Gibbes Museum of Art
135 Meeting Street
September 26, 2017
4:30 p.m.

COMMITTEE ON WAYS AND MEANS

1. Invocation – Councilmember Gregorie

2. Approval of Minutes:

   a.) August 15, 2017

   b.) September 13, 2017

3. Bids and Purchases

4. Budget Finance and Revenue Collections: Approval of Amendment IV to the 2001 Johnson Controls Energy Performance Contract for improvements to the energy and operational efficiency of city facilities. The scope of work includes improvements to 72 city facilities including but not limited to LED Interior Lighting Upgrades and Controls, Parking Garage Lighting Upgrades, R-22 Equipment Replacement, HVAC Building Controls Improvements, Chiller Replacements, Mechanical System Upgrades and Replacement, MLK New Pool Enclosure & Upgrades, Window Replacements at St. Julian Devine, Ice System Replacement at Maritime Center and Distributed Energy Storage at Greenberg Municipal Complex. Approval of this contract gives the Mayor the authorization to enter into a Lease Purchase Agreement for approximately $13.2 million that will be funded through $17.6 million in cost avoidance over a 15 year term.

5. Police Department: Approval to submit the 2017 Edward Byrne JAG grant application, to OJP (FY17 Allocation: $22,204) for a single-purpose EDT K9 and safety upgrade to containment vessel. The project cost is $22,847. CPD will request a match in the amount of $643 to be budgeted for in FY 2018. Due to time constraints this grant was submitted on September 5, 2017. *(See City Council Agenda, Public Hearings – Agenda Item, E-1)*

6. Office of Cultural Affairs: Approval to accept a grant award from SC Humanities in the amount of $3,000. Funds will be used to support programs of the Free Verse Festival. A City match in the amount of $3,000 is required. Matching funds will come from paid admissions and donations.

7. Office of Cultural Affairs: Approval to apply for funding from the National Endowment for the Arts Our Town Grant in the amount of $50,000. Funds will support Cannon Street

Canon, creating community-generated arts and heritage projects exploring the history of Cannonborough-Elliotborough and Charleston. The full application will become available September 25th, with a deadline of October 2nd. A City match in the amount of $50,000 is required. Matching funds will come from 2018 grants and earned revenue.

8. The Committee on Public Works and Utilities: (Meeting was held September 25, 2017 at 4:00 p.m. at City Hall, First Floor Conference Room, 80 Broad Street)

   - An ordinance to amend the Code of the City of Charleston Chapters 7, 12, 13, and 24 to update permitting fees for the City's Building Inspections Division of the Department of Public Service and Fire Marshal's Division of the Fire Department.

9. The Committee on Real Estate: (Meeting was held September 26, 2017 at 4:00 p.m. at Gibbes Museum of Art, 135 Meeting Street)

   a. Request authorization for the Mayor to execute the attached Supplemental Lease Agreement between the City of Charleston and the U.S. Coast Guard which is an annual renewal of an existing 10-year lease agreement. The U.S. Coast Guard desires to continue to use a platform area approximately 5'X5' mounted on top of an 18" diameter steel pile adjacent to the Maritime Center Pier for use as a navigational range light. U.S. Coast Guard also desires to use an optic mounted on a 15' tower bolted to the rear top deck of the Charleston Municipal Aquarium Garage for use as a navigational range light. [TMS: 459-00-00-169 and 459-13-04-001; 10 Wharf Side Street (Charleston Maritime Center Pier), 24 Calhoun Street (Charleston Municipal Aquarium Garage)]

   b. Consider the following annexation:

      - Property on Grimball Road (TMS# 334-07-00-048) 7.15 acres, James Island (District 6). The property is owned by St. James Foundation.

In accordance with the Americans with Disabilities Act, people who need alternative formats, ASL (American Sign Language) Interpretation or other accommodation please contact Janet Schumacher at (843) 577-1389 or email to schumacherj@charleston-sc.gov three business days prior to the meeting.

3a.)

COMMITTEE / COUNCIL AGENDA

TO: John J. Tecklenburg, Mayor

FROM: Wes Ratterree **DEPT.** Information Technology

SUBJECT: GETAC MOBILE DATA TERMINALS (MDT'S)

REQUEST: APPROVAL TO PURCHASE GETAC MDT'S FROM LOWEST BIDDER (NEWCOM) FOR POLICE DEPARTMENT VEHICLES. SOLICITATION #: 17-B028R.

COMMITTEE OF COUNCIL: Ways & Means **DATE:** September 26, 2017

COORDINATION: This request has been coordinated with: *(attach all recommendations/reviews)*

	Yes	N/A	Signature of Individual Contacted	Attachment
Information Technology	X			X
Procurement	X			X

FUNDING: Was funding previously approved? Yes [x] No [ ] N/A [ ]

If yes, provide the following: Dept./Div.: IT Account #: 062017-52740

Balance in Account Lease-Purchase Amount needed for this item $160,180.95

Does this document need to be recorded at the RMC's Office? Yes [ ] No [x]

NOTES: Provides thirty-five (35) replacement Mobile Data Terminals (semi-rugged laptops) for Police vehicles as part of the 3-year rotation cycle to replace aging units used for mobile dispatch and field reporting. Includes ninety (90) MDT docking-stations for Police vehicles to cover multiple Police Teams due to MDT model change.

CFO's Signature: Deputy CFO

FISCAL IMPACT:

Mayor's Signature: John J. Tecklenburg, Mayor

ORIGINATING OFFICE PLEASE NOTE: A FULLY STAFFED/APPROVED (except Mayor's Signature) PACKAGE IS DUE IN THE CLERK OF COUNCIL'S OFFICE NO LATER THAN 10:00AM THE DAY OF THE CLERK'S AGENDA MEETING.

BID TABULATION SHEET
CITY OF CHARLESTON
Charleston, South Carolina
Information Technology

DATE: AUGUST 22, 2017

SOL.# 17-B028R

BUYER: ROBIN B. ROBINSON

MDTs & DOCKING STATIONS

	BIDDER	BIDDER	BIDDER	BIDDER
COMPANY NAME	Newcom Wireless Services	Hypertec USA, Inc.	Island Tech Services, LLC	Howard Technology Solution
COMPANY REPRESENTATIVE	Dov Koplovsky	Mike Marracino	Robert Gronenthal	Jessica Hayes
PHONE NUMBER	781-826-7989	480-626-9000	631-447-2442	601-425-3181
MINORITY	No	No	No	No

QTY	DESCRIPTION	UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL
35	Getac **S410-CHRPD05** – Intel Core i7-6500U Processor (**), 14" (No Webcam), Microsoft Windows 10 Professional x64 with default RAM 8GB + TAA, OPAL 2.0 128GB SSD, Sunlight Readable (LCD + Touchscreen), Multi language + US KBD+US Power Cord, Membrane Backlit KBD + Custom Crossmatch Fingerprint Reader, WiFi+BT+GPS+Gobi+Passthrough, Smart Card Reader (S410), SD Card Reader, TPM 2.0, -21C Wide Range Temp, IP52, 3 Year Bumper-to-Bumper Warranty, NO DVD	$2,995.00	$104,825.00	*$2,950.00*	$103.250.00	$3,017.70	$105,619.50	$3,082.00	$107,870.00
90	Gamber Johnson S410 Vehicle Cradle w/RF	$610.00	$54,900.00	$680.00	$61,200.00	$600.00	$54,000.00	$1,267.00	$114,030.00
	Service / Repair Cost								
	DISCOUNT		-$12,770.00						
	SUB-TOTAL		$146,955.00		$164,450.00		$159,619.50		$221,900.00
	Shipping		-0-		-0-		-0-		-0-
	9% Taxes		$13,225.95		$14,800.50		$14,365.76		$19,971.00
	TOTAL		$160,180.95		$179,250.50		$173,985.26		$241,871.00

COMMENTS:

BUYER: Cherette Singleton

WITNESS: Ann C Jones

BID TABULATION SHEET
CITY OF CHARLESTON
Charleston, South Carolina
Information Technology

DATE: AUGUST 22, 2017

SOL.# 17-B028R

BUYER: ROBIN B. ROBINSON

MDTS & DOCKING STATIONS

	BIDDER	BIDDER	BIDDER	BIDDER
COMPANY NAME	Southern Computer Warehouse, Inc.	Group Mobile	CDW Government, LLC	
COMPANY REPRESENTATIVE	Julia Stewart	Greg Jones	Jennifer Fabianski	
PHONE NUMBER	770-579-8927	423-702-9068	866-819-6497	
MINORITY	No	No	No	

QTY	DESCRIPTION	UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL
35	Getac **S410-CHRPD05** – Intel Core i7-6500U Processor (**), 14" (No Webcam), Microsoft Windows 10 Professional x64 with default RAM 8GB + TAA, OPAL 2.0 128GB SSD, Sunlight Readable (LCD + Touchscreen), Multi language + US KBD+US Power Cord, Membrane Backlit KBD + Custom Crossmatch Fingerprint Reader, WiFi+BT+GPS+Gobi+Passthrough, Smart Card Reader (S410), SD Card Reader, TPM 2.0, -21C Wide Range Temp, IP52, 3 Year Bumper-to-Bumper Warranty, NO DVD	$2,884.27	$100,949.45	$2,850.00	$99,750.00		No Bid		
90	Gamber Johnson S410 Vehicle Cradle w/RF	$1,113.93	$100,253.70	$565.00	$50,850.00				
	Service / Repair Cost								
	SUB-TOTAL		$201,203.15		$150,600.00				
	Shipping		Included		-0-				
	9% Taxes		$18,108.28		$13,554.00				
	TOTAL		$219,311.43		$164.154.00				

COMMENTS:

BUYER: Chenette Singleton

WITNESS: [illegible]

3b.)

COMMITTEE / COUNCIL AGENDA

TO: John J. Tecklenburg, Mayor

FROM: Laura Cabiness **DEPT.** Public Service

SUBJECT: CONSTRUCTION AND DEBRIS REMOVAL WEST ASHLEY AND OUTSIDE I-526

REQUEST: Approval to process a change order to increase the contract by adding construction and debris removal with Carolina Waste & Recycling, LLC, 5246-B International Blvd., North Charleston, SC 29418. Solicitation #13-P034R.

COMMITTEE OF COUNCIL: Ways & Means **DATE:** September 26, 2017

COORDINATION: This request has been coordinated with: *(attach all recommendations/reviews)*

	Yes	N/A	Signature of Individual Contacted	Attachment
Corporate Counsel	☐	☐		☐
Cap. Proj. Cmte. Chair	☐	☐		☐
Public Service	X	☐		☐
Procurement Director	X	☐	Gary Cox	☐

FUNDING: Was funding previously approved? Yes ☐ No ☐ N/A ☐

If yes, provide the following: Dept./Div.: 956000 Account #: 52206

Balance in Account _____ Amount needed for this item $25,000.00

Does this document need to be recorded at the RMC's Office? Yes ☐ No ☐

NEED: Identify any critical time constraint(s).

CFO's Signature: Amy Wharton

FISCAL IMPACT:

Mayor's Signature: John J. Tecklenburg, Mayor

ORIGINATING OFFICE PLEASE NOTE: A FULLY STAFFED/APPROVED (except Mayor's Signature) PACKAGE IS DUE IN THE CLERK OF COUNCIL'S OFFICE NO LATER THAN 10:00AM THE DAY OF THE CLERK'S AGENDA MEETING.

STATE OF SOUTH CAROLINA	)	AMENDMENT
	)	TO AGREEMENT
County of Charleston	)	
	)	
City of Charleston	)	

THIS **AMENDMENT TO AN AGREEMENT** is entered into the 18th day of September, 2017, by and between the **City of Charleston**, (hereinafter referred to as "the City") and **Carolina Waste and Recycling, LLC**, the address of which is 5246-B International Blvd., North Charleston, SC 29418 (hereinafter referred to as the "Contractor").

WHEREAS, the parties entered into an agreement dated June 1, 2014 whereby the Contractor agreed to provide Solid Waste Disposal Services on Johns Island and outside of I-526 West Ashley in accordance with Solicitation #13-P034R for a term of one (1) year with four (4) one year extensions.

NOW, THEREFORE, in consideration of the mutual covenants herein, the parties hereby agree as follows:

1. Effective immediately, to include accepting and disposing of construction and demolition debris.
2. Increase the contract by $25,000.00/year for the additional services listed in #1.
3. In all other respects, the agreement heretofore entered into by and between the parties remains unmodified and in full force and effect.

IN WITNESS WHEREOF, the City hereto has executed this Amendment under their solicitation the day and year first written above.

WITNESSES FOR CONTRACTOR:	CAROLINA WASTE & RECYCLING, LLC:
_____	_____
Name	Name
	_____
	Title
	_____
	Date
WITNESS FOR THE CITY:	CITY OF CHARLESTON
_____	_____
Name	Name
	_____
	Title
	_____
	Date

JOSEPH P. RILEY, JR.
MAYOR

City of Charleston

VANESSA TURNER-MAYBANK
CLERK OF COUNCIL

South Carolina

Clerk of Council Department

March 25, 2014

Mr. Stephen Bedard, CFO
City of Charleston
116 Meeting Street
Charleston, SC 29401

Re: PUBLIC SERVICE - Solid Waste Disposal Services for Johns Island and Parts of West Ashley Outside I-526

Dear Mr. Bedard:

The Committee on Ways and Means and City Council, at their respective meetings on March 18, 2014, approved to establish a contract for Solid Waste Disposal Services for Johns Island and parts of West Ashley outside I-526 with Carolina Waste & Recycling, LLC, 5246-B International Blvd., North Charleston, SC 29418. Soliciation #13-P034R. This contract is based on $8.75/home/month for 11,000 homes. The contract cost will increase depending on the need to service additional homes due to growth in the area. Anticipated start date will be June 1st. Remainder of contract will be budgeted in 2015.

Enclosed, please find one original of the construction contract. By copy of this letter, I am returning one original construction contract to Laura Cabiness in Public Service. Two original contracts have been distributed to Gary Cooper in Procurement. One original construction contract will be retained in the Clerk of Council's office.

Sincerely,

Vanessa Turner Maybank
Clerk of Council

Enclosure: As Stated

c: Mayor Joseph P. Riley, Jr. *(w/o document)*
Laura Cabiness *(w/one (1) original document)*
Amy Wharton *(w/o document)*
Theron Snype *(w/o document)*
Gary Cooper *(two original document previously distributed)*

3c.)

COMMITTEE / COUNCIL AGENDA

TO: John J. Tecklenburg, Mayor

FROM: Laura Cabiness **DEPT.** Public Service

SUBJECT: CONSTRUCTION AND DEBRIS REMOVAL DANIEL ISLAND

REQUEST: Approval to process a change order to increase the contract by adding construction and debris removal with Republic Services of SC, LLC, 141 Fennell Rd., North Charleston, SC 29418. Solicitation #12-P023B.

COMMITTEE OF COUNCIL: Ways & Means **DATE:** September 26, 2017

COORDINATION: This request has been coordinated with: *(attach all recommendations/reviews)*

	Yes	N/A	Signature of Individual Contacted	Attachment
Corporate Counsel	☐	☐		☐
Cap. Proj. Cmte. Chair	☐	☐		☐
Public Service	X	☐		☐
Procurement Director	X	☐		☐

FUNDING: Was funding previously approved? Yes ☐ No ☐ N/A ☐

If yes, provide the following: Dept./Div.: 956000 Account #: 52206

Balance in Account _____ Amount needed for this item $10,000.00

Does this document need to be recorded at the RMC's Office? Yes ☐ No ☐

NEED: Identify any critical time constraint(s).

CFO's Signature: Amy Wharton

FISCAL IMPACT:

Mayor's Signature: _____
John J. Tecklenburg, Mayor

ORIGINATING OFFICE PLEASE NOTE: **A FULLY STAFFED/APPROVED (except Mayor's Signature) PACKAGE IS DUE IN THE CLERK OF COUNCIL'S OFFICE NO LATER THAN 10:00AM THE DAY OF THE CLERK'S AGENDA MEETING.**

STATE OF SOUTH CAROLINA	)	AMENDMENT
	)	TO AGREEMENT
County of Charleston	)	
	)	
City of Charleston	)	

THIS **AMENDMENT TO AN AGREEMENT** is entered into the 18th day of September, 2017, by and between the **City of Charleston**, (hereinafter referred to as "the City") and **Republic Services of South Carolina, LLC**, the address of which is 141 Fennell Road., North Charleston, SC 29418 (hereinafter referred to as the "Contractor").

WHEREAS, the parties entered into an agreement dated October 1, 2012 whereby the Contractor agreed to provide Solid Waste Disposal Services in accordance with Solicitation #12-P023B for a term of one (1) year with four (4) one year extensions.

NOW, THEREFORE, in consideration of the mutual covenants herein, the parties hereby agree as follows:

1. Effective immediately, to include accepting and disposing of construction and demolition debris.
2. Increase the contract by $10,000.00/year for the additional services listed in #1.
3. In all other respects, the agreement heretofore entered into by and between the parties remains unmodified and in full force and effect.

IN WITNESS WHEREOF, the City hereto has executed this Amendment under their solicitation the day and year first written above.

WITNESSES FOR CONTRACTOR:	REPUBLIC SERVICES OF SOUTH CAROLINA, LLC:
_____	_____
Name	Name
	_____
	Title
	_____
	Date
WITNESS FOR THE CITY:	CITY OF CHARLESTON
_____	_____
Name	Name
	_____
	Title
	_____
	Date

JOSEPH P. RILEY, JR.
MAYOR

City of Charleston

VANESSA TURNER-MAYBANK
CLERK OF COUNCIL

South Carolina

Clerk of Council Department

September 21, 2012

Mr. Stephen Bedard, CFO
City of Charleston
116 Meeting Street
Charleston, SC 29401

Re: BIDS AND PURCHASES

Dear Mr. Bedard:

The Committee on Ways and Means, at its meeting on September 11, 2012, approved the following item in Bids and Purchases:

1. **Police Department** **ACCOUNT: #240118-52700** **APPROPRIATION: $73,344.37**
To purchase 35 each Ballistic Vests with attachments from Crye Precision, LLC, 63 Flushing Avenue, Unity 252, Bldg. 275, Rm. 301, Brooklyn, NY 11205.

2. **Fire Department** **ACCOUNT: #211000-52008** **APPROPRIATION: $240,000**
To establish a contract for Fire Protective Clothing (Turn Out Gear) with Newton's Fire & Safety Equipment, Inc., 2724 Darrell Newton Dr., Swepsonville, NC 27359.

3. **Environmental Services** **ACCOUNT: #322000-52203** **APPROPRIATION: $326,416**
To establish a contract for Solid Waste Disposal Services on DI/Cainhoy area with Republic Services, 141 Fennell Road, North Charleston, SC 29418. Solicitation #12-P023B

Sincerely,

Vanessa Turner Maybank

Vanessa Turner Maybank
Clerk of Council

Enclosure: As Stated

c: Mayor Joseph P. Riley, Jr.
Bob Miracle, Deputy Chief Financial Officer
Gary Cooper, Procurement
Theron Snype, Minority Business Enterprise
Laura Cabiness, Environmental
Chief Karen Brack, Fire Department
Chief Mullen, Police Department

CPR COMMITTEE and/or COUNCIL AGENDA

4.)

TO: John J. Tecklenburg, Mayor

FROM: Amy Wharton **DEPT.** BFRC

SUBJECT: JOHNSON CONTROLS ENERGY PERFORMANCE CONTRACT AMENDMENT IV

REQUEST: Approval of Amendment IV to the 2001 Johnson Controls Energy Performance Contract for improvements to the energy and operational efficiency of city facilities. The scope of work includes improvements to 72 city facilities including but not limited to LED Interior Lighting Upgrades and Controls, Parking Garage Lighting Upgrades, R-22 Equipment Replacement, HVAC Building Controls Improvements, Chiller Replacements, Mechanical System Upgrades and Replacement, MLK New Pool Enclosure & Upgrades, Window Replacements at St. Julian Devine, Ice System Replacement at Maritime Center and Distributed Energy Storage at Greenberg Municipal Complex.

COMMITTEE OF COUNCIL: Ways & Means **DATE:** September 26, 2017

COORDINATION: This request has been coordinated with: *(attach all recommendations/reviews)*

	Yes	N/A	Signature of Individual Contacted	Attachment
Corporate Counsel	☐	☐		☐
	☐	☐		☐
	☐	☐		☐

FUNDING: Was funding previously approved? Yes ☐ No ☒ N/A ☐

If yes, provide the following: Dept/Div Various Acct # Various

Balance in Account N/A Amount needed for this item N/A

NEED: Identify any critical time constraint(s).

CFO's Signature: Amy Wharton

FISCAL IMPACT: **Approval of this contract gives the Mayor the authorization to enter into a Lease Purchase Agreement for approximately $13.2 million that will be funded through $17.6 million in cost avoidance over a 15 year term.**

Mayor's Signature: John J. Tecklenburg, Mayor

ORIGINATING OFFICE PLEASE NOTE: A FULLY STAFFED/APPROVED (except Mayor's Signature) PACKAGE IS DUE IN THE CLERK OF COUNCIL'S OFFICE NO LATER THAN 10:00 A.M THE DAY OF THE CLERK'S AGENDA MEETING.

CONTRACT AMENDMENT NUMBER FOUR SUMMARY

The City of Charleston entered into a performance contract with Johnson Controls in 2001. This contract was amended in 2007 and was expanded to include 43 city facilities. Contract Amendment Number Four will build upon the improvements made in the previous phases and further support Charleston's sustainability initiatives while continuing to increase the energy and operational efficiency of city facilities.

Contract Amendment Number Four consists of the following documents:

Amendment Four -	Amendment to Master Contract
Schedule 1-4 -	Scope of Work
Schedule 2-4 -	Assured Performance Guarantee
Schedule 3-4 -	Customer Responsibilities
Schedule 4-4 -	Price and Payment Terms
Attachment 4 -	Preventative Maintenance Services Agreement
Attachment 5 -	Change Order Form

Contract Amendment Number Four includes improvements in 72 city facilities. The scope of work includes the following:

- LED Interior Lighting Upgrades and Controls City-wide
- Parking Garage Lighting Upgrades
- R-22 Equipment Replacement
- HVAC Building Controls Improvements
- Chiller Replacements
- Mechanical System Upgrades and Replacement
- MLK New Pool Enclosure
- MLK Pool Upgrades
- Window Replacements at St. Julian Devine
- Ice System Replacement - Maritime Center Ice System
- Distributed Energy Storage – Greenberg Municipal Complex

Contract Amendment Number Four will provide $13.2 M in infrastructure renewal that will be funded by $17.6 M in cost avoidance over the 15 year term. This project will reduce the city's energy consumption by an additional 30.6%.

This Amendment will result in the reduction of the following greenhouse gas emissions ***annually***:

- 45,250 tons of CO_2 removed

which equates to

- 8,652 Cars removed from the road or
- 236 Coal railcars
- 105,235 Barrels of oil consumed
- 1,160,000 Tree Seedlings grown for 10 years

In support of the City of Charleston's Sustainable Business Diversity Initiative, Johnson Controls is committed to provide opportunities to local, qualified minority partners that will support the Services for Energy Performance Contracting for the City. This project will be implemented *utilizing over 20% minority participation.*

Johnson Controls performance guarantees provide assurance to the City that the project will meet the projected financial and operational expectations. Johnson Controls has maintained the highest level of customer satisfaction in the performance contracting industry because of the thorough and reliable methods we use to develop projects, monitor energy savings, and provide accountability. The performance guarantee is straightforward. If the financial benefits are less than the guaranteed amount, Johnson Controls will pay the shortfall. The guarantee will be measured quarterly and reconciled annually with the City. Any excess savings and revenue enhancements belong to the City as the guaranteed levels are the minimum that will be achieved from this project implementation.

CONTRACT AMENDMENT – NUMBER FOUR

THIS CONTRACT AMENDMENT – Number Four to that certain Master Agreement between the City of Charleston, South Carolina ("Customer") and Johnson Controls, Inc. ("JCI") dated March 29, 2001 (the "Agreement") AND previous Contract Amendments – Number One (dated December 18, 2007), Number Two (dated September 9, 2008) and Number Three (dated September 9, 2008) which provides for the provision to Customer of various energy savings measures, performance contracting equipment and services provided by JCI (the "Project") is made and entered into this _____ day of September, 2017.

WHEREAS, the Agreement contemplated that the Project would be developed in phases, with different scope of working continuing to be developed over the term of the Agreement; and

WHEREAS, the work associated with Phase I and Phase II (Contract Amendments – Number One, Two, and Three) is complete and the third scope of work developed by the parties is now ready to begin ("Phase III"); and

WHEREAS, the parties wish to amend the Agreement to document the parameters of Phase III of the Project. The Assured Performance Guarantee for Phase III, Schedule 2-4, will provide additional savings to the existing amount of the Assured Performance Guarantee as reflected in Schedule 2-2, 2-2(A), and 2-3; and

WHEREAS, the parties wish to further amend the Agreement to document the parameters of Phase II of the Project and adjust the scope of work, payment terms, dates of commencement of work, substantial completion of the work and the term of the Agreement as reflected in Schedules 1-2, 1-2(A), 1-3, 2-2, 2-2(A), 2-3, 3-2, 3-2(A), 3-3 and 4-2, 4-2(A), 4-3 of the Agreement; and,

WHEREAS, the parties desire to further amend the Agreement to incorporate new Schedules 1-4, 2-4, 3-4, 4-4 therein which shall represent the scope of work and services to be performed by the parties for Phase III of the Project, such work and services to be subject to the terms and conditions of the Agreement.

NOW THEREFORE, in consideration of the mutual covenants, agreements and conditions herein contained and for other and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Contractor and Customer agree to amend the contract as follows:

1. The Agreement shall be amended by adding the following schedules, identified herein below, said schedules being attached hereto and incorporated by reference herein:

Schedule 1-4 -	Scope of Work
Schedule 2-4 -	Assured Performance Guarantee
Schedule 3-4 -	Customer Responsibilities
Schedule 4-4 -	Price and Payment Terms
Attachment 4-	Preventative Maintenance Services Agreement
Attachment 5-	Change Order Form

2. The Agreement shall be further amended to provide that Schedule 1-4 shall form the basis for a new scope of work for Phase III of the Project, which shall supplement Schedule 1, Schedule 1-2, Schedule 1-2(A), and Schedule 1-3 contained in the Agreement and Contract Amendments – Number One, Number Two, and Number Three.

3. The Agreement shall be further amended to provide that Schedule 2-4 shall include the total amount of savings guaranteed under Phase III only. These savings will be in addition to the savings associated with the previous phases which shall supplement Schedule 2-2, 2-2(A), 2-3, 3 contained in the Agreement and Contract Amendments – Number One, Number Two, and Number Three.

4. The Agreement shall be further amended to provide that Schedule 3-4 establishes the customer and JCI's responsibilities in delivering the work included in Phase 3.

5. The Agreement shall be further amended to provide that Schedule 4-4 shall include the complete Lease/Purchase provisions governing JCI and Customer for Phase III only. Measurement and Verification (M&V) Services and Preventative Maintenance Services included in Schedule 4-4 include the complete services governing JCI and Customer for Phase I, Phase II (Contract Amendments Number One, Number Two, and Number Three) and Phase III of the Project and shall replace Schedule 3-2 which replaced Schedule 3 in the Agreement.

6. In signing this Contract Amendment – Number Four, the parties acknowledge that they have the authority to sign this Contract Amendment – Number Four, and that all necessary action has been taken to cause this Contract Amendment – Number Four to become legal, valid and binding on the parties.

7. The Agreement as amended by this Contract Amendment – Number Four represents the entire agreement between JCI and the Customer and supersedes any prior oral understandings, written agreements, proposals, or other communications between JCI and the Customer. Any subsequent amendment or modification to the Agreement as amended by this Contract Amendment – Number Four shall not be effective unless made in writing and signed by the parties hereto.

8. Except as modified or otherwise provided herein, the existing terms, covenants, agreements, responsibilities and obligations contained in the Agreement shall remain in full force and effect through the term of the Agreement as amended by this Contract Amendment – Number Four. In the event of conflict between the terms and conditions of the Agreement and the terms and conditions of this Contract Amendment – Number Four, the terms and conditions of this Contract Amendment – Number Four shall prevail.

This Contract Amendment – Number Four shall be effective upon the date of execution by both parties.

IN WITNESS WHEREOF, the parties have duly executed this Contract Amendment Number Four as the date set forth on page 1 hereof.

CITY OF CHARLESTON, SOUTH CAROLINA	**JOHNSON CONTROLS, INC.**
Signature:_____	Signature:_____
Printed Name:_____	Printed Name:_____
Title:_____	Title:_____
Date:_____	Date:_____

Scope of Work

ECM 1 - Interior Lighting Upgrades and Controls

This ECM will replace existing 28-watt / 32-watt T8, CFL, HID and high pressure sodium lighting and ballasts with high-efficiency long life LED lighting technology as detailed specifically in the Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line". The existing fixtures will be either retrofitted, relamped or replaced on a case-by-case basis as detailed specifically in the Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line". Wireless occupancy controls will also be installed in the select spaces with intermittent occupancy patterns to reduce lighting burn hours during the extended unoccupied periods as detailed specifically in the Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".

Vending machines will be retrofitted with VendingMiser^{tm} controls as detailed specifically in the Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line". During the periods of limited occupant traffic, the VendingMiser^{tm} controls will power down the machines and turn off the display lights to conserve energy. This will also result in reduced cooling load on the HVAC system serving the space.

Refer to detailed scope of work for this ECM in Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".

Lighting Upgrades Scope Summary:

Facility	No Retrofit	Retrofit	Relamp	Retrofit With Kit/Reflector	New/ Replacement Fixture	Total Count
ANGEL OAK GIFT SHOP	0	11	0	0	0	11
ANGEL OAK GIFT SHOP - Exterior	2	0	4	0	0	6
ARCH BLDG - CIVIC DESIGN CENTER	12	0	35	0	0	47
ARCH BLDG - CIVIC DESIGN CENTER - Exterior	0	0	2	0	0	2
ARTHUR W. CHRISTOPHER COMMUNITY CENTER - Exterior	2	0	14	6	12	34
ARTHUR W. CHRISTOPHER COMMUNITY CENTER	16	113	0	6	26	161
BEE'S LANDING	113	82	2	33	33	263
BEE'S LANDING - Exterior	0	56	8	0	0	64
BOXING GYM - COMMUNITY CENTER	0	10	23	29	1	63
BOXING GYM - COMMUNITY CENTER - Exterior	0	0	0	0	4	4
CHARLESTON TENNIS	93	27	14	0	0	134
CHARLESTON TENNIS - Exterior	0	4	42	0	0	46
CITY ART GALLERY	146	23	25	0	1	195
CITY HALL - 80 BROAD ST	56	33	280	12	7	388
CITY HALL - 80 BROAD ST - Exterior	5	0	0	0	4	9
CITY OFFICES - 50 BROAD ST	7	56	24	0	0	87
DANIEL ISLAND MUNICIPAL BUILDING	11	55	6	69	0	141
DANIEL ISLAND MUNICIPAL BUILDING - Exterior	16	0	0	0	0	16
DEMING PLAYGROUND	0	24	0	0	2	26

Facility	No Retrofit	Retrofit	Relamp	Retrofit With Kit/Reflector	New/ Replacement Fixture	Total Count
DEMING PLAYGROUND - Exterior	0	0	0	0	6	6
DOCK ST THEATER	200	117	422	0	12	751
DOCK ST THEATER - Exterior	0	3	21	0	3	27
EASTSIDE COMMUNITY CENTER	10	93	78	0	0	181
EASTSIDE COMMUNITY CENTER - Exterior	0	0	0	0	16	16
FAMILY CIRCLE CLUBHOUSE	0	72	49	93	3	217
FAMILY CIRCLE CLUBHOUSE - Exterior	11	0	6	0	2	19
FINANCE - 112 MEETING PL.	4	129	0	9	11	153
FIRE STATION #10	1	32	1	0	0	34
FIRE STATION #10 - Exterior	0	6	6	0	0	12
FIRE STATION #11	0	43	0	0	0	43
FIRE STATION #11 - Exterior	5	1	0	0	4	10
FIRE STATION #12	0	21	6	0	0	27
FIRE STATION #12 - Exterior	0	2	2	0	0	4
FIRE STATION #13	3	28	0	0	0	31
FIRE STATION #13 - Exterior	2	0	3	2	0	7
FIRE STATION #16	0	24	24	13	0	61
FIRE STATION #16 - Exterior	1	2	4	0	0	7
FIRE STATION #17 (& POLICE)	26	47	14	66	0	153
FIRE STATION #17 (& POLICE) - Exterior	6	12	0	0	0	18
FIRE STATION #18	0	8	28	0	0	36
FIRE STATION #18 - Exterior	0	2	0	0	1	3
FIRE STATION #19	0	35	0	23	6	64
FIRE STATION #19 - Exterior	0	0	2	0	3	5
FIRE STATION #2 & 3 - Exterior	0	0	2	0	4	6
FIRE STATION #2 & 3	0	41	38	0	1	80
FIRE STATION #20	0	41	4	5	5	55
FIRE STATION #20 - Exterior	0	2	0	0	2	4
FIRE STATION #4 & 5	0	61	11	2	0	74
FIRE STATION #4 & 5 - Exterior	0	0	0	0	4	4
FIRE STATION #6	0	21	7	0	0	28
FIRE STATION #6 - Exterior	0	0	2	0	3	5
FIRE STATION #7	3	43	23	4	0	73
FIRE STATION #7 - Exterior	1	0	8	0	4	13
FIRE STATION #8	0	14	1	0	0	15
FIRE STATION #8 - Exterior	0	1	3	0	0	4
FIRE STATION #9	10	181	2	48	5	246
FIRE STATION #9 - Exterior	4	8	10	0	2	24
FIRE TOWER/ TRAINING	0	15	0	0	0	15
FIRE TOWER/ TRAINING - Exterior	0	2	0	0	0	2
FOREST PARK PLAYGROUND	0	0	22	3	0	25

Facility	No Retrofit	Retrofit	Relamp	Retrofit With Kit/Reflector	New/ Replacement Fixture	Total Count
FOREST PARK PLAYGROUND - Exterior	0	0	1	0	3	4
FREDDIE WHALEY COMMUNITY CENTER	0	47	5	22	0	74
FREDDIE WHALEY COMMUNITY CENTER - Exterior	0	0	0	0	3	3
GOLF CLUBHOUSE	11	63	3	0	0	77
GOLF CLUBHOUSE - Exterior	3	4	8	3	2	20
HAMPTON PARK - HORTICULTURE OFFICE	0	26	0	0	3	29
HAMPTON PARK - HORTICULTURE OFFICE - Exterior	0	0	2	0	0	2
HASSEL AQUATIC CENTER	30	10	0	175	0	215
HAZEL PARKER PLAYGROUND - Exterior	0	0	3	0	5	8
HAZEL PARKER PLAYGROUND	0	34	9	0	4	47
JACK ADAMS TENNIS CTR - RESTROOMS/SHELTER	0	7	3	0	0	10
JACK ADAMS TENNIS CTR - RESTROOMS/SHELTER - Exterior	0	0	2	0	2	4
JIRC GYMNASIUM	0	105	2	0	5	112
JIRC GYMNASIUM - Exterior	0	5	6	0	9	20
LENEVAR PARK	0	0	12	3	0	15
LOCKWOOD (GREENBURG) MUNICIPAL	18	112	11	505	8	654
LOCKWOOD (GREENBURG) MUNICIPAL - Exterior	31	29	0	2	6	68
LOCKWOOD (GREENBURG) MUNICIPAL - POLICE	11	579	54	64	7	715
LOCKWOOD (GREENBURG) MUNICIPAL - POLICE - Exterior	0	6	0	0	2	8
LOW COUNTY SENIOR CENTER	0	83	72	22	0	177
LOW COUNTY SENIOR CENTER - Exterior	0	9	16	0	4	29
MALL PARK	2	0	1	2	0	5
MALL PARK - Exterior	0	0	0	0	10	10
MARITIME CENTER	25	41	55	7	0	128
MARITIME CENTER - Exterior	0	19	8	0	3	30
MARTIN PARK REC CENTER	24	137	0	0	0	161
MARTIN PARK REC CENTER - Exterior	0	4	0	6	11	21
MARY UTSEY (ORANGE GROVE PARK)- PARK HOUSE	42	1	2	2	1	48
MARY UTSEY (ORANGE GROVE PARK)- PARK HOUSE - Exterior	0	0	0	0	4	4
MAYBANK TENNIS CENTER	79	9	5	0	0	93
MAYBANK TENNIS CENTER - Exterior	0	0	2	0	2	4
MCMAHON PLAYGROUND	42	1	2	2	1	48
MCMAHON PLAYGROUND - Exterior	0	0	0	0	4	4
MILFORD ST - LOGISTICS	47	46	5	25	47	170
MILFORD ST - LOGISTICS - Exterior	0	0	1	0	11	12
MITCHELL PLAYGROUND	0	7	0	0	0	7
MITCHELL PLAYGROUND - Exterior	1	0	2	0	0	3
MLK POOL	0	80	0	0	1	81
MLK POOL - Exterior	3	0	4	0	23	30
MOULTRIE PLAYGROUND	0	1	2	2	1	6

Facility	No Retrofit	Retrofit	Relamp	Retrofit With Kit/Reflector	New/ Replacement Fixture	Total Count
MOULTRIE PLAYGROUND - Exterior	0	0	0	0	2	2
OLD SLAVE MART	25	0	89	0	3	117
ORLEANS WOODS	0	24	0	0	2	26
ORLEANS WOODS - Exterior	0	0	0	0	6	6
PARKS BUILDING	15	280	17	88	0	400
PARKS WAREHOUSE	2	17	0	9	13	41
PARKS WAREHOUSE - Exterior	0	5	1	0	10	16
POLICE - OFFICE	0	137	38	18	6	199
POLICE - OFFICE - Exterior	0	2	0	0	0	2
POLICE SUB STATION	0	47	0	4	0	51
POLICE SUB STATION - Exterior	0	0	0	0	2	2
PUBLIC SERVICE COMPOUND	2	165	0	5	35	207
PUBLIC SERVICE COMPOUND - Exterior	6	0	0	0	11	17
RILEY BASEBALL STADIUM	198	539	112	0	3	852
RILEY BASEBALL STADIUM - Exterior	13	28	70	8	26	145
SHAW CENTER	0	57	3	40	27	127
SHAW CENTER - Exterior	0	0	6	2	4	12
THOMAS JOHNSON PARK (WESTCHESTER PARK)	0	24	0	0	2	26
THOMAS JOHNSON PARK (WESTCHESTER PARK) - Exterior	0	2	0	0	6	8
TIEDEMAN PARK	0	0	22	3	0	25
TIEDEMAN PARK - Exterior	0	0	1	0	4	5
VISITOR CENTER - Exterior	26	34	51	0	0	111
VISITOR CENTER	7	23	208	14	0	252
VOLVO TENNIS STADIUM	220	78	0	0	1	299
VOLVO TENNIS STADIUM - Exterior	4	54	43	0	41	142
WL STEPHENS - Exterior	19	3	3	0	10	35
WL STEPHENS	21	47	3	0	4	75

Demolition and Removal Work shall include the following:

- Cover exposed desks, computers and office equipment during the installation.
- Install lockout/tagout on the lighting circuits as required.
- Safely disconnect electrical supply to the lighting circuits as required.
- Disconnect and remove existing lamps, ballasts and fixtures.
- Store used lamps and ballasts in clearly marked containers.
- Properly dispose of lamps and ballasts as per the applicable codes.
- Properly dispose of all removed equipment and waste materials.
- Clean-up at the end of each shift with vacuuming, dusting and trash removal.

New Installation Work shall include the following:

- Furnish and install new lighting components as listed in Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".
- Clean prismatic lenses with a rag where applicable.
- Furnish and install new wireless occupancy sensors in the specified spaces as listed in Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".
- Properly adjust sensitivity of the new occupancy sensors.
- Install VendingMisers[tm] on select vending machines as identified in Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".
- Remove lockout/tagout from the lighting circuits if applicable.
- Safely restore electrical supply to the lighting circuits.
- Startup, checkout and verify full range of operation and control features per manufacturers' startup and checkout procedures.
- Clean up of all job related debris daily. Clean up and store tools, equipment, etc. daily and remove after successful installation and operational checkout.

ECM 2 - Parking Garage Lighting Upgrades

This ECM will replace specified existing older HID or LED lighting with high-efficiency long life LED lighting technology with WIFI enabled lighting controls. The new fixtures shall be equipped with embedded WIFI enabled lighting controls to enable flexible control strategies.

Refer to detailed scope of work for this ECM in Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".

Lighting Upgrades Scope Summary:

Facility	No Retrofit	Retrofit	Relamp	Retrofit With Kit/Reflector	New/ Replacement Fixture	Total Count
AQUARIUM PARKING GARAGE	27	100	0	0	0	127
AQUARIUM PARKING GARAGE - Exterior	0	367	0	0	0	367
CAMDEN EXCHANGE PARKING GARAGE - Exterior	8	0	0	0	0	8
CAMDEN EXCHANGE PARKING GARAGE	2	8	0	0	38	48
CHARLESTON PL. PARKING GARAGE (85 HASSELL) - Exterior	19	0	0	0	6	25
CHARLESTON PL. PARKING GARAGE (85 HASSELL)	25	27	1	0	1	54
CONCORD PARKING GARAGE	10	11	0	0	0	21
CONCORD PARKING GARAGE - Exterior	8	0	0	0	6	14
GAILLARD PARKING GARAGE - Exterior	24	8	0	0	0	32
GAILLARD PARKING GARAGE	0	158	0	0	0	158
MAJESTIC SQ. PARKING GARAGE - Exterior	14	0	0	0	0	14
MAJESTIC SQ. PARKING GARAGE	3	19	0	0	1	23

Facility	No Retrofit	Retrofit	Relamp	Retrofit With Kit/Reflector	New/ Replacement Fixture	Total Count
MARION SQ. PARKING GARAGE - Exterior	22	0	0	0	0	22
MARION SQ. PARKING GARAGE	51	78	3	23	7	162
PRIOLEAU & EAST BAY PARKING GARAGE - Exterior	7	0	0	0	8	15
PRIOLEAU & EAST BAY PARKING GARAGE	27	23	0	0	0	50
QUEEN ST PARKING GARAGE - Exterior	0	0	2	0	14	16
QUEEN ST PARKING GARAGE	3	143	0	0	83	229
ST. PHILLIPS PARKING GARAGE - Exterior	20	0	0	0	0	20
ST. PHILLIPS PARKING GARAGE	35	51	0	4	0	90
VTRC PARKING GARAGE - Exterior	0	161	50	0	16	227
VTRC PARKING GARAGE	0	92	0	1	4	97
QUEEN ST PARKING GARAGE (New LED Canopies)	0	0	0	0	89	89

Demolition and Removal Work shall include the following:

- Install lockout/tagout on the lighting circuits as required.
- Safely disconnect electrical supply to the lighting circuits as required.
- Disconnect and remove existing lamps, ballasts and fixtures.
- Store used lamps and ballasts in clearly marked containers.
- Properly dispose lamps, ballasts and fixtures as per the applicable codes.
- Properly dispose of all removed equipment and waste materials.

New Installation Work shall include the following:

- Furnish and install new lighting components as listed in Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".
- Remove lockout/tagout from the lighting circuits if applicable.
- Safely restore electrical supply to the lighting circuits.
- Startup, checkout and verify full range of operation and control features per manufacturers' startup and checkout procedures.
- Clean up of all job related debris daily. Clean up and store tools, equipment, etc. daily and remove after successful installation and operational checkout.

Inclusions, Exclusions and Assumptions applicable to ECM 1 and ECM 2:

Inclusions:

- Pricing is turnkey which includes material, labor, engineering, design and disposal costs.
- Recycling of lamps and ballasts in compliance with regulations.

- New work completed in accordance with industry standards and approved safety practices by licensed, insured and certified personnel skilled in lighting retrofit services.
- Average foot-candle levels shall be as defined by Illuminating Engineering Society.
- All work performed during first or second shift, 40 hour work week, Monday through Friday; weekends or overtime not included.
- 100% access will be granted to all facilities during the construction schedule. Keys, escort and security clearance will be provided in a timely manner.
- All circuit breakers, contactors and switches are assumed to be operational.
- JCI shall be given ample notice for security clearance procedures required for access to any facility included in the scope of work.
- Foot-candle levels shall be measured by procedures recommended by the Illuminating Engineering Society, using a calibrated light meter.
- In the absence of code-mandated foot-candle requirements, we will use industry standards, primarily the most recent edition of the Illuminating Engineering Society (IES) Lighting Handbook 10th Edition, IES Recommended Practice documents and IES Design Guides.
- If specified materials become either temporarily or permanently unavailable for reasons beyond the control of JCI, then the expected time for performance of the work will be extended to the extent of unavailability and we reserve the right to provide equivalent substitutions at no price increase.
- Wiping down prismatic lenses with dry cloth.
- Labor Warranty – 1 year workmanship guarantee which will begin after acceptance of each Facility Improvement Measure in each individual building addressed in the scope.
- Manufacturer warranties of lamps, ballasts and fixtures installed are covered by the published policies of individual manufacturers. JCI will furnish contact information for each manufacturer. Alleged defective product may be required for return to factory for analysis.
- Repair or replacement of yellowed, cracked, damaged or missing fixture lenses (not to exceed 100 pcs.).
- Sales Tax.

Exclusions:

- Electrical permits and fees
- Existing task lighting and table type light fixtures.
- Removal or replacement of ceiling tiles unless specified by customer or scope.
- Work in Asbestos contaminated areas.
- Existing decorative light fixtures except those noted on the provided line by line documents, Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".

- The addition of lighting fixtures in "under-lighted" areas not covered under this scope of work unless noted in Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".
- If foot-candle levels do not meet minimum standards, the customer will be notified.
- Existing fluorescent dimming systems will remain "as is" unless otherwise noted in Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".
- Reconfiguration of existing fixture layout unless otherwise noted in Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".
- Replace of the existing lighting sockets unless otherwise noted in Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".
- Replacement of existing wiring and/or electrical issues in exterior fixtures.
- Existing fixtures with dimming controls unless provided for inExhibit 1, ECM 1 & 2, "Lighting Line-by-Line".
- Repair or replacement of existing fixtures which are rusted or embrittled in a manner which would impede retrofit.
- Correction or repair of electrical system deficiencies.
- Correction of any existing applicable building code violations
- Conformance to IEEE standards if the existing layout does not comply with same
- Any electrical wiring other than that required for ballast replacement within the existing lighting fixtures, the installation on new fixtures as scheduled, the installation of occupancy sensors and other controls.
- Double or bi-level switching of in-board and out-board sockets is not included unless specified in Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".
- Repair, replacement and adjustments of existing sensors, time clocks, switches or energy management systems unless otherwise noted.
- Calibration or adjustment of the lighting control devices post installation. JCI will set controls to the agreed upon settings at time of installation only.
- Painting, plastering or any other type of repair to existing mounting surfaces after the removal or replacement of fixtures, unless otherwise noted in Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".
- Repair, replacement or upgrades to the Emergency or Egress Lighting Systems unless otherwise noted in Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".
- Replacement of defective emergency battery back-up ballast unless otherwise noted in Exhibit 1, ECM 1 & 2, "Lighting Line-by-Line".
- Situations that could not be documented during the audit i.e. concealed or inaccessible locations.

ECM 3a - HVAC Building Controls Improvements

Replace existing standalone HVAC system thermostats with new wireless networked programmable thermostats as listed in the table below:

FACILITY NAME	NUMBER OF UNITS	UNIT TYPE
HAZEL PARKER PLAYGROUND	2	SPLIT SYSTEM
MOULTRIE PLAYGROUND	1	SPLIT SYSTEM
TIEDEMAN PARK	1	SPLIT SYSTEM
MALL PARK	1	SPLIT SYSTEM
MCMAHON PLAYGROUND	1	SPLIT SYSTEM
HAMPTON PARK - HORTICULTURE OFFICE	2	SPLIT SYSTEM
FREDDIE WHALEY COMMUNITY CENTER	1	SPLIT SYSTEM
MITCHELL PLAYGROUND	1	SPLIT SYSTEM
MARTIN PARK	1	SPLIT SYSTEM
THOMAS JOHNSON Park (WESTCHESTER PARK)	1	SPLIT SYSTEM
DEMING PLAYGROUND	1	SPLIT SYSTEM
FOREST PARK PLAYGROUND	1	SPLIT SYSTEM
LENEVAR PARK	1	SPLIT SYSTEM
MARY UTSEY (ORANGE GROVE PARK) - PARK HOUSE	1	SPLIT SYSTEM
ORLEANS WOODS (WILLIE GAINS)	1	SPLIT SYSTEM
MILFORD ST CITY STORES (LOGISTICS)	5	SPLIT SYSTEM
PUBLIC SERVICE COMPOUND - CITY GARAGE	8	SPLIT SYSTEM

Demolition and Removal Work

- Remove and dispose existing standalone thermostats.

New Installation Work

- Furnish and install one new wireless networked programmable thermostat per split system unit as listed in the above table.
- Furnish and install one new wireless network coordinator (WNC) gateway per facility as listed in the above table
- Furnish and install power supply for the new WNC gateway.
- Implement scheduling and program occupied/unoccupied temperature setpoints
- Start up and check out.
- Furnish and install control items in the following point list:

Points List

Point	Notes
Occupancy mode (Occupied/Unoccupied)	Trend every 15 minutes
Operating mode (Heating/Cooling)	Trend every 15 minutes
Supply fan command (Start/Stop/Cycle)	Trend every 15 minutes
Zone temperature with display/set point/temporary occupancy	Trend every 15 minutes

Sequence of Operation

Supply fan control: the supply fan will be started based on occupancy schedule and the optimal start control routine.

Warmup/cooldown mode: the warmup/cooldown mode will be initiated by the network input. The unit will control to occupied set points during warmup and cooldown cycles.

Occupied mode: the occupancy mode will be controlled via a network input. The occupancy mode can also be overridden by a network input or a temporary occupancy sensor on the zone temperature sensor. The duration of the temporary occupancy mode will be set at 30mins per activation. The unit fan will run continuously to maintain occupied period temperature setpoint.

Unoccupied mode: the unit fan will cycle to maintain adjustable unoccupied zone set points during unoccupied periods.

Power fail restart: upon power restoration, the unit restart shall be delayed.

ECM 3b - HVAC Building Controls Fire Stations

Replace existing standalone HVAC system thermostats with new wireless networked programmable thermostats, as listed in the table below:

FACILITY NAME	NUMBER OF UNITS	UNIT TYPE
FIRE STATION 2 & 3 - OFFICE	3	SPLIT SYSTEM
FIRE STATION 6	2	SPLIT SYSTEM
FIRE STATION 7	2	SPLIT SYSTEM
FIRE STATION 8	2	SPLIT SYSTEM
FIRE STATION 10	3	SPLIT SYSTEM
FIRE STATION 11	1	SPLIT SYSTEM
FIRE STATION 12	3	SPLIT SYSTEM
FIRE STATION 13	2	(1) SPLIT SYSTEM & (1) RTU
FIRE STATION 4 & 15	4	SPLIT SYSTEM
FIRE STATION 16	2	SPLIT SYSTEM
FIRE STATION 17	2	SPLIT SYSTEM

FACILITY NAME	NUMBER OF UNITS	UNIT TYPE
DANIEL ISLAND POLICE/FIRE – FIRE STATION 18	6	SPLIT SYSTEM
FIRE STATION 19	2	SPLIT SYSTEM
FIRE STATION 20	1	SPLIT SYSTEM
FIRE TOWER - TRAINING FACILITY	7	(4) PTAC & (3) BARD

Demolition and Removal Work

- Remove & dispose existing standalone thermostats.

New Installation Work

- Furnish and install one new wireless networked programmable thermostat per unit as listed in the above table.
- Furnish and install one new wireless network coordinator (WNC) gateway per facility as listed in the above table
- Furnish and install power supply for the new WNC gateway.
- Program occupied/unoccupied temperature setpoints.
- Start up and check out.
- Furnish and install control items in the following point list:

Points List

Point	Notes
Occupancy mode (Occupied/Unoccupied)	Trend every 15 minutes
Operating mode (Heating/Cooling)	Trend every 15 minutes
Supply fan command (Start/Stop/Cycle)	Trend every 15 minutes
Zone temperature with display/set point/temporary occupancy	Trend every 15 minutes

Sequence of Operation

Occupied mode: the unit fan will run continuously.

Unoccupied mode: the unit fan will cycle to maintain adjustable zone set points during unoccupied periods.

Power fail restart: upon power restoration, the unit restart shall be delayed.

Inclusions and Exclusions Applicable to ECM 3a and ECM 3b

Inclusions:

- Graphics on the existing Metasys front end.
- Existing field devices will be reused where possible.
- Pre- and post-installation measurement and verification. Refer to M&V Plan Section for specific M&V activity.
- Detailed documentation in a mutually acceptable format.

Exclusions:

- Ethernet drops will be provided by the owner at each facility.
- Repair or replacement of defective mechanical, electrical and/or controls equipment, other than the equipment specifically described in the above-mentioned scope of work. Johnson Controls will identify the location of defective equipment and notify the owner.
- Repair or upgrades required to bring the HVAC, electrical and mechanical systems up to code.
- Test and balance of the existing HVAC and mechanical systems and terminal units, unless specified in the scope of work.
- Existing building ventilation conditions and indoor air quality issues (if any, except where it is was discussed with the owner during development of project and noted in scope) are excluded from the scope and cost of this project.
- Resolution of existing design, service, and or distribution conditions known or unknown

ECM 4 - R22 Equipment Replacement

The refrigerant known as R22 has been banned due to its ozone depleting chemicals and is currently in the process of being phased out in accordance with the timetable established in the Montreal Protocol. This measure is being taken to replace the City of Charleston's equipment currently operating on R22 with newer, more efficient equipment that uses a more environmentally friendly refrigerant. Equipment being replaced includes existing split system or packaged roof-top air-cooled air-conditioning equipment with new higher-efficiency equipment as listed in the table below:

Building	Unit Tag	Location	Area/Equip Served	Make	Model#	Serial#	Age	Tons	Existing EER	Proposed EER
PARKS DEPARTMENT	CU-1	ROOF	1ST FLOOR, AHU LOCATED ABOVE THE CEILING	FRASER-JOHNSTON	EABD-F036SB	W0A7379529	10	3	10.1	12.8
PARKS DEPARTMENT	CU-2	ROOF	1ST FLOOR, AHU LOCATED ABOVE THE CEILING	YORK	E1FH030S06A	EADM034709	22	2.5	7.8	13.0
PARKS DEPARTMENT	CU-5	ROOF	1ST FLOOR, AHU LOCATED ABOVE THE CEILING	INTERNATIO NAL COMFORT PRODUCTS	R2H324GKR400	X143160794	3	2	10.8	13.0
PARKS DEPARTMENT	RTU-7	ROOF	2ND FLOOR	YORK	B4HP024A06B	N0G8118820	9	2	9.8	12.8
PARKS DEPARTMENT	RTU-8	ROOF	2ND FLOOR	YORK	B1HA048A25B	N0B5556510	12	4	6.8	12.8
PARKS DEPARTMENT	RTU-9	ROOF	2ND FLOOR	YORK	B1HA042A25B	N0B5607989	12	3.5	6.8	12.8
PARKS DEPARTMENT	RTU-10	ROOF	2ND FLOOR	YORK	B1HA042A25B	N0B5607990	12	3.5	6.8	12.8
PARKS DEPARTMENT	RTU-11	ROOF	2ND FLOOR	YORK	B1HA048A25B	N0B5556504	12	4	6.8	12.8
PARKS DEPARTMENT	RTU-12	ROOF	2ND FLOOR	YORK	B3HP036A06A	N0G8079068	9	3	9.3	12.8
PARKS DEPARTMENT	RTU-13	ROOF	2ND FLOOR	YORK	BAUA-F024AB	NBNM012446	13	2	6.8	12.8
PARKS DEPARTMENT	RTU-14	ROOF	2ND FLOOR	YORK	B3HP060A25A	N0G8075343	9	5	9.3	12.8
PARKS DEPARTMENT	RTU-15	ROOF	2ND FLOOR	YORK	B3HP030A06A	N0G8126464	9	2.5	9.3	12.8
PARKS DEPARTMENT WAREHOUSE	SPLIT SYSTEM CU	IN THE BACK OF THE SHOP	CARPENTRY SHOP	INTERNATIO NAL COMFORT PRODUCTS	R2H348GKR400	X142568143	3	4	10.8	12.3
OLD SLAVE MART	RTU-1	ROOF		TEMPSTAR	PGF048K120A	L010761502	16	4	6.8	12.8
OLD SLAVE MART	RTU-2	ROOF		TEMPSTAR	PGF024K060A	L010394813	16	2	6.8	12.8
OLD SLAVE MART	RTU-3	ROOF		TEMPSTAR	PGF036K100A	L01088883	16	3	6.8	12.8
SHAW CENTER	RTU-3	ROOF		CARRIER	50HJQ006---521--	0709G20366	10	5	10.1	12.8
LOWCOUNTRY SENIOR CENTER	CU-3		AH-3	TRANE	2TWB3060A1000CA	13082NHB4F	4	5	10.6	12.8
LOWCOUNTRY SENIOR CENTER	CU-4		AH-4	HEIL	R2H360GKR400	X141474941	3	5	10.8	12.8
LOWCOUNTRY SENIOR CENTER	CU-5		AH-5	TRANE	TWR036D100A0	Z1854YT4F	12	3	7.3	12.8
LOWCOUNTRY SENIOR CENTER	CU-7		AH-7	TRANE	TWR048D100A1	Z105NU22F	16	4	7.3	12.5
LOWCOUNTRY SENIOR CENTER	CU-8		AH-8	TRANE	TWR048D100A1	Z5053AW3F	16	4	7.3	12.5
CITY ART GALLERY	CU-1	ROOF		INTERNATIO NAL COMFORT PRODUCTS	R2A360GHR200	X142671744	3	5	10.8	12.8
CITY ART GALLERY	CU-2	ROOF		GOODMAN	GSC130603CA	1303073436	4	5	10.7	12.0
CITY ART GALLERY	CU-3	ROOF		GOODMAN	GSC130603CA	1304152008	4	5	10.7	12.0

Building	Unit Tag	Location	Area/Equip Served	Make	Model#	Serial#	Age	Tons	Existing EER	Proposed EER
CITY ART GALLERY	CU-4	ROOF		INTERNATIONAL COMFORT PRODUCTS	R2A360GHR200	X142671730	3	5	10.8	12.8
CITY ART GALLERY	CU-6	ROOF	MINISPLIT IN SOUTH STAIRWELL	MITSUBISHI	PUGH18CKB	2074023	15	1.5	7.8	12.8
CHARLESTON MARITIME CENTER	CU-1	NEXT TO ICE MACHINES	AH-1	THERMAL ZONE	TPZA-348-2C757	W251407889	3	4	10.8	12.5
CHARLESTON MARITIME CENTER	CU-2	NEXT TO ICE MACHINES	AH-2	TRANE XE 1000	TWR048C100A3	M0336EACF	20	4	7.3	12.5
CHARLESTON MARITIME CENTER	CU-4	NEXT TO ICE MACHINES	AH-4	TRANE	TWA060C400A2	L39320MFF	21	5	6.8	11.8
CHARLESTON MARITIME CENTER	CU-5	NEXT TO ICE MACHINES	AH-5	DAYTON	HP060X1341A	W0M7433638	10	5	10.1	12.3
CHARLESTON MARITIME CENTER	CU-6	NEXT TO ICE MACHINES	AH-6	DAYTON	HP060X1341A	W0H8228063	9	5	9.3	11.8
ST JULIAN DEVINE	CU-1	GROUND	2ND FLOOR OFFICE	TRANE	TWA090A400FB	7023KRKAD	10	7.5	8.3	11.0
ST JULIAN DEVINE	CU-2	GROUND	ART ROOM	TRANE	2TWB3060A1000AA	7015RSU2F	10	5	9.9	12.0
ST JULIAN DEVINE	CU-3	GROUND	RECREATION ROOM	TRANE	2TWB3060A1000AA	7021LNC2F	10	5	9.9	12.3
ST JULIAN DEVINE	CU-4	GROUND	LOBBY	TRANE	M2HP3060A1000AA	144710100M	3	5	10.8	12.3
BEES LANDING RECREATION CENTER	HP-1	ROOF	AH-1	TRANE	TWA240B400FC	8182627AD	9	12	7.8	12.3
BEES LANDING RECREATION CENTER	HP-2	ROOF	AH-2	TRANE	TWA240B400FC	8145GTKAD	9	12	7.8	12.3
BEES LANDING RECREATION CENTER	RTHP-2	ROOF			PICTURE NOT CLEAR	PICTURE NOT CLEAR	117	3	6.8	12.8
BEES LANDING RECREATION CENTER	RTHP-1	ROOF		TRANE	WSC072A4RCA050Q	83210012GL	9	6	8.8	11.7
BEES LANDING RECREATION CENTER	RTHP-4	ROOF		TRANE	WSC090A4RCA06Q1	83510146---	9	7.5	8.4	11.4
BEES LANDING RECREATION CENTER	RTHP-5	ROOF		TRANE	WSC090A4RCA2MD000A1	835101458L	9	7.5	8.4	11.4
FIRE STATION 17	CU-1	GROUND		YORK	E1RA048S06C	EFCH182261	23	4	7.0	12.5
FIRE STATION 17	CU-2	GROUND		PAYNE	PH10JA060-G	4505X62588	12	5	6.6	12.0
MILFORD ST CITY STORES (LOGISTICS)	CU-5		OFFICE AREA IN THE SIGN SHOP		NOT VISITED	NOT VISITED	117	5	8.1	12.3
JIRC GYM	CU-1	GROUND	AHU SUSPENDED IN THE MAIN GYM	YORK	E1FB180A25B	N0K6919806	11	15	6.4	11.5
JIRC GYM	CU-3	GROUND	AHU ABOVE THE CEILING IN CHILD CARE	YORK	E2HB0365S06A	MDYM150023	117	3	8.7	12.5

Building	Unit Tag	Location	Area/Equip Served	Make	Model#	Serial#	Age	Tons	Existing EER	Proposed EER
			ROOM							
JIRC GYM	CU-4	GROUND	AHU ABOVE THE CEILING MULTI PURPOSE ROOM	YORK	E2HB042506A	N104555	21	3.5	8.7	12.8
JIRC GYM	RTU-1	GROUND	GYMNASTICS GYM	JOHNSON CONTROLS	T23FC02A2IANCIA	N0F8917500	9	30	7.9	10.5
JIRC GYM	CU-5	GROUND	AHU SUSPENDED IN THE MAIN GYM	YORK	E1FB180A25B	N0K6919806	11	15	6.4	11.5
JIRC GYM	CU-7	GROUND	AHU ABOVE THE CEILING IN THE HALLWAY	CARRIER	PH13NR030	0507X67607	12	2.5	8.1	13.0
FIRE STATION 2&3 OFFICE	CU-1	GROUND		INTERNATIO NAL COMFORT PRODUCTS	R2A360GKR200	X142870808	3	3	10.8	12.8
GOVERNORS PARK - FAMILY CIRCLE TENNIS CENTER	CU-1	GROUND		CARRIER	38YCC060540	4900E14786	17	5	6.8	11.8
GOVERNORS PARK - FAMILY CIRCLE TENNIS CENTER	CU-2	GROUND		CARRIER	38AQS008--501--	0201G00117	16	7.5	7.2	12.5
GOVERNORS PARK - FAMILY CIRCLE TENNIS CENTER	CU-3	GROUND		CARRIER	38YCC036530	4700E15759	17	3	6.8	12.8
GOVERNORS PARK - FAMILY CIRCLE TENNIS CENTER	CU-4	GROUND		CARRIER	38YCC042550	5100E17224	17	3.5	6.8	12.8
GOVERNORS PARK - FAMILY CIRCLE TENNIS CENTER	CU-6	GROUND		CARRIER	38YCC048520	4300E13667	17	4	6.8	12.5
GOVERNORS PARK - FAMILY CIRCLE TENNIS CENTER	CU-7	GROUND		CARRIER	38YCC048520	4300E13646	17	4	6.8	12.5
GOVERNORS PARK - FAMILY CIRCLE TENNIS CENTER	CU-8	GROUND		CARRIER	38YCC030500	4700E15989	17	2.5	6.8	13.0
FIRE STATION 18	HP-1	ROOF	AH-1	TRANE	TWA090A300FA	4233TMYAD	13	7.5	7.4	11.0
FIRE STATION 18	HP-2	ROOF	AH-2	TRANE	2TWR2048A1000BA	4222PE92F	13	4	7.8	12.5
FIRE STATION 18	HP-3	ROOF	AH-3	TRANE	2TWR2060A1000AB	4241KUB2F	13	5	7.8	12.0
FIRE STATION 18	HP-5	ROOF	AH-5	TRANE	2TWR2048A1000BA	4222PNE2F	13	4	7.8	12.5
FIRE STATION 4 & 15	CU-2	OUTSIDE WALL		INTERNATIO NAL COMFORT PRODUCTS	R2A360GKR200	X133456822	4	5	10.7	12.0
FIRE STATION 4 & 15	CU-4	GROUND		UNITARY PRODUCTS GROUP	AC030X1322A	W0G6710748	11	2.5	8.2	13.0
FIRE TOWER - TRAINING FACILITY	BARD	WALL	TRAILER 1A	BARD	WA372-A10	225PO52128169-02	12	3	6.6	12.3
FIRE TOWER - TRAINING FACILITY	BARD	WALL	TRAILER 4	BARD	WA361-A10	125H011644700-01	16	3	6.6	12.3

Building	Unit Tag	Location	Area/Equip Served	Make	Model#	Serial#	Age	Tons	Existing EER	Proposed EER
FIRE TOWER - TRAINING FACILITY	BARD	WALL	GREY CONTAINER	BARD	WA121A05CITY OF CHARLESTON4CITY OF CHARLESTONX	158B082459041-01	9	1	7.5	12.3

Demolition and Removal Work

- Recover and properly dispose of refrigerant as per the applicable codes.
- Remove each existing equipment electrical disconnect, and safely disconnect electrical supply.
- Disconnect equipment from existing ducting, condensate drain piping, and natural gas piping.
- Disconnect and secure thermostat connections as necessary to perform work.
- Remove and dispose of existing HVAC equipment as listed in the table above.
- Properly dispose of removed equipment and waste materials.

New Installation Work

- Furnish and install new HVAC equipment as listed in the table above at existing locations.
- Provide new curb adapters and supports if required for the HVAC units located on the roof.
- Provide new curb flashing and sealing of roof penetrations related to this work, if required.
- Reuse existing concrete pad or provide new concrete pad for the HVAC units mounted on the ground if the new equipment will not fit on the existing pad.
- Equipment supports to be compliant with local seismic and hurricane regulations.
- Provide electrical connections, with new electrical disconnect..
- Modify electrical power wiring distribution panel as needed. Existing electrical wiring will be reused as much as possible.
- Reconnect new equipment to existing ductwork reusing existing roof penetrations. If required, provide transition ductwork. Insulate any new ductwork.
- Reconnect new equipment to existing condensate drain and natural gas piping.
- Startup, checkout and verify full range of operation and control features per manufacturers' startup and checkout procedures.
- Clean up of all job related debris daily. Clean up and store tools, equipment, etc. daily and remove after successful installation and operational checkout.
- Reconnect new equipment to BAS or existing thermostat.

- Reclaimed R-22 refrigerant. Johnson Controls will provide approximately 30 lbs (3 containers) to the city for their use throughout the facilities. Reclaim/recycle certificates shall be provided to the city for all reclaimed R-22.

ECM 5a - Ground Loop Improvements - City Hall

The ground coupled heat transfer system currently serving City Hall has been unable to maintain the temperatures in the condenser water loop in the ranges specified by the equipment manufacturer. This measure is included to address the existing system deficiencies thereby increasing the system efficiency and improving the conditions placed on the existing equipment.

- Replace existing 30-ton water-to-water heat pump R-22 chiller (C1) with a new 30-ton high efficiency water-to-water R-410A chiller.
- Replace existing air-cooled liquid cooler currently serving the chiller loop and connect water source heat pump loops 2 & 3 to the new liquid cooler with new circulating pumps to reduce the condenser water temperatures and thereby improve the efficiency and extend the life of the water source heat pumps.
- Add one new liquid cooler for the remaining water source heat pump loop (Loop 1).

BUILDING	EQUIP TAG	LOCATION	AREA/EQUIP SERVED	MAKE	MODEL#	SERIAL#	DATE OF MANUFAC TURING	DETAILS
CITY HALL	C1	MECHANICAL ROOM	AHU-1,2&3 SERVING THE COUNCIL CHAMBER	VERSATE C	VL360W3B8C 0RBSSC	VK1890	11/1/2006	R-22, WATER SOURCE CHILLER
CITY HALL		OUTSIDE ON THE GROUND	CHILLER C1	MCQUAY	BFH035	T11C13302		AIR COOLED LIQUID COOLER

Demolition and Removal Work

- Recover and properly dispose of refrigerant as per the applicable codes.
- Remove each existing equipment electrical disconnect, and safely disconnect electrical supply to the unit.
- Disconnect equipment from existing chilled water and condenser water piping.
- Disconnect and secure BAS connections as necessary to perform work.
- Remove and dispose of existing HVAC equipment as listed in the table above.
- Properly dispose of all removed equipment and waste materials.

New Installation Work

Liquid Coolers

Item No.	Building	Area Served	Description	Manufacturer Model	Flow Rate GPM	Power	Qty.	Cooling Size MBH
1	City Hall	Condenser Loops for BP2 and Chiller	Liquid Cooler	Johnson Controls	115	208V 3ø	1	720
2	City Hall	Condenser Loop for BP1	Liquid Cooler	Johnson Controls VDCF113B10XXB	26	208V 3ø	1	142

Chiller

Item No.	Building	Area Served	Description	Manufacturer Model	Nominal Tons	Power	Qty.	CHW Flow (GPM)
1	City Hall	AHU-1, 2 &3	Chiller (C1)	Johnson Controls RW Series (R-410A)	30	208V 3ø	1	68

Pumps

Item No.	Building	Area Served	Description	Manufacturer Model	Flow Rate GPM	Power	Qty.
1	City Hall	Condenser Loops for BP2 and Chiller	Circulating Pumps	Taco	115	208V 3ø	2
2	City Hall	Condenser Loop for BP1	Circulating Pumps	Taco	26	208V 3ø	2

Electrical

- Furnish and install new electrical circuits to the new liquid coolers and circulating pumps.
- Furnish and install new electrical disconnect and/or circuit breaker (as applicable). The new electrical disconnect/s shall be installed adjacent to new pumps per state and local code requirements.
- Connect equipment to new electrical power wiring.

Mechanical

- Expand or replace existing concrete housekeeping pad for liquid cooler#1.
- Provide new concrete housekeeping pad for the new liquid cooler#2.
- Furnish and install one new 30-ton nominal capacity chiller as listed in the table above and connect to existing piping.

- Furnish and install two new liquid coolers as listed in the table above and connect to existing piping.
- Furnish and install new circulating pumps as listed in the table above and connect to new piping.
- Furnish and install new piping, valves and fittings as necessary. All new piping will be insulated in accordance with code.
- The installation shall include sealing of any new wall penetrations and flashing.
- Start up, commissioning, testing and balancing of the ground loop system including new liquid coolers.

Controls

Liquid coolers and circulating pumps – Furnish and install DDC controls, including communication bus and control power, to control the liquid coolers and circulating pumps. The new liquid cooler fans will be controlled, based on its standalone, packaged controls.

Furnish and install the items in the following point list for each new air-cooled liquid cooler:

- Liquid cooler start/stop/status
- Liquid cooler enable
- Condenser water supply temperature
- Condenser water return temperature
- Condenser water flow switch
- Circulating pump start/stop/status
- Circulating pump enable

ECM 5b - Control Improvements - City Hall

- Add motorized outdoor air dampers on each of the eleven water source heat pumps (AC-1 thru AC-11).
- Revise control sequence for the chiller to provide a more consistent chilled water temperature.
- Revise control sequence for the air handling units (AHU-1, 2 &3) serving the Council Chamber.

List of existing ground source heat pumps:

FACILITY	HP TAG	HP LOCATION	FLOOR SERVED	AREA SERVED	GROUND LOOP#	GROUND LOOP ID
CITY HALL	AC-1	GROUND FLR	GROUND FLR	WEST	BP1	WEST
CITY HALL	AC-2	GROUND FLR	GROUND FLR	MAINTENANCE OFFICE	BP3	EAST

CITY HALL	AC-3	GROUND FLR	GROUND FLR	MECHANICAL ROOM	BP1	WEST
CITY HALL	AC-4	1ST FLR	1ST FLR	CLERK OF COUNCIL WEST	BP1	WEST
CITY HALL	AC-5	1ST FLR	1ST FLR	CLERK OF COUNCIL EAST	BP3	EAST
CITY HALL	AC-6	1ST FLR	1ST FLR	SENIOR ADVISOR NORTH EAST	BP3	EAST
CITY HALL	AC-7	1ST FLR	1ST FLR	SENIOR ADVISOR NORTH WEST	BP1	WEST
CITY HALL	AC-8	ATTIC	2&3 FLRS	MAYOR'S SECRETARY'S OFFICE	BP2	ATTIC
CITY HALL	AC-9	ATTIC	2&3 FLRS	MAYOR'S OFFICE	BP2	ATTIC
CITY HALL	AC-10	ATTIC	2&3 FLRS	BREAK ROOM	BP2	ATTIC
CITY HALL	AC-11	ATTIC	ATTIC IT ROOM	IT ROOM	BP2	ATTIC

Demolition and Removal Work

- Remove & dispose existing CO2 sensors located in the return duct, one each for AHU1 and AHU2.

New Installation Work

Water Source Heat Pumps (AC-1 thru AC-11)

- Furnish and install new electric actuators (2-position) on existing volume dampers in the fresh air duct on eleven (11) water source heat pump units AC-1 thru AC-11.
- Provide electrical wiring to support new damper actuators.
- Furnish and install (11) eleven new network thermostats with integral occupancy sensors for AC-1 thru AC-11.
- Integrate damper actuators and new thermostats into a revised control schedule.

Council Chamber Air Handling Units (AHU-1, 2 &3)

- Furnish and install (2) new occupancy sensors in the Council Chamber.
- Furnish and install new low/high voltage wiring as required to integrate new occupancy sensors into AHU-3 control strategy.
- Furnish and install two CO_2 sensors located in the return duct, one each for AHU1 and AHU2.
- Integrate new occupancy sensors installed in the Council Chamber with the AHU-1, 2 &3 control strategy.

Revise control sequences as follows:

Water Source Heat Pumps (AC-1 thru AC-11)

Occupied hours: Monday through Friday, 6 AM to 6 PM, unoccupied otherwise.

During occupied hours, set outside air damper to open position, fan to remain on and maintain temperature set point as follows:

Heating: 70°F, Cooling 72°F

During unoccupied hours, close outdoor air damper and cycle fan as needed to maintain unoccupied temperature set points.

Heating: 68 °F, Cooling 76 °F

Council Chamber Air Handling Units (AHU-1, 2 &3)

The Council Chamber shall be designated to be in unoccupied mode after no occupancy is sensed by both occupancy sensors continuously for 30 minutes (adj.). While the unoccupied mode AHU-1, 2 &3 serving the Council Chamber will be operated as follows:

Cooling Setpoint (°F)	74
Heating Setpoint (°F)	68
Relative Humidity (%)	55

AHU-3 & exhaust/relief fan (EF-6) will remain off. Outside air dampers (OAD-1&2) and exhaust air dampers (EAD-1&2) will remain closed.

AHU-1&2 supply fans will be cycled at 50% speed (adj.) to maintain space temperature and relative humidity at unoccupied period setpoints as listed in the above table. Return air dampers (RAD-1&2) will remain fully open (100%).

AHU-1, 2 &3 serving the Council Chamber will be operated in **occupied mode** in the event of either of the following conditions:

1. Occupancy sensed by the occupancy sensors in the Council Chamber (2 minute delay (Adj.)
2. When the zone CO_2 rises above 1000ppm as sensed by either CO_2 sensors

Cooling Setpoint (°F)	72
Heating Setpoint (°F)	70
Relative Humidity (%)	55

AHU-1&2 supply fans will run continuously at 100% speed (adj.) to maintain space temperature and relative humidity at occupied period setpoints as listed in the above table. RAD-1&2 will modulate inversely in coordination with the OAD-1&2.

AHU-3 & EF-6 will be enabled and run continuously. The AHU-3 supply fan speed will modulate proportionately in response to the zone CO_2 level as per the reset schedule below:

AHU-3 Fan Speed (%)	20	100
Zone CO_2 Level (ppm)	1000	1200

EF-6 fan speed will modulate to maintain static pressure in the Council Chamber at the setpoint 0.02 in. w.c. (adj).

OAD-1&2 and EAD-1&2 positions will modulate simultaneously in coordination with the AHU-3 fan speed (as described above).

Council Chamber Chiller

The existing control sequence for Chiller C1 to remain with the exception of following changes to the setpoints based on occupied/unoccupied mode of operation for AHU-1, 2& 3:

When AHU-1, 2 &3 serving the Council Chamber are operating in **occupied mode**:

Enable stage-1 on the rise in return chilled water temperature above 47°F (Compressor 1-SP) and stage-2 on the rise in return chilled water temperature above 50°F (Compressor 2-SP). Disable stage-2 on the fall in return chilled water temperature below 47°F and stage-1 on the fall in return chilled water temperature below 44°F. Alternate lead and lag compressors based on the daily runtimes.

When AHU-1, 2 &3 serving the Council Chamber are operating in **unoccupied mode**:

Enable stage-1 on the rise in return chilled water temperature above 53°F (Compressor 1-SP) and stage-2 on the rise in return chilled water temperature above 57°F (Compressor 2-SP). Disable stage-2 on the fall in return chilled water temperature below 54°F and stage-1 on the fall in return chilled water temperature below 50°F. Alternate lead and lag compressors based on the runtimes.

ECM 6a -VRF HVAC System Upgrades - Joe Riley Ballpark

This ECM will replace existing aging direct expansion (DX) equipment utilizing R22 refrigerant at Joe Riley Ballpark facility with five (5) new high efficiency three pipe variable refrigerant flow systems (VRF) with heat recovery utilizing environmentally friendly R410A refrigerant. The existing dedicated outdoor air system shall remain as is.

Demolition and Removal Work

Electrical

- Remove existing electrical disconnect.
- Remove existing thermostat and/or building automation system (BAS) connections.
- Properly disconnect and isolate smoke alarms and other life safety devices connected to the unit.

  Safely disconnect existing fan coil and condenser units as listed in the table below.

Building	Equipment Tag	Location	Area/Equip Served	Make	Model#	Serial#	Age	Tons	Existing Equipment IEER	Proposed Equipment IEER
JOSEPH P RILEY BALLPARK	CU-1 (HPU 14)	BELOW THE STADIUM	RIVERDOGS COACHES OFFICE	YORK	E1RD048S46B	W0L7321920	10	4	11.1	19.0

Building	Equipment Tag	Location	Area/Equip Served	Make	Model#	Serial#	Age	Tons	Existing Equipment IEER	Proposed Equipment IEER
JOSEPH P RILEY BALLPARK	CU-2 (HPU 13)	BELOW THE STADIUM	MAINTENANCE OFFICE	YORK	THGD18S21S1A	W0E8825323	9	1.5	10.3	19.0
JOSEPH P RILEY BALLPARK	CU-3 (HPU 19)	BELOW THE STADIUM	VENDING	YORK	THGD36S21S1A	W0F8941329	9	3	10.3	19.0
JOSEPH P RILEY BALLPARK	CU-4 (HPU 18)	BELOW THE STADIUM	VISITOR LOCKER ROOM	INTERNATIONAL COMFORT PRODUCTS	CHE090GLCA	X082778609	9	7.5	10.3	19.0
JOSEPH P RILEY BALLPARK	CU-5 (HPU-17)	BELOW THE STADIUM	UMPIERS LOCKER ROOM	YORK	THGD18S21S1A	W0E8825322	9	1.5	10.3	19.0
JOSEPH P RILEY BALLPARK	CU-6 (OHP 4)	BELOW THE STADIUM	REAR OFFICES	YORK	E1RD048S46B	W0D8798670	9	4	10.3	19.0
JOSEPH P RILEY BALLPARK	CU-7 (OHP 1)	BELOW THE STADIUM	GIFT SHOP	YORK	E1RD060S46B	W0L7389425	10	5	11.1	19.0
JOSEPH P RILEY BALLPARK	CU-8 (OHP 2)	BELOW THE STADIUM	FRONT OFFICE	YORK	E1RD048S46B	W0C7517268	10	4	11.1	19.0
JOSEPH P RILEY BALLPARK	CU-9 (OHP 5)	BELOW THE STADIUM	TICKET OFFICE	YORK	THGD24S21S1A	W0F8928384	9	2	10.3	19.0
JOSEPH P RILEY BALLPARK	CU-10 (OHP 3)	BELOW THE STADIUM	DAVE OFFICE	YORK	YHJC48S4483A	W1N0535385	7	4	10.7	19.0
JOSEPH P RILEY BALLPARK	CU-11	BELOW THE STADIUM	BEER GARDEN	YORK	BRCS0181BD	980580442	12	1.5	7.5	19.0
JOSEPH P RILEY BALLPARK	CU-12	ROOF (CLOSE TO ACCESS)		MCQUAY	ACZ033ACS27-ER11	STNU070900275	10	33	9.2	19.0
JOSEPH P RILEY BALLPARK	CU-13 (CU-1)	ROOF	401	YORK	E1RD048S46B	W0E8850266	9	4	10.3	19.0
JOSEPH P RILEY BALLPARK	CU-14	ROOF	402	YORK	E1RD048S46B	W0E8850267	9	4	10.3	19.0
JOSEPH P RILEY BALLPARK	CU-15	ROOF		JOHNSON CONTROLS	J10YCC00A4AAA2A	N1C2642510	5	10	12.9	19.0
JOSEPH P RILEY BALLPARK	CU-16	ROOF	404	YORK	E1RD036S46B	W0E8881173	9	3	10.3	19.0
JOSEPH P RILEY BALLPARK	CU-17	ROOF	403	YORK	E1RD048S46B	W0E8850265	9	4	10.3	19.0
JOSEPH P RILEY BALLPARK	CU-18	ROOF	405	YORK	E1RD036S46B	W0C8688202	9	3	10.3	19.0
JOSEPH P RILEY BALLPARK	RTU-1	ROOF		JOHNSON CONTROLS	XN060E07B4A1ACA1A1A	N1A7357144	0	5	12.9	19.0
JOSEPH P RILEY BALLPARK	CU-20	ROOF	406	YORK	E1RD036S46B	W0C8688195	9	3	10.3	19.0
JOSEPH P RILEY BALLPARK	CU-21	ROOF	407	YORK	E1RD048S46B	W0E8850263	9	4	10.3	19.0
JOSEPH P RILEY BALLPARK	CU-22	ROOF	407	YORK	EIR	PICTURE NOT CLEAR	9	4	10.3	19.0
JOSEPH P RILEY BALLPARK	CU-23	ROOF	408	YORK	EIRD048S46B	W0E8850269	9	4	10.3	19.0
JOSEPH P RILEY BALLPARK	RTU-2	ROOF		JOHNSON CONTROLS	XP078E09D4A1BCA1A1	N1A7336700	0	6.5	12.3	19.0
JOSEPH P RILEY BALLPARK	RTU-3	ROOF	NEW RENOV	JOHNSON CONTROLS	ZR240N30P4A1ACA1A1		0	20	12.1	19.0
JOSEPH P RILEY BALLPARK	CU-24	GROUND		MCQUAY	ACZ033ACS27-ER11	STNU061200127	11	33	7.5	19.0
JOSEPH P RILEY BALLPARK	CU9	ROOF	THIRD FLOOR LARGE MEDIA ROOM	YORK	E1RD036S46B	W0M7449090	10	3	11.1	19.0

Building	Equipment Tag	Location	Area/Equip Served	Make	Model#	Serial#	Age	Tons	Existing Equipment IEER	Proposed Equipment IEER
JOSEPH P RILEY BALLPARK	CU10		SMALL MEDIA ROOMS	YORK	H3CE120A46A	N0E6254509	11	10	7.7	19.0
JOSEPH P RILEY BALLPARK	RTU		BATTER'S CAGE	YORK	ZF072E10R40ZZ 10001A	N1C1856904	6	6	10.7	19.0
JOSEPH P RILEY BALLPARK	HPU 16		CITADEL LOCKER ROOM	YORK	E1RAO90S46H	W0E7729788	10	7.5	9.5	19.0
JOSEPH P RILEY BALLPARK	HPU 15		RIVERDOGS LOCKER ROOM	YORK	E1RA090S46H	W0E7729790	10	7.5	9.5	19.0

Mechanical

- Remove and reinstall suspended ceiling panels as needed.
- Recover and dispose of refrigerant according to state and local codes.
- Safely disconnect equipment from existing ducting, line sets, condensate drain piping, as well as natural gas, propane or steam/hot water piping.
- Temporarily seal or cap all disconnected utilities.
- Remove existing fan coil, condenser units and curbs for roof-mounted units and dispose of properly. Customer has right of first refusal.

New Installation Work

- Furnish and install new York variable refrigerant flow systems and equipment as listed in Appendix 6a Joe Riley VRF report in the locations noted.
- Provide new curb adapters and supports if required, for the HVAC units located on the roof.
- Provide new curb flashing and sealing of roof penetrations related to this work, if required.
- Provide new concrete pads for the HVAC units mounted on the ground.
- Equipment supports to be compliant with local seismic and hurricane regulations.
- Provide electrical connections, with new electrical disconnect.
- Modify electrical power wiring distribution panel as needed. Existing electrical wiring will be reused as much as possible.
- Reconnect new equipment to existing ductwork reusing existing roof penetrations. If required, provide transition ductwork. Insulate any new ductwork.
- Reconnect new equipment to existing condensate drain piping
- Startup, checkout and verify full range of operation and control features per manufacturers' startup and checkout procedures.
- Clean up of all job related debris daily. Clean up and store tools, equipment, etc. daily and remove after successful installation and operational checkout.
- Reconnect new equipment to BAS through integration.

ECM 7a - HVAC Controls Improvements - Greenberg Municipal Complex

- Implement duct static pressure reset on the variable air volume units RTU-1 &2.
- Control amount of ventilation air brought into the space by RTU-3 &4 during the occupied-standby modes for the 1st and 2nd floor court rooms.
- Recommission existing (39) parallel flow fan powered VAV boxes serving DMV and Municipal Court buildings, to include demand control ventilation (DCV) strategy.

Existing Rooftop Units:

UNIT TAG	RTU-1	RTU-2	RTU-3	RTU-4
FACILITY	TRAFFIC & TRANSPORTATION	MUNICIAL COURT	MUNICIAL COURT (1st FLR COURTROOM)	MUNICIAL COURT (2nd FLR COURTROOM)
UNIT TYPE	VAV	VAV	CONSTANT VOLUME	CONSTANT VOLUME
HEAT RECOVERY	N/A	N/A	HEAT WHEEL	HEAT WHEEL

Demolition and Removal Work

- N/A

New Installation Work

- Furnish and install (2) new occupancy sensors one each in the 1st and 2nd floor court rooms.
- Furnish low/high voltage wiring for the new occupancy sensors.
- Integrate new occupancy sensors installed in the 1st and 2nd floor court rooms with the respective rooftop units RTU-3&4 control strategies.
- Furnish and install new CO_2 sensors for the (39) existing parallel flow fan powered VAV boxes.

Revise control sequences as follows:

RTU-1&2 Duct Static Pressure Reset

- Implement duct static pressure reset control strategy for the variable volume RTUs-1&2.
- The duct static pressure setpoints will be reset based on the VAV box damper positions.

RTU-3 & 4 Ventilation Control

The RTU shall be designated to be in occupied-standby mode after no occupancy is sensed by the occupancy sensor continuously for 30 minutes (adj.) in the court room. During the occupied-standby mode, the heat recovery unit on the RTU shall be disabled. The RTU shall maintain space temperature at occupied period temperature setpoint during the occupied-standby period.

During the unoccupied period, RTU supply fan shall cycle to maintain space temperature at unoccupied period temperature setpoint. The heat recovery unit on the RTU shall remain OFF during the unoccupied period.

VAV Box Re-commissioning

- Perform thorough condition assessment for the existing (39) parallel flow fan powered boxes.
- Repair or replace components (controller/linkage/sensors/transmitters/others) critical for the functioning of the VAV box.
- Re-evaluate current operating parameters (cooling max cfm, cooling min cfm, heating cfm etc.) for the existing parallel flow fan powered VAV boxes.
- Specify cooling minimum flow setpoint for each VAV box based on the building component for the spaces served by the respective VAV box as per the current ASHRAE standard.
- Provide and install (39) new wall mounted CO_2 sensors in the breathing zone for each VAV box.
- Integrate new CO_2 sensors in the VAV box control strategy.
- Program and commission demand control ventilation (DCV) strategy to reset cooling minimum flow setpoints for the VAV boxes based on the CO_2 level. During the occupied mode, when the zone CO_2 level is below 1000ppm, VAV box cooling minimum flow will be set to the new cooling minimum flow setpoint specified by the Design Engineer. As the CO_2 level rises above 1000ppm, cooling minimum flow setpoint will increase proportionally, and vice versa.
- The outside air dampers on the RTUs serving the VAV boxes will modulate to deliver increased ventilation (above the fixed minimum) based on the occupancy.

ECM 7b - HVAC Equipment Replacement - Greenberg Municipal Complex

Replace existing packaged roof-top air-cooled air-conditioning equipment with new higher-efficiency equipment, as listed in the table below:

Existing Rooftop Units:

UNIT TAG	RTU-1	RTU-2	RTU-3	RTU-4
FACILITY	TRAFFIC & TRANSPORTATION	MUNICIAL COURT	MUNICIAL COURT	MUNICIAL COURT
YORK MODEL#	YPAL055CVB46BBBX	YPAL050CVB46BBB	DH102C00N4BAC3A	DH090C00N4BAC3A
YORK SERIAL#	RKMM005681	RKMM006582	NHMM094774	NHMM094787
NOMINAL TONS	50	48	7.3	8.6
UNIT TYPE	VAV	VAV	CONSTANT VOLUME	CONSTANT VOLUME
REFRIGERANT	R-407C	R-407C	R-22	R-22
HEAT RECOVERY	N/A	N/A	HEAT WHEEL	HEAT WHEEL

Demolition and Removal Work

- Recover and properly dispose of refrigerant as per the applicable codes.
- Remove each existing equipment electrical disconnect, and safely disconnect electrical supply.
- Disconnect equipment from existing ducting and condensate drain piping.
- Disconnect and secure existing BMS connections as necessary to perform work.
- Remove and dispose of existing HVAC equipment as listed in the table above.
- Properly dispose of all removed equipment and waste materials.

New Installation Work

Proposed Rooftop Units:

UNIT TAG		RTU-1	RTU-2	RTU-3	RTU-4
FACILITY		TRAFFIC & TRANSPORTATION	MUNICIAL COURT	MUNICIAL COURT	MUNICIAL COURT
SUPPLY CFM		17,500	14,000	2,720	2,400
O.A. CFM		1,600	2,500	1,500	1,500
APPROX. MOTOR HP		30	25	2	2
EXT. S.P. INCH W.C.		3	3	1	1.5
TOTAL S.P. INCH W.C.		4	4	1.5	2
ENT. AIR	DB °F	77.9	79.7	80	80
	WB °F	62.9	64.8	67	67
LVG. AIR	DB °F	51.94	52.91	56	57
	WB °F	50.14	50.63	56	56
TOTAL COOLING CAP. (BTUH)		599,000	576,000	103,000	88,000
SENS. COOLING CAP. (BTUH)		474,000	400,000	70,000	60,000
UNIT ELECTRICAL V/PH/HZ		480/3/60	480/3/60	480/3/60	480/3/60

UNIT TAG	RTU-1	RTU-2	RTU-3	RTU-4
FACILITY	TRAFFIC & TRANSPORTATION	MUNICIAL COURT	MUNICIAL COURT	MUNICIAL COURT
YORK MODEL#	YPAL051CVE46BBFXN	YPAL050CVE46BBFXN	J08ZJC00B4A6BAB1A1	J07ZJC00B4A6BAB1A1
REFRIGERANT	R-410A	R-410A	R-410A	R-410A

PROVIDE WITH ACOUSTIC AND SEISMIC ROOF CURB ADAPTERS.

PROVIDE 5" MIN. DEEP SEAL TRAP AND PIPE TO ROOF DRAIN. DRAIN PIPING SHALL BE PVC

RTU-1 AND RTU-2 WITH VFD CONTROL.

PROVIDE RTU-3 AND RTU-4 WITH TOTAL ENTHALPY WHEELS.

TOTAL AND SENSIBLE LOADS INDICATED INCLUDE FAN HEAT.

HEAT WHEEL FOR RTU-3: 1500 CFM; MINIMUM WHEEL EFFECTIVENESS OF 73%.

HEAT WHEEL FOR RTU-4: 1200 CFM; MINIMUM WHEEL EFFECTIVENESS OF 73%.

PROVIDE RTU-3 AND RTU-4 WITH 18 KW SUPPLEMENTAL HEATERS.

PROVIDE WITH UNIT MOUNTED DISCONNECT SWITCH.

- Furnish and install new HVAC equipment as listed in the table above at existing locations.
- Provide new curb adapters and supports as required, for the HVAC units located on the roof.
- Provide new curb flashing and sealing of roof penetrations related to this work, as required.
- Equipment supports to be compliant with local seismic and hurricane regulations.
- Provide electrical connections, with new electrical disconnect.
- Modify electrical power wiring distribution panel as needed. Existing electrical wiring will be reused as much as possible.
- Reconnect new equipment to existing ductwork reusing existing roof penetrations. If required, provide transition ductwork. Insulate any new ductwork.
- Reconnect new equipment to existing condensate drain piping.
- Startup, checkout and verify full range of operation and control features per manufacturers' startup and checkout procedures.
- Clean up of all job related debris daily. Clean up and store tools, equipment, etc. daily and remove after successful installation and operational checkout.
- Reconnect new equipment to existing BAS.
- Program new RTU sequences for operation utilizing static pressure reset and demand control (DCV) strategy as described in the Schedule 2; Section III.

ECM 8a - Dual Duct Box Replacement - POLICE STATION

Replace existing dual duct boxes serving the Police Headquarter building to convert existing constant volume dual duct system to new energy efficient pressure independent variable volume dual duct system.

Existing Dual Duct Box Schedule:

Box No.	Max Cooling CFM	Inlet Diameter (inches)
1	300	8
2	720	10
3	740	12
4	360	8
5	650	8
6	400	8
7	648	8
8	720	8
9	2060	14
10	1010	10
11	1208	12
12	1475	13
13	810	7
14	2681	16
15	970	10
16	365	6
17	710	12
18	291	6
19	193	5
20	700	9
21	731	10
22	Not used	Not used
23	312	6
24	206	6
25	2925	16
26	600	8
27	951	8
28	1546	14
29	1670	14
30	665	10
31	826	10
32	1110	10
33	300	6
34	1055	12

Box No.	Max Cooling CFM	Inlet Diameter (inches)
35	570	8
36	906	9
37	380	6
38	1400	12
39	520	7

Demolition and Removal Work

- Carefully remove existing ceiling tile and ceiling grid to permit removal of dual duct boxes. Salvage ceiling tile and grid for replacement.
- Disconnect, remove and properly dispose of existing dual duct boxes.
- Disconnect, remove and properly dispose of existing variable frequency drives (supply & return fans) on AHU-1 serving the dual duct boxes.
- Disconnect and secure existing BMS connections as necessary to perform work.
- Properly dispose of all removed equipment and waste materials.

New Installation Work

- The specifications for the proposed dual duct VAV boxes are as follows:
    - Match dual duct VAV box sizes to existing
    - 22 gauge construction
    - 3/4" fiberglass insulation
    - Controls enclosure
    - 24 VAC 50VA controls transformer
    - DDC controls factory mounted and pre-wired
- Furnish & install new dual duct VAV boxes as per manufacture's criteria and applicable local codes.
- Provide temporary storage for the new dual duct VAV boxes during construction.
- The new dual duct VAV boxes shall be located in the existing locations with ductwork extended as required for proper connections.
- Connect power to the new dual duct boxes. Reuse existing electrical devices and wiring where possible.
- Replace ductwork where damaged during installation.
- Reinstall salvaged ceiling tiles and ceiling grid.
- Reuse existing ductwork and hangers/supports where feasible.

- Furnish and install two new variable frequency drives for the AHU-1 supply and return fans.
- Connect power to the two new variable frequency drives. Reuse existing electrical devices and wiring where possible.
- Provide static pressure control programming and commissioning for the two (supply & return fan) new variable frequency drives.
- Connect and commission factory-mounted and wired controls on the dual duct boxes.
- Provide interface with existing building automation system as necessary.
- Set up 15 mins interval trends for the following points. Data to be available for a minimum of 13 months.
    - Heating cfm along with damper position
    - Cooling cfm along with damper position
    - Discharge air temperature
    - Zone temperature
- Startup, checkout and verify all modes (stages) of operation (by factory authorized representative) to include ALL unit control features per manufacturers' startup and checkout procedures.Clean up of all job related debris daily. Clean up and store tools, equipment, etc. daily and remove after successful installation and operational checkout.
- Provide post installation test and balance on VAV's and input from previous settings.

ECM 8b - Chiller Replacement - POLICE STATION

Replace one existing lower-efficiency air-cooled chiller with a new high-efficiency air-cooled chiller as listed in the table below. The new chiller will utilize environmentally friendly R-410a refrigerant.

Chiller Replacement

Facility Name		Qty.	Make	Model #	Size	Air/Water Cooled	Efficiency (kW/Ton)
Police Station (180 Lockwood Dr.)	Existing>	1	TRANE	RTAA1704XR01A3DOBG	170	Air-cooled	1.13
	Proposed>	1	YORK	YLAA0170SE46XFBBXTX	170	Air-cooled	0.7

Demolition and Removal Work

- Reclaim and properly dispose of refrigerant and oil per local codes.
- Disconnect, remove and properly dispose of chilled water piping to nearest isolation valves or as required for new installation.
- Disconnect, remove and properly dispose of existing chilled water pump.
- Disconnect, remove and properly dispose of all other materials or debris related to this installation.
- Disconnect and secure building automation system connection.
- Disconnect and secure electrical connections to the chiller.
- Disconnect, remove and properly dispose of existing 170-ton nominal capacity chiller located on the roof.

New Installation Work

1. Furnish and install one new high efficiency air-cooled chiller as listed in the table above per manufacturer's criteria and local codes:

   Chiller specifications:

   a. 170-ton nominal capacity chiller (air-cooled)

   b. Refrigerant R410A

   c. The new chiller will have:

      i. Chiller management system

      ii. BACnet capability for operation verification only by building automation system

      iii. Factory installed sound reduction

      iv. Ultra Quiet - Low speed, reduced noise fans

      v. Compressor Acoustic Sound Blankets.

d. Chiller and controls to comply with applicable regulations.

e. Furnish and install seismic restraints and vibration isolation as required.

f. Ensure new chiller has piping package to include "Y" strainer.

2. The new chiller shall be located in the existing location with chilled water and other piping extended as required for connection.

3. Furnish and install new isolation valves for supply and return at chiller on roof.

4. Provide and install one new chilled water pump per below or approved equal.

Customer Asset ID #	Facility Name	Chiller Location	Qty.	GPM	HP	TDH Ft. H2O	RPM	Type	Mfg
CHWP-1	Police Station	Mechanical Room	1	407	20	100	1750	Base Mount End Suction	B&G e-1510 3EB

5. Provide temporary cooling during the construction. Furnish and install new "T" in piping at pump so a temporary chiller can be attached during the chiller replacement work.

6. Reconnect chilled water piping to the new chiller. Match the existing pipe size.

7. Furnish and install new isolation valves at chilled water pump.

8. Furnish and install new triple duty valve at chilled water pump.

9. Furnish and install new suction diffuser at new chilled water pump.

10. Furnish and install new inertia base for new chilled water pump. Provide and install flex coupling in the piping.

11. Insulate new piping, valves and fittings as required to match existing. Re-insulate any piping where insulation was damaged during the installation.

12. Reuse existing piping, pipe fittings, pipe hangers/supports, , thermal wells, and pressure-sensor wells where feasible and serviceable.

13. Flush all new water pipe and chilled water lines, and bleed air from the system.

14. Startup, checkout and verify all modes (stages) of operation (by factory authorized representative) to include measurement and verification of "part-load" and "full-load" efficiencies, and ALL unit control features per manufacturers' startup and checkout procedures.

15. Provide water side test and balance for leaving chiller water.

Controls

1. Connect factory-mounted and wired controls.

2. Disconnect and reconnect to existing controls and control valves.

3. Provide interface with existing building automation system.

4. Set up hourly trends of totalized kWh and totalized Btus delivered. Btus will be calculated based on the flow measured during the T&B and supply and return chilled water temperatures. Data to be available for a minimum of 13 months.

Electrical

1. Connect power to the new chiller. Reuse existing electrical devices and wiring where possible. Replace devices and wiring only if found to be of insufficient size, insufficient length or in poor condition.

2. Connect power to the new chilled water pump. Reuse existing electrical devices and wiring.

3. Install kW meter for the new chiller as required for Measurement and Verification.

ECM 8c - AHU2 System Improvement - POLICE STATION

Replace an existing 46 year old pneumatically controlled single zone AHU-2 that is beyond its useful life currently serving the evidence holding area with a new single zone variable air volume AHU equipped with DDC capable of implementing demand control ventilation (DCV) strategy.

Demolition and Removal Work

- Disconnect and secure electrical connections to AHU-2.
- Disconnect, remove and properly dispose of chilled water piping to the nearest isolation valves or as required for new installation.
- Disconnect, remove and properly dispose of chilled water and hot water control valves
- Disconnect existing pneumatic system serving existingAHU-2 and plug tube ends.
- Disconnect and secure existing BAS connections as necessary to perform work.
- Disconnect, remove and properly dispose of AHU-2 located in the 2nd floor mechanical room at the Central Police Station facility.
- Disconnect, remove and properly dispose of all other materials or debris related to this project.

New Installation Work

- The specifications for the proposed AHU-2 are as follows:
    - Match heating and cooling capacities to existing AHU
    - standard gauge interior and exterior construction
    - 2" foam insulation
    - Factory mounted and wired variable frequency drive (VFD)
    - DDC controls factory mounted and pre-wired
- Furnish and install new AHU-2 as per manufacture's criteria and applicable local codes.
- The new AHU-2 shall be located in the existing location with ductwork modified as required for proper connections.
- Verify existing AHU mounting pad is of adequate size for the new AHU. If necessary, extend existing mounting pad as per the applicable local codes.
- Furnish and install seismic restraints and vibration isolation as required.
- Reconnect chilled water & hot water piping to the new AHU. Match the existing pipe size.
- Furnish and install new heating hot water and chilled water control valves.
- Connect power to the new AHU-2. Reuse existing electrical devices and wiring. If devices and wiring are found to be of insufficient size, insufficient length or in poor condition, then replace.
- Insulate all new piping, valves and fittings as required to match existing. Insulate any piping where insulation was damaged during installation.
- Reuse existing piping, pipe fittings, pipe hangers/supports, isolation valves, strainers, check valves, thermal wells, and pressure-sensor wells where feasible and serviceable.
- Reuse existing ductwork and hangers/supports where feasible.
- Furnish and install ductwork where damaged during installation.
- Furnish and install sensors, transmitters, devices etc. shipped loose with the unit.
- Connect and commission factory-mounted and wired controls.
- Furnish and install new return air temperature sensor and new return air CO2 sensor.
- Provide interface with existing building automation system as necessary.
- Startup, checkout and verify all modes (stages) of operation (by factory authorized representative) to include ALL unit control features per manufacturers' startup and checkout procedures.
- Provide air side test and balance for leaving air to spaces.

- Set up 15 mins interval trends for the following points. Data to be available for a minimum of 13 months.
    - AHU schedule (occupied/unoccupied)
    - Supply fan command and status
    - Supply fan speed
    - Return air temperature
    - Mixed air temperature
    - Discharge air temperature
    - Space temperature
    - Zone CO_2 in ppm

ECM 9 - Chiller Replacement - DOCK STREET THEATER

This ECM will Replace one existing old lower-efficiency air-cooled chiller with new high-efficiency air-cooled chiller as listed in the table below.. The new chiller will utilize environmentally friendly R-410a refrigerant.

Chiller Replacement

Facility Name		Qty.	Make	Model #	Size	Air/Water Cooled	Efficiency (IPLV)
DOCK STREET THEATRE	Existing>	1	YORK	YCAL0124EC17XBADBTXXX	124	Air-cooled	9.96
	Proposed>	1	YORK	YLAA0136SE17XFBSDTX	124	Air-cooled	15.74

Demolition and Removal Work

- Reclaim and properly dispose of refrigerant and oil per local codes.
- Disconnect, remove and properly dispose of chilled water piping to nearest isolation valves or as required for new installation.
- Disconnect, remove and properly dispose of existing chilled water pump package.
- Disconnect and secure building automation system connection.
- Disconnect and secure electrical connections to the chiller.
- Disconnect, remove and properly dispose of existing 124-ton nominal capacity chiller located on the roof.
- Disconnect, remove and properly dispose of all other materials or debris related to this installation.

New Installation Work

1. Furnish and install one new high efficiency air-cooled chiller as listed in the table above per manufacturer's criteria and local codes:

   Chiller specifications:

   a. 124-ton nominal capacity chiller (air-cooled)

   b. Refrigerant R410A

   c. The new chiller will have:

      i. Chiller management system

      ii. BACnet capability for operation verification only by building automation system

   d. Chiller and controls to comply with applicable regulations.

   e. Furnish and install seismic restraints and vibration isolation as required.

   f. Ensure new chiller has piping package to include "Y" strainer.

2. The new chiller shall be located in the existing location with chilled water and all other piping extended as required for connection.

3. Furnish and install new isolation valves for supply and return at chiller on roof.

4. Furnish and install new skid mounted chilled water pumping package consisting of two 10 HP variable speed secondary chilled water pumps and one 10 HP constant speed primary chilled water pump. The skid mounted pumping package shall include a NEMA 4 enclosure with two variable frequency drives (VFDs) for the secondary chilled water pumps. The skid mounted chilled water pumping package shall be factory wired.

5. Furnish and install shot feeder as a part of the chilled water pump package.

6. Provide heat tape for the chilled water piping.

7. Provide temporary cooling during the construction if required. Furnish and install new "T" in piping at pump so a temporary chiller can be attached during the chiller replacement work.

8. Reconnect chilled water piping to the new chiller. Match the existing pipe size.

9. Furnish and install new isolation valves at chilled water pump.

10. Furnish and install new isolation valves at chilled water pump.

11. Furnish and install new suction diffuser at new chilled water pump.

12. Furnish and install new inertia base for new chilled water pump. Provide and install flex coupling in the piping.

13. Insulate new piping, valves and fittings as required to match existing. Re-insulate any piping where insulation was damaged during the installation.

14. Reuse existing piping, pipe fittings, pipe hangers/supports, isolation valves, strainers, , thermal wells, and pressure-sensor wells where feasible and serviceable.

15. Flush all new water pipe and chilled water lines, and bleed air from the system.

16. Provide water side test and balance for chiller and pump skid.

17. Startup, checkout and verify all modes (stages) of operation (by factory authorized representative) to include measurement and verification of "part-load" and "full-load" efficiencies, and ALL unit control features per manufacturers' startup and checkout procedures.

Controls

1. Connect factory-mounted and wired controls.

2. Disconnect and reconnect to existing controls and control valves.

3. Provide interface with existing building automation system.

4. Set up hourly trends of totalized kWh and totalized Btus delivered. Btus will be calculated based on the flow measured during the T&B and supply and return chilled water temperatures. Data to be available for a minimum of 13 months.

Electrical

1. Connect power to the new chiller. Reuse existing electrical devices and wiring where possible. Replace devices and wiring only if found to be of insufficient size, insufficient length or in poor condition.

2. Connect power to the new chilled water pump package. Reuse existing electrical devices and wiring where possible.

3. Install kW meter at chiller as required for Measurement and Verification.

ECM 10 - Chiller Replacement - VRTC - DEAN BUILDING

Replace one existing old lower-efficiency air-cooled chiller with new high-efficiency air-cooled chiller as listed in the table below. The new chiller will utilize environmentally friendly R-410a refrigerant. Replacement of the old chiller will reduce future chiller repair and replacement expenditures.

Chiller Replacement

Facility Name		Qty.	Make	Model #	Size	Air/Water Cooled	Efficiency (IPLV)
VRTC – DEAN BUILDING	Existing>	1	YORK	YCAL0104EC46XCASBT	104	Air-cooled	10.3
	Proposed>	1	YORK	YLAA0101HE46XFBBXTX	100	Air-cooled	15.63

Demolition and Removal Work

- Reclaim and properly dispose of refrigerant and oil per local codes.
- Disconnect, remove and properly dispose of chilled water piping to nearest isolation valves or as required for new installation.
- Disconnect and secure building automation system connection.
- Disconnect and secure electrical connections to the chiller.
- Disconnect, remove and properly dispose of existing 104-ton nominal capacity chiller located on the ground.
- Disconnect, remove and properly dispose of all other materials or debris related to this installation.

New Installation Work

1. Furnish and install one new high efficiency air-cooled chiller as listed in the table above per manufacturer's criteria and local codes:

   Chiller specifications:

   a. 100-ton nominal capacity chiller (air-cooled)

   b. Refrigerant R410A

   c. Each new chiller will have:

      iii. Chiller management system

      iv. BACnet capability for operation verification only by building automation system

   d. Chiller and controls to comply with applicable regulations.

   e. Furnish and install seismic restraints and vibration isolation as required.

   f. Ensure new chiller has piping package to include "Y" strainer.

2. The new chiller shall be located in the existing location with chilled water and all other piping extended as required for connection.

3. Furnish and install new isolation valves for supply and return at the chiller.

4. Provide new pipe stands for pipes at the chiller.

5. Reconnect chilled water piping to the new chiller. Match the existing pipe size.

6. Furnish and install new shot feeder for the new chiller.

7. Insulate new piping, valves and fittings as required to match existing. Re-insulate any piping where insulation was damaged during the installation.

8. Reuse existing piping, pipe fittings, pipe hangers/supports, isolation valves, strainers, check valves, thermal wells, and pressure-sensor wells where feasible and serviceable.

9. Flush all new water pipe and chilled water lines, and bleed air from the system.

10. Startup, checkout and verify all modes (stages) of operation (by factory authorized representative) to include measurement and verification of "part-load" and "full-load" efficiencies, and ALL unit control features per manufacturers' startup and checkout procedures.

Controls

1. Connect factory-mounted and wired controls.

2. Disconnect and reconnect to existing controls and control valves.

3. Provide interface with existing building automation system as necessary.

4. Set up hourly trends of totalized kWh and totalized Btus delivered. Btus will be calculated based on the flow measured during the T&B and supply and return chilled water temperatures. Data to be available for a minimum of 13 months.

Electrical

1. Connect power to the new chiller. Reuse existing electrical devices and wiring where possible. Replace devices and wiring only if found to be of insufficient size, insufficient length or in poor condition.

2. Connect power to the new chilled water pump package. Reuse existing electrical devices and wiring.

3. Install kW meter as required for Measurement and Verification.

Inclusions, Exclusions and Assumptions Applicable to ECM 4 – ECM 10:

Inclusions:

- All required cranes and rigging, with city coordination of street or parking lot traffic control and closures.
- Installation to be performed to mechanical, electrical, fire, etc., local, state, national installation and operational codes in effect at the time of contract signing.
- Obtain required licenses permits and inspections.
- Submit Operations and Maintenance (O&M) documentation in Adobe Acrobat® format.
- Structural analysis.
- Startup and checkout.

Exclusions:

- Repair or replacement of defective mechanical, electrical or controls equipment, and the electrical distribution system, except the equipment described in the FIM description. Johnson Controls will identify the location of defective equipment and notify City of Charleston.
- Repair or upgrades required due to bring adjacent controls, electrical, building, and mechanical systems up to code.
- Structural modification to the existing roof structure -unless covered under separate contract.
- Overtime work caused by unforeseen circumstances beyond the control of Johnson Controls, such as or scheduling changes by City of Charleston. The cost difference between the overtime work wages and normal time work wages will be the responsibility of City of Charleston calculated as [(overtime rate – normal rate) x hours].
- Asbestos abatement and removal for this project is entirely the responsibility of City of Charleston. Johnson Controls is continuing to work with City of Charleston and our subcontractors to sufficiently identify the scope, costs and project scheduling implications of any required abatement such that City of Charleston can adequately plan for this requirement. If hazardous materials are encountered during the implementation phase, Johnson Controls will immediately stop work, take measures to reduce any contamination, and notify the City of Charleston facility manager of the possible hazardous material condition and location. Johnson Controls will then request that City of Charleston remove and dispose of the hazardous materials prior to any continuation of work. Hazardous materials encountered during the ongoing service phase of the project will remain the property and disposal responsibility of City of Charleston.
- The cost of hazardous material abatement or removal, such as asbestos, mold and lead paint that is not currently specified in the engineering scope of work. In the event hazardous materials are uncovered and abatement is beyond the ability of Johnson

Controls to abate under this contract, the FIM will be evaluated for possible removal from the scope of work or the transfer of this responsibility to City of Charleston.

- Air and water balancing will be limited only to the equipment being replaced.
- Existing building ventilation conditions and indoor air quality issues (if any, except where it is was discussed with City of Charleston during development of project and documented above) are excluded from the scope and cost of this project.
- Temporary space conditioning, unless otherwise specified.
- Engineering services, studies or analysis associated with any exclusions or work clearly outside of the scope definition.
- Roof repairs other than those directly associated with this scope of work.
- Duct cleaning and coil cleaning unless otherwise identified in a FIM Scope of Work.
- Duct work repair and/or replacement for air handling units will be limited to the confines of the mechanical room unless otherwise identified in a FIM Scope of Work.
- Resolution of existing design, service, and or distribution conditions known or unknown.
- Repair or replacement of fire and life safety systems
- Temporary space conditioning unless otherwise identified in a the Scope of Work.
- Repairs/replacement of insulation, piping or ductwork found to be corroded or rusted and unacceptable for installation of components or fittings required for installation other than what is specified in the Scope of Work

ECM 11a - Pool Enclosure and Upgrade - MLK POOL

This ECM will furnish and install a new approximately 80' Wide by 188' Long pool enclosure over the existing Martin Luther King pool. The enclosure will have an addition of an approximately 61' x 41' enclosure over the wading area.

Installation of this ECM shall not commence until month 12 of the installation schedule and upon receipt of a written Notice to Proceed by the City. Installation may commence sooner at the direction of the City accompanied with a written Notice to Proceed.

Pool Enclosure

MLK Enclosure Specifications

- Building size is approximately 80' Wide by 188' long with an addition of approximately 61" Wide by 41' long enclosure over wading area
- Structural aluminum in owner selected color choices of white or bronze baked enamel.
- 31 Retractable roof bay panels with bays in both roof slopes
- The retractable roof panels will be motorized and retractable with a panel size of 8' by 9'.
- Panels shall be poly carbonate in owner selected color of bronze tint, clear or opal.
- Sidewall #1 shall have an eave height of 10 feet containing 23 sliding glass doors with insulated and tempered glass. A 36" transom glazed in 16mm clear polycarbonate will extend from the top of the sliding glass door to eave.
- Sidewall #2 shall be the same as sidewall #1.
- Gable #1 shall contain nine (9) 80" x 68" sliding glass doors and one (1) 30" x 70' commercial swing door with panic hardware with insulated and tempered glass. The remaining area in the upper and lower gable will be glazed in 16 mm clear polycarbonate.
- Gable #2 shall contain thirteen (13) 80" x 68" sliding glass doors and one (1) 30" x 70" commercial swing door with panic hardware with insulated and tempered glass. The remaining area in the upper and lower gable will be glazed in 16 mm clear polycarbonate.

Thermal

Enclosure shall provide thermal isolation between exterior and interior structural components by santoprene or equivalent gaskets to diminish the possibility of condensation forming on the interior metal surfaces. The thermal isolation gaskets will not eliminate the possibility that condensation will form.

Water & Moisture

Enclosure shall comply with design and performance requirements specified in the building codes in effect at the time of contract signing and as specified below. In designing and engineering the work, the following principles shall be followed:

- Enclosure shall have provisions to drain the exterior face of assembly of any water entering at joints and any condensation occurring within the framing with internal weep channels.
- At design conditions no water penetration to the interior side of the assembly shall occur.
- Assembly shall be watertight to the interior subject to the interior and exterior design conditions in combination with movements occurring due to loads imposed.

Product Warranty

Manufacturer's standard 1 year warranty from customer acceptance of this measure against defects in material and labor of the work in this section; that the work will be water and weather tight, structurally sound and free from distortion and deformation under load; glazing gaskets and sealant will be free from distortion from sunlight, weather and oxidation and will be free from permanent deformation under load.

Polycarbonate:

Provide Manufacturer's standard warranty against: 10 year limited from customer acceptance of this measure.

- Defective materials and defects in manufacturing
- Discoloration.
- Hail damage

Glass:

Provide Manufacturer's standard warranty against:

- Defects in insulating glass units.
- Material obstruction of vision as a result of dust for film formation on the internal glass surfaces by any cause, under normal conditions, other than extrinsic glass breakage.
- Seal failure.

Finish:

Manufacturer's standard finish warranty.

Products

Superstructure

Framing members shall be designed to elastic deflection limits of L/180 horizontally and vertically under design loading, based on IBC 2000

The enclosure and curtain wall shall withstand the deflection limit as stated above, its own weight, forces applied by the movement of the building structure and the maximum design loads due to the pressure and suction of wind, snow, ice and rain.

Design and construct to work to provide for expansion and contraction of components as will be caused by the ambient temperature range without causing buckling, failure of joint seals, undue stress on fasteners or other effects detrimental to appearance or performance.

Design aluminum structural components in accordance with applicable standards.

Aluminum: Members shall be of extruded aluminum members 6061 T6 and 6005 T5 Structural aluminum box beam superstructure.

Aluminum Flashings: Flashings shall be 0.040 in.

Screws and Fasteners:

- Assembly screws: series 410-H stainless steel, cadmium plated tek screws and sheet metal screws. Retaining cap and perlin screws to be 18-8 stainless steel screws.
- Structural bolts: series 304 high strength stainless steel finished to match color of framing.

Glazing

Overhead glazing:

1" (25mm) extruded solar grade TEN-wall polycarbonate. I.R. gold – R..value = 4.3

The roof will provide an overall class C rating as per ASTM E 108 standards and a Class B for Spread of Flame and Intermittent Flame as per ASTM E 108 (02), sections 7 and 8.

Vertical glazing:

1" sealed insulating glass units composed of:

1/8"-3/16" clear tempered
5/8" – 3/4" air space
1/8"-3/16" clear tempered

Swing Doors

Single action panic doors, standard aluminum stile and rail type and equipped with standard panic hardware. All aluminum materials under this section shall have a minimum thickness of 1/8" unless otherwise specified or indicated. Door stiles and rails shall be one (1) piece extruded aluminum sections with not less than 1/8" wall thickness, shall be reinforced and joined by means of concealed welding of machined aluminum corner reinforcements to the extruded sections.. All doors shall be fully assembled in the factory and ready for installation prior to shipment.

Standard Hardware: Operating hardware shall be ball bearing butt hinges as supplied by the door manufacturer. Closers shall be door manufacturer's standard overhead closers. Exit devices shall be manufacturer's standard panic for the active leaf; includes cylinder, strike and pull handle. Rail sweep shall be manufacturer's standard door bottom.

Frame: 3'-4" or wide x 6'-10" or 7'-2" high aluminum door frame with a threshold.

Glazing:

- Doors to be glaze with 1" insulating glass composed of:
- ¼" clear tempered
- ½" air space
- ¼" clear tempered

Finish:

- Swing doors to be painted to match the enclosure.

Operable Windows

- Windows have thermally broken aluminum frames. The glazing shall be tempered insulated glass and will have removable screens. Operation will be sliding or crank awning type.

Motorized Roof

- Opening panels consist of glazed panels within a thermally isolated aluminum frame. The glazing shall be 25mm (1") bronze, opal or clear 5-wall polycarbonate.

Finish

- Baked enamel (duracron) white or dark bronze color.

SUBMITTALS

- Submit full scale shop drawings indicating methods of construction, location and spacing of anchorage, joinery, finishes, size, shape, thickness of framing members, relationship to adjoining work and glazing materials used.
- Submit samples of each type of glazing material and finish as required.

DELIVERY, STORAGE, AND HANDLING

- Deliver materials to site in manufacturer's original and unopened packaging.
- Store on site in a location and manner to avoid damage. Stacking shall be done in a manner that will prevent damage. Store material in a clean, dry location away from high traffic areas. Any protection on the products during transportation shall remain until installed.

Execution

Demolition and Removal Work

- Remove and properly dispose of existing blower.
- Saw cut existing concrete deck as needed for new foundations.
- Remove existing wooden structure and supports including the existing solar thermal panels and piping.

New Construction

- Install new concrete curb/foundation per local code requirements in effect at the time of

contract signing

- Stainless steel wedge/expansion type anchors supplied by manufacturer.
- Fasteners by shall be 300 series stainless steel.
- Erection:
    - The manufacturer shall assist in the erection of the enclosure system in strict accordance with approved shop drawings as supplied by manufacturer. Fastening and sealing shall be in strict accordance with manufacturer's shop drawings and installation instructions. New aluminum shall be cleaned before sealants are applied.
- Cut existing concrete deck and install new footings. Patch and repair concrete areas damaged during foundation installation.
- Furnish and install one new pool enclosure per the specifications above.
- Furnish and install four (4) Reznor's UEAS or approved equal new natural gas unit heaters, each with an approximate capacity of 310,000 Btu/hr. The units shall be mounted and installed in accordance with the manufacture's requirements. The final design and heater sizing shall be completed by the design engineer.
- Furnish and install new LED lighting. The final lighting design shall be completed by the design engineer.
- Final cleaning and physical protection of the installed materials shall be completed.

City Responsibilities

- If installed at the time of construction, city shall be responsible for the removal and disposal of the existing fabric pool cover.
- City is responsible for any ADA code compliance requirements applicable to ECM 11a.

Inclusions, Exclusions and Assumptions Applicable to ECM 11a

Inclusions:

- All required cranes and rigging are included, with city coordination of street or parking lot traffic control and closures.
- Installation to be performed to mechanical, electrical, fire, local, state, national installation and operational codes in effect at the time of contract signing, including but not limited to the 2015 International Building Code.
- Obtain required licenses permits and inspections.
- Submit Operations and Maintenance (O&M) documentation in Adobe Acrobat® format.
- Structural analysis is included.

- Startup and checkout.

Exclusions:

- Repair or replacement of defective mechanical, electrical or controls equipment, except the equipment described in the FIM description. Johnson Controls will identify the location of defective equipment and notify City of Charleston.
- Repair or upgrades required due to bring adjacent controls, electrical and mechanical systems up to code.
- Overtime work caused by unforeseen circumstances beyond the control of Johnson Controls, such as or scheduling changes by City of Charleston. The cost difference between the overtime work wages and normal time work wages will be the responsibility of City of Charleston calculated as [(overtime rate – normal rate) x hours].
- Asbestos abatement and removal for this project is entirely the responsibility of City of Charleston. Johnson Controls is continuing to work with City of Charleston and our subcontractors to sufficiently identify the scope, costs and project scheduling implications of any required abatement such that City of Charleston can adequately plan for this requirement. If hazardous materials are encountered during the implementation phase, Johnson Controls will immediately stop work, take measures to reduce any contamination, and notify the City of Charleston facility manager of the possible hazardous material condition and location. Johnson Controls will then request that City of Charleston remove and dispose of the hazardous materials prior to any continuation of work. Hazardous materials encountered during the ongoing service phase of the project will remain the property and disposal responsibility of City of Charleston.
- The cost of hazardous material abatement or removal, such as asbestos, mold and lead paint that is not currently specified in the engineering scope of work. In the event hazardous materials are uncovered and abatement is beyond the ability of Johnson Controls to abate under this contract, the FIM will be evaluated for possible removal from the scope of work or the transfer of this responsibility to City of Charleston.
- Air balancing will be limited only to the equipment being replaced.
- Existing building ventilation conditions and indoor air quality issues (if any, except where it is was discussed with City of Charleston during development of project and documented above) are excluded from the scope and cost of this project.
- Temporary space conditioning, unless otherwise specified.
- ADA code compliance requirements
- Engineering services, studies or analysis associated with any exclusions or work clearly outside of the scope definition.

ECM 11b - Miscellaneous Upgrades - MLK POOL

Johnson Controls will designate $300,000 from the Contract Price set forth on Schedule 4-4 as an allowance to fund this ECM 11b. This ECM will include some or all of the miscellaneous

upgrades to the existing MLK Pool building and surrounding area as set forth below and as directed by the City of Charleston's Parks Department.

Projects may include one or more of the following improvements:

- Retiling existing bathrooms.
- Addition of air conditioning to existing pool house.
- Removal and replacement of corroded electrical conduits, wiring and panels in existing chemical treatment room.
- Remove, repair or replace existing fence surrounding existing pool.
- Remove and disposal of existing equipment associated with existing inflatable dome.

The upgrades may consist of one or more improvements, depending on cost and available funds from the allowance. JCI agrees to implement the prescribed improvements that can be funded by the allowance, which may not necessarily include all of those listed, and agrees to show its labor, equipment and material costs on an open book basis for these specific improvements in accordance with JCI's labor and general conditions costs below plus overhead and profit at the same percentages defined in that certain Project Development Agreement by and between JCI and Customer dated March 28, 2017. To the extent that the total aggregate costs of the prescribed improvements in ECM 11b is less than $300,000, JCI will perform in-kind work and/or install additional improvements in Customer's facilities valued at the difference between the aggregate cost of these improvements and $300,000. The aggregate cost described herein shall include the costs of any engineering required.

JCI Labor Cost:	
Project Manager	$95/hr
Superintendent	$95/hr
Mechanical/Electrical Foreman	$80/hr
Mechanical/Electrical Labor	$68/hr
General Conditions Costs:	$875/day

Execution

The City of Charleston Parks Department will determine the order of priority for the improvements listed above for ECM 11b. Johnson Controls will obtain firm fixed prices on the work and present them to the City of Charleston. Upon written direction, Johnson Controls will execute the work in priority order up to the limit of the allowance.

ECM 13 - Window Replacement - ST JULIAN DEVINE

This ECM will replace five existing arched windows on the 3rd floor of St. Julian Devine with five (5) new windows of a similar look and configuration. This ECM will also replace the windows on the first and second floor with new windows of a similar look and configuration.

Demolition and Removal Work

- Demolish and properly dispose of five existing arched windows on the 3rd floor of St. Julian Devine.
- Demolish and properly dispose of windows on the first and second level not including the existing doors or sidelights.

New Installation Work

- Furnish and install new aluminum windows factory glazed with 3/4" Clear insulated SOLAR BAN 60 LOW-E glass with applied muntin grids and pre-set panning trim, with profiled exterior two piece snap trim, expanders and covers at adjacent surfaces all finished in 70% Kynar finish. Paint to match existing color
- Proposal consists of five windows in total for the third floor and the windows on the first and second floor.

Specific Inclusions:

- Removal and disposal of the existing aluminum sash for installation of new replacement windows utilizing existing window framing components.

Specific Exclusions:

- Lead or Asbestos abatement removal or abatement is not included.
- Cost of any field testing.
- Modifications required to due to existing code violations, including but not limited to the Americans with Disabilities Act (ADA) and egress, are the responsibility of the customer.
- The scope of work does not include the repair or installation of brick or other masonry materials/systems previously damaged

ECM 17 - Ice System Replacement - Maritime Center Ice System

This ECM will upgrade the existing ice making system at the Charleston Maritime Center as noted below. Installation of this ECM shall not commence until month 12 of the installation schedule and upon receipt of a written Notice to Proceed by the City. Installation may commence sooner at the direction of the City accompanied with a written Notice to Proceed.

Demolition and Removal Work

- Disconnect, remove and properly dispose of existing ice bin.
- Disconnect, remove and properly dispose of existing auger
- Disconnect, remove and properly dispose of existing compressors
- Reclaim and properly dispose of refrigerant and oil per local codes.
- Disconnect, remove and properly dispose of one existing cooling tower
- Disconnect, remove and properly dispose of existing rack and appurtenances
- Disconnect, remove and properly dispose of existing scale
- Disconnect, remove and properly dispose of existing controls
- Disconnect, remove and properly dispose of all other materials or debris related to this installation.
- .

New Installation Work

Furnish and install one new ice system as described below:

Ice Bin

- One – Model 4608-A MIP sloped bottom ice storage bin complete as follows. One 5 HP high torque vertical rake cutter bar system, One 3 HP high torque 9" diameter discharge screw extended to discharge on scale SE150, Two- 1 HP high torque 9" diameter leveling screws.
- A 2'x 3' clear acrylic access door will be provided in the rear of the bin. The outside walls and roof will be of 4" thick insulated panels.
- The inside walls will be lined with ½" HDPE plastic.
- The bin will be skid mounted for ease of shipping assembled. Approximate Storage Capacity 24,000 pounds or 12 tons. Approximate dimensions are 18'-8" long x 10'-0"wide x 10'-8" tall. Dimensions are approximate and Subject to change to insure storage capacity.
- The overall width with discharge screw will be about 12'-0".
- Power requirements for the bins are 460 volts 3 phase 60 Hz.
- A full bin -shutoff sensor for the icemaker will be provided to shut off the ice maker when the bin is full.

Ice Machine

- One – A & V Industrial Ice Machine Model AV200W.
- 20,000 lbs. of hard cracked ice in 24hrs (90d F air and 60d F water).
- All-purpose adjustable thickness ice.
- Double surface Freezing. Vertical Tube Evaporators.
- Evaporators sections, evaporator's tubes, frame, panels and ice cutter are made from type 304 stainless steel.
- R-404A Refrigerant.
- One of the city's existing cooling towers will be reused for new ice maker.

Scale

- One – SE150 Semco Electronic Scale with up to 150 pound capacity weigh hopper, 750 pound discharge Hopper and 12" discharge screw made with stainless steel and lined with ¼" HDPE. Electronic Countdown Controller with preset contacts to turn off Ice feed when desired count is reached. Includes air compressor for scale doors with filter and lubricator. Includes a ticket Printer.
- Approximate dimensions (42" x 42" x 96") Capacity approximately 25 tons an hour.

Blower Rotary Valve

- One – Refurbished customer RV158 Rotary Valve. Includes new bearings.

Blower

- Existing blower shall be reused as is except as noted above.

All Other Portions

- All other portions of the existing structure and equipment shall be reused as is unless specifically noted above.

Control Panel

- One – Control Panel 460 volt 3 phase 60 Hz to operate the above equipment and ice makers.

Warranty

- Parts only for one year from customer acceptance of this measure.

Customer Responsibilities

If customer deems necessary, customer is responsible for testing and sealing new scale after installation by a licensed scale mechanic.

Inclusions:

- All required cranes and rigging is included, with city coordination of street or parking lot traffic control and closures.
- Installation to be performed to mechanical, electrical, fire, local, state, national installation and operational codes in effect at the time of contract signing.
- Obtain required licenses permits and inspections.
- Submit Operations and Maintenance (O&M) documentation in Adobe Acrobat® format.
- Structural analysis is included.
- Startup and checkout.

Exclusions:

- Repair or replacement of defective mechanical, electrical or controls equipment, or the electrical distribution system, except the equipment described in the FIM description. Johnson Controls will identify the location of defective equipment and notify City of Charleston.
- Repair or upgrades required due to bring adjacent controls, electrical, building and mechanical systems up to code.
- Overtime work caused by unforeseen circumstances beyond the control of Johnson Controls, such as or scheduling changes by City of Charleston. The cost difference between the overtime work wages and normal time work wages will be the responsibility of City of Charleston calculated as [(overtime rate – normal rate) x hours].
- Asbestos abatement and removal for this project is entirely the responsibility of City of Charleston. Johnson Controls is continuing to work with City of Charleston and our subcontractors to sufficiently identify the scope, costs and project scheduling implications of any required abatement such that City of Charleston can adequately plan for this requirement. If hazardous materials are encountered during the implementation phase, Johnson Controls will immediately stop work, take measures to reduce any contamination, and notify the City of Charleston facility manager of the possible hazardous material condition and location. Johnson Controls will then request that City of Charleston remove and dispose of the hazardous materials prior to any continuation of work. Hazardous materials encountered during the ongoing service phase of the project will remain the property and disposal responsibility of City of Charleston.
- The cost of hazardous material abatement or removal, such as asbestos, mold and lead paint that is not currently specified in the engineering scope of work. In the event hazardous materials are uncovered and abatement is beyond the ability of Johnson Controls to abate under this contract, the FIM will be evaluated for possible removal from the scope of work or the transfer of this responsibility to City of Charleston.

- Temporary ice services, unless otherwise specified. Engineering services, studies or analysis associated with any exclusions or work clearly outside of the scope definition.
- Cost for street closures, parking, police and city coordination are excluded and the responsibility of the city.

ECM 18 - Distributed Energy Storage - Greenberg Municipal Complex

General

This FIM is installed behind the electric utility meter tied the existing electric distribution system.

The Distributed Energy Storage System will be installed to implement the following strategies.

- Peak shaving - shave peaks of electric loads and manage demand
- Power factor improvement - improve power factor of electrical system

New Equipment

The system is comprised of a 250 kVA Inverter, 275 kVA Transformer, Utility Shadow Meter, Inverter output meter, and a containerized system including two (2) 92 kWh battery racks, lighting, access doors, controls, cooling system and a fire suppression system with the following specifications:

Battery Rack Specifications:

Characteristic	Power Rack	Units
Total Energy @ 25°C	92.3	kWh
Nominal Voltage	721	Vdc
Voltage Range	588 – 823	Vdc
Dimensions (W x H x D)	520 x 2000 x 670	mm
	20.5 x 78.7 x 26.4	inches
Weight	758	kg
	1671	lbs
Part Number	BU-100P	
Battery Cells per Rack	28	
Quantity of Racks	2	

Battery Cell Specifications:

Characteristic	Power Cell	Units
Capacity @ 25°C	63.9	Ah
Total Energy @ 25°C	234	Wh
Energy Density (gravimetric)	202	Wh/kg
Temperature Range	-30 to +60	°C
	-22 to +140	°F
Li Chemistry	NMC / Graphite	
Min Full Discharge Time	0.5	hrs
Min Full Charge Time	0.5	hrs

Power Conversion System (PCS) Specifications:

Characteristic	PCS-250	Units
Continuous Power	263/250	kVA/kW
Minimum Continuous	250	kVA @ 40°C
Frequency	50/60	Hz
Transformer	275	kVA
Utility Grid Connection	480 Vac, 60 Hz, 3P 4 wire WYE interconnection	

Containerized Energy Storage System Specification:

Characteristic	BU-150P	Units
Nameplate Storage Capacity	184.6	kWh
Usable Storage Capacity	166.14	kWh
Maximum Charging Power	369.2	kW
Maximum Discharging Power	369.2	kW
Output Power	Dependent upon PCS selected	kW
DC Voltage Range	588 – 823	Vdc
AC Output Voltage	Dependent upon PCS selected	Vac
Aux Power Input	480/240 Vac,	
	3P, 60Hz,	
	10 kVA (max)	
Building Interface	JCI *Metasys*® system, ASHRAE BACnet®	
System Monitoring	Local and Remote	
Fire Detection	Tyco FAST2000™/2	
Fire Suppression	Novec™ 1230 Aerosol	
Operating Temperature	0 to +40 (Derating below +18 or above +28)	°C
	+32 to +104 (Derating below +64 or above +82)	°F
Operating Humidity	5% – 85% relative humidity, non-condensing	
Cooling System	2 Ton Unit	
Enclosure	E-10	

Characteristic	BU-150P	Units
Enclosure Dimensions (L,W,H)	10 x 8 x 8.5	ft
Approximate Weight	3800	lbs

Scope of Work

- Apply for an Interconnection Agreement with the Electric Utility.
- Engineer, furnish and install new elevated structure and foundation for placement of the Containerized Energy Storage System.
- Provide and install new PCS Inverter indoors near to the interconnection point.
- Provide and install new Facility Shadow Meter at main service point.
- Provide and install new BU-150 on the 6-foot elevated structure and foundation.
- Install DC wire and conduit from the BU-150 from outdoors to the indoor PCS-250 installation location.
- Install AC wire, conduit and overcurrent protection for the BU-150 auxiliary power from an existing panel in the facility to the BU-150.
- Install communications conduit and wire from the New Facility Shadow Meter to the BU-150.
- Install AC wire, conduit, and overcurrent protection between PCS-250 and the point of connection with the building distribution system.
- Startup, checkout and verify full range of operation and control features per startup and checkout procedures.
- Clean up of all job related debris daily. Clean up and store tools, equipment, etc. daily and remove after successful installation and operational checkout.
- Program new sequences and setpoints for optimal operation.

Inclusions, Exclusions and Assumptions:

Inclusions:

- All required cranes and rigging are included, with city coordination of street or parking lot traffic control and closures.
- Installation to be performed to mechanical, electrical, fire, local, state, national installation and operational codes in effect at the time of contract signing.
- Obtain all required licenses permits and inspections.
- Submit Operations and Maintenance (O&M) documentation in Adobe Acrobat® format.
- Structural analysis is included.
- Startup and checkout.
- Fees associated with utility interconnection studies or interconnection approval.

Exclusions:

- Network Interconnection. To provide remote monitoring and integration into in a building control system, a network interconnection to the facility network or the global internet is required. The DESS shall be located where there is the ability to extend network access. A minimum of 10Mbps Ethernet CAT5 connection is required with the ability to deliver 20G bits of data per month.
- For the location in which the PCS-250 Inverter is placed inside of the building, sufficient cooling for the room must me capable of maintaining 35 DegC or less ambient temperature.
- Structural modification to any existing structures is excluded from this scope of work unless covered under separate contract.
- Repair or replacement of defective mechanical, electrical or controls equipment, or the electrical distribution system, except the equipment described in the FIM description. Johnson Controls will identify the location of defective equipment and notify the City of Charleston.
- Repair or upgrades required due to bring adjacent controls, electrical and mechanical systems up to code.
- Overtime work caused by unforeseen circumstances beyond the control of Johnson Controls, such as or scheduling changes by customer. The cost difference between the overtime work wages and normal time work wages will be the responsibility of customer calculated as [(overtime rate – normal rate) x hours].
- Asbestos abatement and removal for this project is entirely the responsibility of City of Charleston. Johnson Controls is continuing to work with City of Charleston and our subcontractors to sufficiently identify the scope, costs and project scheduling implications of any required abatement such that City of Charleston can adequately plan for this requirement. If hazardous materials are encountered during the implementation phase, Johnson Controls will immediately stop work, take measures to reduce any contamination, and notify the City of Charleston facility manager of the possible hazardous material condition and location. Johnson Controls will then request that City of Charleston remove and dispose of the hazardous materials prior to any continuation of work. Hazardous materials encountered during the ongoing service phase of the project will remain the property and disposal responsibility of City of Charleston.
- The cost of hazardous material abatement or removal, such as asbestos, mold and lead paint that is not currently specified in the engineering scope of work. In the event hazardous materials are uncovered and abatement is beyond the ability of Johnson Controls to abate under this contract, the FIM will be evaluated for possible removal from the scope of work or the transfer of this responsibility to City of Charleston.
- Engineering services, studies or analysis associated with any exclusions or work clearly outside of the scope definition.

Warranty

- Degradation warranty for power cells and racks – three year standard warranty included from FIM acceptance.
- Inverter Warranty Standard 5 year warranty included

ECM 19 - SCE&G Billing Error Correction - Greenberg

General

A billing error was identified during the analysis of utility bills for the Greenberg Complex. The billing error appeared to be caused due to electric meter change-out by SCE&G in the month of July-2016. The monthly billing demand for that month was calculated by adding kVA from both old and new meters instead of taking larger of the two, as listed below:

	Meter#	Demand (kVA)	
New Meter Demand	002217929	542	[A]
Old Meter Demand	002217938	278	[B]
Monthly Billed Demand (July-2016)		820	[C] = [A] + [B]

This error not only caused overbilling in the month of July-2016 but it was carried over for next several months before it was reported. SCE&G acknowledged and issued a credit in the amount of $34,196.26 on the May-2017 bill for the overbilling that occurred until then. This billing error would have persisted next 12 months if it had not been identified and reported.

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CUSTOMER SERVICE	ACCOUNT NUMBER	Page 2 of 2
1-800-251-7234	0-1898-0003-2261	

STATEMENT DATE
May 30 2017

Payment Options

By Mail: Pay by check or money order in the enclosed envelope.

Online: Visit sceg.com to pay directly from your bank account or credit card.

By Phone: Call 1-800-450-9160, toll-free, 24 hours a day to pay using your credit card, debit card or directly from your bank account. There is a fee of $3.50 per transaction that BillMatrix receives for providing this service. Additional limitations may apply.

Business Office:
MT PLEASANT OFFICE, 1277 CHUCK DAWLEY BLVD, MT PLEASANT SC 29464

Authorized Payment Agencies:
Visit an authorized payment location near you to pay in person. There is no fee associated with service at an authorized payment location.

PIGGLY WIGGLY #182, 6780 RIVERS AVE, NORTH CHARLESTON SC 29406

R&S WHOLESALE, 4318 RIVERS AVE, N CHARLESTON SC 29405

ALL SC AND NC WALMARTS

Unauthorized Payment Agencies:
Additional payment centers may exist in your area that are not SCE&G authorized payment locations. While these unauthorized locations may accept your SCE&G payment, they will charge a fee for doing so, and your payment will be delayed in reaching SCE&G.

Gas Charges

RATE PLAN
031 - Firm General Gas Service

METER READING
Gas Meter read on 05/25/17 at 09:34 am
(Next scheduled read date 6/27/17)

METER NUMBER
001164034

BILLING PERIOD	DAYS	CURRENT	PREVIOUS	P-COMP	USAGE(CCF)	BTU FACTOR	THERMS
4/25/17 - 5/25/17	30	(31640	- 31640)	X 1.13374	= 0	X 1.0300	= 0

Base - 0 Therms X $ 1.029000	0.00
State Sales Tax at 9.00 %	1.63
Total Gas Charges	**$19.79**

Other Charges & Credits

Adjustment for Prior Months	-34,196.26
Transfer to Acct #0-1898-0000-8474	12,845.57
Total Other Charges & Credits	**-$21,350.69**

Electronic check conversion. When you provide a check as payment, you authorize us either to use information from your check to make a one-time electronic fund transfer from your account or to process the payment as a check transaction.

Refer to Exhibit 1, ECM 19 for detailed information on estimated overbilling over the 12-month period.

ASSURED PERFORMANCE GUARANTEE

I. PROJECT BENEFITS

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

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

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

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

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

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

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

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

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

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

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

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

B. Project Benefits Summary. Subject to the terms and conditions of this Agreement, JCI and Customer agree that Customer will be deemed to achieve a total of $7,751,761 in Non-Measured Project Benefits and JCI guarantees that Customer will achieve a total of $9,821,586 in Measured Project Benefits during the term of this Agreement, for Total Project Benefits of $17,573,347 as set forth in the Total Project Benefits table below.

Total Project Benefits

Year	Utility Cost Avoidance*	Operations & Maintenance Cost Avoidance**	Future Capital Cost Avoidance**	Annual Project Benefits
Installation Period	$176,853	$-	$-	$176,853
1	$563,113	$90,111	$405,053	$1,058,277
2	$531,514	$92,814	$405,053	$1,029,381
3	$547,459	$95,598	$405,053	$1,048,111
4	$563,883	$98,466	$405,053	$1,067,403
5	$580,800	$101,420	$405,053	$1,087,273
6	$598,224	$104,463	$405,053	$1,107,740
7	$616,170	$107,597	$405,053	$1,128,821
8	$634,655	$110,825	$405,053	$1,150,534
9	$653,695	$114,149	$405,053	$1,172,898
10	$673,306	$117,574	$405,053	$1,195,933
11	$693,505	$121,101	$405,053	$1,219,660
12	$714,310	$124,734	$405,053	$1,244,098
13	$735,740	$128,476	$405,053	$1,269,269
14	$757,812	$132,330	$405,053	$1,295,196
15	$780,546	$136,300	$405,053	$1,321,900
Total	$9,821,586	$1,675,959	$6,075,802	$17,573,347

*Utility Cost Avoidance 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.
** 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 3% for Operations & Maintenance Cost Avoidance and 0% for Future Capital Cost Avoidance.

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

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

C. Project Benefits Shortfalls or Surpluses.

(i) *Project Benefits Shortfalls*. If an Annual Project Benefits Shortfall occurs for any one year of the Guarantee Term, JCI shall, at its discretion and in any combination, (a) set off the

amount of such shortfall against any unpaid balance Customer then owes to JCI, (b) where permitted by applicable law, increase the next year's amount of Annual Project Benefits by the amount of such shortfall, (c) pay to Customer the amount of such shortfall, or (d) subject to Customer's agreement, provide to Customer additional products or services, in the value of such shortfall, at no additional cost to Customer.*

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

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

II. NON-MEASURED PROJECT BENEFITS

Operating and Capital Cost Avoidance Summary

ECM	O&M Cost	Annualized O&M Sav	A/P Factor*	Equipment Life	Annualized Future Capital Avoidance
ECM 1 - Interior Lighting Upgrades and Controls	-	$11,063	-	-	-
ECM 2a - Parking Garage Lighting - PARKING GARAGE - CAMDEN EXCHANGE	-	$928	0.0838	15	$16,078
ECM 2b - Parking Garage Lighting - PARKING GARAGE - CHARLESTON PLACE	-	$675	0.0838	15	$11,685
ECM 2c - Parking Garage Lighting - PARKING GARAGE - CONCORD	-	$703	0.0838	15	$11,728
ECM 2d - Parking Garage Lighting - PARKING GARAGE - GAILLARD	-	$755	0.0838	15	$13,084
ECM 2e - Parking Garage Lighting - PARKING GARAGE - LIBERTY & ST PHILLIPS	-	$594	0.0838	15	$10,285
ECM 2f - Parking Garage Lighting - PARKING GARAGE - MAJESTIC SQUARE	-	$741	0.0838	15	$12,879
ECM 2g - Parking Garage Lighting - PARKING GARAGE - MARION SQUARE	-	$450	0.0838	15	$7,747
ECM 2h - Parking Garage Lighting - PARKING GARAGE – QUEEN ST	-	$651	0.0838	15	$5,441
ECM 2i - Parking Garage Lighting - PARKING GARAGE - SC AQUARIUM	-	$2,632	0.0838	15	$45,582
ECM 2j - Parking Garage Lighting - PARKING GARAGE - VRTC	-	$2,008	0.0838	15	$33,145
ECM 2l - Parking Garage Lighting - PARKING GARAGE - PRIOLEAU & EAST BAY	-	$534	0.0838	15	$9,250
ECM 3a - HVAC Building Controls Improvements	-				$0
ECM 4 - R22 Equipment Replacement	$55,913	$3,728	0.0838	15	$79,786
ECM 5a - Ground Loop Improvements - City Hall	-	-	0.0672	20	$3,285
ECM 5b - Control Improvements - City Hall	-	-	-	-	$0
ECM 6a -VRF HVAC System Upgrades - Joe Riley Ballpark	$24,570	$1,638	0.0672	20	$44,918
ECM 7a - HVAC Controls Improvements - Greenberg Municipal Complex	-	-	-	-	$0
ECM 7b - HVAC Equipment Replacement - Greenberg Municipal Complex	$18,113	$1,208	0.0672	20	$14,922
ECM 8a - Dual Duct Box Replacement - POLICE STATION	-	-	0.0672	20	$11,689
ECM 8b - Chiller Replacement - POLICE STATION	$26,775	$1,785	0.0672	20	$9,113
ECM 8c - AHU2 System Improvement - POLICE STATION	-	-	0.0672	20	$1,317
ECM 9 - Chiller Replacement - DOCK STREET THEATER	$19,530	$1,302	0.0672	20	$6,798
ECM 10 - Chiller Replacement - VRTC - DEAN BUILDING	$16,380	$1,092	0.0672	20	$5,840
ECM 11a - Pool Enclosure and Upgrade - MLK POOL	-	$55,000	-	-	-
ECM 11b - Misc Upgrades - MLK POOL	-	-	0.0672	20	$13,107
ECM 13 - Window Replacement - ST JULIAN DEVINE	-	-	0.0672	20	$12,905
ECM 17a - Ice System Replacement - Maritime Center Ice System	-	$5,000	0.0672	20	$24,467
ECM 18 - Distributioned Energy Storage - Greenberg Municipal Complex	-	-	-	-	-
ECM 19 - SCE&G Billing Error Correction - Greenberg	-	-	-	-	-

051

Factor	Name	Formula	Purpose
(A/P, i, N)	Capital Recovery Factor	$\frac{i(i+1)^N}{(1+i)^N - 1}$	Takes a single payment and spreads it into a uniform series over N later periods. The first payment in the series occurs one period later than P.

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.

Annualized Future Capital Avoidance

Annualized Future Capital Avoidance has been estimated as follows:

(Equipment Cost + Installation Cost)*Capital Recovery Factor where N = the anticipated equipment life

Lighting Material (ECM 1 & 2)

The City of Charleston shall see a reduction in the cost of lighting materials as a direct result of the implementation of ECM 1 and 2. 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 equation:

((Old lamp cost/3-year life)+(old ballast/5-year life))*Quantity of fixtures = Material Savings

R22 Replacement

ECM 4 - R22 Equipment Replacement
ECM 6a -VRF HVAC System Upgrades - Joe Riley Ballpark
ECM 7a - HVAC Controls Improvements - Greenberg Municipal Complex
ECM 7b - HVAC Equipment Replacement - Greenberg Municipal Complex
ECM 8a - Dual Duct Box Replacement - POLICE STATION
ECM 8b - Chiller Replacement - POLICE STATION
ECM 8c - AHU2 System Improvement - POLICE STATION
ECM 9 - Chiller Replacement - DOCK STREET THEATER
ECM 10 - Chiller Replacement - VRTC - DEAN BUILDING
ECM 17a - Ice System Replacement - Maritime Center Ice System

The City of Charleston shall see a reduction in expenses associated with providing R22 refrigerate as a direct result of the implementation of these ECMs. R22 refrigerant is in the process of being phased out under the Montreal Protocol. As a result, the City of Charleston as seen a steep increase in the cost of R22 refrigerant which is expected to accelerate as the phase-out deadline approaches.

JCI modeled the R22 refrigerant savings by creating a model of current refrigeration usage that factors in the amount of refrigerant per system, the expected repair or replacement interval, the life span of the equipment and the current cost of R22 refrigerant. A sample calculation is included below:

ECM 4	Value	Notes	Annualized
# of Units	71	2-4 lbs per ton on cooling	
Avg. Cooling Capacity	5		
Refrigerant lbs per ton of cooling	3		
Cost of R22	$ 25	per lb	
Replace Frequency	7	years	
Total Tons	355		
Total lbs of Refrigerant	1065		
Average Life of Equipment	15	years	
Refrigerant re-charge over the life of equipment	2		
Total lbs of Refrigerant	2,282		
Total Estimated Cost of Refrigerant	$ 55,913		$ 3,727.50

ECM 11a - Pool Enclosure and Upgrade - MLK POOL

The City of Charleston shall see a reduction in operating and maintenance expenses associated with replacing the existing removable fabric pool cover with a fixed pool enclosure. A summary of those expense reduction is as noted below:

Operating and Maintenance Expenses	Cost Avoidance	Notes
Maintenance on dome equipment	$ 5,500	
Dome transportation	$ 4,500	
Maintenance on dome	$ 5,000	
Dome storage	$ 10,000	50'x50' space at $4.00/sf
Solar thermal maintenance	$ 25,846	
Cost of water to fill (need to empty to take down cover)	$ 4,154	
	$ 55,000	

III. MEASUREMENT AND VERIFICATION METHODOLOGIES

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

Option A
Retrofit Isolation: Key Parameter Measurement

Measured Project Benefits are determined by partial field measurement of the energy use of the system(s) to which an Improvement Measure was applied separate from the energy use of the rest of the facility. Measurements may short-term, long-term, or continuous.

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

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

ECM 2 - Parking Garage Lighting
ECM 3a - HVAC Building Controls Improvements
ECM 3b - HVAC Building Controls Fire Stations
ECM 4 - R22 Equipment Replacement
ECM 5a - Ground Loop Improvements - City Hall
ECM 5b - Control Improvements - City Hall
ECM 6a -VRF HVAC System Upgrades - Joe Riley Ballpark
ECM 7a - HVAC Controls Improvements - Greenberg Municipal Complex
ECM 7b - HVAC Equipment Replacement - Greenberg Municipal Complex
ECM 8a - Dual Duct Box Replacement - POLICE STATION
ECM 8b - Chiller Replacement - POLICE STATION
ECM 8c - AHU2 System Improvement - POLICE STATION
ECM 9 - Chiller Replacement - DOCK STREET THEATER
ECM 10 - Chiller Replacement - VRTC - DEAN BUILDING
ECM 13 - Window Replacement - ST JULIAN DEVINE
ECM 18 - Distributed Energy Storage - Greenberg Municipal Complex

Option B
Retrofit Isolation: All Parameter Measurement

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

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

ECM 1 - Interior Lighting Upgrades and Controls

Option C
Whole Facility

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

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

ECM 11a - Pool Enclosure and Upgrade - MLK POOL

Option D
Calibrated Simulation

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

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

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

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

None

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

Customer agrees to notify JCI, within fourteen (14) days, of (i) any actual or intended change, whether before or during the Guarantee Term, in the use of any facility, equipment, or Improvement Measure to which this Schedule applies; (ii) any proposed or actual expansions or additions to the premises or any building or facility at the premises; (iii) a change to utility services to all or any portion of the premises; or (iv) any other change or condition arising before or during the Guarantee Term that reasonably could be expected to change the amount of Project Benefits realized under this Agreement.

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

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

Description of Measurement and Verification Methodologies by ECMs:

ECM 1 - Interior Lighting Upgrades and Controls

The savings associated with this ECM will be verified using IPMVP VOLUME I, EVO 10000 – 1:2012, Option B, Retrofit Isolation with All Parameter Measurement. 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.

Key Parameter	Measurement Frequency	Measurement Description
Pre- and Post-retrofit Fixture Power Draw (kW)	One-time	The measured post-retrofit lighting fixture wattages from the last phase (Phase II) of the Performance Contract were used as pre-retrofit fixture wattages for this phase. Measured wattages were used when possible. In some situations, such as when a certain type of lighting fixture was not available by itself on a switch, typical wattages as published by ANSI (American National Standards Institute) were used. The post-retrofit wattage of the impacted fixtures will be measured one time on a sample of fixtures meeting the same sampling criteria. The savings will be updated.
Burn Hours	Short-term	Mutually agreed burn hours by predominant space types from the last phase (Phase II) of the Performance Contract were used for this phase. The table below shows the average annual baseline burn hours by space type. These values will not be measured again.
Coincident Factor	Short Term	The coincident factor is calculated based on the number of fixtures in a given space type that were logged to be operating at the same time during the on peak period and is agreed to remain at the same value after the retrofit. The coincident factors by room/space types are as listed in the table below with pre and post burn hours.

Following table summarizes existing fixture codes and corresponding average power draws.

Existing Component Code	Existing Fix Qty.	Exist System Wattage
2X28T8EBN	2,271	42.0
3X28T8EBN	703	64.0
4X28T8EBN	604	84.0
2X32T8U6EBN	437	59.0
1X13CFLSI	403	12.7

Existing Component Code	Existing Fix Qty.	Exist System Wattage
1X40INCA	364	40.0
1X1000MH	357	1,080.0
1X32CFL4P	325	35.5
1X26CFL4P	322	29.0
1X250MH	302	295.0
1X23CFLSI	230	23.0
1X74LEDF	218	0.0
2X28T8EBN	214	0.0
1X150MH	212	181.1
1X18CFLSI	185	18.0
1X75INCA	179	75.0
1X60INCA	159	60.0
1X50HAL	148	50.0
2X34T12MB	145	0.0
2X34T12MB	137	72.0
1X3LEDEXIT	136	3.0
1X10LEDF	128	10.0
2X26CFL4P	128	51.0
1X25INCA	119	25.0
6X28T8EBHEL2	117	126.0
1X400MH	110	459.9
1X100MH	108	126.1
1X75HAL	106	75.0
1X15LEDSI	99	15.0
3X28T8EBN2	96	76.0
2X40CFLBX	90	85.0
2X17T8EBN	82	33.0
2X60T12SLMB	76	123.0
3X17T8EBN	76	47.0
4X34T12MB2	74	144.0
1X24CFLBX	71	32.0
2X32T8EBN	71	58.4
1X1500MH	68	1,610.0
3X25INCA	66	75.0
1X175MH	64	215.0
1X5LEDSI	64	5.0
4X34T12MB	64	144.0
1X28T8EBN	59	26.0
2X100INCA	55	200.0
1X40HAL	54	40.0
2X20INCEXIT	54	40.0
3X40CFLBX	54	133.0
1X10LEDSI	53	10.0

Existing Component Code	Existing Fix Qty.	Exist System Wattage
1X400HPS	50	463.2
1X70MH	45	95.0
2X34T12U6MB	43	84.0
1X17LEDSI	42	17.0
2X22CFL2P	40	54.0
6X28T8EBHEL2	38	0.0
4X28T8EBN2	37	99.0
1X250HAL	30	250.0
1X45HAL	30	45.0
1X50MH	30	64.0
1X5LEDF	30	5.0
2X13CFLSI	30	26.0
3X40INCA	30	120.0
1X13CFLSI	26	0.0
1X200LEDF	24	0.0
8X40CFLBX	24	280.0
1X40CFLBX	22	46.0
4X40INCA	22	160.0
1X3LEDEXIT	21	0.0
1X250HPS	20	293.3
1X300HAL	19	300.0
1X70HPS	19	95.0
2X23CFLSI	17	46.0
1X150HPS	16	186.2
1X40LEDF	16	40.0
4X18CFLSI	16	72.0
1X30LEDF	14	30.0
1X50LEDF	14	50.0
6X54T5HOEBHPS2	14	362.0
2X40INCA	13	80.0
1X300LEDF	12	300.0
2X42CFL4P	12	93.0
2X54T5HOEBHPS	12	117.0
2X60INCA	11	120.0
3X28T8EBN	11	0.0
DRINK	11	400.0
4X60T12SLMB2	9	246.0
1X150HPS	8	0.0
1X60INCA	8	0.0
2X18CFLSI	8	36.0
4X28T8EBN	8	0.0
1X13CFLGU24	7	13.0
1X17T8EBN	7	20.0

Existing Component Code	Existing Fix Qty.	Exist System Wattage
1X20LEDF	7	20.0
1X500INCA	7	500.0
3X60INCA	7	180.0
1X100LEDF	6	100.0
1X18CFLSI	6	0.0
1X18CFQ2P	6	26.0
1X34T12MB	6	43.0
1X54T5HOEBHPS	6	64.0
2X26CFL2P	6	51.0
3X13CFlSI	6	39.0
1X175MV	5	205.0
1X7CFL2P	5	10.0
1X7LEDF	5	7.0
2X9CFLEXIT	5	20.0
2XLEDT4FT-L	5	28.0
3X18CFLSI	5	54.0
4X32T8EBN	5	113.3
4X60INCA	5	240.0
1X13CFQ2P	4	17.0
1X26CFL4P	4	0.0
1X80LEDF	4	80.0
2X32CFL2P	4	62.0
4X54T5HOEBHPS2	4	234.0
SNACK	4	180.0
1X100HPS	3	138.0
1X26CFL2P	3	32.0
1X32CIRCMB	3	31.0
1X50HPS	3	66.0
1X6LEDSI	3	6.0
2X13CFL2P	3	31.0
2X14T5EBHPS	3	33.0
3X60T12SLMB	3	210.0
1X175MH	2	0.0
1X18CFLBX	2	24.0
1X23CFLSI	2	0.0
1X25T8EBN	2	24.0
1X32T8EBN	2	27.0
2X10LEDSI	2	20.0
2X17T8EBN	2	0.0
2X7CFL2P	2	21.0
3X23CFLSI	2	69.0
4X17T8EBN	2	0.0
1X28T8EBN	1	0.0

Existing Component Code	Existing Fix Qty.	Exist System Wattage
1X41LEDF	1	41.0
2X20T12MB	1	50.0
2X25T8EBN	1	46.0
2X30T12MB	1	74.0
3X34T12MB2	1	115.0
4X17T8EBN	1	61.0

Following table summarizes average annual burn hours by room types and corresponding coincidence factors used for estimating savings for this ECM:

Room Type / Usage Group	Existing Burn Hours	Proposed Burn Hours	Coincidence Factor
24/7 High Burn Hours	8,760	8,760	100%
Art Gallery	2,600	2,600	N/A
Break room	2,600	2,600	90%
Break room - Sensored Post-retrofit	2,600	1,820	N/A
Cafeteria	2,600	2,600	90%
Cafeteria - Already Sensored	1,820	1,820	90%
Cafeteria - Sensored Post-retrofit	2,600	1,820	90%
Community/ Recreation	2,600	2,600	N/A
Community/ Recreation - Already Sensored	1,820	1,820	N/A
Community/ Recreation - Sensored Post-retrofit	2,600	1,820	N/A
Community/Recreation (Low Hrs)	1,500	1,500	N/A
Community/Recreation (Low Hrs) - Sensored Post-retrofit	1,500	1,050	N/A
Conference Room	2,600	2,600	N/A
Conference Room - Sensored Post-retrofit	2,600	1,820	N/A
Court Room/Trial Areas	2,600	2,600	90%
Elevator	8,760	8,760	100%
Exit Signs	8,760	8,760	100%
Exterior	4,380	4,380	10%
Fire House	2,600	2,600	N/A
Fire House - Already Sensored	1,820	1,820	N/A
Fire House - Sensored Post-retrofit	2,600	1,820	N/A
Golf	2,600	2,600	N/A
Golf - Already Sensored	1,820	1,820	N/A
Hallway	2,600	2,600	90%
Hallway - Already Sensored	1,820	1,820	90%

Room Type / Usage Group	Existing Burn Hours	Proposed Burn Hours	Coincidence Factor
Kitchen	2,600	2,600	N/A
Kitchen - Sensored Post-Retrofit	2,600	1,820	N/A
Living Quarters/Bunk Rooms	500	500	N/A
Lobby/Entry Vestibule	2,600	2,600	N/A
Maritime Center	2,600	2,600	N/A
Maritime Center - Already Sensored	1,820	1,820	N/A
Maritime Center - Sensored Post-retrofit	2,600	1,820	N/A
Mechanical/Electrical Rooms	500	500	90%
Office Support	2,600	2,600	90%
Office Support - Already Sensored	1,820	1,820	90%
Office Support - Sensored Post-retrofit	2,600	1,820	90%
Open Office	2,600	2,600	90%
Open Office - Sensored Post-retrofit	2,600	1,820	90%
Park Facility	1,000	1,000	N/A
Park Facility - Sensored Post-retrofit	1,000	700	N/A
Parks Dept	2,600	2,600	N/A
Parks Dept - Sensored Post-retrofit	2,600	1,820	N/A
Police	2,600	2,600	90%
Police - Sensored Post-retrofit	2,600	1,820	90%
Pool (Interior)	2,600	2,600	N/A
Pool (Interior) - Sensored Post-retrofit	2,600	1,820	N/A
Private Office	2,600	2,600	90%
Private Office - Already Sensored	1,820	1,820	90%
Private Office - Sensored Post-retrofit	2,600	1,820	90%
Public Services	2,600	2,600	N/A
Public Services - Already Sensored	1,820	1,820	N/A
Public Services - Sensored Post-retrofit	2,600	1,820	N/A
Restroom	2,600	2,600	90%
Restroom - Already Sensored	1,820	1,820	90%
Restroom - Sensored Post-retrofit	2,600	1,820	90%
Retail	2,600	2,600	N/A
Slave Mart	2,600	2,600	N/A
Stadium (interior)	500	500	N/A
Stadium (interior)- Already Sensored	350	350	N/A
Stadium (interior) - Sensored Post-retrofit	500	350	N/A
Stairwell	8,760	8,760	100%
Stairwell - Sensored Post-retrofit	8,760	6,132	100%
Storage	500	500	90%
Storage - Already Sensored	350	350	N/A

Room Type / Usage Group	Existing Burn Hours	Proposed Burn Hours	Coincidence Factor
Storage - Sensored Post-retrofit	500	350	N/A
Tennis (interior)	2,600	2,600	N/A
Tennis (interior) - Sensored Post-retrofit	2,600	1,820	N/A
Theater	2,500	2,500	N/A
Theater - Sensored Post-retrofit	2,500	1,750	N/A
Utility/Janitor Closets	500	500	N/A
Visitor Center	2,600	2,600	N/A
Visitor Center - Sensored Post-retrofit	2,600	1,820	N/A
Warehouse	2,600	2,600	N/A

Equations for Calculating Lighting Retrofit Savings

Demand (kW)

$$Connected\ kW\ Saving = \Sigma_u [\ (kW/Fixture_{baseline} \times Quantity_{baseline} - kW/Fixture_{post} \times Quantity_{post})]_{t,u}$$

$$Actual\ kW\ Savings = \Sigma_u [\ Connected\ kW\ Savings_u \times Coincident\ Factor_u]_{t,u}$$

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
$Quantity_{baseline}$ =	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 multiplier to account for Demand Diversity of each specific usage group u.

Examples of usage groups include "hallways" and "offices".

Demand savings apply only to Greenberg Complex facility.

Energy (kWh)

$$kWh\ Savings_{Lighting} = \Sigma_u [Connected\ kW\ Savings_u \times Burn\ Hours]_{t,u}$$

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 u

HVAC Impact

Additional electrical savings will be achieved because the reduced lighting load will in turn reduce cooling loads at the facilities. Heating loads will similarly increase. These impacts were calculated using the Rundquist method as documented in the November 1993 ASHRAE Journal.

Fraction of Lighting Savings as Air Cooling Savings = Fraction of the Year of the Cooling Season x Lighting Load Met by Mechanical Cooling / System's Coefficient of Performance

NOTE: The HVAC savings only applied to lighting retrofits in the conditioned spaces.

The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured			
	Electric Consumption	Electric Demand	Natural Gas	Water
ECM 1	1,556,177 kWh	285 kW	0 Therms	0 kGal.

Refer to Exhibit 1, ECM 1 and 2 (electronic attachment) for the detailed expected savings calculations for ECM-1.

ECM 2 - Parking Garage Lighting Upgrades

The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 - 1:2012, Option A, Retrofit Isolation with Key Parameter Measurement. 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.

Key Parameter	Measurement Frequency	Measurement Description
Pre- and Post-retrofit Fixture Power Draw (kW)	One-time	The measured post-retrofit lighting fixture wattages from the last phase (Phase II) of the Performance Contract were used as pre-retrofit fixture wattages for this phase. Measured wattages were used when possible. In some situations, such as when a certain type of lighting fixture was not available by itself on a switch, typical wattages as published by ANSI (American National Standards Institute) were used. The post-retrofit wattage of the impacted fixtures will be measured one time on a sample of fixtures meeting the same sampling criteria. The savings will be updated.
Burn Hours For lighting other	Short-term	Mutually agreed burn hours by predominant space types from the last phase (Phase II) of the

Key Parameter	Measurement Frequency	Measurement Description
than Parking Garage		Performance Contract were used for this phase. The table below shows the average annual baseline burn hours by space type. These values will not be measured again.

Following table summarizes existing fixture codes and corresponding average power draws.

Existing Fixture Code	Existing Fix Qty.	Average Fixture Wattage
1X74LEDF	2,771	74.0
2X28T8EBN	585	42.0
1X28T8EBN	389	26.0
2X34T12MB	216	72.0
1X150MH	190	181.1
1X100LEDF	116	100.0
1X3LEDEXIT	63	3.0
1X23CFLSI	50	23.0
1X5LEDF	48	5.0
1X175MH	47	215.0
1X40LEDF	46	40.0
4X28T8EBN	38	84.0
1X200LEDF	37	200.0
1X400MH	24	459.9
3X28T8EBN	20	64.0
1X50LEDF	16	50.0
1X250MH	14	295.0
1X100IND	10	108.5
1X10LEDF	9	10.0
1X150HPS	6	186.2
2X17T8EBN	6	33.0
DRINK	5	400.0
2X18CFL2P	4	38.0
2X26CFL4P	4	51.0
1X18CFLSI	3	18.0
1X150INCA	2	150.0
1X32CFL4P	2	35.5
1X10LEDSI	1	10.0
1X40INCA	1	40.0
2X20T12MB	1	50.0
2X9CFLEXIT	1	20.0
4X34T12MB2	1	144.0

Existing Fixture Code	Existing Fix Qty.	Average Fixture Wattage
SNACK	1	180.0

Following table summarizes average annual burn hours by room types and corresponding coincidence factors used for estimating savings for this ECM:

Space Type	Existing Burn Hours	Proposed Burn Hours
Breakroom	2,600	2,600
Elevator	8,760	8,760
Exit Sign	8,760	8,760
Exterior	4,380	4,380
Exterior - 24x7	8,760	8,760
Garage - Sensored Post-retrofit	8,760	6,132
Garage	8,760	8,760
Garage Canopy - Sensored Post-retrofit	8,760	4,818
Garage Rooftop	4,380	4,380
Hallway	2,600	2,600
Hallway	8,760	8,760
Lobby - Sensored Post-retrofit	8,760	6,132
Lobby	8,760	8,760
Office - Sensored Post-retrofit	2,600	1,820
Office	2,600	2,600
Office	8,760	8,760
Restroom	2,600	2,600
Restroom - Sensored Post-retrofit	8,760	4,818
Restroom	8,760	8,760
Stairs - Sensored Post-retrofit	8,760	4,818
Stairs	8,760	8,760
Storage – Low Use	500	500
Storage	8,760	8,760
Ticket Booth	2,600	2,600
Ticket Booth	8,760	8,760
Utility – Low Use	500	500
Utility	8,760	8,760

Equations for Calculating Lighting Retrofit Savings

Energy (kWh)

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

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 u

Since demand charges do not apply to Parking Garage facilities, demand savings are not accounted for ECM-2.

The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured			
	Electric Consumption	Electric Demand	Natural Gas	Water
ECM-2	1,203,995 kWh	0 kW	0 Therms	0 kGal.

Refer to Exhibit 1 and 2 (electronic attachment) for the detailed expected savings calculations for ECM-2.

ECM 3a - HVAC Building Controls Improvements

The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 – 1:2012, Option A, Retrofit Isolation with Key Parameter Measurement. The savings for this ECM are generated through reduction in energy use by effective control of the equipment; therefore, the measurement boundary is the equipment itself.

Key Parameter	Measurement Frequency	Measurement Description
Baseline space temperatures and operating schedules	Short-term	The operation of existing HVAC system was verified utilizing short term data logging of environmental conditions and mechanical equipment. Space temperature measurements were performed for sample of the spaces using HOBO temperature loggers from 5/31/2017 through 6/29/2017. Where possible, current transducers (CTs) were installed on the AHU fan motors to record fan runtimes. This information provided fair amount of information about current equipment schedules and operation.

Key Parameter	Measurement Frequency	Measurement Description
Post Installation Occupied/Unoccupied Control	Continuous	The savings from this ECM will be verified by utilizing the capabilities of the new control system to verify that post-retrofit occupied and un-occupied period temperature setpoints and equipment schedules are maintained at the levels required to maintain the savings as listed in Schedule 2; Section IV. Following control points shall be trended and monitored during the Performance Period: Mode of Operation (Heating/Cooling): Trend every 15 minutes Zone Temperature: Trend every 15 minutes Zone Temperature Set Point: Trend every 15 minutes Occupancy Mode: Trend every 15 minutes
Estimated Parameters	**Assumed Value**	**Justification, Source and Description**
Heat Pump Efficiency	EER: 11.2 COP: 3.28	The heating and cooling efficiencies for the split system heat pump were based on the nameplate information. Nameplate equipment data and efficiencies were also used as inputs in the eQUEST or Bin model calculation

Refer to Exhibit 1, ECM 3a for the summary of measured average space temperatures during occupied and un-occupied periods and HVAC fan runtimes during the Baseline period in the sampled Park houses.

Since the majority of the Park houses under the scope this ECM are between 1250 – 1500 SF and have more or less similar construction, an eQUEST model was created for a Park house building with 1250 SF gross area. The eQUEST model was primarily used to estimate energy (kWh) savings per unit area (SF). The per unit area energy savings established using the eQUEST model were then used to estimate for each Park house based on the individual gross areas.

The measured baseline average temperatures, as highlighted in the above tables for the respective park houses, were averaged and used as pre-retrofit occupied and un-occupied cooling temperature (73.2°F) in the eQUEST model. Since data logging was performed during the cooling season, pre-retrofit heating occupied and un-occupied period temperature was assume to be 72.0°F. Post-retrofit occupied and un-occupied period temperature setpoints and HVAC equipment schedules, as described in Schedule 2; Section V, were used in the eQUEST model.

The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured			
	Electric Consumption	Electric Demand	Natural Gas	Water
ECM 3a	245,089 kWh	0 kW	0 Therms	0 kGal.

Refer to Exhibit 1 (electronic attachment) for the detailed expected savings calculations for ECM-3a.

ECM 3b - HVAC Building Controls Fire Stations

Since the HVAC equipment serving the Fire Stations run 24x7, no savings have been claimed for this ECM. The new HVAC controls system will provide remote monitoring capability.

ECM 4 - R22 Equipment Replacement

The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 – 1:2012, Option A, Retrofit Isolation with Key Parameter Measurement. The savings for this ECM are generated through reduction in energy use due to improved efficiency of the HVAC equipment; therefore, the measurement boundary is the equipment itself.

Key Parameter	Measurement Frequency	Measurement Description
Baseline space temperatures and operating schedules	Short-term	The operation of existing HVAC system was verified utilizing short term data logging of environmental conditions and mechanical equipment. Space temperature measurements were performed for sample of the spaces using HOBO temperature loggers from 5/19/2017 through 7/6/2017. Where possible, current transducers (CTs) were installed on the AHU fan motors to record fan runtimes. This information provided fair amount of information about current equipment schedules and operation.
Post Installation Split System or Packaged unit operation	Continuous	The savings from this ECM will be verified annually via inspection of the sample of the equipment and thermostat settings (temperature setpoints, schedules, fan operation etc.). Any deficiencies observed

Key Parameter	Measurement Frequency	Measurement Description
		during the inspections will be reported in the annual report.
Estimated Parameters	**Assumed Value**	**Justification, Source and Description**
Pre and Post-retrofit Split system / Heat Pump Efficiency (EERs)	Refer to table in Schedule 1, ECM 4 General Description	The heating and cooling efficiencies for the existing and proposed split system and heat pumps were based on the nameplate information. The heating and cooling efficiencies for the existing HVAC system were degraded based on the age of equipment as per National Renewable Energy Laboratory (NREL) guidelines. Refer to Exhibit 1, ECM 4, "Charleston PhIII – Unitary HVAC Savings_Rev12.xlsx" for additional details on the utilized maintenance factors as per the age of the equipment. Nameplate equipment data and efficiencies were used as inputs in the Bin model calculation.

Refer to Exhibit 1, ECM 4 for the summary of measured average space temperatures and HVAC fan runtimes during the Baseline period in the sampled facilities.

The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured			
	Electric Consumption	Electric Demand	Natural Gas	Water
ECM 4	210,513 kWh	0 kW	29 Therms	0 kGal.

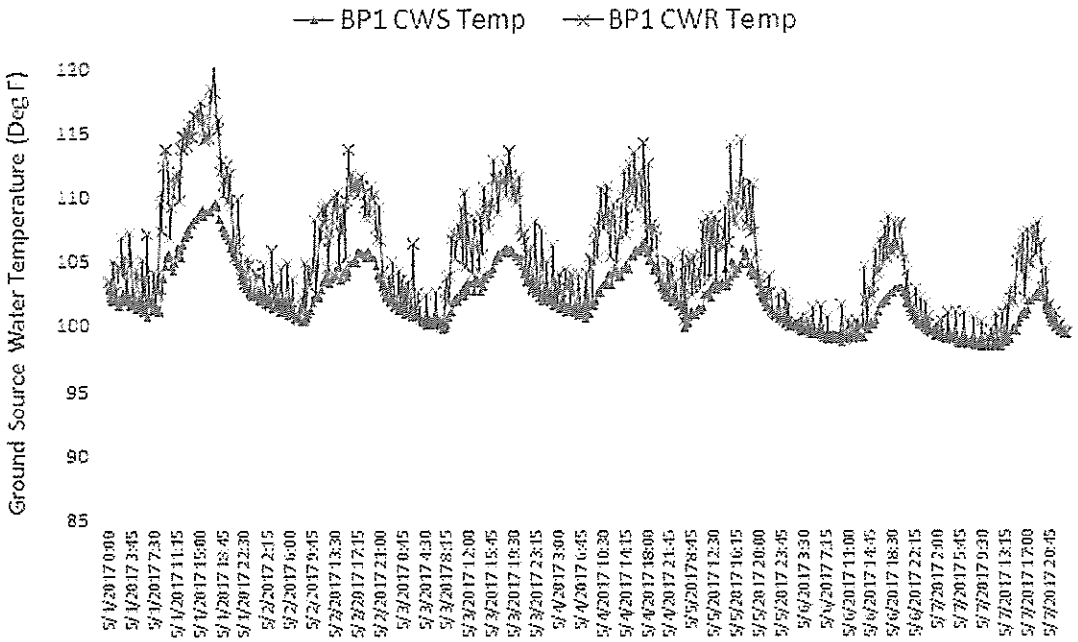
Refer to Exhibit 1, ECM 4 (electronic attachment) for the detailed expected savings calculations for ECM-4.

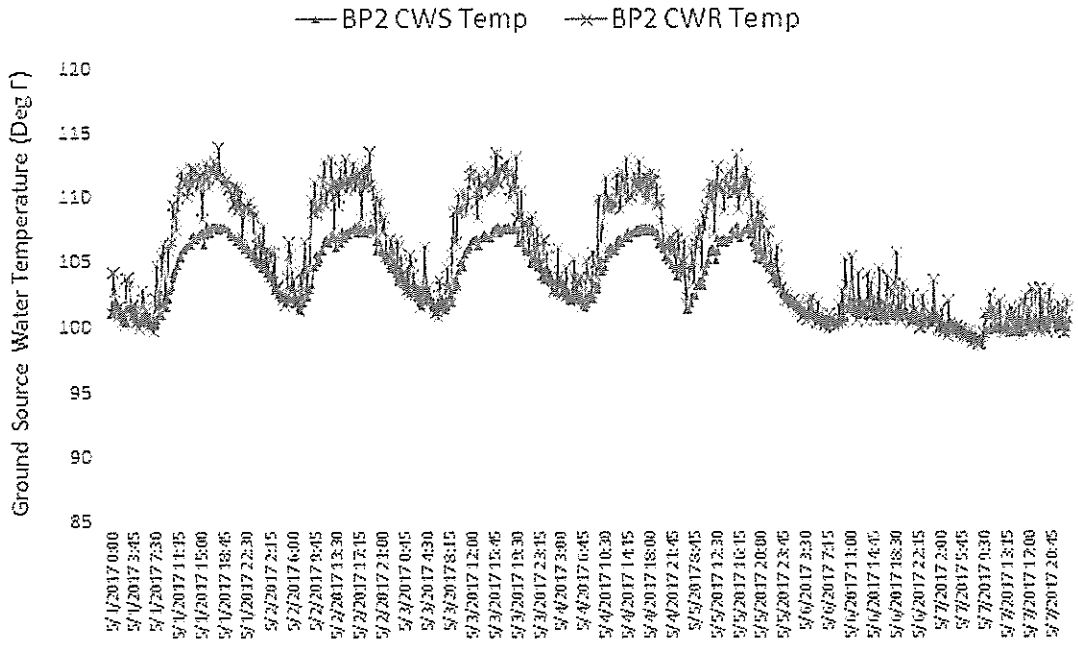
ECM 5a - Ground Loop Improvements - City Hall

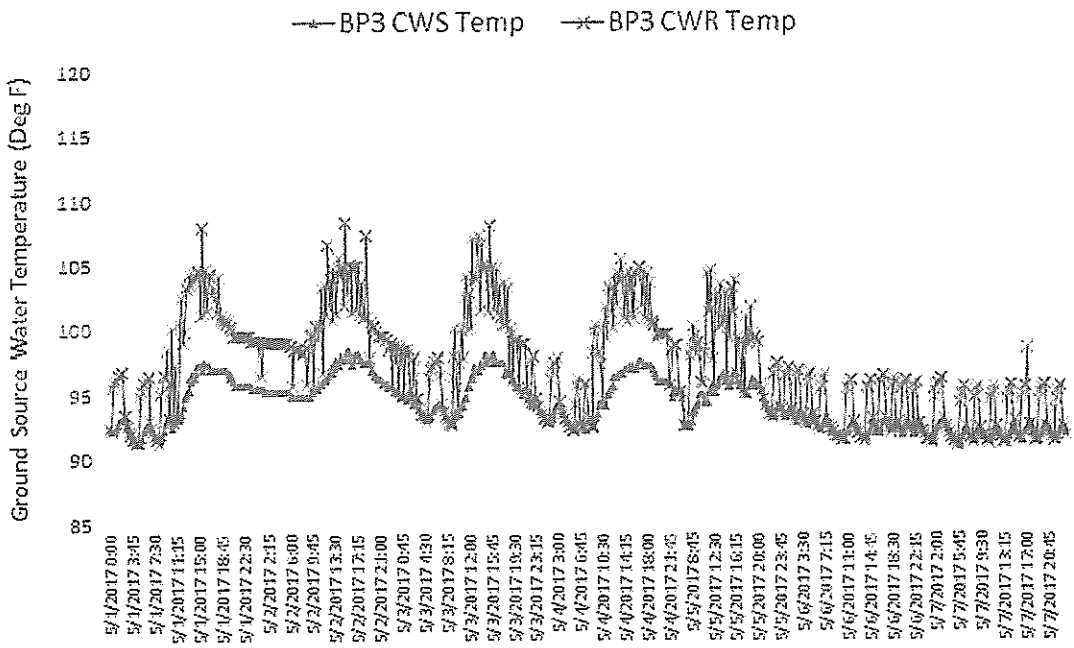
The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 – 1:2012, Option A, Retrofit Isolation with Key Parameter Measurement. The savings for this ECM are generated through reduction in energy use due to improved efficiency of the ground source heat pumps; therefore, the measurement boundary is the ground source heat pump system itself.

Key Parameter	Measurement Frequency	Measurement Description
Baseline ground loop supply and return temperatures	Short-term	The operation of existing ground loop system was verified by analyzing available trend data from the existing BMS. 15-min interval trend data for the supply and return ground loop temperatures from 5/1/2017 through 5/7/2017 was utilized for the analysis.
Post Installation ground loop supply and return temperatures	Continuous	The savings from this ECM will be verified by utilizing the capabilities of the existing BMS to verify that post-retrofit ground loop supply temperatures are maintained at the levels (85-90°F) required to maintain the savings associated with this ECM. Following control points shall be trended and monitored during the Performance Period: For loops BP-1, 2 & 3: Loop water Supply Temperature: Trend every 15 minutes Loop water Return Temperature: Trend every 15 minutes
Estimated Parameters	**Assumed Value**	**Justification, Source and Description**
Ground Source Heat Pump Efficiency (EER)	Ground Source Heat Pumps Pre: 7.7 Post: 10.8 Ground Source Heat Pump Chiller Pre: 10.7 Post: 16	The pre and post-retrofit efficiencies for the ground source heat pumps & chiller were based on the nameplate information. The efficiencies were degraded based on the elevated condenser/loop water temperatures. The efficiencies for the ground source heat pumps were also degraded based on the age of equipment as per National Renewable Energy Laboratory (NREL) guidelines. Refer to Exhibit 1, ECM 5b, "0_City of Charleston City Hall – eQUEST Savings Analysis.xlsx" for additional details on the utilized maintenance factors as per the age of the equipment. Nameplate equipment data and efficiencies were used as inputs in the eQUEST model.

The following charts show supply and return ground loop temperatures observed during the Baseline period. As per the design 85°F condenser water supply temperature is specified for the ground source heat pumps serving the City Hall, it is obvious that for loops BP1 and BP2, supply water temperatures consistently remain 10-20°F higher than the design. This results in drastically reduced efficiencies for the ground source heat pumps.







The installation of new liquid coolers to augment existing ground water loops is expected to reduce loop water temperatures; thereby improving the efficiency of existing water source heat pumps.

The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured			
	Electric Consumption	Electric Demand	Natural Gas	Water
ECM 5a	41,403 kWh	0 kW	0 Therms	0 kGal.

Refer to Exhibit 1, ECM 5a (electronic attachment) for the detailed expected savings calculations for ECM-5a.

ECM 5b - Control Improvements - City Hall

The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 – 1:2012, Option A, Retrofit Isolation with Key Parameter Measurement. The savings for this ECM are generated through reduction in energy use effective control of the HVAC system; therefore, the measurement boundary is the HVAC system itself.

Key Parameter	Measurement Frequency	Measurement Description
Baseline space temperatures and operating	Short-term	The operation of existing HVAC system was verified by analyzing available trend data

Key Parameter	Measurement Frequency	Measurement Description
schedules		from the existing BMS. 15-min interval trend data from 5/8/2017 through 5/23/2017 for various parameters including space temperature, discharge air temperature, supply fan command-status, compressor command-status etc. were used for the analysis.
Post Installation Occupied/Unoccupied Control	Continuous	The savings from this ECM will be verified by utilizing the capabilities of the exist BMS to verify that post-retrofit occupied and un-occupied period temperature setpoints and equipment schedules are maintained at the levels required to achieve the savings associated with this ECM.. Following control points shall be trended and monitored during the Performance Period: Mode of Operation (Heating/Cooling): Trend every 15 minutes Zone Temperature: Trend every 15 minutes Zone Temperature Set Point: Trend every 15 minutes Occupancy Mode: Trend every 15 minutes Supply Fan Command-Status: Trend every 15 minutes Fresh Air Damper Position: Trend every 15 minutes
Estimated Parameters	**Assumed Value**	**Justification, Source and Description**
Ground Source Heat Pump Efficiency (EER)	Pre: 7.7 Post: 10.8	The pre and post efficiencies for the ground source heat pumps were based on the nameplate information. The efficiencies were degraded based on the elevated condenser/loop water temperatures. The efficiencies for the ground source heat pumps were also degraded based on the age of equipment as per National Renewable Energy Laboratory (NREL) guidelines. Refer to Exhibit 1, ECM 5b, "0_City of Charleston City Hall – eQUEST Savings Analysis.xlsx" for additional details on the utilized maintenance factors as per the age of the

Key Parameter	Measurement Frequency	Measurement Description
		equipment. Nameplate equipment data and efficiencies were used as inputs in the eQUEST model.

Refer to Exhibit 1, ECM 5b for the summary of measured average space temperatures during occupied and un-occupied periods during the Baseline period at the City Hall.

Refer to Schedule 2; Section IV for post-retrofit occupied and un-occupied temperature setpoints.

The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured			
	Electric Consumption	Electric Demand	Natural Gas	Water
ECM 5b	151,191 kWh	0 kW	0 Therms	0 kGal.

Refer to Exhibit 1, ECM 5a (electronic attachment) for the detailed expected savings calculations for ECM-5b.

ECM 6a -VRF HVAC System Upgrades - Joe Riley Ballpark

The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 – 1:2012, Option A, Retrofit Isolation with Key Parameter Measurement. The savings for this ECM are generated through reduction in energy use due to improved efficiency of the HVAC equipment; therefore, the measurement boundary is the HVAC equipment itself.

Key Parameter	Measurement Frequency	Measurement Description
Baseline space temperatures and operating schedules	Short-term	The operation of existing HVAC system was verified by analyzing available trend data from the existing BMS. 15-min interval trend data from 5/25/2017 through 6/1/2017 for various parameters including space temperature, discharge air temperature, supply fan command-status, compressor command-status etc. were used for the analysis.
Post Installation VRF system operating	Continuous	The savings from this ECM will be verified by utilizing the capabilities of the existing

Key Parameter	Measurement Frequency	Measurement Description
parameters		BMS to verify that post-retrofit occupied and un-occupied period temperature setpoints and equipment schedules are maintained at the levels required to maintain the savings as listed in Schedule 2; Section IV. Following control points shall be trended and monitored during the Performance Period: Mode of Operation (Heating/Cooling): Trend every 15 minutes Zone Temperature: Trend every 15 minutes Zone Temperature Set Point: Trend every 15 minutes Occupancy Mode: Trend every 15 minutes
Estimated Parameters	**Assumed Value**	**Justification, Source and Description**
Existing Split/Packaged System & VRF System Efficiency (EERs)	Refer to table in Schedule 1, ECM 6a General Description	The pre and post heating and cooling efficiencies for the existing split systems or packaged heat pumps were based on the nameplate information. The heating and cooling efficiencies for the existing equipment were degraded based on the age of equipment as per National Renewable Energy Laboratory (NREL) guidelines. Refer to Exhibit 1, ECM 4, "Charleston PhIII – Unitary HVAC Savings_Rev12.xlsx" for additional details on the utilized maintenance factors as per the age of the equipment. Nameplate equipment data and efficiencies were used as inputs in the Bin model calculation.

Refer to Exhibit 1, ECM 6a for the summary of measured average space temperatures in sample of spaces during the Baseline period at the Joe Riley Ballpark facility.

The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM	Measured

ID	Electric Consumption	Electric Demand	Natural Gas	Water
ECM 6a	299,466 kWh	0 kW	0 Therms	0 kGal.

Refer to Exhibit 1, ECM 4 (electronic attachment) for the detailed expected savings calculations for ECM-6a.

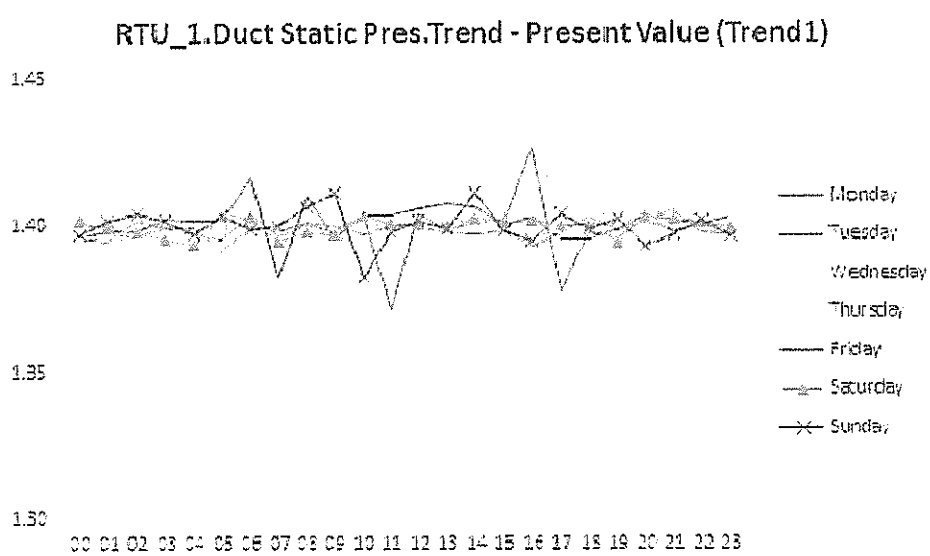
ECM 7a - HVAC Controls Improvements - Greenberg Municipal Complex

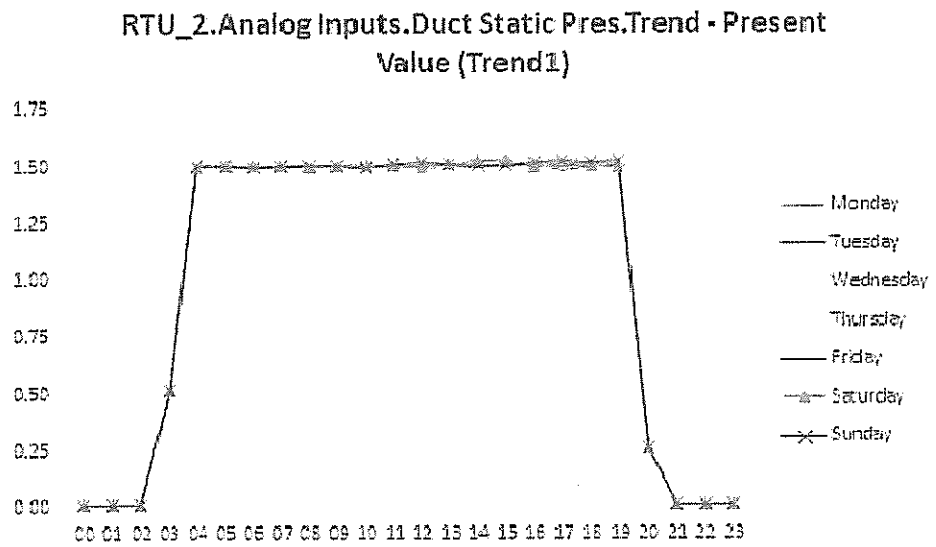
The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 – 1:2012, Option A, Retrofit Isolation with Key Parameter Measurement. The savings for this ECM are generated through reduction in energy use effective control of the HVAC system; therefore, the measurement boundary is the HVAC system itself.

Key Parameter	Measurement Frequency	Measurement Description
Baseline space temperatures, discharge air temperatures, VFD command, duct static pressures and operating schedules	Short-term	The operation of existing HVAC system was verified by analyzing available trend data from the existing BMS. 15-min interval trend data from 5/15/2017 through 5/22/2017 for various parameters including space temperature, discharge air temperature, supply fan command-status, duct static pressure, VFD commands etc. were used for the analysis.
Post Installation space temperatures, discharge air temperatures, VAV CFMs, duct static pressures, CO_2 levels and operating schedules	Continuous	The savings from this ECM will be verified by utilizing the capabilities of the existing BAS to verify that post-retrofit occupied and un-occupied period temperatures, VAV CFMs, duct static pressures, CO_2 levels, and equipment schedules are maintained at the levels required to achieve the savings associated with this ECM. Following control points shall be trended and monitored during the Performance Period: Mode of Operation (Heating/Cooling): Trend every 15 minutes Zone Temperature: Trend every 15 minutes Zone Temperature Set Point: Trend every 15 minutes Occupancy Mode: Trend every 15 minutes Supply Fan Command-Status: Trend every 15

Key Parameter	Measurement Frequency	Measurement Description
		minutes Duct Static Pressure: Trend every 15 minutes CO_2 Levels: Trend every 15 minutes VAV CFMs: Trend every 15 minutes
Estimated Parameters	**Assumed Value**	**Justification, Source and Description**
Rooftop Unit Efficiencies (EER)	RTU-1 Pre: 7.4 Post: 10.2 RTU-2 Pre: 7.4 Post: 10.4 RTU-3&4 Pre: 8.5 Post: 12.2	The pre and post-retrofit equipment heating and cooling efficiencies for the rooftop units were based on the nameplate information. The heating and cooling efficiencies for the existing RTUs were degraded based on the age of equipment as per National Renewable Energy Laboratory (NREL) guidelines. Refer to Exhibit 1, ECM 7a, "0_City of Chalreston Greenberg Complex - eQUEST Savings Analysis.xlsx" for additional details on the utilized maintenance factors as per the age of the equipment. Nameplate equipment data and efficiencies were used as inputs in the eQUEST model.

The following charts show measured average static pressures during occupied and un-occupied periods for the Baseline period at the Greenberg Complex. It is obvious from the charts that duct static pressure reset schedule does not exist on RTU-1 & 2 which could effectively ramp supply fan up and down based on the cooling and heating demands.

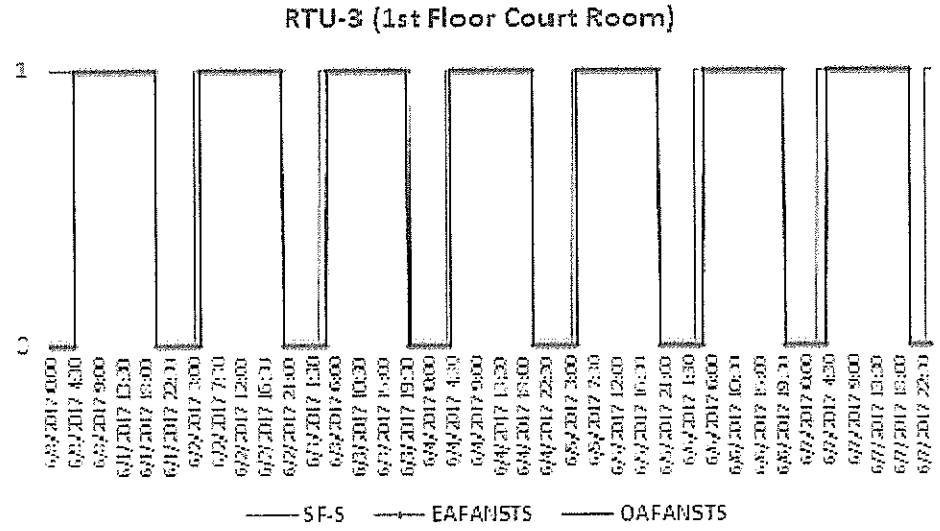


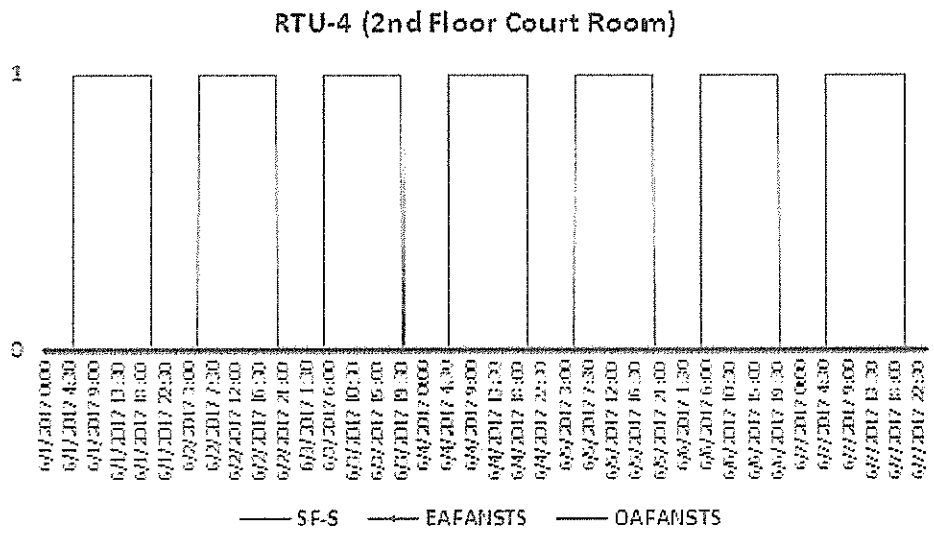


The following charts show RTU supply, ERV Exhaust & Fresh air fan statuses during the Baseline period at the Greenberg Complex. It is obvious from the RTU-3 chart that ERV unit runs all the time when RTU supply fan is running from 4:30am to 8:00pm. The ERV units on the RTUs could remain off when the court rooms are unoccupied.

The ERV on RTU-4 was turned off due to ongoing repairs at the time of analysis.

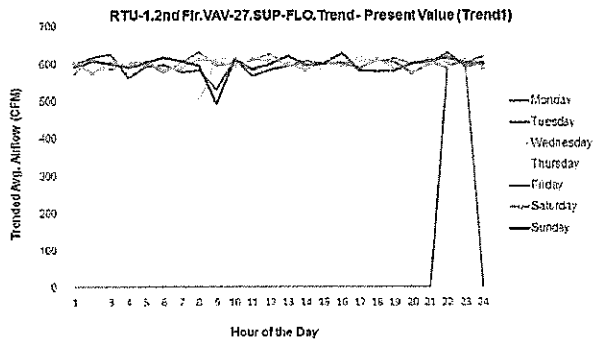
The amount of fresh air brought into court rooms will be controlled effectively post-retrofit by installing occupancy sensors in the court rooms. The ERVs will run only during the occupied period as sensed by the new occupancy sensors, thereby reducing fresh air load for considerable period of time.

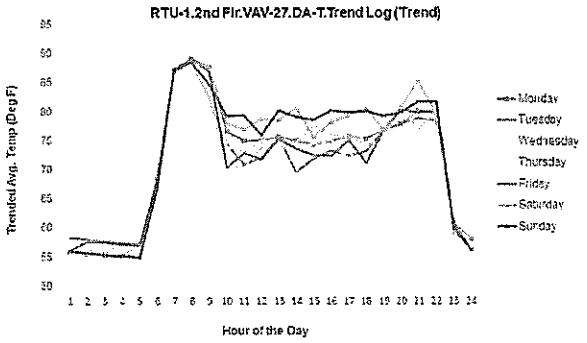


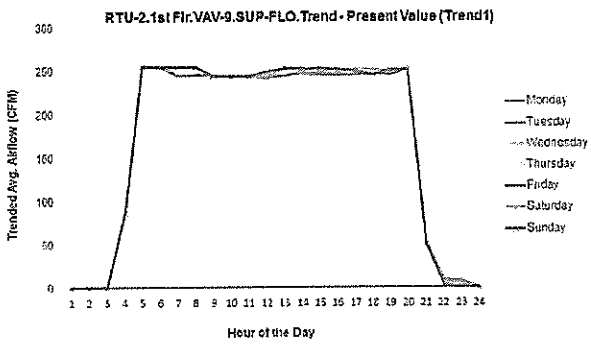


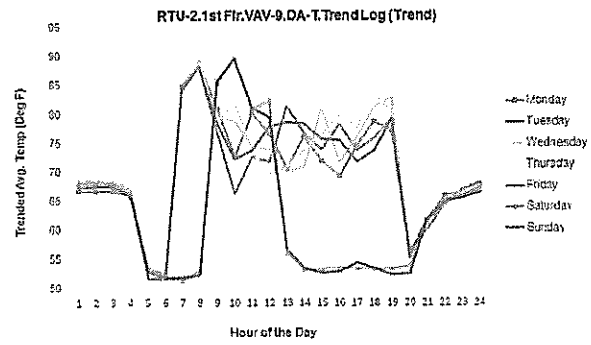
The following charts show VAV box CFMs and discharge air temperatures recorded during the Baseline period at the Greenberg Complex. The graphs on the right hand side for discharge air temperatures clearly show considerable electric reheat operation throughout the day even during the peak cooling season. The charts on the left show that VAV box CFMs do not exceed respective minimum CFM setpoints. Similar pattern was observed for majority of the VAV boxes serving the Greenberg complex.

It is obvious from the analysis that either VAV boxes are oversized or minimum setpoints are set higher than required for the space loads. The VAV box recommissioning recommended under the scope of this ECM will reevaluate current space loads and properly adjust VAV box cooling minimum, cooling maximum and heat CFMs. As a result excessive use of reheat is expected to be eliminated during the peak cooling season.









Refer to Schedule 2; Section IV for post-retrofit occupied and un-occupied temperature setpoints.

The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured			
	Electric Consumption	Electric Demand	Natural Gas	Water
ECM 7a	9,187 kWh	85 kW	0 Therms	0 kGal.

Refer to Exhibit 1, ECM-7a (electronic attachment) for the detailed expected savings calculations for ECM-7a.

ECM 7b - HVAC Equipment Replacement - Greenberg Municipal Complex

The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 – 1:2012, Option A, Retrofit Isolation with Key Parameter Measurement. The savings for this ECM are generated through reduction in energy use due to improved efficiency of the HVAC equipment; therefore, the measurement boundary is the equipment itself.

Key Parameter	Measurement Frequency	Measurement Description
Baseline space temperatures and operating schedules	Short-term	The operation of existing HVAC system was verified by analyzing available trend data from the existing BMS. 15-min interval trend data from 5/15/2017 through 5/22/2017 for various parameters including space temperature, discharge air temperature, supply fan command-status, duct static pressure, VFD commands etc. were used for the analysis.
Post Installation RTU operating parameters	Continuous	The savings from this ECM will be verified by utilizing the capabilities of the existing BMS to verify that post-retrofit occupied and

Key Parameter	Measurement Frequency	Measurement Description
		un-occupied period temperature setpoints and equipment schedules are maintained at the levels required to maintain the savings as listed in Schedule 2; Section IV. Following control points shall be trended and monitored during the Performance Period: Mode of Operation (Heating/Cooling): Trend every 15 minutes Zone Temperature: Trend every 15 minutes Zone Temperature Set Point: Trend every 15 minutes Occupancy Mode: Trend every 15 minutes Supply Fan Command-Status: Trend every 15 minutes Supply Fan Speeds: Trend every 15 minutes Duct Static Pressure: Trend every 15 minutes VAV CFMs: Trend every 15 minutes
Estimated Parameters	**Assumed Value**	**Justification, Source and Description**
Split system / Heat Pump Efficiency (EER)	RTU-1 Pre: 7.4 Post: 10.2 RTU-2 Pre: 7.4 Post: 10.4 RTU-3&4 Pre: 8.5 Post: 12.2	The heating and cooling efficiencies for the rooftop units were based on the nameplate information. The heating and cooling efficiencies for the existing RTUs were degraded based on the age of equipment as per National Renewable Energy Laboratory (NREL) guidelines. Refer to Exhibit 1, ECM 7a, "0_City of Chalreston Greenberg Complex - eQUEST Savings Analysis.xlsx" for additional details on the utilized maintenance factors as per the age of the equipment. Nameplate equipment data and efficiencies were used as inputs in the eQUEST model.

The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured			
	Electric Consumption	Electric Demand	Natural Gas	Water

ECM 7b	43,449 kWh	278 kW	0 Therms	0 kGal.

Refer to Exhibit 1, ECM 7a (electronic attachment) for the detailed expected savings calculations for ECM-7b.

ECM 8a - Dual Duct Box Replacement - POLICE STATION

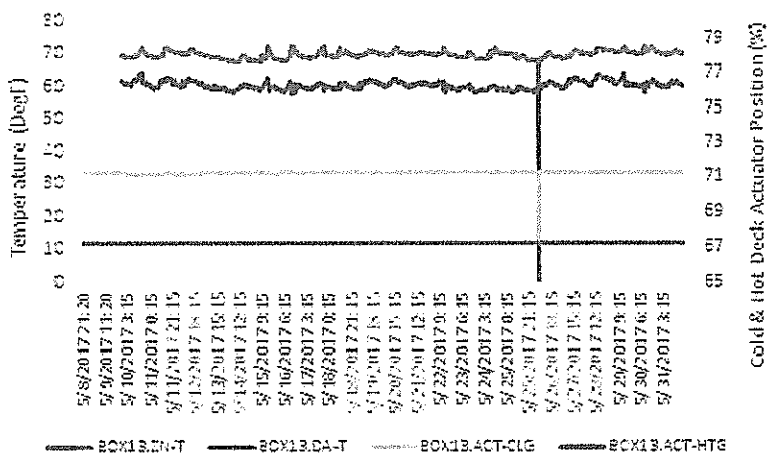
The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 – 1:2012, Option A, Retrofit Isolation with Key Parameter Measurement. The savings for this ECM are generated through reduction in energy use due to improved efficiency of the Dual Duct system; therefore, the measurement boundary is the Dual Duct system itself.

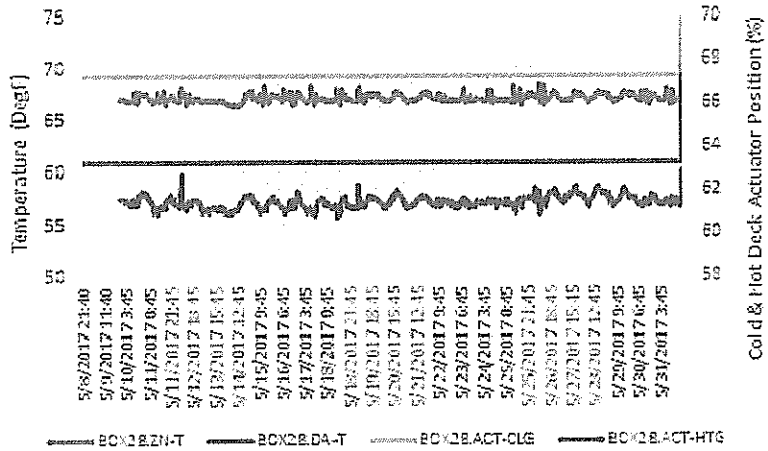
Key Parameter	Measurement Frequency	Measurement Description
Baseline space temperatures and operating schedules	Short-term	The operation of existing Dual Duct HVAC system was verified by analyzing available trend data from the existing BMS. 15-min interval trend data from 5/8/2017 through 5/31/2017 for various parameters including space temperature, discharge air temperature, dual duct box hot and cold deck damper actuator positions etc. were used for the analysis. Nameplate dual duct box schedule, equipment data and efficiencies collected during the site visits were also used as inputs in the eQUEST model.
Post Installation Dual Duct system operating parameters	Continuous	The savings from this ECM will be verified by utilizing the capabilities of the existing BMS to verify that post-retrofit occupied and un-occupied period temperature setpoints and equipment schedules are maintained at the levels required to maintain the savings as listed in Schedule 2; Section IV. Following control points shall be trended and monitored during the Performance Period: Mode of Operation (Heating/Cooling): Trend every 15 minutes Zone Temperature: Trend every 15 minutes Zone Temperature Set Point: Trend every 15 minutes Occupancy Mode: Trend every 15 minutes

Key Parameter	Measurement Frequency	Measurement Description
		Supply Fan Command-Status: Trend every 15 minutes Supply Fan Speeds: Trend every 15 minutes Duct Static Pressure: Trend every 15 minutes VAV CFMs: Trend every 15 minutes
Estimated Parameters	**Assumed Value**	**Justification, Source and Description**
Air-Cooled Chiller Efficiency (kW/ton)	0.7	The efficiency for the existing air-cooled chiller was based on the measurements. Refer to Exhibit 1, ECM 8a, "0 Charleston - Chiller M+V Hourly Summary_rev1.xlsx" for additional details on the chiller efficiency measurements.

The following charts show dual duct box discharge air and zone temperatures along with respective hot and cold deck damper positions recorded during the Baseline period serving the Police Station. It is obvious from the charts that the box discharge and zone temperatures are maintained at same setpoints irrespective of time of day or occupancy. The hot and cold deck damper positions do not appear to change based on the space temperatures, making the system work as a constant volume system. Similar pattern was observed for majority of the existing dual duct boxes serving the Police Station.

Post-retrofit, hot and cold deck dampers in the new VAV boxes are expected to effectively modulate in response to space load conditions as a true pressure independent system. The discharge and space temperatures associated with the new dual duct boxes will also respond to space occupancy as sensed by the occupancy sensors integral to the new thermostats.





The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured			
	Electric Consumption	Electric Demand	Natural Gas	Water
ECM 8a	156,481 kWh	178 kW	424 Therms	0 kGal.

Refer to Exhibit 1, ECM 7a (electronic attachment) for the detailed expected savings calculations for ECM-8a.

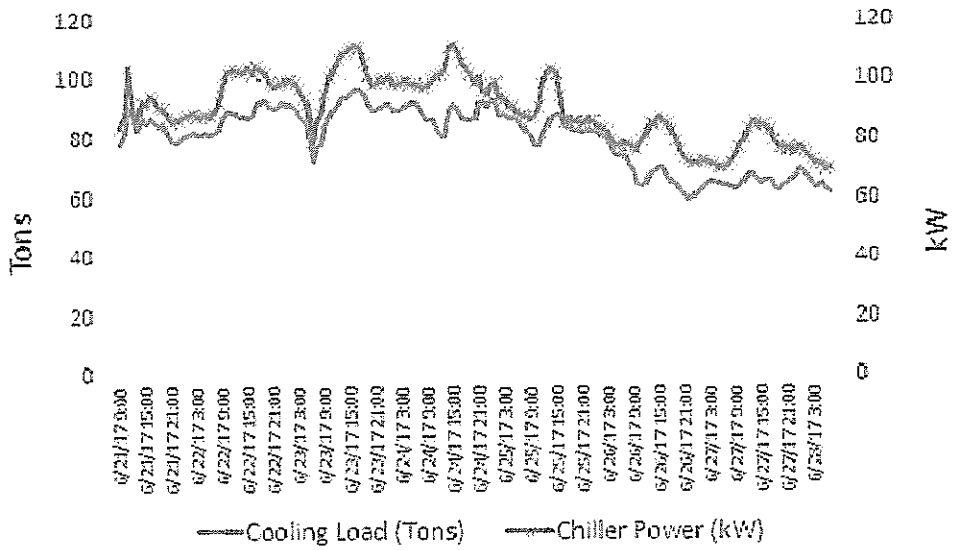
ECM 8b - Chiller Replacement - POLICE STATION

The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 – 1:2012, Option A, Retrofit Isolation with Key Parameter Measurement. The savings for this ECM are generated through reduction in energy use due to improved efficiency of the chiller; therefore, the measurement boundary is the chiller itself.

Key Parameter	Measurement Frequency	Measurement Description
Baseline Btu Delivered & Chiller Power	Short-term	The existing chilled water load and chiller power were measured for a period of one weeks from 6/21/2017 to 6/28/2017. The average kW/ton of 1.13 measured during the measurement period was used as an input into the eQUEST model. Based on the simulation, the annual chilled water load is 3,059,649,583 Btu. It is agreed that the minimum annual chilled water usage will never be less than this simulated value of 3,059,649,583 Btu.

Key Parameter	Measurement Frequency	Measurement Description
		The baseline annual chilled water Btu is converted to ton-hours using the following conversion: $$Ton - Hours_{base} = \frac{Btu_{base}}{12000 \frac{Btu}{ton - Hours}}$$
Post-installation Btu Delivered	Continuous	The post-installation Btu delivered will be totalized, and the totalized value will be recorded on an hourly basis.
Post-installation kWh	Continuous	The post-installation kWh consumed will be totalized, and the totalized value will be recorded on an hourly basis.
Post-installation Chiller Efficiency	Calculated Based on Measurements	The post-installation chiller efficiency will calculated based on the measured Btu delivered and kWh consumed. The kWh used by the chiller and the Btu delivered will be totalized, and the totalized value will be recorded on an hourly basis. At least quarterly, these data will be reviewed by Johnson Controls. The average annual kW/ton will then be determined by: $$\frac{kW}{ton_{post}} = \frac{annual\ kWh}{\left(\frac{annual\ Btu}{12000 \frac{Btu}{ton - Hour}}\right)}$$

The following chart shows measured cooling load and chiller kW during the measurement period at the Police Station building.



The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured			
	Electric Consumption	Electric Demand	Natural Gas	Water
ECM 8b	85,589 kWh	222 kW	0 Therms	0 kGal.

Refer to Exhibit 1, ECM 7a (electronic attachment) for the detailed expected savings calculations for ECM-8b.

ECM 8c - AHU2 System Improvement - POLICE STATION

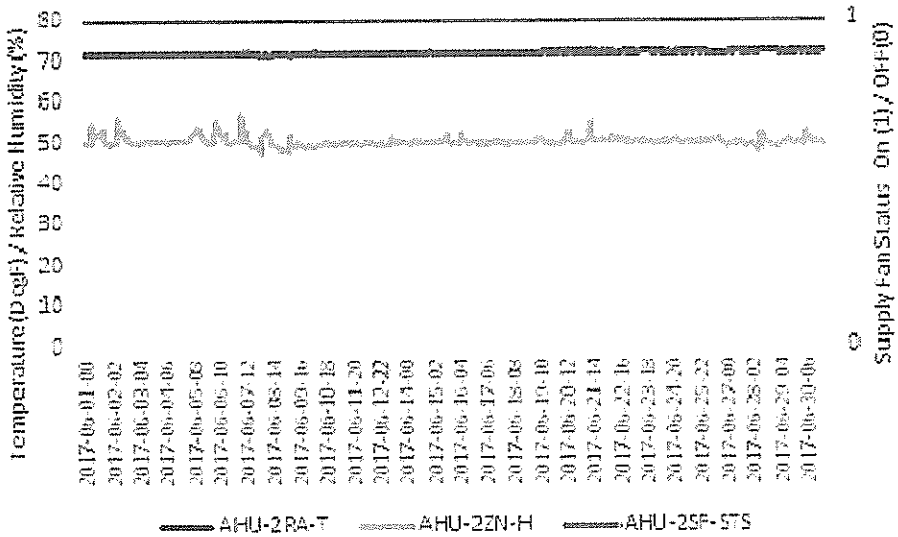
The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 – 1:2012, Option A, Retrofit Isolation with Key Parameter Measurement. The savings for this ECM are generated through reduction in energy use due to variable air volume conversion of AHU-2; therefore, the measurement boundary is AHU-2 itself.

Key Parameter	Measurement Frequency	Measurement Description
Baseline space temperature and operating schedule	Short-term	The operation of existing constant volume AHU-2 was verified by analyzing available trend data from the existing BMS. 15-min interval trend data from 6/1//2017 through 6/30/2017 for various parameters including return air temperature, return air relative humidity, supply fan status etc. was used for

Key Parameter	Measurement Frequency	Measurement Description
		the analysis. Nameplate equipment data and efficiencies collected during the site visits were also used as inputs in the eQUEST model.
Post Installation AHU-2 operating parameters	Continuous	The savings from this ECM will be verified by utilizing the capabilities of the existing BMS to verify that post-retrofit occupied and un-occupied period temperature setpoints and equipment schedules are maintained at the levels required to maintain the savings associated with this ECM. Following control points shall be trended and monitored during the Performance Period: Mode of Operation (Heating/Cooling): Trend every 15 minutes Zone Temperature: Trend every 15 minutes Zone Temperature Set Point: Trend every 15 minutes Occupancy Mode: Trend every 15 minutes Supply Fan Command-Status: Trend every 15 minutes Supply Fan Speed: Trend every 15 minutes Duct Static Pressure: Trend every 15 minutes
Estimated Parameters	**Assumed Value**	**Justification, Source and Description**
Air-Cooled Chiller Efficiency (kW/ton)	Air-Cooled Chiller Pre: 1.13 Post: 0.7	The efficiency for the existing air-cooled chiller was based on the measurements. The efficiency for the new (post) air-cooled chiller was based on the nameplate information.

The following chart shows return air temperature and zone relative humidity along with the supply fan status for AHU-2 recorded during the Baseline period serving the Evidence Locker. It is obvious from the chart that AHU-2 runs 24x7, 365-days a year maintaining zone temperatures at same setpoints irrespective of time of day or occupancy.

The AHU-2 supply fan is expected to modulate in response to space load conditions as a true variable air volume system.



The annual kWh savings will be calculated according to:

$$kWh_{Savings} = Ton - Hours(kW/ton_{pre} - kW/ton_{post})$$

Where Ton-Tours is the higher of the annual measured Ton-Hours or the baseline extrapolated Ton-Hours.

The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured			
	Electric Consumption	Electric Demand	Natural Gas	Water
ECM 8c	26,370 kWh	43 kW	374 Therms	0 kGal.

Refer to Exhibit 1, ECM 7a (electronic attachment) for the detailed expected savings calculations for ECM-8c.

ECM 9 - Chiller Replacement - DOCK STREET THEATER

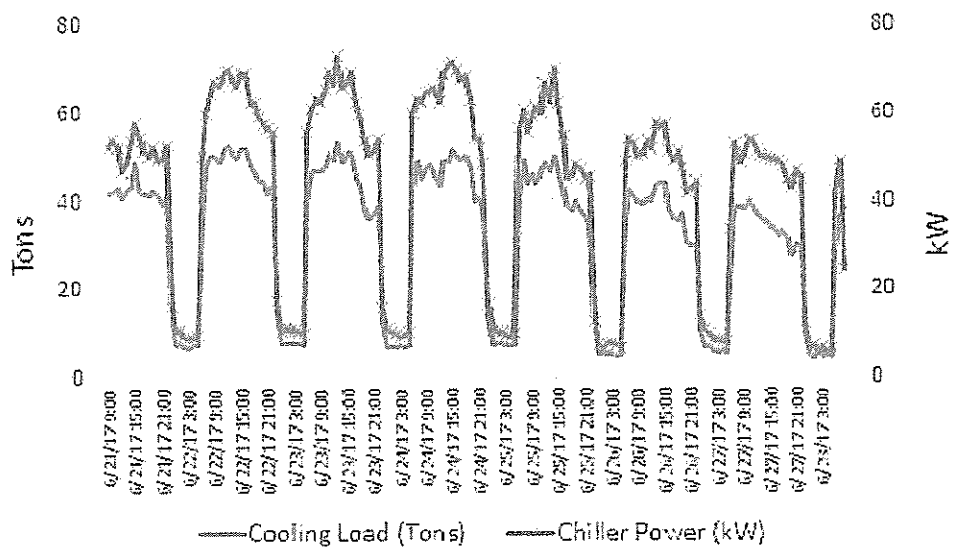
The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 – 1:2012, Option A, Retrofit Isolation with Key Parameter Measurement. The savings for this ECM are generated through reduction in energy use due to improved efficiency of the chiller; therefore, the measurement boundary is the chiller itself.

Key Parameter	Measurement Frequency	Measurement Description
Baseline Btu Delivered & Chiller Power	Short-term	The existing chilled water load and chiller power were measured for a period of one weeks from 6/21/2017 to 6/28/2017. A Bin model calculation

Key Parameter	Measurement Frequency	Measurement Description
		was calibrated using the data gathered during the measurements period. Based on the Bin model calculation, the annual chilled water load is 2,786,903,658 Btu. It is agreed that the minimum annual chilled water usage will never be less than this simulated value of 2,786,903,658 Btu. The baseline annual chilled water Btu is converted to ton-hours using the following conversion: $$Ton - Hours_{base} = \frac{Btu_{base}}{12000 \frac{Btu}{ton - Hours}}$$
Post-installation Btu Delivered	Continuous	The post-installation Btu delivered will be totalized, and the totalized value will be recorded on an hourly basis.
Post-installation kWh	Continuous	The post-installation kWh consumed will be totalized, and the totalized value will be recorded on an hourly basis.
Post-installation Chiller Efficiency	Calculated Based on Measurements	The post-installation chiller efficiency will calculated based on the measured Btu delivered and kWh consumed. The kWh used by the chiller and the Btu delivered will be totalized, and the totalized value will be recorded on an hourly basis. At least quarterly, these data will be reviewed by Johnson Controls. The average annual kW/ton will then be determined by: $$\frac{kW}{ton_{post}} = \frac{annual\ kWh}{\left(\frac{annual\ Btu}{12000 \frac{Btu}{ton - Hour}}\right)}$$
Estimated Parameters	**Assumed Value**	**Justification, Source and Description**
Air-Cooled Chiller Efficiency (kW/ton)	Air-Cooled Chiller Pre: 1.21	Based on the measurements, the chiller was observed to be over-cycling during the afterhours due to low load conditions at the facility. This resulted into abnormally high kW/ton measured during those hours.

Key Parameter	Measurement Frequency	Measurement Description
		Hence the efficiency for the existing air-cooled chiller was based on the nameplate information. The cooling efficiency for the existing chiller was degraded based on the age of equipment as per National Renewable Energy Laboratory (NREL) guidelines. Refer to Exhibit 1, ECM 4, "Charleston PhIII – Unitary HVAC Savings_Rev12.xlsx" for additional details on the utilized maintenance factors as per the age of the equipment.

The following chart shows measured cooling load and chiller kW during the measurement period at the Dock Street Theatre facility.



The annual kWh savings will be calculated according to:

$$kWh_{Savings} = Ton - Hours(kW/ton_{pre} - kW/ton_{post})$$

Where Ton-Tours is the higher of the annual measured Ton-Hours or the baseline extrapolated Ton-Hours.

The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured			
	Electric Consumption	Electric Demand	Natural Gas	Water

ECM 9	102,885 kWh	0 kW	0 Therms	0 kGal.

Refer to Exhibit 1, ECM 4 (electronic attachment) for the detailed expected savings calculations for ECM-9.

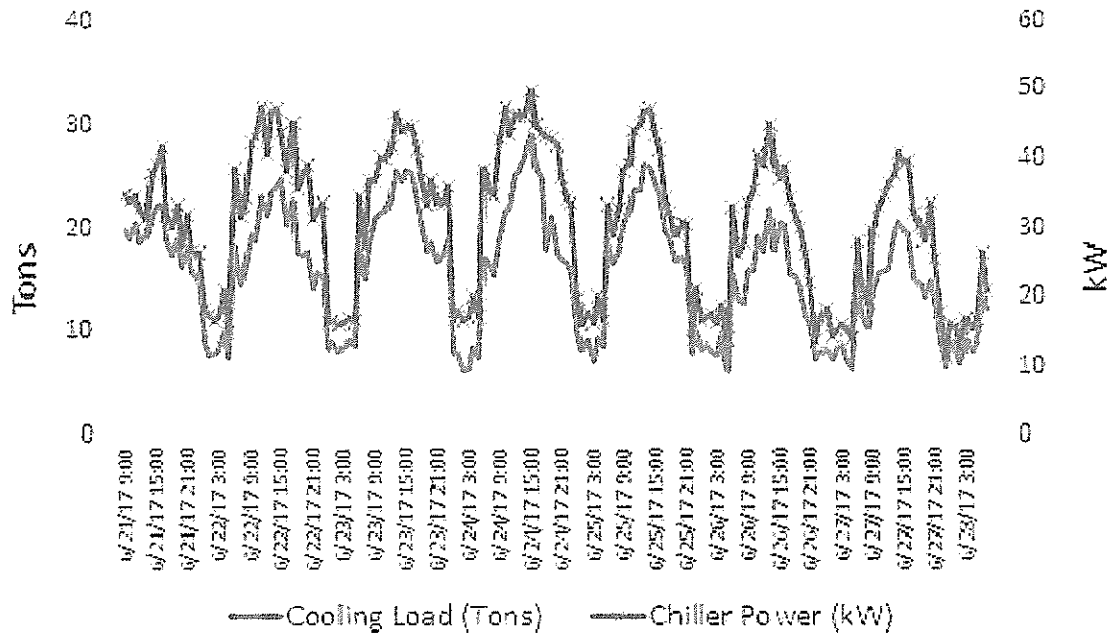
ECM 10 - Chiller Replacement - VRTC - DEAN BUILDING

The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 – 1:2012, Option A, Retrofit Isolation with Key Parameter Measurement. The savings for this ECM are generated through reduction in energy use due to improved efficiency of the chiller; therefore, the measurement boundary is the chiller itself.

Key Parameter	Measurement Frequency	Measurement Description
Baseline Btu Delivered & Chiller Power	Short-term	The existing chilled water load and chiller power were measured for a period of one weeks from 6/21/2017 to 6/28/2017. A Bin model calculation was calibrated using the data gathered during the measurements period. Based on the Bin model calculation, the annual chilled water load is 1,382,155,047 Btu. It is agreed that the minimum annual chilled water usage will never be less than this simulated value of 1,382,155,047 Btu. The baseline annual chilled water Btu is converted to ton-hours using the following conversion: $Ton - Hours_{base} = \frac{Btu_{base}}{12000 \frac{Btu}{ton - Hours}}$
Post-installation Btu Delivered	Continuous	The post-installation Btu delivered will be totalized, and the totalized value will be recorded on an hourly basis.
Post-installation kWh	Continuous	The post-installation kWh consumed will be totalized, and the totalized value will be recorded on an hourly basis.
Post-installation Chiller Efficiency	Calculated Based on Measurements	The post-installation chiller efficiency will calculated based on the measured Btu delivered and kWh consumed. The kWh used by the chiller and the Btu delivered will be totalized, and the totalized value will be recorded on an hourly basis. At least quarterly, these data will be reviewed by

Key Parameter	Measurement Frequency	Measurement Description
		Johnson Controls. The average annual kW/ton will then be determined by: $$\frac{kW}{ton_{post}} = \frac{annual\ kWh}{\left(\frac{annual\ Btu}{12000\frac{Btu}{ton-Hour}}\right)}$$
Estimated Parameters	**Assumed Value**	**Justification, Source and Description**
Air-Cooled Chiller Efficiency (kW/ton)	Air-Cooled Chiller Pre: 1.16	Based on the measurements, the chiller was observed to be over-cycling during the afterhours due to low load conditions at the facility. This resulted into abnormally high kW/ton measured during those hours. Hence the efficiency for the existing air-cooled chiller was based on the nameplate information. The cooling efficiency for the existing chiller was degraded based on the age of equipment as per National Renewable Energy Laboratory (NREL) guidelines. Refer to Exhibit 1, ECM 4, "Charleston PhIII – Unitary HVAC Savings_Rev12.xlsx" for additional details on the utilized maintenance factors as per the age of the equipment.

The following chart shows measured cooling load and chiller kW during the measurement period at the VRTC - Dean building.



The annual kWh savings will be calculated according to:

$$kWh_{Savings} = Ton - Hours(kW/ton_{pre} - kW/ton_{post})$$

Where Ton-Tours is the higher of the annual measured Ton-Hours or the baseline extrapolated Ton-Hours.

The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured			
	Electric Consumption	Electric Demand	Natural Gas	Water
ECM 10	45,449 kWh	0 kW	0 Therms	0 kGal.

Refer to Exhibit 1, ECM 4 (electronic attachment) for the detailed expected savings calculations for ECM-10.

ECM 11a - Pool Enclosure and Upgrade - MLK POOL

The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 – 1:2012, Option C, Whole Facility, since total facility energy cost is the focus. Option C has been specifically selected due to combination of ECMs involved at the facility between the current and previous phases.

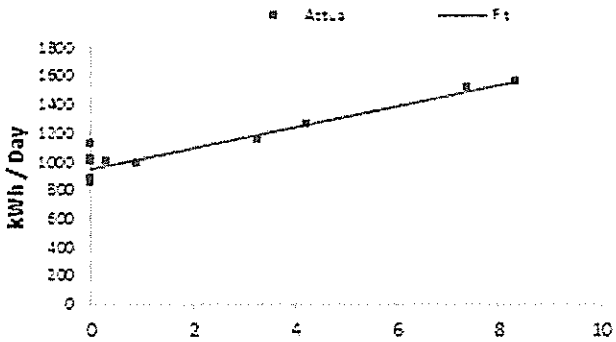
Key Parameter	Measurement Frequency	Measurement Description

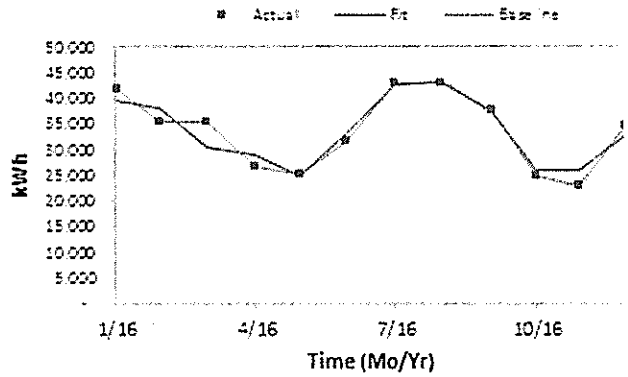
Key Parameter	Measurement Frequency	Measurement Description
Baseline Electric and Natural Gas Utility Invoices	Short-term	Utility invoices were collected for the baseline period (January 2016 – December 2016) and a regression analysis was conducted for each meter to determine any correlation between weather conditions and total usage. This analysis was conducted in the "Metrix" utility accounting software. Baseline utility regressions shown below. The above-mentioned base period is post installation of work completed under Amendments I, II & III. Therefore the savings from those Phases stand alone.
Performance Period Electric and Natural Gas Utility Invoices	Continuous	Electric and Natural Gas invoices will be collected on a monthly basis. "Metrix" utility accounting software will be utilized to make comparisons between baseline usage and conditions and current usage and conditions.

Meter Tuning Contract

Project: City of Charleston 3
Area: Martin Pk Pool
Account: 0-1975-0107-0930

Site: City of Charleston 3
Meter: Martin Pk Pool E-0930
Unit: kWh(Qty OnPk)





From	To	# Days	Reading	Incl?	HDD	CDD	Offset	Baseline	Deviation
12/17/15	01/19/16	34	41,760	☒	326.5	0.0	2,033	41,760	0.0%
01/20/16	02/16/16	28	35,360	☒	421.0	0.0	(2,767)	35,360	0.0%
02/17/16	03/17/16	30	35,600	☒	158.5	0.0	5,157	35,600	0.0%
03/18/16	04/18/16	32	26,880	☒	75.5	0.0	(2,265)	26,880	0.0%
04/19/16	05/17/16	29	25,360	☒	1.5	9.0	667	25,360	0.0%
05/18/16	06/17/16	31	31,760	☒	0.0	101.5	(1,325)	31,760	0.0%
06/18/16	07/18/16	31	43,120	☒	0.0	228.5	709	43,120	0.0%
07/19/16	08/17/16	30	42,880	☒	0.0	250.0	(283)	42,880	0.0%
08/18/16	09/19/16	33	37,760	☒	0.0	139.0	267	37,760	0.0%
09/20/16	10/18/16	29	24,960	☒	0.0	25.5	(891)	24,960	0.0%
10/19/16	11/15/16	28	23,120	☒	85.0	0.0	(3,055)	23,120	0.0%
11/16/16	12/15/16	30	34,560	☒	225.0	0.0	1,751	34,560	0.0%
Sum/Average/Max		**365**	**403,120**		**1293.0**	**753.5**	**(0)**	**403,120**	**0% +/- 6.9%**

Martin Pk Pool E-0930 (Account # 0-1975-0107-0930): Tuning Period is 365 days from 12/17/2015 until 12/15/2016.

Below is the equation used to calculate the Baseline values for the tuning period and all future periods:

Baseline (kWh) = 826.8405 x #Days + 35.5713 x HDD + 73.43 x CDD + Offset

The Baseline Equation has a Net Mean Bias of 0% and a Monthly Mean Error of +/-6.9268%. The underlying regression has a R^2=0.867

Baseline Costs are calculated using Average Total Cost/Consumption.

Explanations and Assumptions:

☐ (empty checkbox) under 'Incl?' indicates that the bill is excluded from the regression. However the Baseline Equation is always applied for all billing periods, even those excluded from the regression.

HDD = Heating Degree-Days calculated for CHARLESTONSC for a 63.0 F° balance point.

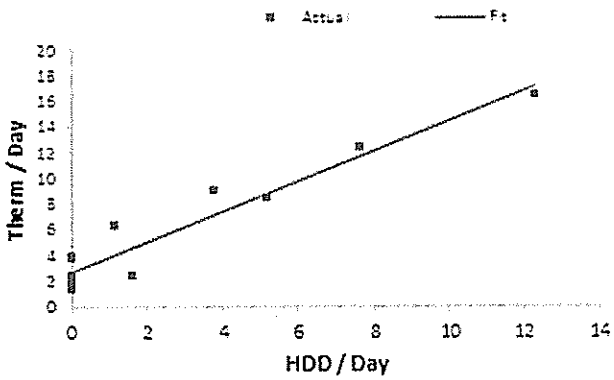
CDD = Cooling Degree-Days calculated for CHARLESTONSC for a 77.0 F° balance point.

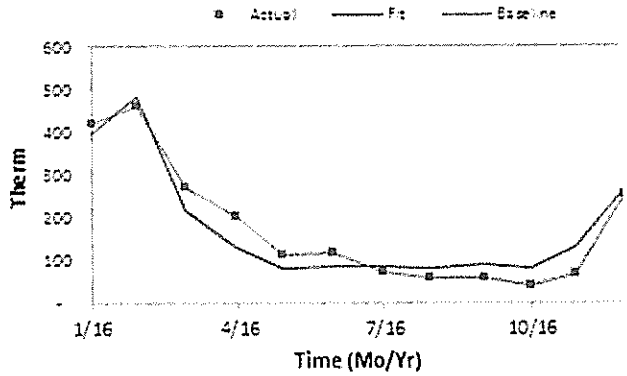
Multiplier and Offset are derived from Modification(s) in effect during the tuning period and are replicated annually for all future periods.

Meter Tuning Contract

Project: City of Charleston 3
Area: Martin Pk Pool
Account: 0-1975-0107-1101

Site: City of Charleston 3
Meter: Mark Pk Pool NG-1101
Unit: Therm(Qty OnPk)





From	To	# Days	Reading	Incl?	HDD	CDD	Offset	Baseline	Deviation
12/17/15	01/19/16	34	422	☒	259.5	0.0	23	422	0.0%
01/20/16	02/16/16	28	462	☒	344.0	0.0	(20)	462	0.0%
02/17/16	03/17/16	30	269	☒	113.5	0.0	53	269	0.0%
03/18/16	04/18/16	32	202	☒	36.5	0.0	71	202	0.0%
04/19/16	05/17/16	29	112	☒	0.0	0.0	32	112	0.0%
05/18/16	06/17/16	31	116	☒	0.0	0.0	31	116	0.0%
06/18/16	07/18/16	31	74	☒	0.0	0.0	(11)	74	0.0%
07/19/16	08/17/16	30	57	☒	0.0	0.0	(25)	57	0.0%
08/18/16	09/19/16	33	58	☒	0.0	0.0	(33)	58	0.0%
09/20/16	10/18/16	29	38	☒	0.0	0.0	(42)	38	0.0%
10/19/16	11/15/16	28	68	☒	46.0	0.0	(63)	68	0.0%
11/16/16	12/15/16	30	251	☒	156.5	0.0	(16)	251	0.0%
Sum/Average/Max		**365**	**2,129**		**956.0**	**0.0**	**(0)**	**2,129**	**0% +/- 23.2%**

Mark Pk Pool NG-1101 (Account # 0-1975-0107-1101): Tuning Period is 365 days from 12/17/2015 until 12/15/2016.

Below is the equation used to calculate the Baseline values for the tuning period and all future periods:

Baseline (Therm) = 2.7471 x #Days + 1.1781 x HDD + Offset

The Baseline Equation has a Net Mean Bias of 0% and a Monthly Mean Error of +/-23.1663%. The underlying regression has a R^2=0.9205

Baseline Costs are calculated using Average Total Cost/Consumption.

Explanations and Assumptions:

☐ (empty checkbox) under 'Incl?' indicates that the bill is excluded from the regression. However the Baseline Equation is always applied for all billing periods, even those excluded from the regression.

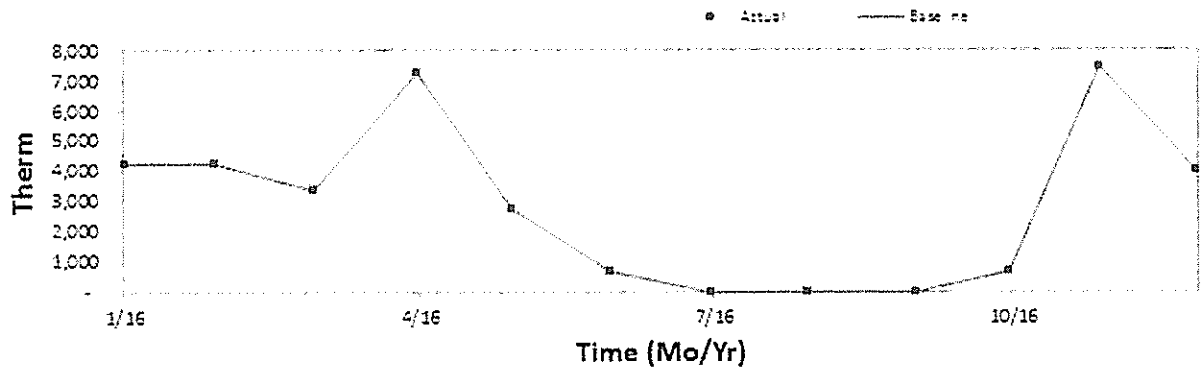
HDD = Heating Degree-Days calculated for CHARLESTONSC for a 60.0 F° balance point.

Multiplier and Offset are derived from Modification(s) in effect during the tuning period and are replicated annually for all future periods.

Meter Tuning Contract

Project: City of Charleston 3
Area: Martin Pk Pool
Account: 0-1975-0107-0930

Site: City of Charleston 3
Meter: Martin Pk Pool NG-0930
Unit: Therm(Qty OnPk)



From	To	# Days	Reading	Incl?	HDD	CDD	Offset	Baseline	Deviation
12/17/15	01/19/16	34	4,257	☒	0.0	0.0	4,257	4,257	0.0%
01/20/16	02/16/16	28	4,259	☒	0.0	0.0	4,259	4,259	0.0%
02/17/16	03/17/16	30	3,405	☒	0.0	0.0	3,405	3,405	0.0%
03/18/16	04/18/16	32	7,246	☒	0.0	0.0	7,246	7,246	0.0%
04/19/16	05/17/16	29	2,767	☒	0.0	0.0	2,767	2,767	0.0%
05/18/16	06/17/16	31	708	☒	0.0	0.0	708	708	0.0%
06/18/16	07/18/16	31	-	☒	0.0	0.0	-	-	0.0%
07/19/16	08/17/16	30	-	☒	0.0	0.0	-	-	0.0%
08/18/16	09/19/16	33	-	☒	0.0	0.0	-	-	0.0%
09/20/16	10/18/16	29	704	☒	0.0	0.0	704	704	0.0%
10/19/16	11/15/16	28	7,443	☒	0.0	0.0	7,443	7,443	0.0%
11/16/16	12/15/16	30	4,009	☒	0.0	0.0	4,009	4,009	0.0%
Sum/Average/Max		**365**	**34,798**		**0.0**	**0.0**	**34,798**	**34,798**	**0.0%**

Martin Pk Pool NG-0930 (Account # 0-1975-0107-0930): Tuning Period is 365 days from 12/17/2015 until 12/15/2016.

Below is the equation used to calculate the Baseline values for the tuning period and all future periods:

Baseline (Therm) = Offset

The Baseline Equation has a Net Mean Bias of 0%. The underlying regression has a R^2=0

Baseline Costs are calculated using Average Total Cost/Consumption.

Explanations and Assumptions:

☐ (empty checkbox) under 'Incl?' indicates that the bill is excluded from the regression. However the Baseline Equation is always applied for all billing periods, even those excluded from the regression. Multiplier and Offset are derived from Modification(s) in effect during the tuning period and are replicated annually for all future periods.

The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured			
	Electric Consumption	Electric Demand	Natural Gas	Water
ECM 11a	52,067 kWh	0 kW	24,073 Therms	0 kGal.

ECM 13 - Window Replacement - ST JULIAN DEVINE

The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 – 1:2012, Option A, Retrofit Isolation with Key Parameter Measurement. The savings for this ECM are generated through a reduction in energy loss from the window system; therefore, the measurement boundary is the window system itself.

Key Parameter	Measurement Frequency	Measurement Description
Pre- and Post-retrofit Linear feet of crack	One-time	Linear feet of crack was measured for the windows. Energy savings are based on the ASHRAE crack method calculations. Determination of air current air leakage rates is based on the following factors: • Linear feet of cracks • Square feet of openings • Stack coefficient • Shield class • Average wind speed • Heating or cooling set point • Average seasonal ambient
Pre- and Post-retrofit Square feet of opening & U-value	One-time	Window area was measured for the existing windows. The pre and post-retrofit U-values for the windows are based on the manufacturer product information.

The following equation is based on the ASHRAE crack method:

Heat loss per hour: = 1.08 x Q x ΔT

Where Q represents the airflow in cubic feet per minute (CFM) and is calculated in the following manner:

$$Q=A\_crack\times\sqrt{(C\_s\ (T\_out-T\_(in\ ))+\ C\_w\ V^2\ )}$$

In this equation, A represents the crack area in square inches to be reduced. The other values in the equation are standard for these buildings and are based upon shelter class, height, and local wind speed.

C_w = wind coefficient from ASHRAE 16.23; Fundamentals 2013 Table 5 Local Shelter Class (Trees/other buildings)
V = wind speed = 8.8 average mph (typical US)
Cs = stack coefficient from ASHRAE Table 16.23, Table 4 (based on number of floors)

ΔT = temperature difference = Tout – Tin

The total heat loss is calculated as follows:

$$q=\sum 128\_(x=1)\text{^}(total\ \ hours)\text{▒}\ [\![1.08\times A\_crack\times\sqrt{(C\_s\ \ (T\_out-T\_(in\ \ ))+\ \ C\_w\ \ V\text{^}2\ \ )}\times(T\_out-T\_(in\ ))]\!]$$

Insulation Improvement:

Steady-state, one dimensional heat flow through insulation systems (applied to new windows) is governed by Fourier's law:

q = - k·A·dT/dx * Hrs / 1MMBtu

Where:

q = rate of heat flow, Btu/hr

A = cross sectional area normal to heat flow, ft2

k = thermal conductivity of the insulation material, Btu-in/h ft2°F

dT/dx = temperature gradient, °F/in

The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured			
	Electric Consumption	Electric Demand	Natural Gas	Water
ECM 13	5,695 kWh	0 kW	0 Therms	0 kGal.

Refer to Exhibit 1 (electronic attachment) for the detailed expected savings calculations for ECM-13.

ECM 18 - Distributed Energy Storage - Greenberg Municipal Complex

The savings associated with this ECM will be verified using IPMVP Volume I, EVO 10000 – 1:2012, Option A, Retrofit Isolation with Key Parameter Measurement. The savings for this ECM are generated through reduction in billing capacity (kVA) charges due to improved power factor and peak (kW) shaving; therefore, the measurement boundary is the peak demand (kVA) and power factor component of the monthly electric bill for the Greenberg Complex electric meter (Account# 0-1898-0003-2261).

Key Parameter	Measurement Frequency	Measurement Description

Pre- and Post-retrofit Power Factor	Monthly	Historical monthly billing data for the above-mentioned utility electric meter was collected and analyzed for the baseline period from May-2016 to April-2017. The power factor, demand (kW and kVA) components of the bills were documented as the baseline. Post-retrofit savings associated with the power factor improvement portion of this ECM will be verified by analyzing billing data for the utility electric meter on a monthly basis. The savings guarantee will be assumed met, as per the table below, as long the ratio of kW/kVA is at unity (1) per the monthly bills. The savings will be updated, as per the formula below, only if the ratio for the month is lower than unity (1).
Pre- and Post-retrofit Electric Demand (kVA and kW)	Shadow and DES Meters Ongoing	Historical 15 minute interval electric demand (kVA & kW) data for the above-mentioned utility electric meter was collected and analyzed for the baseline period from 7/1/2016 to 6/30/2017. Post-retrofit savings associated with the peak shaving portion of this EC will be verified by continuously trending 15 minute interval electric demand (kVA & kW) at the new shadow electric meter and on the ESS meter, utilizing the capabilities of existing Metasys BMS.

Calculation Method:

Power Factor Improvement:
A spreadsheet model was developed to calculate charges associated with the demand portion of the bills for the above-mentioned baseline period. The model utilized published rate structure for SCE&G's "020 - Medium General Service" rate code.

Following equation was used to calculate billed demand (kVA) reduction on a monthly basis:

$$kVA_{reduction} = Max(kW_{post}, kW_{pre}) * (\frac{kVA\_post}{kW\_post} - \frac{kVA\_pre}{kW\_pre})$$

$$kVA\_cost\_savings = kVA\_reduction * Demand\_Rate\_(kVA)$$

Where:

$kW =$ Billed electric demand in kW

kVA = Billed electric demand in kVA

$Demand\_Rate\_(kVA)$ = Baseline kVA demand rate (refer to Schedule 2, Section IV)

Following table summarizes calculated monthly benefits based on the spreadsheet model:

Month	Pre-retrofit Demand (kW)	Pre-retrofit Demand (kVA)	Pre-retrofit PF	Post-retrofit PF	Estimated Monthly Benefit
January	431	455	0.947	1.00	$429.15
February	441	465	0.948	1.00	$429.15
March	433	475	0.912	1.00	$751.02
April	445	484	0.919	1.00	$697.38
May	408	456	0.895	1.00	$842.74
June	462	519	0.89	1.00	$1,000.76
July	484	542	0.893	1.00	$1,018.32
August	500	560	0.893	1.00	$1,053.43
September	441	501	0.88	1.00	$1,053.43
October	408	467	0.874	1.00	$1,035.87
November	405	418	0.969	1.00	$743.87
December	423	438	0.966	1.00	$447.04
				Total	**$9,502**

Peak Shaving:
A separate spreadsheet model was used to calculate savings associated with the peak shaving. Since post power factor improvement ECM, apparent power (kVA) component of the billed demand is expected to be same as the real power (kW) component, spreadsheet model utilized historical 15 minute interval real power (kW) data for the baseline period. The model utilized published rate structure for SCE&G's "020 - Medium General Service" rate code.

Following calculations will be performed on a monthly basis using 15-minute interval datasets:

$$Total\_Facility\_Load\ (t) = Shadow\_Meter\_Demand\ (t) + ESS\_Meter\_Demand\ (t)$$

$$kVA_{shaved} = Total\_Facility\_Load\_\max - Shadow\_Meter\_Demand\_Max$$

$$kVA\_cost\_savings = kVA\_shaved\ * Demand\_Rate\_(kVA)$$

Where:

$Shadow\_Meter\_Demand\ (tmax)$ = Maximum 15 minute interval demand in kVA recorded on Shadow meter for the month

Total_Facility_Load_max = highest 15 minute interval Facility Load in kVA calculated for the month

Demand_Rate_(kVA) = Baseline kVA demand rate, refer to Schedule 2, Section IV

The expected savings for this ECM are as follows, at the rates and escalations as noted in Schedule 2, Section IV.

ECM ID	Measured				
	Electric Consumption	Electric Demand	Natural Gas	Water	Demand Charge
ECM 18	0 kWh	594 kVA	0 Therms	0 kGal.	$ 9,502

Refer to Exhibit 1 (electronic attachment) for the detailed expected savings calculations for ECM-18.

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 Base Utility Cost for each type of utility has been calculated by separating only the variable component of the published utility rates as of August-2017. The following table summarizes Base Utility Costs for the facilities under the scope of this amendment.

Base Utility Costs

Utility Type	Base Utility Cost
Electric Energy	$0.1229 per kWh (003 - Municipal Power Service) $0.0553 per kWh (020 - Medium General Service)
Electric Demand	No Demand Charge (003 - Municipal Power Service) $21.04 per kVA (020 - Medium General Service) $21.04 per kW* (020 - Medium General Service)
Natural Gas	$1.12 per therm
Water-Sewer	$12.05 per kGal

* Post power factor improvement ECM at Greenberg Complex, power factor is expected to be unity (1).
Following table summarizes applicable rate schedules and utility providers for respective facilities under the scope of this amendment.

No	Facility Name	Facility Address	Electric		Natural Gas		Water-Sewer	
			Utility Provider	Rate Schedule	Utility Provider	Rate Schedule	Utility Provider	Rate Schedule
1	CHARLESTON TENNIS CENTER	19 FARMFIELD ST	SCE&G	003 - Municipal Power Service				
2	DANIEL ISLAND POLICE/FIRE	235 SEVEN FARMS RD	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
3	GOVERNORS PARK - Volvo Cars STADIUM	166 SEVEN FARMS RD	SCE&G	003 - Municipal Power Service				
4	Governors Park - Concessions Building		SCE&G	003 - Municipal Power Service				
5	Governors Park - Family Circle Tennis Center		SCE&G	003 - Municipal Power Service				
6	ARCH BUILDING	85 CALHOUN ST	SCE&G	003 - Municipal Power Service				
7	HAZEL PARKER PLAYGROUND	70 EAST BAY ST	SCE&G	003 - Municipal Power Service				
9	BOXING GYM - COMMUNITY CENTER	1099 KING ST	SCE&G	003 - Municipal Power Service				
11	CITY HALL	80 BROAD ST	SCE&G	003 - Municipal Power Service				
12	LEGAL DEPARTMENT	50 BROAD ST	SCE&G	003 - Municipal Power Service				
13	DOCK STREET THEATER	133 CHURCH ST	SCE&G	003 - Municipal Power Service				
14	FINANCE	116 MEETING STREET	SCE&G	003 - Municipal Power Service	SCE&G	033 - Medium General Svc		

No	Facility Name	Facility Address	Electric		Natural Gas		Water-Sewer	
			Utility Provider	Rate Schedule	Utility Provider	Rate Schedule	Utility Provider	Rate Schedule
15	PARKS DEPARTMENT	823 MEETING ST	SCE&G	003 - Municipal Power Service	SCE&G	033 - Medium General Svc		
16	PARKS DEPARTMENT - WAREHOUSE	823 MEETING ST	SCE&G	003 - Municipal Power Service				
17	VRTC - DEAN BUILDING	375 MEETING ST	SCE&G	003 - Municipal Power Service				
18	MOULTRIE PLAYGROUND	41 ASHLEY	SCE&G	003 - Municipal Power Service				
19	OLD SLAVE MART	6 CHALMERS ST	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
20	PARKING GARAGE - CAMDEN EXCHANGE	47 JOHN ST	SCE&G	003 - Municipal Power Service				
21	PARKING GARAGE - CHARLESTON PLACE	85 HASSELL ST	SCE&G	003 - Municipal Power Service				
22	PARKING GARAGE - CONCORD	1 CUMBERLAND ST	SCE&G	003 - Municipal Power Service				
23	PARKING GARAGE - GAILLARD	32 ALEXANDER	SCE&G	003 - Municipal Power Service				
24	PARKING GARAGE - LIBERTY & ST PHILLIPS	34 ST PHILLIPS	SCE&G	003 - Municipal Power Service				
25	PARKING GARAGE - MAJESTIC SQUARE	211 KING ST	SCE&G	003 - Municipal Power Service				
26	PARKING GARAGE - MARION SQUARE	399 KING ST	SCE&G	003 - Municipal Power Service				
27	PARKING GARAGE – QUEEN ST	Queen ST	SCE&G	003 - Municipal Power Service				
28	PARKING GARAGE - SC AQUARIUM	24 CALHOUN ST	SCE&G	003 - Municipal Power Service				
29	PARKING GARAGE - VRTC	63 MARY ST	SCE&G	003 - Municipal Power Service				
30	PARKING GARAGE - WENTWORTH	81 WENTWORTH ST	SCE&G	003 - Municipal Power Service				
31	SHAW CENTER	22 MARY ST	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
32	ST JULIAN DEVINE	1 COOPER ST	SCE&G	003 - Municipal Power Service				
33	TIEDEMAN PARK	40 ELIZABETH ST	SCE&G	003 - Municipal Power Service				
34	MALL PARK	68 COLUMBUS ST	SCE&G	003 - Municipal Power Service				
36	MCMAHON PLAYGROUND	55 CLEVELAND ST	SCE&G	003 - Municipal Power Service				
37	CITY ART GALLERY	34 PRIOLEAU ST	SCE&G	003 - Municipal Power Service				
38	PARKING GARAGE - PRIOLEAU & EAST BAY	25 PRIOLEAU ST	SCE&G	003 - Municipal Power Service				
39	HAMPTON PARK - HORTICULTURE OFFICE	30 MARY MURRAY BVLD	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
40	MILFORD ST - CITY STORES (LOGISTICS)	1950 MILFORD ST	SCE&G	003 - Municipal Power Service				
41	PUBLIC SERVICE COMPOUND - CITY GARAGE	2150 MILFORD ST	SCE&G	003 - Municipal Power Service				
41a	Fleet Management	2150 Millford Street	SCE&G	003 - Municipal Power Service				
42	FREDDIE WHALEY COMMUNITY CENTER	1810 DOSHER ST(2St after	SCE&G	003 - Municipal Power Service				

No	Facility Name	Facility Address	Electric		Natural Gas		Water-Sewer	
			Utility Provider	Rate Schedule	Utility Provider	Rate Schedule	Utility Provider	Rate Schedule
		Milford then rt)						
43	CHARLESTON MARITIME CENTER	10 WHARFSIDE ST	SCE&G	003 - Municipal Power Service				
44	ARTHUR W CHRISTOPHER COMMUNITY CENTER	265 FISHBURNE ST	SCE&G	003 - Municipal Power Service	SCE&G	033 - Medium General Svc		
45	HERBERT HASSELL POOL	265 FISHBURNE ST	SCE&G	003 - Municipal Power Service				
46	JOSEPH P RILEY BALLPARK	360 FISHBURNE ST	SCE&G	003 - Municipal Power Service	SCE&G	033 - Medium General Svc		
47	MITCHELL PLAYGROUND	145 FISHBURNE ST	SCE&G	003 - Municipal Power Service				
48	GREENBERG MUNCIPAL COMPLEX	180 LOCKWOOD	SCE&G	020 - Medium General Service				
49	POLICE STATION	180 LOCKWOOD	SCE&G	020 - Medium General Service	SCE&G	031 - Firm General Gas Service		
50	JACK ADAMS TENNIS CENTER - RESTROOMS	CONGRESS ST	SCE&G	003 - Municipal Power Service				
51	JACK ADAMS TENNIS CENTER - SHELTER	CONGRESS ST	SCE&G	003 - Municipal Power Service				
52	MARTIN PARK(4 Streets North of Columbus)	155 JACKSON ST	SCE&G	003 - Municipal Power Service				
53	MLK POOL	155 JACKSON ST	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service	Charleston Water System	Inside City
54	MLK POOL - POOL HOUSE	155 JACKSON ST	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service	Charleston Water System	Inside City
55	JIRC - GYM	1088 QUAIL DRIVE	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
56	LOWCOUNTRY SENIOR CENTER	865 RIVERLAND DRIVE	SCE&G	003 - Municipal Power Service				
57	MAYBANK TENNIS CENTER (2 Street N of Harborview)	1880 HOUGHTON DRIVE	SCE&G	003 - Municipal Power Service				
58	MUNICIPAL GOLF COURSE - CLUB HOUSE	2110 MAYBANK HWY	SCE&G	003 - Municipal Power Service				
59	MUNICIPAL GOLF COURSE - STORAGE SHED	2110 MAYBANK HWY	SCE&G	003 - Municipal Power Service				
60	THOMAS JOHNSON Park (WESTCHESTER PARK)	SECESSIONVILLE	SCE&G	003 - Municipal Power Service				
61	ANGEL OAK - GIFT SHOP	3688 ANGLE OAK RD	SCE&G	003 - Municipal Power Service				
64	DEMING PLAYGROUND (Behind SK&C)	5TH AVENUE MARYVILLE	SCE&G	003 - Municipal Power Service				
65	FOREST PARK PLAYGROUND	780 PLAYGROUND RD	SCE&G	003 - Municipal Power Service				
66	LENEVAR PARK	1305 LENEVAR ST	SCE&G	003 - Municipal Power Service				
67	MARY UTSEY (ORANGE GROVE PARK) - PARK HOUSE	1350 ORANGE GROVE RD	SCE&G	003 - Municipal Power Service				
70	WL STEPHENS	780 PLAYGROUND RD	SCE&G	003 - Municipal Power Service	SCE&G	033 - Medium General Svc		

No	Facility Name	Facility Address	Electric		Natural Gas		Water-Sewer	
			Utility Provider	Rate Schedule	Utility Provider	Rate Schedule	Utility Provider	Rate Schedule
71	BEES LANDING REC.(1 rt S of Glenn/McC on BeesF)	1580 Ashley Gardens Blvd.	SCE&G	003 - Municipal Power Service				
72	ORLEANS WOODS (WILLIE GAINS)	1827 TABORWOOD CIRCLE	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
73	FIRE STATION 2 & 3 - OFFICE	262/263 MEETING ST	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
74	FIRE STATION 6	5 CANNON ST	SCE&G	003 - Municipal Power Service				
75	FIRE STATION 7	1173 FT JOHNSON RD	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
76	FIRE STATION 8	370 HUGER ST	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
77	FIRE STATION 9	KING ST	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
78	FIRE STATION 10	SAV HWY 1 NICHOLSON	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
79	FIRE STATION 11	1517 SAVANNAH HWY	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
80	FIRE STATION 12	HWY 171 OLD TOWN RD	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
81	FIRE STATION 13	358 FOLLY RD	SCE&G	003 - Municipal Power Service				
82	FIRE STATION 4 & 15	162 COMING ST	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
83	FIRE STATION 16(rt before 526 Overpass on 61)	81 ASHLEY PLANTATION RD	SCE&G	003 - Municipal Power Service				
84	FIRE STATION 17	1830 BOHICKET RD	Berkeley Co-op					
85	FIRE STATION 18	235 Seven Farms Rd	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
86	FIRE STATION 19	1985 BEES FERRY RD	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		
87	FIRE STATION 20	1006 Pinefield Road	SCE&G	003 - Municipal Power Service				
88	FIRE TOWER - TRAINING FACILITY	2166 MILFORD ST	SCE&G	003 - Municipal Power Service				
89	DMV	180 LOCKWOOD	SCE&G	003 - Municipal Power Service	SCE&G	031 - Firm General Gas Service		

V. PRIMARY OPERATIONS SCHEDULE PRE & POST RETROFIT

The following tables summarize annual operating schedules for the facilities under the scope of this amendment.

Park House: Deming Park

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - March	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	
April - May	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
June - August	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	OFF		OFF		OFF	
September - October	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
November - December	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	

Park House: Forest Park

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - March	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	
April - May	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
June - August	7:00 AM	6:00 PM	7:00 AM	6:00 PM	7:00 AM	6:00 PM	7:00 AM	6:00 PM	7:00 AM	6:00 PM	OFF		OFF		OFF	
September - October	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
November - December	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	

Park House: Freddie Whaley

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - March	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	
April - May	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
June - August	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	OFF		OFF		OFF	
September - October	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
November - December	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	

Park House: Lenevar Park

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - March	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	
April - May	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
June - August	7:00 AM	6:00 PM	7:00 AM	6:00 PM	7:00 AM	6:00 PM	7:00 AM	6:00 PM	7:00 AM	6:00 PM	OFF		OFF		OFF	
September - October	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
November - December	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	

Park House: Mall Park

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - March	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	
April - May	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
June - August	OFF		5:00 PM	10:00 PM	OFF		5:00 PM	10:00 PM	OFF		5:00 PM	10:00 PM	OFF		OFF	
September - October	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
November - December	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	

Park House: Martin Park

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - March	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	
April - May	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
June - August	8:00 AM	4:00 PM	8:00 AM	4:00 PM	8:00 AM	4:00 PM	8:00 AM	4:00 PM	8:00 AM	4:00 PM	OFF		OFF		OFF	
September - October	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
November - December	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	

Park House: McMahon Playground

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - March	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	
April - May	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
June - August	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	OFF		OFF		OFF	
September - October	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
November - December	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	

Park House: Mitchell Playground

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - March	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	
April - May	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
June - August	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	OFF		OFF		OFF	
September - October	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
November - December	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	

Park House: Mitchell Playground

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - March	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	
April - May	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
June - August	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	OFF		OFF		OFF	
September - October	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
November - December	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	

Park House: Moultrie Playground

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - March	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	
April - May	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
June - August	7:00 AM	6:00 PM	7:00 AM	6:00 PM	7:00 AM	6:00 PM	7:00 AM	6:00 PM	7:00 AM	6:00 PM	OFF		OFF		OFF	
September - October	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
November - December	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	

Park House: Thomas Johnson Park (Westchester Park)

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - March	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	
April - May	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
June - August	10:00 AM	6:00 PM	10:00 AM	6:00 PM	10:00 AM	6:00 PM	10:00 AM	6:00 PM	10:00 AM	6:00 PM	OFF		OFF		OFF	
September - October	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
November - December	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	

Park House: Orleans Wood (Willie Gaines Park)

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - March	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	
April - May	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
June - August	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	10:00 AM	4:00 PM	OFF		OFF		OFF	
September - October	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
November - December	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	

Park House: Hazel Parker Playground, Tiedeman Park, Hampton Park & May Utsey (Orange Grove) Park

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - March	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	
April - May	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
June - August*	8:00 AM	4:00 PM	8:00 AM	4:00 PM	8:00 AM	4:00 PM	8:00 AM	4:00 PM	8:00 AM	4:00 PM	OFF		OFF		OFF	
September - October	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	4:00 PM	7:00 PM	OFF		OFF		OFF	
November - December	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	3:30 PM	6:00 PM	Noon	5:00 PM	OFF		OFF	

** Assumption: Summer season hours - 8:00 AM - 4:00 PM (Monday - Friday)*

Milford Street City Stores (Logistics)

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - December	8:00 AM	5:00 PM	8:00 AM	5:00 PM	8:00 AM	5:00 PM	8:00 AM	5:00 PM	8:00 AM	5:00 PM	OFF		OFF		OFF	

Public Service Compound - City Garage

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - December	8:00 AM	5:00 PM	8:00 AM	5:00 PM	8:00 AM	5:00 PM	8:00 AM	5:00 PM	8:00 AM	5:00 PM	OFF		OFF		OFF	

Fire Stations

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - December	24x7		24x7		24x7		24x7		24x7		24x7		24x7		24x7	

City Hall - Spaces served by Ground Source Heat Pumps

Months	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Holiday	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
January - December**	6:00 AM	6:00 PM	6:00 AM	6:00 PM	6:00 AM	6:00 PM	6:00 AM	6:00 PM	6:00 AM	6:00 PM	OFF		OFF		OFF	

*** Fresh air dampers will remain closed & supply fans will cycle to maintain unoccupied tempeature setpoints outside of the hours listed above*

*** Ground source heat pumps will be put in occupied mode, outside of the hours listed above, based on the input from respective occupancy sensors*

Notes:

- Summer season (June thru August) schedules for the Park Houses are based on the information collected from the City staff. Schedules for remainder of the year are based on the published hours on the City website.
- No change to HVAC equipment schedules at the Fire Stations is recommended under the scope of this Amendment.
- Un-occupied period heating and cooling setpoints listed below will be maintained during the period listed as "OFF" in the tables above.
- New BMS will maintain operating schedules for the HVAC system as listed in the tables above and temperature setpoints listed in the table below.
- The individual facility occupants are free to operate as they need to operate to serve their communities. However, events outside of these times will not result in a shortfall payment.

The following table summarizes post-retrofit space temperature setpoints during occupied and un-occupied periods. See Exhibit 1, ECM 3a for measured pre-retrofit temperatures and fan run times

Facility	Cooling Mode		Heating Model	
	Occupied	Un-occupied	Occupied	Un-occupied
Park Houses	72°F	78°F	72°F	65°F
Fire Stations	72°F		72°F	
City Hall (Council Chamber)	72°F	74°F	70°F	68°F
Milford Street City Stores (Logistics)	72°F	78°F	72°F	65°F
Public Service Compound - City Garage	72°F	78°F	72°F	65°F

VI. MEASUREMENT & VERIFICATION SERVICES

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

1. During the Installation Period, a JCI Performance Assurance Specialist will track Measured Project Benefits. JCI will report the Measured Project Benefits achieved during the Installation Period, as well as any Non-Measured Project Benefits applicable to the Installation Period, to Customer within 60 days of the commencement of the Guarantee Term.

2. Within 60 days of each anniversary of the commencement of the Guarantee Term, JCI will provide Customer with an annual report containing:

   A. an executive overview of the project's performance and Project Benefits achieved to date;

   B. a summary analysis of the Measured Project Benefits accounting; and

   C. depending on the M&V Option, a detailed analysis of the Measured Project Benefits calculations.

3. During the Guarantee Term, a JCI Performance Assurance Specialist will monitor the on-going performance of the Improvement Measures, as specified in this Agreement, to determine whether anticipated Measured Project Benefits are being achieved. In this regard, the Performance Assurance Specialist will periodically assist Customer, on-site or remotely, with respect to the following activities:

   A. review of information furnished by Customer from the facility management system to confirm that control strategies are in place and functioning;

   B. advise Customer's designated personnel of any performance deficiencies based on such information;

   C. coordinate with Customer's designated personnel to address any performance deficiencies that affect the realization of Measured Project Benefits; and

   D. inform Customer of opportunities to further enhance project performance and of opportunities for the implementation of additional Improvement Measures.

4. For specified Improvement Measures, 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 Improveok.ment 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

5. For specified Improvement Measures utilizing an "Option C" M&V protocol, as well as the DES power factor correction, JCI will:

   A. perform periodic facility inspections of all equipment and operations in the facility during the reporting period to identify changes in the static factors from the baseline conditions;

   B. measure and record independent variables at the same time as the energy data; and

   C. collect and analyze all applicable utility billing invoices on a monthly basis necessary to track and report Measured Project Benefits for the applicable Improvement Measure.

CUSTOMER RESPONSIBILITIES

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

1. Providing JCI, its subcontractors, and its agents reasonable and safe access to all facilities and properties that are subject to the Work and/or M&V Services;

2. Providing for shut down and scheduling of affected locations during installation, including timely shutdowns of chilled water and hot water systems as needed to accomplish the Work and/or M&V Services;

3. Providing timely reviews and approvals of design submissions, proposed change orders, and other project documents;

4. Providing the following information with respect to the project and project site as soon as practicable following JCI's request:

    a. surveys describing the property, boundaries, topography and reference points for use during construction, including existing service and utility lines;
    b. geotechnical studies describing subsurface conditions, and other surveys describing other latent or concealed physical conditions at the project site;
    c. temporary and permanent easements, zoning and other requirements and encumbrances affecting land use, or necessary to permit the proper design and construction of the project and enable JCI to perform the Work;
    d. a legal description of the project site;
    e. as-built and record drawings of any existing structures at the project site; and
    f. environmental studies, reports and impact statement describing the environmental conditions, including hazardous conditions or materials, in existence at the project site.

5. Securing and executing all necessary agreements with adjacent land or property owners that are necessary to enable JCI to perform the Work;

6. Providing assistance to JCI in obtaining any permits, approvals, and licenses that are JCI's responsibility to obtain as set forth in Schedule 1;

7. Obtaining any permits, approvals, and licenses that are necessary for the performance of the Work and are not JCI's responsibility to obtain as set forth in Schedule 1;

8. Properly maintaining, and performing appropriate preventative maintenance on, all equipment and building systems affecting the Assured Performance Guarantee in accordance with manufacturers' standards and specifications;

9. Providing the utility bills, reports, and similar information reasonably necessary for administering JCI's obligations under the Assured Performance Guarantee within five (5) days of Customer receipt and/or generation or JCI's request therefor;

10. Providing 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. Remove and dispose of existing MLK pool cover.

16. If any equipment under control is changed out, it is the responsibility of the customer to move the controls and controls programming to the new equipment. This includes, but is not limited to, vending machine controls and HVAC controls.

17. Providing Police and Traffic Control support as necessary to facilitate the safe installation of equipment on city buildings including but not limited to temporary street closures.

PRICE AND PAYMENT TERMS

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

1. *Work*. The price to be paid by Customer for the Work shall be $13,209,151.00. Payments (including payment for materials delivered to JCI and work performed on and off-site) shall be made to JCI as follows:

September 2017	$3,962,745
October 2017	$660,458
November 2017	$660,458
December 2017	$660,458
January 2018	$660,458
February 2018	$462,320
March 2018	$660,458
April 2018	$594,412
May 2018	$660,458
June 2018	$660,458
July 2018	$660,458
August 2018	$660,458
September 2018	$330,229
October 2018	$660,458
November 2018	$396,275
December 2018	$330,229
January 2019	$132,092
February 2019	$132,092
March 2019	$264,183

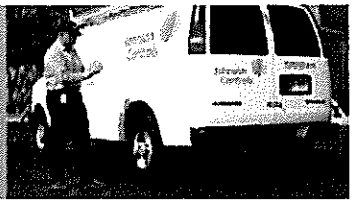
2. *M&V Services*. The total price for JCI's M&V Services, as detailed on Schedule 2-4 of this Agreement, is $427,128. At the City's request, this amount will be combined with the remaining M&V Services from the previous phases. The total price for JCI's M&V Services for all phases is $858,947. This amount will be paid to JCI in quarterly installments as shown in the following chart. 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.

Contract Year	Total Annual M&V Service for all Phases	Quarterly Payment	Payment Due Date
Installation 9/2017 thru 12/2017	$ -		Paid 1/1/2017
1/2018 thru 12/2018	$ 66,756	$ 16,689	1/1/2018; 4/1/2018; 7/1/2018; 10/1/2018
1/2019 thru 3/2019	$ 17,190	$ 17,190	1/1/2019
Year 1 - 2019	$ 62,902	$ 20,967	4/1/2019; 7/1/2019; 10/1/2019
Year 2 - 2020	$ 82,495	$ 20,624	1/1/2020; 4/1/2020; 7/1/2020; 10/1/2020
Year 3 - 2021	$ 84,970	$ 21,242	1/1/2021; 4/1/2021; 7/1/2021; 10/1/2021
Year 4 - 2022	$ 87,519	$ 21,880	1/1/2022; 4/1/2022; 7/1/2022; 10/1/2022
Year 5 - 2023	$ 90,145	$ 22,536	1/1/2023; 4/1/2023; 7/1/2023; 10/1/2023
Year 6 - 2024	$ 32,011	$ 8,003	1/1/2024; 4/1/2024; 7/1/2024; 10/1/2024
Year 7 - 2025	$ 32,971	$ 8,243	1/1/2025; 4/1/2025; 7/1/2025; 10/1/2025
Year 8 - 2026	$ 33,960	$ 8,490	1/1/2026; 4/1/2026; 7/1/2026; 10/1/2026
Year 9 - 2027	$ 34,979	$ 8,745	1/1/2027; 4/1/2027; 7/1/2027; 10/1/2027
Year 10 - 2028	$ 36,029	$ 9,007	1/1/2028; 4/1/2028; 7/1/2028; 10/1/2028
Year 11 - 2029	$ 37,110	$ 9,277	1/1/2029; 4/1/2029; 7/1/2029; 10/1/2029
Year 12 - 2030	$ 38,223	$ 9,556	1/1/2030; 4/1/2030; 7/1/2030; 10/1/2030
Year 13 - 2031	$ 39,369	$ 9,842	1/1/2031; 4/1/2031; 7/1/2031; 10/1/2031
Year 14 - 2032	$ 40,551	$ 10,138	1/1/2032; 4/1/2032; 7/1/2032; 10/1/2032
Year 15 - 2033	$ 41,767	$ 10,442	1/1/2033; 4/1/2033; 7/1/2033; 10/1/2033

3. *Preventative Maintenance Services Agreement*. See Attachment 4 (Preventative Maintenance Services Agreement). The total increase for JCI's Preventative Maintenance Services for Phase III, as detailed on Schedule 2-4 of this Agreement, is $180,526. At the City's request, this amount will be combined with the existing Preventative Maintenance Services. The total price for JCI's Preventative Maintenance Services as outlined in Attachment 4, is $6,496,061. This amount will be paid to JCI in quarterly installments as shown in the following chart. 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 Service Term.

Contract Year	Total Annual Planned Services for all Phases	Quarterly Payment	Payment Due Date
Installation	$ 317,874	$ 79,469	1/1/2018; 4/1/2018; 7/1/2018; 10/1/2018
Year 1 - 2019	$ 332,180	$ 83,045	1/1/2019; 4/1/2019; 7/1/2019; 10/1/2019
Year 2 - 2020	$ 342,145	$ 85,536	1/1/2020; 4/1/2020; 7/1/2020; 10/1/2020
Year 3 - 2021	$ 352,410	$ 88,102	1/1/2021; 4/1/2021; 7/1/2021; 10/1/2021
Year 4 - 2022	$ 362,982	$ 90,746	1/1/2022; 4/1/2022; 7/1/2022; 10/1/2022
Year 5 - 2023	$ 373,872	$ 93,468	1/1/2023; 4/1/2023; 7/1/2023; 10/1/2023
Year 6 - 2024	$ 385,088	$ 96,272	1/1/2024; 4/1/2024; 7/1/2024; 10/1/2024
Year 7 - 2025	$ 396,640	$ 99,160	1/1/2025; 4/1/2025; 7/1/2025; 10/1/2025
Year 8 - 2026	$ 408,540	$ 102,135	1/1/2026; 4/1/2026; 7/1/2026; 10/1/2026
Year 9 - 2027	$ 420,796	$ 105,199	1/1/2027; 4/1/2027; 7/1/2027; 10/1/2027
Year 10 - 2028	$ 433,420	$ 108,355	1/1/2028; 4/1/2028; 7/1/2028; 10/1/2028
Year 11 - 2029	$ 446,422	$ 111,606	1/1/2029; 4/1/2029; 7/1/2029; 10/1/2029
Year 12 - 2030	$ 459,815	$ 114,954	1/1/2030; 4/1/2030; 7/1/2030; 10/1/2030
Year 13 - 2031	$ 473,609	$ 118,402	1/1/2031; 4/1/2031; 7/1/2031; 10/1/2031
Year 14 - 2032	$ 487,818	$ 121,954	1/1/2032; 4/1/2032; 7/1/2032; 10/1/2032
Year 15 - 2033	$ 502,452	$ 125,613	1/1/2033; 4/1/2033; 7/1/2033; 10/1/2033

Planned Service Proposal



Attachment 1

CUSTOMER
CITY OF CHARLESTON

LOCAL JOHNSON CONTROLS OFFICE
4415 SEA RAY DR
CHARLESTON,SC 29405-8401

AGREEMENT START DATE:
01/01/2019

PROPOSAL DATE:
09/12/2017

ESTIMATE NO:
1-P4NNEYS

Partnering with you to deliver value-driven solutions

A Planned Service Agreement with Johnson Controls provides you with a customized service strategy designed around the needs of your facility. Our approach features a combination of scheduled, predictive and preventative maintenance services that focus on your goals.

As your building technology services partner, Johnson Controls delivers an unmatched service experience delivered by factory-trained, highly skilled technicians who optimize operations of the buildings we work with, creating productive and safe environments for the people within.

By integrating our service expertise with innovative processes and technologies, our value-driven planned service solutions deliver sustainable results, minimize equipment downtime and maximize occupant comfort.

YORK BY JOHNSON CONTROLS

METASYS BY JOHNSON CONTROLS

Johnson Controls

Executive Summary

PLANNED SERVICE PROPOSAL FOR THE CITY OF CHARLESTON, SC

Dear Mayor Tecklenburg,

We value and appreciate your commitment in Johnson Controls as a service provider for your building systems and are pleased to provide a value-driven maintenance solution for the City. The enclosed proposal outlines the Planned Service Agreement we have developed for your facilities.

Details are included in the Planned Service Agreement summary (Schedule A), but highlights are as follows:

- In this proposal we are offering a service agreement for 1 Year - starting 01/01/2019 and ending 12/31/2019.
- The agreement price for first year is $332,180.00; see Schedule A, Supplemental Price and Payment Terms, for pricing in subsequent years.
- The equipment options and number of visits being provided for each piece of equipment are described in Schedule A, Equipment list.

As a manufacturer of both mechanical and controls systems, Johnson Controls has the expertise and resources to provide proper maintenance and repair services for your facilities.

Again, thank you for your commitment to Johnson Controls and we look forward to continuing to support the City as your building technology services partner.

Please contact us if you have any questions.

Sincerely,

Jack Mills
Service Account Executive
(843)729 -0412

Kimberly L. Smith
Solutions, Sr. Account Executive
(803)403-3719

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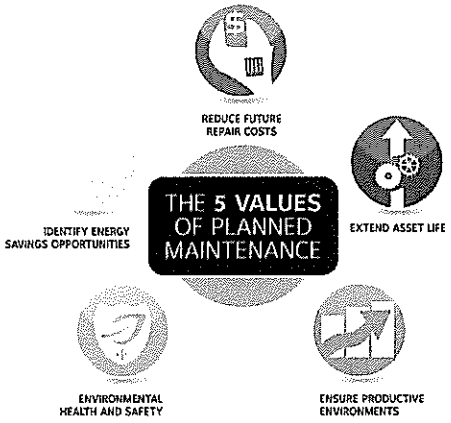
Benefits of Planned Service

A Planned Service Agreement with Johnson Controls will allow you to optimize your building's facility performance, providing dependability, sustainability and energy efficiency. You'll get a value-driven solution that fits your specific goals, delivered with the attention of a local service company backed by the resources of a global organization.



With this Planned Service Agreement, Johnson Controls can help you achieve the following five objectives:

1. Identify Energy Savings Opportunities
   Since HVAC equipment accounts for a major portion of a building's energy usage, keeping your system performing at optimum levels may lead to a significant reduction in energy costs.
2. Reduce Future Repair Costs
   Routine maintenance may maximize the life of your equipment and may reduce equipment breakdowns.
3. Extend Asset Life
   Through proactive, factory-recommended maintenance, the life of your HVAC assets may be extended, maximizing the return on your investment.
4. Ensure Productive Environments
   Whether creating a comfortable place where employees can be productive or controlling a space to meet specialized needs, maintenance can help you achieve an optimal environment for the work that is being accomplished
5. Promote Environmental Health and Safety
   When proper indoor conditions and plant requirements are maintained, business outcomes may be improved by minimizing sick leave, reducing accidents, minimizing greenhouse gas emissions and managing refrigerant requirements.

All of the services we perform on your equipment are aligned with "The 5 Values of Planned Maintenance" and our technicians understand how the work they perform can help you accomplish your business objectives.

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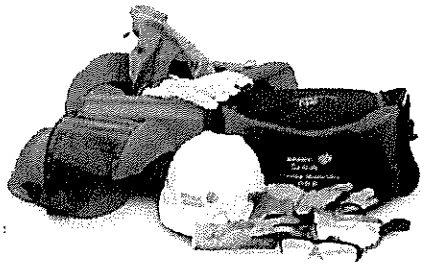
Personalized Account Management

A Planned Service Agreement also provides you with the support of an entire team that knows your sites and can closely work with you on budget planning and asset management. Your local Johnson Controls account management team can help guide planned replacement, energy retrofits and other building improvement projects. You'll have peace of mind that an entire team of skilled professionals will be looking out for what is best for your facility and budget.

A Culture of Safety

Johnson Controls technicians take safety seriously and personally, and integrate it into everything they do. All of our technicians participate in regular and thorough safety training. Because of their personal commitment, we are a leader in the HVAC service industry for workplace safety performance. This means that you do not have to worry about us when we are on your site.



Commitment to Customer Satisfaction

Throughout the term of your Planned Service Agreement, we will periodically survey you and use your feedback to continue to make improvements to our service processes and products. Our goal is to deliver the most consistent and complete service experience possible. To meet this goal, we've developed and implemented standards and procedures to ensure you receive the ultimate service experience – every time.

Energy & Sustainability

A more sustainable world one building at a time – Johnson Controls is a company that started more than 125 years ago with a product that reduced energy use in buildings. We've been saving energy for customers ever since. Today, Johnson Controls is a global leader in creating smart environments where people live, work and play, helping to create a more comfortable, safe and sustainable world.

The Value of Integrity

Johnson Controls has a long, proud history of integrity. We do what we say we will do and stand behind our commitments. Our good reputation builds trust and loyalty. In recognition for our commitment to ethics across our global operations, we are honored to be named one of the World's Most Ethical Companies by Ethisphere Institute, a leading think tank dedicated to business ethics and corporate social responsibility. In addition, *Corporate Responsibility Magazine* recognizes Johnson Controls as one of the top companies in its annual "100 Best Corporate Citizens" list.

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Service Plan Methodology

As part of the delivery of this Planned Service Agreement, Johnson Controls will dedicate a local customer service agent responsible for having a clear understanding of the agreement scope, and your facility procedures and protocols.

A high-level overview around our service delivery process is outlined below including scheduling, emergency service, on-site paperwork, communication and performing repairs outside of the agreement scope.

Scheduling

Preventative maintenance service will be scheduled using our automated service management system. In advance of the scheduled service visit, our technician is sent a notice of service to a smartphone. Once the technician acknowledges the request, your customer service agent will call or e-mail your on-site contact to let you know the start date and type of service scheduled.

The technician checks in, wears personal protective equipment, performs the task(s) as assigned, checks out with you and asks for a screen capture signature on the smartphone device. A work order is then e-mailed, faxed or printed for your records.

Emergency Services

Emergency service will be provided 7 days a week, 24 hours a day, 365 days a year. During normal business hours, emergency service will be coordinated by the customer service agent. After hours, weekends and holidays, the emergency service number transfers to the Johnson Controls after-hours call center and on-call technicians are dispatched as needed.

Johnson Controls is committed to dispatching a technician within hours of receiving your call through the service line. A work order is e-mailed, faxed or printed for your records. Depending on the terms of your agreement, you may incur charges for after hour services.

Communication

A detailed communication plan will be provided to you so you know how often we will provide information to you regarding your Planned Service Agreement. The communication plan will also provide you with your main contacts at Johnson Controls.

Approval Process for Non-Covered Items

Johnson Controls will adhere to your procurement process. No work will be performed outside of the agreement scope without prior approval. Johnson Controls will work with you closely to ensure your procurement process is followed before any non-covered item work is started.

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Summary of Services and Options

Comprehensive and Operational Inspections

During comprehensive and operational inspections, Johnson Controls will perform routine checks of the equipment for common issues caused by normal wear and tear on the equipment. Additional tests can be run to confirm the equipment's performance.

Routine maintenance, such as lubrication, cleaning and tightening connections, can be performed depending on the type of equipment being serviced. Routine maintenance is one of the keys to the five values of maintenance – it can help identify energy saving opportunities, reduce future repair costs, extend asset life, ensure productive environments, and promote health and safety.

Evaporator Coil Cleaning

Dirty evaporator coils impair heat transfer from the circulated air to the cooling medium. This reduces the efficiency of the unit. Extremely dirty coils may impede the airflow across the coil and out into the building, which can cause occupant discomfort and complaints. Johnson Controls technicians will clean these coils, improving efficiency and occupant comfort.

Filter Replacement

Clean air filters help maintain proper airflow throughout your building. Decreased airflow can impair the performance of the cooling coil and may lead to occupant discomfort and inefficient operation of the HVAC system. Johnson Controls will replace the filters on a regular basis to maintain airflow and maximize air quality.

Install Updates supplied with Software Subscription

Our expert technicians will install software upgrades to keep your system up-to-date. This helps minimize disruptions to your daily operations and staff during the upgrade process. Keeping your software up-to-date allows you to take advantage of the latest features and enhancements, and helps maintain compatibility with the latest technology on the market. Updating the system software is also a best practice to minimize cybersecurity vulnerabilities.

Metasys Software Subscription

We will provide the most recent software release allowed by the hardware and operating systems of your existing computers and servers for the number of years specified. Labor to install the updates is available as an additional option. Keeping your software up-to-date allows you to take advantage of the latest features and enhancements, and helps maintain compatibility with the latest technology on the market. Updating the system software is also a best practice to minimize cybersecurity vulnerabilities.

Oil Analysis

By examining the oil, we can determine what part of the chiller is experiencing the most significant and harmful wear. Johnson Controls has been collecting data to statistically derive acceptable limits. We can also determine if there is a breakdown in the oil or if contaminants are affecting chiller operation.

Operational Visit/Controls System Verification

Based on our expertise and factory recommendations, we will execute routine preventative maintenance and calibrations on the equipment controller for your mechanical equipment. The inspection includes the following tasks:

- Visual inspection of the control panel.
- Review of alarms, points which are offline, out of service and overridden points.
- Local backup of controller program.

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Advantages: Provides proactive identification of problems, which helps maintain productive environments, identify energy efficiency opportunities, reduce future repairs and extend the life of your equipment.

Operational Visit/Supervisory Controls System Verification

Based on our expertise and factory recommendations, we will execute routine preventative maintenance on the supervisory controllers and servers in your Metasys system. The inspection includes the following tasks:

- Visual inspection of the control panel and cleaning as needed.
- Review of alarms, points which are offline, out of service and overridden points.
- Local backups of controllers, objects, and server repositories.
- Review security database and ensure default passwords are changed.

Advantages: Provides proactive identification of problems, which helps maintain productive environments, identify energy efficiency opportunities, reduce future repairs and extend the life of your equipment.

VAV Box Comprehensive/Controls System Verification and Calibration By Exception

Based on our expertise and factory recommendations, we will execute routine preventative maintenance and calibrations on the equipment controllers for your VAV boxes. This will include:

- Review of alarms, points which are offline, out of service and overridden points.
- Local backup of controller program.

We will also perform a box flow test, then perform the following inspections on suspect boxes that do not meet the test:

- Visually inspection of the control panel, clean and tighten connections as needed.
- Verification and field calibration of sensors used in control loops and alarm functions.
- Verification of control signals and sequences.

Advantages: Provides a cost-efficient way to proactively identify problems, which helps maintain productive environments, identify energy efficiency opportunities, reduce future repairs and extend the life of your equipment.

Vibration Analysis - Chiller

Johnson Controls maintains the world's largest database of vibration signatures based on more than 50,000 chiller analyses. Data from your chiller is collected by Johnson Controls personnel and uploaded to our predictive diagnostics team for analysis. It is then compared with vibration standards which have been statistically derived from 20 years of compiled data using patented formulas. This allows you to identify and correct potential issues before they cause unscheduled downtime.

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Summary

Thank you for choosing Johnson Controls as your building technology services partner. The following agreement document includes all the details surrounding your Planned Service Agreement.

With planned service from Johnson Controls, you'll get a value-driven solution that can help optimize your building controls and equipment performance, providing dependability, sustainability and energy efficiency. You'll get a solution that fits your specific goals, delivered with the attention of a local service company backed by the resources of a global organization.

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Planned Service Agreement

Customer Name :	CITY OF CHARLESTON
Address:	80 BROAD ST CHARLESTON,SC 29401-2901
Proposal Date:	09/12/2017
Estimate #:	1-P4NNEYS

Scope of Service

Johnson Controls, Inc. ("JCI") and the Customer (collectively the "Parties") agree Preventative Maintenance Services, as defined in Schedule A ("Services"), will be provided by JCI at the Customer's facility. This Planned Service Agreement, the Equipment List, Supplemental Price and Payment Terms and Schedules attached hereto and incorporated by this reference as if set forth fully herein (collectively the "Agreement"), cover the rights and obligations of both the Customer and JCI.

Extended Service Options for Premium Coverage

If Premium Coverage is selected, on-site repair services to the equipment will be provided as specified in this Agreement for the equipment listed in the attached Equipment List.

Equipment List

Only the equipment listed in the Equipment List will be covered as part of this Agreement. Any changes to the Equipment List must be agreed upon in writing by both Parties.

Term / Automatic Renewal

This Agreement takes effect on 01/01/2019 and will continue until 12/31/2019 ("Original Term"). The Agreement will automatically renew on a year-to-year basis after the Original Term ends unless the Customer or JCI gives the other written notice it does not want to renew. The notice must be delivered at least (45) days prior to the end of the Original Term or of any renewal period. The Original Term and any renewal periods are sometimes collectively referred to in this Agreement as the "Term".

Refrigerant Charges

Refer to page 110 "Special Additions and Exceptions".

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Price and Payment Terms

The total Contract Price for JCI's Services during the 1st year of the Original Term is $332,180.00. This amount will be paid to JCI in Monthly installments. Pricing for each subsequent year of a multiyear original term is set forth in the Supplemental Price and Payment Terms. All payments will be due and payable within 30 days of the invoice date and such timely payment by Customer shall be a condition precedent to JCI's obligation to perform its Services. A penalty of one and a half percent (1.5%) of the amount due per month shall accrue for payments received after the payment due date.

Invoices will be sent to the following location:

CITY OF CHARLESTON
ATTN: ACCOUNTS PAYABLE
PO BOX 853
CHARLESTON,SC 29402

JOHNSON CONTROLS Inc.

By: Jack Mills

Signature:

Title: Account Executive **Date:**

Signature:

Title: **Date:**

By:

Signature:

Title: **Date:**

Customer PO#:

JCI Branch: JOHNSON CONTROLS CHARLESTON SC CB - 0N94
Address: 4415 SEA RAY DR
CHARLESTON,SC 29405-8401
Branch Phone: (866) 818-5463

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Schedule A - Equipment List

ARTHUR W CHRISTOPHER COMMUNITY CENTER	265 FISHBURNE ST CHARLESTON, SC 29403-4755

Builtup Unit, Supply-Return Fan, <10HP

Quantity: 4
Coverage Level: Premium 24x7

Services Provided

1	Operational
3	Comprehensive
4	Filters, Standard Pleated

Customer Tag	Manufacturer	Model #	Serial #
FAN #1			
FAN #2			
FAN #3			
FAN #4			

Controls (Controller/End Devices), Roof Top Unit (RTU), Johnson Controls, 0-20 points

Quantity: 8
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
RTU CONTROLLER 1			
RTU CONTROLLER 2			
RTU CONTROLLER 3			
RTU CONTROLLER 4			
RTU CONTROLLER 5			
RTU CONTROLLER 6			
RTU CONTROLLER 7			
RTU CONTROLLER 8			

Controls (Controller/End Devices), Supervisory/Server/UI, Johnson Controls, 25001-50000 points

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

4	Operational

Customer Tag	Manufacturer	Model #	Serial #
NAE			

Roof Top Unit (RTU), Cooling/Gas Heating, with Economizer, 25.5-60 Tons

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

3	Operational (Mid Season - Cooling/Heating with Economizer)
1	Cooling Comprehensive (with Economizer)
1	Condenser Coil Cleaning
4	Return Air Filter Change

Customer Tag	Manufacturer	Model #	Serial #
RTU 16-50T #4			
RTU 16-50T #5			

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ARTHUR W CHRISTOPHER COMMUNITY CENTER	265 FISHBURNE ST CHARLESTON, SC 29403-4755

Roof Top Unit (RTU), Cooling/Gas Heating, with Economizer, 8-15 Tons

Quantity: 6

Coverage Level: Premium 24x7

Services Provided

3	Operational (Mid Season - Cooling/Heating with Economizer)
1	Condenser Coil Cleaning
4	Return Air Filter Change
1	Cooling Comprehensive (with Economizer)

Customer Tag	Manufacturer	Model #	Serial #
RTU#1	JCI_YORK	J08ZHS10P2WZZ500 01 65671741	N1N0516560
RTU#2	JCI_YORK	J08ZHS10P2WZZ500 01 65572662	N1D0794851
RTU#3	JCI_YORK	J12ZHS15P2WZZ500 01 65572662	N1D0794649
RTU#6	JCI_YORK	J12ZHS15P2WZZ500 01 65572662	N1D0794648
RTU#7	JCI_YORK	J08ZHS10U2WZZ50 001A	N1D0794650(M)
Verify Unit#	JCI_YORK	J08ZHS10P2WZZ500 01 65572662	N1D0794852

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BEES FERRY REC CENTER	1580 ASHLEY GARDEN BLVD CHARLESTON, SC 29414-9127

Air Handling Unit (AHU), 100% Outside Air, <15 HP

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Evaporator Coil Cleaning
6	Standard Pleated Filter Change
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
AHU #1	Trane	LPCAD14D4F0C6000 000107HCJA00GB	T08G47622
AHU #2	Trane	LPACD14D4F0C6000 000107HCJA00GB	T08G47623

Air Handling Unit (AHU), Variable Frequency Drive (VFD), <15 HP

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
VFD #1	Trane	TR16008GT2CN1ST R0DLF00A00C0	061132H298
VFD #2	Trane	TR16008GT2CN1ST R0DLF00A00C0	055832H258

Block Hours - Controls

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

1	Repair

Customer Tag	Manufacturer	Model #	Serial #

Controls (Controller/End Devices), Air Handling Unit (AHU), 3rd Party, 0-20 points

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #

Controls (Controller/End Devices), Air Handling Unit (AHU), 3rd Party, 21-60 points

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #

Controls (Controller/End Devices), Heat Pump, 3rd Party, 0-50 points

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Quantity: 5
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #

Controls (Controller/End Devices), Supervisory/Server/UI, Johnson Controls, 0-25000 points

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

2	Operational

Customer Tag	Manufacturer	Model #	Serial #

Heat Pump, Air Cooled, >15 Tons

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

1	Cooling Comprehensive
2	Operational (Mid Season)
6	Return Air Filter Change
1	Evaporator Coil Cleaning
1	Condenser Coil Cleaning
1	Heating Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
GYM UNIT		TWA240B400FC	8182627AD
HP2	Trane	TWA240B400FC	8145GTKAD

Heater, Gas Infrared-All

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
Gas Htr #1			

Induction Unit Items

Quantity: 6
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
Induction #1			
Induction #2			
Induction #3			
Induction #4			
Induction #5			
Induction #6			

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BEES FERRY REC CENTER	1580 ASHLEY GARDEN BLVD CHARLESTON, SC 29414-9127

Roof Top Unit (RTU), Cooling/Electric Heating, with Economizer, 15.5-25 Tons

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

2	Operational (Mid Season - Cooling/Heating with Economizer)
1	Cooling Comprehensive (with Economizer)
1	Electric Heating Comprehensive (with Economizer)
1	Condenser Coil Cleaning
1	Evaporator Coil Cleaning
6	Return Air Filter Change

Customer Tag	Manufacturer	Model #	Serial #
RTU #1	Trane	WSC072A4RCA2	832100120L
RTU #2		WSCO48E4RBA0JB0 00A1B20000	0385101527L

Roof Top Unit (RTU), Cooling/Electric Heating, with Economizer, 8-15 Tons

Quantity: 5
Coverage Level: Premium 24x7

Services Provided

1	Electric Heating Comprehensive (with Economizer)
1	Condenser Coil Cleaning
1	Evaporator Coil Cleaning
6	Return Air Filter Change
2	Operational (Mid Season - Cooling/Heating with Economizer)
1	Cooling Comprehensive (with Economizer)

Customer Tag	Manufacturer	Model #	Serial #
ACHPU SML #1	Trane	WSC072A4RCA2D00 00A1B20300C	832100120L
ACHPU SML #2	Trane	WSC048E4RBA0JB0 00A1B20000B	835101527L
ACHPU SML #3	Trane	WSC036E4RBA0HB0 00A1B20000B	832100075L
ACHPU SML #4	Trane	WSC090A4RCA2MD0 00A1B20000C	835101462L
ACHPU SML #5	Trane	WSC090A4RCA2MD0 00A1B20000C	835101458L

Unit Heater, Electric, 300000-600000 BTU

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
UNIT HTR #1			

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Air Handling Unit (AHU), Mixed Air, <15 HP

Quantity: 4
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Evaporator Coil Cleaning
4	Standard Pleated Filter Change
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
AHU #1			
AHU #2			VI1203
AHU #3			
AHU #4			

Chiller, Water Cooled, Reciprocating, 80-120 Tons

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #

Contractor - Water Treatment

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

5872	Contractor - Water Treatment

Customer Tag	Manufacturer	Model #	Serial #

Controls (Controller/End Devices), Air Handling Unit (AHU), Johnson Controls, 0-20 poin

Quantity: 14
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #

Controls (Controller/End Devices), Central Cooling Plant, Johnson Controls, 0-50 points

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
Chiller Controller #1	JCI_YORK		1-CTJWTEP

Controls (Controller/End Devices), Generic Input/Output, Johnson Controls, 0-20 points

Quantity: 5
Coverage Level: Premium 24x7

Services Provided

1	Operational

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1 Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
Exhaust Controller #1	JCI_YORK		1-CTK24WV
TEC #1			
TEC #2			
TEC #3			
TEC #4			

Controls (Controller/End Devices), Supervisory/Server/UI, Johnson Controls, 50001-125000 points

Quantity: 1
Coverage Level: Premium 24x7

Services Provided
4 Operational

Customer Tag	Manufacturer	Model #	Serial #
NAE	JCI_YORK		1-3SM0TLN

Heat Exchanger-All

Quantity: 4
Coverage Level: Premium 24x7

Services Provided
1 Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
HT EXCHANGER #1			
HT EXCHANGER #2			
HT EXCHANGER #3			
HT EXCHANGER #4			

Heat Pump, Water Cooled, 0-5 Tons

Quantity: 10
Coverage Level: Premium 24x7

Services Provided
4 Return Air Filter Change
1 Evaporator Coil Cleaning
3 Operational (Mid Season)
1 Cooling Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
WCHP #1	WaterFurnance	EO36BL001NBDSSB	V12801
WCHP #10		E036ER	V12804
WCHP #2			
WCHP #3			
WCHP #4		E036TL001NBDSSA	VI2806
WCHP #5		E036TR001NBDSSA	V12808
WCHP #6		E036TL001NBDSSA	V12805
WCHP #7			
WCHP #8			
WCHP #9			

Pump, Circulating, 0-10 HP

Quantity: 10
Coverage Level: Premium 24x7

Services Provided
3 Operational
1 Comprehensive

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CHARLESTON CITY HALL	80 BROAD ST CHARLESTON, SC 29401-2901

Customer Tag	Manufacturer	Model #	Serial #
CIR PUMPS #1			
CIR PUMPS #10			
CIR PUMPS #2			
CIR PUMPS #3			
CIR PUMPS #4			
CIR PUMPS #5			
CIR PUMPS #6			
CIR PUMPS #7			
CIR PUMPS #8			
CIR PUMPS #9			

Terminal Product, Fan Coil Unit (FCU), Horizontal Air Flow, 300-1200 CFM

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
4	Air Filter Change
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
FCU #1			

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Air Handling Unit (AHU), 100% Outside Air, <15 HP

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive
4	Standard Pleated Filter Change
1	Evaporator Coil Cleaning

Customer Tag	Manufacturer	Model #	Serial #
AHU (<10HP) / 0001			

Air Handling Unit (AHU), Mixed Air, <15 HP

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive
1	Evaporator Coil Cleaning
4	Standard Pleated Filter Change

Customer Tag	Manufacturer	Model #	Serial #
AHU (10-40HP) / 0001			

Chiller, Air Cooled, Scroll, 10-40 Tons

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive
1	Condenser Coil Cleaning

Customer Tag	Manufacturer	Model #	Serial #
Chiller	JCI_YORK	YCAL0033EE17XEA	2BVM003016

Controls (Controller/End Devices), Air Handling Unit (AHU), Johnson Controls, 0-20 poin

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
AHU Controller #1			

Controls (Controller/End Devices), Central Cooling Plant, Johnson Controls, 0-50 points

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
Chiller Controller #1			

Controls (Controller/End Devices), Fan Coil Unit (FCU), Johnson Controls, 0-50 points

Quantity: 18
Coverage Level: Premium 24x7

Services Provided

1	Operational

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1 Comprehensive

Customer Tag	Manufacturer	Model #	Serial #

Controls (Controller/End Devices), Generic Input/Output, Johnson Controls, 0-20 points

Quantity: 1
Coverage Level: Premium 24x7

Services Provided
1 Operational
1 Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
Pump Controller #1			

Controls (Controller/End Devices), Supervisory/Server/UI, Johnson Controls, 25001-50000 points

Quantity: 1
Coverage Level: Premium 24x7

Services Provided
4 Operational

Customer Tag	Manufacturer	Model #	Serial #
NAE			

Controls (Controller/End Devices), Variable Air Volume (VAV), Johnson Controls, 0-25 points

Quantity: 11
Coverage Level: Premium 24x7

Services Provided
1 Operational
1 Comprehensive - By Exception

Customer Tag	Manufacturer	Model #	Serial #

Expansion Tank

Quantity: 1
Coverage Level: Premium 24x7

Services Provided
1 Operational

Customer Tag	Manufacturer	Model #	Serial #
Expansion Tank / 0001			

Fan, Exhaust Fan, Ceiling Mounted, 0 - 5HP

Quantity: 5
Coverage Level: Premium 24x7

Services Provided
1 Operational
1 Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
Exhaust Fan (0-5HP) #1			
Exhaust Fan (0-5HP) #2			

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Exhaust Fan (0-5HP) #3
Exhaust Fan (0-5HP) #4
Exhaust Fan (0-5HP) #5

Heat Pump, Air Cooled, 0-5 Tons

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

1	Cooling Comprehensive
3	Operational (Mid Season)
4	Return Air Filter Change
1	Evaporator Coil Cleaning
1	Condenser Coil Cleaning

Customer Tag	Manufacturer	Model #	Serial #
AC Heat Pump (0-7.5T) / 0001			

Pump, Condenser, 0-10 HP

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
Chill Water Pump			

Terminal Product, Fan Coil Unit (FCU), Horizontal Air Flow, 300-1200 CFM

Quantity: 18
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #

VAV Box, All Types

Quantity: 11
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #

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CHARLESTON MARITIME CENTER	10 WHARFSIDE ST CHARLESTON, SC 29401-1596

Air Compressor/Dryer, Air Compressor, Commercial, <5 HP

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
AIR COMPRESSOR			

Heat Pump, Air Cooled, 0-5 Tons

Quantity: 5
Coverage Level: Premium 24x7

Services Provided

4	Return Air Filter Change
3	Operational (Mid Season)
1	Cooling Comprehensive
1	Condenser Coil Cleaning
1	Evaporator Coil Cleaning

Customer Tag	Manufacturer	Model #	Serial #
ACHPU #1			
ACHPU #2		PWR048C100A3	M0336EACF
ACHPU #3		TWA060C400A2	L39320MFF
ACHPU #4			
ACHPU #5			

Refrigeration, Freezer Walk-in

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #

Refrigeration, Refrigerator Walk-in

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #

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CHARLESTON PARKS DEPT	823 MEETING ST CHARLESTON, SC 29403-3108

Controls (Controller/End Devices), Heat Pump, Johnson Controls, 0-50 points

Quantity: 29
Coverage Level: Premium

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #

Controls (Controller/End Devices), Supervisory/Server/UI, Johnson Controls, 0-25000 points

Quantity: 3
Coverage Level: Premium

Services Provided

3	Operational

Customer Tag	Manufacturer	Model #	Serial #

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CHARLESTON POLICE DEPT	180 LOCKWOOD BLVD STE A CHARLESTON, SC 29403-5152

Air Compressor/Dryer, Air Compressor, Commercial, <5 HP

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
ACOMP-SML RAD-ALL			

Air Handling Unit (AHU), Mixed Air, 35-60 HP

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
4	Standard Pleated Filter Change
1	Evaporator Coil Cleaning
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
AHU-LG			

Air Handling Unit (AHU), Mixed Air, <15 HP

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive
4	Standard Pleated Filter Change
1	Evaporator Coil Cleaning

Customer Tag	Manufacturer	Model #	Serial #
AHU-SML		S1CA9000-00	1-08-F-324126

Air Handling Unit (AHU), Return Air, 35-60 HP

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive
4	Standard Pleated Filter Change
1	Evaporator Coil Cleaning

Customer Tag	Manufacturer	Model #	Serial #
AHU-MED			

Chiller, Air Cooled, Screw, 150-250 Tons

Quantity: 1
Coverage Level: Basic

Services Provided

3	Operational
1	Comprehensive
1	Condenser Coil Cleaning
1	Oil Analysis (2 Circuits)

Customer Tag	Manufacturer	Model #	Serial #
Chiller	Trane	RTAA1704XR01A3D OBG	U99D07784

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CHARLESTON POLICE DEPT	180 LOCKWOOD BLVD STE A CHARLESTON, SC 29403-5152

Computer Room Unit, with Remote Condenser, <5 Tons

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Condenser Coil Cleaning
4	Standard Pleated Filter Change
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #

Controls (Controller/End Devices), Air Handling Unit (AHU), Johnson Controls, 0-20 poin

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
AHU Controller #1			
AHU Controller #2			

Controls (Controller/End Devices), Central Cooling Plant, Johnson Controls, 0-50 points

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
Chiller Controller #1			

Controls (Controller/End Devices), Supervisory/Server/UI, Johnson Controls, 0-25000 points

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

4	Operational

Customer Tag	Manufacturer	Model #	Serial #
NAE 1			
NAE 2			

Controls (Controller/End Devices), Variable Air Volume (VAV), Johnson Controls, 0-25 points

Quantity: 39
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive - By Exception

Customer Tag	Manufacturer	Model #	Serial #
VAV Controllers	JCI_YORK		1-CTK912M

Heat Pump, Air Cooled, 0-5 Tons

Quantity: 2

Services Provided

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Coverage Level: Premium 24x7

1	Evaporator Coil Cleaning
4	Return Air Filter Change
1	Condenser Coil Cleaning
3	Operational (Mid Season)
1	Cooling Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
ACHPU-SML #1		TRANE AHU	
ACHPU-SML #2	Liebert	MMD96E-CHLS0	0831N171062

Pump, Circulating, 11-50 HP

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
PUMP-MED			

Pump, Variable Frequency Drive (VFD), <15 HP

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
VFD-LG #1 Supply Fan-1, 75 HP		HV9075AGV5M0A36 13	12754354
VFD-LG #2 Return Fan, 20 HP	Eaton	TEST	12815195

VAV Box, All Types

Quantity: 39
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #

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Air Handling Unit (AHU), Mixed Air, <15 HP

Quantity: 11
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive
4	Standard Pleated Filter Change
1	Evaporator Coil Cleaning

Customer Tag	Manufacturer	Model #	Serial #
AHU #1			
AHU #11			
AHU #2			
AHU #3			
AHU #4			
AHU #5			
AHU #6			
AHU #7			
AHU #8			
AHU #9			

Chiller, Air Cooled, Scroll, 101-140 Tons

Quantity: 1
Coverage Level: Basic

Services Provided

3	Operational
1	Comprehensive
1	Condenser Coil Cleaning (with louvers)

Customer Tag	Manufacturer	Model #	Serial #
Chiller	JCI_YORK	YCAL0104EC46XCAS TB	RHNM009825

Controls (Controller/End Devices), Air Handling Unit (AHU), Johnson Controls, 0-20 poin

Quantity: 11
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
AHU Controllers	JCI_YORK		1-CTK915K

Expansion Tank

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

1	Operational

Customer Tag	Manufacturer	Model #	Serial #
EXP TANK			

Pump, Circulating, 0-10 HP

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

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CHARLESTON VISITORS CENTER00422937	375 MEETING ST CHARLESTON, SC 29403-6238

Customer Tag	Manufacturer	Model #	Serial #
CIR PUMPS #1			
CIR PUMPS #2			

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DOCK STREET THEATRE	135 CHURCH ST CHARLESTON, SC 29401-2803

Air Handling Unit (AHU), Mixed Air, 15-30 HP

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive
6	Standard Pleated Filter Change
1	Evaporator Coil Cleaning

Customer Tag	Manufacturer	Model #	Serial #
AHU #1			

Chiller, Air Cooled, Screw, 150-250 Tons

Quantity: 1
Coverage Level: Basic

Services Provided

3	Operational
1	Vibration Analysis
1	Comprehensive
1	Condenser Coil Cleaning
1	Oil Analysis (2 Circuits)

Customer Tag	Manufacturer	Model #	Serial #
Chiller	JCI_YORK	YCAL0124EC17XBA / R22	RGLM003686

Controls (Controller/End Devices), Air Handling Unit (AHU), Johnson Controls, 0-20 poin

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
FEC Controller #20			

Controls (Controller/End Devices), Fan Coil Unit (FCU), Johnson Controls, 0-50 points

Quantity: 19
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
FEC Controller #10			
FEC Controller #11			
FEC Controller #12			
FEC Controller #13			
FEC Controller #14			
FEC Controller #15			
FEC Controller #16			
FEC Controller #17			
FEC Controller #18			
FEC Controller #19			
FEC Controller #2			
FEC Controller #3			
FEC Controller #4			
FEC Controller #5			
FEC Controller #6			
FEC Controller #7			
FEC Controller #8			
FEC Controller #9			
FEC Contriler #1			

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Controls (Controller/End Devices), Roof Top Unit (RTU), Johnson Controls, 0-20 points

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
FEC Controller #21			

Controls (Controller/End Devices), Supervisory/Server/UI, Johnson Controls, 0-25000 points

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

4	Operational

Customer Tag	Manufacturer	Model #	Serial #
NCM			

Fan, Exhaust Fan, Ceiling Mounted, 0 - 5HP

Quantity: 20
Coverage Level: Premium 24x7

Services Provided

2	Operational

Customer Tag	Manufacturer	Model #	Serial #

Humidifier All

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

1	Operational

Customer Tag	Manufacturer	Model #	Serial #
	JCI_YORK		1-96YPR8N

Pump, Circulating, 11-50 HP

Quantity: 3
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
Circulating Pump #1 Circulating Pump #2 Circulating Pump #3			

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Pump, Variable Frequency Drive (VFD), <15 HP

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
VFD #1			
VFD #2			

Roof Top Unit (RTU), Cooling/Electric Heating, with Economizer, 25.5-60 Tons

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

2	Operational (Mid Season - Cooling/Heating with Economizer)
1	Cooling Comprehensive (with Economizer)
1	Electric Heating Comprehensive (with Economizer)
1	Evaporator Coil Cleaning
1	Condenser Coil Cleaning
6	Return Air Filter Change

Customer Tag	Manufacturer	Model #	Serial #
RTU #1			

Terminal Product, Fan Coil Unit (FCU), Horizontal Air Flow, 300-1200 CFM

Quantity: 3
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
FCU CEILING MOUNTED #1			
FCU CEILING MOUNTED #2			
FCU CEILING MOUNTED #3			

Terminal Product, Fan Coil Unit (FCU), Vertical Air Flow, 1201-1800 CFM

Quantity: 11
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive
6	Air Filter Change

Customer Tag	Manufacturer	Model #	Serial #
FCU #1			
FCU #10			
FCU #11			
FCU #2			
FCU #3			
FCU #4			
FCU #5			
FCU #6			
FCU #7			
FCU #8			
FCU #9			

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DOCK STREET THEATRE	135 CHURCH ST CHARLESTON, SC 29401-2803

Terminal Product, Fan Coil Unit (FCU), Vertical Air Flow, 300-1200 CFM

Quantity: 5
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive
6	Air Filter Change

Customer Tag	Manufacturer	Model #	Serial #
FCU #12			
FCU #13			
FCU #14			
FCU #15			
FCU #16			

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GAILLARD MANAGEMENT CENTER	77 CALHOUN ST CHARLESTON, SC 29401-3506

Controls Software, Supervisory/Server/UI, Johnson Controls, ADX

Quantity: 1

Coverage Level: Premium 24x7

Services Provided

1	ADX 10-User Site Dir Software Subscription 1-year - Subscription Only
1	Install NxE software (supplied with Software Upgrade/Subscription) - 6 to 20 NxE's

Customer Tag	Manufacturer	Model #	Serial #
Main City Contract	JCI_YORK		1-CTK918F

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Air Handling Unit (AHU), Make-Up Air Unit (MAU), 15-30 HP

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive
8	Standard Pleated Filter Change

Customer Tag	Manufacturer	Model #	Serial #

Block Hours - Mechanical Heavy

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

1	Repair
1	Preventive Maintenance

Customer Tag	Manufacturer	Model #	Serial #

Condensing Unit, Air Cooled, Scroll, 10-40 Tons

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

3	Operational
1	Comprehensive
1	Condenser Coil Cleaning

Customer Tag	Manufacturer	Model #	Serial #

Controls (Controller/End Devices), Generic Input/Output, Johnson Controls, 0-20 points

Quantity: 8
Coverage Level: Premium

Services Provided

3	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
Fan Controller #1			
Fan Controller #2			
Fan Controller #3			
Fan Controller #4			

Controls (Controller/End Devices), Supervisory/Server/UI, Johnson Controls, 25001-50000 points

Quantity: 1
Coverage Level: Premium

Services Provided

4	Operational

Customer Tag	Manufacturer	Model #	Serial #
NAE			

Fan, Exhaust Fan, Wall Mounted, 0 - 5HP

Quantity: 4
Coverage Level: Premium

Services Provided

3	Operational

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JOE RILEY STADIUM	360 FISHBURNE ST CHARLESTON, SC 29403-4770

1 Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
EF #1		ACZ033ACSS27-ER1 1	STNU061200127
EF #2		ACZ033ACSS27-ER1 1	STNU061200127
EF #3		ACZ033ACSS27-ER1 1	STNU061200127
EF #4		ACZ033ACSS27-ER1 1	STNU061200127

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Computer Room Unit, with Remote Condenser, <5 Tons

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

3	Operational
4	Standard Filter Change
1	Condenser Coil Cleaning
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
CRU-SML		BU067A-CAE1S669	

Controls (Controller/End Devices), Generic Input/Output, Johnson Controls, 0-20 points

Quantity: 4
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
STATIC/ECON CONTROLLER #1			
STATIC/ECON CONTROLLER #2			
STATIC/ECON CONTROLLER #3			
STATIC/ECON CONTROLLER #4			

Controls (Controller/End Devices), Roof Top Unit (RTU), Johnson Controls, 0-20 points

Quantity: 4
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
RTU CONTROLLER #1			
RTU CONTROLLER #2			
RTU CONTROLLER #3			
RTU CONTROLLER #4			

Controls (Controller/End Devices), Supervisory/Server/UI, 3rd Party, 25001-50000 poin

Quantity: 1
Coverage Level: Premium 24x7

Services Provided

4	Operational

Customer Tag	Manufacturer	Model #	Serial #
NAE			

Controls (Controller/End Devices), Variable Air Volume (VAV), Johnson Controls, 0-25 points

Quantity: 43
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive - By Exception

Customer Tag	Manufacturer	Model #	Serial #
VAV Controller #1	JCI_YORK		1-CTK24YL

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Fan, Exhaust Fan, Ceiling Mounted, 0 - 5HP

Quantity: 6
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
EXH FAN - SML #1			
EXH FAN - SML #2			
EXH FAN - SML #3			
EXH FAN - SML #4			
EXH FAN - SML #5			
EXH FAN - SML #6			

Roof Top Unit (RTU), Cooling Only, with Economizer, 25.5-60 Tons

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

3	Operational (Mid Season - Cooling Only with Economizer)
1	Cooling Comprehensive (with Economizer)
1	Condenser Coil Cleaning
1	Evaporator Coil Cleaning
4	Return Air Filter Change

Customer Tag	Manufacturer	Model #	Serial #
RTU-LRG 1		YPAL055CVB46BBBX	RKMM005681
RTU-MED		YPAL050CVB46BBB	RKMM006582

Roof Top Unit (RTU), Cooling/Electric Heating, with Economizer, 8-15 Tons

Quantity: 2
Coverage Level: Premium 24x7

Services Provided

3	Operational (Mid Season - Cooling/Heating with Economizer)
1	Cooling Comprehensive (with Economizer)
1	Condenser Coil Cleaning
1	Evaporator Coil Cleaning
4	Return Air Filter Change

Customer Tag	Manufacturer	Model #	Serial #
RTU-SML#3	JCI_YORK	DH102C00N4BAC3A	NHMM094774
RTU-SML#4	JCI_YORK	DH090C00N4BAC3A	NHMM094787

VAV Box, All Types

Quantity: 43
Coverage Level: Premium 24x7

Services Provided

1	Operational
1	Comprehensive

Customer Tag	Manufacturer	Model #	Serial #

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SEVEN FARMS	161 SEVEN FARMS DR DANIEL ISLAND, SC 29492-7596

Heat Pump, Air Cooled, 0-5 Tons

Quantity: 5
Coverage Level: Premium 24x7

Services Provided

2	Operational (Mid Season)
6	Return Air Filter Change
1	Heating Comprehensive
1	Evaporator Coil Cleaning
1	Condenser Coil Cleaning
1	Cooling Comprehensive

Customer Tag	Manufacturer	Model #	Serial #
RTU 1	Marvair	AVP12SCA2	JL58395
RTU 2	Marvair	AVP12ACA2	FL50057
RTU 3	Marvair	AVP12ACA2	JL58386
RTU 4	Marvair	AVP42ACC00M	KL61022
RTU 5	Fujitzu	ASU24CL	DDA015986

Split System, Cooling with Electric Heat, 7.5-15 Tons

Quantity: 7
Coverage Level: Premium 24x7

Services Provided

6	Return Air Filter Change
2	Operational (Mid Season - Cooling/Heating)
1	Cooling Comprehensive
1	Electric Heating Comprehensive
1	Condenser Coil Cleaning

Customer Tag	Manufacturer	Model #	Serial #
CONDENSING UNIT #1	Carrier	38YCC036530	4700E15759
CONDENSING UNIT #2	Carrier	38YCC042550	5100E17224
CONDENSING UNIT #3	Carrier	38AQS008---501	0201G00117
CONDENSING UNIT #4	Carrier	38YCC060540	4900E14786
CONDENSING UNIT #5	Carrier	38YCC048520	4300E13667
CONDENSING UNIT #6	Carrier	38YCC048520	4300E13646
CONDENSING UNIT #7	Carrier	38YCC030500	4700E15989

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Equipment Tasking

Air Compressor/Dryer, Air Compressor, Commercial, <5 HP

Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Drain condensate from tank and check traps Check safety relief valve Check condition of pulley and belts (if applicable) Inspect air filters and wash or replace as needed Replace oil in compressor and check for proper level Lubricate motor bearings (per manufacturer's recommendations) Check PE switch and starter Check pressure reducing station for proper operation Inspect pressure reducing station filters and clean or replace as required Check for proper operation of air drier Check air drier condenser coil Brush air dryer, condenser and cover grills as required Check for unusual noise and vibration Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Drain condensate from tank and check traps Check safety relief valve Check condition of pulley and belts (if applicable) Inspect air filters Check for proper oil level in compressor Lubricate motor bearings (per manufacturer's recommendations) Check PE switch and starter Check pressure reducing station for proper operation Check for proper operation of air drier Check air drier condenser coil Brush air dryer, condenser and cover grills as required Check for unusual noise and vibration Check overall condition of unit Document tasks performed during visit and report any observations to appropriate customer representative

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Air Handling Unit (AHU), 100% Outside Air, <15 HP

Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Visually inspect damper(s) Check condition of pulleys and belts Check for proper fan operation Check condition of coils Check condition of filters Record temperatures and pressures (if applicable) Check for unusual noise and vibration Check for deterioration of gaskets and seals Check overall condition of unit Visually inspect for fluid leaks of coils and connecting piping Check starter/contactor Check and tighten electrical connections Check damper operation and lubricate as required Visually check control valve(s) Lubricate blower and motor bearings Clean condensate pan and clear drain line Check condition of blower assembly Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Evaporator Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Clean condensate drain (if necessary) Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery

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	Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Inspect motor mounting isolators Check for integrity of cabinet hardware Visually inspect damper(s) Verify damper operation Check condition of pulleys and belts Check for proper fan operation Check condition of coils Check condition of filters Record temperatures and pressures (if applicable) Check condensate drain Visually inspect electrical connections Check for unusual noise and vibration Check overall condition of unit Visually inspect for fluid leaks of coils and connecting piping Document tasks performed during visit and report any observations to appropriate customer representative
Standard Pleated Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative
	Air Handling Unit (AHU), Make-Up Air Unit (MAU), 15-30 HP
Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Visually inspect damper(s) Check condition of pulleys and belts Check for proper fan operation Check condition of coils Check condition of filters Record temperatures and pressures (if applicable) Check for unusual noise and vibration Check for deterioration of gaskets and seals

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	Check overall condition of unit Visually inspect for fluid leaks of coils and connecting piping Check starter/contactor Check and tighten electrical connections Check damper operation and lubricate as required Visually check control valve(s) Lubricate blower and motor bearings Clean condensate pan and clear drain line Check condition of blower assembly Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Inspect motor mounting isolators Check for integrity of cabinet hardware Visually inspect damper(s) Verify damper operation Check condition of pulleys and belts Check for proper fan operation Check condition of coils Check condition of filters Record temperatures and pressures (if applicable) Check condensate drain Visually inspect electrical connections Check for unusual noise and vibration Check overall condition of unit Visually inspect for fluid leaks of coils and connecting piping Document tasks performed during visit and report any observations to appropriate customer representative
Standard Pleated Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative

Air Handling Unit (AHU), Mixed Air, 15-30 HP

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Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Visually inspect damper(s) Check condition of pulleys and belts Check for proper fan operation Check condition of coils Check condition of filters Record temperatures and pressures (if applicable) Check for unusual noise and vibration Check for deterioration of gaskets and seals Check overall condition of unit Visually inspect for fluid leaks of coils and connecting piping Check starter/contactor Check and tighten electrical connections Check damper operation and lubricate as required Visually check control valve(s) Lubricate blower and motor bearings Clean condensate pan and clear drain line Check condition of blower assembly Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Evaporator Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Clean condensate drain (if necessary) Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies

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	Inspect motor mounting isolators Check for integrity of cabinet hardware Visually inspect damper(s) Verify damper operation Check condition of pulleys and belts Check for proper fan operation Check condition of coils Check condition of filters Record temperatures and pressures (if applicable) Check condensate drain Visually inspect electrical connections Check for unusual noise and vibration Check overall condition of unit Visually inspect for fluid leaks of coils and connecting piping Document tasks performed during visit and report any observations to appropriate customer representative
Standard Pleated Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative
	Air Handling Unit (AHU), Mixed Air, 35-60 HP
Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Visually inspect damper(s) Check condition of pulleys and belts Check for proper fan operation Check condition of coils Check condition of filters Record temperatures and pressures (if applicable) Check for unusual noise and vibration Check for deterioration of gaskets and seals Check overall condition of unit Visually inspect for fluid leaks of coils and connecting piping Check starter/contactor Check and tighten electrical connections

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	Check damper operation and lubricate as required Visually check control valve(s) Lubricate blower and motor bearings Clean condensate pan and clear drain line Check condition of blower assembly Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Evaporator Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Clean condensate drain (if necessary) Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Inspect motor mounting isolators Check for integrity of cabinet hardware Visually inspect damper(s) Verify damper operation Check condition of pulleys and belts Check for proper fan operation Check condition of coils Check condition of filters Record temperatures and pressures (if applicable) Check condensate drain Visually inspect electrical connections Check for unusual noise and vibration Check overall condition of unit Visually inspect for fluid leaks of coils and connecting piping Document tasks performed during visit and report any observations to appropriate customer representative
Standard Pleated Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work

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Use and follow the JCI Lock-out Tag-out on all electrical machinery
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Turn equipment off
Remove dirty filters
Install new filters
Turn equipment on
Dispose of dirty filter appropriately
Document tasks performed during visit and report any observations to appropriate customer representative

Air Handling Unit (AHU), Mixed Air, <15 HP

Comprehensive

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Use appropriate Arc/flash personal protective equipment on voltages over 240 volts
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Visually inspect damper(s)
Check condition of pulleys and belts
Check for proper fan operation
Check condition of coils
Check condition of filters
Record temperatures and pressures (if applicable)
Check for unusual noise and vibration
Check for deterioration of gaskets and seals
Check overall condition of unit
Visually inspect for fluid leaks of coils and connecting piping
Check starter/contactor
Check and tighten electrical connections
Check damper operation and lubricate as required
Visually check control valve(s)
Lubricate blower and motor bearings
Clean condensate pan and clear drain line
Check condition of blower assembly
Remove and dispose any debris from any maintenance activity
Document tasks performed during visit and report any observations to appropriate customer representative

Evaporator Coil Cleaning

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Use appropriate Arc/flash personal protective equipment on voltages over 240 volts
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Clean condensate drain (if necessary)
Spray coil(s) with chemical solution
Rinse coil(s) thoroughly with water

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	Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Inspect motor mounting isolators Check for integrity of cabinet hardware Visually inspect damper(s) Verify damper operation Check condition of pulleys and belts Check for proper fan operation Check condition of coils Check condition of filters Record temperatures and pressures (if applicable) Check condensate drain Visually inspect electrical connections Check for unusual noise and vibration Check overall condition of unit Visually inspect for fluid leaks of coils and connecting piping Document tasks performed during visit and report any observations to appropriate customer representative
Standard Pleated Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative
	Air Handling Unit (AHU), Return Air, 35-60 HP
Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts

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	All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Visually inspect damper(s) Check condition of pulleys and belts Check for proper fan operation Check condition of coils Check condition of filters Record temperatures and pressures (if applicable) Check for unusual noise and vibration Check for deterioration of gaskets and seals Check overall condition of unit Visually inspect for fluid leaks of coils and connecting piping Check starter/contactor Check and tighten electrical connections Check damper operation and lubricate as required Visually check control valve(s) Lubricate blower and motor bearings Clean condensate pan and clear drain line Check condition of blower assembly Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Evaporator Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Clean condensate drain (if necessary) Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Inspect motor mounting isolators Check for integrity of cabinet hardware Visually inspect damper(s) Verify damper operation Check condition of pulleys and belts Check for proper fan operation Check condition of coils Check condition of filters

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	Record temperatures and pressures (if applicable) Check condensate drain Visually inspect electrical connections Check for unusual noise and vibration Check overall condition of unit Visually inspect for fluid leaks of coils and connecting piping Document tasks performed during visit and report any observations to appropriate customer representative
Standard Pleated Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative
	Air Handling Unit (AHU), Variable Frequency Drive (VFD), <15 HP
Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check and tighten electrical connections Check for heat damage Review event log (if applicable) Ramp drive up and down, and check for proper operation (if possible) Check condition of air filter and clean or replace as needed Verify proper operation of cooling fans and clean as needed Check for unusual noise or vibration Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts

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All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Check drive for proper operation
Review event log (if applicable)
Check for unusual noise and vibration
Check overall condition of unit
Document tasks performed during visit and report any observations to appropriate customer representative

Block Hours - Mechanical Heavy

Preventive Maintenance

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Check with appropriate customer representative for operational deficiencies
Perform scheduled block hour tasks
Complete any required maintenance checklists, report observations to appropriate customer representative

Builtup Unit, Supply-Return Fan, <10HP

Comprehensive

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Check with appropriate customer representative for operational deficiencies
Check operation of control system and dampers
Check safeties
Check sheaves and pulleys for wear and alignment
Check step controller (as applicable)
Check and tighten bolts, set screws and collars
Check supply and control air pressures
Check thermal cutout on electric heaters (as applicable)
Clean area around equipment
Clean starter and cabinet
Check and tighten electrical connections
Inspect fan wheel and shaft for wear
Log operating conditions system stabilizer
Lube fan shaft and motor bearings
Motor lead megohm test
Test high static pressure
Check belt guard
Test low static pressure
Test low temperature safety devices
Check belts and adjust tension
Perform Annual Comprehensive maintenance tasks in addition to inspection and testing procedures
Check condition of contacts
Check contactors for free and smooth operation
Check damper wear, security and linkage
Check fan blades

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	Check fan and motor bearings Complete any required maintenance checklists, report observations to appropriate customer representative
Filters, Standard Pleated	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Check with appropriate customer representative for operational deficiencies Replace air filters per agreement Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Complete any required maintenance checklists, report observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Check with appropriate customer representative for operational deficiencies Check sheaves and pulleys for wear and alignment Check supply and control air pressures Clean area around equipment Check and tighten electrical connections Inspect fan wheel and shaft for wear Test high static pressure Check belt guard Test low static pressure Test low temperature safety devices Check belts and adjust tension Check condition of contacts Check contactors for free and smooth operation Check fan blades Check fan and motor bearings Complete any required maintenance checklists, report observations to appropriate customer representative
	Chiller, Air Cooled, Screw, 150-250 Tons
Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants Use and follow the JCI process for handling and working with Used Oil

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	All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories Check for visual signs of refrigerant/oil leak(s) Conduct refrigerant leak check Check oil separator level Verify oil heater operation Perform lock-out and tag-out procedure Inspect condenser fan and compressor contactors for wear Check and tighten electrical connections Perform preventative procedures to flow proving devices Check for unusual noise and vibration Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Condenser Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Oil Analysis (2 Circuits)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants Use and follow the JCI process for handling and working with Used Oil All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Remove sample in approved container Drop off for analysis Label and complete paperwork indicating present operating conditions Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery

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	Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories Check for proper chilled water flow Check system pressures and temperatures Check refrigerant charge (sight glass) Check oil separator level Check for proper capacity control operation Check for proper oil temperature and pressure Check for visual signs of refrigerant/oil leak(s) Check for unusual noise and vibration Check for proper condenser fan operation Check overall condition of unit Record and log all operating parameters Document tasks performed during visit and report any observations to appropriate customer representative
Vibration Analysis	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Record equipment specific information for reference Install pads and labels (if applicable) Install sensors in proper location. Start equipment and run at normal operating conditions. Record readings and remove sensors. Submit readings for report generation and deliver to customer with recommendations. Document tasks performed during visit and report any observations to appropriate customer representative
	Chiller, Air Cooled, Scroll, 10-40 Tons
Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants Use and follow the JCI process for handling and working with Used Oil All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories Check for visual signs of refrigerant/oil leak(s) Conduct refrigerant leak check

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	Check for proper crank case heater operation (if applicable) Perform lock-out and tag-out procedure Inspect condenser fan and compressor contactors for wear Check and tighten electrical connections Perform preventative procedures to flow proving devices Check for unusual noise and vibration Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Condenser Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories Check for proper chilled water flow Check system pressures and temperatures Check refrigerant charge (sight glass) Check for proper capacity control operation Check for proper crank case heater operation (if applicable) Check for visual signs of refrigerant/oil leak(s) Check for unusual noise and vibration Check for proper condenser fan operation Check overall condition of unit Record and log all operating parameters Document tasks performed during visit and report any observations to appropriate customer representative

Chiller, Air Cooled, Scroll, 101-140 Tons

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Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants Use and follow the JCI process for handling and working with Used Oil All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories Check for visual signs of refrigerant/oil leak(s) Conduct refrigerant leak check Check for proper crank case heater operation (if applicable) Perform lock-out and tag-out procedure Inspect condenser fan and compressor contactors for wear Check and tighten electrical connections Perform preventative procedures to flow proving devices Check for unusual noise and vibration Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Condenser Coil Cleaning (with louvers)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories

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Check for proper chilled water flow
Check system pressures and temperatures
Check refrigerant charge (sight glass)
Check for proper capacity control operation
Check for proper crank case heater operation (if applicable)
Check for visual signs of refrigerant/oil leak(s)
Check for unusual noise and vibration
Check for proper condenser fan operation
Check overall condition of unit
Record and log all operating parameters
Document tasks performed during visit and report any observations to appropriate customer representative

Chiller, Water Cooled, Reciprocating, 80-120 Tons

Comprehensive

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Use appropriate Arc/flash personal protective equipment on voltages over 240 volts
Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants
Use and follow the JCI process for handling and working with Used Oil
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Review control panel for proper operation and recorded fault histories
Perform compressor suction blank off test (test for compressor integrity)
Conduct refrigerant leak check
Check for proper crank case heater operation (if applicable)
Perform lock-out and tag-out procedure
Inspect contactors for wear
Check and tighten electrical connections
Perform preventative procedures to flow proving devices
Check for unusual noise and vibration
Check overall condition of unit
Remove and dispose any debris from any maintenance activity
Document tasks performed during visit and report any observations to appropriate customer representative

Operational

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Use appropriate Arc/flash personal protective equipment on voltages over 240 volts
Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Review control panel for proper operation and recorded fault histories
Check for proper condenser and chilled water flow
Check system pressures and temperatures

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Check refrigerant charge (sight glass)
Check for visual signs of refrigerant/oil leak(s)
Check for unusual noise and vibration
Check overall condition of unit
Record and log all operating parameters
Document tasks performed during visit and report any observations to appropriate customer representative

Computer Room Unit, with Remote Condenser, <5 Tons

Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check for proper humidifier operation Check humidifier pan for signs of debris Clean humidifier pan (if applicable) Replace humidifier canister or quartz bulbs (customer provided) Conduct refrigerant leak check Lubricate blower and motor bearings Check and tighten electrical connections Check contactor(s) Check operating controls Check water make-up valve for leaks Check blower motor operation Check condition and alignment of pulley and belts Check condition of evaporator coil Check condition of dry cooler or condenser coil Check condition of filters Clean condensate pan and clear drain line Check operation of reheat function Visually check for glycol leaks (if applicable) Check for unusual noise and vibration Check overall condition of unit Record and log all operating parameters Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Condenser Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants

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	All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories Check for proper humidifier operation Check humidifier pan for signs of debris Check water make-up valve for leaks Check blower motor operation Check condition of pulley and belts Check condenser fan motors and blades Check the dry cooler or condenser coil for debris Visually check for glycol leaks (if applicable) Check condition of evaporator coil Check condition of filters Check condensate drain Check for visual signs of refrigerant/oil leak(s) Visually inspect electrical components for signs of over heating Check for unusual noise and vibration Check overall condition of unit Document tasks performed during visit and report any observations to appropriate customer representative
Standard Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative
Standard Pleated Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery

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All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Turn equipment off
Remove dirty filters
Install new filters
Turn equipment on
Dispose of dirty filter appropriately
Document tasks performed during visit and report any observations to appropriate customer representative

Condensing Unit, Air Cooled, Scroll, 10-40 Tons

Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants Use and follow the JCI process for handling and working with Used Oil All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories Check for visual signs of refrigerant/oil leak(s) Conduct refrigerant leak check Check for proper crank case heater operation (if applicable) Perform lock-out and tag-out procedure Inspect condenser fan and compressor contactors for wear Check and tighten electrical connections Check for unusual noise and vibration Check overall condition of unit Record and log all operating parameters Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Condenser Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative

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Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories Check refrigerant charge (sight glass) Check for proper crank case heater operation (if applicable) Check for visual signs of refrigerant/oil leak(s) Check for proper condenser fan operation Check for unusual noise and vibration Check overall condition of unit Record and log all operating parameters Document tasks performed during visit and report any observations to appropriate customer representative
	Controls (Controller/End Devices), Air Handling Unit (AHU), 3rd Party, 0-20 points
Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Create local back up of existing program and store on on-site computer and on-site media Verify unit is controlling to set points by checking sequences of operations and PID loops Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Visually validate system outputs from the field controller Validate controls safety circuit and alarm verification (coordinate with customer) Tighten electrical connections Check overall condition of panel and perform visual inspection of unit and surrounding area Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies

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Check with appropriate customer representative for operational deficiencies
Verify unit is controlling to set points by checking sequences of operations and PID loops
Identify and notify customer of abnormal point communications
Identify and notify customer of current overrides (e.g. out of service) and negative impacts
Identify and notify customer of all current alarms and negative impacts
Check overall condition of panel and perform visual inspection of unit and surrounding area
Document tasks performed during visit and report any observations to appropriate customer representative

Controls (Controller/End Devices), Air Handling Unit (AHU), 3rd Party, 21-60 points

Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Create local back up of existing program and store on on-site computer and on-site media Verify unit is controlling to set points by checking sequences of operations and PID loops Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Visually validate system outputs from the field controller Validate controls safety circuit and alarm verification (coordinate with customer) Tighten electrical connections Check overall condition of panel and perform visual inspection of unit and surrounding area Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Verify unit is controlling to set points by checking sequences of operations and PID loops Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Check overall condition of panel and perform visual inspection of unit and surrounding area Document tasks performed during visit and report any observations to appropriate customer representative

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Controls (Controller/End Devices), Air Handling Unit (AHU), Johnson Controls, 0-20 points

Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Create local back up of existing program and store on on-site computer and on-site media Verify unit is controlling to set points by checking sequences of operations and PID loops Check that the damper actuators, valve actuators, variable speed drives, and protections (as applicable) are responding appropriately to control signals. Notify customer of any issues with those devices Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Verify sensor readings and field calibrate critical sensors used in control loops and alarming functions (as sensor type and controller options allow) Visually validate system outputs from the field controller Validate controls safety circuit and alarm verification (coordinate with customer) Tighten electrical connections Check overall condition of panel and perform visual inspection of unit and surrounding area Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Verify unit is controlling to set points by checking sequences of operations and PID loops Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Check overall condition of panel and perform visual inspection of unit and surrounding area Document tasks performed during visit and report any observations to appropriate customer representative

Controls (Controller/End Devices), Central Cooling Plant, Johnson Controls, 0-50 points

Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite

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	Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Create local back up of existing program and store on on-site computer and on-site media Verify unit is controlling to set points by checking sequences of operations and PID loops Check that the damper actuators, valve actuators, variable speed drives, and protections (as applicable) are responding appropriately to control signals. Notify customer of any issues with those devices Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Verify sensor readings and field calibrate critical sensors used in control loops and alarming functions (as sensor type and controller options allow) Visually validate system outputs from the field controller Tighten electrical connections Check overall condition of panel and perform visual inspection of unit and surrounding area Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Verify unit is controlling to set points by checking sequences of operations and PID loops Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Check overall condition of panel and perform visual inspection of unit and surrounding area Document tasks performed during visit and report any observations to appropriate customer representative
	Controls (Controller/End Devices), Fan Coil Unit (FCU), Johnson Controls, 0-50 points
Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Create local back up of existing program and store on on-site computer and

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	on-site media Verify unit is controlling to set points by checking sequences of operations and PID loops Check that the damper actuators, valve actuators, variable speed drives, and protections (as applicable) are responding appropriately to control signals. Notify customer of any issues with those devices Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Verify sensor readings and field calibrate critical sensors used in control loops and alarming functions (as sensor type and controller options allow) Visually validate system outputs from the field controller Validate controls safety circuit and alarm verification (coordinate with customer) Tighten electrical connections Check overall condition of panel and perform visual inspection of unit and surrounding area Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Verify unit is controlling to set points by checking sequences of operations and PID loops Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Check overall condition of panel and perform visual inspection of unit and surrounding area Document tasks performed during visit and report any observations to appropriate customer representative
	Controls (Controller/End Devices), Generic Input/Output, Johnson Controls, 0-20 points
Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Create local back up of existing program and store on on-site computer and on-site media Verify unit is controlling to set points by checking sequences of operations and PID loops Check that the damper actuators, valve actuators, variable speed drives, and protections (as applicable) are responding appropriately to control signals. Notify customer of any issues with those devices

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	Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Verify sensor readings and field calibrate critical sensors used in control loops and alarming functions (as sensor type and controller options allow) Visually validate system outputs from the field controller Validate controls safety circuit and alarm verification (coordinate with customer) Tighten electrical connections Check overall condition of panel and perform visual inspection of unit and surrounding area Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Check overall condition of panel and perform visual inspection of unit and surrounding area Document tasks performed during visit and report any observations to appropriate customer representative
	Controls (Controller/End Devices), Heat Pump, 3rd Party, 0-50 points
Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Create local back up of existing program and store on on-site computer and on-site media Verify unit is controlling to set points by checking sequences of operations and PID loops Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Visually validate system outputs from the field controller Validate controls safety circuit and alarm verification (coordinate with customer) Tighten electrical connections Check overall condition of panel and perform visual inspection of unit and surrounding area Document tasks performed during visit and report any observations to appropriate customer representative

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Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Verify unit is controlling to set points by checking sequences of operations and PID loops Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Check overall condition of panel and perform visual inspection of unit and surrounding area Document tasks performed during visit and report any observations to appropriate customer representative

Controls (Controller/End Devices), Heat Pump, Johnson Controls, 0-50 points

Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Create local back up of existing program and store on on-site computer and on-site media Verify unit is controlling to set points by checking sequences of operations and PID loops Check that the damper actuators, valve actuators, variable speed drives, and protections (as applicable) are responding appropriately to control signals. Notify customer of any issues with those devices Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Verify sensor readings and field calibrate critical sensors used in control loops and alarming functions (as sensor type and controller options allow) Visually validate system outputs from the field controller Validate controls safety circuit and alarm verification (coordinate with customer) Tighten electrical connections Check overall condition of panel and perform visual inspection of unit and surrounding area Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery

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All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Verify unit is controlling to set points by checking sequences of operations and PID loops
Identify and notify customer of abnormal point communications
Identify and notify customer of current overrides (e.g. out of service) and negative impacts
Identify and notify customer of all current alarms and negative impacts
Check overall condition of panel and perform visual inspection of unit and surrounding area
Document tasks performed during visit and report any observations to appropriate customer representative

Controls (Controller/End Devices), Roof Top Unit (RTU), Johnson Controls, 0-20 points

Comprehensive

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Create local back up of existing program and store on on-site computer and on-site media
Verify unit is controlling to set points by checking sequences of operations and PID loops
Check that the damper actuators, valve actuators, variable speed drives, and protections (as applicable) are responding appropriately to control signals. Notify customer of any issues with those devices
Identify and notify customer of abnormal point communications
Identify and notify customer of current overrides (e.g. out of service) and negative impacts
Identify and notify customer of all current alarms and negative impacts
Verify sensor readings and field calibrate critical sensors used in control loops and alarming functions (as sensor type and controller options allow)
Visually validate system outputs from the field controller
Validate controls safety circuit and alarm verification (coordinate with customer)
Tighten electrical connections
Check overall condition of panel and perform visual inspection of unit and surrounding area
Document tasks performed during visit and report any observations to appropriate customer representative

Operational

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Verify unit is controlling to set points by checking sequences of operations and PID loops
Identify and notify customer of abnormal point communications
Identify and notify customer of current overrides (e.g. out of service) and

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negative impacts
Identify and notify customer of all current alarms and negative impacts
Check overall condition of panel and perform visual inspection of unit and surrounding area
Document tasks performed during visit and report any observations to appropriate customer representative

Controls (Controller/End Devices), Supervisory/Server/UI, 3rd Party, 25001-50000 points

Operational

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Use compressed air to remove dust from computer case openings and verify operation of CPU and case fans
Identify and notify customer of abnormal supervisory device communications
Document tasks performed during visit and report any observations to appropriate customer representative

Controls (Controller/End Devices), Supervisory/Server/UI, Johnson Controls, 0-25000 points

Operational

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Use compressed air to remove dust from computer case openings and verify operation of CPU and case fans
Identify and notify customer of abnormal supervisory device communications
Identify and notify customer of abnormal diagnostic results (e.g. unbound references, object count)
Back up all supervisory controllers and OWS/server devices
Archive object database for Metasys system
Ensure security database is consistent across devices and that default passwords have been changed
Back up all server repository databases (e.g. trends, alarms, etc.)
Document tasks performed during visit and report any observations to appropriate customer representative

Controls (Controller/End Devices), Supervisory/Server/UI, Johnson Controls, 25001-50000 points

Operational

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work

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	Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Use compressed air to remove dust from computer case openings and verify operation of CPU and case fans Identify and notify customer of abnormal supervisory device communications Identify and notify customer of abnormal diagnostic results (e.g. unbound references, object count) Back up all supervisory controllers and OWS/server devices Archive object database for Metasys system Ensure security database is consistent across devices and that default passwords have been changed Back up all server repository databases (e.g. trends, alarms, etc.) Document tasks performed during visit and report any observations to appropriate customer representative
	Controls (Controller/End Devices), Supervisory/Server/UI, Johnson Controls, 50001-125000 points
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Use compressed air to remove dust from computer case openings and verify operation of CPU and case fans Identify and notify customer of abnormal supervisory device communications Identify and notify customer of abnormal diagnostic results (e.g. unbound references, object count) Back up all supervisory controllers and OWS/server devices Archive object database for Metasys system Ensure security database is consistent across devices and that default passwords have been changed Back up all server repository databases (e.g. trends, alarms, etc.) Document tasks performed during visit and report any observations to appropriate customer representative
	Controls (Controller/End Devices), Variable Air Volume (VAV), Johnson Controls, 0-25 points
Comprehensive - By Exception	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Create local back up of existing program and store on on-site computer and on-site media Run VAV box flow test and visually inspect suspect boxes (coordinate access with customer) Verify unit is controlling to set points by checking sequences of operations and

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	PID loops Check that the damper actuators, valve actuators, variable speed drives, and protections (as applicable) are responding appropriately to control signals. Notify customer of any issues with those devices Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Verify sensor readings and field calibrate critical sensors used in control loops and alarming functions (as sensor type and controller options allow) on suspect boxes Visually validate system outputs on suspect boxes from the field controller Validate controls safety circuit and alarm verification on suspect boxes (coordinate with customer) Tighten electrical connections on suspect boxes Check overall condition of panel and perform visual inspection of unit and surrounding area Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Run VAV box flow test Verify unit is controlling to set points by checking sequences of operations and PID loops Identify and notify customer of abnormal point communications Identify and notify customer of current overrides (e.g. out of service) and negative impacts Identify and notify customer of all current alarms and negative impacts Document tasks performed during visit and report any observations to appropriate customer representative
	Controls Software, Supervisory/Server/UI, Johnson Controls, ADX
ADX 10-User Site Dir Software Subscription 1-year - Subscription Only	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Upgrade ADX software to latest Metasys release Document tasks performed during visit and report any observations to appropriate customer representative
Install NxE software (supplied with Software Upgrade/Subscription) - 6 to 20 NxE's	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work All work must be performed in accordance with Johnson Controls safety policies

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Check with appropriate customer representative for operational deficiencies
Upgrade NxE software to latest Metasys release
Document tasks performed during visit and report any observations to appropriate customer representative

Expansion Tank

Operational

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Check with appropriate customer representative for operational deficiencies
Check for leaks
Check for proper air cushion
Clean area around equipment
Complete any required maintenance checklists, report observations to appropriate customer representative

Fan, Exhaust Fan, Ceiling Mounted, 0 - 5HP

Comprehensive

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Check with appropriate customer representative for operational deficiencies
Check rain guard
Check and tighten electrical connections
Clean area around equipment
Inspect starter
Lubricate as required
Motor operating amps
Check bearing wear
Check belt guard
Check belt(s) (if applicable)
Check drive condition
Check electrical contacts
Check fan blades
Check for proper rotation
Complete any required maintenance checklists, report observations to appropriate customer representative

Operational

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Check with appropriate customer representative for operational deficiencies
Check rain guard
Check and tighten electrical connections
Clean area around equipment
Inspect starter

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Lubricate as required
Motor operating amps
Check belt guard
Check belt(s) (if applicable)
Check drive condition
Check electrical contacts
Check fan blades
Check for proper rotation
Complete any required maintenance checklists, report observations to appropriate customer representative

Fan, Exhaust Fan, Wall Mounted, 0 - 5HP

Comprehensive

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Check with appropriate customer representative for operational deficiencies
Check rain guard
Check and tighten electrical connections
Clean area around equipment
Inspect starter
Lubricate as required
Motor operating amps
Check bearing wear
Check belt guard
Check belt(s) (if applicable)
Check drive condition
Check electrical contacts
Check fan blades
Check for proper rotation
Complete any required maintenance checklists, report observations to appropriate customer representative

Operational

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Check with appropriate customer representative for operational deficiencies
Check rain guard
Check and tighten electrical connections
Clean area around equipment
Inspect starter
Lubricate as required
Motor operating amps
Check belt guard
Check belt(s) (if applicable)
Check drive condition
Check electrical contacts
Check fan blades
Check for proper rotation
Complete any required maintenance checklists, report observations to appropriate customer representative

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Heat Exchanger-All

Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Check with appropriate customer representative for operational deficiencies Check operating and safety controls, adjust as needed Inspect for system leaks Inspect structural elements and mounting points for vibration, corrosion, damage and secureness (Document any problems and corrections) Check for fouling Confirm system flow Clean area around equipment Complete any required maintenance checklists, report observations to appropriate customer representative

Heat Pump, Air Cooled, 0-5 Tons

Condenser Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Cooling Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check and tighten electrical connections Check contactor(s) Check condition of condenser coil

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Check condition of evaporator coil
Check condenser fan motors and blades
Check blower motor operation
Lubricate blower and motor bearings
Check condition and alignment of pulley and belts
Check condition of filters
Clean condensate pan and clear drain line
Check for visual signs of refrigerant/oil leak(s)
Check for unusual noise and vibration
Record and log all operating parameters
Check overall condition of unit
Remove and dispose any debris from any maintenance activity
Document tasks performed during visit and report any observations to appropriate customer representative

Evaporator Coil Cleaning

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Use appropriate Arc/flash personal protective equipment on voltages over 240 volts
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Clean condensate drain (if necessary)
Spray coil(s) with chemical solution
Rinse coil(s) thoroughly with water
Remove and dispose any debris from any maintenance activity
Document tasks performed during visit and report any observations to appropriate customer representative

Heating Comprehensive

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Use appropriate Arc/flash personal protective equipment on voltages over 240 volts
Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Review control panel for proper operation and recorded fault histories (if applicable)
Check operation of heating mode
Check and tighten electrical connections
Check contactor(s)
Check condition of condenser coil
Check condition of evaporator coil
Check condenser fan motors and blades
Check blower motor operation
Lubricate blower and motor bearings
Check condition and alignment of pulley and belts
Check condition of filters
Check for visual signs of refrigerant/oil leak(s)
Check for unusual noise and vibration

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	Record and log all operating parameters Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational (Mid Season)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check condition of condenser coil Check condition of evaporator coil Check condenser fan motors and blades Check blower motor operation Check condition of pulley and belts Check heating operation (when applicable) Check condition of filters Check condensate drain Check for visual signs of refrigerant/oil leak(s) Visually inspect electrical connections Check for unusual noise and vibration Check overall condition of unit Document tasks performed during visit and report any observations to appropriate customer representative
Return Air Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative
	Heat Pump, Air Cooled, >15 Tons
Condenser Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery

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	Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Cooling Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check and tighten electrical connections Check contactor(s) Check condition of condenser coil Check condition of evaporator coil Check condenser fan motors and blades Check blower motor operation Lubricate blower and motor bearings Check condition and alignment of pulley and belts Check condition of filters Clean condensate pan and clear drain line Check for visual signs of refrigerant/oil leak(s) Check for unusual noise and vibration Record and log all operating parameters Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Evaporator Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Clean condensate drain (if necessary) Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity

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	Document tasks performed during visit and report any observations to appropriate customer representative
Heating Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check operation of heating mode Check and tighten electrical connections Check contactor(s) Check condition of condenser coil Check condition of evaporator coil Check condenser fan motors and blades Check blower motor operation Lubricate blower and motor bearings Check condition and alignment of pulley and belts Check condition of filters Check for visual signs of refrigerant/oil leak(s) Check for unusual noise and vibration Record and log all operating parameters Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational (Mid Season)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check condition of condenser coil Check condition of evaporator coil Check condenser fan motors and blades Check blower motor operation Check condition of pulley and belts Check heating operation (when applicable) Check condition of filters Check condensate drain Check for visual signs of refrigerant/oil leak(s) Visually inspect electrical connections Check for unusual noise and vibration

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	Check overall condition of unit Document tasks performed during visit and report any observations to appropriate customer representative
Return Air Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative
	Heat Pump, Water Cooled, 0-5 Tons
Cooling Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check and tighten electrical connections Check contactor(s) Check condition of evaporator coil Check for proper condenser water flow Check blower motor operation Lubricate blower and motor bearings Check condition and alignment of pulley and belts Check condition of filters Clean condensate pan and clear drain line Check for visual signs of refrigerant/oil leak(s) Check for unusual noise and vibration Record and log all operating parameters Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Evaporator Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work

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	Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Clean condensate drain (if necessary) Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational (Mid Season)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check condition of evaporator coil Check for proper condenser water flow Check blower motor operation Check condition of pulley and belts Check heating operation (when applicable) Check condition of filters Check condensate drain Check for visual signs of refrigerant/oil leak(s) Visually inspect electrical connections Check for unusual noise and vibration Check overall condition of unit Document tasks performed during visit and report any observations to appropriate customer representative
Return Air Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative

Heater, Gas Infrared-All

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Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Check with appropriate customer representative for operational deficiencies Check operating and safety controls, adjust as needed Clean pilot assembly, including electrode spark gap, orifice, and ignition wire Check and tighten electrical connections Inspect for leaks and report Check alignment of thermo-sensor bulb Check and clean pilot sight glass Clean area around equipment Complete any required maintenance checklists, report observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Check with appropriate customer representative for operational deficiencies Check operating and safety controls, adjust as needed Clean pilot assembly, including electrode spark gap, orifice, and ignition wire Check and tighten electrical connections Inspect for leaks and report Check alignment of thermo-sensor bulb Check and clean pilot sight glass Clean area around equipment Complete any required maintenance checklists, report observations to appropriate customer representative

Humidifier All

Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Check with appropriate customer representative for operational deficiencies Check control valve(s) Check manifold Check strainer Check trap Clean area around equipment Complete any required maintenance checklists, report observations to appropriate customer representative

Induction Unit Items

Comprehensive	Use appropriate eye protection in work environment

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Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Check with appropriate customer representative for operational deficiencies
Check electric connections
Clean coils
Check fan operation
Clean area around equipment
Complete any required maintenance checklists, report observations to appropriate customer representative

Operational

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Check with appropriate customer representative for operational deficiencies
Check fan operation
Clean area around equipment
Complete any required maintenance checklists, report observations to appropriate customer representative

Pump, Circulating, 0-10 HP

Comprehensive

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Use appropriate Arc/flash personal protective equipment on voltages over 240 volts
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Check for leaks
Check coupling
Lubricate pump and motor bearing(s) per manufacturer's recommendation
Record and log all operating parameters
Check for unusual noise and vibration
Check overall condition of unit
Document tasks performed during visit and report any observations to appropriate customer representative

Operational

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Use appropriate Arc/flash personal protective equipment on voltages over 240 volts
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Check for leaks

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Check pressures
Visually inspect coupling
Check for unusual noise and vibration
Check overall condition of unit
Document tasks performed during visit and report any observations to appropriate customer representative

Pump, Circulating, 11-50 HP

Comprehensive

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Use appropriate Arc/flash personal protective equipment on voltages over 240 volts
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Check for leaks
Check coupling
Lubricate pump and motor bearing(s) per manufacturer's recommendation
Record and log all operating parameters
Check for unusual noise and vibration
Check overall condition of unit
Document tasks performed during visit and report any observations to appropriate customer representative

Operational

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Use appropriate Arc/flash personal protective equipment on voltages over 240 volts
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Check for leaks
Check pressures
Visually inspect coupling
Check for unusual noise and vibration
Check overall condition of unit
Document tasks performed during visit and report any observations to appropriate customer representative

Pump, Condenser, 0-10 HP

Comprehensive

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Use appropriate Arc/flash personal protective equipment on voltages over 240 volts

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	All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check for leaks Check coupling Lubricate pump and motor bearing(s) per manufacturer's recommendation Record and log all operating parameters Check for unusual noise and vibration Check overall condition of unit Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check for leaks Check pressures Visually inspect coupling Check for unusual noise and vibration Check overall condition of unit Document tasks performed during visit and report any observations to appropriate customer representative
	Pump, Variable Frequency Drive (VFD), <15 HP
Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check and tighten electrical connections Check for heat damage Review event log (if applicable) Ramp drive up and down, and check for proper operation (if possible) Check condition of air filter and clean or replace as needed Verify proper operation of cooling fans and clean as needed Check for unusual noise or vibration Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work

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Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Use appropriate Arc/flash personal protective equipment on voltages over 240 volts
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Check drive for proper operation
Review event log (if applicable)
Check for unusual noise and vibration
Check overall condition of unit
Document tasks performed during visit and report any observations to appropriate customer representative

Refrigeration, Freezer Walk-in

Comprehensive

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Use appropriate Arc/flash personal protective equipment on voltages over 240 volts
Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants
Use and follow the JCI process for handling and working with Used Oil
Check with appropriate customer representative for operational deficiencies
Inspect door(s)
Clean coil(s)
Check and tighten electrical connections
Check safeties
Check for leaks
Check operating temperatures
Check drain lines and heaters
Inspect defrost systems for proper operation
Check for unusual noise and vibration
Clean area around equipment
Complete any required maintenance checklists, report observations to appropriate customer representative

Operational

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
Use appropriate Arc/flash personal protective equipment on voltages over 240 volts
Check with appropriate customer representative for operational deficiencies
Check condenser
Check pressures
Inspect door(s)
Check coil(s)
Check electrical connections
Check operating temperatures
Inspect defrost systems for proper operation
Check for unusual noise and vibration

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Clean area around equipment
Complete any required maintenance checklists, report observations to appropriate customer representative

Refrigeration, Refrigerator Walk-in

Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants Use and follow the JCI process for handling and working with Used Oil Check with appropriate customer representative for operational deficiencies Inspect door(s) Clean coil(s) Check and tighten electrical connections Check safeties Check for leaks Check operating temperatures Check drain lines and heaters Inspect defrost systems for proper operation Check for unusual noise and vibration Clean area around equipment Complete any required maintenance checklists, report observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Check with appropriate customer representative for operational deficiencies Check condenser Check pressures Inspect door(s) Check coil(s) Check electrical connections Check operating temperatures Inspect defrost systems for proper operation Check for unusual noise and vibration Clean area around equipment Complete any required maintenance checklists, report observations to appropriate customer representative

Roof Top Unit (RTU), Cooling Only, with Economizer, 25.5-60 Tons

Condenser Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite

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	Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Cooling Comprehensive (with Economizer)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check and tighten electrical connections Check VFD operation and clean cooling fan intake (if applicable) Check contactor(s) Check condition of condenser coil Check condition of evaporator coil Check condenser fan motors and blades Check blower motor operation Lubricate blower and motor bearings Check economizer operation Lubricate and adjust economizer damper linkages Verify proper operation of exhaust motor (if applicable) Check condition and alignment of pulley and belts Check condition of filters Clean condensate pan and clear drain line Check for visual signs of refrigerant/oil leak(s) Check for unusual noise and vibration Record and log all operating parameters Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Evaporator Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240

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	volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Clean condensate drain (if necessary) Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational (Mid Season - Cooling Only with Economizer)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check condition of condenser coil Check condition of evaporator coil Check condenser fan motors and blades Check blower motor operation Check economizer operation Check condition of pulley and belts Check condition of filters Check condensate drain Check for visual signs of refrigerant/oil leak(s) Visually inspect electrical connections Check for unusual noise and vibration Check overall condition of unit Document tasks performed during visit and report any observations to appropriate customer representative
Return Air Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative

Roof Top Unit (RTU), Cooling/Electric Heating, with Economizer, 15.5-25 Tons

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Condenser Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Cooling Comprehensive (with Economizer)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check and tighten electrical connections Check VFD operation and clean cooling fan intake (if applicable) Check contactor(s) Check condition of condenser coil Check condition of evaporator coil Check condenser fan motors and blades Check blower motor operation Lubricate blower and motor bearings Check economizer operation Lubricate and adjust economizer damper linkages Verify proper operation of exhaust motor (if applicable) Check condition and alignment of pulley and belts Check condition of filters Clean condensate pan and clear drain line Check for visual signs of refrigerant/oil leak(s) Check for unusual noise and vibration Record and log all operating parameters Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Electric Heating Comprehensive (with Economizer)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work

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	Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check and tighten electrical connections Check contactor(s) Check blower motor operation Check condition of pulley and belts Check economizer operation Lubricate and adjust economizer damper linkages Verify proper operation of exhaust motor (if applicable) Check heat strip operation (coordinate with customer) Check condition of filters Check for unusual noise and vibration Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Evaporator Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Clean condensate drain (if necessary) Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational (Mid Season - Cooling/Heating with Economizer)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check condition of condenser coil Check condition of evaporator coil Check condenser fan motors and blades Check blower motor operation Check economizer operation

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	Check heating operation (when applicable) Check condition of pulley and belts Check condition of filters Check condensate drain Check for visual signs of refrigerant/oil leak(s) Visually inspect electrical connections Check for unusual noise and vibration Check overall condition of unit Document tasks performed during visit and report any observations to appropriate customer representative
Return Air Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative
	Roof Top Unit (RTU), Cooling/Electric Heating, with Economizer, 25.5-60 Tons
Condenser Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Cooling Comprehensive (with Economizer)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants

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	All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check and tighten electrical connections Check VFD operation and clean cooling fan intake (if applicable) Check contactor(s) Check condition of condenser coil Check condition of evaporator coil Check condenser fan motors and blades Check blower motor operation Lubricate blower and motor bearings Check economizer operation Lubricate and adjust economizer damper linkages Verify proper operation of exhaust motor (if applicable) Check condition and alignment of pulley and belts Check condition of filters Clean condensate pan and clear drain line Check for visual signs of refrigerant/oil leak(s) Check for unusual noise and vibration Record and log all operating parameters Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Electric Heating Comprehensive (with Economizer)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check and tighten electrical connections Check contactor(s) Check blower motor operation Check condition of pulley and belts Check economizer operation Lubricate and adjust economizer damper linkages Verify proper operation of exhaust motor (if applicable) Check heat strip operation (coordinate with customer) Check condition of filters Check for unusual noise and vibration Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Evaporator Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work

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	Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Clean condensate drain (if necessary) Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational (Mid Season - Cooling/Heating with Economizer)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check condition of condenser coil Check condition of evaporator coil Check condenser fan motors and blades Check blower motor operation Check economizer operation Check heating operation (when applicable) Check condition of pulley and belts Check condition of filters Check condensate drain Check for visual signs of refrigerant/oil leak(s) Visually inspect electrical connections Check for unusual noise and vibration Check overall condition of unit Document tasks performed during visit and report any observations to appropriate customer representative
Return Air Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative

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	Roof Top Unit (RTU), Cooling/Electric Heating, with Economizer, 8-15 Tons
Condenser Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Cooling Comprehensive (with Economizer)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check and tighten electrical connections Check VFD operation and clean cooling fan intake (if applicable) Check contactor(s) Check condition of condenser coil Check condition of evaporator coil Check condenser fan motors and blades Check blower motor operation Lubricate blower and motor bearings Check economizer operation Lubricate and adjust economizer damper linkages Verify proper operation of exhaust motor (if applicable) Check condition and alignment of pulley and belts Check condition of filters Clean condensate pan and clear drain line Check for visual signs of refrigerant/oil leak(s) Check for unusual noise and vibration Record and log all operating parameters Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Electric Heating	Use appropriate eye protection in work environment

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Comprehensive (with Economizer)	Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check and tighten electrical connections Check contactor(s) Check blower motor operation Check condition of pulley and belts Check economizer operation Lubricate and adjust economizer damper linkages Verify proper operation of exhaust motor (if applicable) Check heat strip operation (coordinate with customer) Check condition of filters Check for unusual noise and vibration Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Evaporator Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Clean condensate drain (if necessary) Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational (Mid Season - Cooling/Heating with Economizer)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check condition of condenser coil

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	Check condition of evaporator coil Check condenser fan motors and blades Check blower motor operation Check economizer operation Check heating operation (when applicable) Check condition of pulley and belts Check condition of filters Check condensate drain Check for visual signs of refrigerant/oil leak(s) Visually inspect electrical connections Check for unusual noise and vibration Check overall condition of unit Document tasks performed during visit and report any observations to appropriate customer representative
Return Air Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative
	Roof Top Unit (RTU), Cooling/Gas Heating, with Economizer, 25.5-60 Tons
Condenser Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Cooling Comprehensive (with Economizer)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery

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	Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check and tighten electrical connections Check VFD operation and clean cooling fan intake (if applicable) Check contactor(s) Check condition of condenser coil Check condition of evaporator coil Check condenser fan motors and blades Check blower motor operation Lubricate blower and motor bearings Check economizer operation Lubricate and adjust economizer damper linkages Verify proper operation of exhaust motor (if applicable) Check condition and alignment of pulley and belts Check condition of filters Clean condensate pan and clear drain line Check for visual signs of refrigerant/oil leak(s) Check for unusual noise and vibration Record and log all operating parameters Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational (Mid Season - Cooling/Heating with Economizer)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check condition of condenser coil Check condition of evaporator coil Check condenser fan motors and blades Check blower motor operation Check economizer operation Check heating operation (when applicable) Check condition of pulley and belts Check condition of filters Check condensate drain Check for visual signs of refrigerant/oil leak(s) Visually inspect electrical connections Check for unusual noise and vibration Check overall condition of unit Document tasks performed during visit and report any observations to appropriate customer representative

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Return Air Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative
	Roof Top Unit (RTU), Cooling/Gas Heating, with Economizer, 8-15 Tons
Condenser Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Cooling Comprehensive (with Economizer)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check and tighten electrical connections Check VFD operation and clean cooling fan intake (if applicable) Check contactor(s) Check condition of condenser coil Check condition of evaporator coil Check condenser fan motors and blades

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	Check blower motor operation Lubricate blower and motor bearings Check economizer operation Lubricate and adjust economizer damper linkages Verify proper operation of exhaust motor (if applicable) Check condition and alignment of pulley and belts Check condition of filters Clean condensate pan and clear drain line Check for visual signs of refrigerant/oil leak(s) Check for unusual noise and vibration Record and log all operating parameters Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational (Mid Season - Cooling/Heating with Economizer)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Review control panel for proper operation and recorded fault histories (if applicable) Check condition of condenser coil Check condition of evaporator coil Check condenser fan motors and blades Check blower motor operation Check economizer operation Check heating operation (when applicable) Check condition of pulley and belts Check condition of filters Check condensate drain Check for visual signs of refrigerant/oil leak(s) Visually inspect electrical connections Check for unusual noise and vibration Check overall condition of unit Document tasks performed during visit and report any observations to appropriate customer representative
Return Air Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on

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Dispose of dirty filter appropriately
Document tasks performed during visit and report any observations to appropriate customer representative

Split System, Cooling with Electric Heat, 7.5-15 Tons

Condenser Coil Cleaning	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Spray coil(s) with chemical solution Rinse coil(s) thoroughly with water Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Cooling Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check and tighten electrical connections Check contactor(s) Check condition of condenser coil Check condenser fan motors and blades Check blower motor operation Lubricate blower and motor bearings (if applicable) Check condition and alignment of pulley and belts (if applicable) Check condition of filters Clean condensate pan and clear drain line (if readily accessible) Check for visual signs of refrigerant/oil leak(s) Check for unusual noise and vibration Record and log all operating parameters Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Electric Heating Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work

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	Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check and tighten electrical connections Check contactor(s) Check blower motor operation Check condition of pulley and belts (if applicable) Check heat strip operation (coordinate with customer) Check condition of filters Check for unusual noise and vibration Check overall condition of unit Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational (Mid Season - Cooling/Heating)	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Use appropriate Arc/flash personal protective equipment on voltages over 240 volts Use and follow the JCI safety policy for working with CFC, HCFC and HRC refrigerants All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check condition of condenser coil Check condenser fan motors and blades Check condensing unit electrical connections and contactor(s) Check blower motor operation Check heating operation (when applicable) Check condition of filters Check condition of pulley and belts (if applicable) Check condensate system Check for visual signs of refrigerant/oil leak(s) Check for unusual noise and vibration Check overall condition of unit Document tasks performed during visit and report any observations to appropriate customer representative
Return Air Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to

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appropriate customer representative

Terminal Product, Fan Coil Unit (FCU), Horizontal Air Flow, 300-1200 CFM

Air Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative
Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check for proper fan operation Check condition of coils Check condition of filters Record temperatures Check fan contactor/relay Check and tighten electrical connections Clean condensate pan and clear drain line Check condition of pulley and belts (if applicable) Visually check control valve(s) Lubricate blower and motor bearings (if applicable) Check condition of blower assembly Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check condition of pulley and belts (if applicable) Check condition of coils Check condition of filters Check condensate drain Check for unusual noise and vibration

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Check unit for proper operation
Check overall condition of unit
Document tasks performed during visit and report any observations to appropriate customer representative

Terminal Product, Fan Coil Unit (FCU), Vertical Air Flow, 1201-1800 CFM

Air Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative
Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check for proper fan operation Check condition of coils Check condition of filters Record temperatures Check fan contactor/relay Check and tighten electrical connections Clean condensate pan and clear drain line Check condition of pulley and belts (if applicable) Visually check control valve(s) Lubricate blower and motor bearings (if applicable) Check condition of blower assembly Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check condition of pulley and belts (if applicable) Check condition of coils

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Check condition of filters
Check condensate drain
Check for unusual noise and vibration
Check unit for proper operation
Check overall condition of unit
Document tasks performed during visit and report any observations to appropriate customer representative

Terminal Product, Fan Coil Unit (FCU), Vertical Air Flow, 300-1200 CFM

Air Filter Change	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Turn equipment off Remove dirty filters Install new filters Turn equipment on Dispose of dirty filter appropriately Document tasks performed during visit and report any observations to appropriate customer representative
Comprehensive	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies Check with appropriate customer representative for operational deficiencies Check for proper fan operation Check condition of coils Check condition of filters Record temperatures Check fan contactor/relay Check and tighten electrical connections Clean condensate pan and clear drain line Check condition of pulley and belts (if applicable) Visually check control valve(s) Lubricate blower and motor bearings (if applicable) Check condition of blower assembly Remove and dispose any debris from any maintenance activity Document tasks performed during visit and report any observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery All work must be performed in accordance with Johnson Controls safety policies

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Check with appropriate customer representative for operational deficiencies
Check condition of pulley and belts (if applicable)
Check condition of coils
Check condition of filters
Check condensate drain
Check for unusual noise and vibration
Check unit for proper operation
Check overall condition of unit
Document tasks performed during visit and report any observations to appropriate customer representative

Unit Heater, Electric, 300000-600000 BTU

Comprehensive

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Check integrity of unit heater supports
Check and tighten electrical connections
Measure operating amperage of heater elements
Check condition of pulley and belts (if applicable)
Cycle thermostat and check for proper operation
Check for unusual noise and vibration
Check overall condition of unit
Remove and dispose any debris from any maintenance activity
Document tasks performed during visit and report any observations to appropriate customer representative

Operational

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work
Use and follow the JCI Lock-out Tag-out on all electrical machinery
All work must be performed in accordance with Johnson Controls safety policies
Check with appropriate customer representative for operational deficiencies
Check integrity of unit heater supports
Check condition of pulley and belts (if applicable)
Check for proper fan operation
Cycle thermostat and check for proper operation
Check for unusual noise and vibration
Check overall condition of unit
Document tasks performed during visit and report any observations to appropriate customer representative

VAV Box, All Types

Comprehensive

Use appropriate eye protection in work environment
Use appropriate Head protection on worksite
Use appropriate hand gloves on worksite
Use and follow the JCI safety policy for Fall Protection while performing work
Use and follow the JCI Ladder Safety processes while performing work

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	Use and follow the JCI Lock-out Tag-out on all electrical machinery Check with appropriate customer representative for operational deficiencies Check and tighten electrical connections Check damper and linkage Cycle thermostat and check for proper operation Check for leaks in air supply (if applicable) Clean area around equipment Complete any required maintenance checklists, report observations to appropriate customer representative
Operational	Use appropriate eye protection in work environment Use appropriate Head protection on worksite Use appropriate hand gloves on worksite Use and follow the JCI safety policy for Fall Protection while performing work Use and follow the JCI Ladder Safety processes while performing work Use and follow the JCI Lock-out Tag-out on all electrical machinery Check with appropriate customer representative for operational deficiencies Check temperature Check damper and linkage Cycle thermostat and check for proper operation Check for leaks in air supply (if applicable) Check fan operation Clean area around equipment Complete any required maintenance checklists, report observations to appropriate customer representative

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Supplemental Price & Payment Terms (Applies to Multi-Year Contracts Only)

Year	Total Annual Dollar Amount	Payment Frequency

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Special Additions and Exceptions

A. JCI will provide 10% of total refrigerant on all major pieces of equipment that hold 100 lbs or more of refrigerant.

B. JCI will cover all refrigerant on all equipment that holds less than 100 lbs of refrigerant.

C. City will receive a labor discount of 10% off current street rates for any work not covered or included in this contract.

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CHANGE ORDER

Performance Contract Amendment Four dated , 20 between Johnson Controls, Inc. and Customer	Change Order No.		Date (mo/day/yr)
Customer City of Charleston, SC			

The above referenced Performance Contract is hereby modified to the extent described below in accordance with the Terms and Conditions of the CHANGE ORDERS section thereof.

Scope of Work changed as follows:

Total amount of this Change Order	$
Total Performance Contract amount as revised by this Change Order.....	$
The time for completion is: ☐ increased, ☐ decreased, ☐ unchanged. The new completion date resulting from this Change Order is:	(mo, day, yr)

[check if applicable] Assured Performance Guarantee changed as follows:

Unless specifically changed by this Change Order, all terms, conditions and provisions of the above referenced Performance Contract remain unchanged and in full effect.

JOHNSON CONTROLS, INC.	**CUSTOMER**
Signature:	Signature:
Printed Name:	Printed Name:
Title:	Title:

Attachment 2

COMMITTEE / COUNCIL AGENDA

5.)

TO: John J. Tecklenburg, Mayor

FROM: Interim Chief Jerome Taylor **DEPT.** BFRC

SUBJECT: POLICE DEPARTMENT- 2017 EDWARD BYRNE MEMORIAL JAG GRANT

REQUEST: To approve submission of the 2017 Edward Byrne JAG grant Application, to OJP (FY17 Allocation: $22,204) for a single-purpose EDT K9and safety upgrade to containment vessel. The Project cost is $22,847.

COMMITTEE OF COUNCIL: W&M **DATE:** September 26, 2017

COORDINATION: This request has been coordinated with: *(attach all recommendations/reviews)*

	Yes	N/A	Signature of Individual Contacted	Attachment
Corporate Counsel	☐	☐		☐
Cap. Proj. Cmte. Chair	☐	☐		☐
Police Department	☐	☐		☐
Grants Manager	☑	☐		☐

FUNDING: Was funding previously approved? Yes ☐ No ☐ N/A ☐

If yes, provide the following: Dept./Div.: _____ Account #: _____

Balance in Account _____ Amount needed for this item _____

Does this document need to be recorded at the RMC's Office? Yes ☐ No ☒

NEED: Identify any critical time constraint(s).
Due to time constraints this grant was submitted on 9/5/17

CFO's Signature: Amy Wharton

FISCAL IMPACT:

CPD will request a match in the amount of $643 to be budgeted for in FY 2018.

Mayor's Signature: _____
John J. Tecklenburg, Mayor

ORIGINATING OFFICE PLEASE NOTE: A FULLY STAFFED/APPROVED (except Mayor's Signature) PACKAGE IS DUE IN THE CLERK OF COUNCIL'S OFFICE NO LATER THAN 10:00AM THE DAY OF THE CLERK'S AGENDA MEETING.

City of Charleston

South Carolina

JOHN J. TECKLENBURG
Mayor

JEROME TAYLOR
Interim Chief of Police

POLICE DEPARTMENT

MEMORANDUM

To: Jennifer Cook, Assistant Clerk of Council

From: Lieutenant James Byrne, Charleston Police Department

Subject: 2017 Edward Byrne JAG Memorial Grants Program – Local Solicitation

Date: 18 September 2017

The purpose of this memorandum is to summarize the Charleston Police Department's (CPD) grant application request under the Department of Justice's FY2017 Edward Byrne Memorial Justice Assistance Grants (JAG) Program – Local Solicitation.

The goal of this project is maintain the screening and response capabilities of CPD's Explosive Devices Team (EDT). This grant would support the purchase of a new single-purpose explosive detection canine to allow another aging canine to retire. The grant budget also contains funds for the required canine handler training. Finally, this grant application would also purchase an upgrade to EDT's existing suspect item containment vessel, so that it can be operated by radio at a safe distance and with greater reliability.

This grant solicitation is made directly available to units of local government. CPD was previously awarded this grant in 2016 for an automated license plate reader. No cash match is required, and the expected award date is October 1, 2017. Should you have any questions regarding this application, please email Lieutenant Byrne at <byrnej@charleston-sc.gov>.

Project Abstract
Edward Byrne Memorial JAG Program
FY17 Local Solicitation: EDT Capability Maintenance
Applicant: City of Charleston, SC
CFDA: 16.738

Maintenance of the Charleston Police Department Explosive Devices Team Capabilities

Through the support of the 2017 Edward Byrne Memorial JAG program, the **Charleston Police Department (CPD)** seeks to maintain its FEMA Type II Explosive Devices Team capabilities (EDT) by replacing an aging explosive detection canine and installing an upgrade to its Suspect Item Disposal (SID) trailer, commonly known as a "containment vessel." The Department currently maintains two explosive detection canines and provides explosive devices screening and response services throughout the greater Charleston area. The FY17 Byrne JAG Grant application for **$22,204** is intended to maintain these existing capabilities and to increase the safety for the Bomb Technicians who handle suspicious items.

The City of Charleston Police Department's (CPD) jurisdiction covers 131 square miles of territory in Charleston and Berkeley counties. With 458 sworn officers, CPD is the largest municipal police force in South Carolina. The department's Explosive Devices Team (EDT) is made up of four certified Bomb Technicians, two explosive detection canine teams, and three apprentice Bomb Technicians.

This 24-month project would fund one single-purpose canine, the required handler training and travel, and new components for the containment vessel. The primary grant activities for this project will be the procuring the explosive detection canine from a qualified vendor and testing the new, digital components on the containment vessel with EDT officers. First, CPD would select an officer for the canine handler training. The canine team would undergo annual certification, and the canine would be maintained by the department after the life of the grant. Additionally, the containment vessel is stored on police property. Its safety upgrade components would be ordered and installed by electricians with the Police Department's Radio Shop.

The investments would affect EDT screening and response services within the City of Charleston's jurisdiction, as well as its regional mutual aid partners in Berkeley County, Charleston County, Joint Base Charleston, and the Port of Charleston. Therefore, this project would improve upon services for a multitude of Federal, state, and local operations.

Project Identifiers

1. CANINES
2. COUNTER TERRORISM
3. CRIME PREVENTION
4. CVE
5. EQUIPMENT - TACTICAL
6. FIREARMS
7. HAZARDOUS MATERIAL SAFETY
8. OFFICER SAFETY
9. SCREENING AND ASSESSMENT
10. TERRORISM PREPARDNESS

Program Narrative
Edward Byrne Memorial JAG Program
FY17 Local Solicitation: EDT Capability Maintenance
Applicant: City of Charleston, SC
CFDA: 16.738

Introduction

The Edward Byrne Memorial JAG program allows Law Enforcement Agencies (LEAs) the opportunity to more consciously and systematically advance the use of police technology in justice practices. As the largest municipal law enforcement agency in South Carolina, the Charleston Police Department (CPD) is leading the state in 21st century policing by implementing innovative strategies and forging strong community partnerships.

CPD fields a variety of special activation units. The Explosive Devices Team (EDT) addresses all explosive related incidents, conducts preventative sweeps for dignitary visits and special events, recovers military ordnance and found explosives, responds to calls for suspected and/or actual improvised explosive devices, investigates explosions and bombings, supports crime scene investigators and detectives by locating firearms and spent shell casings, and works closely with the CPD's SWAT Team and the Charleston Fire Department's Hazardous Materials team.

In the Explosive Devices Team's 23 years of existence, CPD has made substantial investments in equipping and training the unit's members to be ready for any eventuality. However, due to budget constraints and the rising costs of equipment acquisition and maintenance, the City of Charleston is seeking supportive funding through the Edward Byrne Memorial Justice Assistance Grant Program. This application is specifically requesting funding for an explosive detection canine, training for a new canine handler, and a control system upgrade for a single-vent Suspect Item Disposal containment vessel (bomb transport trailer).

The purchase of an explosive detection canine (and the training for a canine handler) would allow EDT to maintain its current capabilities, as one of the team's two current explosive detection canines is facing retirement due to its age and physical health. The containment vessel upgrade would be a significant technology enhancement to an existing asset. It is this strategy of consistently acquiring and implementing cutting edge equipment, technology, and techniques that has had a direct impact on the interdiction of criminal activity in the city; when this reduction in crime is paired with the strong community relations enjoyed by CPD, it is clear why the department has become a leader in 21st century policing.

City of Charleston

An estimated 142,848 people reside within the corporate limits of the City of Charleston [See: City Fast Facts]. The Charleston Metropolitan Statistical Area (MSA), comprising Charleston, Berkeley, and Dorchester Counties (the tri-county area), has a population of over 712,000. The City of Charleston Police Department's jurisdiction covers 134 square miles of territory in Charleston and Berkeley counties. Residents of the tri-county area commute to the City of Charleston for work, business, recreation, and worship on a regular basis. With estimates of more than 40 new residents in the tri-county area each day, Charleston is now one of the three fastest growing metropolitan areas on the Atlantic coast.

Program Narrative
Edward Byrne Memorial JAG Program
FY17 Local Solicitation: EDT Capability Maintenance
Applicant: City of Charleston, SC
CFDA: 16.738

Statement of the Problem

The City of Charleston Police Department (CPD) has taken great lengths to address crime. In fact, from 2001-2014, CPD has steadily reduced the rate of violent crime [See: Violent Crime Summary]. Despite this success, the characteristics of the city are changing and, therefore, the types of crime that officers face. Charleston has become a popular destination for high-profile dignitaries, sporting events, conferences, and festivals.

Unfortunately, unforeseen environmental and public safety factors have stretched CPD's annual budget, and internal funding for these projects was not available. The timeliness of the projects has also become a factor, as police working dogs have finite service lives, and explosive detection canine "Tinto" is rapidly approaching his retirement. Recent deteriorations in Tinto's health that have affected his endurance and focus. The purchase of a new canine would allow Tinto to retire while preserving CPD's ability to identify and interdict explosive hazards.

Thanks to mutual aid agreements between the Charleston County Sherriff's Office (CCSO), the Berkeley County Sheriff's Office (BCSO), and the City of Charleston, the area's five detector dogs respond to call-outs and screening requests outside their normal jurisdiction. At times, they are even called upon to augment the explosive detection canine resources at the State Ports Authority, at the Boeing aircraft factory, at the Charleston International Airport, at Joint Base Charleston, and at the Federal Courthouse.

The effectiveness of working dogs in law enforcement is indisputable, and their use for the detection of explosive materials is one of the most successful applications of their abilities. Explosive detection canines greatly improve the screening, detection, and response capabilities of first responders. Working closely with the Charleston Fire Department's HAZMAT Team, CPD's Explosive Devices Team conducts pre-event sweeps of venues, vehicles, and deliveries; in such cases, the use of explosive detection canines drastically expedites the sweep and provides early warning that a hazardous item may be present. Moreover, the canines are trained to detect both traditional, commercially-produced explosives and the homemade explosives that are preferred by today's international terrorists and "lone wolf" criminals. The canine team's ability to rapidly assess real and false hazards saves officer lives, employee time, and taxpayer dollars.

These sweeps have become a significant part of the duties performed by CPD's Explosive Devices Team, as Charleston hosts a growing number of dignitary visits each year. These events include Presidential and Vice-Presidential visits, the 2016 Democratic Presidential Debate, gubernatorial and Congressional association events, Medal of Honor events, and military balls. The explosive detection canines screen the private airport facilities, motorcades, hotel rooms, and other venues associated with these occasions.

Likewise, Charleston is also home to many large, recurring special events that require enhanced security measures. Each year, the City of Charleston deploys the explosive detection canines to conduct daily sweeps of the facilities and vendors at the Volvo Car Open, the largest women's-only tennis tournament in North America. Prior to the nation's 3rd largest ground race, the

Program Narrative
Edward Byrne Memorial JAG Program
FY17 Local Solicitation: EDT Capability Maintenance
Applicant: City of Charleston, SC
CFDA: 16.738

Cooper River Bridge Run, the dogs sweep race routes, ferry boats, a children's race festival, and more than 200 school buses in order to keep participants and infrastructure safe. This race crosses the largest cable-stayed bridge in the western hemisphere and passes directly over portions of the Port of Charleston, which is one of the top 10 container ports in the nation by volume.

It is also worth noting that CPD's explosive detection canines are also deployed in support of detectives investigating violent crimes, as they are regularly called on to search for firearms and spent shell casings at crime scenes. The canines also support investigators executing search warrants on vehicles and properties by locating concealed firearms, ammunition, and explosives. Finally, the canines are available to ensure officer safety by sweeping command posts locations and staging areas when CPD responds to critical incidents, explosions, and suspicious items.

CPD's Explosive Devices Team employs a single-vent containment vessel (bomb transport trailer) to safely relocate suspicious items to low vulnerability sites for investigation and disposal. The vessel, able to withstand the force of a handheld improvised explosive device, is equipped with a remote-controlled arm to assist with loading and unloading the payload. However, the existing design uses an analog system with a limited range for the Bomb Technician operating the arm. Additionally, there is a delay between input and response that limits how precisely the Technician can control the arm, potentially prolonging the time that a suspicious item is out of the containment vessel. The upgrade will convert the controls to a digital system that increases operator standoff and eliminates the delay.

Project Design & Implementation

If awarded, this grant would allow the Charleston Police Department to purchase one explosive detection canine and retire an existing one. By replacing the canine, the project would maintain the department's screening and detection capabilities and meet the demand outlined earlier. In purchasing the upgrade for the containment vessel, the project would enhance the team's response capabilities and increase the margin safety for CPD's Bomb Technicians.

If awarded, the primary benefit of replacing an explosive detection canine is the maintenance of current detection capabilities, as detailed previously. Unlike canine pets, a working canine has a shorter lifespan, and thus a limited service life. From age 1 to approximately age 9, they clock over 40 hours each week constantly searching, walking, and jumping into the vehicle. Eight years on the force can wear on an officer, but the effect is even more pronounced on a working dog. The advantage of a new explosive detection canine would be the continuity of current Explosive Devices Team capabilities. It would allow the City of Charleston's first responders to continue their efforts in keeping the public, and each other, safe. Finally, it would mean giving one of their hardest working members – Tinto – the rest and relaxation that he has earned.

The digital upgrade to the SID containment vessel delivers several benefits. First, it enhances the reliability of the signal between the controller and the receiver by increasing the number of channel options available, and by using stronger radio frequencies less vulnerable to

interference. Second, the stronger signal allows for a greater standoff distance between the operator and the containment vessel, and distance directly translates to safety in such operations. Furthermore, the digital system reduces the size of the controller and uses modern, more rugged electronics in its construction, increasing durability and reliability of the hardware involved. Finally, the digital signal eliminates the analog system's two second delay between a Bomb Technician's input on the controller and the kinetic response from the containment vessel, making operation more precise and reducing the time that a suspicious device might be out of the containment vessel. These several features ultimately result in enhanced system reliability and operator safety, as well as reduced risk to the community.

The City of Charleston Police Department understands the performance requirements for those applicants that receive funding. In order to demonstrate the project and to measure success, the Project Manager will follow the proposed timeline, detailed below. In order to implement the project, the Project Manager would work closely with the City of Charleston Procurement Department to determine if a "Request for Proposals" (RFP) is required for the canine and handler training, which are typically purchased together. If an RFP is required, it would entail the expectations, inclusive costs, timeframe, and instructor qualifications. The RFP would be advertised publicly and according to Department of Justice and local procurement guidelines.

All Justice-related grants are managed by the CPD Grants Coordinator, charged with Federal donor communications, asset management, progress reporting, and monitoring. The City of Charleston also employs a Grants Compliance Manager who oversees all Federal and non-Federal grant monies for the city, acting as an additional level of oversight for grant compliance. Finally, the city has designated a Senior Grants Accountant who tracks Federal procurement and financial reporting.

Capabilities & Competencies

City of Charleston Police Department

The Charleston Police Department has been accredited by CALEA (Commission on Accreditation of Law Enforcement Agencies) since 1991, receiving the Commission's highest level of accreditation in each its last three tri-annual assessments. The department strives to maintain the highest level of professionalism as it serves and protects the public. To this end, CPD works with various local, state, Federal, and non-governmental partners to reduce criminal activity and fear of crime. Its jurisdiction falls within South Carolina's Charleston and Berkeley counties, and it encompasses the majority of Charleston's historical and business districts. CPD is one of the larger law enforcement agencies in the state, with 458 sworn officers and 117 civilian administrators and analysts.

Explosive Devices Team

The Charleston Police Department has fielded the Explosive Devices Team (EDT) as its public safety bomb squad since 1994. The team, which maintains certification through the FBI,

currently has four Bomb Technicians and three apprentices assigned on a collateral-duty basis. Two of the Bomb Technicians are also explosive detection canine handlers. EDT operates as a FEMA Type II bomb squad, meaning that it employs human, canine, and robotic capabilities and is equipped and staffed to handle at least two separate incidents simultaneously. The explosive detection canines employed by the team are assigned to their handlers on a 24 hour basis, and they undergo frequent care and training to maintain their readiness for duty.

Lieutenant James Byrne
Explosive Devices Team Commander & Project Manager
Lieutenant James Byrne joined the Charleston Police Department full-time in 2000. He was assigned to the Explosive Devices Team (Bomb Squad) and promoted to supervisory rank in the fall of 2003. He earned certification as a Bomb Technician through the FBI's Hazardous Devices School in May, 2005, and he has recertified three times since then. Currently serving as both a patrol commander and the EDT commander, Lieutenant Byrne manages teams of twenty-one and six officers, respectively. He is responsible for all EDT operations and serves as a point of contact for mutual aid requests, multi-agency special events, and joint training exercises. Lieutenant Byrne holds a Bachelor's Degree with dual majors in Political Science and Business, Economics, & the Law, and he previously served with the United States Border Patrol.

Performance Measures & Data Collection

The City of Charleston Police Department understands the performance requirements for those applicants that receive funding. In order to demonstrate the effectiveness of the project and measure success, the Project Manager will collect various data, as detailed below:

Objective	Performance Measures	Data Grantee Provides
Increase EDT officer safety when containing and transporting explosives and suspicious items	The distance between an operator and the containment vessel after switching to digital controller/receiver.	Purchase records, photographs of property, training records
Maintain explosive screening capabilities.	Replace aging explosive detection canine.	Purchase records, canine handler basic training certificate, NAPWDA certifications, training records, after action reports
Give professional opportunity to a new explosive detection canine handler within the department.	Send selected explosive detection canine officer to basic handler training.	"Personnel Order" of explosive detection canine assignment, travel authorization, canine handler basic training certificate

Budget Narrative
Edward Byrne Memorial JAG Program
FY17 Local Solicitation: EDT Capability Maintenance
Applicant: City of Charleston, SC
CFDA: 16.738

Maintenance of the Charleston Police Department Explosive Devices Team Capabilities

Cost estimates in the Budget Detail Worksheet are based on product or service MSRPs and include a 9% state and local sales tax.

Equipment

Single-Purpose Explosive Detection Canine

A single-purpose explosive detection canine is a police working dog trained and certified to detect the odors of explosive substances. The dog alerts its handler passively (typically by sitting) and is rewarded with a toy or similar item for accurate alerts. The term "single-purpose" indicates that the dog is not cross-trained for patrol work (tracking / apprehension). Police working dogs are specifically selected, imported, and trained for duties such as explosive detection.

Dual-Channel Receiver and Transmitter for SID Containment Vessel

A SID (Suspect Item Disposal) containment vessel is a transport system for explosives and suspicious items that is mounted on a dual-axle trailer. The containment vessel consists of two steel chambers, one inside the other, separated by a layer of granular material. The system is open at the top, resembling a large bucket or tub, and it is designed to withstand the pressures and fragmentation of an explosive blast. Suspected explosive items are transported inside the containment vessel so that they can be investigated or disrupted at a safe location. A boom arm and winch mounted on the trailer is used to load and unload items in the containment vessel. It is controlled by either a hard-wire system or an analog wireless radio signal. The dual-channel receiver and transmitter is a digital upgrade to the containment vessel's electronics that extends the range and reliability of the radio control system and enhances many of its other functions.

Shipping

Funds are budgeted to cover the cost of shipping the dual-channel receiver and transmitter for the SID containment vessel. The single-purpose explosive detection canine (with HME odor imprinting) must be picked up in person by the canine handler.

Other

HME Odor Imprinting

"HME" is an acronym for homemade explosives, which are explosive compounds that are easily manufactured without the need for large production facilities using raw materials readily available to the average consumer. Unlike commercially-produced explosives, these compounds are often unstable and dangerous to manufacture, making them difficult to train with. HME

odors are different than those of commercial explosives. The act of "imprinting" means introducing an explosive detection canine to specific odors, and training it to display a specific response (or alert) when that odor is detected.

Single-Purpose Explosive Detection Canine Handler Course Registration

The single-purpose explosive detection canine will be assigned to a member of the Charleston Police Department's Explosive Devices Team who has not previously served as an explosive detection canine handler. Typically, kennels that supply police working dogs require handlers to attend training at their facilities to ensure that the canine and the handler are a good match, and to provide basic canine handler training so that the canine team can successfully perform its duties. The training includes canine obedience, sweep techniques, training aid use and handling, health and care of working dogs, record keeping, and other vital skills. This training typically lasts for four weeks, depending on the handler's previous experience and the canine team's progress during the training.

Travel

Lodging

The lodging line item provides the canine handler with appropriate lodging at or near the selected kennel (vendor) during the single-purpose explosive detection canine handler course.

Travel – Mileage

The travel line item provides the funding to allow the canine handler to drive to and from the selected kennel (vendor) for the single-purpose explosive detection canine handler course. The canine handler must drive in order to provide transportation for the canine both during and at the conclusion of the training course.

Per Diem

The per diem line item provides funding for meals and incidental expenses while the canine handler is attending the single-purpose explosive detection canine handler course.

Budget Detail Worksheet
Edward Byrne Memorial JAG Program
FY17 Local Solicitation: EDT Capability Maintenance
Applicant: City of Charleston, SC
CFDA: 16.738

EQUIPMENT

UNITS	DESCRIPTION	UNIT COST	TAX (9%)	TOTAL
1	Single-Purpose Explosive Detection Canine	$ 9,500.00	$ 855.00	$ 10,355.00
				$ 10,355.00

OTHER

UNITS	DESCRIPTION	UNIT COST	TAX (9%)	TOTAL
1	HME Odor Imprinting	$ 1,000.00		$ 1,000.00
1	Single Purpose Explosive Detection Canine Handler Course Registration	$ 3,000.00		$ 3,000.00
				$ 4,000.00

TRAVEL

UNITS	DESCRIPTION	UNIT COST	TAX (10%)	TOTAL
30	Lodging (On-Site Law Enforcement Rate from Vendor. GSA Rate is $102/night for Fayetteville, NC. Nearest to Jackson Springs, NC)	$ 45.00	$ 4.50	$ 1,485.00
942	Travel-Mileage (2017 City $.535 Per Mile)	$ 0.535		$ 503.97
30	Per Diem (2017 GSA Rate for Fayetteville, NC. Nearest to Jackson Springs, NC).	$ 44.00		$ 1,320.00
				$ 3,308.97

EQUIPMENT

UNITS	DESCRIPTION	UNIT COST	TAX (9%)	TOTAL
1	Dual-channel receiver and transmitter for SID containment vessel (Includes extension cable and freight)	$ 4,700.00	$ 423.00	$ 5,123.00
1	Shipping	$ 55.00	$ 4.95	$ 59.95
				$ 5,182.95

Subtotal	$ 22,846.92
Total	**$ 22,847**

FAST FACTS

City of Charleston

Prepared by the Department of Planning, Preservation & Sustainability
January 2017

LAND AREA	2017
Peninsula land area	approx. 8.0 sq miles
Total City area (excluding water)	approx. 112 sq miles
Total City area (including water)	approx. 134 sq miles

CENSUS DEMOGRAPHICS	2000	2010
City of Charleston Total Population	96,650	120,083
West Ashley	45,954	54,239
Peninsula	35,157	34,636
James Island	12,741	17,847
Johns Island	1,676	5,266
Daniel Island/Cainhoy	1,122	8,095
Charleston-North Charleston-Summerville MSA	549,033	664,607
City Racial Breakdown	34.0% Black	25.6% Black
	63.0% White	68.6% White
City Per Capita Income	$22,414	$30,763
City Median Household Income	$35,295	$49,448
City Median Family Income	$48,705	$67,400
City Persons Per Household	2.23	2.18

(Source: U.S. Census Bureau, decennial census data & American Community Survey data

POPULATION ESTIMATES	2016	2017
City of Charleston Total Population	137,447	142,848
West Ashley	60,878	63,239
Peninsula	35,972	37,079
James Island	20,416	20,780
Johns Island	8,119	8,628
Daniel Island/Cainhoy	12,062	13,122

(Source: City of Charleston building permit and annexation data)

BUILDING PERMITS (residential)	2015	2016
Total Single & Multi-Family Unit Permits Issued	2,055	2,862
West Ashley	518	1,233
Peninsula	61	596
James Island	89	199
Johns Island	535	271
Daniel Island/Cainhoy	852	563

(Source: City of Charleston building permit data)

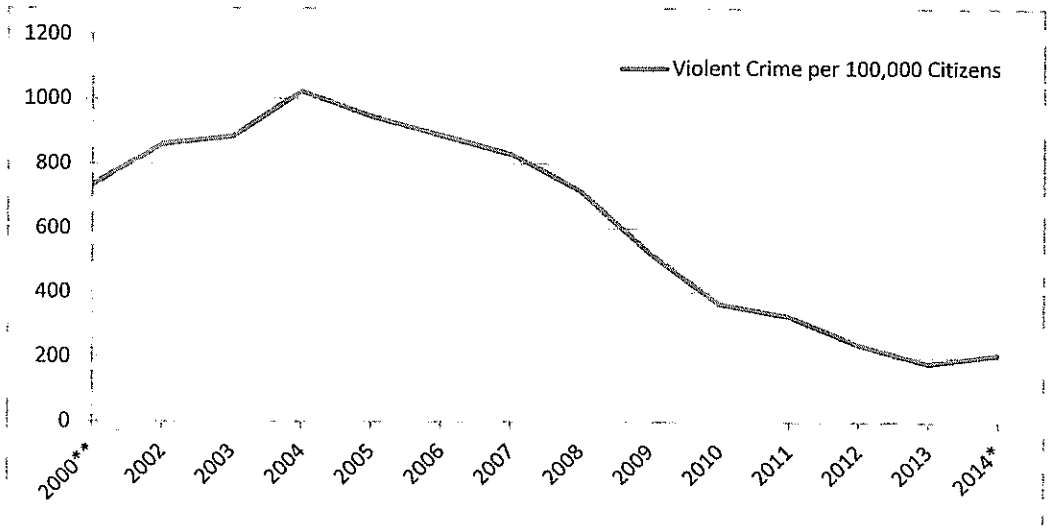
ANNEXATION	2015	2016
Area Annexed	291.41 acres	38.97 acres
Persons Annexed	65	73
Housing Units Annexed	26	29

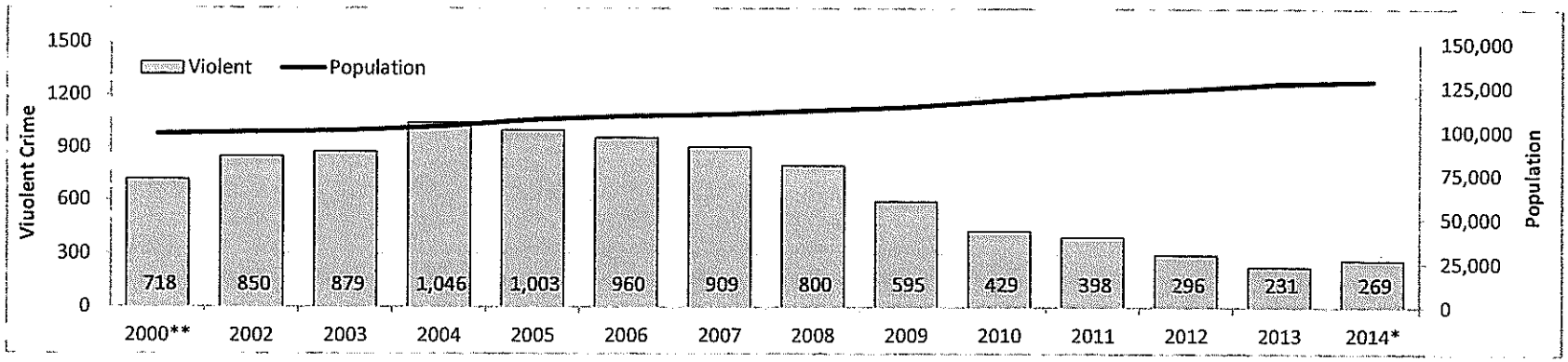
City of Charleston South Carolina
PP&S PLANNING, PRESERVATION AND SUSTAINABILITY
2 George Street, Charleston, South Carolina 29401
ph. 843.724.3765
www.charleston-sc.gov

FBI Reported Violent Crime for the City of Charleston

Report Year 2001 - 2014

Year	Population	Violent	Per100k
2000**	97,879	718	733.6
2002	98,942	850	859.1
2003	99,756	879	881.2
2004	102,264	1,046	1,022.8
2005	106,307	1,003	943.5
2006	108,371	960	885.8
2007	109,382	909	831.0
2008	111,645	800	716.6
2009	113,681	595	523.4
2010	117,551	429	364.9
2011	121,481	398	327.6
2012	123,856	296	239.0
2013	127,206	231	181.6
2014*	128,700	269	209.0
Total		9,383	





** FBI UCR Table 8 does not provide accurate data for 2001 (listed as 386) so the 2000 total was used for this summary

* 2014 numbers are unofficial from RMS and are subject to further revision

* 2014 population estimate provided by City Finance

U.S. DEPARTMENT OF JUSTICE
OFFICE OF JUSTICE PROGRAMS

OMB Number: 1121-0329
Expiration Date: 12/31/2018

FINANCIAL MANAGEMENT AND SYSTEM OF INTERNAL CONTROLS QUESTIONNAIRE

The financial management system of each non-Federal entity must provide for the following

- Retention requirements for records
- Requests for transfer of records
- Methods for collection, transmission and storage of information
- Access to records
- Restrictions on public access to records

(1) Identification, in its accounts, of all Federal awards received and expended and the Federal programs under which they were received. Federal program and Federal award identification must include, as applicable, the CFDA title and number, Federal award identification number and year, name of the Federal agency, and name of the pass-through entity, if any.

(2) Accurate, current, and complete disclosure of the financial results of each Federal award or program.

(3) Records that identify adequately the source and application of funds for federally-funded activities. These records must contain information pertaining to Federal awards, authorizations, obligations, unobligated balances, assets, expenditures, income and interest and be supported by source documentation.

(4) Effective control over, and accountability for, all funds, property, and other assets. The non-Federal entity must adequately safeguard all assets and assure that they are used solely for authorized purposes.

(5) Comparison of expenditures with budget amounts for each Federal award.

(6) Written procedures to document the receipt and disbursement of Federal funds including procedures to minimize the time elapsing between the transfer of funds from the United States Treasury or the pass-through entity and the disbursement by the non-Federal entity whether the payment is made by electronic funds transfer, or issuance or redemption of checks, warrants, or payment by other means.

(7) Written procedures for determining the allowability of costs.

APPLICANT ORGANIZATIONAL INFORMATION

1. Name of Organization and Address:

Organization Name: City of Charleston
Street1: 80 Broad Street
Street2:
City: Charleston
State: SC: South Carolina
Zip Code: 29401

2. Authorized Representative's Name and Title:

Prefix: Mr.
First Name: John
Middle Name:
Last Name: Tecklenburg
Suffix:
Title: Mayor

3. Phone: (843) 724-3737
4. Fax: 843-720-3827

5. Email: tecklenburgj@charleston-sc.gov

6. Year Established: 1783
7. Employer Identification Number (EIN): 57-6000226
8. DUNS Number: 7799078600000

9. Type of Organization:

☐ State ☒ Municipality ☐ Non-Profit ☐ Higher Education ☐ Tribal ☐ For-Profit
☐ Other:

U.S. DEPARTMENT OF JUSTICE
OFFICE OF JUSTICE PROGRAMS

OMB Number: 1121-0329
Expiration Date: 12/31/2018

AUDIT INFORMATION

An audit is conducted using generally accepted auditing standards (GAAS) or Generally Accepted Governmental Auditing Standards (GAGAS) and results in an audit report with an opinion.

10. The organization has undergone the following types of audit(s)(Please check all that apply):

- [x] OMB A-133 Single Audit
- [ ] Financial Statement Audit
- [ ] Defense Contract Agency Audit (DCAA)
- [ ] None
- [ ] Programmatic Audit & Agency:
- [ ] Other Audit & Agency:

11. Most Recent Audit: [x] Within the past 12 months [ ] Within the past two years [ ] More than two years

Name of Audit Agency/Firm: Mauldin & Jenkins, LLC

AUDITOR'S OPINION:

12. On the most recent audit, what was the auditor's opinion?

[x] Unqualified Opinion [ ] Qualified Opinion [ ] Disclaimer, Going Concern or Adverse Opinions

Please enter the number of findings:

Please enter the amount of questioned costs:

Were material weaknesses noted in either the Financial Statement or Single Audit? [ ] Yes [x] No

ACCOUNTING SYSTEM

13. Which of the following best describes your accounting system:

[ ] Manual [ ] Automated [x] Combination

14. Does the accounting system identify the receipt and expenditure of program funds separately for each grant?	[x] Yes [ ] No [ ] Not Sure
15. Does the accounting system provide for the recording of expenditures for each grant/contract by budget cost categories shown in the approved budget?	[x] Yes [ ] No [ ] Not Sure
16. Does your accounting system have the capability to document the recording of cost sharing or match for each grant? Can you determine if documentation is available to support recorded match or cost share?	[x] Yes [ ] No [ ] Not Sure
17. Are time distribution records maintained for each employee that specifically identify effort charged to a particular grant or cost objective?	[x] Yes [ ] No [ ] Not Sure
18. Does the accounting/financial system include budgetary controls to preclude incurring obligations or costs in excess of total funds available or by budget cost category (e.g. Personnel, Travel, etc.)?	[x] Yes [ ] No [ ] Not Sure
19. Is the organization familiar with the existing Federal regulation and guidelines containing the Cost Principles and procedures for the determination and allowance of costs in connection with Federal grants?	[x] Yes [ ] No [ ] Not Sure

U.S. DEPARTMENT OF JUSTICE
OFFICE OF JUSTICE PROGRAMS

OMB Number: 1121-0329
Expiration Date: 12/31/2018

PROPERTY STANDARDS, PROCUREMENT STANDARDS, AND TRAVEL POLICIES

PROPERTY STANDARDS	
20. Does your property management system(s) provide for maintaining: (1) a description of the equipment; (2) an identification number; (3) source of the property, including the award number; (4) where title vests; (5) acquisition date; (6) federal share of property cost; (7) location and condition of the property; (8) acquisition cost; & (9) ultimate disposition information?	☒ Yes ☐ No ☐ Not Sure
PROCUREMENT STANDARDS	
21. Does your organization maintain written procurement procedures which (1) avoid unnecessary purchases; (2) provide an analysis of lease and purchase alternatives; and (3) provide a process for soliciting goods and services?	☒ Yes ☐ No ☐ Not Sure
22. Does your procurement system provide for the conduct to determine selection on a competitive basis and documentation of cost or price analysis for each procurement action?	☒ Yes ☐ No ☐ Not Sure
23. Does your procurement system include provisions for checking the "Excluded Parties List" system for suspended or debarred sub-grantees and contractors, prior to award? Please visit www.sam.gov.	☒ Yes ☐ No ☐ Not Sure
TRAVEL POLICY	
24. Does your organization:	
(a) maintain a standard travel policy?	☒ Yes ☐ No
(b) adhere to the Federal Travel Regulation? (FTR)	☐ Yes ☒ No
SUBRECIPIENT MANAGEMENT AND MONITORING	
25. (For Pass-through entities only). Does your organization have controls in place to monitor activities of subrecipients, as necessary, to determine that Federal awards are used for authorized purposes in compliance with laws, regulations, and the provisions of the award and that performance goals are achieved (2 CFR200)?	☐ Yes ☐ No ☐ Not Sure ☒ N/A (Your organization does not make subawards.)

STANDARDS FOR FINANCIAL MANAGEMENT SYSTEMS AND APPLICANT CERTIFICATION

I certify that the above information is complete and correct to the best of my knowledge. This document must be certified by the organization's Authorized Representative, Executive Director, Chief Financial Officer, Chairman of the Board of Directors, or similar position.

Name: Amy K. Wharton

Date: 2017-08-14

Title: ☐ Executive Director ☒ Chief Financial Officer ☐ Chairman ☐ Other

Phone: (843) 579-7596

DISCLOSURE OF LOBBYING ACTIVITIES

Approved by OMB
0348-0046

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

1. Type of Federal Action:
[b] a. contract
b. grant
c. cooperative agreement
d. loan
e. loan guarantee
f. loan insurance

2. Status of Federal Action:
[a] a. bid/offer/application
b. initial award
c. post-award

3. Report Type:
[a] a. initial filing
b. material change
For Material Change Only:
year _____ quarter _____
date of last report _____

4. Name and Address of Reporting Entity:
[✓] Prime [ ] Subawardee
Tier , *if known*:
City of Charleston
80 Broad Street
Charleston, SC 29401
Congressional District, *if known*:

5. If Reporting Entity in No. 4 is a Subawardee, Enter Name and Address of Prime:
Congressional District, *if known*:

6. Federal Department/Agency:
Department of Justice-Office of Justice Programs

7. Federal Program Name/Description:
Edward Byrne Memorial Justice Assistance Grant Program
CFDA Number, *if applicable*: 16.738

8. Federal Action Number, *if known*:

9. Award Amount, *if known*:
$ 22,204.00

10. a. Name and Address of Lobbying Registrant
(*if individual. last name. first name. MI*):
TCH Group, 601 13th Street NW, Suite B2
Washington, DC, 2005 and;
Clyburn Consulting, 7819 12th St. N.W.,
Washington, DC, 20012

b. Individuals Performing Services (*including address if different from No. 10a*)
(*last name. first name. MI*):
Tongour, Mike, TCH Group and;
Clyburn, William, Clyburn Consulting

Amy K. Wharton

11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less that $10,000 and not more than $100,000 for each such failure.

Signature: Amy K. Wharton
Print Name: Amy K. Wharton
Title: Chief Financial Officer, City of Charleston
Telephone No.: (843) 579-7596 Date: 8/14/2017

Federal Use Only:

Authorized for Local Reproduction
Standard Form LLL (Rev. 7-97)

Applicant Disclosure of Pending Applications

The City of Charleston has no pending applications for federal assistance that include requests for funding to support the same project being proposed under this solicitation and that will cover the identical cost items outlined in the budget narrative and worksheet in the application under this solicitation.

Federal or State Funding Agency	Solicitation Name/Project Name	Name/Phone/Email for Point of Contact at Funding Agency
South Carolina Department of Public Safety (SCDPS)	SCDPS 2018 Highway Safety-Traffic Enforcement Program (Continuation)	Christine Tull 803-896-9961 christinetull@scdps.gov
South Carolina Department of Public Safety (SCDPS)	SCDPS 2017 Justice Assistance Grant-Crime Scene & Evidence Photography Project	Bonnie Burns 803-896-8707 bonnieburns@scdps.gov
South Carolina Department of Public Safety (SCDPS)	SCDPS 2016 VOCA Special Solicitation-Enhanced Coordination of City of Charleston Police Victim Services	Bonnie Burns 803-896-8707 bonnieburns@scdps.gov
South Carolina Emergency Management Division (SCEMD)	SCEMD 2016 Hazard Mitigation Grant Program 5% Initiative - Flood Detection & Alert Mitigation Project	Lindsey Greenbaum 803-367-8095 lgreenbaum@emd.sc.gov

U.S. DEPARTMENT OF JUSTICE
OFFICE OF JUSTICE PROGRAMS

Edward Byrne Justice Assistance Grant Program
FY 2017 Local Solicitation

Certifications and Assurances
by the Chief Executive of the Applicant Government

On behalf of the applicant unit of local government named below, in support of that locality's application for an award under the FY 2017 Edward Byrne Justice Assistance Grant ("JAG") Program, and further to 42 U.S.C. § 3752(a), I certify under penalty of perjury to the Office of Justice Programs ("OJP"), U.S. Department of Justice ("USDOJ"), that all of the following are true and correct:

1. I am the chief executive of the applicant unit of local government named below, and I have the authority to make the following representations on my own behalf and on behalf of the applicant unit of local government. I understand that these representations will be relied upon as material in any OJP decision to make an award, under the application described above, to the applicant unit of local government.

2. I certify that no federal funds made available by the award (if any) that OJP makes based on the application described above will be used to supplant local funds, but will be used to increase the amounts of such funds that would, in the absence of federal funds, be made available for law enforcement activities.

3. I assure that the application described above (and any amendment to that application) was submitted for review to the governing body of the unit of local government (e.g., city council or county commission), or to an organization designated by that governing body, not less than 30 days before the date of this certification.

4. I assure that, before the date of this certification— (a) the application described above (and any amendment to that application) was made public; and (b) an opportunity to comment on that application (or amendment) was provided to citizens and to neighborhood or community-based organizations, to the extent applicable law or established procedure made such an opportunity available.

5. I assure that, for each fiscal year of the award (if any) that OJP makes based on the application described above, the applicant unit of local government will maintain and report such data, records, and information (programmatic and financial), as OJP may reasonably require.

6. I certify that— (a) the programs to be funded by the award (if any) that OJP makes based on the application described above meet all the requirements of the JAG Program statute (42 U.S.C. §§ 3750-3758); (b) all the information contained in that application is correct; (c) in connection with that application, there has been appropriate coordination with affected agencies; and (d) in connection with that award (if any), the applicant unit of local government will comply with all provisions of the JAG Program statute and all other applicable federal laws.

7. I have examined certification entitled "State or Local Government: FY 2017 Certification of Compliance with 8 U.S.C. § 1373" executed by the chief legal officer of the applicant government with respect to the FY 2017 JAG program and submitted in support of the application described above, and I hereby adopt that certification as my own on behalf of that government.

I acknowledge that a materially false, fictitious, or fraudulent statement (or concealment or omission of a material fact) in this certification, or in the application that it "supports, may be the subject of criminal prosecution (including under 18 U.S.C. §§ 1001 and/or 1621, and/or 42 U.S.C. § 3795a), and also may subject me and the applicant unit of local government to civil penalties and administrative remedies for false claims or otherwise (including under 31 U.S.C. §§ 3729-3730 and §§ 3801-3812). I also acknowledge that OJP awards, including certifications provided in connection with such awards, are subject to review by USDOJ, including by OJP and by the USDOJ Office of the Inspector General.

Signature of Chief Executive of the Applicant Unit of Local Government	Date of Certification
Printed Name of Chief Executive	Title of Chief Executive

Name of Applicant Unit of Local Government

U.S. DEPARTMENT OF JUSTICE
OFFICE OF JUSTICE PROGRAMS

State or Local Government: FY 2017 Certification of Compliance with 8 U.S.C. § 1373

On behalf of the applicant government entity named below, and in support of its application, I certify under penalty of perjury to the Office of Justice Programs ("OJP"), U.S. Department of Justice ("USDOJ"), that all of the following are true and correct:

(1) I am the chief legal officer of the State or local government of which the applicant entity named below is a part ("the jurisdiction"), and I have the authority to make this certification on behalf of the jurisdiction and the applicant entity (that is, the entity applying directly to OJP). I understand that OJP will rely upon this certification as a material representation in any decision to make an award to the applicant entity.

(2) I have carefully reviewed 8 U.S.C. § 1373(a) and (b), including the prohibitions on certain actions by State and local government entities, -agencies, and -officials regarding information on citizenship and immigration status. I also have reviewed the provisions set out at (or referenced in) 8 U.S.C. § 1551 note ("Abolition ... and Transfer of Functions"), pursuant to which references to the "Immigration and Naturalization Service" in 8 U.S.C. § 1373 are to be read, as a legal matter, as references to particular components of the U.S. Department of Homeland Security.

(3) I (and also the applicant entity) understand that the U.S. Department of Justice will require States and local governments (and agencies or other entities thereof) to comply with 8 U.S.C. § 1373, with respect to any "program or activity" funded in whole or in part with the federal financial assistance provided through the FY 2017 OJP program under which this certification is being submitted ("the FY 2017 OJP Program" identified below), specifically including any such "program or activity" of a governmental entity or -agency that is a subrecipient (at any tier) of funds under the FY 2017 OJP Program.

(4) I (and also the applicant entity) understand that, for purposes of this certification, "program or activity" means what it means under title VI of the Civil Rights Act of 1964 (*see* 42 U.S.C. § 2000d-4a), and that terms used in this certification that are defined in 8 U.S.C. § 1101 mean what they mean under that section 1101, except that the term "State" also shall include American Samoa (*cf.* 42 U.S.C. § 901(a)(2)). Also, I understand that, for purposes of this certification, neither a "public" institution of higher education (*i.e.*, one that is owned, controlled, or directly funded by a State or local government) nor an Indian tribe is considered a State or local government entity or -agency.

(5) I have conducted (or caused to be conducted for me) a diligent inquiry and review concerning both—

(a) the "program or activity" to be funded (in whole or in part) with the federal financial assistance sought by the applicant entity under this FY 2017 OJP Program; and

(b) any prohibitions or restrictions potentially applicable to the "program or activity" sought to be funded under the FY 2017 OJP Program that deal with sending to, requesting or receiving from, maintaining, or exchanging information of the types described in 8 U.S.C. § 1373(a) or (b), whether imposed by a State or local government entity, -agency, or -official.

(6) As of the date of this certification, neither the jurisdiction nor any entity, agency, or official of the jurisdiction has in effect, purports to have in effect, or is subject to or bound by, any prohibition or any restriction that would apply to the "program or activity" to be funded in whole or in part under the FY 2017 OJP Program (which, for the specific purpose of this paragraph 6, shall not be understood to include any such "program or activity" of any subrecipient at any tier), and that deals with either— (1) a government entity or -official sending or receiving information regarding citizenship or immigration status as described in 8 U.S.C. § 1373(a); or (2) a government entity or -agency sending to, requesting or receiving from, maintaining, or exchanging information of the types (and with respect to the entities) described in 8 U.S.C. § 1373(b).

I acknowledge that a materially false, fictitious, or fraudulent statement (or concealment or omission of a material fact) in this certification, or in the application that it supports, may be the subject of criminal prosecution (including under 18 U.S.C. §§ 1001 and/or 1621, and/or 42 U.S.C. § 3795a), and also may subject me and the applicant entity to civil penalties and administrative remedies for false claims or otherwise (including under 31 U.S.C. §§ 3729-3730 and §§ 3801-3812). I also acknowledge that OJP awards, including certifications provided in connection with such awards, are subject to review by USDOJ, including by OJP and by the USDOJ Office of the Inspector General.

Signature of Chief Legal Officer of the Jurisdiction	Printed Name of Chief Legal Officer
Date of Certification	Title of Chief Legal Officer of the Jurisdiction

Name of Applicant Government Entity (*i.e.*, the applicant to the FY 2017 OJP Program identified below)

FY 2017 OJP Program: **Byrne Justice Assistance Grant ("JAG") Program**

OMB No. 1121-0140
Expires 5/31/2019

U.S. DEPARTMENT OF JUSTICE
OFFICE OF JUSTICE PROGRAMS

CERTIFIED STANDARD ASSURANCES

On behalf of the Applicant, and in support of this application for a grant or cooperative agreement, I certify under penalty of perjury to the Office of Justice Programs (OJP), U.S. Department of Justice ("Department"), that all of the following are true and correct:

(1) I have the authority to make the following representations on behalf of myself and the Applicant. I understand that these representations will be relied upon as material in any OJP decision to make an award to the Applicant based on its application.

(2) I certify that the Applicant has the legal authority to apply for the federal assistance sought by the application, and that it has the institutional, managerial, and financial capability (including funds sufficient to pay any required non-federal share of project costs) to plan, manage, and complete the project described in the application properly.

(3) I assure that, throughout the period of performance for the award (if any) made by OJP based on the application—

(a) the Applicant will comply with all award requirements and all federal statutes and regulations applicable to the award;

(b) the Applicant will require all subrecipients to comply with all applicable award requirements and all applicable federal statutes and regulations; and

(c) the Applicant will maintain safeguards to address and prevent any organizational conflict of interest, and also to prohibit employees from using their positions in any manner that poses, or appears to pose, a personal or financial conflict of interest.

(4) The Applicant understands that the federal statutes and regulations applicable to the award (if any) made by OJP based on the application specifically include statutes and regulations pertaining to civil rights and nondiscrimination, and, in addition—

(a) the Applicant understands that the applicable statutes pertaining to civil rights will include section 601 of the Civil Rights Act of 1964 (42 U.S.C. § 2000d); section 504 of the Rehabilitation Act of 1973 (29 U.S.C. § 794); section 901 of the Education Amendments of 1972 (20 U.S.C. § 1681); and section 303 of the Age Discrimination Act of 1975 (42 U.S.C. § 6102);

(b) the Applicant understands that the applicable statutes pertaining to nondiscrimination may include section 815(c) of Title I of the Omnibus Crime Control and Safe Streets Act of 1968 (42 U.S.C. § 3789d(c)); section 1407(e) of the Victims of Crime Act of 1984 (42 U.S.C. § 10604(e)); section 299A(b) of the Juvenile Justice and Delinquency Prevention Act of 2002 (42 U.S.C. § 5672(b)); and that the grant condition set out at section 40002(b)(13) of the Violence Against Women Act (42 U.S.C. § 13925(b)(13)) also may apply;

(c) the Applicant understands that it must require any subrecipient to comply with all such applicable statutes (and associated regulations); and

(d) on behalf of the Applicant, I make the specific assurances set out in 28 C.F.R. §§ 42.105 and 42.204.

(5) The Applicant also understands that (in addition to any applicable program-specific regulations and to applicable federal regulations that pertain to civil rights and nondiscrimination) the federal regulations applicable to the award (if any) made by OJP based on the application may include, but are not limited to, 2 C.F.R. Part 2800 (the DOJ "Part 200 Uniform Requirements") and 28 C.F.R. Parts 22 (confidentiality - research and statistical information), 23 (criminal intelligence systems), and 46 (human subjects protection).

(6) I assure that the Applicant will assist OJP as necessary (and will require subrecipients and contractors to assist as necessary) with the Department's compliance with section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. § 306108), the Archeological and Historical Preservation Act of 1974 (54 U.S.C. §§ 312501-312508), and the National Environmental Policy Act of 1969 (42 U.S.C. §§ 4321-4335), and 28 C.F.R. Parts 61 (NEPA) and 63 (floodplains and wetlands).

(7) I assure that the Applicant will give the Department and the Government Accountability Office, through any authorized representative, access to, and opportunity to examine, all paper or electronic records related to the award (if any) made by OJP based on the application.

(8) I assure that, if the Applicant is a governmental entity, with respect to the award (if any) made by OJP based on the application—

(a) it will comply with the requirements of the Uniform Relocation Assistance and Real Property Acquisitions Act of 1970 (42 U.S.C. §§ 4601-4655), which govern the treatment of persons displaced as a result of federal and federally-assisted programs; and

(b) it will comply with requirements of 5 U.S.C. §§ 1501-1508 and 7324-7328, which limit certain political activities of State or local government employees whose principal employment is in connection with an activity financed in whole or in part by federal assistance.

I acknowledge that a materially false, fictitious, or fraudulent statement (or concealment or omission of a material fact) in this certification, or in the application that it supports, may be the subject of criminal prosecution (including under 18 U.S.C. §§ 1001 and/or 1621, and/or 42 U.S.C. § 3795a), and also may subject me and the Applicant to civil penalties and administrative remedies for false claims or otherwise (including under 31 U.S.C. §§ 3729-3730 and 3801-3812). I also acknowledge that OJP awards, including certifications provided in connection with such awards, are subject to review by the Department, including by OJP and by the Department's Office of the Inspector General.

Signature of Chief Executive of the Applicant Unit of Local Government

Date of Certification

Printed Name of Chief Executive

Title of Chief Executive

Name of Applicant Unit of Local Government

COMMITTEE / COUNCIL AGENDA

6.)

TO: John J. Tecklenburg, Mayor

FROM: Scott Watson **DEPT.** Executive

SUBJECT: OFFICE OF CULTURAL AFFAIRS – SC HUMANITIES FAST TRACK LITERARY GRANT

REQUEST: To accept a grant award from SC Humanities in the amount of $3,000. Funds will be used to support programs of the Free Verse Festival.

COMMITTEE OF COUNCIL: W&M **DATE:** September 26, 2017

COORDINATION: This request has been coordinated with: *(attach all recommendations/reviews)*

	Yes	N/A	Signature of Individual Contacted	Attachment
Corporate Counsel				
Cap. Proj. Cmte. Chair				
Office of Cultural Affairs	X			
Grants Manager	x			

FUNDING: Was funding previously approved? Yes ☐ No ☐ N/A ☐

If yes, provide the following: Dept./Div.: _____ Account #: _____

Balance in Account _____ Amount needed for this item _____

Does this document need to be recorded at the RMC's Office? Yes ☐ No X

NEED: Identify any critical time constraint(s).

CFO's Signature: _____

FISCAL IMPACT:

A City match in the amount of $3,000 is required. Matching funds will come from paid admissions and donations.

Mayor's Signature: _____
John J. Tecklenburg, Mayor

ORIGINATING OFFICE PLEASE NOTE: A FULLY STAFFED/APPROVED (except Mayor's Signature) PACKAGE IS DUE IN THE CLERK OF COUNCIL'S OFFICE NO LATER THAN 10:00AM THE DAY OF THE CLERK'S AGENDA MEETING.

September 14, 2017

Scott Watson
City of Charleston Office of Cultural Affairs
75 Calhoun Street, Suite 3800
Charleston, SC 29401

Dear Scott Watson:

On behalf of South Carolina Humanities, I am pleased to inform you that your grant entitled **"Free Verse Festival"** has been awarded in the outright **Fast Track Literary Grant** amount of **$3,000.**

In all correspondence about the grant, please refer to it as SC Humanities grant **# 17-1767-4.**

Enclosed are two copies of the grant agreement form. Please see that these are properly *signed and returned to us within ten days* to confirm acceptance of the grant. Note that the forms require **two** signatures. The signing of the Grant Agreement indicates the grantee's understanding of and willingness to comply with both the Grant Agreement and this letter.

We are placing an increased emphasis on evaluation and publicity requirements. Please *sign and return* the enclosed "Evaluation and Publicity Requirement" form.

A Final Financial Report that states in-kind and cost-share amounts for your project is due by **February 28, 2018.** I have enclosed a copy of the report form for you. Please also indicate the number of participants in the project for SC Humanities' records by completing a Project Director's report, which is due by **February 28, 2018** and is also enclosed.

We ask that you **acknowledge funding** support from SC Humanities and the South Carolina Arts Commission. I have enclosed a sample statement. Please use both logos for any printed publicity material. There are directions for how to retrieve digital files of the logos. If you have any questions, please call me at 803-771-2477 or write to me at **tjwallace@schumanities.org**.

Sincerely,

Theresa J. Wallace
Assistant Director
tjwallace@schumanities.org
803-771-2477

CC: _____
Fiscal Agent
City of Charleston Office of Cultural Affairs
75 Calhoun Street, Suite 3800
Charleston, SC 29401

Theresa J. Wallace (T.J.)
Assistant Director
South Carolina Humanities
P.O. Box 5287, Columbia, SC 29250
803-771-2477 (P)
803-771-2487 (F)
www.schumanities.org

The president's budget proposes the elimination of the National Endowment for the Humanities. ***Act now*** *to protect funding for South Carolina Humanities.*

Although the NEH is a mere 0.02% of federal spending, the agency is charged with preserving our nation's heritage and expanding access to America's diverse cultural and historic treasures. The loss of NEH funding would jeopardize SC Humanities' 44 years of work preserving and sharing the stories that bring SC's rich culture and heritage to life. ***Act today to preserve NEH funding for SC***

COMMITTEE / COUNCIL AGENDA

7.)

TO: John J. Tecklenburg, Mayor

FROM: Scott Watson **DEPT.** Executive

SUBJECT: OFFICE OF CULTURAL AFFAIRS – NATIONAL ENDOWMENT FOR THE ARTS (NEA) OUR TOWN GRANT

REQUEST: To Apply for funding from the NEA Our Town Grant in the amount of $50,000. Funds will support Cannon Street Canon, creating community-generated arts and heritage projects exploring the history of Cannonborough-Elliotborough and Charleston.

COMMITTEE OF COUNCIL: W&M **DATE:** September 26, 2017

COORDINATION: This request has been coordinated with: *(attach all recommendations/reviews)*

	Yes	N/A	Signature of Individual Contacted	Attachment
Corporate Counsel	☐	☐	[signature]	☐
Cap. Proj. Cmte. Chair	☐	☐		☐
Office of Cultural Affairs	X	☐	[signature]	☐
Grants Manager	X	☐	[signature]	☐

FUNDING: Was funding previously approved? Yes ☐ No ☐ N/A ☐

If yes, provide the following: Dept./Div.: _____ Account #: _____

Balance in Account _____ Amount needed for this item _____

Does this document need to be recorded at the RMC's Office? Yes ☐ No X

NEED: Identify any critical time constraint(s).
The full application will become available September 25th, with a deadline of October 2nd.

CFO's Signature: [signature], Deputy CFO

FISCAL IMPACT:

A City match in the amount of $50,000 is required. Matching funds will come from 2018 grants and earned revenue.

Mayor's Signature: [signature]

John J. Tecklenburg, Mayor

ORIGINATING OFFICE PLEASE NOTE: A FULLY STAFFED/APPROVED (except Mayor's Signature) PACKAGE IS DUE IN THE CLERK OF COUNCIL'S OFFICE NO LATER THAN 10:00AM THE DAY OF THE CLERK'S AGENDA MEETING.

GRANTS.GOV

WORKSPACE FORM

1-800-518-4726
SUPPORT@GRANTS.GOV

This Workspace form is one of the forms you need to complete prior to submitting your Application Package. This form can be completed in its entirety offline using Adobe Reader. You can save your form by clicking the "Save" button and see any errors by clicking the "Check For Errors" button. In-progress and completed forms can be uploaded at any time to Grants.gov using the Workspace feature.

When you open a form, required fields are highlighted in yellow with a red border. Optional fields and completed fields are displayed in white. If you enter invalid or incomplete information in a field, you will receive an error message. Additional instructions and FAQs about the Application Package can be found in the Grants.gov Applicants tab.

OPPORTUNITY & PACKAGE DETAILS:

Opportunity Number:	2017NEA01OT
Opportunity Title:	NEA Our Town Application, FY2018
Opportunity Package ID:	PKG00232603
CFDA Number:	45.024
CFDA Description:	Promotion of the Arts_Grants to Organizations and Individuals
Competition ID:	2017NEA01OT
Competition Title:	NEA Our Town Application FY2018
Opening Date:	05/18/2017
Closing Date:	09/18/2017
Agency:	National Endowment for the Arts
Contact Information:	If you have questions about your application please contact OT@arts.gov

APPLICANT & WORKSPACE DETAILS:

Workspace ID:	WS00066524
Application Filing Name:	NEA Our Town
DUNS:	0779907860000
Organization:	CHARLESTON, CITY OF
Form Name:	Application for Federal Domestic Assistance-Short Organizational
Form Version:	1.1
Requirement:	Mandatory
Download Date/Time:	Sep 05, 2017 11:30:33 AM EDT
Form State:	No Errors

FORM ACTIONS:

OMB Number: 4040-0003
Expiration Date: 01/31/2019

APPLICATION FOR FEDERAL DOMESTIC ASSISTANCE - Short Organizational

*** 1. NAME OF FEDERAL AGENCY:**

National Endowment for the Arts

2. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER:

45.024

CFDA TITLE:

Promotion of the Arts_Grants to Organizations and Individuals

*** 3. DATE RECEIVED:** Completed Upon Submission to Grants.gov **SYSTEM USE ONLY**

*** 4. FUNDING OPPORTUNITY NUMBER:**

2017NEA01OT

* TITLE:

NEA Our Town Application, FY2018

5. APPLICANT INFORMATION

* a. Legal Name:

City of Charleston

b. Address:

* Street1: 75 Calhoun Street, Suite 3800	Street2:
* City: Charleston	County/Parish:
* State: SC: South Carolina	Province:
* Country: USA: UNITED STATES	* Zip/Postal Code: 29401-3538

c. Web Address:

http://

* d. Type of Applicant: Select Applicant Type Code(s): C: City or Township Government	* e. Employer/Taxpayer Identification Number (EIN/TIN): 57-6000226
Type of Applicant:	* f. Organizational DUNS: 0779907860000
Type of Applicant:	* g. Congressional District of Applicant: SC-001
* Other (specify):	

6. PROJECT INFORMATION

* a. Project Title:

To support Cannon Street Canon, instigating community-generated arts and heritage projects exploring the history of Cannonborough-Elliotborough and Charleston.

* b. Project Description:

To support Cannon Street Canon, instigating community-generated arts and heritage projects exploring the history of Cannonborough-Elliotborough and Charleston. When the City of Charleston launches the inaugural 2018-2019 season of programming in a new community arts center, it will provide much-needed access to performance and exhibition space for local artists and ensembles. Housed in a former church building, occupied until recently by an African-American congregation, this adaptive re-use facility will conserve a neighborhood landmark, while affording an unprecedented opportunity to mine the stories and creatively interrogate the lore, history, and social landscape of the surrounding communities. Engaging teaching artists, historians, walking tour guides, curators and artists-in-residence, and equally commissioning local poets and writers, the project will generate in the arts center's first year a body of work and series of arts events celebrating the venue's unique sense of place.

c. Proposed Project: * Start Date: 08/01/2018 * End Date: 07/31/2019

APPLICATION FOR FEDERAL DOMESTIC ASSISTANCE - Short Organizational

7. PROJECT DIRECTOR

Prefix: Mr. / * First Name: Scott	Middle Name:
* Last Name: Watson	Suffix:
* Title: Director, Office of Cultural Affairs	* Email: watsons@charleston-sc.gov
* Telephone Number: (843) 724-7305	Fax Number: (843) 720-3967
* Street1: 75 Calhoun Street, Suite 3800	Street2:
* City: Charleston	County/Parish:
* State: SC: South Carolina	Province:
* Country: USA: UNITED STATES	* Zip/Postal Code: 29401-3538

8. PRIMARY CONTACT/GRANTS ADMINISTRATOR

☐ Same as Project Director (skip to item 9):	
Prefix: Mr. / * First Name: Gordon	Middle Name:
* Last Name: Rooney	Suffix:
* Title: Development Manager	* Email: rooneyg@charleston-sc.gov
* Telephone Number: (843) 724-7295	Fax Number: (843) 720-3967
* Street1: 75 Calhoun Street, Suite 3800	Street2:
* City: Charleston	County/Parish:
* State: SC: South Carolina	Province:
* Country: USA: UNITED STATES	* Zip/Postal Code: 29401-3538

APPLICATION FOR FEDERAL DOMESTIC ASSISTANCE - Short Organizational

9. * By signing this application, I certify (1) to the statements contained in the list of certifications** and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties (U.S. Code, Title 218, Section 1001)

** I Agree ☒

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

AUTHORIZED REPRESENTATIVE

Prefix: Mr. / * First Name: John	Middle Name:
* Last Name: Tecklenburg	Suffix:
* Title: Mayor, City of Charleston	* Email: tecklenburgj@charleston-sc.gov
* Telephone Number: (843) 724-7295	Fax Number: (843) 720-3967
* Signature of Authorized Representative: Completed by Grants.gov upon submission.	* Date Signed: Completed by Grants.gov upon submission.

8.)

Ratification Number_____

AN ORDINANCE

TO AMEND THE **CODE OF THE CITY OF CHARLESTON** CHAPTERS 7, 12, 13, AND 24 TO UPDATE PERMITTING FEES FOR THE CITY'S BUILDING INSPECTIONS DIVISION OF THE DEPARTMENT OF PUBLIC SERVICE AND FIRE MARSHAL'S DIVISION OF THE FIRE DEPARMENT.

BE IT ORDAINED BY THE MAYOR AND COUNCILMEMBERS IN CITY COUNCIL ASSEMBLED:

Section 1. Chapter 7, Article II, Section 27 of the Code of the City of Charleston is hereby amended by deleting the struck through text and adding thereto the following underlined words, which shall read as follows:

"Sec. 7-27. - Same—Amendments.

The Code adopted by Section 7-26 of this article is hereby amended as follows:

Section 101.4.1 Electrical is amended by deleting the same and substituting in its place and stead the following:

Section 101.4.1 (Reserved)

Section 101.4.4 Plumbing is amended by deleting "The provisions of the International Private Sewage Disposal Code shall apply to private sewage disposal systems," with no substitution.

Section 101.4.5 Property Maintenance is amended by deleting the words "International Property Maintenance Code" in said section and substituting in their place and stead the words "1997 Edition of the Standard Housing Code."

Section 101.4.7 Energy is amended by deleting the same in its entirety and substituting in its place and stead the following:

Section 101.4.7 (Reserved)

Section 104 Duties and Powers of Building Official is amended by adding Section 104.12, which shall read as follows:

Any requirements necessary for the strength, stability or proper operation of an existing or proposed operation of an existing or proposed building, structure, electrical, gas, mechanical or plumbing system, or for the public safety, health and general welfare, not specifically covered by this or other technical codes, shall be determined by the Building Official.

Section 105 Permits is amended by deleting Section 105.1 through 105.2.3 in their entirety and substituting in their place and stead the following Sections 105.1, 105.2 and 105.2.1 which shall read as follows:

Section 105.1 Permit Application

Any owner, authorized agent, or contractor who desires to construct, enlarge, alter, repair, move, demolish, or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by the technical codes, or to cause any such work to be done, shall first make application to the building official and obtain the required permit for the work.

EXCEPTION: Permits shall not be required for the following mechanical work:

1. any portable heating appliance;
2. any portable ventilation equipment;
3. any portable cooling unit;
4. any steam, hot or chilled water piping within any heating or cooling equipment regulated by this code;
5. replacement of any part which does not alter its approval or make it unsafe;
6. any portable evaporative cooler;
7. any self-contained refrigeration system containing 10 lb (4.54kg) or less of refrigerant and actuated by motors of 1 horsepower (746 W) or less.

Section 105.2 Repairs

Application or notice to the building official is not required for ordinary repairs to structures, replacement of lamps or connection of approved portable electrical equipment to approved permanently installed receptacles. Such repairs shall not include the cutting away of any walls, partitions, or portions thereof, the removal or cutting of any structural beam, load bearing support, or the removal or change of any required means of egress, or rearrangement of parts of a structure affecting the means of egress requirements; nor shall ordinary shall ordinary repairs include addition to, alteration of, replacement or relocation of any standpipe, water supply sewer, drainage, drain leader, gas, soil, waste, vent or similar piping, electrical wiring or mechanical or other work affecting public health or general safety.

Section 105.2.1 Work Authorized

A building, electrical, gas, mechanical or plumbing permit shall carry with it the right to construct or install the work, provided the same are shown on the

drawings and set forth in the specifications filed with the application for the permit. Where these are not shown on the drawings and covered by the specifications submitted with the application, separate permits shall be required.

A permit issued by the building official shall be construed to be authorization to proceed with the work in accordance with all the building codes of the City of Charleston. The omission of information on the plans or permit application shall not be construed as authority to violate, cancel, alter, or set aside any of the provisions of the Code, the compliance of which shall remain the responsibility of the applicant and or owner. The Building Official retains the right after issuance of the permit to require a correction of errors in plans or in construction, or correction of violation of the Codes of the City of Charleston.

Section 106 Construction Documents is amended by adding the following paragraph at the end of Section 106.2 therein, which shall read as follows:

The ground floor elevation on all buildings shall be a minimum of one (1 ft.) foot above existing or proposed street crown at a point measured perpendicular to the street at the building point unless side or rear lot slopes are sufficient to eliminate all possibility of flooding conditions.

Section ~~108~~ 109 Fees is amended by deleting ~~108~~109.2 therein in its entirety and substituting in its place and stead the following:

Section ~~108~~109.2 Schedule of Permit Fees

(a) On all buildings, structures or alterations requiring a permit, as set forth in Section 105, fees shall be paid as required at the time of permit issuance, on a per building basis, in accordance with fee schedule established and reviewed from time to time by the Council. The fee schedule shall be made available to the public online at the City's website, at the Clerk of Council's office, or at the Building Inspections Division of the Department of Public Service.

(b) Where work for which permit is required by this Code is started or proceeded with prior to obtaining such permit, the fees herein specified shall be double, but the payment of such double fee shall not relieve any persons from fully complying with the requirements of this Code in the execution of the work nor from any other penalties prescribed herein. ~~If there would have been no other fee based on the value of construction and the work started prior to obtaining a permit, the minimal fee for the permit shall be fifteen and no/100 ($15.00) dollars~~.

(c) On all buildings, structures, or alterations requiring a building permit, as set forth in Section 105, fees shall be paid as required at the time of permit issuance on a per building basis.~~, except that no fee other than an application fee shall be charged to a homeowner who complies with the following conditions:~~

~~(i) The homeowner intends to do all work himself;~~

~~(ii) All work is to be done on the homeowner's dwelling;~~

~~(iii) The total valuation of the work to be done is One Thousand and No/100 ($1,000.00) Dollars or less;~~

~~(iv) No structural changes are involved;~~

~~(v) No inspection is required; and~~

~~(vi) The work was not started or proceeded with prior to obtaining a permit.~~

~~A homeowner who complies with these provisions may obtain a courtesy permit from the Chief Building Official. It shall be unlawful for the homeowner to give false information to obtain a courtesy permit. This exception shall not be construed to exempt a homeowner from complying with zoning regulations. All other persons must pay fees in accordance with the fee schedule established from time to time by City Council.~~

~~(d) Plan Checking Fees: When the valuation of the proposed construction exceeds One Thousand and No/100 ($1,000.00) Dollars, and a plan is required to be submitted by Section 104.2, a plan-checking fee shall be paid to the Building Official at the time of submitting plans and specifications for checking. Such plan checking fee shall be equal to one-half (½) of the building permit fee as set by City Council.~~

~~Total Valuation~~	~~Fees~~
~~$1,000 and less~~	~~No fee, unless inspection required, in which case a $15.00 fee for each inspection shall be charged.~~
~~$1,000 to $50,000~~	~~$15.00 for the first $1000.00 plus $5.00 for each additional thousand or fraction thereof, to and including $50,000.00.~~
~~$50,000 to $100,000~~	~~$260.00 for the first $50,000.00 plus $4.00 for each additional thousand or fraction thereof, to and including $100,000.00.~~
~~$100,000 to $500,000~~	~~$460.00 for the first $100,000.00 plus $3.00 for each additional thousand or fraction thereof, to and including $500,000.00.~~
~~$500,000 and up~~	~~$1,660.00 for the first $500,000.00 plus $2.00 for each additional thousand or fraction thereof.~~

~~*Moving Fees:* For the moving of any building or structure, the fee shall be $100.00~~

~~*Demolition Fees:* For the demolition of any building or structure the fee shall be:~~

~~0 up to 100,000 cubic feet ..... $50.00~~

~~100,000 cubic feet and over ..... $0.50/1,000 cubic feet~~

~~*Re-Inspection Fees:* A re-inspection fee of $20.00 may be charged when re-inspection is required as a result of the permit holder having failed to meet the requirements of the applicable code during initial inspection.~~

~~The above fees may be increased by the Chief Building Official on four (4) weeks notice in writing to the Clerk of City Council who shall transmit such proposal to the members of City Council.~~"

Section 2. Chapter 7, Article III, Section 46(b) of the Code of the City of Charleston is hereby amended by deleting the struck through text and adding thereto the following underlined words, which shall read as follows:

"**ARTICLE III. - GAS**

Sec. 7-46. - Adoption of International Fuel Gas Code.

(b) The code adopted by section 7-47 of this article is hereby amended as follows:

Section ~~*106.5.2*~~ 106.6 *Fee Schedule* is amended by adding the following:

Fees shall be charged in accordance with the fee schedule established and reviewed from time to time by the Council. The fee schedule shall be made available to the public online at the City's website, at the Clerk of Council's office or at the Building Inspections Division of the Department of Public Service. ~~adding the following:~~

~~Ten dollars ($10.00) for one (1) to four (4) gas outlets.~~

~~One dollar ($1.00) for each additional outlet thereafter.~~

~~*Re-Inspection Fees.* A re-inspection fee of $20.00 may be charged when re-inspection is required as a result of the permit holder having failed to meet the requirements of the applicable code during initial inspection.~~"

Section 3. Chapter 7, Article V, Section 141(b) of the Code of the City of Charleston is hereby amended by deleting the struck through text and adding thereto the following underlined words, which shall read as follows:

Sec. 7-141. - Adopted.

(b) The code adopted by section 7-141 of this article is hereby amended as follows:

~~*106.5.2*~~ *109.2 Fee Schedule* is amended by adding the following:

Fees shall be charged in accordance with the fee schedule established and reviewed from time to time by the Council. The fee schedule shall be made available to the public online at the City's website, at the Clerk of Council's office or at the Building Inspections Division of the Department of Public Service. ~~Ten dollars ($10.00) for issuing the permit.~~

~~Fee for inspecting heating ventilating ductwork, air conditioning and refrigeration system shall be $10.00 for the first $1000.00, or fraction thereof, of valuation of the installation plus $2.00 for each additional $1000.00 or fraction thereof.~~

~~*Re-Inspection Fees.* A re-inspection fee of $20.00 may be charged when re-inspection is required as a result of the permit holder having failed to meet the requirements of the applicable code during initial inspection."~~

Section 4. Chapter 12, Article III, Section 33 of the Code of the City of Charleston is hereby amended by deleting the struck through text and adding thereto the following underlined words, which shall read as follows:

"Sec. 12-33. - ~~Inspection f~~Fees; amount; payment before commencement of work.

If a permit, as required in section 12-31, shall be granted, the applicant, prior to beginning the work, shall pay ~~to the city treasurer the inspection~~ a fees charged in accordance with the fee schedule established and reviewed from time to time by the Council. The fee schedule shall be made available to the public online at the City's website, at the Clerk of Council's office or at the Building Inspections Division of the Department of Public Service. ~~as established by the city council from time to time.~~"

Section 5. Chapter 13, Article III, Section 76(b) of the Code of the City of Charleston is hereby amended by deleting the said sub-section in its entirety and renumbering sub-section 76(c) to sub-section 76(b).

Section 6. Chapter 13, Article III, of the Code of the City of Charleston is hereby amended by adding thereto a new section 13-81 which shall read as follows:

Section 13-81. Permit and Plan Review Fees

(a) The code adopted by section 13-76 of this article identifies operational and construction permits required by the Fire Code, these permits may be instituted by the Chief Fire Marshal as necessary to provide for fire prevention and safety.

(b) Additional permits or plan review requirements may be established by Chief Fire Marshal as necessary to protect life and property.

(c) Fees shall be charged in accordance with the fee schedule established and reviewed from time to time by the Council. A schedule of ~~P~~permit and plan review fees ~~will be approved by City Council and published by the jurisdiction and subject to periodic modification. A current fee schedule shall be maintained on file in the offices of the city clerk and fire code official, where it shall be available for public inspection.~~ shall be made available to the public online at the City's website, at the Clerk of Council's office, or at the Fire Marshal's Office of the Fire Department.

(d) Re-inspection fees ~~will be approved by City Council and~~ shall be charged in accordance with the fee schedule established and reviewed from time to time by the Council. The fee schedule shall be made available to the public online at the City's website, at the Clerk of Council's office, or at the Fire Marshal's Office of the Fire Department. ~~published by the jurisdiction and subject to period modification.~~ A re-inspection fee may be charged when re-inspection is required as a result of the permit holder having failed to meet the requirements of the applicable code during initial inspection, failing to properly prepare for the requested inspection, or failure to correct items cited during a previous inspection."

Section 7. Chapter 24, Article II, Section 16(b) of the Code of the City of Charleston is hereby amended by deleting the struck through text and adding thereto the following underlined words, which shall read as follows:

"Sec. 24-16. - Adopted.

(b) The code adopted by section 24-16 of this article is hereby amended by adding the following:

Section 106.~~5~~6 Permit Issuance. No permit shall be issued to an applicant who is not a licensed plumber, unless the applicant is the owner and resident of the premises and is seeking a permit only for traditional plumbing applications, excluding gas.

Section 106.6.~~2~~ Fee Schedule.

Fees shall be charged in accordance with the fee schedule established and reviewed from time to time by the Council. The fee schedule shall be made available to the public online at the City's website, at the Clerk of Council's office or at the Building Inspections Division of the Department of Public Service.

~~Permit Fee ..... Ten Dollars ($10.00)~~

~~Sewer Connection ..... Five Dollars ($5.00)~~

~~Water Connection ..... Five Dollars ($5.00)~~

~~Fixture Fee ..... Two Dollars and fifty cents~~

~~($2.50) per fixture~~

~~*Re-Inspection Fees.* A re-inspection fee of $20.00 may be charged when re-inspection is required as a result of the permit holder having failed to meet the requirements of the applicable code during initial inspection.~~"

Section 8. The fee schedule of permit fees amended by this Ordinance is attached hereto.

Section 9. This Ordinance shall become effective as of January 1, 2018.

Ratified in City Council this ____ day of _____, in the Year of Our Lord, 2017, and in the _____ Year of the Independence of the United States of America.

BY:

_____
John J. Tecklenburg
Mayor, City of Charleston

ATTEST:

_____
Vanessa Turner Maybank
Clerk of Council

CITY OF CHARLESTON, SC

BUILDING AND FIRE PERMIT FEES SCHEDULE APPROVED BY ORDINANCE NO. 2017 - _____*

Building Permit Fees: Single Family Residential New Construction**

Building permit fees for single family residential new construction are based on valuation of construction. Construction valuation is determined by the City's Building Official, based on the most current Building Valuation Data, Square Foot Construction Costs, as published by the International Code Council. Upon determination of the valuation, the Building Official will set the amount of the permit fee according to the following fee schedule.

There is a fee waiver of 100% for all building permit fees required for new construction of single family detached residences used only as Affordable Housing as that term is defined in Chapter 54 of the Code of the City of Charleston (Zoning Ordinance) and so certified by the City's Department of Housing and Economic Development. Requests for fee waivers should be submitted to the Building Inspections Division of the Department of Public Service.

Application Fee	$40.00.
$1000 or less	$40.00 application fee.
1,001 to $50,000	$15.00 for the first $1,000.00 plus $5.00 for each additional thousand or fraction thereof, to and including $50,000.
50,001 to $100,000	$260.00 for the first $50,000 plus $4.00 for each additional thousand or fraction thereof, to and including $100,000.

100,001 to $500,000	$460.00 for the first $100,000 plus $3.00 for each additional thousand or fraction thereof, to and including $500,000.
500,001 and up	$1660.00 for the first $500,000 plus $2.00 for each additional thousand or fraction thereof.
Demolition	Based on valuation.
Plan Review Fee	Equal to 50% of building permit fee.

** EFFECTIVE JANUARY 1, 2018

Sub-Permit Fees:**

Electrical Permits**

Application Fee	$40.00. (A $40.00 application fee is in addition to the fees set out below.)
New or Upgrade Services	$.25 per amp.
Electrical Safety	$30.00.
Temp Pole	$40.00 (No application fee.)

Fuel Gas Permits**

Application Fee	$40.00. (A $40.00 application fee is in addition to the fees set out below.)
One to Four Outlets	$10.00.
Each Additional Outlet	$2.00.

Mechanical Permits**

Application Fee	$40.00. (A $40.00 application fee is in addition to the fees set out below.)
Heating, Ventilating Duct	$10.00 for the first $1,000 of value and $2.00 for each additional $1,000 of value or fraction thereof.

Plumbing Permits**

Application Fee	$40.00. (A $40.00 application fee is in addition to the

	fees set out below.)
Each Plumbing Fixture	$3.50.
Each House Sewer (new/repair)	$10.00.
Each Water Heater and/or Vent	$10.00.

** EFFECTIVE JANUARY 1, 2018

Fire Permit & Plan Review Fees: Operational and Construction Permits For Fire Protection Systems and Fire Code Required Permits**

Fire permit and plan review fees for operational and construction permits for fire protection systems and required fire permits are based on the size and complexity of the specific permit application and the projected time to complete plans review and inspection(s). Permit applications will be divided into Levels, based on the specifications determined by the City's Chief Fire Marshal, and applied to the permit and plan review fee. Upon determination of the Level of the project, the Chief Fire Marshal will set the amount of the permit fee, which includes the cost of the application, the plan review fee, and the permit inspection fee according to the following fee schedule. Worked conducted without a permit or approval may result in doubling of the total permit fee.

Application Fee	$40.00.

Fire Plan Review	
Provides the initial review and up to one additional review of resubmitted documents. Additional reviews will be assessed based on the Additional Plan Review fee schedule in the next table.	
Level 1	$32.61

Level 2	$48.92
Level 3	$97.83
Level 4	$130.44
Level 5	$195.66

Additional Fire Plan Review Provides for up to two additional reviews.	
Level 1	$32.61
Level 2	$48.92
Level 3	$97.83
Level 4	$130.44
Level 5	$195.66

Fire Permit Inspection Fees Fee adjusted by the number of floors impacted by the work area unless each floor is permitted separately			
1	$32.61		N/A
2	$48.92	X	Number of floors impacted
3	$97.83	X	Number of floors impacted
4	$130.44	X	Number of floors impacted
5	$195.66	X	Number of floors impacted

Fire Permit Re-Inspection Fees Fee adjusted by the number of floors impacted by the work area unless each floor is permitted separately Applied upon failure of the requested inspection

1	$32.61		N/A
2	$48.92	X	Number of floors impacted
3	$65.22	X	Number of floors impacted
4	$81.53	X	Number of floors impacted
5	$97.83	X	Number of floors impacted

*** ALL OTHER PERMIT FEES ARE NOT AMENDED BY THIS ORDINANCE.**

****EFFECTIVE JANUARY 1, 2018.**