiner boxes must include properly-sized fusing, and all metal equipment and components must be bonded and grounded as required by NEC.
- System wiring and conduit must comply with NEC stipulations, and all indoor and outdoor wiring, outdoor-rated or otherwise, must be enclosed in EMT or RIGID conduit or covered raceway, except adjacent panel connections and under-array home run wiring.
- Wall penetrations must be sealed in compliance with NEC and NFPA regulations.
- Wiring materials and methods must adhere to industry-standard best practices, and all inter-module connections must require the use of a specialized tool for disconnecting.

Interconnection Agreement

- JCI shall coordinate with the Utility and pay all costs and provide all engineering and information in order to obtain an interconnection agreement.

Roofing & Roof Protection

- Protect existing roof materials to maintain existing roof system warranties. It is required to install slip sheets on EPDM, TPO and other roof systems to protect the existing roof from the impact of the racking systems set directly on those roofs.
- Provide roofing penetrations as required.
- Existing roof warranties shall not be voided based on the work performed.

As-Built Documentation

- As-built documentation which represents the actual quantity and configuration of the work installed under the project. This documentation shall be forwarded to JCI upon completion of the project. This documentation is also used for Measurement and Verification purposes.

Existing 20.64kW DC Solar PV System – Operational Diagnostic Analysis

The existing solar PV system installed in 2011 at the Central Repair Garage, consists of three SMA inverters, (2) SB-6000-US and (1) SB 7000-US, which when fully operational provide approximately 20.64kW DC to the buildings electrical system. The inverters are wired to provide AC power directly into the electrical panelboard in the upper Compressor Mechanical Room 202 thru (2) 40A and (1) 45A circuit breakers. The existing solar PV system is currently only partially operational as the #2 & #3 inverters serving combined strings #3, #4, #5 & #6 are not functional at this time. Inverter #1 appears to be functional.

JCI will inspect the non-functional inverters and their associated solar PV arrays and will perform a general electrical inspection of the associated solar PV arrays and provide troubleshooting of the causes of the non-functional inverters. JCI will make repairs limited to replacement of breakers, fuses, and basic electrical diagnostics with the intent of returning the existing solar PV system to complete functionality again with limited investment. This system is out of warranty and the scope of the work is identified above and is limited. Any repairs needed beyond this scope are not included and will be quoted separately to the customer as identified during the implementation of this scope. The diagnostic work on the 2011 system excludes tie-in of this existing Solar PV system to or monitoring from the Also Energy DAS being installed as part of the 250kWac system installation.

ECM: CRG-11 LED Lighting Retrofit

The Central Repair Garage has existing troffers, wraps, strip fixtures, and direct indirect fixtures throughout the building. Space types include a variety of fluorescent and LED technologies.

We are proposing most fixtures to be retrofitted with direct-wire TLED tubes. The incandescent and screw-in CFL fixtures will be re-lamped with LED lamps. The recessed cans will be upgraded with LED retrofit can kits. High bay fixtures in the main repair garage bay will be upgraded with new fixtures. Existing LED technologies will remain as-is. Please see digitally attached Lighting room line by line survey for scope details in Appendix 1.

Bldg	No Retrofit	Retrofit	Relamp	Retrofit with a Kit or Reflector	New/ Replacement Fixture	Total Count
Central Repair Garage Exterior	55	0	8	0	1	64
Central Repair Garage Interior	407	401	17	0	298	1123

- “No Retrofit” is leaving the existing fixture as-is.
- “Retrofit w/ LEDs” is upgrading existing to fixtures with LED technology, typically involving removing existing ballasts.

- "Relamp" is installing a compatible LED lamp that uses existing fixture components as-is.
- “Retrofit with a Kit” is removing internal fixture components, leaving existing housing, and installing a LED kit designed for existing fixture profile. Some kits may alter finished appearance of fixture.
- “New/Replacement Fixture” is installing a new fixture in place of the existing.

DPW Field HQ (DPW)

ECM Summary Table

The following table describes the Energy Conservation Measures included in the scope of work for the DPW Field Headquarters.

ECM#	Energy Conservation Measure (ECM) Description
DPW-06	**RTU-2 and RTU-3 Replacement**
DPW-08a	**Solar PV - 200 kWac**
OBEM-1	**OpenBlue Enterprise Manager**

ECM: DPW-06 RTU-2 and RTU-3 Replacement

Existing System:
Two (2) high efficiency Constant Air Volume (CAV) Trane packaged HVAC Rooftop Units (RTU-2, 3) are located on the roof of the office building. Rooftop Unit (RTU-2) serves Assembly room 168 and is oversized for the space it serves. Rooftop Unit (RTU-3) serves the locker rooms.

Mechanical Scope of Work:
As indicated in tables below, rightsize and replace RTU-2 equipment based on a load calc, and upgrade with a high efficiency Single Zone Variable Air Volume (VAV) York unit. Replace and upgrade RTU-3 with a high efficiency single zone Variable Air Volume (VAV) York unit.

- Reclaim and dispose of refrigerant in accordance with state, local codes, and EPA current requirements in effect at the time of contract signing.
- Safely disconnect and demolish rooftop units and remove from job site.
- Disconnect existing electrical disconnect, gas piping and supply & return duct connections.
- Provide lifting, rigging, loading, and setting of both old and new rooftop units.
- Provide and install new high efficiency York VAV rooftop units with Economizer, VFD, smoke detector and mount on existing curb or with curb adapter as needed. Provide RTU with factory packaged controls and a BACnet card for integration to the Metasys BAS system.
- Reconnect equipment to the existing electrical power wiring. Provide labor, conduit, fittings, gauges, insulation, etc.
- Replace and resize the electrical breaker size for RTU-2 to meet the new equipment amperage.
- Reconnect gas connection and supply & return duct connections.
- Provide and install new PVC condensate drain piping with proper trap.
- Tie into existing building fire alarm system for annunciation and fan shutdown.
- Provide Start up, air balancing and system testing.
- Provide 1 hour training and validation of system operation.

Temperature Controls Scope of Work:

Disconnect the N2 communication bus from RTU-2 and RTU-3 prior to the demolition of each unit. For RTU-2, replace the existing thermostat with a new N2 TEC thermostat. Connect the TEC to the existing N2 bus.

For RTU-3, install a new CGM control panel in the electrical closet. Install a new Zone Sensor in the Men's Locker Room and the Women's Toilet Room and wire to the control panel. Provide power and N2 communications to the CGM.

Table 1 – New Equipment (Rightsized)

RTU-2 HVAC ROOFTOP UNIT SCHEDULE														
TAG	Model	CFM	VENT CFM	HTG EAT/LAT	Gas Htg MBh Output	Gas Htg MBh Input	CLG. EAT (db/wb)	CLG. LAT (db/wb)	CLG. MBh	Nom. Clg. Tons	Electric (Volts/Ph)	Amps	SF HP	Dimensions
RTU-2	York ZF150S24R4B6CECD24A	5,000	1,000	52 / 85	181,500	240.0	78.1 / 65.4	56.2 / 55.6	160.0	12.5	460/3	50	1.25	DIM. 119.5"X50.75"X59". Wt. 1253 lb.

RTU Options Include VFD Intellispeed High Static, 2-Stg SS Gas, SS Drain Pan, Coil Guard, Factory Mtd. Controller, BacNet Card, Return smoke detectors, dirty filter sensors Identified equipment selection. Final unit size and characteristics to be selected and specified by the mechanical engineer on record.

Table 2 – Existing Equipment Conditions

ROOFTOP UNIT SCHEDULE

UNIT	MFG.	MODEL	CLG. MBH	HTG. IN MBH	HTG. OUT MBH	TOTAL CFM	MIN. F.A. CFM	E.E.R.	HTG. EFF.%	VOLTAGE	M.C.A.	WEIGHT	ACCESSORIES
RTU-2	TRANE	YCD 301 C4L	300	250	203	10,000	1,480	10.4	81	460/3 PHASE	58	2,650	②③ ⑥⑦⑧

NOTE: RTU-2 will be replaced with a new unit and it shall be rightsized accordingly for the space it serves. The information above in Table 2 is provided for refence only and is the current existing conditions.

ECM: DPW-08a Solar PV - 200 kWac

Overview

Provide and install a roof-mounted solar photovoltaic (PV) systems at the location shown below. The final Solar PV modules, PV inverters, PV ac and dc system sizes, and PV array layout may be adjusted during final engineering and construction due to the final selection and availability of equipment and array dimensions. Project is a turnkey installation that includes WE Energies interconnection, state licensed PE stamped drawings verifying the integrity and code compliance of proposed PV system and interconnection with facility, provide stamped PE structural engineering documentation and a letter certifying that the existing structure(s) shall support the load of the proposed solar system(s), 2 physical copies and 1 digital copy of all Operations and Maintenance manuals

Roof-mounted fixed-tilt ballasted array at a total PV system size of 277.4kWdc / 200kWac

Solar PV Scope of Work

This project will utilize (509) JA Solar, JAM72D30-545/MB (545W) Modules and (4) Sunny Tripower_Core1 50-US-41 (SMA) PV Inverters. The PV modules will be mounted to module racking systems at a fixed angle from the horizon.

The solar PV consists of the following materials:

- Rows of fixed tilt ballasted roof-mounted PV modules with module racking system and mounted at an angle of 9° up from the flat roof surface.
- Racking system will consist of structural metal bars which connect and secure the PV modules together with integrated pans where concrete ballast blocks will be placed to hold the system down and prevent movement. There may be penetrations into the roof required to secure the racking system which will be determined during the final racking system design. Roof warranty will not be affected by solar installation.
- Rubber feet or slip sheets of material matching the roofing surface material to be placed between new Solar PV equipment in any location where metal parts of that equipment would come into contact with the roof surface
- (4) PV inverters and AC combiner panelboard will be installed against mechanical penthouse room exterior wall
- PV system AC output conductors routed from AC combiner panelboard along the top of the roof utilizing stand-offs and against building exterior walls to the main AC disconnect switch
- PV system main AC disconnect switch mounted against the building exterior wall at ground level for 24-hour utility and emergency services access
- Interconnection of PV AC conductors into existing customer-owned main facility electrical distribution panel

The energy generated by the PV system will be metered on site by the data acquisition system (DAS) included as part of this project and will be installed per the electric utility's specifications and requirements.

The solar PV DAS consist of the following materials:

- One (1) Also Energy solar PV data acquisition / monitoring system consisting of the following:
    - One data acquisition system gateway or "brain"
    - One new customer-owned revenue-grade generation meter to meter the generation of the PV systems (connected directly to the data acquisition system)
    - One network switch to allow all data acquisition equipment to connect to the internet via a single network communication RJ-45 cable (Cat 5e or equal) to available RJ45 network port within (300) feet of the data acquisition system gateway.
    - As part of the solar PV data acquisition / monitoring system, One (1) AlsoEnergy weather station at each of the sites which connects directly to the data acquisition system at that system site and includes the following sensors:
        - One (1) Irradiance sensor in the plane of the largest array.

Material Requirements

- Fasteners and hardware throughout system shall be stainless steel or material of equivalent corrosion resistance.
- Racking components shall be anodized aluminum, hot-dipped galvanized steel, or material of equivalent corrosion resistance.
- Unprotected steel not to be used in any components.
- Electrical conduit installed in exterior environments shall be installed with weathertight conduit and fittings.

Installation

- The Solar PV system installation shall be led by a NABCEP Certified PV Installation Professional.
- Installation shall be per contract documents.
- The PV system shall include, at a minimum, one fused DC disconnect and one fused AC disconnect for safety and maintenance concerns.
- String combiner boxes must include properly-sized fusing, and all metal equipment and components must be bonded and grounded as required by NEC.
- System wiring and conduit must comply with NEC stipulations, and all indoor and outdoor wiring, outdoor-rated or otherwise, must be enclosed in EMT conduit or covered raceway, except adjacent panel connections and under-array home run wiring.
- Wall penetrations must be sealed in compliance with NEC and NFPA regulations.
- Wiring materials and methods must adhere to industry-standard best practices, and all inter-module connections must require the use of a specialized tool for disconnecting.

Interconnection Agreement

- JCI shall coordinate with the Utility and pay all costs and provide all engineering and information in order to obtain an interconnection agreement.

Roofing & Roof Protection

- Protect existing roof materials to maintain existing roof system warranties. It is required to install slip sheets on EPDM, TPO and other roof systems to protect the existing roof from the impact of the racking systems set directly on those roofs.
- Provide roofing penetrations as required.
- Existing roof warranties shall not be voided based on the work performed.

As-Built Documentation

- As-built documentation which represents the actual quantity and configuration of the work installed under the project. This documentation shall be forwarded to JCI upon completion of the project. This documentation is also used for Measurement and Verification purposes.

ECM: OBEM-1 OpenBlue Enterprise Manager

Net Zero Advisor Plus

Term - Net Zero Advisor Plus is included for the first two (2) years of the Measurement & Verification guaranteed term.

This project will implement a single instance of OpenBlue Enterprise Manager (OBEM).

Activation:
Johnson Controls Digital Sales and Deployment Teams shall work with Customer to ensure Johnson Controls has access and permission to access and import utility bill information successfully into OBEM.

Solution Design and Engineering:
JCI Digital Deployment Team shall draft a detailed engineering document of what is included and excluded in the scope and how the solution will be delivered in what time frame. This is a detailed solutioning document that is utilized to provide the customer a look at their final dashboard (i.e. Building Names, Design Layout, etc.) that will be customized for their use as part of the deployment process.

JCI Digital Deployment Team shall provide Customer with the OBEM Solution Design and Engineering Document. Prior to execution, JCI shall verify and get acceptance of the solution document from Customer. Formal customer acceptance process shall be identified and agreed to by the Customer.

Installation and Commissioning:
JCI Digital Deployment Team will import a total of 10 utility accounts information via API connection to Urjanet (10 accounts) to enable the gathering of all relevant data for the features as described in this proposal. Accounts not accessible via Urjanet will require the respective providers to engage with Urjanet to facilitate the delivery of necessary data prior to any efforts by JCI to bring that information into the OpenBlue environment. Accounts with providers that refuse to provide information to Urjanet will be excluded from this scope of work.

Provisioning and Configuration:
JCI Digital Deployment Team shall provide licenses for all features purchased as part of this proposal.

Data Stabilization:
JCI Digital Sales Team shall establish data reliability, data availability, check telemetry, as well as validate custom and global rules with Customer.

Validation and Signoff:
JCI Digital Deployment Team shall validate that all delivery obligations as per the OBEM Solution Design and Engineering Document are demonstrated to Customer. JCI Digital Deployment Team shall update OBEM Solution Design and Engineering Document for As-Built records, if required.

Post Support:

JCI Digital Deployment Team shall provide elevated support for a period of two weeks immediately following implementation completion, including up to 48 hours of engagement to address and resolve issues identified as part of the UAT (User Acceptance Testing).

Training:
JCI Digital Customer Success shall provide end user training on OBEM software for one, 1-hour training session to be delivered via Microsoft Teams. JCI shall provide Customer with the OBEM User Guide and the Customer Adoption Handbook.

Schedule B: Energy Savings Guarantee

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.

Project Benefits Summary. Subject to the terms and conditions of this Agreement, JCI and Customer agree that Customer will be deemed to achieve a total of $2,089,884 in Non-Measured Project Benefits and JCI guarantees that Customer will achieve a total of $2,569,236 in Measured Project Benefits during the term of this Agreement, for Total Project Benefits of $4,659,120, as set forth in the Total Project Benefits table below.

Total Project Benefits

Year	Utility Cost Avoidance (Measured)*	Utility Cost Avoidance (Non-measured)**	Operations & Maintenance Cost Avoidance**	Rebates & Grants (Not Guaranteed)	Future Capital Cost Avoidance**	Annual Project Benefits
1	$99,334	$40,408	$4,088	$64,554	$350,000	$558,384
2	$101,937	$41,507	$4,252	$0		$147,696
Sub-total	**$201,270**	**$81,915**	**$8,340**	**$64,554**	**$350,000**	**$706,079**
3	$104,608	$42,637	$4,422	$530,203		$681,870
4	$107,350	$43,798	$4,599	$0		$155,747
5	$110,165	$44,990	$4,783	$0		$159,938
6	$113,054	$46,216	$4,974	$0		$164,243
7	$116,019	$47,475	$5,173	$0		$168,667
8	$119,063	$48,768	$5,380	$0		$173,211
9	$122,187	$50,097	$5,595	$0		$177,879
10	$125,394	$51,463	$5,819	$0		$182,675
11	$128,685	$52,866	$6,052	$0		$187,603
12	$132,064	$54,308	$6,294	$0		$192,665
13	$135,531	$55,790	$6,545	$0		$197,866
14	$139,091	$57,312	$6,807	$0		$203,210
15	$142,745	$58,876	$7,080	$0		$208,701
16	$146,496	$60,483	$7,363	$0		$214,342
17	$150,346	$62,135	$0	$0		$212,480
18	$154,297	$63,832	$0	$0		$218,129
19	$158,354	$65,576	$0	$0		$223,930
20	$162,518	$67,368	$0	$0		$229,885
Total	**$2,569,236**	**$1,055,904**	**$89,224**	**$594,756**	**$350,000**	**$4,659,120**

* Utility Cost Avoidance (Measured) is a Measured Project Benefit. 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.

** Utility Cost Avoidance (Non-measured) Operations & Maintenance Cost Avoidance, and Future Capital Cost Avoidance are Non-measured Project Benefits. Operations & Maintenance Cost Avoidance figures in the table above are based on a mutually agreed fixed annual escalation rate of four percent (4%), beginning in Year 1.

Note: JCI's M&V Services, as detailed in Schedule 2, will be provided for the first two years of the Guarantee Term. The Customer agrees the above savings will be achieved during Year 3 through Year 20 and JCI will provide no further M&V Services after Year 2.

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

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

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.*

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.

NON-MEASURED PROJECT BENEFITS

Customer has furnished the foregoing information to JCI, which information forms the basis of the Non-Measured Project Benefits. 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.

ECM#	ECM Description
DPW-06	RTU CAV-to-VAV (Office Bldg.) (RTU-2, 3)
CRG-11	LED Lighting Retrofit
PD-17	LED Lighting Retrofit
PD-19	Solar PV - 120 kWac
CRG-10a	Solar PV - 250 kWac
DPW-08a	Solar PV - 200 kWac

Non-measured Energy Savings:

DPW-06 RTU CAV to VAV (Office Bldg.) (RTU-2, 3)
The savings associated with this ECM are to be derived from right-sizing the RTUs and conversion from constant air volume (CAV) to variable air volume (VAV). Listed below are the calculations for determining energy reduction. The Customer agrees that the assumptions and calculations are accurate and with reasonable effort by the Customer the savings will be realized.

City of Milwaukee - Department of Public Works

DPW-06 RTU CAV-to-VAV (Office Bldg.) (RTU-2, 3)

Replace Packaged HVAC Rooftop Units RTU-2 (right-sized) and RTU-3 with Higher SEER RTU's

	Existing	Proposed	
Total Design Cooling Load served by RTUs	40.8	28.3	*Tons*
Minimum Cooling Load	12.2	8.5	*Tons*
Supply Fan HP	15.0	10.0	*HP*
Supply Fan kW	10.1	6.7	*kW*
Ventilation CFM	2450	750	*CFM*

OAT	BIN HOURS	% LOAD	Cooling Load, Tons	Existing RTU kW/ton	Existing RTU kWh	Cooling Load, Tons	Proposed RTU kW/ton	Proposed RTU kWh	Proposed RTU Savings, kWh
97	5	100%	40.8	1.71	348	28.3	1.58	224	125
92	23	86%	35.2	1.64	1,329	24.5	1.51	850	479
87	65	73%	29.7	1.57	3,035	20.7	1.44	1,933	1,102
82	212	59%	24.2	1.50	7,705	16.8	1.37	4,887	2,818
77	395	46%	18.7	1.43	10,576	13.0	1.30	6,677	3,899
72	614	32%	13.2	1.36	11,036	9.2	1.23	6,932	4,104
67	687	30%	12.2	1.29	10,834	8.5	1.16	6,766	4,068
62	669	30%	12.2	1.29	10,550	8.5	1.16	6,589	3,962
57	342	30%	12.2	1.29	5,393	8.5	1.16	3,368	2,025
	3012				60,807			38,225	22,582

Supply Fan Motor Savings

	Existing HP	Proposed HP
RTU-2 Supply Fan	10	5
RTU-3 Supply Fan	5	5
Total Fan HP	15	10
Total Fan kW	10.071	6.714
Hour of Operation per Year		3120
kWh Savings		10,474
Total kWh Savings		**33,056**

CRG-11 and PD-17 LED Lighting Retrofit

The savings associated with this ECM are to be derived from a reduction in electric Demand (kW) costs as a result of the installation of lower wattage fixtures.

Equations for Calculating Lighting Retrofit Savings

Demand (kW)

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

$$\text{Actual kW Savings} = \Sigma_u \left[\text{Connected kW Savings}_u \times \text{Coincident Factor}_u \right]_{t,u}$$

where:

$kW/fixture_{baseline}$ =	lighting baseline demand per fixture for usage group *u*
$kW/fixture_{post}$ =	lighting demand per fixture during post-installation period for usage group. If multiple wattages are possible (i.e. multiple levels of lighting are possible) then the wattage to be used is the highest wattage
$Quantity_{baseline}$ =	quantity of affected fixtures before the lighting retrofit for usage group *u*
$Quantity_{post}$ =	quantity of affected fixtures after the lighting retrofit for usage group *u*
Coincident $Factor_u$ =	*Coincident* Factor is a percentage multiplier to account for Demand Diversity of each specific usage group *u*. This might be 100% for hallways and open offices (all fixtures on during the day), or 75% for private offices, many of which are generally vacant with lights off at any one time

An example of usage group is 4' four lamp T-8 fixtures.

CRG-10a 120 kWac; DPW 8a 200 kWac; PD 19 120 kWac Solar PV
The savings associated with this ECM are to be derived from a reduction in electric Demand (kW) utility costs as a result of the installation of solar PV systems on the Customer side of the WE Energies utility meter at each of the facilities. The power fed from the PV systems into the facility electrical infrastructure will lessen the facility electrical demand as measured at the WE Energies billing meter.

The amount of the demand savings for each facility was modeled by performing a typical-year simulation in which the expected facility load and the expected PV system output for each 15-minute interval of the year were compared, with the resulting facility load after solar PV derived as:

Facility Load after PV $_{15\text{-min interval}}$ = Facility Load before PV $_{15\text{-min interval}}$ – PV Output $_{15\text{-min interval}}$.

Based on the modeled Facility Load after PV for each month/billing period and the WE Energies electric rates for each facility, the annual demand savings were computed as:

Annual Utility Bill Demand Savings ($) =
Annual Utility Bill Demand Charges $_{\text{before PV}}$ ($) – Annual Utility Bill Demand Charges $_{\text{after PV}}$ ($).

Non-measured Operations & Maintenance Benefits

ECM#	ECM Description
CRG-11	LED Lighting Retrofit
PD-17	LED Lighting Retrofit

Customer will realize Operations & Maintenance Benefits to be derived from reduced cost of replacement materials as a result of the installation of new lighting lamps, ballasts, and fixtures as detailed in Schedule 1. These Operations and Maintenance benefits have been calculated as follows.

Material Savings (Project or Warranty 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.

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

Maintenance Labor Savings - Operational Savings

Maintenance Labor Savings (Project, *Warranty, & **Year-One Over Term)
Annual Cost Avoidance = Cost of Existing System Failures - Cost of Proposed System Failures
Existing Failures = Existing Lamp Failures + Existing Ballast/Driver Failures
Existing Lamp Failures = [Line item Existing Burn Hours ÷ Rated Lamp Life] × Lamps per Fixture × Total Fixtures
Existing Ballast/Driver Failures = [Line item Existing Burn Hours ÷ Rated Ballast Life] × Ballasts per Fixture × Total Fixtures
Rate of Replacement
Lamp Time to Replace = 60 minutes ÷ Maint. Lamp Replacement per Hour
Ballast Time to Replace = 60 minutes ÷ Maint. Ballast Replacement per Hour
Proposed Failures = Proposed Lamp Failures + Proposed Ballast/Driver Failures
Proposed Lamp Failures = [(Line item Proposed Burn Hours ÷ Rated Lamp Life] × Lamps per Fixture × Total Fixtures
Proposed Ballast/Driver Failures = [(Line item Proposed Burn Hour ÷ Rated Ballast Life)] × Lamps per Fixture × Total Fixtures
System Maintenance Costs
Cost of Existing System Failures = [(Existing Failures ÷ Rate of Replacement) × Labor Rate]
Cost of Proposed System Failures = [(Proposed Failures ÷ Rate of Replacement) × Labor Rate]

***Warranty Term**
Calculates annual existing and proposed labor cost savings only for the duration of the warranty period of the new installed equipment (lamp type and ballast/driver) and provides an averaged annual value for payback calculation purposes.

****Year-One over Term**
First-Year Annual Cost Avoidance ÷ Finance Term (First year Savings normalized as an annual cashflow for payback calculation purposes)

Schedule C: Calculation of Baseline; Methodology to Adjust Baselines

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%), beginning in Year 1. The Base Utility Cost for each type of utility represents the 12month average utility costs from January 2023 through December 2023.

Central Repair Garage:

		Calendar Year 2023	
	Account #:	0713388932-00183	
	Meter #:	PJZT1271	
$/kWh	**On-Peak**	$0.0842	**$0.0674***
	Off-Peak	$0.0584	
$/kW	**Demand On-Peak**	**$16.784**	
	Customer Demand	$2.330	

Usage (kWh)	**On-Peak**	615,121
	Off-Peak	788,478
	Total	1,403,599

Calendar Year 2023	
Therms	126,696
Total $	$72,917
$/Therm	**$0.5266**

*Average value of On-Peak and Off-Peak rates used for Lighting and HVAC ECM savings calculations.

DPW Field Headquarters:

		Calendar Year 2023		
	Account #:	0713388932-00071	0713388932-00089	
	Meter #:	PNXZT21770	PNXZT16419	
$/kWh	**On-Peak**	$0.0864	$0.0865	**$0.0664***
	Off-Peak	$0.0541	$0.0541	
$/kW	**Demand On-Peak**	$18.272	**$18.272**	
	Customer Demand	$3.069	$3.069	

Usage (kWh)	**On-Peak**	256,029	270,564	
	Off-Peak	449,305	405,006	
	Total	705,334	675,570	1,380,904

Calendar Year 2023	
Therms	120,640
Total $	$74,846
$/Therm	**$0.5684**

*Average value of On-Peak and Off-Peak rates used for Lighting and HVAC ECM savings calculations.

Police Department District 3 (Communications Center):

	Calendar Year 2023		
	Account #:	0700256242-00001	
	Meter #:	PJXZT1600	
$/kWh	**On-Peak**	$0.0841	**$0.0658***
	Off-Peak	$0.0584	
$/kW	**Demand On-Peak**	**$16.606**	
	Customer Demand	$2.310	

Calendar Year 2023	
Therms	73,888
Total $	$47,243
$/Therm	**$0.6293**

Usage (kWh)	**On-Peak**	883,207
	Off-Peak	1,469,541
	Total	2,352,748

*Average value of On-Peak and Off-Peak rates used for Lighting and HVAC ECM savings calculations.

Solar PV ECMs – Year 1 Utility Bill Savings Rates

The Year 1 utility bill savings for the Solar PV ECMs were modeled using the following rates, which reflect the WE Energies electric rates effective August 1, 2024, as well as the WE Energies 2024 Customer generation rates for Solar PV systems.

Central Repair Garage and Police Dept. District 3 (Communications Center) sites:

WE Energies rate Cp-1, 10am-10pm On-Peak, voltage level 12.47kV – 138kV. Summer period June 1 – September 30. Customer Use CGS-CU solar generation rates.

		Value of Solar PV production used immediately on-site	*Value of Solar PV production exported through utility meter*
$/kWh	**On-Peak Summer**	$0.0944	$0.0959
	Off-Peak Summer	$0.0602	$0.0320
$/kWh	**On-Peak Winter**	$0.0820	$0.0782
	Off-Peak Winter	$0.0602	$0.0314
$/kW	**Demand On-Peak Summer**	$20.674	--
	Demand On-Peak Winter	$14.941	
	Customer Demand Summer and Winter	$2.311	--

DPW Field Headquarters site:

WE Energies rate Cg-3, 9am-9pm On-Peak, voltage level Secondary. Summer period June 1 – September 30. Customer Use CGS-CU solar generation rates.

		Value of Solar PV production used immediately on-site	*Value of Solar PV production exported through utility meter*
$/kWh	**On-Peak Summer**	$0.0912	$0.0963
	Off-Peak Summer	$0.0573	$0.0316
$/kWh	**On-Peak Winter**	$0.0912	$0.0788
	Off-Peak Winter	$0.0573	$0.0310
$/kW	**Demand On-Peak Summer**	$18.313	--
	Demand On-Peak Winter	$18.313	--
	Customer Demand Summer and Winter	$3.075	--

Schedule D: Financing Agreement

The Customer intends to enter into a Tax-Exempt Lease-Purchase financing agreement with a third-party lender. Refer to the negotiated Financing Agreement for details.

Schedule E: Johnson Controls Maintenance Risks and Responsibilities

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

1. During the Installation Period, a JCI Customer Experience Performance Specialist will track Measured Project Benefits. JCI will report the Measured Project Benefits achieved during the Installation Period, as well as any Non-Measured Project Benefits applicable to the Installation Period, to Customer within 60 days of the commencement of the Guarantee Term.
2. Within 60 days of each anniversary of the commencement of the Guarantee Term, JCI will provide Customer with an annual report containing:
    a. an executive overview of the project's performance and Project Benefits achieved to date;
    b. a summary analysis of the Measured Project Benefits accounting; and
    c. depending on the M&V Option, a detailed analysis of the Measured Project Benefits calculations.
3. During the Guarantee Term, a JCI Customer Experience Performance 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 Customer Experience Performance Specialist will periodically assist Customer, on-site or remotely, with respect to the following activities:
    a. review of information furnished by Customer from the facility management system to confirm that control strategies are in place and functioning;
    b. advise Customer's designated personnel of any performance deficiencies based on such information;
    c. coordinate with Customer's designated personnel to address any performance deficiencies that affect the realization of Measured Project Benefits; and
    d. inform Customer of opportunities to further enhance project performance and of opportunities for the implementation of additional Improvement Measures.
4. For specified Improvement Measures utilizing an "Option A" M&V protocol, 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).
5. For specified Improvement Measures utilizing an "Option B" M&V protocol, JCI will:
    a. 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
    b. 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.

Schedule F: Customer Maintenance Risks and Responsibilities

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

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

12. Providing and maintaining a dedicated telephone line and/or TCP/IP remote connection to facilitate remote monitoring of relevant equipment;
13. Promptly notifying JCI of any change in use or condition described in Section III of Schedule 2 or any other matter that may impact the Assured Performance Guarantee;
14. Taking all actions reasonably necessary to achieve the Non-Measured Project Benefits;
15. Maintaining any service contracts and proper O&M procedures for installed scope as not already included by JCI as set forth in Schedule 1.
16. Installation of network connections to the Solar PV Data Acquisition Systems switch to support the solar PV data acquisition system
17. Coordinate with Customer for necessary traffic controls to accommodate deliveries and crane work at associated job sites.
18. All software upgrades for BAS systems
19. All data backups, IT security, and network connectivity
20. Removal, storage, and replacement of loose furnishing to adequately perform work specified in the scope
21. Coordination with JCI project manager for an office space, adequate space for material laydown area, dumpster, etc.
22. Providing a network internet connection port within (300) feet of the solar PV data acquisition system gateways at each site. This shall be an operational RJ45 port (Cat 5e or equal) with an active and managed connection to the internet.
23. Solar PV data acquisition system post-construction ongoing subscription and service plan fees for each site
24. Ongoing cellular and data service plans for EV charging stations not already pre paid in this scope of work
25. Maintaining network operation and access for the solar PV data acquisition system at each site
26. Filing for grants, rebates, and tax credits that may be available. JCI will assist by providing technical documents as may be required. Rebates, grants, and tax credits are not guaranteed by JCI.
27. Providing JCI with a Sales and Use tax exemption certificate so project purchases can be made with tax exempt status and applied to project.

Schedule G: ECM Operation Parameters; Standards of Comfort and Service

Pre-Retrofit Facility/Area

	HVAC	
	Time On	Time Off
Monday	7:00 AM	5:00 PM
Tuesday	7:00 AM	5:00 PM
Wednesday	7:00 AM	5:00 PM
Thursday	7:00 AM	5:00 PM
Friday	7:00 AM	5:00 PM
Saturday	9:00 AM	12:00 PM
Sunday	9:00 AM	12:00 PM
Holidays	OFF	OFF

Occupied Room Temperature During Heating Season: **68 Deg F to 72 Deg F**

Unoccupied Low Temperature Limit During Heating Season: **65 Deg F to 72 Deg F**

Heating season is **November through April**

Occupied Room Temperature During Cooling Season: **72 Deg F to 76 Deg F**

Unoccupied High Temperature Limit During Cooling Season: **76 Deg F to 80 Deg F**

Cooling season is May through October

Post-Retrofit Facility/Area

	HVAC	
	Time On	Time Off
Monday	7:00 AM	5:00 PM
Tuesday	7:00 AM	5:00 PM
Wednesday	7:00 AM	5:00 PM
Thursday	7:00 AM	5:00 PM
Friday	7:00 AM	5:00 PM
Saturday	9:00 AM	12:00 PM
Sunday	9:00 AM	12:00 PM
Holidays	OFF	OFF

Occupied Room Temperature During Heating Season: **68 Deg F to 72 Deg F**

Unoccupied Low Temperature Limit During Heating Season: **65 Deg F to 72 Deg F**

Heating season is **November through April**

Occupied Room Temperature During Cooling Season: **72 Deg F to 76 Deg F**

Unoccupied High Temperature Limit During Cooling Season: **76 Deg F to 80 Deg F**

Cooling season is **May through October**

Schedule H: Johnson Controls Training Responsibilities

Johnson Controls will provide training to the Customer's designated operating personnel following the installation, startup, and commissioning of the proposed equipment. Training will include:

1. Review of equipment startup and commissioning documentation.
2. Overview of installed equipment.
3. Training on maintenance procedures as specified in the equipment's Installation, Operations & Maintenance (IOM) documentation.
4. Review of basic troubleshooting procedures indicated in the equipment's IOMs.

Schedule I: Construction and Installation Schedule

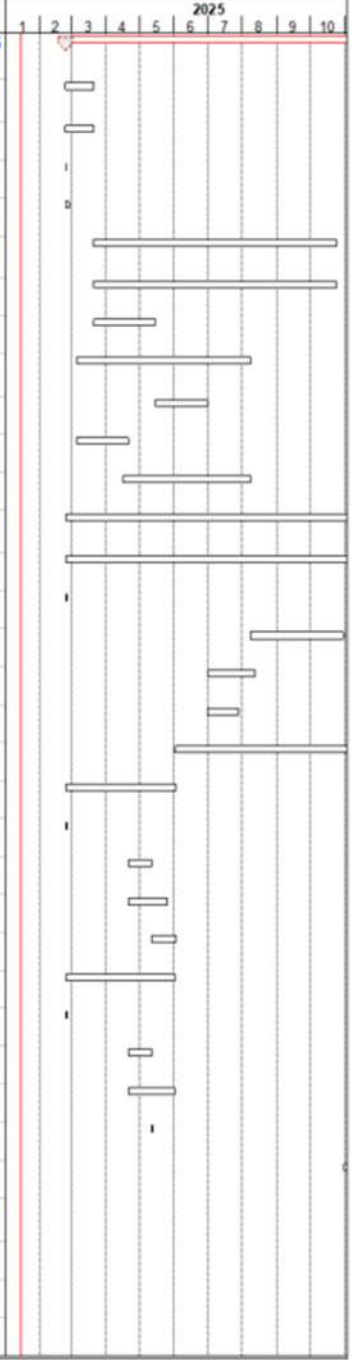
All ECMs proposed on the Premises have been designed to a preliminary design level, with final design documents to be developed during the implementation schedule. The anticipated construction and installation schedule is as follows:

Johnson Controls

City of Milwaukee - ESPC
Energy Savings Performance Contract

Current Date: 1/14/2025
Status Date: 1/14/2025

WBS	Task Name	% Work Comp	Start	Finish
0	City of Milwaukee - ESPC	0%	2/24/2025	11/27/2025
1	Project Initiation	0%	2/24/2025	3/21/2025
1.1	Mobilization	0%	2/24/2025	3/21/2025
1.2	Preproject Planning	0%	2/24/2025	2/24/2025
1.3	Award Subcontracts & P.O.'s	0%	2/24/2025	2/27/2025
2	Management & Professional Services	0%	3/21/2025	10/24/2025
2.1	Project Management	0%	3/21/2025	10/24/2025
2.2	Professional Services	0%	3/21/2025	5/15/2025
3	Material Procurement & Delivery	0%	3/6/2025	8/8/2025
3.1	Solar	0%	5/15/2025	7/1/2025
3.2	Lighting	0%	3/6/2025	4/21/2025
3.3	HVAC Equipment	0%	4/16/2025	8/8/2025
4	Installation & Commissioning	0%	2/24/2025	11/6/2025
4.1	DPW Field Headquarters Facility	0%	2/24/2025	11/3/2025
4.1.1	Key Interface Milestones	0%	2/24/2025	2/25/2025
4.1.2	ECM DPW-06 - RTU-2 & RTU-3 Upgrade	0%	8/8/2025	10/31/2025
4.1.3	ECM DPW-08a - Solar Photovoltaic 200kW AC	0%	7/1/2025	8/12/2025
4.1.4	ECM OBEM-1 Open Blue	0%	7/1/2025	7/29/2025
4.1.5	ECM Commissioning	0%	6/2/2025	11/3/2025
4.2	Police Department	0%	2/24/2025	6/3/2025
4.2.1	Key Interface Milestones	0%	2/24/2025	2/25/2025
4.2.2	ECM PD-17 LED Lighting Upgrades	0%	4/21/2025	5/12/2025
4.2.3	ECM PD-19 Solar PV - 120kW AC	0%	4/21/2025	5/26/2025
4.2.4	ECM Commissioning	0%	5/12/2025	6/3/2025
4.3	Central Repair Garage	0%	2/24/2025	6/2/2025
4.3.1	Key Interface Milestones	0%	2/24/2025	2/25/2025
4.3.2	ECM CRG-11 LED Lighting Upgrades	0%	4/21/2025	5/12/2025
4.3.3	ECM CRG-10a Solar PV - 250kW AC	0%	4/21/2025	6/2/2025
4.3.4	ECM Commissioning	0%	5/12/2025	5/13/2025
4.4	ECM Acceptance	0%	10/31/2025	11/6/2025
5	Project Closeout	0%	11/6/2025	11/27/2025
5.1	Complete As-Builts & O&M Manuals	0%	11/6/2025	11/20/2025
5.2	Training	0%	11/6/2025	11/14/2025
5.3	Administrative Closeout	0%	11/20/2025	11/27/2025



Johnson Controls

Schedule J: Methods of Savings Measurement and Verification

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) and/or the Federal Energy Management Program (FEMP), in connection with the provision of M&V Services hereunder.

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. Measurements will be short-term with only one-time measurements before and after the Installation Period.

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 short-term pre and post-retrofit 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#	ECM Description
CRG-11	LED Lighting Retrofit
PD-17	LED Lighting Retrofit

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

Key Parameter	Measurement Frequency	Measurement Description
Pre- and Post-Installation Fixture Power Draw (kW)	Short-term	The pre-retrofit power draw is based upon typical wattages as published by ANSI (American National Standards Institute). The post-installation wattage of the impacted fixtures will be measured one time on a sample of fixtures meeting the 80/20 sampling plan – assuming a coefficient of variance of 0.5 – will be measured using a true RMS meter after the completion of the retrofit. Fixtures with similar rated wattages, counts and types will be grouped together with a post-retrofit code. Non measured wattages will use ANSI wattage values. The savings will be updated accordingly.
Estimated Parameters	**Assumed Value**	**Justification, Source and Description**
Burn Hours	See Burn Hours table below.	The lighting system annual run hours by space type are agreed to be as shown in the table below. These run

Key Parameter	Measurement Frequency	Measurement Description
		hours are based on interviews discussed with the customer during the audit process. These values will not be measured.
Coincident Factor	See Coincidence Factors table below.	The coincident factor is estimated based on the number of fixtures in a space type expected to be operating at the same time during the on-peak period – and is agreed to remain at the same value after the retrofit.

Burn Hours

Central Repair Garage

Usage Group	Burn Hours
Lobby/Hallway/Restrooms	4641
Break Room/Classroom/Open Office/Multipurpose Private Office/Copy Room/Kitchen/Auditorium/Workroom	4641
Gym/Locker Room/workshop	4641
Vehicle Bays	4641
Storage and Janitor's Closets/Conference Rooms	510
Mechanical/Electrical	510
Exteriors (12/7)	4380

Police Department

Usage Group	Burn Hours
Lobby/Hallway/ /Restrooms	8760
Break Room/Classroom/Open Office/Multipurpose/ /Private Office/Copy Room/Kitchen/Auditorium/Workroom	5824
Gym/Locker Room/work shop	5824
Night Lights/Stairwell/Exit Signs/Parking Garage	8760
Storage and Janitor's Closets/Conference Rooms	728
Mechanical/Electrical	728
Exteriors (12/7)	4380

Coincidence Factor

Annual Lighting Runtime	Coincidence Factor
Less than 100 hrs/yr	0%
Between 100 and 999 hrs/yr	50%
Between 1000 and 5999 hrs/yr	90%

6000 hrs or greater	100%
Exterior (4380 hrs/yr)	10%

Energy (kWh)

$$\text{kWh Savings}_{\text{Lighting}} = \Sigma_s [(\text{kW/Fixture}_{\text{baseline}} \times \text{Quantity}_{\text{baseline}} \times \text{Burn Hours}) - \Sigma_{\text{level}} (\text{kW/Fixture}_{\text{post}} \times \text{Quantity}_{\text{post}} \times \text{Burn Hours}]_{t,s}$$

where:

kW Savings$_u$ = kilowatt savings realized during the post-installation time for usage group *u*

Burn Hours = number of operating hours during the time period *t* for the usage group s (s is space type, for example offices)

Level For post-installation the level is the wattage trim level. Example levels include daylight harvesting, presentation mode and full power

Option B: Retrofit Isolation

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

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

ECM#	ECM Description
PD-19	Solar PV - 120 kWac
CRG-10a	Solar PV - 250 kWac
DPW-08a	Solar PV - 200 kWac

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^2)	ongoing	The irradiance will be measured using irradiance sensors: one (1) per site. A total of one (1) pyranometer will be installed and mounted in a horizontal plane: the remaining irradiance sensors will be installed 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.
AC Energy (kWh)	ongoing	Also Energy solar PV data acquisition/monitoring system.

Below is a table showing the baseline monthly and total annual solar irradiance for Milwaukee, Wisconsin, based on the NREL PSM3 0.04 degree grid weather data for Milwaukee, Wisconsin (latitude/longitude 43.05, -87.9). Also shown in this table is the estimated Year 1 Energy production for the output of the PV system.

Solar Irradiance and Estimated Energy Production

Month	Baseline Global Horizontal Irradiance (GHI): PD3 (kWh/m^2)	Baseline Plane of Array Irradiance (POA): All other sites (kWh/m^2)	Baseline Year 1 AC Energy output (kWh)		
			Central Repair Garage (250 kWac)	DPW Field Hdqtrs (200 kWac)	PD3/Comm Ctr (120 kWac)
January	49.7	60.9	10,905	9,472	5,182
February	73.3	86.1	18,001	15,248	8,365
March	118.8	130.9	31,844	26,198	14,765
April	141.0	148.6	40,064	32,528	18,870
May	182.7	187.2	50,820	41,094	24,263
June	193.8	196.0	52,500	42,462	25,269
July	205.7	209.8	55,514	44,951	26,534
August	175.9	183.8	49,245	39,910	23,246
September	130.1	142.3	38,799	31,749	18,036
October	89.1	101.4	28,147	23,470	12,986
November	57.9	70.9	18,008	15,594	8,400
December	47.0	60.1	11,138	9,835	5,352
Year 1 Total			**404,985**	**332,511**	**191,269**

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 system will be adjusted based on the actual measured global horizontal or plane-of-array solar irradiance received compared to the baseline (reference) solar irradiance (of the same type), as per the following formula:

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

Where

P is energy measured in kWh

Q is solar irradiance measured in kWh/m^2, either the actual measured or the reference as shown.

kWh ProdFac is kWh impact of any production factors that occur during the measurement period. Production factors are defined as events outside JCI's control that has the effect of reducing kWh generation or failures in system operation due to maintenance that influences data collection and recording for complete and accurate data pertaining to production and weather. Other production factors include, but are not limited to, physical obstructions or interference with the solar irradiation of each array (i.e. over shadowing or shading), snow-frost-ice, utility grid outages, outages directed by the owner-Customer, casualty events, Force Majeure events, theft, vandalism, equipment failure, DAS failure (lost connection or data), or utility system permit events (system disabled). 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 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 that Project Year, and the result will be the PV ECM Project Benefit Surplus for that year.

ECM Strategy**:** This ECM involves the installation a solar PV system as detailed in Schedule 1.
Data**:** The estimated energy production for this ECM is based on a computer simulation performed using the Helioscope software. This simulation incorporated the NREL PSM3 weather data for Milwaukee, Wisconsin. The PV system model used in the simulation used the PV modules and PV inverters proposed for this ECM. Loss factors such as wiring losses, inverter efficiency, module efficiency at array operating temperature, dust soiling, and all other estimated applicable losses were taken into account in the computer simulation.

Clarifications and Assumptions**:** The efficiencies for the proposed systems are based on information detailed above and shown in this ECM Calculation. JCI is not responsible for lack of savings due to inefficiencies arising from improper operation or lack of maintenance of the solar PV system.

JCI Responsibilities**:** JCI will check and verify proper installation and operation of the new PV system after system startup and report findings to the owner. JCI will provide system startup commissioning according to manufacturer's recommendations. The savings for this ECM are based on a reduction in energy consumption as detailed above.

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.

Schedule K: Systems Startup and Commissioning of ECM

The proposed ECMs will undergo commissioning to include the following:

- Pre-construction meeting to review commissioning requirements with all involved subcontractors.
- Provide commissioning documentation for HVAC equipment, lighting, and controls to be commissioned.
- Verify installation of all ECMs was complete as per scope
    - Check approved HVAC equipment, lighting, and controls were installed
    - Confirm completion of HVAC equipment start-up and confirm burn-in of lighting (lamps and ballasts) for 100 hours; identify any problems
    - Verify lighting luminaire aiming and complete a visual inspection for lighting operating problems
- Complete on-site Functional Performance Testing for HVAC equipment, lighting, and controls being commissioned. Sampling rates, if applied, will be consistent with industry standard statistical sampling approaches.
    - Functional Performance Testing for HVAC equipment and HVAC controls will include exercising the equipment through the sequence of operation and verifying correct response and performance.
    - Functional Performance Testing for lighting and lighting controls will include:
        i. Measuring light levels
        ii. Operational tie in check with new BAS controls or local switching and system on/off scheduling
        iii. Operation check related to occupancy sensors, daylight harvesting, dimming sequence
- Provide functional performance testing documentation.