Administrative Services Committee Meeting Virtual/Teleconference- 4/13/2021- 1:05 PM

ADMINISTRATIVE SERVICES

1. Motion to **approve** due to purchases on the individual purchase orders will exceed $25,000.00 per order. The following annual bid items: **Central Services Department** - 21-006 Elevator Maintenance Agreement; **Environmental Services Department** - 21-129 Landscape Maintenance Services; **Utilities Department** 20-011 Chemicals and 21-055A Chemicals; **Engineering Department** 21-100 On-Call ITS Construction & Emergency Repair. Attachments

2. Motion to approve a one year extension of the Augusta Fleet Maintenance Contract for 2022 at a cost of $2,963,946.00 to First Vehicle Services. (REF - RFP 19-225) Attachments

3. Request from Mr. Brian Green to appear before Administrative Committee to address homelessness impact on sanitation and safety. Attachments

4. Update from Housing & Community Development Department regarding their Emergency Rental Assistance Program. **(Requested by Commissioner Francine Scott)** Attachments

5. Motion to approve seven (7) Emergency Rehabilitation projects. Attachments

6. Motion to approve Housing and Community Development Department's (HCD's) request to provide HOME funding to assist one (1) low to moderate income homebuyer with gap financing, down payment and closing cost to purchase a home though the Homebuyer Subsidy Program. Attachments

7. Attachments

Motion to approve the minutes of the Administrative Services Committee held on March 9, 2021.

8. Motion **authorize** the Clerk of Commission Office to maintain control of and schedule use of the following rooms in the Municipal Building: **1)**The Commission Chambers **2)3)** Commission Executive Session Conference Room 293 **4)** Conference Room 292 and **5)** Conference Room 291. **(Requested by Commissioner Sammie Sias)** Attachments

9. Motion to accept as information the Investment Grade Audit Report and proceed with Phase 2 of the process to enter into a Performance Contract with Trane, Inc. – details and financials to follow after procurement biding. (REF 18-164) Attachments

10. Discuss and approve allocated funding for travel of Commissioners in 2021 via a recommendation of the administrator on timeline for safe travel. **(Requested by Commissioner Sean Frantom)** Attachments

11. Consider request from Probate Judge Harry James regarding a new staff position in the Probate Court. Attachments

12. Request approval of the Comprehensive Fleet Management Operations, Maintenance and Replacement Policy. (Deferred from March 9 Administrative Services Committee) Attachments

Administrative Services Committee Meeting
4/13/2021 1:05 PM
2020 and 2021 Annual Bid Recommendation of Award

Department:	Procurement
Presenter:	Geri Sams
Caption:	Motion to **approve** due to purchases on the individual purchase orders will exceed $25,000.00 per order. The following annual bid items: **Central Services Department** - 21-006 Elevator Maintenance Agreement; **Environmental Services Department** - 21-129 Landscape Maintenance Services; **Utilities Department** 20-011 Chemicals and 21-055A Chemicals; **Engineering Department** 21-100 On-Call ITS Construction & Emergency Repair.
Background:	Each item has been bid through the sealed bid process as directed in the Augusta Procurement Code. The User Departments have reviewed the submittals and has presented a recommendation of award to the Procurement Department.
Analysis:	The User Departments are responsible for the purchase of the items listed on the individual bids.
Financial Impact:	Purchases will be made on an as needed basis. Various funds provided by the User Departments.
Alternatives:	Not to award and require the User Departments to follow the purchasing guidelines as listed in the Augusta Procurement Code for each individual purchase.
Recommendation:	Approve the recommendation as submitted by the User Departments.
Funds are Available in the Following Accounts:	Various funds provided by the User Departments.

REVIEWED AND APPROVED BY:

PROCUREMENT SOURCE SELECTION METHODS AND CONTRACT AWARDS

Sec. 1-10-48. Generally.

The following sections provide detailed information concerning the use of the seven (7) source selection methods available for use for the procurement of commodities, services and construction products for Augusta, Georgia. The seven methods are:(1) sealed bids, (2) sealed proposals, (3) special services, (4) quotations or informal bids, (5) sole source, (6) emergency procurement and (7) annual contracts.

Purpose:

A significant portion of the Augusta, Georgia Annual Budget is committed each year to various purchase contracts such as raw materials, equipment, equipment parts or components, general supplies, and professional and non-professional services. Therefore, it is essential that maximum value be obtained for each public tax dollar spent. A proven technique for obtaining this goal is through the annual bid contract process,

Sec. 1-10-58. Annual contracts.

Upon approval of an annual contract by the Board of Commissioners (or the Administrator for annual bids of up to $25,000), any using agency may order supplies or services under such annual contract as needed up to the maximum amount approved in the annual bid.

Purchases on the following annual bid items will exceed $25,000.00 per order:

	Description	Recommended Vendors	Local Vendors	2020 Amounts	Budget	Comments
Central Services Department						
21-006	Elevator Maintenance Agreement	Thyssekrupp Elevator		$33,964.00	$35,000.00	
Environmental Services Department						
21-129	Landscape Maintenance Services	Davis Landscape Company	Local Vendors	$37,200.00	$40,000.00	
Utilites Department						
20-011	Chemicals	Aqua Smart		339443.54	$50,000.00	

21-055A	Chemicals	1.) CarbPure Technologies, LLC 2.) Chemrite, Inc. 3.) Polydyne, Inc. 4.) Unifilt Corp, Inc. 5.) Univar Solutions USA, Inc.		127062.95	$1,000,000.00	
			Total	**$71,164.00**		

Sec. 1-10-58. Annual Contracts.

Upon approval of an annual contract by the Board of Commissioners (or the Administrator for annual bids of up to $25,000), any using agency may order supplies or services under such annual contract as needed up to the maximum amount approved in the annual bid.

Purchases on the following annual bid items will exceed $25,000.00 per order:

Invitation to Bid

Sealed bids will be received at this office until **Wednesday, September 9, 2020 @ 11:00 a.m. (Opening via ZOOM – ID #922 4140 9907; Password - 191047)** for furnishing:

BID ITEM CENTRAL SERVICES DEPARTMENT – FACILITIES DIVISION – ANNUAL CONTRACT
COMMODITY CODE (Bid Items may have more parent codes)

Bid Item #21-006	**Elevator Maintenance – Annual Contract**	**005-295-00; 022-910-13; 022-909-34**

Bids will be received by Augusta, GA Commission hereinafter referred to as the OWNER at the offices of:

Geri A. Sams, Director
Augusta Procurement Department
535 Telfair Street - Room 605
Augusta, Georgia 30901

Bid documents may be viewed on the Augusta, Georgia web site under the Procurement Department **ARCbid.** Bid documents may be examined during regular business hours at the office of Augusta, GA Procurement Department.

A Pre Bid Conference will be held on Tuesday, August 18, 2020 @ 10:00 a.m. via ZOOM – ID #963 3379 4394; Password - 545116.

All questions must be submitted in writing by fax to 706 821-2811 or by email to procbidandcontract@augustaga.gov to the office of the Procurement Department by Wednesday, August 26, 2020 @ 5:00 P.M. No bid will be accepted by fax, all must be received by mail or hand delivered.

The local bidder preference program is applicable to this project. To be approved as a local bidder and receive bid preference an eligible bidder must submit a completed and signed written application to become a local bidder at least thirty (30) days prior to the date bids are received on an eligible local project. An eligible bidder who fails to submit an application for approval as a local bidder at least thirty (30) days prior to the date bids are received on an eligible local project, and who otherwise meets the requirements for approval as a local bidder, will not be qualified for a bid preference on such eligible local project.

No bids may be withdrawn for a period of ninety (90) days after bids have been opened, pending the execution of contract with the successful bidder.

Invitation for bids and specifications. An invitation for bids shall be issued by the Procurement Office and shall include specifications prepared in accordance with Article 4 (Product Specifications), and all contractual terms and conditions, applicable to the procurement. **All specific requirements contained in the invitation to bid including, but not limited to, the number of copies needed, the timing of the submission, the required financial data, and any other requirements designated by the Procurement Department are considered material conditions of the bid which are not waiveable or modifiable by the Procurement Director.** All requests to waive or modify any such material condition shall be submitted through the Procurement Director to the appropriate committee of the Augusta, Georgia Commission for approval by the Augusta, Georgia Commission. Please mark BID number on the outside of the envelope.

Bidders are cautioned that acquisition of BID documents through any source other than the office of the Procurement Department is not advisable. Acquisition of BID documents from unauthorized sources placed the bidder at the risk of receiving incomplete or inaccurate information upon which to base his qualifications.

Correspondence must be submitted via mail, fax or email as follows:

Augusta Procurement Department
Attn: Geri A. Sams, Director of Procurement
535 Telfair Street, Room 605
Augusta, GA 30901
Fax: 706-821-2811 or Email: procbidandcontract@augustaga.gov

No bid will be accepted by fax, all must be received by mail or hand delivered.

GERI A. SAMS, Procurement Director

Publish:

Augusta Chronicle	July 23, 30, August 6, 13, 2020
Metro Courier	July 23, 2020

OFFICIAL

Augusta GEORGIA	Bid Item #21-006 Elevator Maintenance - Annual Contract for Augusta, Georgia - Central Services Department – Facilities Division Bid Date: Wednesday, September 9, 2020 at 11:00 a.m.	
Total Number Specifications Mailed Out: 13 Pre-Bid Attendees: 7 Total packages submitted: 4 Total Non-Compliant: 2		
Vendors	**Premier Elevator Services Corp. 230 Andrew Drive Stockbridge, GA 30281**	**Thyssenkrupp Elevator 3005 Cahstain Meadows Pkwy., Suite 100 Marietta, GA 30066**
Attachment B	Yes	Yes
ADDENDUM 1	Yes	Yes
E-Verify #	126802	198314
SAVE FORM	Yes	Yes
A) MUNICIPAL BUILDING:		
1. Hourly Rate/ Straight Time	Rate	Rate
Year 1 (2021)	$9,084.00	$9,720.00
Year 2 (2022)	$9,408.00	$10,011.60
Year 3 (2023)	$9,744.00	$10,311.95
Year 4 (2024)	$10,070.00	$10,621.31
Year 5 (2025)	$10,423.00	$10,939.95
SUBTOTAL	$48,729.00	$51,604.81
B) SHERIFF ADMIN. BUILDING:	Rate	Rate
Year 1 (2021)	$2,616.00	$2,880.00
Year 2 (2022)	$2,712.00	$2,966.40
Year 3 (2023)	$2,808.00	$3,055.39
Year 4 (2024)	$2,906.00	$3,147.05
Year 5 (2025)	$3,008.00	$3,241.47
SUBTOTAL	$14,050.00	$15,290.31
C) CHARLES WEBSTER DETENTION CENTER:	Rate	Rate
Year 1 (2021)	$1,284.00	$1,440.00
Year 2 (2022)	$1,332.00	$1,483.20
Year 3 (2023)	$1,380.00	$1,527.70
Year 4 (2024)	$1,428.00	$1,573.53
Year 5 (2025)	$1,478.00	$1,620.73
SUBTOTAL	$6,902.00	$7,645.16

Item # 1

Vendors	Premier Elevator Services Corp. 230 Andrew Drive Stockbridge, GA 30281	Thyssenkrupp Elevator 3005 Cahstain Meadows Pkwy., Suite 100 Marietta, GA 30066
D) PUBLIC DEFENDER OFFICE:	Rate	Rate
Year 1 (2021)	$1,284.00	$1,440.00
Year 2 (2022)	$1,332.00	$1,483.20
Year 3 (2023)	$1,380.00	$1,527.70
Year 4 (2024)	$1,428.00	$1,573.53
Year 5 (2025)	$1,478.00	$1,620.73
SUBTOTAL	$6,902.00	$7,645.16
E) AUGUSTA COMMONS:	Rate	Rate
Year 1 (2021)	$1,284.00	$1,440.00
Year 2 (2022)	$1,332.00	$1,483.20
Year 3 (2023)	$1,380.00	$1,527.70
Year 4 (2024)	$1,428.00	$1,573.53
Year 5 (2025)	$1,478.00	$1,620.73
SUBTOTAL	$6,902.00	$7,645.16
F) DIAMOND LAKES SCORING TOWERS:	Rate	Rate
Year 1 (2021)	$2,736.00	$2,880.00
Year 2 (2022)	$2,808.00	$2,966.40
Year 3 (2023)	$2,904.00	$3,055.39
Year 4 (2024)	$3,006.00	$3,147.05
Year 5 (2025)	$3,111.00	$3,241.46
SUBTOTAL	$14,565.00	$15,290.30
G) AUGUSTA JUDICIAL CENTER:	Rate	Rate
Year 1 (2021)	$14,772.00	$13,140.00
Year 2 (2022)	$15,288.00	$13,534.20
Year 3 (2023)	$15,282.00	$13,940.23
Year 4 (2024)	$16,382.00	$14,358.43
Year 5 (2025)	$16,955.00	$14,789.19
SUBTOTAL	$78,679.00	$69,762.05

Item # 1

Vendors	Premier Elevator Services Corp. 230 Andrew Drive Stockbridge, GA 30281	Thyssenkrupp Elevator 3005 Cahstain Meadows Pkwy., Suite 100 Marietta, GA 30066
H) AQUATIC CENTER:	Rate	Rate
Year 1 (2021)	$1,284.00	$1,440.00
Year 2 (2022)	$1,332.00	$1,483.20
Year 3 (2023)	$1,380.00	$1,527.70
Year 4 (2024)	$1,428.00	$1,573.53
Year 5 (2025)	$1,478.00	$1,620.73
SUBTOTAL	$6,902.00	$7,645.16
I) INFORMATION TECHNOLOGY CENTER:	Rate	Rate
Year 1 (2021)	$1,284.00	$1,440.00
Year 2 (2022)	$1,322.00	$1,483.20
Year 3 (2023)	$1,380.00	$1,527.70
Year 4 (2024)	$1,428.00	$1,573.53
Year 5 (2025)	$1,478.00	$1,620.73
SUBTOTAL	$6,892.00	$7,645.16
TOTAL BID AMOUNT (YEARS 1, 2, 3, 4, AND 5)	$183,631.00	$182,528.11
HOURLY RATES FOR REPAIRS NOT COVERED BY CONTRACT (ALL LOCATIONS):		
H.1 Year One 2021	Price	Price
Regular Single	$256.00	$225.00
Regular Term	$384.00	$405.00
Overtime Single	$384.00	$382.50
Overtime Term	$576.00	$810.00
Sun. Holiday Single	$512.00	$450.00
Sun. Holiday Term	$768.00	$810.00
H.2 Year Two 2022	Price	Price
Regular Single	$266.00	$231.75
Regular Term	$399.00	$417.15
Overtime Single	$399.00	$393.98
Overtime Term	$598.50	$834.30
Sun. Holiday Single	$532.00	$463.50
Sun. Holiday Term	$798.00	$834.30

Item # 1

Vendors	Premier Elevator Services Corp. 230 Andrew Drive Stockbridge, GA 30281	Thyssenkrupp Elevator 3005 Cahstain Meadows Pkwy., Suite 100 Marietta, GA 30066
H.3 Year Three 2023	Price	Price
Regular Single	$276.00	$238.70
Regular Term	$414.00	$429.66
Overtime Single	$414.00	$405.79
Overtime Term	$621.00	$859.33
Sun. Holiday Single	$552.00	$477.41
Sun. Holiday Term	$858.00	$859.33
H.4 Year Four 2024	Price	Price
Regular Single	$286.00	$245.86
Regular Term	$429.00	$442.55
Overtime Single	$429.00	$417.97
Overtime Term	$644.00	$885.11
Sun. Holiday Single	$572.00	$491.73
Sun. Holiday Term	$858.00	$885.11
H.5 Year Five 2025	Price	Price
Regular Single	$296.00	$253.24
Regular Term	$444.00	$455.86
Overtime Single	$444.00	$430.51
Overtime Term	$666.00	$911.66
Sun. Holiday Single	$592.00	$506.48
Sun. Holiday Term	$888.00	$911.66

****KONE INC.; 1800 Sandy Plains Pkwy; Suite 200: Marietta, GA 30066 - NON-COMPLAINT - LATE SUBMITTAL****
****Schindler Elevator Corp.; 6600 Highlands Parkway; Smyrna, GA 30082 - NON-COMPLAINT - LATE SUBMITTAL****

Item # 1

Augusta GEORGIA

Central Services Department

Takiyah A. Douse, Director
LaQuona Sanderson, Business Analyst

Facilities Division
2760 Peach Orchard Road, Augusta GA 30906
(706) 828-7174 Phone (706)799-5077 Fax

MEMORANDUM

TO: **Ms. Geri Sams, Director, Procurement Department**

FROM: **Mrs. Takiyah A. Douse, Director, Central Services Department**

'20 SEP 24 1:35PM

DATE: **September 18, 2020**

SUBJECT: **Bid Item #21-006 Elevator Maintenance- Annual Contract**

Two responsive bid proposals were received on September 9, 2020 for bid item #21-006. We are recommending award to ThyssenKrupp Elevator for the following locations:

Location	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Aquatic Center	$ 1,440.00	$ 1,483.20	$ 1,527.70	$ 1,573.53	$ 1,620.73	$ 7,645.16
Augusta Commons	$ 1,440.00	$ 1,483.20	$ 1,527.70	$ 1,573.53	$ 1,620.73	$ 7,645.16
Augusta Judicial Center	$ 13,140.00	$ 13,534.20	$ 13,940.23	$ 14,358.43	$ 14,789.19	$ 69,762.05
Charles B. Webster Detention Center	$ 1,440.00	$ 1,483.20	$ 1,527.70	$ 1,573.53	$ 1,620.73	$ 7,645.16
Diamond Lakes Scoring Towers	$ 2,880.00	$ 2,966.40	$ 3,055.39	$ 3,147.05	$ 3,241.46	$ 15,290.30
Information Technology	$ 1,440.00	$ 1,483.20	$ 1,527.70	$ 1,573.53	$ 1,620.73	$ 7,645.16
Municipal Building	$ 9,720.00	$ 10,011.60	$ 10,311.95	$ 10,621.31	$ 10,939.95	$ 51,604.81
Richmond County Sheriff's Office	$ 2,880.00	$ 2,966.40	$ 3,055.39	$ 3,147.05	$ 3,241.47	$ 15,290.31
Total (Years 1-5)						**$ 182,528.11**

The Public Defender's Office elevator is currently under contract with Genesis Elevator Company until October 2021 and we will rebid at a later date.

Thank you for your assistance in securing these prices. Please do not hesitate to call if you have any questions or need additional clarification.

cc: Maria Rivera Rivera
Takiyah A. Douse

Pre-Bid Meeting - Participant Sheet
Bid Item #21-006 Elevator Maintenance Services – Annual Contract
For Augusta, GA – Central Services Department
Tuesday, August 18, 2020, @10:00 a.m via ZOOM

Meeting ID	Topic	Start Time	End Time	User Email	Duration (Minutes)	Participants
96333794394	Pre Bid Conference - Bid Item #21-006 Elevator Maintenance – Annual Contract	8/18/2020 9:34	8/18/2020 10:18	Shill@augustaga.gov	44	13
Name (Original Name)	User Email	Total Duration (Minutes)				
Shill@augustaga.gov	shill@augustaga.gov	44				
Phyllis Johnson		39				
LaQuona Sanderson		1				
Kenny Hays		26				
Swannette Jones	sjones2@augustaga.gov	26				
LaQuona's iPhone		25				
Ben Yeany	byeany@gmail.com	21				
14703324829		21				
Caroline Covert	m	21				
Yolanda Jackson	yljackson25@gmail.com	22				
Daniel Gross		20				
HeatherP		18				
16784778125		16				

KONE
BID AND CONTRACAT DEPT
1800 SANDY PLAINS PARKWAY, SUITE 200
MARIETTA, GA 30066

SCHINDLER ELEVATORS
BID AND CONTRACT DEPT
6600 HIGHLANDS PARKWAY
SMYRNA, GA 30082-4856

OTIS ELEVATORS
BID AND CONTRACT DEPT.
1453 – C GREENE STREET
AUGUSTA, GA 30901
RETURNED MAIL

THYSSENKRYUPP ELEVATORS
TEAM COLUMBIA
BID AND CONTRACT DEPT
145 WINDHILL ROAD, SUITE 300
COLUMBIA, SC 29203

PREMIER ELEVATOR COMPANY
BID AND CONTRACT DEPT.
230 ANDREW DRIVE
STOCKBRIDGE, GA 30281

MOWEER ELEVATOR
BID AND CONTRACT DEPT
3162 JOHNSON FERRY RD, SUITE 260-128
MARIETTA, GA 30062
RETURNED MAIL

OTIS ELEVATOR COMPANY
BID AND CONTRACT DEPT.
1575 NORTHSIDE DRIVE
AUGUSTA, GA 30901

A M BRICKLEY
BID AND CONTRACT DEPT.
218 CARMELIA BOULEVARD
MARSHALLVILLE, GA 31057

SOUTHERN ELEVATOR REPAIR
BID AND CONTRACT DEPT
104 CORPORATE BOULEVARD #403
WEST COLUMBIA, SC 29169

THYSSENDRUPP ELEVATORS
BID AND CONTRACT DEPT
199 WOODFIELD DRIVE
MACON, GA 31210

THYSSENDRUPP ELEVATOR
ATTN: JOHN KENNEDY
3005 CHASTAIN MEADOWS PKWY STE 100
MARIETTA, GA 30066

SCHINDLER ELEVATORS
BID AND CONTRACT DEPT.
20 WHIPPANY ROAD
MORRISTOWN, NJ 07960

TREZA EDWARDS
COMPLIANCE

JARVIS SIMS
INTERIM ADMINISTRATOR

TAKIYAH DOUSE
CENTRAL SERVICES

RICK ACREE
CENTRAL SERVICES

BID ITEM #21-006
ELEVATOR MAINTENANCE ANNUAL
CENTRAL SERVICES-FACILITIES
MAINTENANCE
BID DUE: WED. SEPT. 9, 2020 @ 11 A.M.

BID ITEM 21-006
PAGE 1 OF 1
ELEVATOR MAINTENANCE

Invitation To Bid

Sealed bids will be received at this office until **Wednesday, September 23, 2020 @ 11:00 a.m. via ZOOM – Meeting ID: 976 1390 9570; Password: 761019** for furnishing:

BID ITEMS FOR ENVIRONMENTAL SERVICES DEPARTMENT - ANNUAL CONTRACT- COMMODITY CODE (Bid Items may have more parent codes) -

21-114	Mechanic Block Time	016-928-00
21-115	Tire Repair and Servicing	016-928-82
21-116	Various Pipe, Coupling & End Sections	024-691-34, 024-340-56
21-118	Tires	004-863-00
21-129	Landscape Maintenance Services	018-906-56; 022-910-52

Bids will be received by Augusta, GA Commission hereinafter referred to as the OWNER at the offices of:

Geri A. Sams, Director
Augusta Procurement Department
535 Telfair Street - Room 605
Augusta, Georgia 30901

Bid documents may be viewed on the Augusta, Georgia web site under the Procurement Department **ARCbid.** Bid documents may be obtained at the office of the Augusta, GA Procurement Department, 535 Telfair Street – Room 605, Augusta, GA 30901. Documents may be examined during regular business hours at the offices of Augusta, GA Procurement Department.

There will be a site visit for Bid Item 21-129 – Landscape Maintenance Services on Wednesday, September 9, 2020 @ 1:00 p.m. The site visit is not mandatory.

All questions must be submitted in writing by fax to 706 821-2811 or by email to procbidandcontract@augustaga.gov to the office of the Procurement Department by Friday, September 11, 2020, @ 5:00 P.M. No bid will be accepted by fax or email; all must be received by mail or hand delivered.

The local bidder preference program is applicable to this project. To be approved as a local bidder and receive bid preference an eligible bidder must submit a completed and signed written application to become a local bidder at least thirty (30) days prior to the date bids are received on an eligible local project. An eligible bidder who fails to submit an application for approval as a local bidder at least thirty (30) days prior to the date bids are received on an eligible local project, and who otherwise meets the requirements for approval as a local bidder, will not be qualified for a bid preference on such eligible local project.

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Bidders are cautioned that acquisition of BID documents through any source other than the office of the Procurement Department is not advisable. Acquisition of BID documents from unauthorized sources placed the bidder at the risk of receiving incomplete or inaccurate information upon which to base his qualifications.

Correspondence must be submitted via mail; fax or email as follows:

Augusta Procurement Department
Attn: Geri A. Sams, Director of Procurement
535 Telfair Street, Room 605
Augusta, GA 30901
Fax: 706-821-2811 or Email: procbidandcontract@augustaga.gov

No bid will be accepted by fax all must be received by mail or hand delivered.

GERI A. SAMS, Procurement Director
Publish:
Augusta Chronicle August 13, 20, 27, and September 3, 2020
Metro Courier August 13, 2020

Augusta GEORGIA

Bid Item #21-129 Landscape Maintenance Service – Annual Contract for Augusta, Georgia - Environmental Services Department
Bid Date: Wednesday, September 23, 2020 @ 11:00 a.m. via ZOOM

Total Number Specifications Mailed Out: 19
Mandatory Site Visit Attendees:
Total packages submitted: 8
Total Noncompliant: 6

Vendors	Davis Landscape Company P. O. Box 350 Evans, GA 30809	First Love Personal Care Home 2403 Wrightsboro Road Augusta, GA 30904	Jacob Land Management 733 Scott Nixon Memorial Drive Augusta, GA 30907	Lumberjack Lawn & Landscaping 3315 Limber Twig Lane Augusta, GA 30906
Attachment B	Yes	Yes	Yes	Yes
E-Verify #	310404	No Number	417873	32-0356589
SAVE Form	Yes	Yes	Yes	Yes
Pesticide License	Yes	No - Non-Compliant	No - Non-Compliant	No - Non-Compliant
FEES	PRICE	PRICE	PRICE	PRICE
Monthly	$3,100.00	$2,235.00	$3,000.00	$4,017.50
Annually	$37,200.00	$26,820.00	$36,000.00	$48,210.00

Vendors	Mats Landscaping & Pressure Washing 1138 Fawn Forest Rd Grovetown, GA 30813	Pond Maintenance 3707 Colbert Street Augusta, Ga 30906	Rise and Shine Lawncare & Landscaping Service, LLC 1159 Waltons Trail Hephzibah, GA 30815	T. Garrett Enterprise, LLC 2326 Walden Dr., Ste B Augusta, GA 30904
Attachment B	Yes	Yes	Yes	Yes
E-Verify #	1590736	67036	228912	1215950
SAVE Form	Yes	Yes	Yes	Yes
Pesticide License	No - Non-Compliant	Yes	No - Non-Compliant	No - Non-Compliant
FEES	PRICE	PRICE	PRICE	PRICE
Monthly	$3,952.00	$12,000.00	$5,416.67	$5,625.00
Annually	$47,424.00	$144,000.00	$65,000.00	$67,500.00

Augusta GEORGIA

ENVIRONMENTAL SERVICES DEPARTMENT

Mark Mehall
Director

MEMORANDUM

TO: **Geri Sams**
Director - Procurement

FROM: **Mark Mehall**
Director

DATE: **October 2, 2020**

SUBJECT: **Bid Item 21-129 – Landscape Maintenance Services - Award Recommendation**

In response to Annual Bid 21-129, Landscape Maintenance Services, two compliant bids were received. The bids were opened on September 23, 2020 and the results and specific pricing of each item are listed on the attached page. Upon thorough examination, it is my recommendation to award the bid to Davis Landscape Company.

Thank you in advance for your time and attention. Please feel free to contact me at 706-592-3206, should you have any questions or require any additional information.

MM/tgh

Cc: Phyllis Johnson
Tywanna Scott
Darrell White
File

Environmental Services Department
4330 Deans Bridge Road, Blythe, GA 30805
(706) 592-3200 – Fax (706) 592-3255
WWW.AUGUSTAGA.GOV

AUGUSTA LAWN & TURF
3618 PHILLIPS DRIVE
MARTINEZ, GA 30907

AUGUSTA QUALITY LAWN CARE
1540 KERON WAY
HEPHZIBAH, GA 30815

BETWEEN THE EDGES
816 EDGEFIELD ROAD
NORTH AUGUSTA, SC 29841

CSRA LANDSCAPING
4223 WOODCREEK COURT
MARTINEZ, GA 30907

DAVIS LAWN CARE
P. O. BOX 350
GROVETOWN, GA 30809

JACOBS LAND MANAGEMENT
118 WOODLAND ROAD
MARTINEZ, GA 30907

ATTN: PAUL ROBERTO
PAUL'S LANDSCAPING
P.O. BOX 394
PINE LAKE, GA 30072-0394

NORTH GEORGIA LANDSCAPE
PO BOX 585
STATHAM, GA 30666

YOUR LAWN CARE SERVICE
1456 HEPHZIBAH-MCBEAN RD
HEPHZIBAH, GA 30815

GREEN KEEPER LANDSCAPING
342 BOY SCOUT ROAD
AUGUSTA GA 30909

LUMBER JACK LAWN
3315 LIMBER TWIG LANE
AUGUSTA, GA 30906

SEASONS LANDSCAPES
P.O. BOX 33222
DECATUR, GA 30033

LSBOP SUGGESTED VENDORS BEYOND THIS POINT 9/23/2016

RISE & SHINE LAWN CARE/LANDSCAPING
1159 WALTONS TRAIL
HEPHZIBAH, GA 30815

EDDIE KEMP LAWN SERVICE
2453 YATES DRIVE
AUGUSTA, GA 30906

HERMAN HAZEL
1820 FAIRVIEW AVENUE
AUGUSTA, GA 30904

WATKINS TRUCKING AND LANDSCAPE
3716 KINGSGATE DR.
HEPHZIBAH, GA 30815

CSRA LANDSCAPING
321 H PEACH ORCHARD RD
AUGUSTA, GEORGIA 30906

RETURNED MAIL

LARRY L MCCORD LLC DESIGN
ATTN LARRY MCCORD
2016 HIGHLAND AVENUE
AUGUSTA GA 30904

TAMMY HERRING
ENVIRONMENTAL SERVICES

MARK MEHALL
ENVIRONMENTAL SERVICES

TREZA EDWARDS
COMPLIANCE

JARVIS SIMS
INTERIM ADMINISTRATOR
(ITB ONLY)

POND MAINTENANCE
ATN: ALLEN ODOM
3707 COLBERT ST.
AUGUSTA, GA 30906

BID ITEM #21-129
LANDSCAPE MAINTENANCE SERVICES
FOR ENVIRONMENTAL SERVICES
BID DUE: WED. 9/23/20 @ 11:00 AM

BID ITEM #19-129
LANDSCAPE MAINTENANCE
ENVIRONMENTAL SERVICES
MAILED: THU. AUG. 13, 2020

PAGE 1 OF 1
BID ITEM #21-129

Invitation To RE-Bid

Sealed bids will be received at this office until **Wednesday, January 6, 2020 @ 11:00 a.m. (Opening via ZOOM – ID 995 2347 0753; Password – 497456)** for furnishing:

RE-BID ITEMS UTILITIES DEPARTMENT - ANNUAL CONTRACT
COMMODITY CODE (Bid Items may have more parent codes)

Re-Bid Item 21-055A	**Chemicals**	**001-998-24; 015-190-00**

Re-Bids will be received by Augusta, GA Commission hereinafter referred to as the OWNER at the offices of:

Geri A. Sams Procurement Department
535 Telfair Street - Room 605,
Augusta, Georgia 30901
706-821-2422

RE-Bid documents may be viewed on the Augusta, Georgia web site under the Procurement Department **ARCbid.** Bid documents may be obtained at the office of the Augusta, GA Procurement Department, 535 Telfair Street – Room 605, Augusta, GA 30901. Documents may be examined during regular business hours at Augusta, GA Procurement Department.

All questions must be submitted in writing by fax to 706 821-2811 or email to procbidandcontract@augustaga.gov to the office of the Augusta, Georgia Procurement Department by Friday, December 18, 2020 @ 5:00 P.M. No bid will be accepted by fax or email; all must be received by mail or hand delivered.

No re-bids may be withdrawn for a period of ninety (90) days after bids have been opened.

Invitation for re-bids and specifications. An invitation for re-bids shall be issued by the Procurement Office and shall include specifications prepared in accordance with Article 4 (Product Specifications), and all contractual terms and conditions, applicable to the procurement. **All specific requirements contained in the invitation to bid including, but not limited to, the number of copies needed, the timing of the submission, the required financial data, and any other requirements designated by the Procurement Department are considered material conditions of the bid which are not waiveable or modifiable by the Procurement Director.** All requests to waive or modify any such material condition shall be submitted through the Procurement Director to the appropriate committee of the Augusta, Georgia Commission for approval by the Augusta, Georgia Commission. Please mark BID number on the outside of the envelope.

Bidders are cautioned that acquisition of RE-BID documents through any source other than the office of the Procurement Department is not advisable. Acquisition of RE-BID documents from unauthorized sources placed the bidder at the risk of receiving incomplete or inaccurate information upon which to base his qualifications.

Correspondence must be submitted via mail; fax or email as follows:

Augusta Procurement Department
Attn: Geri A. Sams, Director of Procurement
535 Telfair Street, Room 605
Augusta, GA 30901
Fax: 706-821-2811 or Email: procbidandcontract@augustaga.gov

No bid will be accepted by fax; all must be received by mail or hand delivered.

GERI A. SAMS, Procurement Director

Revised: 8/3/2016

Re-Bid Opening Bid Item #21-055A Chemicals – Annual Contract
for Augusta, Georgia - Utilities Department
Re-Bid Due: Wednesday, January 6, 2021 @ 11:00 a.m. via ZOOM

Total Number Specifications Mailed Out: 44
Total packages submitted: 10
Total Noncompliant: 1

VENDORS	CarbPureTechnologies, LLC 8051 E. Maplewood Ave., Ste 210 Greenqwood Village, CO 80111	Cabot Norit Americas, Inc. 3200 University Ave Marshall, TX 75670	Carbon Activated Corp 2250 S. Central Compton, CA 90220	Chemrite, Inc. 5202 Belle Wood Court, Suite 104 Buford, GA 30518	Pencco, Inc. P. O. Box 600 San Felipe, TX 77473	Polydyne, Inc One Chemical Plant Rd Riceboro, GA 31323	Unifilt Corporation P. O. Box 614 Ellwood City, PA 16117	Univar Solutions USA, Inc. 29601 45th Ave. S. Kent, WA 98032	The Dycho Company, Inc. 412 Meridian Street Niota, TN 37826
Attachment B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
E-Verify	972943	386498	972568	101238	183453	115171	169321	176511	288043
Save Form	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1) Anthracite									
Cost per 52 lb. Bag	NB	NB	$15.40	NB	NB	NB	$12.9963/bag	NB	NB
2) Cationic Polymer C339									
Cost per Pound	NB	NB	NB	NB	NB	($0.770/lb x 9.67lbs/Gal. = $7.446/Gallon)	NB	NB	NB
Cost per Gallon	NB	NB	NB	NB	NB	$7.446/Gallon	NB	NB	NB
3) Hydrofluorosilicic Acid									

Item # 1

Re-Bid Opening Bid Item #21-055A Chemicals – Annual Contract
for Augusta, Georgia - Utilities Department
Re-Bid Due: Wednesday, January 6, 2021 @ 11:00 a.m. via ZOOM

Cost per Pound/Gallon	NB	NB	NB	NB	$2.2491/gal	NB	NB	$1.8000	$2.092/gal* ($0.2092/lb*/$418.40/Ton *) *23% H2SiF6 Assay Adj. Basis; 22.5 Tons Min/Shipment 1st stop free; $75/per stop for each additional stop thereafter. 7-10 WD ARO
4) Potassium Permanganate									
Cost per Pail	NB	NB	NB	$87.91 18 pail minimum	NB	NB	NB	$107.25 or $1.9500/lb	NB
5) Powered Activated Carbon (PAC)									
Cost per Pound	$1,050.00/20-ton (40,000 lb) $1,180.00/15-ton (30,000 lb)	$1,380.00 per ton	$1,640.00	$1,219.00	NB	NB	NB	NB	NB
Minimun Delivery Quanity	15 Tons	20,000 lbs (10 tons)	10 tons	10 tons	NB	NB	NB	NB	NB
Total Bid Quote		$1,380.00	$319,920.00	$186,014.76		$119,136.00	$62,382.24	$68,700.00	
							See Exception		
*****Sterling Water Technologies, LLC , P. O. Box 602; Columbia, TN 38402 - NON-COMPLIANT - LATE SUBMITTAL*****									

Item # 1

UTILITIES DEPARTMENT

Augusta GEORGIA

D. Allen Saxon, Jr.
Interim Director

MEMORANDUM

TO: Geri Sams, Director – Procurement
Darrell White, Deputy Director - Procurement
Nancy Williams –Quality Assurance Analyst
Tywanna Scott – Bid Management Assistant

FROM: D. Allen Saxon, Jr., Interim Director – Utilities Department
Debra Beazley, Water Production Superintendent

SUBJECT: **Chemicals (Bid Item #21-055A) Recommendation of Award (2021)**

DATE: January 13, 2021

The 2021 tabulation worksheet for Bid# 21-055A listing the compliant bidders is attached.

It is our recommendation that the following Chemical Items be awarded to the following vendors:

Item #1	Anthracite	**UNIFILT**
Item #2	Cationic Polymer	**POLYDYNE**
Item #3	Hydrofluorosilicic Acid	**UNIVAR USA**
Item #4	Potassium Permanganate	**CHEMRITE**
Item #5	Powdered Activated Carbon (PAC)	**CARBPURE**

Thank you very much for your kind assistance regarding this matter.

D. Allen Saxon, Jr., Interim Director, Utilities Department — Date 1/13/21

CC: Allen Flanagan, Plant Manager- Hicks Plant
Robert Mobley, Plant Manager-Highland Ave. Plant
Allen Elliott, Assistant Plant Manager-Highland Ave. Plant
Debra Horne, Assistant Plant Manager-Hicks Plant

SENT TO:
JAN 13 2021
PROCUREMENT

Augusta Utilities Administration
452 Walker Street – Suite 200 - Augusta, GA 30901
(706) 312-4154 – Fax (706) 312-4123
WWW.AUGUSTAGA.GOV

CABOT NORIT AMERICAS INC.
AMBER LEWIS OR
BID AND CONTRACT DEPT.
3200 UNIVERSITY AVE
MARSHALL, TX 75670

UNIFILT CORPORATION
JULIE NOCERA OR
BID AND CONTRACT DEPT.
PO BOX 614
ELLWOOD CITY, PA 16117

UNIVAR USA INC.
LINDA CAMPBELL OR
BID AND CONTRACT DEPT.
4 STEEL ROAD EAST
MORRISVILLE, PA 19067

THE DYCHO COMPANY INC.
J. ROBERT SHAMBLIN OR
BID AND CONTRACT DEPT.
412 MERIDIAN ST
NIOTA, TN 37826

CARBON ACTIVATED CORPORATION
NII-AKWEI ACQUAYE OR
BID AND CONTRACT DEPT.
2250 S. CENTRAL AVENUE
COMPTON, CA 90220

CARBPURE TECHNOLOGIES, LLC
TOM STOCKER OR
BID AND CONTRACT DEPT.
8051 E. MAPLEWOOD, SUITE 210
GREENWOOD VILLAGE, CO 80111

MOSAIC GLOBAL SALES, LLC
HEIDI SCHMITZ OR
BID AND CONTRACT DEPT.
13830 CIRCA CROSSING DR.
LITHIA, FL 33547

CABOT NORIT AMERICAS INC.
AMBER LEWIS OR
BID AND CONTRACT DEPT.
PO BOX 790
MARSHALL, TX 75671

STERLING WATER TECHNOLOGIES
DONALD C. HELWIG OR
BID AND CONTRACT DEPT.
P.O. BOX 602
COLUMBIA, TN 38402-0602

BURNETT LIME CO., INC.
HUGH BURNETT OR
BID AND CONTRACT DEPT.
7095 HIGHWAY 11
CAMPOBELLO, SC 29322

ALLIED UNIVERSAL CORPORATION
CATHERINE GUILLARMOD OR
BID AND CONTRACT DEPT.
3901 NW 115TH AVENUE
MIAMI, FL 33178

CHEMTRADE CHEMICALS US LLC
BID AND CONTRACT DEPT.
90 EAST HALSEY ROAD, SUITE #200
PARSIPPANY, NJ 07054

GEO SPECIALTY
PASTY HALE/ADAM JOHNSON/BRENDA OWENS OR
BID AND CONTRACT DEPT.
9213 ARCH STREET PIKE
LITTLE ROCK, AR 72206

POLYDYNE, INC.
SANDY WELLS/MARK SCHLAG OR
BID AND CONTRACT DEPT.
1 CHEMICAL PLANT ROAD
RICEBORO, GA 31323

EVER ZINO
ANA ARROYO OR
BID AND CONTRACT DEPT.
3600 GLENWOOD AVAENUE, SUITE 250
RALEIGH, NC 27612

CARUS CORPORATION
SAMANTHA PUMO/BARBIE SMITH OR
BID AND CONTRACT DEPT.
315 FIFTH STREET
PERU, IL 61354

AQUA SMART, INC.
ADAM GROSSBLATT OR
BID AND CONTRACT DEPT.
4445 COMMERCE DRIVE, SW
ATLANTA, GA 30336

NORWECO INC.
ASHLEY SAUNDERS OR
BID AND CONTRACT DEPT.
220 REPUBLIC STREET
NORWALK OHIO 44857

PENCCO, INC.
SARAH DUFFY OR
BID AND CONTRACT DEPT.
831 BARTLETT ROAD
SEALY, TX 77474

SOLUTION FOR PURIFIEDWORLD
LINDA BALL OR
BID AND CONTRACT DEPT.
2535 JASON COURT
OCEANSIDE, CA 92056

WATER & WASTEWATER TREATMENT CHEMICAL SYSTEM
GARY LOUGHMILLER OR
BID AND CONTRACT DEPT.
P.O. BOX 810
ZELLWOOD, FL 32798

INDUSTRIAL CHEMICALS, INC.
BID AND CONTRACT DEPT.
PO BOX 660688
BIRMINGHAM, AL 35266

BRENNTAG MIDSOUTH, INC.
ANDREW GARDNER/RANDY SMITH OR
BID AND CONTRACT DEPT.
4200 AZALEA DRIVE
N. CHARLESTON, SC 29405

PENCCO, INC.
BID AND CONTRACT DEPT.
PO BOX 600
SAN FELIPE, TX 77473

HARCROS CHEMICAL CO.
BID AND CONTRACT DEPT.
4030 FAMBROUGH
POWDER SPRINGS, GA 30127

CALCIQUEST, INC.
BID AND CONTRACT DEPT.
181 WOODLAWN AVE.
BELMONT, NC 28012

SHANNON CHEMICAL CORPORATION
KIM D'AMBROSIO OR
BID AND CONTRACT DEPT.
P.O. BOX 376
MALVERN, PA 19355

ACTICARB USA INC.
ANA ARROYO
3600 GLENWOOD AVE., SUITE 250-A
RALEIGH, NC 27612-4945

OXBOW ACTIVATED CARBON, LLC
BRIANA MUÑOZ
2535 JASON COURT,
OCEANSIDE, CA 92056

SOUTHERN IONICS
BID AND CONTRACT DEPT.
PO DRAWER 1217
WEST POINT, MS 39773

SOLVAY FLUORIDES, LLC
3333 RICHMOND AVE.
HOUSTON, TX 77098

GENERAL CHEMICAL CORP.
BID AND CONTRACT DEPT.
90 EAST HALSEY ROAD
PARSIPPANY, NJ 07054

C.N. BROWN, INC
BID AND CONTRACT DEPT.
PO BOX 6336
NORTH AUGUSTA, SC 29861

JCI JONES CHEMICAL, INC.
BID AND CONTRACT DEPT.
1500 TARHEEL ROAD
CHARLOTTE, NC 28208

SOLVAY FLUORIDES, LLC
BID AND CONTRACT DEPT.
3333 RICHMOND AVE.
HOUSTON, TX 77098

KC INDUSTRIES, LLC
BID AND CONTRACT DEPT.
PO BOX 646
MULBERRY, FL 33860

CHEMICAL LIME CO.
BID AND CONTRACT DEPT.
2093 BIG STONY CREEK RD
RIPPLEMEAD, VA 24150

SHANNON CHEMICAL CORP.
90 EAST HALSEY ROAD
PARISIPPANY, NJ 07054

SHERRY JONES
PVS CHEMICALS, INC.
10900 HARPER AVENUE
DETROIT, MI 48213

PENCCO
CARRIE SHOW/ACCOUNT RECEIVABLES
P.O. BOX 600
SAN FELIPE, TX 77473

SWEETWATER TECHNOLOGIES
P. O. BOPX 602
COLUMBIA, TN 38401

CARBON ACTIVATED CORPORATION
319 CARBON ACTIVATED DRIVE
MOUNT HOPE, WV 25880

NALCO
PATRICK ST. JULES OR
BID AND CONTRACT DEPT.
1601 W. DIEHL ROAD
NAPERVILLE, IL 60563

CHEMRITE, INC.
5202 BELLEWOOD COURT, STE. 104
BUFORD, GA 30518

ALLEN SAXON
UTILITIES DEPARTMENT
WALKER STREET

TESS THOMPSON
UTILITIES DEPARTMENT
WALKER STREET

ODIE DONALD
ADMINISTRATOR
(ITB ONLY)

PHYLLIS JOHNSON
LSBOP/COMPLIANCE OFFICE

RE-BID ITEM #21-055A
CHEMICALS – ANNUAL CONTRACT
FOR UTILITIES DEPARTMENT
BID DUE: WED., JAN. 6, 2020 @11 AM

RE-BID ITEM #21-055A
CHEMICALS – ANNUAL CONTRACT
FOR UTILITIES DEPARTMENT
MAILED: DECEMBER 4, 2020

PAGE 2 OF 2
RE-BID ITEM 21-055A
CHEMICALS

Invitation To Bid

Sealed bids will be received at this office until **Wednesday, August 26, 2020 @ 11:00 a.m. (Opening via ZOOM – ID #973 3086 3499; Password – 015636)** for furnishing:

BID ITEMS UTILITIES DEPARTMENT - ANNUAL CONTRACT
COMMODITY CODE (Bid Items may have more parent codes)

Bid Item 20-011 Chemicals 001-998-24;015-190-00

Bids will be received by Augusta, GA Commission hereinafter referred to as the OWNER at the offices of:

Geri A. Sams Procurement Department
535 Telfair Street - Room 605,
Augusta, Georgia 30901
706-821-2422

Bid documents may be viewed on the Augusta, Georgia web site under the Procurement Department **ARCbid.** Bid documents may be obtained at the office of the Augusta, GA Procurement Department, 535 Telfair Street – Room 605, Augusta, GA 30901. Documents may be examined during regular business hours at Augusta, GA Procurement Department.

All questions must be submitted in writing by fax to 706 821-2811 or email to procbidandcontract@augustaga.gov to the office of the Augusta, Georgia Procurement Department by Friday, August 14, 2020 @ 5:00 P.M. No bid will be accepted by fax; all must be received by mail or hand delivered.

No bids may be withdrawn for a period of sixty (60) days after bids have been opened.

Invitation for bids and specifications. An invitation for bids shall be issued by the Procurement Office and shall include specifications prepared in accordance with Article 4 (Product Specifications), and all contractual terms and conditions, applicable to the procurement. **All specific requirements contained in the invitation to bid including, but not limited to, the number of copies needed, the timing of the submission, the required financial data, and any other requirements designated by the Procurement Department are considered material conditions of the bid which are not waiveable or modifiable by the Procurement Director.** All requests to waive or modify any such material condition shall be submitted through the Procurement Director to the appropriate committee of the Augusta, Georgia Commission for approval by the Augusta, Georgia Commission. Please mark BID number on the outside of the envelope.

Bidders are cautioned that acquisition of BID documents through any source other than the office of the Procurement Department is not advisable. Acquisition of BID documents from unauthorized sources placed the bidder at the risk of receiving incomplete or inaccurate information upon which to base his qualifications.

Correspondence must be submitted via mail; fax or email as follows:

Augusta Procurement Department
Attn: Geri A. Sams, Director of Procurement
535 Telfair Street, Room 605
Augusta, GA 30901
Fax: 706-821-2811 or Email: procbidandcontract@augustaga.gov

No bid will be accepted by fax; all must be received by mail or hand delivered.

GERI A. SAMS, Procurement Director

Publish:
Augusta Chronicle July 23, 30, August 6, 13, 2020
Metro Courier July 23, 2020

Revised: 8/3/2016

Bid Item #20-011 - Chemicals – Annual Contract
for Augusta, Georgia - Utilities Department
Bid Date: Wednesday, September 2, 2020 @ 2:00 p.m. via ZOOM

Total Number Specifications Mailed Out: 36
Total packages submitted: 4
Total Non-Compliant: 0

VENDOR		Aqua Smart, Inc. 4445 Commerce Dr. SW Atlanta, GA 30336	Carus LLC 315 5th Street Peru, IL 61354	Sterling Water Technologies, Inc. 902 S. High Street Columbia. TN 38401
ATTACHMENT "B"		Yes	Yes	Yes
ADDENDUM 1 & 2		Yes	Yes	Yes
E-VERIFY #		368582	30030	11815
SAVE FORM		Yes	Yes	Yes
Item #	Description			
1	Dry Blended Phosphate			
	Proposed Dose (ppm)	0.50 PPM (4.17 Pounds Per MGD)	.5 mg/l 4.17 lbs of product per million gals of treated water; 4.17 lbs x $7.8813 per million gals of treated water x 6.3 MGD x 365 = $18,123.05	Estimate 1.5 ppm (Feed the same dosage as present product) CP 2060D, MINIMUN 2 PALLETS/DELIVERY
	Cost Per Pound/Gal	$2.83 Per Dry Pound	1.89/lb	1.776/lb
	Annual Cost	$27,136.63	$18,123.05	$51,118.11

Item # 1

VENDOR		Aqua Smart, Inc. 4445 Commerce Dr. SW Atlanta, GA 30336	Carus LLC 315 5th Street Peru, IL 61354	Sterling Water Technologies, Inc. 902 S. High Street Columbia. TN 38401
2	Liquid Orthophospahte			
	Proposed Dose (ppm)	0.50 PPM (Dry) 1.45 PPM (Liquid) 1.07 Gallons Per MGD	.5 mg/l 4.17 lbs of product per million gals of treated water; 4.17 lbs x $0.63 = $2.6271 per million gals of treated water x 37.5 MGD x 365 = $35,958.43	Estimate 1.5 ppm (Feed the same dosage as present product) CP 723l, MINIMUM 3,900 GALLONS/DELIVERY
	Product Cost per pound	$11.04 Per Gallon $0.9777 Per Liquid Pound (11.3 Pounds Per Gallon)	$0.63	0.5266/LB ($5.9721/GAL)
	Annual Cost	$161,817.05	$35,958.43	$90,252.39
TOTAL BID		$188,953.68	$54,081.48	$141,370.50
Approximate Delivery		5 Days	7-10 Days	5-7 Days ARO
Exceptions		See Exception		
*****SHANNON CHEMICALS CORPORATION; P. O. BOX 376; MALVERN, PA 19355 - NO BID*****				

Item # 1

UTILITIES DEPARTMENT

Augusta GEORGIA

D. Allen Saxon, Jr.
Interim Director

MEMORANDUM

TO: Geri Sams, Director – Procurement
Darrell White, Deputy Director - Procurement
Nancy Williams –Quality Assurance Analyst
Tywanna Scott – Bid Management Assistant

FROM: D. Allen Saxon, Jr., Interim Director – Utilities Department
Debra Beazley, Water Production Superintendent

SUBJECT: **Chemicals (Bid Item #20-011) Recommendation of Award**

DATE: February 17, 2021

The tabulation worksheet for Bid# 20-011 listing the compliant bidders is attached.

Aquasmart met the pH range requirements with supporting documentations and met all other specs required for these two chemicals. Their products have a higher density than what's specified in the bid. Therefore, it is our recommendation that the following Chemical items be awarded to Aquasmart.

Item #1	Dry Blended Phosphate	**AQUASMART**
Item #2	Liquid Orthophosphate	**AQUASMART**

D. Allen Saxon, Jr., Interim Director, Utilities Department — Date 2/18/21

CC: Allen Flanagan, Plant Manager- Hicks Plant
Robert Mobley, Plant Manager-Highland Ave. Plant
Allen Elliott, Assistant Plant Manager-Highland Ave. Plant
Debra Horne, Assistant Plant Manager-Hicks Plant

Augusta Utilities Administration
452 Walker Street – Suite 200 - Augusta, GA 30901
(706) 312-4154 – Fax (706) 312-4123
WWW.AUGUSTAGA.GOV

AQUA SMART, INC.
4445 COMMERCE DR, SW
SUITE A-4
ATLANTA, GA 30336

C.N. BROWN, INC.
PO BOX 6336
NORTH AUGUSTA, SC 29861
RETURNED MAIL

LUCIER CHEMICAL INDUSTRIES
PO BOX 49000
JACKSONVILLE BCH, FL 32240
RETURNED MAIL

JCI JONES CHEMICAL, INC.
1500 TARHEEL ROAD
CHARLOTTE, NC 28208

CALGON CARBON CORPORATION
ATTN: AMBER SIMONIC
1 GREENTREE CENTRE, SUITE 201
MARLTON, NJ 08053
RETURNED MAIL

SHANNON CHEMICAL CORP.
90 EAST HALSEY ROAD
PARSIPPANY, NJ 07054

HARCROS CHEMICAL CO.
4030 FAMBROUGH
POWDER SPRINGS, GA 30127

CALCIQUEST, INC.
181 WOODLAWN AVE.
BELMONT, NC 28012
RETURNED MAIL

BRENNTAG SOUTHEAST, INC.
4200 AZALEA DRIVE
CHARLESTON, SC 29408

INDUSTRIAL CHEMICALS, INC.
PO BOX 660688
BIRMINGHAM, AL 35266

DPC ENTERPRISES
PO BOX 545
MT. MOURNE, NC 28123
RETURNED MAIL

GMC INCORPORATED
2625 BALD RIDGE DRIVE
CUMMING, GA 30041
RETURNED MAIL

PENCCO, INC.
PO BOX 600
SAN FELIPE, TX 77473

A.J. WICKLIFFE CO., INC.
10450 JONES BRIDGE ROAD
ALPHARETTA, GA 30202
RETURNED MAIL

BURNETT LIME COMPANY
7095 HIGHWAY 11
CAMPOBELLO, SC 29322

NALCO CHEMICAL CO.
1601 NALCO CENTER
NAPERVILLE, IL 60563

KC INDUSTRIES, LLC
PO BOX 646
MULBERRY, FL 33860

POLYDYNE INC.
1 CHEMICAL PLANT ROAD
RICEBORO, GA 31323

STERLING WATER TECHNOLOGIES
PO BOX 602
COLUMBIA, TN 38402

CHEMICAL LIME CO.
2093 BIG STONY CREEK RD.
RIPPLEMEAD, VA 24150

RELIABLE SERVICES
PO BOX 2205
STOCKBRIDGE, GA 30281

ALLIED UNIVERSAL CORP.
3901 N.W. 115 AVENUE
MIAMI, FL 33178

UNIFILT CORP.
PO BOX 88
FOMBELL, PA 16123
RETURNED MAIL

NALCO CHEMICAL CO.
ONE NALCO CENTER
NAPERVILLE, IL 60563

SUFFOLK SALES & SERVICE
3730 CACTUS TRAIL
MARTINEZ, GA 30907
RETURNED MAIL

CARUS CHEMICAL COMPANY
ATTN SAMANTHA PUMO
315 FIFTH STREET
PERU, IL 61354

CHEMRITE, INC.
5202 BELLEWOOD COURT, STE. 104
BUFORD, GA 30518

UNIVAR USA INC.
ATTN: DARRYLL DIXON
3230 PERKINS RD.
AUGUSTA, GA 30906

K JELL CORPORATION
PO BOX 834
BELOIT, WI 53512
RETURNED MAIL

F2 INDUSTRIES INC.
423 C SMYRNA SQUARE DRIVE
CUMMING, GA 30041
RETURNED MAIL

GENERAL CHEMICAL CORP.
90 EAST HALSEY ROAD
PARSIPPANY, NJ 07054

SOUTHERN IONICS
P. O. DRAWER 1217
WEST POINT, MS 39773

SOLVAY FLUORIDES, LLC
3333 RICHMOND AVENUE
HOUSTON, TX 77098

KEMIRA
3211 CLINTON PKY., CT #1
LAWRENCE, KANSAS 55047
RETURNED MAIL

CALGON CARBON CORPORATION
ATTN: AMBER SIMONIC
1 GREENTREE CENTRE, STE 201
MARLTON, NJ 08053
RETURNED MAIL

GEO SPECIALTY CHEMICALS, INC.
9213 ARCH STREET PIKE
LITTLE ROCK, AR 72206

JLM MARKETING
8675 HIDDEN RIVER PARKWAY
TAMPA, FL 33637
RETURNED MAIL

CARBPURE TECHNOLOGIES
8051 E. MAPLEWOOD, SUITE 210
GREENWOOD, CO 80111

SHANNON CHEMICALS CORP
P. O. BOX 376
MALVERN, PA 19355

USP TECHNOLOGIES
1375 PEACHTREE STREET, N. E.
SUITE 300 N
ATLANTA, GA 30309

BRENNTAG MID-SOUTH, INC
ATN: MISSY SPARROW
2000 E PETTIGREW STREET
DURHAM, NC 27703

DUBOIS CHEMICALS, INC.
1717 E. FARGO AVENUE
NAMPA, ID 83687

COYNE CHEMICALS
3015 STATE ROAD
CROYDON, PA 19021

TESS THOMPSON
UTILITIES ADMIN

ALLEN SAXON
UTILITIES ADMIN

TREZA EDWARDS
COMPLIANCE

TONY MCDONALD
DEPUTY ADMINISTRATOR

BID ITEM 20-011
CHEMICALS FOR AUGUSTA UTILITIES
BID DUE: WED. 8/26/20 @ 2:00 P.M.

BID ITEM 20-011
CHEMICALS FOR AUGUSTA UTILITIES
BID MAILED THURS 7/23/20

PAGE 2 OF 2
BID 20-011
CHEMICALS

PROCUREMENT SOURCE SELECTION METHODS AND CONTRACT AWARDS

Sec. 1-10-48. Generally.

The following sections provide detailed information concerning the use of the seven (7) source selection methods available for use for the procurement of commodities, services and construction products for Augusta, Georgia. The seven methods are:(1) sealed bids, (2) sealed proposals, (3) special services, (4) quotations or informal bids, (5) sole source, (6) emergency procurement and (7) annual contracts.

Purpose:

A significant portion of the Augusta, Georgia Annual Budget is committed each year to various purchase contracts such as raw materials, equipment, equipment parts or components, general supplies, and professional and non-professional services. Therefore, it is essential that maximum value be obtained for each public tax dollar spent. A proven technique for obtaining this goal is through the annual bid contract process,

Sec. 1-10-58. Annual contracts.

Upon approval of an annual contract by the Board of Commissioners (or the Administrator for annual bids of up to $25,000), any using agency may order supplies or services under such annual contract as needed up to the maximum amount approved in the annual bid.

Purchases on the following annual bid items will exceed $25,000.00 per order:

	Description	Recommended Vendors	Local Vendors	2020 Amounts	2021 Estimated Budget	Comments
Central Services Department						
21-006	Elevator Maintenance Agreement	Thyssekrupp Elevator		$33,964.00	$35,000.00	
Environmental Services Department						
21-129	Landscape Maintenance Services	Davis Landscape Company	Local Vendor	$37,200.00	$40,000.00	
Utilites Department						
20-011	Chemicals	Aqua Smart		$339,443.54	$50,000.00	
21-055A	Chemicals	1.) CarbPure Technologies, LLC 2.) Chemrite, Inc. 3.) Polydyne, Inc. 4.) Unifilt Corp, Inc. 5.) Univar Solutions USA, Inc.		$127,062.95	$1,000,000.00	
Engineerig Department - Traffic Engineering Division						
21-10	On-Call ITS Construction & Emergency Repair	1) ATG Communications 2) Southease Utilities of Georiga LLC.	1 local Vendor	$20,959.00	$50,000.00	
			Total	**$558,629.49**	**$1,175,000.00**	

Purchases on the following annual bid items will exceed $25,000.00 per order:

Item# 1

Attachment number 6 \nPage 1

Request for Proposal

Request for Proposals will be received at this office until **Wednesday, October 28, 2020 @ 11:00 a.m. via ZOOM – Meeting ID: 926 0718 3170; Password: 946679** for furnishing:

COMMODITY CODE (RFP items may have more parent codes) – RFP ITEM FOR ENGINEERING DEPARTMENT – ANNUAL CONTRACT

RFP Item 21-100 On-Call ITS Construction & Emergency Repair 022-912-00; 022-913-00; 022-913-19

RFPs will be received by: The Augusta Commission hereinafter referred to as the OWNER at the offices of:

Geri A. Sams, Director
Augusta Procurement Department
535 Telfair Street - Room 605
Augusta, Georgia 30901

RFP documents may be viewed on the Augusta Georgia web site under the Procurement Department **ARCbid.** RFP documents may be obtained at the office of the Augusta, GA Procurement Department, 535 Telfair Street – Room 605, Augusta, GA 30901, 706-821-2422.

All questions must be submitted in writing by fax to 706 821-2811 or by email to procbidandcontract@augustaga.gov to the office of the Procurement Department by Tuesday, October 6, 2020 @ 5:00 P.M. No RFP will be accepted by fax, all must be received by mail or hand delivered.

No RFP may be withdrawn for a period of **90** days after time has been called on the date of opening.

Request for proposals (RFP) and specifications. An RFP shall be issued by the Procurement Office and shall include specifications prepared in accordance with Article 4 (Product Specifications), and all contractual terms and conditions, applicable to the procurement. **All specific requirements contained in the request for proposal including, but not limited to, the number of copies needed, the timing of the submission, the required financial data, and any other requirements designated by the Procurement Department are considered material conditions of the bid which are not waiveable or modifiable by the Procurement Director.** All requests to waive or modify any such material condition shall be submitted through the Procurement Director to the appropriate committee of the Augusta, Georgia Commission for approval by the Augusta, Georgia Commission. Please mark RFP number on the outside of the envelope.

Proponents are cautioned that acquisition of RFP documents through any source other than the office of the Procurement Department is not advisable. Acquisition of RFP documents from unauthorized sources places the proponent at the risk of receiving incomplete or inaccurate information upon which to base his qualifications.

Correspondence must be submitted via mail, fax or email as follows:

Augusta Procurement Department
Attn: Geri A. Sams, Director of Procurement
535 Telfair Street, Room 605
Augusta, GA 30901
Fax: 706-821-2811 or Email: procbidandcontract@augustaga.gov

No bid will be accepted by fax all must be received by mail or hand delivered.

GERI A. SAMS, Procurement Director

Publish:

Augusta Chronicle	September 10, 17, 24, and October 1, 2020
Metro Courier	September 10, 2020

OFFICIAL

Augusta GEORGIA

RFP Item #21-100 On-Call ITS Construction & Repair - Annual Contract
for the Augusta, GA – Engineering Department
RFP Due: Wednesday, October 28, 2020 @ 11:00 a.m. via ZOOM

Total Number Specifications Mailed Out: 3
Total packages submitted: 3
Total Noncompliant: 0

VENDORS	Attachment "B"	E-Verify Number	SAVE Form	Original	7 Copies	Fee Proposal
ATG Communications 5100 B Pierce Court Evans, GA 30809	**Yes**	**424561**	**Yes**	**Yes**	**Yes**	**Yes**
Carlson Construction Servies, LLC 27 N. Fairground St., NE Marietta, GA 30060	**Yes**	**209934**	**Yes**	**Yes**	**Yes**	**Yes**
Southeast Utilities of Georgia LLC 1020 Franke Industrial Drive Augusta, GA 30909	**Yes**	**241606**	**Yes**	**Yes**	**Yes**	**Yes**

Item # 1

Augusta GEORGIA

RFP Item 21-100 Evaluation Sheet
On-Call ITS Construction and Repair
for Augusta GA – Engineering Department - Traffic Engineering
RFP Evaluation Meeting: Thursday, November 19, 2020 @ 1:30 p.m.

Vendors			ATG Communications, LLC 5100 B. Pierce Court Evans, GA 30809	Carlson Const4ruction Services, LLC 27 N. Fairground St., NE Marietta, GA 30060	Southeastern Utilities of Georgia LLC 1020 Franke Industrial Drive Augusta, GA 30909	ATG Communications, LLC 5100 B. Pierce Court Evans, GA 30809	Carlson Const4ruction Services, LLC 27 N. Fairground St., NE Marietta, GA 30060	Southeastern Utilities of Georgia LLC 1020 Franke Industrial Drive Augusta, GA 30909
Phase 1			**Ranking of 0-5 (Enter a number value between 0 and 5)**					
Evaluation Criteria	**Ranking**	**Points**	**Scale 0 (Low) to 5 (High)**			**Weighted Scores**		
1. Completeness of Response • Package submitted by the deadline • Package is complete (includes requested information as required per this solicitation) • Attachment B is complete, signed and notarized	N/A	Pass/Fail	PASS	PASS	PASS	PASS	PASS	PASS
2. Qualifications & Experience	(0-5)	20	5.0	5.0	5.0	100.0	100.0	100.0
3. Organization & Approach	(0-5)	10	5.0	4.0	5.0	50.0	40.0	50.0
4. Scope of Services	(0-5)	25	5.0	4.5	5.0	125.0	112.5	125.0
5. Financial Stability	(0-5)	10	5.0	5.0	5.0	50.0	50.0	50.0
6. References	(0-5)	5	5.0	5.0	5.0	25.0	25.0	25.0
7. Proximity to Area (only choose 1 line according to location of the company - enter the ranking value for the one line only)								
Within Richmond County	5	5			5.0	0.0	0.0	25.0
Within CSRA	5	4	5.0			20.0	0.0	0.0
Within Georgia	5	3		5.0		0.0	15.0	0.0
Within SE United States (includes AL, TN, NC, SC, FL)	5	2				0.0	0.0	0.0
• All Others	5	1				0.0	0.0	0.0
Phase 1 Total - (Total Maximum Ranking 30 - Maximum Weighted Total Possible 375)		75	30.0	28.5	30.0	370.0	342.5	375.0
Phase 2 (Option - Numbers 8-9) (Vendors May Not Receive Less Than a 3 Ranking in Any Category to be Considered for Award)								
8. Presentation by Team	(0-5)	10				0.0	0.0	0.0
9. Q&A Response to Panel Questions	(0-5)	5				0.0	0.0	0.0
10. Cost/Fee Proposal Consideration (only choose 1 line according to dollar value of the proposal in relation to all fee proposals - enter the point value for the one line only)								
Lowest Fees	5	10			5.0	0.0	0.0	50.0
Second	5	6	5.0			30.0	0.0	0.0
Third	5	4		5.0		0.0	20.0	0.0
Forth	5	2				0.0	0.0	0.0
Fifth	5	1				0.0	0.0	0.0
Total Phase 2 - (Total Maximum Ranking 15 - Maximum Weighted Total Possible 125)		25	5	5	5	30.0	20.0	50.0
Total (Total Possible Score 500) Total (May not Receive Less Than a 3 Ranking in Any Category to be								
Total Cumulative Score (Maximum point is 500)			35.0	33.5	35.0	400.0	362.5	425.0

Internal Use Only

Evaluator: Cumulative Date: 11/19/20

Procurement DepartmentRepresentative: Nancy Williams

Procurement Department Completion Date: 11/19/20

Augusta GEORGIA

ENGINEERING DEPARTMENT

Hameed Malik, PE, Ph. D., Director
John Ussery, PE, Assistant Director of Traffic

MEMORANDUM

To: Ms. Geri Sams, Director Procurement

From: Hameed Malik, Ph. D., PE, Director AED

Date: March 22, 2021

Subject: 2021 Annual Bid – ITS Construction & Emergency Repair Item #21-100

The chart below reflects Traffic Engineering recommendation for Bid Item #21-100. The two recommended bidders have the lowest line item totals of the three bids received. The third bidder's line item total was quadruple the two recommended bidders. Traffic Engineering averaged the line item prices that had different amounts and got concurrence from the two remaining bidders. Please contact John Ussery at 706-821-1710 for additional information.

BID#	DESCRIPTION	AWARD TO:
21-100	ITS Construction & Emergency Repair	Southeast Utilities of Georgia, Inc. ATG Communications, LLC

Thank You.

/:sc

cc: John Ussery, Assistant Director of Traffic Engineering, AED
Guy Shepherd, Manager Streetlight Maintenance, Signs & Striping
Arthur Jacobs, Crew Supervisor Markings
File

Augusta
GEORGIA

Procurement Department

Mrs. Geri Sams, Director

March 4, 2021

EMAIL/FAX (takins@catg.com)
706-823-1141

ATG Communications
Attn: Tommy Atkins
5100 B Pierce Court
Evans, GA 30809

RE: RFP #21-100 ITS Construction & Emergency Repair for the Augusta, GA – Engineering Department – Traffic Engineering

Dear Mr. Atkins:

Thank you for your RFP response for 21-100 ITS Construction & Emergency Repair. We have completed the evaluation process and would like to offer your company the opportunity to move forward with the recommendation of award utilizing an average RFP fee pricing of the two lowest fees. Attached is a copy of the average price of the two lowest bidders. The only two lines that are affected with the average pricing are line items #13, #17 and #22. We are asking you to review the prices for each line and respond if you will accept the average pricing. Once we have received confirmation that your company is acceptable with the average pricing, we will move forward with presenting the recommendation of award to our Commission. The recommendation of award will be on an on-call basis utilizing a rotation based assignment of the on-call ITS Construction & Emergency Repair with your company and **Southeast Utilities of Georgia, LLC.**

We are requesting that you review the average pricing as listed on the attached tab sheet and advise if you will accept the average pricing for the award of ITB 20-100. **Please check the appropriate box below, sign and returned the form by fax at 706-821-2811 or by email to** procbidandcontract@augustaga.gov **no later than Monday March 8, 2021 at 11:00 a.m.**

Sign: _____ **Date:** 3/4/2021

☑ **WILL accept average fee proposal prices** **WILL NOT accept average fee proposal pricing**

If you do are not accept the average pricing proposal, the RFP may be recommended for award to the next lowest most responsive proposer

We would like to thank you for your interest in doing business with Augusta. Any correspondence concerning this matter or questions concerning future procurements must be submitted via mail, fax or email as follows:

Augusta Procurement Department
Attn: Geri A. Sams, Director of Procurement
535 Telfair Street, Room 605
Augusta, GA 30901
Or
Fax: 706-821-2811
Email: procbidandcontract@augustaga.gov

Sincerely,

Geri A. Sams,
Procurement Director

GAS/nw

Attachments

cc: Jarvis Sims, Deputy Administrator
Hameed Malik, Engineering Department
John Ussery, Engineering Department – Traffic Engineering Division

Negotiated Average Unit Price RFP #21-100

NO.	ITEM CODE	DESCRIPTION	UNIT	UNIT PRICE
1.		TRENCHING (24' TO 36" DEEP)	LF	9.75
2.	441-0104	CONCRETE SIDEWALK, 4 IN	SY	95.00
3.	615-1200	DIRECTIONAL BORE	LF	12.00
4.	647-2130	PULL BOX, PB-3	EA	335.00
5.	647-2140	PULL BOX, PB-4	EA	365.00
6.	647-2150	PULL BOX, PB-5	EA	395.00
7.	647-2160	PULL BOX, PB-6	EA	425.00
8.	647-2170	PULL BOX, PB-7	EA	455.00
9.	647-6090	REPLACE LOOP DETECTOR	EA	275.00
10.	682-6233	CONDUIT, NONMETAL, TP 3, 2 IN	LF	3.25
11.	935-1115	FIBER OPTIC CABLE (CORNING OR PRYSMIAN), SM, 48 FIBER	LF	1.00
12.	935-1117	FIBER OPTIC CABLE (CORNING OR PRYSMIAN), SM, 96 FIBER	LF	1.00
13.	935-1512	FIBER OPTIC CABLE (CORNING OR PRYSMIAN), DROP, SM, 12 FIBER	LF	0.95
14.	935-4010	FIBER OPTIC SPLICE, FUSION	EA	28.00
15.	935-5030	FIBER OPTIC CONNECTORS, SM	EA	31.50
16.	935-5030	FIBER OPTIC CONNECTORS, ST	EA	31.50
17.		SPLICE ENCLOSURE (MULTILINK 4000-D STARFIRE DOME)		394.00
18.		OVERHEAD CABLE LASHING	LF	1.00
19.	935-3206	OVERHEAD SPLICE ENCLOSURE	EA	125.00
20.		FIBER OPTIC STORAGE SYSTEM PLASTIC SNO-SHOE (17" OR 18")	EA	65.00
21.		UNDERGROUND LOCATE WIRE (#10 THN)	LF	0.50
22.		UNDERGROUND CABLE MARKER (9" MIN DIA., 6' LONG, ORANGE, PROMARK PM 908 W/ PM T18 TEST STATION OR SIMILAR)	EA	525.00
23.	935-8000	FIBER TESTING (OTDR)	EA	19.00

Augusta
GEORGIA

Procurement Department

Mrs. Geri Sams, Director

March 4, 2021

EMAIL/FAX (finance@seutilites.com)
706-733-7201

Southeast Utilities of Georgia, LLC
Attn: Tim Moses
1020 Franke Industrial Drive
Augusta, GA 30909

RE: RFP #21-100 ITS Construction & Emergency Repair for the Augusta, GA – Engineering Department – Traffic Engineering

Dear Mr. Moses:

Thank you for your RFP response for 21-100 ITS Construction & Emergency Repair. We have completed the evaluation process and would like to offer your company the opportunity to move forward with the recommendation of award utilizing an average RFP fee pricing of the two lowest fees. Attached is a copy of the average price of the two lowest bidders. The only two lines that are affected with the average pricing are line items #17 and line item #22. We are asking you to review the prices for each line and respond if you will accept the average pricing. Once we have received confirmation that your company is acceptable with the average pricing, we will move forward with presenting the recommendation of award to our Commission. The recommendation of award will be on an on-call basis utilizing a rotation based assignment of the on-call ITS Construction & Emergency Repair with your company and ATG Communications.

We are requesting that you review the average pricing as listed on the attached tab sheet and advise if you will accept the average pricing for the award of ITB 20-100. **Please check the appropriate box below, sign and returned the form by fax at 706-821-2811 or by email to** procbidandcontract@augustaga.gov **no later than Monday March 8, 2021 at 11:00 a.m.**

Sign: _____ **Date:** 03/12/2021

☑ **WILL accept average fee proposal prices** **WILL NOT accept average fee proposal pricing**

If you are not accept the average pricing proposal, the RFP may be recommended for award to the next lowest most responsive proposer.

We would like to thank you for your interest in doing business with Augusta. Any correspondence concerning this matter or questions concerning future procurements must be submitted via mail, fax or email as follows:

Augusta Procurement Department
Attn: Geri A. Sams, Director of Procurement
535 Telfair Street, Room 605
Augusta, GA 30901
Or
Fax: 706-821-2811
Email: procbidandcontract@augustaga.gov

Sincerely,

Geri A. Sams,
Procurement Director

GAS/nw

Attachments

cc: Jarvis Sims, Deputy Administrator
Hameed Malik, Engineering Department
John Ussery, Engineering Department – Traffic Engineering Division

TM

Item # 1

Negotiated Average Unit Price RFP #21-100

NO.	ITEM CODE	DESCRIPTION	UNIT	UNIT PRICE
1.		TRENCHING (24' TO 36" DEEP)	LF	9.75
2.	441-0104	CONCRETE SIDEWALK, 4 IN	SY	95.00
3.	615-1200	DIRECTIONAL BORE	LF	12.00
4.	647-2130	PULL BOX, PB-3	EA	335.00
5.	647-2140	PULL BOX, PB-4	EA	365.00
6.	647-2150	PULL BOX, PB-5	EA	395.00
7.	647-2160	PULL BOX, PB-6	EA	425.00
8.	647-2170	PULL BOX, PB-7	EA	455.00
9.	647-6090	REPLACE LOOP DETECTOR	EA	275.00
10.	682-6233	CONDUIT, NONMETAL, TP 3, 2 IN	LF	3.25
11.	935-1115	FIBER OPTIC CABLE (CORNING OR PRYSMIAN), SM, 48 FIBER	LF	1.00
12.	935-1117	FIBER OPTIC CABLE (CORNING OR PRYSMIAN), SM, 96 FIBER	LF	1.00
13.	935-1512	FIBER OPTIC CABLE (CORNING OR PRYSMIAN), DROP, SM, 12 FIBER	LF	0.95
14.	935-4010	FIBER OPTIC SPLICE, FUSION	EA	28.00
15.	935-5030	FIBER OPTIC CONNECTORS, SM	EA	31.50
16.	935-5030	FIBER OPTIC CONNECTORS, ST	EA	31.50
17.		SPLICE ENCLOSURE (MULTILINK 4000-D STARFIRE DOME)		394.00
18.		OVERHEAD CABLE LASHING	LF	1.00
19.	935-3206	OVERHEAD SPLICE ENCLOSURE	EA	125.00
20.		FIBER OPTIC STORAGE SYSTEM PLASTIC SNO-SHOE (17" OR 18")	EA	65.00
21.		UNDERGROUND LOCATE WIRE (#10 THN)	LF	0.50
22.		UNDERGROUND CABLE MARKER (9" MIN DIA., 6' LONG, ORANGE, PROMARK PM 809 W/ PM TS3 TEST STATION OR SIMILAR)	EA	325.00
23.	935-8000	FIBER TESTING (OTDR)	EA	19.00

ADVANCED TECHNOLOGY GROUP
5100 PIERCE COURT
EVANS, GA 30809

SOUTHEAST UTILITIES OF GEORGIA
1020 FRANKE INDUSTRIAL DR
AUGUSTA, GA 30909

ROTWEILER SYSTEMS
5655 LAKE ACWORTH DRIVE, STE. 140
ACWORTH, GA 30101

HAMEED MALIK
ENGINEERING

JOHN USSERY
TRAFFIC ENGINEER

TREZA EDWARDS
COMPLIANCE

BID ITEM 21-100
ON CALL ITS CONSTRUCTION & REPAIR
FOR ENGINEERING DEPARTMENT
RFP DUE: WED. OCT 28, 2020 @ 11:00 A.M.

RFP ITEM 21-100
ON CALL ITS CONSTRUCTION & REPAIR
FOR ENGINEERING DEPARTMENT
RFP MAILED: 9/10/20

Administrative Services Committee Meeting
4/13/2021 1:05 PM
2021 - Fleet Maintenance Contract Extension

Department:	Central Services Department - Fleet Management
Presenter:	Ron Crowden
Caption:	Motion to approve a one year extension of the Augusta Fleet Maintenance Contract for 2022 at a cost of $2,963,946.00 to First Vehicle Services. (REF - RFP 19-225)
Background:	Augusta entered into a 3 year fleet maintenance contract for vehicles and equipment, excluding Environmental Services, Fire and Transit Departments. This contract supports more than 56 divisions with over 2,400 vehicles and equipment. The increase in cost from 2021 to the request for extension is $36,143.00. First Vehicle Services has provided fleet maintenance services to Augusta since 2005, as a result of various requests for proposals being advertised. Per our current fleet maintenance contract, the 3 year contract was approved by Commission on 1/25/2019. The item has two one year extensions which may be granted by mutual agreement of both parties.
Analysis:	Funds for the continuation of this contract will be requested during the 2022 budget process within the operating budget. The Fleet Management Division has four administrative employees and therefore cannot service Augusta's fleet adequately without the continuation of outsourced services, identical to those provided by First Vehicle Services.
Financial Impact:	$2,963,946 Fleet Management 2022 Operating Budget
Alternatives:	(1) Approve the request; (2) Do not approve the request
Recommendation:	Motion to approve a one year extension of the Augusta Fleet Maintenance Contract for 2022 at a cost of $2,963,946.00 to First Vehicle Services
	2022 Operating Budget

Funds are
Available in the
Following
Accounts:

REVIEWED AND APPROVED BY:

Finance.
Procurement.
Law.
Administrator.
Clerk of Commission

Memo

First Vehicle Services

February 23, 2021

Ms. Takiyah A Douse

Director Central Services Director

Augusta GA 30906

Dear Ms. Douse

This is the time of year most of our customers are working on their budgets and planning for the upcoming budget year. With that understanding we would request Augusta Richmond GA consider the contract extension option in the contract outlined in Section One Article One below. Therefore, by mutual agreement FVS would like to extend the contract from January 1, 2022 through December 31, 2022.

1. **AGREEMENT TERM AND TERMINATION:** The duration of the Agreement will be from February 1, 2019 to December 31, 2021, for a period of 35 months. Further this agreement may be renewed, expanded and extended by mutual agreement in annual increments, provided that the funds for subject Agreement are available and an operating budget is approved by the Augusta Commission and that the Contractor has established a satisfactory record of performance.

In addition, Section 13 of the contract allows for a budget increase based on the CPI. The Current CPI is 3.4% but we could accept a 1.5% increase on labor, parts, and overheads to help bring us back up to budget and help Augusta with their budget. As you know we ran $23,000 over budget in 2020. We are not requesting any increase to the fees.

This increase would raise the current budget by $36,143 for a total of $2,963,946 annually.

13. **Annual Adjustments:** The Contract base cost, approved budget, including the Contractors fee may be adjusted for any subsequent years of the Contract in accordance with the Annual Meeting. During the Annual Meeting between the Government and the Contractor, the Contractors performance will be reviewed. The Government will present a report card that includes the Government's assessment of Contractor performance in the areas of fleet maintenance, operations, cost/performance, Contract incentives, and other issues. The meeting shall also include a review of the Contractors cost of doing business. Escalation of the approved budget for the ensuing year shall not exceed the Bureau of Labor Statistics – Consumer Price Index (CPI) for all urban consumers in the Transportation Category for Atlanta, Georgia for the most current year reporting period. Changes to the Contract resulting from the annual meeting shall be documented in an Agreement Amendment, subject to approval by the Augusta Commission.

First Vehicle Services
3009 Pamplico Highway
Florence, SC 29505

Memo

First Vehicle Services

Thanks for taking this option in consideration.

If you have any questions, I can be reached any time at 843-319-3157

Sincerely,
Steve Breeden

Region Vice President
First Vehicle Services

First Vehicle Services
3009 Pamplico Highway
Florence, SC 29505

AGREEMENT FOR FLEET MAINTENANCE SERVICES FOR AUGUSTA, GEORGIA

Section One

This agreement is made and entered into as of this 1st day of February , 2019, by and between Augusta, Georgia, a political subdivision of the State of Georgia, (herein referred to as "Augusta"), and First Vehicle Services, Inc., 600 Vine Street, Suite 1400, Cincinnati, Ohio 45202, (herein referred to as "Contractor").

Augusta and the Contractor, for the consideration stated herein, agree as follows:

1. **AGREEMENT TERM AND TERMINATION:** The duration of the Agreement will be from February 1, 2019 to December 31, 2021, for a period of 35 months. Further this agreement may be renewed, expanded and extended by mutual agreement in annual increments, provided that the funds for subject Agreement are available and an operating budget is approved by the Augusta Commission and that the Contractor has established a satisfactory record of performance.

2. **GENERAL DESCRIPTION OF SERVICES:** The Contractor shall provide the full range of fleet maintenance services to Augusta as set forth in the "Scope of Work" at Section 2.

3. **DEFINITIONS:** Where the following terms occur herein, the intent and meaning shall be as follows:

   a. **Augusta**: shall mean Augusta, Georgia, a political subdivision of the State of Georgia.

   b. **Contractor**: shall mean First Vehicle Services, Inc.

   c. **Contract Cost**: shall mean the sum of **$2,788,787.35** for the calendar year 2019, **$2,855,996.47** for calendar year January 2020, **$2,924,960.57** for the calendar year 2021.

   d. **Surety:** shall mean the party who is bound with and for the Contractor to ensure the payment of all obligations and lawful debts pertaining to and for this Agreement.

   e. **Performance and Payment Bond:** shall mean the security approved by Augusta and furnished by the Contractor as a guarantee that the Contractor will execute the work in accordance with the terms of this Agreement and will pay all lawful claims.

   f. **Fleet Manager**: shall mean the designated representative of Augusta with the Authority to direct the Contractor in the daily performance of the Agreement, but shall have no authority to direct the time, manner, or method of performance.

   g. **Fleet**: Shall mean all of the units listed in the equipment table of the Request for Proposal (RFP) and provided in electronic format (excel spreadsheet) of the RFP, and units that may be added to or deleted from the Augusta fleet.

   h. **Agreement Documents:** The documents that will form the Agreement includes: the "Request for Proposal", all attachments thereto, the proposal by First Vehicle Services, Inc. and the signed Agreement (ref: paragraph 2.16, page 33, Request for Proposal, RFP Item # 19-225.

   i. **Contract Services**: Contract services are generally those routing vehicle maintenance and repair activities that are reasonably predictable and there-fore lend themselves to projection and estimation. Examples of Contract services include, but not limited to: preventive maintenance services, failures due to fair wear and tear, remedial repairs, compliances, etc. Repairs necessitated by predictable, normal deterioration incurred during the proper operation use of the vehicle and equipment in proper applications.

j. **Non-Contract Services**: are generally variable in nature and therefore are not predictable; they are also generally dependent on the actions or decisions of individuals other than those who are providing maintenance services, such as vehicle operators and management personnel, and therefore, often avoidable. Non-contract service include accident repairs, modifications or fabrications to vehicles, vandalism, repairs from operator abuse/error, repairs required to extend the life of the vehicles or equipment beyond the normal life cycle or adjusted life expectancy agreed upon and attached here-to.

4. **Performance & Payment Bond:** The successful bidder shall furnish a Performance and Payment Bond executed by a Surety Company duly authorized to do business in the State of Georgia, in an amount equal to at least one hundred-ten percent (100%) of the annual firm-fixed contract amount, within 15 calendar days of the Notice of the Award. Said bond shall be in full force and effect during the term of this agreement and shall be issued on an annual basis. No contract shall exist until the Augusta Commission receives a duly executed Performance Bond made payable to the Augusta Commission. Failure to provide the Performance Bond as indicated will result in the offer being ruled null and void and the award shall be made to the next most responsive respondent. **Payment Bond:** A Payment Bond shall be executed in the full amount of the annual firm-fixed amount of the agreement for the protection of all claimants supplying labor and materials in the prosecution of the work. The Performance and Payment Guaranty shall be conditions upon the following:

   a. If the Contractor performs this agreement between the Contractor and this Government for the deliverables at the times and in the manner prescribed in this Agreement and;

   b. promptly makes payments to all claimants supplying the Contractor with goods, labor, materials, or supplies, used directly or indirectly by the contractor in the prosecution of and providing the deliverables specified in this Agreement and;

   c. pays this government all losses, damages, expenses, costs and attorney fees including appellate proceedings in accordance with this Agreement, the Government sustains because of default by the Contractor under this Agreement and;

   d. provides all deliverables under this Agreement in the time specified in this agreement and such deliverables are accepted by this Government as provided for in this Agreement, then the Performance and/or Payment Bond are released; otherwise they remain in full force.

   e. The terms of this agreement supersede any and all provisions of the Georgia Prompt Pay Act.

5. **Actions Under Default:** To the extent provided for this Agreement, if the Contractor shall be and is declared to be in default under this Agreement, and the Augusta Commission has performed its' obligations hereunder, the funds available under the Performance Bond and Payment Bond may be immediately claimed in their entirety and used by the Augusta Commission as needed to remedy the default, or may be used to:

   a. complete this Agreement in accordance with its terms and conditions; or

   b. obtain a proposal(s) for performing this Agreement in accordance with its terms and conditions, and at the Government's option, arrange for a contract between such proposer(s) and this Government and make sufficient funds available as work progresses whether or not there is a default or succession of defaults under any agreement(s) or contract(s) for completion less the balance of this agreed price.

6. **Contractor's Relationship to the Commission (Augusta Commission/Government).**

a. **Contractor as Independent Contractor:** it is expressly agreed and understood that the Contractor is in all respects an Independent Contractor as to the work and that the Contractor is in no respect an agent, servant or employee of this Government. This contract/agreement specifies the work to be done by the Contractor, but the method utilized to accomplish the work shall be the responsibility of the Contractor

b. **Subcontracting:** The Contractor may subcontract services to be performed hereunder with the prior approval of the Fleet Manager, which shall not be unreasonably withheld. No such approval will be construed as making the government party of, or to, such subcontract, nor shall approval be construed as subjecting the Government to liability of any kind to any Subcontractor. No subcontract shall, under any circumstance, relieve the Contractor of its liability and obligation under this contract/agreement; and despite such subcontracting the Government shall deal through the Contractor, and Subcontractors will be dealt with as workmen and representatives of the Contractor. Where the subcontracting of local services, such as glass work or towing service, requires a request for quote, the Contractor will share the Request for Quote and responses with Augusta.

7. **TERMINATION (Other):** This Agreement may be terminated by the Augusta Commission without cause upon providing the Contractor with at least thirty (30) days prior written notice. Should either party fail to perform any of its obligations under this contract for a period of thirty (30) days after receipt of written notice of such failure, the non-defaulting party will have the right to terminate the Agreement immediately upon delivery of written notice to the defaulting party of its election to do so. The foregoing rights of termination are in addition to any other rights and remedies that such party may have.

8. **Severability:** If any term or position of this Agreement is found to be illegal and unenforceable, such terms shall be deemed stricken and the remainder of the Agreement shall remain in full force and effect.

9. **Manner of Performance-General**: The Contractor agrees to perform its duties and obligations under this contract in a professional manner and in accordance with all applicable local, Federal and State laws, rules and regulations. The Contractor agrees that the services provided in this Agreement shall be provided by employees that are educated, trained, experience, certified (ASE-EVT), and licensed in all areas encompassed within their designated duties. The Contractor will furnish all documentation, certification, authorization, license, permit or registration currently required by applicable laws or rules and regulations. The Contractor further certifies that they and their employees will keep all license, permits registrations, authorizations, or certifications required by applicable laws or regulations in full force and effect during the term of this contract. Failure of the Contractor to comply with the section shall constitute a material breach of this Agreement.

10. **Augusta Representative:** Unless provided otherwise elsewhere in this Agreement, Augusta authorizes the Fleet Manager as the representative to act on behalf of Augusta on all matters relating to this Agreement and/or services being performed hereunder. The Fleet Manager shall decide all questions, which may arise as the quantity, character and quality of services performed or to be performed pursuant to this agreement.

11. **Inspection of Work:** The Contractor shall furnish Augusta's authorized representative with every reasonable opportunity to determine whether the work is performed in accordance with the requirements of the Agreement. Augusta may appoint qualified persons to inspect the Contractor's operations and equipment, and the Contractor shall permit the authorized representative(s) to make such inspections at a reasonable time and place.

12. **Agreement Discrepancy**: Verbal notification of an Agreement discrepancy will be made to the Contractor's General Manager or designee as soon as a discrepancy is identified. The Project Manager shall immediately resolve the problem. The Fleet Manager will determine whether a formal

Discrepancy Report shall be issued. If a Report is issued, it will be mailed or hand delivered to the Contractor's General Manager. Upon receipt of the Report, the Contractor is required to respond in writing to the Fleet Manager within the time period specified, acknowledging the reported discrepancy or presenting contrary evidence and presenting a program for immediate correction of all failures of performance identified in the Report. The Fleet Manager will make the determination if the response to the Discrepancy Report is appropriate and resolves the discrepancy reported. Responses that are determined to be unresponsive or inappropriate will be referred back to the General Manager in writing with the reason for inappropriateness. The General Manager will be provided another opportunity to resolve the issues raised. The Fleet Manager has the authority to apply a reasonable penalty, including monetary deductions to the monthly invoice as appropriate to the Discrepancy. When this is done the Contractor will be notified in writing with full justification and the amount to be deducted. The Fleet Manager's decision shall be final. Nothing in this paragraph is meant to limit either party's rights to pursue any action in a Court of Law.

13. **Insurance:** Prior to the commencement of the Agreement, the Contractor shall obtain and keep in full force and effect until the termination of the Agreement, the following insurance with an insurance company licensed and/or qualified to do business in the State of Georgia, as evidenced by the Certificate of Insurance and/or certified copies of the insurance policy(ies). The Augusta Commission shall be named as an additional insured on all liability policies for claims specifically arising under the Agreement.

    a. **Workers Compensation:** statutory minimum limits.
    b. **Employers Liability:** minimum of $1,000,000 combined single limit.
    c. **Commercial General Liability:** Minimum of $2,000,000 combined single limit of Bodily Injury and Property Damage per occurrence. (Damages to Rented Premises [each occurrence], Medical Expense [any one person-$5,000], Personal & Adv injury, General Aggregate.
    d. **Automobile Liability:** Minimum of $1,000,000 combined single limit of Bodily Injury and Property Damage per occurrence including the following: owned automobiles, hired automobiles, and non-owned automobiles.
    e. **Garage Keepers Liability:** (any auto) a minimum of $1,000,000 per occurrence.

14. **Other Insurance Provisions:**

    a. Each insurance policy required under this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled, reduced in coverage or in limits except after thirty days prior written notice has been provided to Augusta. If the policy is cancelled for non-payment of premium, only ten days' notice is required.
    b. Worker's Compensation and Employer's Liability Coverage: the insurer shall agree to waive all rights of subrogation against Augusta, its officials, employees and volunteers for losses arising from the activities under this contract.
    c. Certificates of Insurance and Endorsements affecting coverage required by this clause shall be forwarded to the Fleet Manager, 1568 Broad Street.

Section Two

SCOPE OF WORK

1. **General:** The Contractor shall provide preventive maintenance, proactive and reactive remedial repairs, mobile service, tire service, overhaul services, fleet in-processing and de-commissioning, towing, fleet maintenance management and such other associated services as may be required to assure the continuity of effective and economical operations of the Government's vehicles and equipment. The Contractor shall furnish all necessary supervision, labor employee training, technical service manuals, parts supplies and sub-contract work required to maintain the fleet in a state of repair and service consistent with generally accepted fleet practices and as define in this Statement

of Work. In addition, the Contractor shall use and maintain a permanent, detailed, automated record for each vehicle, (using the CCG Systems- FASTER software program) provided by Augusta.

2. **Preventive Maintenance:** A preventive maintenance Inspection (PMI) program is a systematic approach to inspecting a vehicle at planned intervals. This scheduled maintenance is a planned servicing of equipment to maximize vehicle efficiency and to ensure compliance to the established standards set forth by equipment manufacturers and to meet Federal, State and local regulations.

   a. The primary goal of preventive maintenance is to maximize the equipment availability of the fleet by taking a proactive approach in minimizing unscheduled repairs.

   b. The PMI program shall be designed in accordance with recognized good fleet management practices and shall meet the terms and conditions necessary to comply with the original equipment manufacturers (OEM) specifications or stricter warranties and recommendations, but may be modified by the Fleet Manager.

   c. **PM Cycle and Costing:** The preventive maintenance program/schedule shall, as a minimum, comply with the equipment/vehicle manufacturer's recommendation as published in the owner's/service manual. In general, vehicle PM services will be on a 5,000 mile or 6 month (whichever is first) rotation. Equipment with hour-meters will be serviced at 250 hours or 6 months (whichever comes first) and non-motorized equipment (example: trailers) will be serviced annually. Service requirements will be in accordance with the manufacturers recommended services from the operator's or service manual. PM services will be included in the contract cost. The costing of services and supplies should take into consideration the requirements of the manufacturer for the type of equipment/vehicle. In every case a safety inspection will also be conducted as a part of the service.

   d. The Contractor is responsible for developing and providing a PM schedule, notifying the user, and performing required maintenance, preventive maintenance, or inspections without requiring any other authority. The schedule should interfere minimally with normal work schedules and must be flexible considering the requirements of the departments. Departments should be notified monthly of which vehicles and equipment require PM services. The current methodology is by email with an attached Excel spreadsheet form. The Fleet Manager will be advised of vehicles and/or equipment that were scheduled but not provided by the user for the service. This will be done monthly and the format will be mutually agreed upon by the Contractor and Fleet Manager.

3. **Hourly Inspections:** Maintain hourly equipment within compliance of the OEM specifications or as necessary, based on historical data. The format for this type of inspection will be mutually agreed upon by the Contractor and Fleet Manager within thirty days of startup.

4. **Annual Inspections:** The Contractor will inspect and test all other required gasoline and diesel power-operated equipment on an annual basis in accordance with Federal, State and local laws. Inspections and tests shall be performed by the Contractor in Augusta owned Maintenance Facilities by properly authorized and trained mechanics, or by authorized inspectors from outside sources. The Contractor shall perform these inspections within the fixed price of the Agreement. The Contractor may elect to perform these tests if their employees have been properly trained. Copies of all current certifications must be given to the Fleet Manager prior to commencement of performing the inspections. If no Contractor employee is trained and certified to perform these tests, the Contractor will subcontract these services to a qualified outside source. The cost of performing these inspections by outside vendor will be borne by the Contractor (Contract Cost). The Contractor is required to provide for the following mandated annual inspections:

   a. Aerial truck dielectric testing

b. Aerial boom and bucket testing

c. Crane and derrick truck testing

d Shop crane and hoist testing

e. Other annual testing as required by the manufacturer with respect to specialty equipment.

5. **Inspection Continuity**: The Contractor will ensure continuity of inspections by performing the required annual inspections in the same month of the previous year's inspection for each piece of equipment. It is expected the Contractor will schedule all mandated inspection in such a way as to limit equipment downtime. The Contractor may work with the affected department directly to establish the best schedule and time for the inspections. The Contractor will maintain the results of the inspection in the equipment's file.

6. **Oil Analysis:** The Contractor will perform a scheduled oil analysis with a reputable outside company on all engines, transmission and differentials on wheeled vehicles above 26,000 GVW and every piece of tracked equipment in the Augusta inventory The oil analysis program can be used by the Contractor to determine when fluids should be changed; therefore, substituting the normal PM cycled timeframes. The Contractor will recommend to the Fleet Manager any vehicles or equipment recommend for the oil analysis program designation.

7. **Repairs:** Contractor shall make specific repairs to vehicles and equipment that have been identified through PM services, annual inspection, by Department user(s), Fleet Management or by Risk Management departmental reports, and/or breakdown or malfunction. Repairs shall be made as required, limiting the nature and extent or repairs that are consistent with age, mileage and cost to repair criteria of good fleet maintenance.

   a. Repair Service Timelines: The Contractor shall be required to complete regular repair services within reasonable times. Scheduled contract repairs shall be started the same day schedules (including PM services). Unscheduled contract repair shall be started with 3 work days. Non-contract repairs require Fleet Management approval and therefore cost estimates shall be prepared and submitted electronically for approval within 3 days of receiving the vehicle or equipment. Parts shall be ordered (if required) within one working day after the non-contract estimate is approved.

   b. PM Service Timelines: PM Service for light vehicle will be completed within 8 hours or delivery if scheduled by the Contractor; 16 hours for heavy trucks (maximum time allowed). If a vehicle requires repair in addition to the PM Service, the above times do not apply.

   c. Repair of Small Equipment: The Contractor will be tasked to perform repair work and services of small gas-powered equipment which includes, but not limited to: chain saws, lawn trimmers, push mowers, tillers, pressure washers, tampers, generators, light towers, pumps and sprayers. Repairs to small equipment will be charged as a non-contract cost with the exception of warranty type work. Damages to small equipment caused by the Contractor will be repaired by the Contractor at no cost to Augusta.

   d. Safety Inspections: Whenever a unit requires any type of maintenance service, the Contractor will also perform a general safety inspection to ensure that the general condition of the equipment meets normal fleet requirements (as well as legal safety requirements of law) prior to the equipment leaving the repair facility. All PM services will include the safety inspection. Safety inspections will be documented on the respective work order. Safety inspections will include, as a minimum the following:

- All lights, including turn signals, back up lamp, license tag lamp
- Horn
- Windshield Wipers
- Safety belt
- Steering
- Braking
- Tire Tread

e. Fire Extinguishers: Vehicles that have been issued fire extinguishers but the extinguisher is missing or discharged will be replaced as a non-contract cost, if the Contractor replaces the extinguisher or at no cost if Fleet Management replaces the extinguisher. All expended extinguishers will be taken to Fleet Management for inspection, recharging and reissue.

f. Quick Fix Repairs: The Contractor shall provide a Quick Fix function for minor repairs of less than one hour duration at all repair facilities, when the vehicle operator chooses to wait for the service. This type of repair service is generally allocated to items such as windshield wipers, tire repair or replacement, topping off fluid levels, lighting repair or replacement or other such associated light-duty repair services.

g. Tire Services: The Contractor will provide comprehensive tire services including tire management, inflation, maintenance, repairs, rotation, mounting, demounting, disposal and disposal fees, replacement, wear management, balancing, field tire services, warranty management, inventory security and maintenance of an inventory of mounted spares. The contractor will replace tires when tires have reached minimum tread depths as specified in Georgia law appropriate to the type vehicle with the expectation that law enforcement, pursuit vehicles (assigned to Sheriff' Office- Road Patrol, Narcotics Division, CID) shall have a minimum of 4/32 tread.

h. Warranty and Recall Work: The contractor will negotiate, manage, administer, claim and recover all warranties and recalls offered by vehicle manufacturers, parts and component suppliers, and any subcontracted repairs. The contractor will add warranties to Augusta's MIS (CCG Systems-FASTER) warranty recovery module and return proceeds to Augusta via credits against contract or non-contract invoices. The contractor is encouraged to obtain authorization from the various vehicle manufacturers to perform in-house warranty work on Augusta vehicles in order to reduce the turnaround time for warranty repairs. The deciding factor on warranty repairs is to obtain the quickest turnaround time.

i. Outside Repairs: The Contractor's bid proposal response will define the typed of repairs that will be or anticipated to be conducted by subcontractors, outside Augusta facilities. The Contractor is responsible for arranging and managing the conduct and performance to Contract requirements of all outsource venders for any repairs that are not performed "in-house". All responsibility for the administration, invoicing, quality control, vehicle movement, vehicle security, etc. shall be that of the Contractor. Subcontractor invoices will be accepted solely by the Contractor and must be addressed to the Contractor, not Augusta.

j. Seasonal Equipment Preparation: The Contractor shall coordinate with the Fleet Manager to set up a program to ensure seasonal equipment is fully serviceable prior to the start of each season. Requirements include annual inspections and operational maintenance of air condition and engine cooling systems during warm weather and the winterization of vehicles and equipment during cooler months as applicable. Charges for all seasonal preparation will be included in the contract cost.

k. New Vehicle Preparation: The Contractor is responsible for all vehicle and equipment preparation which is brought into the fleet by the Fleet Manager. The Contractor will perform the installation

of Government seals or insignia decals and equipment asset and bumper numbers as directed by Fleet Management. The Contractor will include in the contract price, the cost of all seals, insignia and lettering with the exception of those insignia badges or seals for public safety use. These seals will be provided by the respective department.

l. Vehicle Disposal Preparation: Vehicles and equipment being removed from the normal Government fleet shall be prepared for disposal/auction sales or storage by the Contractor. Costs associated with disposal prep will be included in the contract cost. Preparation shall include, but not limited to:

1. The Contractor will provide a general vehicle condition assessment using a form provided by Fleet Management.

2. The Contractor will remove all insignias and lettering so that no distinguishable insignia or lettering will remain to identify the retired unit as a Government vehicle.

3. The Contractor will remove all emergency equipment from Public Safety vehicles and equipment. Equipment to be removed include: spot lights, emergency lights, emergency power boxes, camera systems, sirens.

4. The Contractor shall make minor, cost effective, contract cost repairs to increase the resale value of the vehicle (example: replace dead batteries).

5. The Contractor will transport the equipment; to include the cost of any towing required, to the Government storage site or auction site as a contract cost for a "one time" movement cost. Any charges for moving the vehicle or equipment more than once will be charged as non-contract cost.

8. **Non-Contract Repairs:**

a. **Repairs for Operator Abuse**: Operator abuse is defined as mechanical damage or breakdown caused by the operator through the improper operation of the vehicle or equipment or failure of the operator to provide the vehicle for scheduled service. The Contractor shall identify repairs caused by suspected operator abuse and shall forward estimates for repairs to the Fleet Manager with the proper coding. Fleet Manager will be the final authority in deciding operator abuse. All repairs coded as operator abuse will be a non-contract cost.

b. **Repairs for Vandalism**: Is defined as government property is damaged by an individual and causes mechanical or component damage to a unit through no fault of an Augusta Employee or Contractor Employee. Examples would include: theft of parts, deliberate damage to equipment from unknown parties, damage caused by suspects being transported in Government Vehicles and other such damage. Vandalism is charged as non-contract.

c. **Directed Work**: The Government may direct the Contractor to perform additional tasks under this Contract. No such work shall commence without the Contractor receiving authorization to proceed from the Fleet Manager. It is the intent of the Government that all such work does not reduce the level of service that is provided for in the fixed price portion of the contract. Directed work shall be charged as non-contract. Directed work may include, but not be limited to the following:

1. Welding, fabrication or repair services to other than fleet equipment.

2. Repairs of equipment outside life expectancy.

3. Accident repairs Operator abuse repairs

4. Repairs for Vandalism Repairs due to acts of God Emergency Services

9. **Road Testing**: The Contractor must conduct a road or appropriate operations test on all vehicles and equipment that have had a safety related repair or adjustment. The Contractor, by releasing the equipment or vehicle back to the department or Augusta employee, implies that the vehicle and/or equipment is/are safe to operate. All such driving or operations check will be charged as a contract cost.

10. **Other Services:**

a. **Assembly**: The contractor will be tasked, at times, to perform assembly which is the initial piecing together or assembly of equipment purchased and delivered in packages, boxes or crates. The scope of the nature of assembly of small equipment shall be considered as a contract cost. It is the intent of Fleet Management to procure most equipment in a state of ready use.

b. **Fabrication:** defined as the construction of a vehicle or equipment component. Fabrication includes, but is not limited to the manufacture of an assembly or a component of security screens and bars, light bars, mounting racks, panels and switches and body parts or bodies, ventilators, racks, bumpers, customization and reinforcing. Fabrication is considered as directed work by the Fleet Manager and shall be charged as non-contract.

c. **Modification:** defined as an alteration of a vehicle or equipment component. Examples of modification would be the installation of accessory equipment that was not installed upon delivery of the vehicle or equipment. Modification is considered as directed work by the Fleet Manager and shall be charged as non-contract.

d. **Customer Contact of Completed Repairs/Services:** The Contractor will immediately notify all Departments or operator by telephone, radio or email when repairs or services have been completed. The Fleet Manager will be informed if the vehicle or equipment is not picked up within a reasonable time on the second notification.

e. **Completed Service Orders**: The Contractor will provide a copy of the completed work order, generated by the FASTER work order system ("Customer" copy) to the employee picking up the vehicle or equipment at the time of pick up.

f. **Waste & Hazardous Waste**: The Contractor shall be responsible for disposal of all trash and other wastes generated during the course of the Contract/Agreement. The Contractor shall hold Augusta, its elected officials and employees free of liability for all actions of the Contractor relating to waste disposal. The Contractor is responsible for good environmental management of all waste created to prevent pollution, encourage recycling and meet all laws and regulations pertaining to waste handling relating to its operation of this Contract/Agreement. This includes the proper required documentation and implementation of programs and training associated with hazardous waste and proper reporting of incidents associated with hazardous waste.

g. **Scrap Tires**: The Contractor is responsible for the proper disposal (and associated required documentation) of scrap/sued tires from the Augusta fleet. Tires with resale value may be sold to tire venders and all revenues acquired from the disposal of such tires will be reimbursed to the Augusta Commission.

h. **Scrap Metal**: All recyclable scrap metal will be sold to local scrap metal recyclers. The Contractor shall arrange for storage bins to be located at each major repair facility by the recycler and all revenues acquired from the sale of scrap metal will be reimbursed to the Augusta Commission.

I **Accidents**: The Risk Management Department is responsible for coordinating repairs for damages to vehicles resulting from accidents. The Contractor will assist in assessing the extent of mechanical damage associated with vehicle accidents. This will be coordinated through Fleet Management. Preparation of estimates will be charged as contract costs if done during the normal workday. Actual repairs will be covered as non-contract.

k. **Investigations:** The Contractor shall support the Government with technical investigations related to the automotive and truck fleet. Such investigations may support accidents, fire, or other issues of a technical nature. The cost of this service will be included in the contract cost.

11. Emergency Road Calls and Towing Services:

a. The Contractor shall provide emergency road call service, including towing service for vehicles in the vehicle fleet on a twenty-four (24) hour, seven days per week basis.

b. Emergency road call service is considered as repairs to vehicles and equipment that require immediate repairs to allow continued usage of equipment without having the equipment moved to the repair facility. Examples include but are not limited to tire repair or replacement, clogged fuel systems, dead batteries or no-start problems and drive-shaft problems.

c. During normal business hours, the Contractor shall have persons on call to expeditiously respond to emergency-road service calls for equipment breakdowns and the Contract response time shall be less than 60 minutes within the County limits. After normal business hours, the Contractor shall have persons on call to handle emergency-road service calls for equipment breakdowns, with a Contract response time of no more than 90 minutes within the County limits.

d. The Contractor will ensure that repair personnel are sent to equipment breakdowns to determine if repairs can be made on-site or it towing services are required to deliver equipment to the repair facility. The on-site technician will carry a compliment of tools and repair parts necessary to eliminate excessive downtime or repeated trips to the repair facility.

e. The Contractor will have a minimum of one mechanic selected daily as the emergency-road-service person at both the Broad Street Shop and Tobacco Road repair facilities.

f. The Contractor will ensure that no more than two service personnel are out of a repair facility at any one time for emergency-road services.

g. The Contractor may select to utilize out-source repair vendors to assist in expediting the emergency-road-service calls, but the Contractor must ensure the Contract response times remain in effect. Failure of the Contractor to ensure that the response times of out-source repair venders meet Agreement requirements shall be considered as a Contract discrepancy.

h. The Contractor will include in the Contract Cost the emergency road call services inside the Augusta's defined support area. The Support area for Augusta will be within a 50-mile radius of the Broad Street repair facility. The Contractor will assist Augusta in emergency-road-service calls for "outside the support area" problems by arranging maintenance and/or towing services.

i. Fleet Management and the Contractor will review the "outside the support area" changes and determine appropriate reimbursements as non-contract expenses.

12. Towing:

a. The Contractor shall tow any Augusta owned or leased equipment requiring this service, regardless of whether or not the cause is a repair, tire service or other breakdown incident, regardless of location.

b. Accident towing is the responsibility of the Risk Management Department and should be charged as non-contract. It will not be included as part of the Contract cost.

c. The Contractor will include, as a Contract expense, towing for equipment that is six (6) years old or newer. The "in service" date entered in FASTER will be the date used for determination of Contract or Non-Contract.

d. It will also include any towing associated with comeback repair.

e. Exceptions to the "6 year rule" include: confiscated vehicles added to the fleet, used vehicles added to the fleet. These vehicles will be charged as non-contract.

f. If the Contractor selects to perform this service with an outsource vendor, the related service will be awarded annually to a single point-of – contact dispatch provider. The Contractor will make bid documents for towing services available to the Fleet Manger and the Augusta Procurement Director.

g. The Contractor may utilize multiple vendors for the service, but only one telephone number can be given out regardless of which vendor provides the towing service.

h. The Contractor will provide the towing service number to all user departments and the Fleet Manager. The Contractor is responsible for notifying using departments and the Fleet Manager of any changes to the towing service number.

i. The acceptable response time during normal business hour is 60 minutes and no more than 90 minutes for all other times.

j. Equipment users shall be authorized to make contact for towing services to transport the equipment to the repair facility, if in the best interest of Augusta.

k. The fleet MIS system shall track vehicle emergency road call breakdowns and towing expenses for informational retrieval by Fleet Management

Section Three

PERSONNEL and SUPPORT LOGISTICS

1. **Government Personnel:** The Central Services Department Director and the Fleet Manager will have full authority to supervise the Contractor's performance in daily operations of the contract and shall provide direction to the Contractor in areas relating to policy, information and procedural requirements. The Fleet manager is not authorized to make any changes in the terms and conditions of the contract without the approval of the Government Administrator and the Augusta Commission, as appropriate. The Fleet Manager shall operate in the capacity as Contract manager for Augusta.

In the absence of the Fleet Manager, for periods of vacation, short illness' or temporary periods of authorized absences; the administrative assistant shall have temporary authority as the Contract Manager.

2. **Contractor Personnel:** The Contractor will designate whom the following Contractor personnel will be when the proposals are submitted and must designate the personnel prior to award of the contract.

   a. **Manager:** The Contractor shall provide a General Manager or Project Manager who will liaise with the Fleet Manager and have full authority to act for the Contractor on all contract matters relating to the daily operation of the contract.

   b The General Manager shall have a minimum of seven years' experience in the management of fleet maintenance and services. The manager must be able to speak, read, write and understand English.

   c. The General Manager shall be available through the normal 8 hour work day, Monday through Friday, except Government recognized holidays. The Fleet Manager will be notified in writing (or email notification) when the Contract Manager will not be in the Augusta area and available to respond to the Government needs.

   d. Any changes in the General Manager shall be subject to advance written approval by the Fleet Manager. Such approval shall not be withheld unreasonably or for an unreasonable length of time.

3. **Management Staff:** The Contractor shall provide a professional management staff with the proper skills and training in providing the required fleet maintenance and management services. Management staff includes shop supervisors, and parts/supply supervisor.

4. **Maintenance Staff:** Contractor shall provide maintenance staff personnel with the proper skill and training in providing the required fleet maintenance services.

   a. The Contractor is responsible to ensure their staff is kept abreast of the latest technology. The Contractor will provide a budgeted training schedule for all eligible maintenance personnel in the Contract cost.

   b. The Contractor is required to maintain ASE certifications for maintenance personnel in the following categories:
      1. Automotive Repair
      2. Air Conditioning Recovery and Recycling
      3. Advanced Engine performance
      4. Medium and Heavy Truck Repair
      5. Medium and Heavy Truck Electrical Diesel Engine performance
      6. Alternative Fuel
      7. Parts Specialist
      8. EVT Certification

5. **Staffing Provisions:** The Contractor shall have the responsibility for selecting personnel to perform the services to be provided here under.

   a. No applicant with a record of arrests involving a crime of moral turpitude will be hired within two years of the date of that arrest, unless such person is found not guilty of such offense.

b. No applicant, with a felony conviction will be hired to provide repair services to public safety equipment.

c. The Contractor is responsible for conducting appropriate background checks on prospective new employees and will describe their process in the proposal. If an outside agency is used the agency must be identified in the discussion.

d. All Contractor employees will have a valid driver's license, with proper endorsements, in performance of their job responsibilities. The Contractor will review driver's license semi-annually and dismiss any employee who fails to have a valid driver's license (loss of job qualification). Fleet Management will be provided a memorandum stating that an inspection of employee's licenses has been conducted in accordance with the "Maintenance Agreement" and that all employees are in compliance or not in compliance. When not in compliance a statement of intent to comply and actions to be taken to comply will be made and sent to the Fleet Manager.

e. The Contractor is responsible for performance evaluations of its employees.

f. The Contractor is responsible for providing employees pay for work performed, every week, two weeks or bi-monthly.

g In the event that the Contractor has open Contract position(s) for a period in excess of 45 days the Contractor will credit the Contract cost of the open position(s) from the monthly fixed-Contract invoice(s) until the position(s) is/are filled. The following base rate wage will be used for the purpose of this provision:

Automotive: Tech 1 = $14.25; Tech 2 = $12.25; Tech 3 = 9.25

Medium/Heavy: Tech 1 = $15.25, Tech 2 = 13.25, Tech 3 = 10.25

h. Contractor Benefits: The Contractor shall have sole responsibility for determining and providing health and other related benefits for the Contractor employees, however they must comply with the provisions as set forth in the Request for Proposal and the Contractors response to the Request.

6. **Disciplinary Actions:** Where in the case that Fleet Management finds actions by Contractor personnel affecting contract performance, the Contractor shall take disciplinary action on employees as appropriate. The contractor shall be responsible for removing and replacing any Contractor employee performing services hereunder, when reasonably requested to do so by the Government. In these cases the request by the Government will be in writing stating the cause for such request.

7. **Uniforms and Professional Attire:** The Contractor will ensure their employees maintain a professional appearance at all times while performing the requirements of the contract. Technicians, shop helpers/porters, laborers, janitors, Service Coordinators/writers, QA representative(s), Fleet Operations Specialist, Shop Supervisors shall be in appropriate uniforms. This shall be included as part of the contract cost. Administrative personnel and parts personnel shall be dressed in appropriate dress as determined by the contractor policy. The contractor is also responsible for appropriate safety foot ware and other safety apparel (eye protection, hearing protection, safety vests). Uniformed shirts should include the Contractor's logo, first name of the technician and certification patches as appropriate. Proposals shall address the proposer's intent regarding attire. The cost of such uniformed apparel and safety apparel may be included in the contract cost.

8. **Facilities:** Notwithstanding anything to the contrary contained herein, the Contractor agrees to indemnify, defend and save harmless the Augusta Commission and its employees, agents and servants from any claim, cause of action, or lawsuit brought against the Government or Elected Officials, or its employees, agents and servants as a result of the possession, operation, handling or

transportation of the repair facilities or the equipment contained therein; except to the extent that such claim, cause of action, or lawsuit arises from or in connection with the negligence or willful misconduct of the Commission, its employees, agents or servants.

a. **Location:** The following is a listing of the repair facilities by location and type of work performed at each site: (This Government will not entertain recommendations to consolidate any of the facilities)

   1. 1568 Broad Street Repair Facility: - 23 bays with 8 lifts for automobiles, light truck – 1 ton and under, motorcycle repair and lift, firefighting equipment and small gas-powered equipment. Includes parts room, parts storage area, and administrative offices.

   2. 2316 Tobacco Road Repair Facility: 10 bays no lifts, services all trucks over 1 ton, off-road/construction equipment, trailers and tractor mounted grass cutting equipment. Includes parts room and administrative offices. Provides the full range of service repairs.

b. **Facilities Use:** The facilities will remain the property of the Government. The Government will lease to the Contractor the maintenance facilities listed above for the charge of $1.00 per year. The Contractor's first fixed-contract monthly invoice each year will show a credit for the lease cost. The Contractor shall not use the facilities, for work on vehicles or equipment not owned or lease by the Government unless otherwise directed in writing by the Government's Fleet Manager. The Contractor shall not use the facilities, which shall in any way conflict with any Federal, State or local law, statute, ordinance, rule, order, regulation or requirement, now in force or which may hereafter be enacted or promulgated. The facilities include compressors, lifts, welders, and specialty garage maintenance tools located at each facility. Augusta will be responsible for annual lift inspections and repairs to specialty tools/machines as required.

c. **Facilities Inspection:** Between the date of contract execution and the date that the Contractor actually takes over the facilities, a complete physical inventory of the office and shop equipment will be taken by representatives of the Contractor and Government to determine what the Contractor shall be responsible for. The physical facilities, office and shop equipment provided for the term of the Contract will become the responsibility of the Contractor and will be returned to the Government upon completion of the Contract in the same condition they were provided to the Contractor, except for normal wear and tear. The Contractor hereby acknowledges that the Government has made no representations or warranties regarding the condition of the facilities. The Contractor will accept the facilities in their present state and condition and waives any and all demand upon the government for alterations, repairs or improvements thereof, excepting those items which do not meet local, State or Federal laws. Any cost to improve the facilities to meet said standards will be the responsibility of the Government. There are no known concerns or liabilities currently existing with the waste oil tanks at the repair facilities. The Contractor is responsible for conducting a monthly facilities inspection using a format acceptable to the Fleet Manager.

   a. **Facilities Maintenance:** The physical facilities will be maintained by the Government unless such repairs are caused in part or whole by an act, neglect, fault or omission of the Contractor, its agents, servants or employees. If defects, degraded conditions or needed repairs in any facility are found, the Contractor will notify Fleet Management for the execution of repairs by the Government. Facility repair work will not be included into any portion of the Contract cost. The Contractor is responsible for normal routine maintenance of facilities including: interior housekeeping, general cleaning, sweeping, mopping, dusting, disposal of accumulated waste materials and rubbish, minor plumbing (such as stopped up toilet or sink), janitorial maintenance and supplies as required to maintain a safe environment. The Government will Contract pest control services and trash removal to the solid waste facility of normal waste (dumpster). The Government will pay for the proper inspection and refilling or replacement of fire extinguishers assigned to each facility but the Contractor is responsible for the routine monthly inspections of facilities

extinguishers and coordinating with Fleet Management on technical inspections or services required.

10. **Utilities:** The Government will supply those utilities necessary and customary for the proper operation of the facilities. Each facility will include an appropriate number of telephones, computers, and printers for operations. These costs are charged directly to the Government as part of the Fleet Management operating budget and should not be included in the proposers budget proposal (exception is the copy machines). Any communications requirements used solely for corporate communications will be the responsibility of the Contractor. The Government may require a telephone usage log on long distance calls be submitted monthly to ensure compliance. The format will be determined when and if a log is directed. The Contractor is responsible for implementing a utilities conservation plan for each of the facilities.

11. **Tools:** Fleet Management maintains an annual budget for the replacement or addition of necessary tools and equipment as vehicle and equipment technological changes develop. The Contractor will assist the fleet manager in determining the tools required in the performance of maintenance mission and will submit requests for consideration. Specialty tools of less than $100.00 each will be the responsibility of the Contractor to purchase. The Contractor's decision to not purchase a specialty tool and the resulting affect could be cause for a Contract Discrepancy if the resulting affect caused a delay in the repairs. None of the Mechanical tools associated as "tools of the trade" for each type of mechanic assigned at the repair facility will be provided by the Government.

12. **Radios:** Portable radios and two "base stations" will be provided by the Government for use by the Contractor to facilitate communications with Departments. The cost of radio operations (air time) will be the responsibility of the Government. The Contractor is responsible for the security and accountability of those radios assigned to the facilities.

13. **Vehicles:** A limited number of vehicles and specialty equipment, such as forklifts, and work trucks will be supplied by the Government. The Fleet Manager will have the authority to provide or remove equipment based on the needs and availability of such vehicles. Fuel for these vehicles will be provided by the Government and will not be included in the proposers Contract cost proposal. The Government disclaims any and all express or implied warranties on the equipment, disclaims any implied warranty of merchantability of the equipment or the warranty of fitness for a particular purpose, and the Contractor agrees that the equipment is "as is" and "with all faults". Repairs to vehicles will be incorporated into the normal repair operations of the Augusta Fleet. All PM services will be considered Contract repairs. All labor for repairs on vehicles and equipment used by the Contractor will be covered under Contract Cost. Parts for repairs shall be charged as Contract/Non-Contract as appropriate to the classifications identified herein. The Fleet Manager shall approve or disapprove any repairs classified as Non-Contract. The Contractor shall assume the risk of loss, damage, or destruction of any Government furnished vehicles, equipment and tools. Liability for the injury, disability and/or death of workers and other persons caused by the operation, handling or transportation of the equipment during the Contract period shall be the sole responsibility of the Contractor.

14. **Damages:** The Contractor shall be responsible for all damages to persons and/or property that occur as a result of the contractor's fault or negligence in connection with the performance of this contract.

15. **Permits:** Contractor shall, without additional expense to the Government, obtain all local, State and Federal business and other licenses and permits required for the performance of work. A copy of all licenses and permits will be displayed at each shop location and copies will be given to Fleet Management. The Contractor shall be required to maintain a Business License from the Augusta Licensing Department.

16. Security:

a. **General:** The Contractor shall ensure the security and confidentiality of all facilities and documents provide by the Government and all such measures must be approved by the government. All reports and records including maintenance records are to be considered property and may only be used for the conduct of Government and Contractor business.

b. **Facilities:** The Contractor may change the locks on any or all the maintenance facilities and equipment leased for the duration of the contract. The Contractor shall provide properly tagged, duplicate keys to the Government Fleet Manager immediately after any change is made. The Contractor is responsible for the implementation of proper security measures, policies and practices associated with building security.

c. **Vehicles and Equipment**: The Contractor is responsible for vehicles and equipment accepted for service at each of the repair facilities. Although all facilities are fenced access is not restricted at this time. The Contractor shall take reasonable precautions to ensure the safety and security of vehicles and equipment under their care. Light vehicles serviced at the Broad Street Shop that have had windows kicked out or are missing for various reasons should be moved inside at the end of the work day and secured to prevent theft, vandalism or weather damage to the interior. It is recommended the Contractor implement a policy of quick "walk around" inspection of all vehicle being brought into the repair facility to identity any damage or missing items and report those observations to the owner department or Fleet Manager.

d. **Found Damage:** The Contractor shall report any found damage to vehicles or equipment that is not associated with the normal operation of such vehicles or equipment if it appears the damage is new. This will be reported to Risk Management and Fleet Management. Repairs should be delayed until the vehicle or equipment has been inspected by Risk Management or Fleet Management.

17. **Hours of Service:** The Contractor will normally operate an 8 hour day, 40 hours per week from 7:00 A.M. until 4:00 P.M., Monday through Friday. Holidays shall coincide with those of Augusta, usually 11 days per year . These are announced at the beginning of each new year. Repair facilities may be required or may request to adjust their hours to better support Government Departments that may adjust for seasonal or climatic changes. The Contractor normally will have discretion over shop and shift hours as long as vehicle availability remains at acceptable levels and the Fleet Manager concurs. Any changes in shop hours will be announced prior to the change. Vehicles and equipment brought to the repair facility by user departments will be accepted for PM or repair services throughout the normal work hours, including Contractor's break or lunch periods. The Contractor is expected to provide quick fix repairs at any time during the workday including lunch.

18. Emergency Support:

a. In addition to normal hours of operation and upon one-hour notification during normal business hours, the Contractor shall repair equipment seven days a week, 24 hours a day at any location designated by the Fleet Manager. During non-business hours, the Contractor shall repair emergency vehicles as expeditiously as possible. At no time shall the period between notification and commencement of repair exceed two hours. The Contractor shall provide the Fleet Manager with an after-hours emergency contact telephone number for use in emergency situations. In most cases, emergency support during non-business hours is a non-Contract (directed) work. The Contractor will inform Fleet Management the next working day, of all after-hours emergency support accomplished for cost charge determination.

b. The Contractor shall mobilize the shop and provide repair and maintenance services for the duration of any Government Recognized emergency. Emergencies include, but are not limited to major fires, floods, earthquakes, civil disturbances and disaster emergencies. Such service shall include adequate staffing to ensure continued vehicle operations at a level determined by the

Government. Should an emergency require performance of services beyond the capability of the Contractor, the Government may perform or supplement performance of contract services with Government personnel or non-contract vendors. Such performance shall not constitute a breach of the contract by the Government. Such work conducted outside the normal work day will be charged as non-contract.

19. **Service Interruptions:** Should services be interrupted or reduced during the term of the contract by the Contractor employees' work stoppages or slowdowns, the Contractor shall continue services by whatever means available, and shall incur all reasonable related costs associated with the alternate system. If the contractor fails to supply an alternate system, the Government shall have the right to continue services by whatever means available and charge any reasonable costs associated with the alternate system to the Contractor. Further, such interruptions, directly attributable to failures, omissions, or conduct on the part of the Contractor or the Contractor's employees shall be grounds for termination of the contract. In the event the Contractor is unable to provide the services as specified in this Agreement because of any act of God, civil disturbance, fire, riot, war, terrorism, picketing, strike, labor dispute, labor shortages, governmental action or any other condition or cause beyond the Contractor's control, Augusta shall excuse the Contractor from performance under this Agreement.

20. **Repair of Privately Owned Vehicles and Equipment:** No use of the Government facilities, land, specialty equipment or tools may be used to effect repairs on any privately-owned vehicle or equipment with the exception of the Contractor owned equipment or vehicles supporting this contact. Any repairs performed on Contractor provided equipment shall be at the risk of the Contractor and the Government shall be held harmless.

21. **Safety:** The Contractor shall be responsible for implementing a comprehensive safety program for their employees to comply with local, State or Federal guidelines affecting job safety. Proposers should address their intent or outline their policies/program as part of their proposal. The selected Contractor will provide a copy of written programs, policies or directives to Fleet Management.

22. **Equal Opportunity Compliance:** The Augusta Commission and the Contractor are subject to the requirements of Executive Order 11246, Section 202, Equal Opportunity; Executive Order 11625; Section 402 of the Vietnam Era Veterans Readjustment Act of 1972, as amended; Section 503 of the Rehabilitation Act of 1973, as amended; and related rules and regulations of the Department of Labor and the Office of Federal Contract Compliance Programs. Attachment J of the RFP is hereby incorporated into this Agreement by reference.

23. **Drug Free Workplace Certification:** The Augusta Commission has a zero tolerance policy on prohibited drug use and an aggressive drug testing program. Augusta complies with all State and Federal requirements for drug testing. The Contractor is required to comply with the requirements of O.C.G.A. 50-24-3 which is a certification of establishing a Drug Free Workplace. The attached certification will be required to be signed by the Contractor for each year the Agreement is in effect. The Contractor is also required to have a testing policy that complies with Federal Transit requirements as this Government receives Federal and State funds for Transit operation and must therefore comply with State and Federal drug testing requirements. Drug testing is required for pre-employment, post-accident, random, and probable cause. The Contractors program must be published in writing and is subject to review by the Government's Risk Management Department.

Section Four

REPAIR PARTS

1. **Parts Supply:**

a. **General:** The Contractor will procure and furnish all parts, materials, supplies and fluids (except fuel) required for the operation and maintenance of all vehicle and equipment of the Augusta Commission under this contract/agreement. The Contractor shall procure repair parts at its discretion, utilizing best business judgment, to provide the Government with products of the best price and highest quality and that will ensure meeting all relevant standards of performance as outlined elsewhere in this request for proposal. The use of local area venders for all such procurement is preferred, excepting any parts or specialty items that require purchase by other means and are not available in the local area.

b. **OEM Parts:** Parts installed by the Contractor shall meet or exceed the original equipment manufacturers (OEM) specification and must meet the equipment manufacturer's requirements for coverage under their equipment warranty programs. The Contractor will accept all risks and penalties due to damage and partial or complete voiding of equipment warranties in the use of generic components and shall hold the Government harmless. Repairs to such equipment due to the cancellation of warranties shall be the responsibility of the Contractor during the remainder of the warranty period.

c. **Parts Options:** The Contractor may propose alternative parts supply options, during the course of this agreement, such as but not limited to, consignment parts, single source suppliers, Just-In-Time purchasing, or subcontracting. The use of a supplier, located within the repair facilities can be accomplished but the Government accepts no physical or financial responsibility and shall be held harmless by the Contractor and all other parties.

d. **Taxes:** The Contractor will be required to pay all applicable taxes on parts and supplies purchased for their own use.

e. Parts Information and Documentation: The Contractor will use the appropriate modules and tabs within the CCG Systems-FASTER application to document all aspects of parts management for the Government.

2. **Inventory –General:** The Contractor will be totally responsible for parts accountability and security.

3. **Obsolete Parts:** By direction of the Fleet Manager, the Contractor will administer the disposal of all other remaining inactive, excess and obsolete parts in the Government stock. The Fleet Manager will direct the Contractor to establish a secondary inventory location in the Fleet MIS system to account for the safeguard, control and usage of such inventory until it is used or disposed.

a. **Parts Inventory:** The Contractor is responsible for maintaining an adequate "on demand" inventory to minimize downtime. These parts will be charged back to the Government on an "as used" basis, without mark up.

c. **Parts Warranty:** The Contractor will insure that tracking of replacement repair parts warranty information is managed. All repair parts placed in the inventory will have their prospective warranty information entered into the MIS system. The MIS system will alert shop management within the part being replaced is still within its warranty period and that recovery is possible.

d. **Core Charges:** The Contractor shall have the responsibility for absorbing the cost of all core charges normally associated with replacement parts. In no case shall the MIS system charge core charges to any repair order for returnable part cores. Core charges for damaged, unusable, non-returnable parts will be listed as a separate item on repair orders.

e. **Cannibalized Parts:** The Contractor shall have the option to request from Fleet Management the ability to remove parts from accident-damaged or salvaged vehicles for reuse. The removed part may be utilized on other fleet vehicles if the condition of the used part is safe and serviceable.

f. **Tires**: The Contractor will replace worn or damaged tires on vehicles with replacement equal to or exceeding the equipment manufacturer's recommendations. The Contractor will follow the manufacturer's recommendations for repairing of tires to ensure vehicle and equipment safety. The Contractor will comply with the restricted repair capability on V-Rated tires used on public safety vehicles. Tires will be replaced on automobiles and pickup trucks when 3/32 of an inch of usable tread is remaining across the entire tire crown. If any area of the tire crown is below 3/32 of usable tread or if any wear bar is showing the tire will be replaced. Any tires that are out-of-round or having flat spots will be replaced regardless of tread depth. The Contractor will comply with the requirements of the State of Georgia for tread depth applicable to vehicles requiring CDL licenses as well as tread patterns and recaps.

4. **Re-Purchase of Contractor Active Inventory:** The Government shall have the option to purchase, at cost from the Contractor the entire demand supported repair parts in inventory upon completion or termination of the Contract. If the government chooses to purchase any parts that the Government considers valid, demand-supported repair parts, a joint complete physical inventory will be taken by representative of the government and the Contractor. Payment for the acquisition of the Contractor's demand supported inventory will be within one hundred and eighty (180) working days of contract expiration.

Section Five

Reports, Records and Billing

1. **Information Systems Requirements:** The Contractor will be required to use Augusta's existing fleet management information system, CCG System – FASTER. The Contractor will follow all Augusta policies and procedures for maintenance and use of the system. The Contractor will operate the system in real time mode with work orders opened immediately upon receipt of an Augusta vehicle or equipment and timely input of all labor, parts, sublet and other data relating to the vehicle or its repair. FASTER Update seminars are normally scheduled each year and the Contractor is required to have one representative that is the "subject matter expert" (SME) in the use of the system. To maintain continuity of information and training the Contractor should budget for the attendance of the SME normally held in or around Norfolk, VA.

2. **Files**: The Contractor shall maintain a complete file of service manuals, service and technical bulletins, lubrication charts and other information needed to properly service and repair the fleet. A hard copy history folder shall be maintained by the Contractor for each vehicle. The file will contain, in chronological order, the last repair order in front and contain all work orders generated on the vehicle for a period of two years. These files are subject to review at any time by any authorized agent of the Government.

3. **Records Management**: The Contractor shall use the CCG FASTER software, a permanent, detailed automated record system that provides a basis for optimum fleet management and provides detailed maintenance and operating information for the Government. The Government Information Technology Department is responsible for maintenance and security of the system. Fleet Management budgets for the licenses each year. This system has been used since February 2000 and has been found to be acceptable for continued Government use. It is capable of supporting all reports, records, and supporting documentation or invoicing.

4. **Reports**:

   a. **Monthly Management Report**: The Contractor shall provide a monthly management report (with the monthly invoice) to be delivered to the Fleet Manager by the 10th working day of each month for the previous month (consistent with billing cutoff date). The report shall include a currently accepted format with the following information:

- Number of shop orders
- Number of road service calls
- Number of vehicle PM's scheduled and completed
- Number of work orders processed, by facility
- Delinquent PM's
- Number of re-work repairs
- Number of Manufacturer Recalls Performed
- Warranty recovery/deductible
- Number of Service Calls
- Non Contract/Contract repairs by class and cost
- Inventory by shop
- Monthly staffing report

b. **Daily Reports:** Daily reports will be limited to the Daily Backlog Report and Daily parts status report, the format is already devised and will be continued. The Contractor may provide recommendations for changes to the formatting of any report to the Fleet Manager for consideration.

c. **Inspection Records:** The Contractor must be able to provide to the Government a record of all inspections conducted by the Contractor and the corrective action taken.

d. **Contract Discrepancy Report:** Verbal notification of a Contract discrepancy will be made to the Contract Manager or designee as soon as possible whenever a Contract discrepancy is identified. The problem shall be immediately resolved by the Contract Manager. The Fleet Manager shall determine whether a formal Contract Discrepancy Report shall be issued. If a Contract Discrepancy Report is issued, it will be mailed or hand delivered to the Contract Manager. The Contract Manager is require to respond in writing to the Fleet Manager with the time period specified, acknowledging the reported discrepancy or presenting contrary evidence, and presenting a program for immediate correction of all failures of performance identified in the Contract Discrepancy Report.

5. **Monthly Billing**: Payment to the Contractor will be made monthly in arrears at the rates specified in the Contract provided that the Contractor is not in default under any provision(s) of the Agreement, and an accurate statement of payment due is submitted, with documentation attached supporting the statement of payment due. The format currently used is attached as Attachment N. Backup is generated from FASTER reports. Invoices shall be paid completely by the Augusta Commission and the processing of payment will be within 30 working days after receipt of the Contractor's billing and the payment authorization by the Fleet Manager. Payment authorization will be delayed pending receipt of all required billing information. The Contractor shall be liable for payment on Thirty days written notice of any liquidated damages or other offset authorized by the agreement not deducted from any payment made by the Government to the Contractor. The Government may delay the last payment due hereunder until six (6) months after termination of this Contract.

6. **Operating Statement:** The Contractor's Operating Statement for each month will be presented with the monthly billing. The operating statement will report costs of current period (billing period) and cost of year to date for the following major categories: (format is provided by Fleet Management)

a. Cost of parts: oil, tires, repair parts, batteries, charges, O/S service repair, Total

b. Payroll Expense: Salaries and wages, payroll taxes, vacation pay, payroll costs-other-Total payroll expense

c. Operating Expense: uniforms, supplies, training, travel, office expenses etc.

d. Fees: administrative fees, management fee, Total

Section Six
COSTING METHODOLOGY

1. **Cost Proposal:** The Contract cost for the initial year is **$2,788,787.35**, includes the following cost items: Personnel costs/Labor Costs (salaries, wages and benefits); Parts/supplies/outside services; Overhead expenses and Management Fees.

2. **Labor Costs:** Personnel costs will include wages, salaries, fringe benefits, payroll taxes, and mechanic and management costs.

3. **Parts/Supplies/Outside Services:** The Contractor will charge the Government for parts, supplies and outside services as the items or services are used, as reflected in the Contractor's repair orders without any markup.

4. **Over-head Expenses**: Overhead expenses will include such items as office supplies, uniforms, bonding costs, copying costs and insurance. All over-head expenses will be calculated as they are expected to incur monthly at the Contractors net cost without any markup. These Other Direct Cost charges are to be detailed in a monthly report.

5. **Administrative Costs and Management Fees:** Line items in the approved budget for administrative costs and management fees will be charged to the Government for each accounting period on a pro rata basis. These items will not be subject to documentation in the monthly invoice, but are expected to be listed separately in the proposal.

6. **Cost Incentives:** In addition to the Contractors cost and fee, the Contractor may receive 50 percent of any aggregate annual savings for the Government on the Contract cost for each fiscal year. Aggregate annual savings shall be defined as the difference between a lower twelve (12) month actual cost to the Government and the amount of the Contract cost. Aggregate costs that exceed the maximum amount of 100 percent of the operating Contract shall be borne totally by the Contractor.

7. **ADDITIONAL COSTS:** The approved budget shall include the Contract cost as adjusted in accordance with the additional cost items described herein.

8. **Capital Expenditures:** Any and all Government-approved capital expenditures of the Contractor for equipment or other capitalized items (i.e., computers, printers, engine analyzer), in connection with the services and work to be provided by the Contractor hereunder, shall not be included in the approved Contract cost, but such expenditures shall be depreciated over the terms of the Contract.

9. **Directed Work:** Government approved overtime and material cost incurred by the Contractor in performance of emergency or other directed work shall not be included in the approved Contract cost, pursuant to the terms of the Contract, unless otherwise noted herein. The Government will not approve or reimburse the Contractor for overtime charges for work included in the Contract cost.

10. **Transition Costs:** The Government will NOT approve or reimburse the Contractor for items related to transition costs. The Contractor will accept the Government's fleet "as-is".

11. **ADJUSTMENTS TO THE APPROVED BUDGET: any adjustments to the approved "fixed price" (Contract cost) will require approval by the Augusta Commission.**

12. **Unusual Costs:** The Contractor may request the Government for an adjustment to the approved budget at reasonable times based on unusual changes in the Contractor's cost of doing business. For purposes of this Section, "Unusual Changes" shall mean items not covered by this Agreement, which occur through no fault of the Contractor, the term shall not include price increases arising in the

ordinary course of business. The amount of any adjustment pursuant to this paragraph shall be determined by mutual agreement.

13. **Annual Adjustments:** The Contract base cost, approved budget, including the Contractors fee may be adjusted for any subsequent years of the Contract in accordance with the Annual Meeting. During the Annual Meeting between the Government and the Contractor, the Contractors performance will be reviewed. The Government will present a report card that includes the Government's assessment of Contractor performance in the areas of fleet maintenance, operations, cost/performance, Contract incentives, and other issues. The meeting shall also include a review of the Contractors cost of doing business. Escalation of the approved budget for the ensuing year shall not exceed the Bureau of Labor Statistics – Consumer Price Index (CPI) for all urban consumers in the Transportation Category for Atlanta, Georgia for the most current year reporting period. Changes to the Contract resulting from the annual meeting shall be documented in an Agreement Amendment, subject to approval by the Augusta Commission.

14. **Changes in Fleet Size or Mix:** The Contract cost shall be adjusted to correspond to increases or decreases of at least five (5%) of the fleet. The Contractor and Fleet Manager shall negotiate the adjusted amount and the Fleet Manager will present the request to the Augusta Commission for approval

15. **Funding:** The obligation of the Government for payment to the Contractor is limited to the availability of funds appropriated in a current fiscal period, and continuation of the Contract into a subsequent fiscal period is subject to appropriation of funds, unless authorized by law.

CONTROLING LAW

The substantive law of Georgia shall govern the validity of this Agreement, its interpretation and performance, and any other claims related to it.

VENUE

All claims disputes and other matters in question between Augusta and the Contractor arising out of or relating to this Agreement, or breach thereof, shall be decided in the Superior Court of Richmond County, Georgia. The Contractor, by executing this Agreement, specifically consents to jurisdiction and venue in Richmond County and waives any right to contest the venue in the Superior Court of Richmond County, Georgia.

IN WITNESS WHEREOF Augusta, Georgia, acting by and through the Augusta Commission and the Contractor have affixed their signatures as of the dated indicated below.

AUGUSTA, GEORGIA		FIRST VEHICLE SERVICES, INC.	
Signature		Signature	
Name:	Hardie Davis, Jr.	Name:	Steve Breeden
Title:	Mayor	Title:	Region Vice President
Date:		Date:	January 19, 2019
Attest:	Clerk of Commission	Attest:	

Administrative Services Committee Meeting
4/13/2021 1:05 PM
Brian Green

Department:

Presenter:

Caption: Request from Mr. Brian Green to appear before Administrative Committee to address homelessness impact on sanitation and safety.

Background:

Analysis:

Financial Impact:

Alternatives:

Recommendation:

Funds are Available in the Following Accounts:

REVIEWED AND APPROVED BY:

Nancy Morawski

From: Brian Green <briangreen2009@gmail.com>
Sent: Wednesday, April 7, 2021 9:49 PM
To: Nancy Morawski
Subject: [EXTERNAL] Request to appear before administrative committee to address homelessness impact on sanitation and safety.

Brian Green
7066273859

[**NOTICE:** This message originated outside of the City of Augusta's mail system -- **DO NOT CLICK** on **links**, open **attachments** or respond to **requests for information** unless you are sure the content is safe.]

Item # 3

Administrative Services Committee Meeting
4/13/2021 1:05 PM
Emergency Rental Assistance Program

Department:

Presenter: Commissioner Francine Scott/HCD

Caption: Update from Housing & Community Development Department regarding their Emergency Rental Assistance Program. **(Requested by Commissioner Francine Scott)**

Background:

Analysis:

Financial Impact:

Alternatives:

Recommendation:

Funds are Available in the Following Accounts:

REVIEWED AND APPROVED BY:

Lena Bonner

From: Commissioner Francine Scott
Sent: Wednesday, April 7, 2021 4:40 PM
To: Lena Bonner
Subject: Emergency Rental Assistance Program

Good Afternoon Ms. Bonner,

Please add the above-mentioned subject to the Administrative Service Committee Meeting Agenda.

If additional information is needed please advise.

Thank you.

Francine R. Scott, Commissioner
Commission District 9

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This e-mail contains confidential information and is intended only for the individual named. If you are not the named addressee, you should not disseminate, distribute or copy this e-mail. Please notify the sender immediately by e-mail if you have received this e-mail by mistake and delete this e-mail from your system. The City of Augusta accepts no liability for the content of this e-mail or for the consequences of any actions taken on the basis of the information provided, unless that information is subsequently confirmed in writing. Any views or opinions presented in this e-mail are solely those of the author and do not necessarily represent those of the City of Augusta. E-mail transmissions cannot be guaranteed to be secure or error-free as information could be intercepted, corrupted, lost, destroyed, arrive late or incomplete, or contain viruses. The sender therefore does not accept liability for any errors or omissions in the content of this message which arise as a result of the e-mail transmission. If verification is required, please request a hard copy version.
AED:104.1

Item # 4

Administrative Services Committee Meeting
4/13/2021 1:05 PM
HCD_ Emergency Rehabilitation Approval Request

Department: HCD

Presenter: Hawthorne Welcher, Jr. and/or HCD Staff

Caption: Motion to approve seven (7) Emergency Rehabilitation projects.

Background: The Homeowner-Occupied Emergency Rehabilitation Programs provide a mechanism for eligible homeowners to bring their home into compliance with local codes and provide safe, decent housing for lower-income individuals. The program functions through two major components: · Home Owner occupied Rehabilitation – Full rehab to include rehabbing of floors, bathrooms, counter tops, cabinets, etc… • Emergency Rehabilitation – Code items program to include only one of the following: roofing, HVAC, electrical or plumbing. The Homeowner Emergency / Rehabilitation Program is designed to bring the eligible homeowner's dwelling into compliance with applicable, locally adopted housing rehabilitation standards to reduce ongoing and future maintenance costs, promote energy efficiency, and to preserve decent affordable owner-occupied housing. Federal funding for these activities is provided to Augusta, GA through the Community Development Block Grant (CDBG) Program and the Home Investment Partnership Program (HOME). This request will provide seven (7) homeowners with funding for the following address: 1. Contractor: Legacy 4 Construction Project Address: 3628 Spanish Terrace, 30815 Amount: $8,850.00 2. Contractor: Johnny's Heating & Air Project Address: 3514 Becton Road, 30815 Amount: $4,850.00 3. Contractor: Johnny's Heating & Air Project Address: 2513 Cairo Drive, 30906 Amount: $4,900.00 4. Contractor: Curry's Home Improvement Project Address: 2243 Raleigh Drive, 30904

Cover Memo

Item # 5

Amount: $7,900.00 5. Contractor: Curry's Home Improvement
Project Address: 1536 Koger Street, 30901
Amount: $4,425.00
6. Contractor: Curry's Home Improvement Project Address: 126 E. Taylor Street, 30901
Amount: $6,725.00 7. Contractor: Curry's Home Improvement Project Address: 708 Hall Street, 30901
Amount: $4,100.00

Analysis: The approval of this request will allow seven (7) homeowners to obtain compliant, decent, and safe housing.

Financial Impact: The City receives funding from the US Housing and Urban Development Department (HUD) on an annual basis. Total amount requested - $ 41,750.00 .

Alternatives: Do not approve HCD's request

Recommendation: Motion to approve seven (7) Emergency Rehabilitation projects.

Funds are Available in the Following Accounts: U.S. Department of Housing and Urban Development (HUD) Funds: a) CDBG-221073211

REVIEWED AND APPROVED BY:

Finance.
Law.
Administrator.
Clerk of Commission

Administrative Services Committee Meeting
4/13/2021 1:05 PM
HCD_ Homebuyer Subsidy Program Request

Department: HCD

Presenter: Hawthorne Welcher, Jr. and/or HCD Staff

Caption: Motion to approve Housing and Community Development Department's (HCD's) request to provide HOME funding to assist one (1) low to moderate income homebuyer with gap financing, down payment and closing cost to purchase a home though the Homebuyer Subsidy Program.

Background: The City of Augusta's Home Subsidy Program is a loan in the form of a second mortgage. This financial assistance is combined with a primary loan (first mortgage loan) from a participating lending institution and enables a qualified first-time home buyer to become a homeowner. The buyer must be a first-time home buyer and the home must become the buyer's primary residence. The program is funded by The Department of Housing and Urban Development (HUD) and administered by The City of Augusta's Housing and Community Development Department (HCD). The program promotes neighborhood stability by assisting with the gap financing toward the purchase price and closing costs for homes located within the city limits of Augusta and in conjunction with local Community Housing Development Organizations (CHDOs) and employees of Augusta, Georgia. One application is awaiting approval to move forward with the process of becoming a homeowner: 1. Homebuyer Subsidy – 809 Spruce St - Requesting: $25,000 Sales Price: $ 87,000.00 Applicant has a first mortgage from a lending institution but needs the Subsidy to complete the process. Once approved, Lenders will schedule closing and the applicant will then become a new homeowner in Augusta, Georgia.

Analysis: The approval of the application will enable one individual to become a homeowner and "Make the American Dream a Reality". Approval will also have a positive impact on the community by increasing the tax base in Augusta, Georgia.

Financial Impact:	The City receives funding from the US Housing and Urban Development Department on an annual basis. This approval would be for the amount of $25,000.00.
Alternatives:	Do not approve Homebuyer Subsidy's Agreement.
Recommendation:	Motion to approve Housing and Community Development Department's (HCD's) request to provide HOME funding to assist one (1) low to moderate income homebuyer with gap financing, down payment and closing cost to purchase a home though the Homebuyer Subsidy Program.
Funds are Available in the Following Accounts:	Housing and Urban Development (HUD) Funds: HOME Investment Partnership Grant (HOME) funds. 221073212-5225110

REVIEWED AND APPROVED BY:

Finance.
Law.
Administrator.
Clerk of Commission

HOME PROGRAM
HOMEBUYER WRITTEN AGREEMENT

NOTICE TO HOMEBUYER: This AGREEMENT contains a number of requirements you must fulfill in exchange for the federal assistance you are receiving through the Home Investment Partnerships Program (HOME Program). Be sure to read each paragraph carefully and ask questions regarding any sections you do not fully understand. This AGREEMENT will be enforced by a forgivable loan and mortgage as set forth below. You should be sure that you thoroughly understand these documents before you sign them.

THIS AGREEMENT, made and entered into this ____ day of **_____, 2021** by and between _____hereinafter referred to as "BORROWER," and **AUGUSTA HOUSING & COMMUNITY DEVLOPMENT** having its principal office at **510 Fenwick, Augusta, Georgia 30901**, hereinafter referred to as "LENDER."

WHEREAS, on _____, the Lender agreed to provide to the Borrower financial assistance to be used in pursuit of the purchase of certain real property hereafter described: **Map Parcel #_____**and **_____.**

WHEREAS, a percentage of said financial assistance was provided in the form of a Forgivable Loan, hereinafter referred to as a "LOAN," with said Loan being in the amount of **Twenty-Five thousand dollars 00/100 ($25,000.00)** subject to the condition that the Borrower executes this Agreement.

WHEREAS, the Forgiveness Loan is funded by the U.S. Department of Housing and Urban Development ("hereafter HUD") via the HOME Investment Partnership Program (hereafter "HOME Program"), and restrictions apply to the Borrower when participating in the City of Augusta's Forgiveness Loan Program.

NOW THEREFORE, in consideration of the said Loan and in accordance with the provisions of State of Georgia Statues, the parties do hereby agree as follows:

The Borrower covenants and agrees with the Lender to adhere to the following HOME Program Restrictions imposed on them for the federal assistance provided:

Affordability Period

You must comply with the HOME Program's period of affordability. The period of affordability for the home will be 10 years, based on the amount of the direct subsidy to the HOMEBUYER. During this 10 year period, the HOMEBUYER must maintain the home as his/her **principal place of residence** at all times. During this time the recapture restriction is effective and requires all HOME funds that were provided for the purchase of the home to be repaid to the City, including principal,

interest, late fees, and other charges, if you do not occupy the property as your principal residence or if you sell or transfer the property.

Maximum Sales Price

The property may not have a purchase price for the type of single family housing that exceeds 95% of the median purchase price for the area. It has been verified that the purchase price of the housing does not exceed 95 percent (95%) of the median purchase price of homes for the area, as set forth in 24 CFR Part 92.254(a).

The maximum purchase price is as follows for the Augusta Richmond County GA:

Unit #	FHA Limits Pre-Economic Stimulus Act- 2020	
	Existing Homes	New Homes
1 Unit	$ 157,000	$ 238,000
2 Unit	$ 201,000	$ 304,000
3 Unit	$ 243,000	$ 368,000
4 Unit	$ 301,000	$ 456,000
Unadjusted Median Value	$ 164,900	$ 250,000

Appraised property value

The AWARDEE certifies that a certified property appraiser has appraised the property that is the subject of this AGREEMENT at a value of $_____.

Principal residence requirement

This agreement shall remain in force throughout the affordability period as long as the home remains the principal residence of the HOMEBUYER. Should the HOMEBUYER not maintain the home as his/her principal residence, or rent or sell the residence to another party, the HOMEBUYER will be in breach of this agreement and will be required to repay the amount awarded, as of the day the home is no longer the principal place of residence of the HOMEBUYER. If the home is sold to another party, the liability of the HOMEBUYER will be limited to the amount of the net proceeds of the sale as set forth below.

_____*Buyer Initials*

Recapture Agreement

This is a mechanism to recapture all or a portion of the direct HOME subsidy if the HOME recipient decide to sell the house within the affordability period at whatever price the market will bear. The recaptured funds will come from the net proceeds if available. Any such repayment as required shall be made to the Lender no later than thirty (30) days following the action that require the repayment.

Obligation of Repayment

As security of Borrower's obligation of repayment, and subject to the terms and conditions of this Agreement, the Borrower grants, and the Lender shall and hereby does have, a lien on the real estate hereinafter described in the full amount necessary to satisfy said repayment obligation and the cost, including reasonable attorney's fees, of collecting the same. The real estate subject to said lien is legally described as:

> **ALL THAT LOT OR PARCEL OF LAND,** situated, lying and being in the City of Augusta, Richmond County, Georgia bounded North by _____. South by _____, East by _____ and West by _____. Parcel # _____ Property recorded as _____,

Promptly after the date of any sale, transfer or other conveyance of the above describe property, or in the event of a sale by contract for deed, at least ten (10) days prior to the date of such sale; or if the property shall cease to be the Borrower's **principal place of residency**, the Borrower or his/her heirs, executors, or representatives shall give the lender notice thereof.

In the event the Borrower or his/her heirs, executors, or representatives shall fail or refuse to make a required payment within said limited period, the Lender may, with or without notice to the Borrower, foreclose said lien in the same manner as an action of the foreclosure or mortgages upon said real estate, as provided by State Statue.

Ownership of Property

You must hold fee simple title to the property purchased with HOME funds for the duration of your Forgiveness Loan.

Use of HOME funds

The HOMEBUYER agrees that the HOME assistance will be used to lower the cost of the home by providing down payment assistance. This will reduce the sales price of the home to the HOMEBUYER and reduce the total amount the HOMEBUYER will be required to borrow in order to purchase the home.

_____*Buyer Initials*

Household Income

You must be an eligible household through the time of filing a loan application with the City or other lender to the escrow closing of the purchase transaction. Income eligibility means that your annual gross household income, adjusted for household size does not exceed eighty percent (80%) of the Augusta-Aiken median income, as established by HUD.

Insurance requirement

The HOMEBUYER must at all times during the duration of this AGREEMENT maintain a valid and current insurance policy on the home for the current appraised or assessed value of the home. Failure to maintain a valid and current insurance policy will be considered a breach of this AGREEMENT, and the AWARDEE will have the right to foreclose on its mortgage lien if necessary to protect the HOME Program investment.

Property standards

Pursuant to HOME Program rules, the property that is the subject of this AGREEMENT must meet all State and local housing quality standards and code requirements. If no such standards or codes apply, the property must at a minimum meet the HUD Section 8 Housing Quality Standards/Uniform Physical Condition Standards.

Termination Clause

In the event of foreclosure or deed in lieu of foreclosure of Prior Security Deed, any provisions herein or any provisions in any other collateral agreement restricting the use of the Property to low or moderate-income households or otherwise restricting the Borrower's ability to sell the Property shall have no further force or effect. Any person (including his successors or assigns) receiving title to the Property through a foreclosure or deed in lieu of foreclosure of a Prior Security Deed shall receive title to the Property free and clear from such restriction.

Further, if any Senior Lien Holder acquires title to the Property pursuant to a deed in lieu of foreclosure, the lien of this Security Instrument shall automatically terminate upon the Senior Lien Holder's acquisition of title, provided that (i) the Lender has been given written notice of a default under the Prior Security Deed and (ii) the Lender shall not have curved the default under the Prior Security Deed within the 30-day notice sent to the Lender."

This Agreement shall run with the aforementioned real estate and shall inure to the benefit of and be binding upon the parties hereto and their respective heirs, executors, representatives, successors and assigns.

If at any time that the City realizes that you have falsified any documentation or information, you may be required by law to pay the full amount of subsidy provided.

_____*Buyer Initials*

Post Purchase Requirement

Homeowner must attend a Post Homeownership Counseling class and submit a certificate of completion to AHCD within the first two years of purchasing the house. AHCD will not release the lien on the property until this requirement has been met.

_____*Buyer Initials*

IN WITNESS WHEREOF, the Borrower has executed this Forgiveness Loan Repayment Agreement.

_____ Date_____
HOMEBUYER SIGNATURE

Attest:

Subscribed and sworn to before me _____, 20____.

My Commission Expires _____, 20____.

_____
Notary Signature

IN WITNESS WHEREOF, the parties have set their hands and seals as of the date first written above:

ATTEST: AUGUSTA, GEORGIA
(The City)

Approved as to form: _____ Date:_____
Augusta, GA Law Department

By: _____ Date: _____
Hardie Davis
As Mayor

By: _____ Date: _____
Odie Donald II
Administrator

By: _____ Date:_____
Hawthorne Welcher, Jr.
As Director, HCD

SEAL

_____
Lena Bonner
As its Clerk

Administrative Services Committee Meeting
4/13/2021 1:05 PM
Minutes

Department:

Presenter:

Caption: Motion to approve the minutes of the Administrative Services Committee held on March 9, 2021.

Background:

Analysis:

Financial Impact:

Alternatives:

Recommendation:

Funds are Available in the Following Accounts:

REVIEWED AND APPROVED BY:

Cover Memo

Item # 7

Augusta GEORGIA

Administrative Services Committee Meeting Virtual/Teleconference - 3/9/2021

ATTENDANCE:

Present: Hons. Hardie Davis, Jr., Mayor; Hasan, Chairman; Scott, Vice Chairman; Frantom and B. Williams, members.

ADMINISTRATIVE SERVICES

1. Award the contract to furnish and install roller shelving in the Records Retention Annex, in the amount of $81,644.50, to the Clyde Castleberry Company of Covington, GA (Bid #20-283). **Item Action:** Approved

Motions

Motion Type	Motion Text	Made By	Seconded By	Motion Result
Approve	Motion to approve. Motion Passes 4-0.	Commisioner Sean Frantom	Commissioner Bobby Williams	Passes

2. Motion to approve the purchase of two pickup trucks, at a total cost of $44,490, to Allan Vigil Ford for the Augusta Regional Airport (Bid 20-265). **Item Action:** Approved

Motions

Motion Type	Motion Text	Made By	Seconded By	Motion Result
Approve	Motion to approve. Motion Passes 4-0.	Commisioner Sean Frantom	Commissioner Bobby Williams	Passes

3. Approve the purchase of two Heavy Duty Shredders at a total of $38,365.98 to Whitaker Brothers Business Machines Inc. of Rockville, MD for the Central Services Department-Records Retention Division (Bid 21-135). **Item Action:** Approved

Motions

Motion Type	Motion Text	Made By	Seconded By	Motion Result
Approve	Motion to approve. Motion Passes 4-0.	Commisioner Sean Frantom	Commissioner Bobby Williams	Passes

4. Request approval of the Comprehensive Fleet Management Operations, Maintenance and Replacement Policy.

Item Action: Rescheduled

Motions

Motion Type	Motion Text	Made By	Seconded By	Motion Result
Defer	Motion to refer this item to the next committee meeting. Motion Passes 4-0.	Commisioner Sean Frantom	Commissioner Ben Hasan	Passes

5. Accept HCDs Motion to: a) approve the Georgia Department of Public Health (GDPH) Intergovernmental Agreement, b) accept $2,675,029.44 in HUD Program funds for program implementation, c) allow HCD to create/administer an Augusta, GA Lead Grant Hazard Reduction Program (LGHR) ~ in partnership with the Georgia Department of Public Health, d) allow HCD to hire two (2) FT staff persons to provide program implementation, and e) instruct finance department to add available funding to HCDs budget (upon receipt) for immediate use and implementation.

Item Action: Approved

Motions

Motion Type	Motion Text	Made By	Seconded By	Motion Result
Approve	Motion to approve. Motion Passes 4-0.	Commisioner Sean Frantom	Commissioner Bobby Williams	Passes

6. Motion to approve the minutes of the Administrative Services Committee held on February 23, 2021.

Item Action: Approved

Motions

Motion Type	Motion Text	Made By	Seconded By	Motion Result

Approve	Motion to approve. Motion Passes 4-0.	Commisioner Sean Frantom	Commissioner Bobby Williams	Passes

7. Update from HCD relative to Augusta's Emergency Rental Assistance Program implementation with United Way of the CSRA. **(Requested by Commissioner Ben Hasan)**

Item Action: Approved

Motions

Motion Type	Motion Text	Made By	Seconded By	Motion Result
Approve	Motion to approve receiving this item as information. Motion Passes 4-0.	Commissioner Francine Scott	Commisioner Sean Frantom	Passes

8. Update from the Law Department on proposed draft of the non-discrimination ordinance. **(Requested by Mayor Hardie Davis, Jr.)**

Item Action: None

Motions

Motion Text	Made By	Seconded By	Motion Result
It was the consensus of the committee that this item be deleted without objection.			

9. Discuss the draft of an Anti-Discrimination Ordinance prepared by the Law Department and to determine the path forward. **(Requested by Commissioner Jordan Johnson)**

Item Action: Approved

Motions

Motion Type	Motion Text	Made By	Seconded By	Motion Result
Approve	Motion to approve holding a workshop in the next 30 days on this agenda item. Mr. Hasan out. Motion Passes 3-0.	Commisioner Sean Frantom	Commissioner Bobby Williams	Passes

10.

Discuss establishing a working Committee to create a MOU for future consideration with Gold Cross EMS. **(Requested by Commissioner Ben Hasan)**

Item Action: Approved

Motions

Motion Type	Motion Text	Made By	Seconded By	Motion Result
Delete	Motion to delete this item from the agenda. Motion Passes 4-0.	Commisioner Sean Frantom	Commissioner Bobby Williams	Passes

11. FY 2020 GDOT Transportation Alternatives Planning Funding Grant Award to Study the Intersection of Wrightsboro Rd. at McCauley St. RFQ 20-232.

Item Action: Approved

Motions

Motion Type	Motion Text	Made By	Seconded By	Motion Result
	It was the consensus of the committee that this item be added to the agenda.			

Motions

Motion Type	Motion Text	Made By	Seconded By	Motion Result
Approve	Motion to approve. Motion Passes 4-0.	Commisioner Sean Frantom	Commissioner Bobby Williams	Passes

Administrative Services Committee Meeting
4/13/2021 1:05 PM
Scheduling of Commission Chamber, Conference Rooms 291,292,293

Department:

Presenter: Commissioner Sammie Sias

Caption: Motion **authorize** the Clerk of Commission Office to maintain control of and schedule use of the following rooms in the Municipal Building: **1)**The Commission Chambers **2)3)** Commission Executive Session Conference Room 293 **4)** Conference Room 292 and **5)** Conference Room 291. **(Requested by Commissioner Sammie Sias)**

Background:

Analysis:

Financial Impact:

Alternatives:

Recommendation:

Funds are Available in the Following Accounts:

REVIEWED AND APPROVED BY:

Lena Bonner

From: Commissioner Sammie Sias
Sent: Tuesday, April 6, 2021 10:33 AM
To: Lena Bonner
Cc: Nancy Morawski; Commissioner Ben Hasan; Odie Donald
Subject: Scheduling Use of Commission Rooms

Ms. Bonner,

Please put the following item on the Administrative Services Committee agenda for 13 April 2021

Motion: Authorize the Clerk of Commission maintain control of and schedule use of the following rooms in the Municipal Building.

- The Commission Chambers
- The Commission Executive Conference Rm
- Conference Room 292
- Conference Room 291

By streamlining this process into the clerk's office, we will avoid any confusion as to who is planning to or using these rooms.

Sammie L. Sias
Commissioner,
Augusta Richmond County
"Failure is not an Option"

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AED:104.1

Item # 8

Administrative Services Committee Meeting
4/13/2021 1:05 PM
Trane Investment Grade Audit

Department: Central Services Department - Facilities

Presenter: Takiyah A. Douse

Caption: Motion to accept as information the Investment Grade Audit Report and proceed with Phase 2 of the process to enter into a Performance Contract with Trane, Inc. – details and financials to follow after procurement biding. (REF 18-164)

Background: Many of Augusta, Georgia facilities and buildings are not energy efficient, in accordance with today's standards and would benefit from upgrades with more energy efficient equipment and methods available on the market today. A facility assessment, of this nature, has never been completed and information derived from this assessment would prove valuable while planning for our capital improvements of the present and future. On May 7, 2019 Trane, Inc. was approved to complete a Phase I Investment Grade facility audit on 89 Augusta, Georgia owned facilities. Phase II requires Augusta to enter into a Performance Contract, project source funding details will be returned once bids have been evaluated.

Analysis: Trane, Inc. has worked intimately in Augusta's facilities to assess our energy efficiency and equipment performance in comparison to industry standards. The recommendations provided, if implemented, will allow Augusta to capitalize on savings generated from lowered energy consumption to finance the upgrades recommended through a performance contract, while reaping the benefits of savings. 1. Proposals for the performance contract financing ($24.5M) will be obtained and returned for Commission approval. Customer Capital ($4.5M) funded through SPLOST 8. 2. Final Performance Contract, with legal review, will be presented for Commission approval.

Financial Impact: None at this time.

Alternatives:

	1. Motion to accept as information the Investment Grade Audit Report and proceed with Phase 2 of the process to enter into a Performance Contract with Trane, Inc. – details and financials to follow after procurement biding. 2. Do not accept as information; Do not proceed with Phase II
Recommendation:	Motion to accept as information the Investment Grade Audit Report and proceed with Phase 2 of the process to enter into a Performance Contract with Trane, Inc. – details and financials to follow after procurement biding.
Funds are Available in the Following Accounts:	None at this time.

REVIEWED AND APPROVED BY:

Augusta GEORGIA

TRANE®

Energy Project Investment Grade Audit

Customer Workshop Document

Synopsis of Executive Summary

Trane is pleased to provide the following Detailed Energy Audit Report for Augusta-Richmond County. Trane is an international organization with engineers and construction professionals on staff experienced in analyzing and developing comprehensive energy saving programs.

The objective of this study was to identify and quantify Energy Conservation Measures (ECMs) at occupied City-owned buildings to reduce the energy consumption. This objective was met by conducting site visits to existing facilities to determine their existing conditions and analyze existing equipment in those buildings. Trane then examined the energy use profiles of each building using actual electricity bills, natural gas bills, and water/sewer bills. Because of the size and complexity of this project, Trane used a variety of modeling strategies to calculate energy baselines and savings, including spread sheet models and Trace 700™ energy models.

After determining the buildings' baseline energy profile, Trane analyzed potential ECMs that would result in a significant energy usage reduction. The energy savings calculated for each measure are compared against the baseline model and historical consumption to validate the quantities of savings proposed. Trane then determined the financial impact of the proposed ECMs using actual utility rate structures, taking into account escalation of utility rates into the future.

Augusta-Richmond County's buildings that are included in this report comprise a total of approximately 1,328,675 ft^2 of conditioned space. The types of buildings surveyed included museums, fire stations, police stations, recreation centers, libraries, office/administrative buildings, public pools, and sports arenas.

1.2.5 Mechanical Systems

Augusta-Richmond County has many mechanical systems that are past their useful life. Trane used this audit to document, to the best of our ability, the age and condition of existing HVAC equipment in the buildings included in this audit. The mechanical equipment surveyed includes but is not limited to chillers, boilers, pumps, air handling units (AHUs), roof top units (RTUs), split systems, and package terminal units (PTACs). The maintenance costs of keeping aged equipment in serviceable condition is a primary opportunity for operational cost savings discussed in Sub-section 1.4 Major Customer Operational Benefits.

A detailed equipment list of all equipment surveyed in this audit is contained in Appendix 4.

1.2.6 Controls

Much like the mechanical systems at Augusta-Richmond County, much of the HVAC controls infrastructure is well out of date. While Augusta-Richmond County does have modern direct digital controls (DDC) systems for some of their larger buildings, there are also a number of buildings operating on older pneumatic controls. In most buildings such as libraries, recreation centers, etc., the majority of

thermostats that control HVAC equipment are standard electromechanical thermostats or non-programmable digital thermostats.

1.2.9 Utilities

The utility providers for Augusta-Richmond County are Georgia Power Company and Jefferson Energy Cooperative for electricity; Scana Energy, Constellation, Walton EMC, and Georgia Natural Gas for natural gas; and the Augusta Utilities Department for water and sewer.

The surveyed building's utilities for the Baseline Year of October 2018 through September 2019 are outlined below. This only includes buildings outlined in Table 1.1.

Electric Consumption	25,711,324 kWh
Electric Demand	6,346 kW*
Electric Cost	$2,185,728
Natural Gas Consumption	239,571 therms
Natural Gas Cost	$233,657
City EUI	94 kBtu/ft^2
City ECI	$2.04/ft^2
Total Utility Spend	$2,419,385

*Electricity demand was not provided for all locations.

The utility numbers above apply only to the surveyed buildings and do not include roadway lighting, roadway irrigation, parking deck consumption, water and sewer system consumption, etc. The values presented above for EUI and ECI only include the energy usage and associated cost for electricity and natural gas. Water consumption and cost are typically left out of this calculation.

1.3 Summary of Savings

The ECMs investigated in this technical analysis are presented in the table below. The economics associated with these ECMs are also presented. The Base Utility Rates are defined in Section 3, and a discussion regarding how the Base Utility Rates were escalated to obtain the Proposed Escalated Cost Savings in Table 2 are also contained in this section. These ECMs have been identified as potential candidates for implementation, and a detailed analyses of all of the ECMs are provided in Section 5.

Table 1: Guaranteed Utility and Cost Savings by ECM Category

ECM	Guaranteed Energy Savings				
	kWh	kW	Therms	kgal	$ Savings
Lighting Upgrades	4,161,541	6,444	-10,442	0	$434,511
Water and Sewer Conservation	0	0	47,451	16,384	$87,657
Building Envelope Improvements	743,593	612	17,703	0	$106,866
Controls Upgrades	1,817,476	297	13,885	0	$182,201
Mechanical/HVAC Upgrades	348,145	633	7762	0	$52,971
Chiller Plant Improvements	2,374,673	-89	0	0	$110,201
Boiler Plant Improvements	-2,314	-3	3647	0	$7,756
Renewable Energy Systems	331,811	0	0	0	$34,006
	9,774,925	**7,894**	**80,006**	**16,384**	**$1,016,169**

* (preliminary) Cost savings equate to an approximate 40% reduction in electric and gas utility costs

1.4 Major Customer Operational Benefits

Implementing the described measures has many benefits in addition to reducing facility energy consumption and associated cost. In most instances, maintenance costs will also be reduced due to a reduction in equipment operating hours and/or loads imposed on equipment, and installation of longer life materials. Replacing old equipment nearing the end of its useful life will also reduce maintenance costs and eliminate future replacement costs. New system designs often improve system diagnostics, detecting, and repairing problems before building occupants are aware they exist. Lighting system retrofits often improve space lighting level and HVAC measures often result in improved space comfort conditions and indoor air quality. Spaces are more pleasant to occupants, which often results in an increase in productivity. The operational savings benefits Trane identified during the Detailed Energy Audit, with input from Augusta-Richmond County personnel, are summarized below.

Table 2: Summary of Operational Savings

Operational Savings shown here are based upon past and projected expenditure data . As a direct result of the work to be performed by Trane, the Customer shall achieve *annual* operational cost savings in the amounts set forth in the table below during the Guarantee Term.

Description	A - Direct Cost Avoidance	B - Indirect Cost Avoidance	C - Capital Cost Avoidance
Annual BAS Service Savings	$19,213		
Annual Lighting Operation Savings	$70,047		
Capital Cost Avoidance			$241,649
Total	**$89,260**	**$0**	**$241,649**

A Direct Cost Avoidance: Reduction or elimination of costs or expenses in connection with existing or planned service contracts, materials, supplies, energy costs and labor expenditures. Direct cost avoidance Operational Savings may include savings achieved through a reduction in fuel and/or electricity rates ("Energy Rate Optimization Savings") by one or more of the following means:

(i) Improved rate from local electric utility company, natural gas company, or fuel company;

(ii) Direct purchase of natural gas or electricity; and/or

(iii) Bulk purchase of fuel.

B Indirect Cost Avoidance. Customer valuation, including such items are re-deployed labor resources and reduction in overhead

C Capital Cost Avoidance. Future replacement expenditures avoided as a result of new equipment installed.

Key Takeaways from Section 1:

- **The proposed project consists of LED lighting upgrades, building envelope improvement, water efficiency upgrades at Webster Detention Center, HVAC and Building Automation (controls) upgrades at approximately (25) buildings, and solar PV renewable energy**
- **Implementation of recommended ECMs (energy conservation measures) is projected to reduce ARC's buildings utilities spend by approximately 40%**
- **All costs associated with the proposed ~$24M project (debt service and Trane on-going services) are projected to be offset by the financial benefit generated by the combination of guaranteed energy savings and operational savings forecasted over an (18) year term, combined with a $4.5M Customer capital contribution.**

5. Baseline Analysis (and Energy Savings) Calculation Methodology

Trane used existing building utility data (consumption and cost) incurred during the October 2018 through September 2019 (the Baseline Period) to tune and calibrate spreadsheet and Trane Trace 700 energy models which were used to simulate baseline energy consumption. Building energy consumption was modeled again after ECMs were employed. Calculated energy savings (kWh of electricity and/or therms of natural gas) were calculated based on the difference between baseline energy consumption and ECM post retrofit energy consumption. Calculated energy savings were multiplied by a guarantee safety factor in order to obtain the value of guaranteed energy savings. Utility dollar savings values were derived based on the quantity of guaranteed energy savings multiplied by the baseline utility rate applicable to each ECM employed in a given building. These utility dollar savings were escalated throughout the course of the (18) year proposed project finance term by a utility escalation rate of 3% per annum which was used to model inflationary effects on utilities.

Key Takeaways from Section 5:

- **Energy unit savings (kWh, Therms, etc.) are guaranteed by Trane.**
- **Energy dollar savings are not guaranteed by Trane; ESCOs (energy service companies) like Trane are prohibited by federal and state law from guaranteeing energy dollar savings.**
- **The value of energy dollar savings is escalated at a fixed rate during the finance term to account for inflationary changes / increases in utility rates**

6. Energy Conservation Measure Evaluation

Trane is proposing ECMs for (89) separate facilities in this project. The ECMs, which will result in both annual energy and cost reduction, can be divided into 6 categories. These categories are:

1) Lighting Fixture and System Retrofits and Improvements
2) HVAC (Heating Ventilation and Air Conditioning) System Improvements
3) Controls (for building mechanical and electrical systems) Improvements
4) Water (domestic) Fixture Retrofits and Improvements
5) Solar PV installations
6) Building Envelope (Walls, Windows, Doors, Roof) Improvements

Details on these ECMs is presented in this section. The ECM Matrix below shows which ECMs are proposed in each building surveyed during the Detail Energy Audit. For detailed information regarding modeling methodology for these locations and ECMs, refer to Appendix 6.

Table 3: ECM Matrix

Building Name	Lighting Improvements	HVAC	Controls	Water and Sewer Conservation	PV Solar	Building Envelope
911 Emergency Services	X					X
Appleby Library	X					X
Augusta Animal Services	X					
Augusta Aquatics Center	X					X
Augusta Commons and Riverwalk	X					
Augusta Fire Department Administrative Building	X					X
Augusta Fire Department Training Center	X					
Augusta Municipal Building	X	X	X		X	X
Augusta Public Library Headquarters	X					X
Augusta-Richmond County Judicial Center	X	X	X			
Bernie Ward Community Center	X					X
Blythe Area Recreation Center	X	X	X			X
Carrie J Mays Community Life Center	X		X			X
Carrie J Mays Gymnasium	X	X	X			
Central Services	X					X
Charles B Webster Detention Center	X	X	X	X		
Diamond Lakes Library and Robert Howard Community Center	X				X	X

Building Name	Lighting Improvements	HVAC	Controls	Water and Sewer Conservation	PV Solar	Building Envelope
Doughty Community Center	X					X
Downtown Park Division		X	X			
Eastview Community Center	X		X			X
Eisenhower Athletic Complex	X					
Fire Station 1	X					X
Fire Station 4	X					X
Fire Station 5	X					X
Fire Station 6	X					X
Fire Station 7	X					X
Fire Station 8	X					X
Fire Station 9	X					
Fire Station 10	X					X
Fire Station 11	X					X
Fire Station 12	X					X
Fire Station 13	X					X
Fire Station 14						X
Fire Station 15						X
Fire Station 16	X					X
Fire Station 17	X					X
Fire Station 18	X					X
Fire Station 19	X					X
Fleming Tennis Center	X					
Friedman Branch Library	X					X
Gracewood Community Center	X	X	X			X
Henry Brigham Park Senior Center	X					X
Henry Brigham Park Swim Center	X		X			X
Information Technology	X		X			X
Jamestown Community Center	X	X	X			X

Building Name	Lighting Improvements	HVAC	Controls	Water and Sewer Conservation	PV Solar	Building Envelope
Jones Pool	X					
Julian Smith BBQ Pit	X					X
Julian Smith Casino	X					X
May Park Community Center	X	X	X			X
May Park Print Shop			X			X
McDuffie Community Center	X	X	X			X
Newman Tennis Center	X	X	X			X
Old Government House	X	X	X			X
Recreation, Parks, And Facilities Administrative Offices	X	X	X			X
Recreation, Parks, And Facilities Equipment Repair	X					
Recreation, Parks, And Facilities Maintenance Shop	X					
Recreation, Parks, And Facilities New Maintenance Shop	X		X			
Richmond County Municipal Solid Waste Landfill Main Building	X	X	X			
Richmond county Municipal Solid Waste Scale House		X	X			
Richmond County Sheriff's Office	X					X
Richmond County Sheriff's Office South Precinct	X					X
Richmond County Sheriff's Office Special Ops Precinct						X
Richmond County Sheriff's Training Center Administration Building	X					
Richmond County Sheriff's Training Center Bunk House	X		X			
Richmond County Training Center Dog Kennel	X					
Richmond County Sheriff's Training Center EVOC Training Office	X					
Richmond County Sheriff's Training Center Mess Hall	X	X	X			
Richmond County Sheriff's Training Center Myers Building	X	X	X			
Richmond County Sheriff's Training Center Training Center Shop	X					
Sand Hill Community Center	X	X	X			X
Sign Shop AED	X					
The Boathouse	X					
Traffic Engineering Street Lighting	X					

Building Name	Lighting Improvements	HVAC	Controls	Water and Sewer Conservation	PV Solar	Building Envelope
Wallace Branch Library	X					X
Warren Road Community Center	X	X	X			X
WT Johnson Center	X	X	X			X

Scope Summary Supplement – Large Buildings:

Judicial Center

- LED lighting retrofit
- New air-cooled chiller to serve weekend and off-hour cooling load
- Building HVAC system selected duct work replacement, and ventilation, dehumidification, & building pressurization improvements - ARC has previously invested a great deal of capital to remediate the problems (primarily mold and mildew) that result from high humidity and improper building pressurization; the scope of work addressed herein will serve to solve the root cause of these problems
- Trane building automation system including chiller plant optimization and full building RCx (recommissioning)
- Dynamic air filtration, bi-polar ionization, and UV-C installed as a particulate, bacteria, and virus control measure
- Trane Service and training

Municipal Building

- LED lighting retrofit
- Chiller plant renovation including (2) new chillers, pumps, and VFDs – these chillers were not replaced as part of the 2014/15 building renovation project and are approaching the end of their useful service life
- Trane building automation system including chiller plant optimization and full building RCx (recommissioning)
- Dynamic air filtration, bi-polar ionization, and UV-C installed as a particulate, bacteria, and virus control measure
- 100 kW canopy style solar PV system
- Building Envelope improvement measures
- Trane Service and training

Webster Detention Center

- LED lighting retrofit
- Chiller plant renovation including (2) new chillers, pumps, VFDs and a new cooling tower
- Trane building automation system including chiller plant optimization and full building RCx (recommissioning)
- Dynamic air filtration, bi-polar ionization, and UV-C installed as a particulate, bacteria, and virus control measure

- (11) new air handling units
- Water efficiency measures including inmate cell flush valve control system and ozone laundry
- Trane Service and training

6.1 Lighting Improvements

This measure involves converting older style lighting fixtures, such as fluorescent and incandescent, to modern LED lighting fixtures and lamps. Unless a building has been built or renovated in the past few years, it is common to find extensive use of fluorescent, metal halide, and incandescent fixtures throughout the building. These older lighting technologies are a product of their time and often remain without intentional replacement. Older lighting technologies require more wattage to produce the same amount of light as LED fixtures. This results in more electrical energy consumption for lighting systems and also a higher heat output from the lamps which raises HVAC cooling costs.

For this measure, existing fluorescent, metal halide and incandescent lighting fixtures will be replaced/retrofitted with new LED tubes, lamps, retrofit kits, and/or fixtures. This will greatly reduce the energy required to illuminate the building. Additionally, cooling systems will have to run less often to offset the heat generated by the lighting.

There are several additional benefits to LED lighting technology. LED lighting has longer burn hour life, faster on/off response time, and easier dimming capabilities compared to fluorescent and incandescent technologies. Because LED light fixtures have longer burn hour life, this will reduce the material and time cost of replacing burned out lamps. This is especially advantageous in building areas with high ceilings, such as high-bay areas, where the maintenance costs associated with lamp replacements includes renting or obtaining lifts to reach the fixtures

6.2 HVAC Scope and ECMs

As part of the scope of this project, Trane will be furnishing and installing several different HVAC system types and implementing different Energy Conservation Measures (ECMs) including those listed in the table below. Most of the new equipment and systems that will be installed serve to replace and/or to retrofit existing HVAC equipment and systems. The table below provides a listing of the ECMs which will be implemented in each building. A description of each of these ECMs is presented in the body of this section below.

Table 4: Summary of HVAC Energy Conservation Measures by Building

Building Name	Chiller/ Cooling Tower Retrofit	Variable Primary Variable Secondary Pumping CHW/HW	Re-commission Water-Side Economizer	DX Unit Retrofits	Add Condenser Water Pump VFDs	DHW Retrofit	Dynamic Air Filtration	FIM 1: AHU Replacement	FIM 2: New 60-ton Chiller	FIM 3: Bi-polar Ionization	FIM 4: Dynamic Air Filtration
Augusta Municipal Building	X	X	X		X					X	
Augusta Richmond County Judicial Center		X					X		X	X	X
Blythe Community Center				X							
Carrie J Mays Gymnasium				X							
Charles B Webster Detention Center	X	X					X	X		X	X
Downtown Park Division				X							
Gracewood Community Center				X							
Henry Brigham Park Swim Center						X					
Jamestown Community Center				X							
May Park Community Center				X							
McDuffie Woods Community Center				X							
Newman Tennis Center				X							

Building Name	Chiller/ Cooling Tower Retrofit	Variable Primary Variable Secondary Pumping CHW/HW	Re-commission Water-Side Economizer	DX Unit Retrofits	Add Condenser Water Pump VFDs	DHW Retrofit	Dynamic Air Filtration	FIM 1: AHU Replacement	FIM 2: New 60-ton Chiller	FIM 3: Bi-polar Ionization	FIM 4: Dynamic Air Filtration
Old Government House				X							
Recreation, Parks, and Facilities Administrative Offices				X							
Richmond County Municipal Solid Waste Main Building				X							
Richmond County Municipal Solid Waste Landfill Scale House				X							
Richmond County Sheriff's Training Center Mess Hall				X							
Richmond County Sheriff's Training Center Myers Building				X							
Sand Hill Community Center				X							
Warren Road Community Center				X							
WT Johnson Community Center				X							

6.2.1 Chiller / Cooling Tower Retrofit

This measure proposes replacing the existing water-cooled chillers with new, high-efficiency chillers. In some cases, new cooling towers will be installed to accompany these new chillers. The existing chillers to be removed as part of this measure are older, degraded efficiency chillers. These machines provide chilled water to coils in air handling units and fan coils to cool the building. Cooling towers provide condenser water which accepts heat rejected from a chiller and transfers it to the environment (outdoors) via evaporative cooling.

Over time, chillers lose efficiency due to fouling, which is the build-up of contaminants on the heat exchanger surfaces. Chillers also lose efficiency as they age due to corrosion and typical wear on moving parts. Additionally, the chillers being replaced are 20 years old or older and nearing the end of their useful life. Replacing them in this project will eliminate capital replacements costs in the near future.

The new chillers that are installed will provide a higher IPLV (integrated part-load value) than the existing chillers they will replace, thereby providing cooling operation energy savings. The new chillers also support variable flow through the evaporator barrels, which allows pumping systems to be converted to lower power consuming variable flow set-ups. Also, with the newer on-board controllers, Tran can employ chiller/tower optimization control

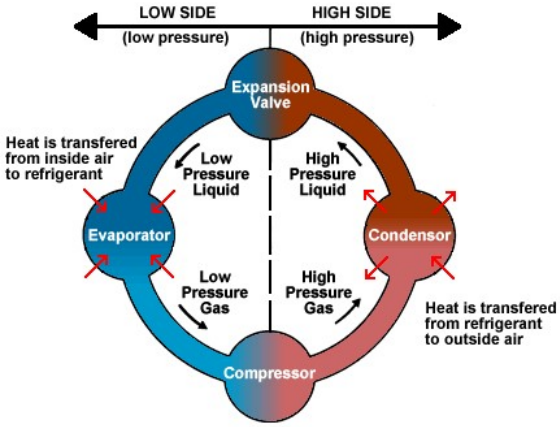
Affected Equipment

This measure is proposed for two locations: The Augusta Municipal Building, and The Charles B. Webster Detention Center. Note that the cooling tower replacements will only occur at the Detention Center's older plant, as the towers for the Detention Center's newer plant, and the towers at the municipal building are in decent shape. Below is a list of equipment affected by this measure.

Table 5: Chiller/Cooling Tower Retrofit Affected Equipment

Building	Equipment	Model No.	Serial No.	Unit Size	Date of Manufacture/Age of Unit
Augusta Municipal Building	Water-Cooled Chiller	CVHE400	L01B06967	250 tons	2001
Augusta Municipal Building	Water-Cooled Chiller	CVHE400	L01B06968	250 tons	2001
Charles B Webster Detention Center	Water-Cooled Chiller	CVHE450	L97A00016	200 tons	1997
Charles B Webster Detention Center	Water-Cooled Chiller	CVHE450	L97A00061	200 tons	1997
Charles B Webster Detention Center	Cooling Tower	Tag: CT-1	-	-	-

6.2.2 DX Unit Retrofits



This measure proposes to replace existing DX equipment which is at or nearing the end of its predicted useful life. Direct expansion (DX) air conditioning equipment is the technical name for typical residential and small commercial style rooftop units and split systems. Many Augusta facilities are cooling and heated with these systems.

DX systems consist of a refrigerant loop, in which the refrigerant is compressed and expanded at different points of the loop to transfer thermal energy. Typically, a refrigerant coil is placed directly in the supply air stream, where the refrigerant absorbs thermal energy as it evaporates and expands. Thermal energy is rejected at a compressor, where the refrigerant is compressed and condenses, rejecting the heat that was removed from the supply air steam.

Over time, HVAC units degrade in operational efficiency as coil surfaces oxidize on the exterior and sometimes scale on the interior which reduces heat transfer efficiency. The moving mechanical components also wear, which further reduces the operational efficiency of the equipment. The new equipment will be installed in place of the existing equipment, including providing new refrigerant line sets for all split systems.

Additionally, older DX equipment uses R-22 as its refrigerant, which has been phased out in favor of newer refrigerants with lower adverse environmental impact. Because it has been phased out, R-22 is far less available, meaning increased maintenance costs if additional refrigerant is required. ARC has already undertaken future budgetary preparation for replacing these older air conditioning systems which utilize R-22 refrigerant, therefore Trane has financially accounted for the avoidance of this need as Capital Cost Avoidance. Existing refrigerant will be handled and disposed of in a manner consistent with local environmental requirements.

Table 6: DX retrofit Affected Equipment

Building	Qty	Tag	Equipment	Manufacturer	Model No.	Serial No.	Unit Size	Date of Manufacture/Age of Unit
Blythe Community Center	1	OHP-1	Condensing Unit	Trane	TWA060	P354D491F	5 ton	1999
Blythe Community Center	1	IHP-1	Split System AHU	Trane	TWE060C15FD0	P35535G1V	5 ton	1999
Blythe Community Center	1	OHP-3	Condensing Unit	Trane	TWA030	P352EC3CF	-	1999
Blythe Community Center	1	IHP-3	Split System AHU	Trane	TWE060C15FD0	P3213PF1V	2.5 ton	1999

Building	Qty	Tag	Equipment	Manufacturer	Model No.	Serial No.	Unit Size	Date of Manufacture/Age of Unit
Blythe Community Center	1	OHP-27	Condensing Unit	Trane	FY4ANF030	2809A68714	2.5 ton	2009
Blythe Community Center	1	IHP-27	Split System AHU	Trane	25HCB330A300	0709E13603	-	2009
Carrie J Mays Gymnasium	1	Offices	Condensing Unit	Rheem	RPNE-036JAZ	7348 M1907 10704	3 ton	2007
Carrie J Mays Gymnasium	1	Offices	Split System AHU	Rheem	RHSA-HM3617JA	M2707 02620	3 ton	2007
Carrie J Mays Gymnasium	1	RTU-1	Rooftop Unit	Trane	TCH180B30BHB	419100476D	15 ton	2004
Carrie J Mays Gymnasium	1	RTU-2	Rooftop Unit	Trane	TCH180B30BHB	-	15 ton	2004
Downtown Parks Division	1	-	Condensing Unit	Rheem	RAKA-042JAZ	5461 M0604 04766	3.5 ton	2004
Downtown Parks Division	1	-	Split System Furnace	Rheem	RGPH-10EBRJR	-	100 MBH	2004
Downtown Parks Division	1	-	Condensing Unit	Rheem	RAKA-042JAZ	5461 M0604 04826	3.5 ton	2004
Downtown Parks Division	1	-	Split System Furnace	Rheem	RGPH-10EBRJR	-	100 MBH	2004
Downtown Parks Division	1	-	Condensing Unit	Rheem	RAKA-037JAZ	5429 M1996 09265	3.0 ton	1996
Downtown Parks Division	1	-	Split System Furnace	Rheem	RGPH-10EBRJR	FU5D307F130407987	100 MBH	1996
Gracewood Community Center	1	-	Condensing Unit	Ruud	RGPH-12EARJR	FD5D307F130006503	5 ton	2006
Gracewood Community Center	1	-	Split System Furnace	Rheem	UAND-060JAZ	7307 M3906 03971	-	2006
Gracewood Community Center	1	-	Condensing Unit	Ruud	RGPH-12EARJR	-	5 ton	2006
Gracewood Community Center	1	-	Split System Furnace	Rheem	UAND-060JAZ	-	-	2006
Jamestown Community Center	1	-	Condensing Unit	Rheem	RANL-060JAZ	7390W071200856	5 ton	2012
Jamestown Community Center	1	-	Split System Furnace	Rheem	-	-	-	2012
Jamestown Community Center	1	-	Condensing Unit	Rheem	RANL-060JAZ	7390W071200844	5 ton	2012
Jamestown Community Center	1	-	Split System Furnace	Rheem	-	-	-	2012
Jamestown Community Center	1	-	Condensing Unit	Rheem	13AJN24A01	W091438450	2 ton	2014
Jamestown Community Center	1	-	Split System Furnace	Rheem	-	-	-	2014
Jamestown Community Center	1	-	Condensing Unit	Tempstar	N2A360AKB200	E082715009	3 ton	2008

Building	Qty	Tag	Equipment	Manufacturer	Model No.	Serial No.	Unit Size	Date of Manufacture/Age of Unit
Jamestown Community Center	1	-	Split System Furnace	Tempstar	-	-	-	2008
Jamestown Community Center	1	-	Condensing Unit	Tempstar	N2A360AKB200	E081702146	3 ton	2008
Jamestown Community Center	1	-	Split System Furnace	Tempstar	-	-	-	2008
May Park Community Center	1	-	Condensing Unit	Ruud	UPKA-049JAZ	6583 M2101 17463	4 ton	2001
May Park Community Center	1	-	Split System AHU	Ruud	UBHA-21J14SUAA	TM370004103	-	2001
May Park Community Center	1	Club Room	Condensing Unit	-	-	-	~3 ton	~2001
May Park Community Center	1	Club Room	Split System AHU	-	-	-	-	~2001
May Park Community Center	1	Main Office	Condensing Unit	Trane	4TTA3036A3000AA	9061LW93F	3 ton	2009
May Park Community Center	1	Main Office	Split System AHU	-	-	-	-	2000
McDuffie Woods Community Center	1	Fitness Room (AHU-12)	Condensing Unit	Trane	2TTA0060A3000AA	23252FJ3F		2002
McDuffie Woods Community Center	1	Fitness Room (AHU-12)	Split System AHU	Trane	TWE060	34617LH2V	5 ton	2002
McDuffie Woods Community Center	1	Multipurpose Room	Condensing Unit	Trane	2TWA0036A300AB	3371P3K3F	3 ton	2003
McDuffie Woods Community Center	1	Multipurpose Room	Condensing Unit	Trane	2TWA0036A300AB	3371P1N3F	3 ton	2003
McDuffie Woods Community Center	1	Multipurpose Room	Split System AHU	Trane	TWE090	3414TABD	7.5 ton	2003
McDuffie Woods Community Center	1	Gym Northeast	Condensing Unit	Payne	PA13PR060-J	4511X65696	5 ton	2011
McDuffie Woods Community Center	1	Gym Northeast	Split System Furnace	Carrier	58STA110---14122	2311A22142	110 MBH	2011
McDuffie Woods Community Center	1	Game Room	Condensing Unit	Payne	PA13PR060-J	1512X64425	5 ton	2012
McDuffie Woods Community Center	1	Game Room	Split System Furnace	ICP	N8MPN100F20B2	A073343942	100 MBH	2007
McDuffie Woods Community Center	1	Gym Northeast	Condensing Unit	Payne	PA13PR060-J	1512X64634	5 ton	2012
McDuffie Woods Community Center	1	Gym Northeast	Split System Furnace	Frigidaire	FG7SA 126C-45D1	FGG170378070	126 MBH	2003

Building	Qty	Tag	Equipment	Manufacturer	Model No.	Serial No.	Unit Size	Date of Manufacture/Age of Unit
Newman Tennis Center	1	-	Condensing Unit	Rheem	RANL-060JAZ	7390M340806667	5 ton	2008
Newman Tennis Center	1	-	Split System Furnace	Rheem	RGPN-12EARJR	FU5D307F170903946	-	2009
Old Government House	1	-	Condensing Unit	Trane	TWA060	J02209663	5 ton	1994
Old Government House	1	-	Split System AHU	Trane	BWE060	C26177502	-	1988
Recreation, Parks, and Facilities Administrative Offices	1	2nd Floor Admin (#4)	Condensing Unit	Ruud	UPKA-043JAZ	M4303 04521	3.5 ton	2003
Recreation, Parks, and Facilities Administrative Offices	1	2nd Floor Admin (#4)	Split System AHU	Ruud	UBHC-21J14SFA	6391 M4303 04521	-	2004
Recreation, Parks, and Facilities Administrative Offices	1	Tonia's Office	Ductless Split	Mitsubishi	MU15TN	1000584	1.25 ton	2001
Recreation, Parks, and Facilities Administrative Offices	1	Marilyn's Office	Ductless Split	EMI	SHC09D	1-03-B-4194-09	0.75 ton	2003
Richmond County Municipal Solid Waste Landfill Main Building	2	CU-5A/5B	Condensing Unit	Carrier	25HCB360A00	5008E09035, 3508E23604	5 ton	2008
Richmond County Municipal Solid Waste Landfill Main Building	1	AH-5	Split System AHU	Carrier	40RMQ012—B611HC	3409U17932	-	2009
Richmond County Municipal Solid Waste Landfill Main Building	1	CU-8	Condensing Unit	Carrier	25HBS348A300	3409E21527	4 ton	2009
Richmond County Municipal Solid Waste Landfill Main Building	1	AH-8	Split System AHU	Carrier	FV4CNB006	3109A87310	-	2009
Richmond County Municipal Solid Waste Landfill Main Building	1	CU-9	Condensing Unit	Carrier	25HBS348A300	2108E12780	4 ton	2008
Richmond County Municipal Solid Waste Landfill Main Building	1	AH-9	Split System AHU	Carrier	FV4CNB006	3109A87312	-	2009
Richmond County Municipal Solid Waste Landfill Scale House	1	CU-11	Condensing Unit	Carrier	25HBA330A310	1207E02209	2.5 ton	2007
Richmond County Municipal Solid Waste Landfill Scale House	1	AH-11	Split System AHU	Carrier	FV4BNF002	3707A83520	-	2007
Richmond County Sheriff's Training Center Mess Hall	1	-	Ductless Split	Mitsubishi	MSY-D36NA	5002123T	3 ton	2005

Building	Qty	Tag	Equipment	Manufacturer	Model No.	Serial No.	Unit Size	Date of Manufacture/Age of Unit
Richmond County Sheriff's Training Center Myers Building	2	-	Ductless Split	Fujitsu	AOU24RLXFW	KTN010133, KTN015000	2 ton	~2005
Richmond County Sheriff's Training Center Myers Building	1	-	Ductless Split	Daikin	-	-	2 ton	~2005
Sand Hill Community Center	1	-	Condensing Unit	Trane	2TWB000A	4063J1K2F	5 ton	2004
Sand Hill Community Center	1	-	Split System AHU	Trane	TWE060	3454XB42V	-	2003
Warren Road Community Center	1	Weight Room	Condensing Unit	Rheem	RPNL-024JAZ	7475 M0208 08219	2 ton	2008
Warren Road Community Center	1	Weight Room	Split System AHU	Rheem	RHSL-HM2417JA	M030801161	-	2008
WT Johnson Community Center	1	Computer Room	Condensing Unit	York	-	-	~2 ton	~1998
WT Johnson Community Center	1	Computer Room	Split System AHU	Ruud	UBHC-17J11NFA	T M2102 26278	-	2002
WT Johnson Community Center	1	Teen Room	Condensing Unit	Ruud	UAKA-037JAZ	5429 M3302 13179	3 ton	2002
WT Johnson Community Center	1	Teen Room	Split System Furnace	Rheem	UGPH-12EARJR	FD5D307F430101180	-	2001
WT Johnson Community Center	3	Game Room (#1, #2), Back Room (#5)	Condensing Unit	Trane	TTA060C300A1	N301MEGFF, N301L93FF, N312481FF	5 ton	1998
WT Johnson Community Center	3	Game Room (#1, #2), Back Room (#5)	Split System Furnace	Trane	TUD100RSV5H5	-	-	1998

6.2.3 Dynamic Air Filtration

Facility improvement measures (FIMs) are measures intended to improve the operation and value of building systems but are not associated directly with energy savings.

Filters are a required AHU component throughout any facility for cleanliness and IAQ concerns. Newer technology in filters can give excellent performance with regards to particle filtration with less pressure drop than older technology.

Electrostatic filter technology combines the benefits of passive filtration with those of electro-static attraction. A charge is applied to the filter, which polarizes the media and the surrounding particles. This causes particles in the air to be attracted to the filter and stick to it, including very fine particulates as well as gas contaminants which traditional air filters cannot capture. Due to this, the filters don't need to be as invasive to the airstream, and there's less pressure drop across the filter.

6.2.4 Bipolar Ionization

FIMs are measures intended to improve the operation and value of building systems but are not associated directly with energy savings.

This measure proposes to install bipolar ionization units as a means to improve indoor air quality. Bipolar ionization works to clean the air by producing ions, which induce the particles in air to clump together and become caught in the filters. This also helps reduce odors and airborne pathogens while simultaneously cleaning the coils of HVAC equipment. The improved indoor air quality has also been shown to lead to greater levels of occupant attentiveness, productivity, and comfort, and can reduce the number of airborne infectious disease particulates, including SARS-CoV-2 which causes COVID-19, from the air. Global Plasma Solutions conducted a study of their bipolar ionization technology and its effectiveness in reducing SARS-CoV-2 from the air, and found that it's possible that it could eliminate 99.4% of the virus from the air in 30 minutes of continuous use. (Aircare Engineering, 2020 Sept 15, "Global Plasma Solutions (GPS) Launches Needlepoint Bipolar Ionization to Virtually Eliminate Static SARS-CoV-2 with Proprietary NPBI™ Technology", PR Newswire, https://www.prnewswire.com/in/news-releases/global-plasma-solutions-gps-launches-needlepoint-bipolar-ionization-to-virtually-eliminate-static-sars-cov-2-with-proprietary-npbi-tm-technology-860417185.html)

6.4 Controls Scope and ECMs

Under the scope of this project, Trane will be providing Augusta-Richmond County with a Tracer Ensemble Enterprise (Tracer ES) building automation system which allows multiple buildings to be managed as a single enterprise. The Tracer ES will reside on Trane's "Trane Connect" Cloud Based Servers via locally installed digi routers in each facility. This network will receive and store building data that is being gathered from each individual building's system level controllers. The Tracer system will also consist of a centralized and interactive graphical user interface. In addition to the centralized user interface, the Tracer ES offers remote access via the Web as well as mobile devices, allowing the Augusta-Richmond

County enterprise of buildings to be effectively managed from nearly any location by authorized facility's staff.

At the individual building level, Trane will be providing Tracer System Controllers (Tracer SC's). These controllers will be the "brain" of each building in terms of building automation. Like the Tracer ES, each Tracer SC will offer remote access via the Web as well as mobile devices. At many of the smaller sites, the Tracer SC will be paired with a Tracer Concierge touchscreen display, offering the end user with the ability to toggle set points with the touch of a finger. End devices and unit controllers in each building will ultimately tie back to that building's Tracer SC via wireless and/or wired communications. The Tracer SC will also offer device graphics and floor plan graphics, which will aid facility's staff in physically locating issues that need to be addressed.

Trane controls systems will enable the Augusta-Richmond County Facilities Team to efficiently manage buildings from nearly anywhere with one system, leading to high performance and consistent comfort in each building. The centralized interface will allow facilities staff to monitor buildings across Augusta-Richmond County from a single access point. This will reduce response time to possible issues, often without having to spend time traveling from building to building. Staff can manage and respond to alarms, change set points, and modify schedules conveniently from their computers.

Many operational improvements will also be seen in each individual building. Each building can be custom scheduled to match building occupancy so that mechanical equipment runs only when it is needed. This leads to energy savings, extended system life, and reduced lifecycle operating costs. Alarms will be sent to established facilities staff, informing them of any issues that need to be addressed in the building. This real time data helps reduce response time and enables predictive maintenance. Lastly, Trane control systems offer graphics that allow staff to easily navigate between equipment and find the root cause of a problem leading to greater occupant comfort.

Table 7: Summary of Controls Energy Conservation Measure by Building

Building Name	Air-Fi Trane Concierge Building Controls	New Tracer SC + Building Automation System w/ Retrocommissioning (RCx)	Demand Control Ventilation (DCV)	Kitchen DCV
Augusta Municipal Building		X		
Augusta Richmond County Judicial Center		X	X	
Blythe Area Recreation Center	X			
Carrie J Mays Community Life Center	X			
Carrie J Mays Gymnasium				
Charles B Webster Detention Center		X		X
Downtown Park Division	X			
Eastview Community Center	X			
Gracewood Community Center	X			
Henry Brigham Park Senior Center	X			
Henry Brigham Park Swim Center	X			
Information Technology	X			
Jamestown Community Center	X			
May Park Community Center	X			
May Park Print Shop	X			
McDuffie Community Center	X			
Newman Tennis Center	X			
Old Government House	X			
Recreation, Parks, And Facilities Administrative Offices	X			
Recreation, Parks, And Facilities New Maintenance Shop	X			
Richmond County Municipal Solid Waste Landfill Main Building	X			
Richmond County Municipal Solid Waste Landfill Scale House	X			
Richmond County Sheriff's Training Center Bunk House	X			

Building Name	Air-Fi Trane Concierge Building Controls	New Tracer SC + Building Automation System w/ Retrocommissioning (RCx)	Demand Control Ventilation (DCV)	Kitchen DCV
Richmond County Sheriff's Training Center Mess Hall	X			
Richmond County Sheriff's Training Center Myers Building	X			
Sand Hill Community Center	X			
Warren Road Community Center	X			
WT Johnson Community Center	X			

6.4.1 New Tracer SC + Building Automation System w/ Recommissioning (RCx)

As part of Trane's system-wide controls solution, three large buildings (Augusta Municipal Building, Augusta-Richmond County Judicial Center, and Charles B. Webster Detention Center) with older DDC controls will be upgraded to New Trane systems and interconnected back to the central Tracer ES. Additionally, Trane teams will provide a full retro-commissioning of air-side and water-side systems, replacing malfunctioning hvac equipment. All controls equipment in this building will be replaced or upgraded as part of this retrofit.

The new system will be programed with a suite of energy savings strategies to reduce energy consumption of HVAC systems. The following strategies will be used

- HVAC system scheduling and setback
- Temperature setpoint optimization
- Optimum Start (morning warm-up)
- Static Pressure Reset
- Airflow/Ventilation Improvements
- Fan Cycling Optimization
- Chiller plant/Cooling Tower Optimization
- Condenser Water Reset

While this controls upgrade and Retrocommissioning (RCx) effort is described as one measure, there are a variety of upgrades that will be made specifically due to RCx efforts. Retrocommissioning is being performed in all facilities to identify and correct potential unknown operational issues with hvac and controls equipment. However, Trane is already planning for a number of known issues included for the Judicial Center, identified by Trane personnel.

HVAC System Scheduling and Setback (All facilities)

These three Augusta-Richmond County buildings are conditioned at the same space temperature set point on a 24/7/365 basis even though parts of these buildings are occupied only a portion of the time (Monday – Friday daytime hours for example). Scheduled HVAC setback turns off or sets back HVAC systems during unoccupied times and is the controls measure which will provide the greatest quantity of energy savings. This ECM involves implementation of space temperature set point reset / setback schedules for each building area and system which does not exhibit constant occupancy. Humidistats will also be incorporated to initiate air-conditioning system operation override, as needed, to prevent excessive relative humidity during unoccupied time periods.

Table 8: Occupied versus Unoccupied Cooling and Heating Setpoint Values

State	Cooling Setpoint	Heating Setpoint
Occupied	72°F	70°F
Unoccupied	*82°F	60°F

*subject to RH or humidistat feedback

Blythe Area Recreation Center is presented as an example facility for which unoccupied temperature setback control is proposed.

Table 9: Blythe Area Recreation Center Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	8a – 6p	8a – 6p	8a – 6p	8a – 6p	8a – 6p	Closed	Closed
UnOccupied	6p – 8a	6p – 8a	6p – 8a	6p – 8a	6p – 8a	Closed	Closed

Chiller plant / Tower Optimization & Condenser Water Reset (All Facilities)

Trane proposes to furnish and install a complete chiller plant control system. This will include taking control of the chiller, economizer loop, chilled water pumps, tower fans, condenser water pumps, changeover valves, and plant actuators. As part of this measure, the new system will support the all-variable chilled water flow ECM. Trane will accomplish this through all new Trane controls, reprogramming the entire plant for Variable Flow operations, along with Trane's patented 'Tower Optimization' programming sequence.

The Trane systems approach to minimization of cooling tower chiller subsystem energy use is unique. It uses a powerful algorithm to model the interaction of the cooling tower and chiller using real-time ambient conditions and chiller loading to calculate the optimal setpoint. Other systems use a broad assumption concerning the best method for determining the optimal setpoint to operate a cooling tower. The Trane strategy determines the cooling tower setpoint that minimizes the system energy usage. Trane will also program the system to utilize the existing piping and valve arrangement for free cooling /economizer during the cooler parts of the year, in support of the re-commissioning of the Water-side economizer ECM. This will be programmed as a building changeover system, controlling the existing valve

actuators and tower water temperature to achieve this during colder outside temperatures. This new plant configuration will correlate into substantial energy savings, and improved tenant comfort.

Building Name	Input Name	Existing Value	Proposed Value
Augusta Municipal Building	Chiller Minimum Condenser Water Temperature	79°F	60°F
	Cooling Tower Equipment Type	Cooling Tower (DOE)	Optimized Tower (DOE)

T

Below is a list of buildings that are in scope for energy savings associated with water fixture upgrades. For detailed information regarding the audit, refer to the water audit appendix. Given the low water rate in Augusta and that facilities outside of the Detention Center do not pay for sewer service, water conservations measures were only financially feasible at this location.

6.5 Water Efficiency Retrofit

This measure proposes to replace existing plumbing fixtures, such as toilets, urinals, sinks, and showers, with low-flow fixtures. Toilets and urinals are rated based on the amount of water per flush, while showers and sinks are rated on their flow rate during use. Over time, building codes have changed to mandate lower flow fixtures than were previously allowed. Advances in technology allow for new low-flow fixtures to provide similar performance while using a fraction of the water.

The existing fixtures will be replaced, including all wear parts, with new low-flow equivalents. Replacing wear components puts the entire assembly back to its original condition and eliminates any potential for existing degradation to affect the new fixtures. While existing low flow fixtures may be excluded from this measure, including the replacement of their wear components will lead to standardized parts as well as resetting the expected lifespan of the fixtures, both of which reduce maintenance costs.

Detailed information regarding the water retrofit can be found in Appendix 2.

Table 10: Water and Sewer Conservation Facilities Affected

Building Name	Water Efficiency Retrofit	Cooling Tower Credit	Flush Valve Control	Ozone Laundry
Charles B Webster Detention Center	X	X	X	X

Cooling Tower Credit

Often when water gets billed from a utility company to the customer, it is assumed that all water that is used by the customer is going to make its way to the sewer, so the total amount of water delivered is also assumed to be the same amount of water for the purposes of sewer charges. While this is true of many processes that use water, in the case of cooling towers this assumption is not true. Cooling towers use

water evaporation to cool down the condenser water loop, and hence there's no sewage produced by cooling towers. As a result, this project proposes to put a water meter on the cooling tower make-up water line and getting a sewage credit for that water that is used by the cooling tower make-up water, hence only being charged for the water being delivered to the cooling towers and not the sewage charge.

Flush Valve Control

Often in detention centers, water closets can get abused and used way more by the inmates for various purposes, such as trying to eradicate evidence of contraband or just repeatedly flushing the toilet for no reason. This project proposes to install a Flush Valve Control system that helps reduce the amount of times that inmates can flush the toilet in a short period of time. This allows remote access of parameters, and can set how many times inmates can flush the toilet in a certain amount of time. It is also capable of locking out flushing for a period of time if it detects abuse. This can greatly reduce the amount of water consumption used by the Detention Center.

Ozone Laundry

This measure proposes installing an Ozone Laundry System at the Detention Center. The oxidation of the ozone sterilizes the fabrics with a 99%+ bacterial and viral kill count, reducing risk of spreading pathogens throughout the prison.

Other benefits included reduced hot water usage. This can reduce hot water usage up to 80% depending on local groundwater temperatures. Fabric drying times are also shorter, as the ozone helps release moisture in the dryer, reducing drying times by up to 20% in most cases. This furthers energy savings by reducing energy consumption by the dryers.

6.6 PV SOLAR SCOPE AND ECMS

This measure proposes to install a solar photovoltaic assembly to convert solar radiation into electrical energy for use in the building. Only the Municipal Building and Diamond Lakes Library/Robert Howard Community Center are in scope for this measure.

Electricity is typically provided by the utility company, who sets the tariff schedule and associated costs. Depending on the utility profile, there may be separate charges for consumption and demand. Utilizing a source of free energy such as solar radiation can offset significant utility energy costs. Additionally, it is more environmentally friendly than purchasing electricity from the utility provider, as there are no grid distribution losses and uses a 100% renewable energy source.

A solar photovoltaic assembly, consisting of panels with semiconductor materials, will be installed in an area that receives large amounts of sunlight throughout the day. When sunlight contacts the panels, electrons are knocked free from the semiconductor material. Electric fields within the panels push the electrons to conducting plates which transfer the electrons to wire, creating electricity for use in the building. The image below shows how the photovoltaic cells work to produce an electrical current.

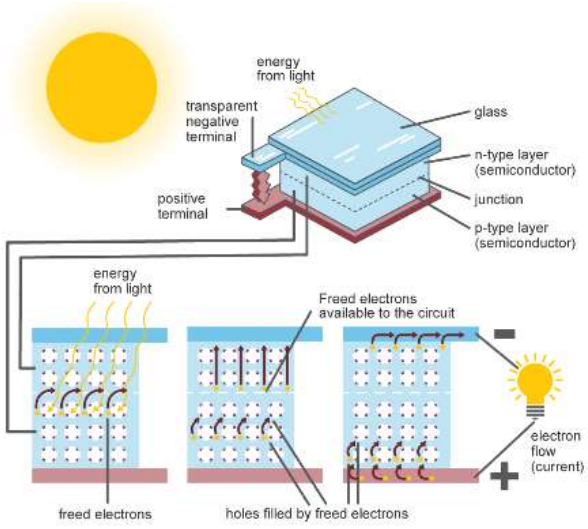


Figure 1: Photovoltaic Cell

Below is a list of buildings that are in scope for energy savings associated with building envelope improvements. For detailed information regarding the PV solar upgrade, refer to Appendix 11.

Table 11: PV Solar Facilities Affected

Building Name	Peak kW	Annual kWh
Augusta Municipal Building	108 kW	209,796 kWh
Diamond Lakes Library and Robert Howard Community Center	100 kW	186,642 kWh

6.7 BUILDING ENVELOPE SCOPE AND ECMS

Trane has identified five categories of building envelope improvements for Augusta-Richmond County. A description of each building envelope improvement is below as well as a matrix showing which improvement types are applicable to each building.

- *Air Leakage/Penetrations* – Usually occur where building envelope elements are connected, where penetrations exist, or where cracks have developed over time. Various techniques will be used to seal these openings including insulation, drywall, polyurethane spray foam, and urethanized elastomeric sealants.
- *Air Leakage/Windows* – Occurs where the window frames are attached to the walls. These areas will be caulked with a premium urethanized elastomeric sealant.
- *Conduction/Insulation* – Heat transfer occurs in attic and plenum spaces where there is insufficient insulation. In these areas, polyurethane spray foam, standard batt insulation, or blown-in insulation will be applied.
- *Weatherstripping/Exterior Doors* – Weatherstripping, door sweeps, and vertical door sweeps on exterior doors and even roll-up doors gets old, brittle, or cracked and allows air infiltration.
- *Compartmentalization* – When not properly sealed (or compartmentalized), pipe chases and other vertical shafts can allow stack effects to exist. This creates air infiltration/exfiltration and drafty conditions within a building. These areas will be properly sealed to eliminate the stack effects.

6.8 OPERATIONAL SAVINGS

Implementing the described measures has many benefits in addition to reducing facility energy usage and associated cost. In most instances, maintenance costs will also be reduced due to a reduction in equipment operating hours and/or loads imposed on equipment. Replacing old equipment nearing the end of its useful life will also reduce maintenance costs. New system designs often improve system diagnostics, detecting, and repairing problems before building occupants are aware they exist. Lighting system retrofits often improve space lighting level and HVAC measures often result in improved space comfort conditions and indoor air quality. Spaces are more pleasant to occupants, which often results in an increase in productivity. The operational savings benefits Trane identified during the Detailed Energy Audit for the Augusta Richmond County are detailed below.

Lighting

The anticipated service life of most of the new LED kits and other components that will be installed as part of the proposed project work is 50,000+ hours implying that these lighting materials should last longer than the finance period of the proposed project (18 years). Therefore, it is reasonable to anticipate that Augusta Richmond County will no longer need to purchase lighting replacement materials including lamps and ballasts.

Controls Service

The proposed energy project includes controls service support which will eliminate the need for Augusta Richmond County to continue to procure a number of existing controls service contracts in the future.

6.8.2 Capital Cost Avoidance

Much of the Customer's existing HVAC equipment and systems are near the end of useful service life or past the end of useful service life (e.g., operating at reduced capacity and/or efficiency, or not operating at all). Implementation of new HVAC equipment as part of proposed Services Trane will furnish will reduce the need for the City to procure replacement HVAC equipment in many of the City's buildings over the course of Guarantee Term. Trane quantified the value of aforementioned equipment near or at the end of useful service life as presented in the tables below.

Table 12: Future replacement expenditures avoided as result of new equipment installed.

Capital Cost Avoidance - Annual Average (18 yrs)		**$ 241,649**								
Capital Cost Avoidance - TOTAL (Net Present Value)		$ 4,349,675		Forecast Replacement Out-Year						
Escalation Factor for each column (3% per year)				1.030	1.061	1.093	1.126	1.159	1.194	1.230
Building	**Equipment ID**	**2020 Cost Est**	**Current Age**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Municipal Building	Chiller #1	$ 508,620	19				X			
	Chiller #2	$ 508,620	19				X			
Webster Detention	Chiller #1	$ 650,000	23	X						
	Chiller #2	$ 650,000	23	X						
	AHUs 1-11E	$ 321,600	23	X						
Blythe Park & Rec Center	5-ton split AC hea	$ 80,872	21	X						
New DDC controls - all AC systems	2.5 ton split AC he	Incl	21	X						
	2.5 ton split AC he	Incl	11				X			
Carrie Mays Gymnasium	3 ton split AC hea	$ 134,403	13		X					
New DDC controls - all AC systems	15 ton rooftop AC	Incl	17	X						
	15 ton rooftop AC	Incl	17	X						
Downtown Parks Division	3.5 ton split AC he	$ 75,412	16	X						
New DDC controls - all AC systems	3.5 ton split AC he	Incl	16	X						
	3.5 ton split AC he	Incl	24	X						
Gracewood CC	5-ton split system	$ 86,956	14		X					
New DDC controls - all AC systems	5-ton split system	Incl	14		X					
Jamestown CC	3-ton split system	$ 67,888	12				X			
New DDC controls - all AC systems	3-ton split system	Incl	12				X			
May Park CC	4 ton split AC hea	$ 99,241	19	X						
New DDC controls - all AC systems	3 ton split AC hea	Incl	20	X						
	3 ton split AC hea	Incl	19	X						
McDuffie Woods CC	5-ton split system	$ 300,845	18	X						
New DDC controls - all AC systems	6-ton split AC hea	Incl	17	X						
	5-ton split system	Incl	9							X
	5-ton split system	Incl	17	X						
	5-ton split system	Incl	13			X				
Newman Tennis Center	5-ton split system	$ 38,095	12				X			
New DDC controls - all AC systems		Incl								
Old Government House	5-ton split AC hea	$ 139,187	32	X						
New DDC controls - all AC systems		Incl								
Rec , Parks, and Facilities Admin Offices	3.5 ton split AC he	$ 79,283	17	X						
New DDC controls - all AC systems	1.25 ton ductless s	Incl	19	X						
	.75 ton ductless sp	Incl	17	X						
Richmond Co STC - Dining Hall	3 ton ductless spli	$ 12,000	17	X						
New DDC controls - all AC systems		Incl								
Richmond Co STC - Myers Building	2 ton ductless spli	$ 141,201	15	X						
New DDC controls - all AC systems	2 ton ductless spli	Incl	15	X						
	3 ton ductless spli	Incl	15	X						
Richmond Co Municipal Solid Waste Landfill	3 ton split AC hea	$ 121,129	12				X			
New DDC controls - all AC systems	4 ton split AC hea	Incl	12				X			
	4 ton split AC hea	Incl	12				X			
Richmond Co Landfill - Scalehouse	2.5 ton split AC he	$ 21,853	13			X				
New DDC controls - all AC systems		Incl								
Sand Hills CC	5-ton split AC hea	$ 39,531	17	X						
New DDC controls - all AC systems		Incl								
WT Johnson Center	5-ton split system	$ 224,630	22	X						
New DDC controls - all AC systems	5-ton split system	Incl	22	X						
	5-ton split system	Incl	22	X						
	3-ton split system	Incl	19	X						
	2-ton split system	Incl	22	X						
Warren Road CC + new DDC controls all AC systems	2-ton split system	$ 48,309	12				X			

Table 13: Direct Cost Avoidance

Direct Cost Avoidance - TOTAL	**$89,260**
Annual BAS Service Savings - these savings are based BAS service contract expenditures that will no longer be necessary, or will be replaced by a new service contract after the project is completed. A separate cost will be carried in the project for future BAS Service.	**$19,213**
Augusta Utilities Department - per Trane quote 6/25/19	$3,716
Augusta Mixed Use Facility - per Trane quote 7/1/19	$1,390
Diamond Lakes Park - per Trane quote 6/25/19	$5,240
Webster Detention Center - per Trane quote 5/5/20	$8,868
Annual Lighting Maintenance Savings - calculated base on typical material expenditures for replacement of old fluorescent lamps and ballasts. These types of expenditures will not be required with the new LED fixtures that will be installed.	**$70,047**
Augusta-Richmond County Public Library	$4,015
Municipal Building	$5,215
Augusta-Richmond County Judicial Center	$9,785
911 Emergency Services	$660
Appleby Branch Library	$42
Augusta Animal Services Center	$1,225
Augusta Aquatics Center	$581
Augusta Commons	$4,037
Augusta Fire Department Training Division	$419
Bernie Ward Community Center	$543
Blythe Area Recreation Center and Park	$336
Carrie J. Mays Family Life Center	$671
Central Services office and warehouse	$164
Diamond Lakes Library and Robert Howard CC, Tennis Center & park	$2,873
Doughty Park Com Center	$170
Eastview Community Center and Park	$139
Eisenhower Athletic Complex and Park	$229
Fire Station 01	$520
Fire Station 04	$416
Fire Station 05	$217
Fire Station 06	$363
Fire Station 07	$314
Fire Station 08	$282
Fire Station 09	$147
Fire Station 10	$277
Fire Station 11	$191
Fire Station 12	$313
Fire Station 13	$101
Fire Station 16	$183
Fire Station 17	$239
Fire Station 18	$413
Fire Station 19	$330
Fleming Tennis Center	$98
Friedman Branch Library	$932
Gracewood Community Center	$128
Information Technology	$590
Jamestown Community Center and Park	$182
Jones Pool	$32
Lake Olmstead Park and Casino and BBQ pit	$103
May Park Community Center	$457
Mcduffie Woods Community Center	$502
Newman Tennis Center	$282
Old Government House	$934
Recreation , Parks, and Facilities Admin Offices,Equip Repair, Main Shop, New Main Shop	$683
Richmond Co Sheriff Training Center - bunk house, myers building, mess hall, & outdoor lighting	$1,582
Richmond County Sheriff's Office	$2,883
Richmond County Sheriff's Office - South Precinct	$1,707
Sand Hills Community Center and Park	$286
Sign Shop AED	$88
Richmond County Municipal Solid Waste Landfill	$346
Street Lighting	$320
The Boathouse	$1,130
Wallace Branch Library	$488
Warren Road Community Center	$452
WT Johnson Community Center	$711
Wellness Center - Board of Elections	$342
Henry Brigham Swim Center, Sr Center, Park	$559
Charles B Webster Detention Center	$18,820

Key Takeaways from Section 6:

- **The proposed ECM scope of work not only provides for utility cost avoidance of around $1M per year, but also includes a large quantity of FIMs (facility improvement measures) – the proposed project will serve to replace the majority of Augusta Richmond County's HVAC equipment that is at or near the end of its useful service life**
- **The proposed ECM scope of work offers a significant reduction in water consumption and provides clean renewable energy in the form of solar photovoltaic power**
- **Implementation of the proposed ECM scope of work will serve to reduce Augusta Richmond County's maintenance expenditures on lighting materials, HVAC repair materials and services, and will delay and/or eliminate the need to replace a significant quantity of HVAC equipment over the course of the next ten years.**

7. M&V METHODOLOGY

Trane is proposing a Measurement and Verification (M&V) plan that will provide Augusta Richmond County with verification of project guaranteed savings while balancing costs incurred during the M&V process. This section provides an overview of the M&V process, guidelines for the M&V approach, and details on how each ECM will be handled. Trane's team have selected both Option A and Option C methodologies for different ECMs and locations.

7.1.1 IPMVP Protocol

Trane adheres to the well-established International Performance Measurement and Verification Protocol (IPMVP) for confirming the benefits of the installed ECMs. The four IPMVP methods are summarized below. Together, we will select whichever Option proves to be the most prudent for each individual ECM after the project is fully developed.

IPMVP Protocol		Typical Uses for this Option
A	**Retrofit Isolation: Key Parameter Measurements**	Option A is applied to ECMs where there is one specific and key variable that best indicates the potential for energy savings.
B	**Retrofit Isolation: All Parameter Measurements**	Verification techniques for Option B are designed for projects where long-term continuous measurement of performance is desired.
C	**Whole Facility**	Verification techniques for Option C determine savings by studying overall energy use in a facility and identifying the effects of energy projects from changes in overall energy use patterns.
D	**Calibrated Simulation**	Option D is intended for energy retrofits where calibrated simulation of baseline energy use and calibrated simulations of post-installation energy consumption are used to measure savings from the retrofit.

7.2 M&V ECM TABLE

The following table details the proposed M&V methodology, by IPMVP Option category, for each proposed ECM.

Building Name	Lighting	HVAC	Controls	Water	PV Solar	Building Envelope
911 Emergency Services	A					A
Appleby Library	A					A
Augusta Animal Services	A					
Augusta Aquatics Center	A					A
Augusta Commons and Riverwalk	A					
Augusta Fire Department Administrative Building	A					A
Augusta Municipal Building	C	C	C		C	C
Augusta Public Library Headquarters	A					A
Augusta-Richmond County Judicial Center	C	C	C			
Bernie Ward Community Center	A					A
Blythe Area Recreation Center	A	A	A			A
Board of Elections / Wellness Center	A					
Carrie J Mays Community Life Center	A		A			A
Carrie J Mays Gymnasium	A	A	A			
Central Services	A					A
Charles B Webster Detention Center	A	A*	A	A*		
Diamond Lakes Library and Robert Howard Community Center	A		A		A	A
Doughty Community Center	A					A
Downtown Park Division		A	A			
Eastview Community Center	A		A			A
Eisenhower Athletic Complex	A					
Fire Station 1	A					A

Building Name	Lighting	HVAC	Controls	Water	PV Solar	Building Envelope
Fire Station 4	A					A
Fire Station 5	A					A
Fire Station 6	A					A
Fire Station 7	A					A
Fire Station 8	A					A
Fire Station 9	A					
Fire Station 10	A					A
Fire Station 11	A					A
Fire Station 12	A					A
Fire Station 13	A					A
Fire Station 14						A
Fire Station 15						A
Fire Station 16	A					A
Fire Station 17	A					A
Fire Station 18	A					A
Fire Station 19	A					A
Fleming Tennis Center	A					
Friedman Branch Library	A					A
Gracewood Community Center	A	A	A			A
Henry Brigham Park Senior Center	A		A			A
Henry Brigham Park Swim Center	A		A			A
Information Technology	A		A			A
Jamestown Community Center	A	A	A			A
Jones Pool	A					
Julian Smith BBQ Pit	A					X

Building Name	Lighting	HVAC	Controls	Water	PV Solar	Building Envelope
Julian Smith Casino	A					X
May Park Community Center	A	A	A			A
May Park Print Shop			A			A
McDuffie Community Center	A	A	A			A
Newman Tennis Center	A	A	A			A
Old Government House	A	A	A			A
Recreation, Parks, And Facilities Administrative Offices	A	A	A			A
Recreation, Parks, And Facilities New Maintenance Shop			A			
Richmond County Sheriff's Office	A					A
Richmond County Sheriff's Office South Precinct	A					A
Richmond County Sheriff's Office Special Ops Precinct						A
Richmond County Sheriff's Training Center Administration Building	A					
Richmond County Sheriff's Training Center Bunk House	A		A			
Richmond County Training Center Dog Kennel			A			
Richmond County Sheriff's Training Center Mess Hall	A	A	A			
Richmond County Sheriff's Training Center Myers Building	A	A	A			
Richmond County Municipal Solid Waste Landfill Main Building	A		A			
Richmond county Municipal Solid Waste Scale House		A	A			
Sand Hill Community Center	A	A	A			A
The Boathouse	A		A			
Traffic Engineering - Street Lighting	A					
Traffic Engineering Sign Shop	A					
Wallace Branch Library	A					A

Building Name	Lighting	HVAC	Controls	Water	PV Solar	Building Envelope
Warren Road Community Center	A	A	A			A
WT Johnson Center	A	A	A			A

*small parts of this measure will be stipulated to reduce M&V costs – see details

Trane proposes performing the "Option A – Retrofit Isolation: Key Parameter Measurement" methods on the following ECMs associated with all buildings except the Municipal Building and Judicial Center.

M&V Summary Table

ECM	M&V Option	Comments
Lighting	A	Measure before and after lighting fixture power consumption using a statistically valid sample of lighting fixtures – datalog baseline lighting burn hours – one time measurements
Water Efficiency	A	Measure before and after water closet, urinal, and shower water flush volume – one time measurements
Building Envelope	A	Physically verify and document that each building envelope measure was properly installed – one time measurement
HVAC Equipment	A	Measure before and after equipment efficiency for chillers and a valid sample of small HVAC equipment – one time measurement
HVAC Controls and Setback ECM	A	Use Trane Intelligent Service to document control system occupied and unoccupied setback schedules and temperature control setpoints in all buildings where new Trane controls are installed – quarterly analysis and verification in larger buildings and annual verification in smaller buildings
Solar PV	A	Measure peak kW output from each system on a sunny day – one time measurement
Municipal Building and Judicial Center – All ECMs	C	Use building electric utility meters to monitor and document building kWh energy consumption continuously over the course of time – normalize utility energy consumption with respect to weather and other baseline adjustment factors – compare normalized baseline utilities data to actual performance period utilities data to determine utility savings – these two building account for 28% of the total program energy savings.

Key Takeaways from Section 7:

- **The Trane team has assembled a measurement and verification program which will serve to ensure the persistence of energy savings over the course of time.**

8. TRANE SERVICE

Trane plans to provide two types of on-going service once the proposed energy performance contract is implemented and commissioned. This service offering consists of the following: Mechanical-HVAC service, and Building Automation System (BAS) - TIS (Trane Intelligent Services) - M&V (measurement and verification) service. Georgia energy performance contracting statute requires that Trane provide M&V and accompanying services necessary to maintain the energy performance guarantee during the first year of the project finance term. Afterward, Trane and ARC will have the opportunity to renew this service agreement during each year of the finance term. The proposed services that Trane will provide serve to ensure optimal comfort and energy performance, and to enhance the perpetuity of energy savings that ARC will benefit from over the course of time. Trane will require that the BAS-TIS-M&V services remain in force to maintain the energy performance guarantee during the finance term. The cost for all of the aforementioned services is included on a continuing basis as part of the energy project cash flow proforma.

8.1 Mechanical-HVAC Service

The following table summarizes the proposed services that Trane will provide regarding the mechanical-HVAC service.

Table 14: Mechanical-HVAC Service Summary

Building Name	Currently Under SELECT Contract	Proposed SELECT Contract per this Agreement	Proposed SCHEDULED Contract	(1) Annual Visit	(1) Semi-Annual Visit	(3) Quarterly Visits	Filter Change Each Visit	Annual Belt Replacement Where Applicable	Dynamic Filtration Replacement Annually	UVC Lamp Replacement
Augusta Municipal Building	Chillers			X		X				
Augusta Richmond County Judicial Center	Chillers	New Chiller to be added		X		X			AHU 1-6 Furnish only (installed by others) on an Annual basis	Furnish only (installed by others) at 3 year intervals
Diamond Lakes Community Center		Existing Chiller		X		X				
Augusta Animal Services		Existing Chiller	Existing ERU, Boiler, Pumps, BCU's	X		X	X			
Blythe Community Center			X	X	X		X	X		
Carrie J Mays Gymnasium			X	X	X		X	X		
Charles B Webster Detention Center	Chillers			X		X	X		Furnish only (installed by others) on an Annual basis	Furnish only (installed by others) on an Annual basis
Downtown Park Division			X	X	X		X	X		
Gracewood Community Center			X	X	X		X	X		
Henry Brigham Park Swim Center			X	X	X		X	X		
Jamestown Community Center			X	X	X		X	X		
May Park Community Center			X	X	X		X	X		
McDuffie Woods Community Center			X	X	X		X	X		

Building Name	Currently Under SELECT Contract	Proposed SELECT Contract per this Agreement	Proposed SCHEDULED Contract	(1) Annual Visit	(1) Semi-Annual Visit	(3) Quarterly Visits	Filter Change Each Visit	Annual Belt Replacement Where Applicable	Dynamic Filtration Replacement Annually	UVC Lamp Replacement
Newman Tennis Center			X	X	X		X	X		
Old Government House			X	X	X		X	X		
Recreation, Parks, and Facilities Administrative Offices			X	X	X		X	X		
Richmond Cty Muni S Waste Main Bldg*			X	X	X		X	X		
Richmond Cty Muni S Waste Scale House			X	X	X		X	X	X	
Richmond County Sheriff's Training Center Mess Hall			X	X	X		X	X		
Richmond County Sheriff's Training Center Myers Building			X	X	X		X	X		
Sand Hill Community Center			X	X	X		X	X		
WT Johnson Community Center			X	X	X		X	X		

Mechanical-HVAC Service Notes

1. SELECT contracts are those that carry a commitment from Trane to cover costs associated with certain equipment failures. They include annual and quarterly maintenance visits as recommended by Trane operating manuals.
2. SCHEDULED contracts carry no commitment from Trane to cover costs associated with equipment failures, but the Owner can have assurance that the equipment has been maintained at the optimum levels to minimize failures and realize longer equipment life. SCHEDULED contracts as offered here can include either annual/semi-annual or annual/quarterly visits.

3. Semi-annual visits are included on each piece of equipment and are usually performed prior to the beginning of cooling season.
4. Annual visits are included at various sites and are usually conducted at the beginning of heating season.
5. Quarterly visits are included at various more heavily used sites and allow us to keep a more critical eye on this equipment.
6. Filter changes are included at each visit. Filters are left on site for occupant/building manager use as needed.
7. Belt changes are included annually on equipment as needed.
8. Dynamic Air Filtration and Purafil Odor Control Unit replacement media are included at noted sites.

8.2 Building Automation System (BAS) - TIS (Trane Intelligent Services) - M&V (Measurement and Verification) Service

The following table summarizes the proposed services that Trane will provide regarding the BAS-TIS M&V service.

Table 15: BAS-TIS M&V Service Summary

Building Name	BAS Service	TIS Service	M&V Service Type	Notes
Augusta Municipal Building	X	X	Option C	BAS service includes annual SMP (service maintenance plan), and combination of OS (on site service) and RSS (remote support specialist) service
Augusta Richmond County Judicial Center	X	X	Option C	BAS service includes annual SMP, replacement of (42) CO2 sensors every three years, replacement of (36) relative humidity sensors every three years, and combination of OS (on-site service) and RSS (remote support specialist) service
Diamond Lakes Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Augusta Animal Services	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Blythe Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Carrie J Mays Gymnasium	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Charles B Webster Detention Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service. M&V service not only applies to the HVAC and BAS measures, but also to the water efficiency measure.
Downtown Park Division	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Gracewood Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Henry Brigham Park Senior Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Henry Brigham Park Swim Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service

Building Name	BAS Service	TIS Service	M&V Service Type	Notes
IT Building	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Jamestown Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
May Park Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
McDuffie Woods Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Newman Tennis Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Old Government House	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Recreation, Parks, and Facilities Administrative Offices	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Richmond County Municipal Solid Waste Main Building	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Richmond County Municipal Solid Waste Landfill Scale House	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Richmond County Sheriff's Training Center Mess Hall	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Richmond County Sheriff's Training Center Myers Building	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Sand Hill Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
WT Johnson Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service

8.3 Trane Training

It is important for Trane to regularly communicate the goals, purpose, and operational and maintenance functionality of the ECMs (energy conservation measures) that are being employed as part of this energy project in order for ARC to realize the full effect of the benefits offered by this project over the course of time. To meet this objective, Trane plans to provide training for facilities/building maintenance personnel on a regular basis which can be summarized as follows:

Table 16: Training Plan

Training Description	Buildings Affected	Target Audience	Training Frequency	Notes/Comments
Chiller Plant Operation & Maintenance including BAS sequences	Judicial Center	Building maintenance personnel	Initial + every three years Directed by Trane	Training to include operational sequence for new air-cooled chiller which will operate during low-load conditions, chiller-tower optimization, and primary-secondary flow matching pumping system control.
Chiller Plant Operation & Maintenance including BAS sequences	Municipal Building & Webster Detention Center	Building maintenance personnel, facilities director (Webster)	Initial + every three years Directed by Trane	One chiller plant at the Municipal Building + two chiller plants at Webster Detention Center
Air-side HVAC Operation & Maintenance including BAS sequences	Judicial Center, Municipal Building, Webster Detention Center	Building maintenance personnel, facilities director (Webster)	Initial + every three years Directed by Trane	Training to include operational sequences for conditioned air systems, occupied and unoccupied mode operational sequences (Judicial & Municipal) and space cooling and heating temperature setpoints
HVAC System maintenance & service provided by Trane, and ARC maintenance requirements	Judicial Center, Municipal Building, Webster Detention Center, Animal Services, Diamond Lakes Library, and (23) small buildings covered by Trane BAS-TIS-M&V service agreement	Building maintenance personnel, facilities directors, Rec and Parks director, and Central Services director	Initial + every three years Directed by Trane	It is important for both ARC and Trane to perform equipment and system maintenance on a prescribed basis to maintain equipment reliability and energy efficiency.
Solar Photovoltaic System Operation and Maintenance	Municipal Building & Diamond Lakes Library	Building maintenance personnel	Initial Facilitated by Trane with vendor support	The proposed solar PV systems will exhibit minimal maintenance requirements over the course of time.
Ozone Laundry System and Flush Valve Control System Operations and Maintenance	Webster Detention Center	Facilities Director	Initial Facilitated by Trane with vendor support	
Measurement & Verification and Energy Performance Guarantee	All	Central Services director, Rec and Parks director, Facilities director (Webster), CFO	Initial + every three years Directed by Trane	Review Trane and ARC contractual operations and maintenance responsibilities including building occupancy schedules and temperature setpoints, Option C M&V versus Option A M&V, what will be measured versus what is stipulated, Trane TIS, Trane utilities trending and energy performance reporting, etc.

Key Takeaways from Section 8:

- **The Trane team has assembled a service program which will protect and maintain the new equipment that is proposed as part of this energy project scope**
- **The proposed service measures will ensure that the Trane building automation system (control system) will continue to operate each building in an efficient and comfortable manner over the course of time by maintaining unoccupied temperature setback schedules, fine tuning optimized morning cool down and warm-up algorithms, and proactively identifying and diagnosing equipment and system problems**
- **The proposed service program will be administrated and delivered by local Trane employees working out of the Trane Augusta, GA office**
- **The Trane training program includes front-end and on-going training for Augusta-Richmond County building maintenance personnel and for administrative personnel**

Detailed Energy Audit Report

Energy Conservation Measures

at

Augusta-Richmond County
Augusta, Georgia

Prepared:

DISCLAIMER

This report is a Technical Energy Audit, which serves to investigate possible energy conservation opportunities and is based on the plans available, fieldwork, and interviews of site operating and maintenance personnel. The recommendations are based on an analysis of conditions observed and information gathered at the time of the survey and costs are based on experience with similar projects. Statements concerning energy savings are projections only and actual savings to be realized by the customer are dependent upon many factors, including conservation measures implemented, seasonal weather variations, fuel price, and specific energy use practices of the facility occupants and workers. By this report, Trane makes no guarantee, whether express or by implication, of any savings. Any guarantee will be by contract executed by Owner and Trane.

This report, by itself, is not intended, as a basis for the engineering required to adopt any of these recommendations. Its intent is to interest the customer in the potential cost savings of the recommendations. Development of design documents and specifications will be required, conforming to the details of this audit, to successfully implement the ECMs.

Disturbance, removal, or replacement of building material, insulation systems, high intensity discharge and fluorescent lamps, lamp ballasts, power factor correction capacitors, starting and running capacitors of motors and potentially other components which may contain asbestos, mercury, or PCBs require handling and disposal in accordance with applicable Federal and State laws and regulations.

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1. EXECUTIVE SUMMARY

1.1 ENERGY AUDIT DEVELOPMENT INFORMATION

Trane is pleased to provide the following Detailed Energy Audit Report for Augusta-Richmond County. Trane is an international organization with engineers and construction professionals on staff experienced in analyzing and developing comprehensive energy saving programs.

The objective of this study was to identify and quantify Energy Conservation Measures (ECMs) at occupied City-owned buildings to reduce the energy consumption. This objective was met by conducting site visits to existing facilities to determine their existing conditions and analyze existing equipment in those buildings. Trane then examined the energy use profiles of each building using actual electricity bills, natural gas bills, and water/sewer bills. Because of the size and complexity of this project, Trane used a variety of modeling strategies to calculate energy baselines and savings, including spread sheet models and Trace 700™ energy models.

After determining the buildings' baseline energy profile, Trane analyzed potential ECMs that would result in a significant energy usage reduction. The energy savings calculated for each measure are compared against the baseline model and historical consumption to validate the quantities of savings proposed. Trane then determined the financial impact of the proposed ECMs using actual utility rate structures, taking into account escalation of utility rates into the future.

In addition to this report, Trane has included an extensive series of appendices. Because of how voluminous these appendices are, they are being provided to Augusta-Richmond County electronically and are not part of the main body of this report. Included in these appendices are the lighting fixture line-by-line audit, the building envelope line-by-line audit, water audit, rate structures, and Trace 700™ methods for estimating savings and spreadsheet methods for estimating savings.

1.2 BRIEF DESCRIPTION OF FACILITIES

1.2.1 General

Augusta-Richmond County's buildings that are included in this report comprise a total of approximately 1,328,675 ft^2 of conditioned space. The types of buildings surveyed included museums, fire stations, police stations, recreation centers, libraries, office/administrative buildings, public pools, and sports arenas. The list of buildings that were surveyed includes buildings as old as the Old Government House, which was built in 1801, to recently constructed buildings. Geographically, the buildings are spread throughout the eight City districts.

All facilities where energy retrofit work is planned and their addresses are as follows.

Table 1: Site List

Building Name	Street Number	Street
911 Emergency Services	911	4th St.
Appleby Library	2260	Walton Way
Augusta Animal Services	4164	Mack Ln.
Augusta Aquatics Center	3157	Damascus Rd.
Augusta Commons and Riverwalk	836	Reynolds St.
Augusta Fire Department Administrative Building	3117	Deans Bridge Rd.
Augusta Fire Department Administrative Training Center	3125	Deans Bridge Rd.
Augusta Municipal Building	535	Telfair St.

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Building Name	Street Number	Street
Augusta Public Library Headquarters	823	Telfair St.
Augusta-Richmond County Judicial Center	735	James Brown Blvd.
Bernie Ward Community Center	1941	Lumpkin Rd.
Blythe Area Recreation Center	3129	Hwy. 88
Carrie J Mays Community Life Center	1014	11th Ave.
Carrie J Mays Gymnasium	1014	11th Ave.
Central Services	2760	Peach Orchard Rd.
Charles B Webster Detention Center	1941	Phinizy Rd.
Diamond Lakes Library and Robert Howard Community Center	101	Diamon Lakes Way
Doughty Community Center	1200	Nellieville Rd.
Downtown Park Division	302	Watkins St.
Eastview Community Center	644	Aiken St.
Eisenhower Athletic Complex	1488	Eisenhower Dr.
Fire Station 1	1	Broad St.
Fire Station 4	1866	Ellis St.
Fire Station 5	1898	Martin Luther King Blvd.
Fire Station 6	2618	Richmond Hill Rd.
Fire Station 7	2917	Willis Foreman
Fire Station 8	1898	Highland Ave.
Fire Station 9	3507	Walton Way Ext.
Fire Station 10	1056	Alexander Dr.
Fire Station 11	2243	Old Savannah Rd.
Fire Station 12	1151	Hephzibah-McBean Rd.
Fire Station 13	2619	Lumpkin Rd.
Fire Station 14	3507	GA Highway 88
Fire Station 15	1420	Flowing Wells Rd.
Fire Station 16	3446	Old Louisville Rd.
Fire Station 17	3705	Old Waynesboro Rd.
Fire Station 18	4185	Windsor Spring Rd.
Fire Station 19	1600	Brown Rd.
Fleming Tennis Center	1850	Chester Ave.
Friedman Branch Library	1447	Jackson Rd.
Gracewood Community Center	2309	Tobacco Rd.
Henry Brigham Park Senior Center	2463	Golden Camp Rd.
Henry Brigham Park Swim Center	2463	Golden Camp Rd.
Information Technology	535	Telfair St.
Jamestown Community Center	3647	Karleen Rd.
Jones Pool	1617	Holley St.
Julian Smith BBQ Pit	3	Milledge Rd.

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Building Name	Street Number	Street
Julian Smith Casino	2200	Broad St.
May Park Community Center	622	4th St.
May Park Print Shop	712	4th St.
McDuffie Community Center	3431	Old McDuffie Rd.
Newman Tennis Center	3103	Wrightsboro Rd.
Old Government House	432	Telfair St.
Recreation, Parks, And Facilities Administrative Offices	2027	Lumpkin Rd.
Recreation, Parks, And Facilities Equipment Repair	2027	Lumpkin Rd.
Recreation, Parks, And Facilities Maintenance Shop	2027	Lumpkin Rd.
Recreation, Parks, And Facilities New Maintenance Shop	2027	Lumpkin Rd.
Richmond County Municipal Solid Waste Landfill Main Building	4330	Deans Bridge Rd.
Richmond county Municipal Solid Waste Scale House	4330	Deans Bridge Rd.
Richmond County Sheriff's Office	400	Walton Way
Richmond County Sheriff's Office South Precinct	3425	Mike Padgett Hwy.
Richmond County Sheriff's Office Special Ops Precinct	3431	Mike Padgett Hwy.
Richmond County Sheriff's Training Center Administration Building	2098	Greeland Rd.
Richmond County Sheriff's Training Center Bunk House	2098	Greeland Rd.
Richmond County Training Center Dog Kennel	2098	Greeland Rd.
Richmond County Sheriff's Training Center EVOC Training Office	2098	Greeland Rd.
Richmond County Sheriff's Training Center Mess Hall	2098	Greeland Rd.
Richmond County Sheriff's Training Center Myers Building	2098	Greeland Rd.
Richmond County Sheriff's Training Center Shop	2098	Greeland Rd.
Sand Hill Community Center	2540	Wheeler Rd.
Sign Shop AED	1815	Marvin Griffin Rd.
The Boathouse	101	Riverfront Dr.
Traffic Engineering Division Street Lighting	1559	Eagles Way
Wallace Branch Library	1237	Laney Walker Blvd.
Warren Road Community Center	300	Warren Rd.
WT Johnson Community Center	1606	Hunter St.

1.2.2 Lighting Systems

Most of the interior lighting is some type of linear fluorescent lighting fixture. Many of the older vintage T12 have been replaced by T8 fluorescent fixtures, but there are still a considerable number of T12s and T8s remaining in the buildings included in this audit. In addition to linear fluorescent fixtures, there are also compact fluorescent luminaries, incandescent luminaires, halogen luminaires, LED luminaires, metal halide luminaires, and U-Bend luminaires.

The exterior fixtures predominantly include metal halide lighting fixtures, halogen lighting fixtures, high pressure sodium lighting fixtures, high wattage incandescent lighting fixtures, LED lighting fixtures, linear fluorescent lighting fixtures, and compact fluorescent lighting fixtures.

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A complete list of all lighting fixtures and quantities can be found in Appendix 1.

1.2.3 Water and Sewer Conservation

Water efficiency retrofits were conducted at the locations in the table below. Although audits were conducted at these location, water and sewer conservation measures were only economically feasible at the Charles B. Webster Detention Center. The reasoning behind this is the water rates are low, and the other buildings do not pay sewer charges.

Table 2: Water and Sewer Conservation Affected Buildings

Building
Augusta Public Library Headquarters
Office Of the Public Defender
Information Technology
Municipal Building
Richmond County Sheriff's Office
911 Emergency Services
Henry Brigham Community Center
Henry Brigham Swim Center
Henry Brigham Senior Center
Bernie Ward Community Center
Recreation, Park, and Facilities Administrative Offices
Fleming Athletic Offices
Augusta Soccer Park
Utilities-Metering
Utilities- Construction and Maintenance
Augusta Golf Course
Eisenhower Athletic Complex
Augusta Aquatic Center
Jones Pool
Wallace Branch Library
Utilities-Facilities Maintenance
Charles B. Webster Detention Center
Richmond County Correctional Institute
Augusta Airport
Sign Shop AED
Central Services
Robert Howard Community Center
Augusta Animal Services
Blythe Area Recreation Center
Richmond County Sheriff's Training Center

Water fixtures including toilet flush valves, faucets, and showerheads were audited at the Charles B. Webster Detention Center. The large portion of water fixtures surveyed during the audit were high flow fixtures: 3.5 gallons per flush (gpf) water closets, 3.7 gallons per flush (gpf) water closets, and 1.6 gpf urinals. Approximately half of the water closet fixtures were also found to be 1.6 gallons per flush (gpf), which are not being changed out. Other water conservation measures include a cooling tower retrofit, cooling tower credit, ozone laundry system measure, and flush valve controls.

A complete list of all fixtures included in the water audit and savings measures can be found in Appendix 2.

1.2.4 Building Envelope

There are a number of different construction types throughout all the buildings surveyed during this audit. These construction types are related to the vintage of the building, the function of the building, and the needs of the building occupants. One major need that was addressed in this audit is detailing the deficiencies in the building envelope at the Municipal Building.

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A complete list of all buildings included in the building envelope audit can be found in Appendix 3.

1.2.5 Mechanical Systems

Augusta-Richmond County has many mechanical systems that are past their useful life. Trane used this audit to document, to the best of our ability, the age and condition of existing HVAC equipment in the buildings included in this audit. The mechanical equipment surveyed includes but is not limited to chillers, boilers, pumps, air handling units (AHUs), roof top units (RTUs), split systems, and package terminal units (PTACs). The maintenance costs of keeping aged equipment in serviceable condition is a primary opportunity for operational cost savings discussed in Sub-section 1.4 Major Customer Operational Benefits.

A detailed equipment list of all equipment surveyed in this audit is contained in Appendix 4.

1.2.6 Controls

Much like the mechanical systems at Augusta-Richmond County, much of the HVAC controls infrastructure is well out of date. While Augusta-Richmond County does have modern direct digital controls (DDC) systems for some of their larger buildings, there are also a number of buildings operating on older pneumatic controls. In most buildings such as libraries, recreation centers, etc., the majority of thermostats that control HVAC equipment are standard electromechanical thermostats or non-programmable digital thermostats.

1.2.7 Miscellaneous Loads

Many of the Augusta-Richmond County's buildings have plug loads that add to the electrical consumption of each building. These plug loads include items used for occupant comfort: fans and space heaters. It also includes standard office equipment such as computers, monitors, printers, and copiers. Many of the facilities have kitchens and break rooms that include additional building loads such as refrigerators, electric or gas stoves, microwaves, vending machines, and coffee makers. There are also some pools with pool pumps. There are no measures in scope to reduce energy consumption occurring from miscellaneous loads.

1.2.8 Occupancy

Building occupancy depends on the function of each individual facility. Fire stations and police stations often operate around the clock, while offices are typically occupied 8AM to 6PM. There is a wide range of occupancy types that were accounted for and discussed in the Existing Buildings and Systems Descriptions. Occupancy details, where known, are noted in the existing facility descriptions

1.2.9 Utilities

The utility providers for Augusta-Richmond County are Georgia Power Company and Jefferson Energy Cooperative for electricity; Scana Energy, Constellation, Walton EMC, and Georgia Natural Gas for natural gas; and the Augusta Utilities Department for water and sewer.

The surveyed building's utilities for the Baseline Year of October 2018 through September 2019 are outlined below. This only includes buildings outlined in Table 1.1.

Electric Consumption	25,711,324 kWh
Electric Demand	6,346 kW*
Electric Cost	$2,185,728
Natural Gas Consumption	239,571 therms
Natural Gas Cost	$233,657
City EUI	94 kBtu/ft^2
City ECI	$2.04/ft^2
Total Utility Spend	$2,419,385

*Electricity demand was not provided for all locations.

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The utility numbers above apply only to the surveyed buildings and do not include roadway lighting, roadway irrigation, parking deck consumption, water and sewer system consumption, etc. The values presented above for EUI and ECI only include the energy usage and associated cost for electricity and natural gas. Water consumption and cost are typically left out of this calculation.

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1.3 SUMMARY OF SAVINGS

The ECMs investigated in this technical analysis are presented in the table below. The economics associated with these ECMs are also presented. The Base Utility Rates are defined in Section 3, and a discussion regarding how the Base Utility Rates were escalated to obtain the Proposed Escalated Cost Savings in Table 2 are also contained in this section. These ECMs have been identified as potential candidates for implementation, and a detailed analysis of all of the ECMs are provided in Section 5.

Table 3: Guaranteed Utility and Cost Savings by ECM Category

ECM	Guaranteed Energy Savings				
	kWh	kW	Therms	kgal	$ Savings
Lighting Upgrades	4,161,541	6,444	-10,442	0	$434,511
Water and Sewer Conservation	0	0	47,451	16,384	$87,657
Building Envelope Improvements	743,593	612	17,703	0	$106,866
Controls Upgrades	1,817,476	297	13,885	0	$182,201
Mechanical/HVAC Upgrades	348,145	633	7762	0	$52,971
Chiller Plant Improvements	2,374,673	-89	0	0	$110,201
Boiler Plant Improvements	-2,314	-3	3647	0	$7,756
Renewable Energy Systems	331,811	0	0	0	$34,006
	9,774,925	**7,894**	**80,006**	**16,384**	**$1,016,169**

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1.4 MAJOR CUSTOMER OPERATIONAL BENEFITS

Implementing the described measures has many benefits in addition to reducing facility energy consumption and associated cost. In most instances, maintenance costs will also be reduced due to a reduction in equipment operating hours and/or loads imposed on equipment, and installation of longer life materials. Replacing old equipment nearing the end of its useful life will also reduce maintenance costs and eliminate future replacement costs. New system designs often improve system diagnostics, detecting, and repairing problems before building occupants are aware they exist. Lighting system retrofits often improve space lighting level and HVAC measures often result in improved space comfort conditions and indoor air quality. Spaces are more pleasant to occupants, which often results in an increase in productivity. The operational savings benefits Trane identified during the Detailed Energy Audit, with input from Augusta-Richmond County personnel, are summarized below. A detailed description of these operational savings categories and the computation thereof can be found in Section 6.

Table 4: Summary of Operational Savings

Operational Savings shown here are based upon past and projected expenditure data . As a direct result of the work to be performed by Trane, the Customer shall achieve *annual* operational cost savings in the amounts set forth in the table below during the Guarantee Term.

Description	A - Direct Cost Avoidance	B - Indirect Cost Avoidance	C - Capital Cost Avoidance
Annual BAS Service Savings	$19,213		
Annual Lighting Operation Savings	$70,047		
Capital Cost Avoidance			$241,649
Total	**$89,260**	**$0**	**$241,649**

A Direct Cost Avoidance: Reduction or elimination of costs or expenses in connection with existing or planned service contracts, materials, supplies, energy costs and labor expenditures. Direct cost avoidance Operational Savings may include savings achieved through a reduction in fuel and/or electricity rates ("Energy Rate Optimization Savings") by one or more of the following means:

(i) Improved rate from local electric utility company, natural gas company, or fuel company;

(ii) Direct purchase of natural gas or electricity; and/or

(iii) Bulk purchase of fuel.

B Indirect Cost Avoidance. Customer valuation, including such items are re-deployed labor resources and reduction in overhead

C Capital Cost Avoidance. Future replacement expenditures avoided as a result of new equipment installed.

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2. EXISTING BUILDINGS AND SYSTEMS DESCRIPTIONS

2.1 911 Emergency Services

Site Overview

The 911 Emergency Services buildings is the public safety answering point for the Emergency Services in Augusta-Richmond County. The center is a single-story building located at 911 4th St and is approximately 9,100 square feet. The center provides consolidated public safety dispatch services to the citizens of Richmond County and processes over 500,000 calls annually.

Lighting Systems

Majority of fixtures at this location are T12 and T8 linear fluorescent lamps. Exterior lighting fixtures are 400-watt and 70-watt metal halide fixtures as well as 400-watt and 70-watt high pressure sodium fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The building has a brick and masonry façade and interior walls are sheetrock. The exterior is in good condition. There are approximately 15 windows located on the exterior of the building.

Mechanical Systems

The building has four RTUs ranging from 5 to 12.5 tons. All of the units were manufactured by Carrier in either 2009 or 2012 and all are in poor condition. Cooling and heating is provided by these 4 units.

Controls

Existing HVAC controls throughout the building include a Honeywell thermostat, and two Emerson thermostats. All of these thermostats are located in lockboxes preventing occupant control.

Miscellaneous Loads

Given this building is a call center for emergencies, there are multiple computers located throughout the building. These compromise the largest miscellaneous load at this location.

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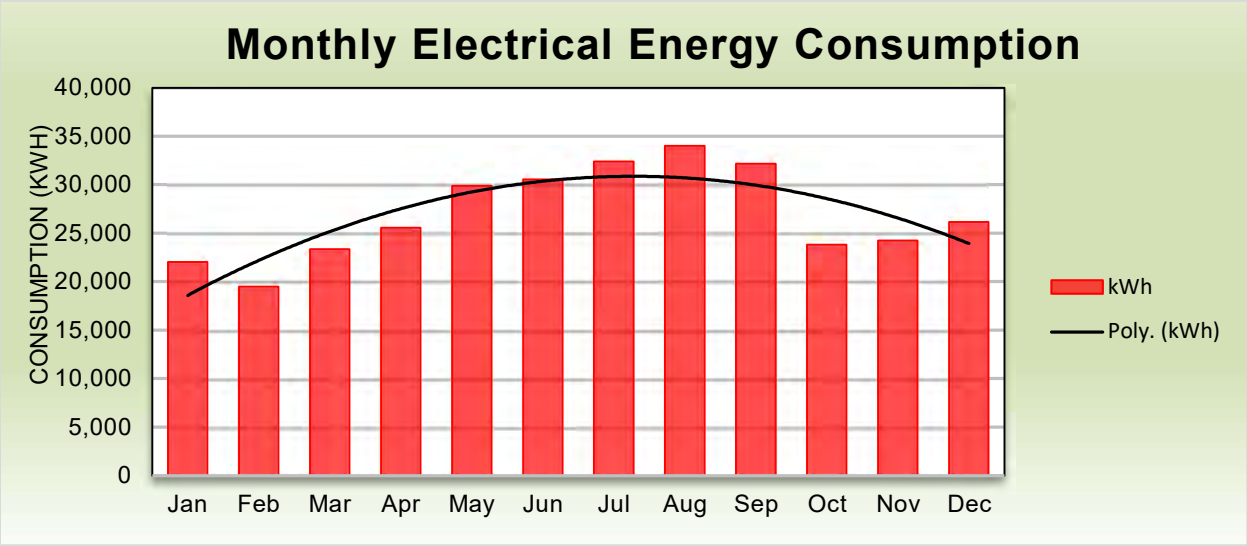
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	72	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the 911 Emergency Services Building.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for the 911 Emergency Services building during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods.



Monthly electrical demand (kW) is shown below, for the baseline year. The profile matches that of the electrical energy consumption profile.

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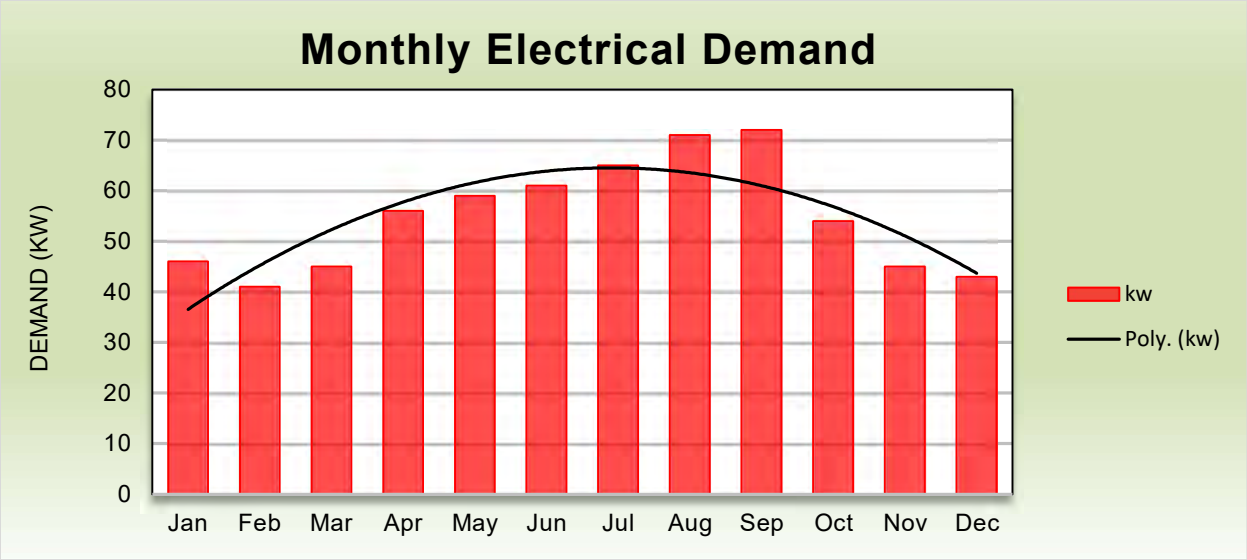

Natural gas is not used at this location.

2.2 Appleby Library

Site Overview

Originally a residence constructed in 1830, Appleby Library serves as a public library located on 2260 Walton Way. The library is a two-story building with basement and is approximately 7,000 square feet.

Lighting Systems

Majority of interior lighting at this location is provided by T12 and T8 linear fluorescent fixtures, although there are some incandescent fixtures throughout the building as well. Exterior lighting fixtures are mainly 250- and 40-watt metal halide fixtures, with some LED and compact fluorescent fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

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Building Envelope

The 2-story, wood-frame building has double-hung sash windows and 2-story porticoes. North and south facades each have six 2-story columns to support the heavy architrave. Overall, the exterior of the building is in good condition.

Mechanical Systems

Appleby Library has two refrigeration condensing units connected to one split system air AHU that provides cooling to the building. Heating is provided via a hot water loop which connects to the AHU. This hot water is generated onsite by an electric hot water boiler.

Controls

The AHU serves three different zones and is controlled by three thermostats. All thermostats are pneumatic.

Miscellaneous Loads

There are several computers located throughout the building for public use as well as three for staff use.

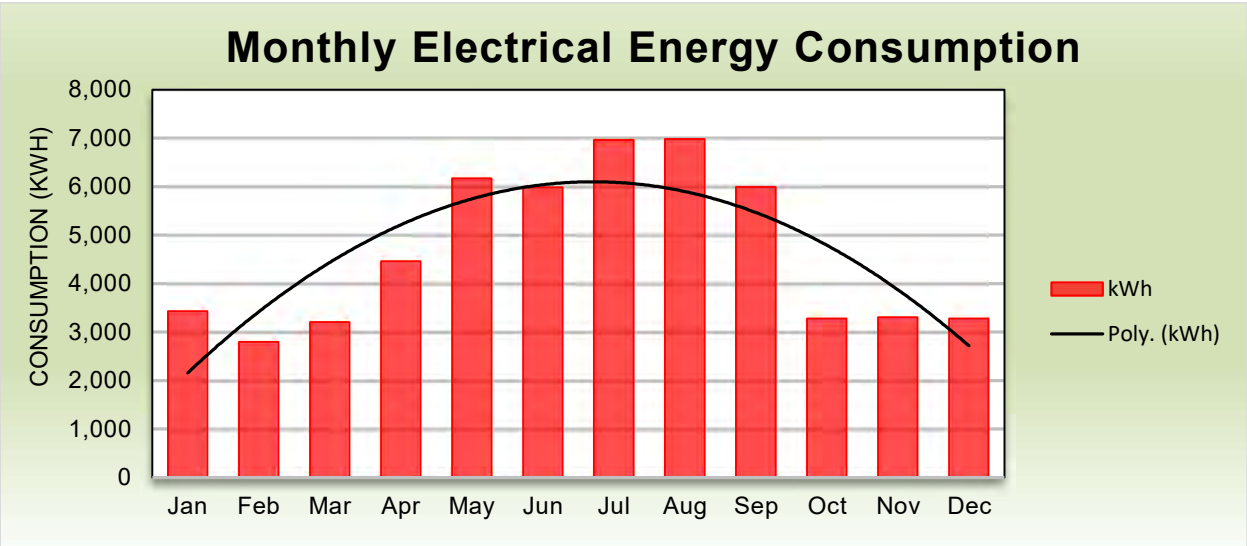
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	74	70	9:30a – 5:30p	9:30a – 5:30p	9:30a – 5:30p	9:30a – 5:30p	9:30a – 5:30p	9:30a – 5:30p	Closed
UnOccupied	74	70	5:30p – 9:30a	5:30p – 9:30a	5:30p – 9:30a	5:30p – 9:30a	5:30p – 9:30a	5:30p – 9:30a	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Appleby Library.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for the Appleby Library building during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with typical buildings that have gas heating. Peaks occur over the summer and for cooling loads, with slight bumps in the winter for the fans for the gas equipment to run.



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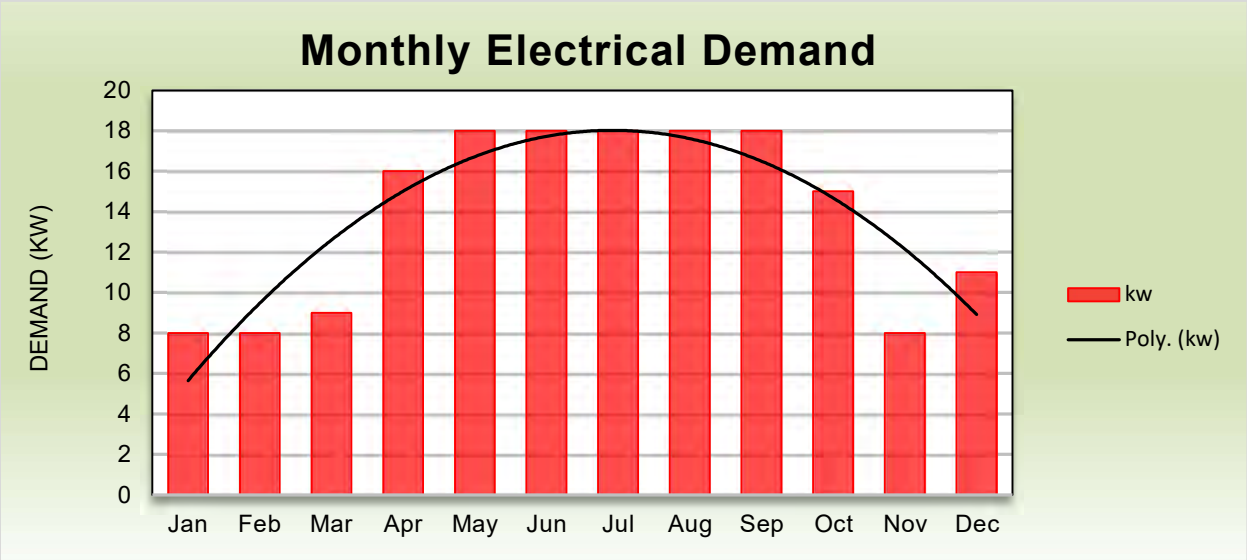
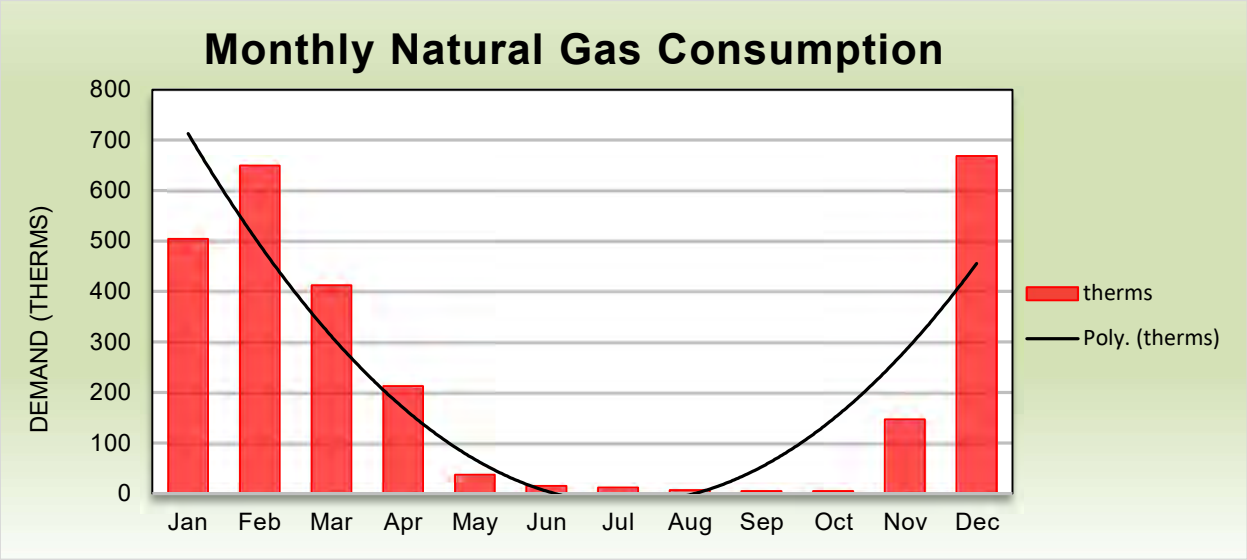
Monthly electrical demand (kW) is shown below, for the baseline year. The demand profile is consistent with electrical consumption profile.



Monthly natural gas (therms) is shown below, for the baseline year. This shows a very typical natural gas profile, with spiking in the winter due to heating needed for the building.



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2.3 Augusta Animal Services

Site Overview

The Augusta Animal Services serves as a shelter for and treatment facility for lost, abandoned, released, stray, and nuisance animals. The building is located at 4164 Mack Lane and is approximately 17,500 square feet.

Lighting Systems

Lighting at the Augusta Animal Services building is mainly T8 linear fluorescent luminaires, although there are also some compact fluorescent and U-bend fluorescent fixtures throughout the interior as well. All exterior fixtures are 100-, 400-, 50-, and 70-watt metal halide luminaires.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

This Augusta Animal Services building has a cement façade with a pitched metal roof. Interior walls are painted cement block. There are double pane glass windows throughout the building exterior.

Mechanical Systems

The building is served by an air-cooled chiller on grade. The existing Trane chiller is approximately 17 years old, and 70 tons. Chilled water is distributed through the chiller and building air handling units via an existing constant speed chilled water pump. The existing chilled water circulation pump is installed in a mechanical room on the mechanical mezzanine in the building. The air-cooled chiller supplies chilled water to one energy recovery unit and six (6) blower coil units in the building. The SEMCO energy recovery unit provides 100% outdoor air to the building for ventilation air to the blower coil units as well as all conditioned air to the animal kennels. Air is exhausted from the animal kennels and building restrooms by this unit. The unit also has a chilled water coil to de-humidify and cool the outside air after the enthalpy wheel and a hot water coil to heat the air during the winter. The sensible wheel adds re-heat to the airstream after the cooling coil to supply neutral air to the kennels and blower coil units. The energy recovery unit and blower coil units are located within the building on a mechanical mezzanine. There is also one electric hot water boiler and one domestic water boiler on site.

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Controls

There are four zone sensors that control the building. These sensors are located in the back hallway, field officer's office, director's office, lobby, check in room, and surgical suite.

Miscellaneous Loads

Largest miscellaneous loads at this location would be for chilled water pumping, surgical equipment, and office equipment.

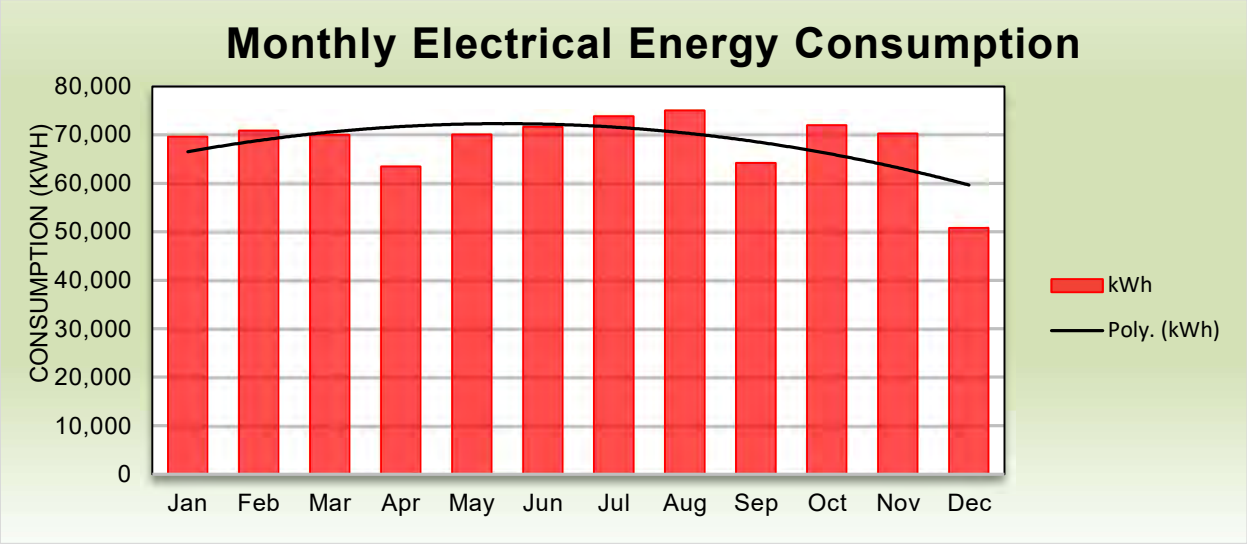
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	74	70	8:30a – 5p	8:30a – 5p	8:30a – 5p	8:30a – 5p	8:30a – 5p	12p – 5p	Closed
UnOccupied	74	70	5p – 8:30a	5p – 8:30a	5p – 8:30a	5p – 8:30a	5p – 8:30a	5p – 12p	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Augusta Animal Services building.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for the 911 Emergency Services building during the baseline year (October 2018 to September 2019). The utility shows a fairly consistent electricity usage throughout the year. This makes sense for a building of this type where outside air is constantly needed to clear out any odors in the building.



Monthly electrical demand (kW) is shown below, for the baseline year. The profile is consistent with that of the electrical consumption profile.

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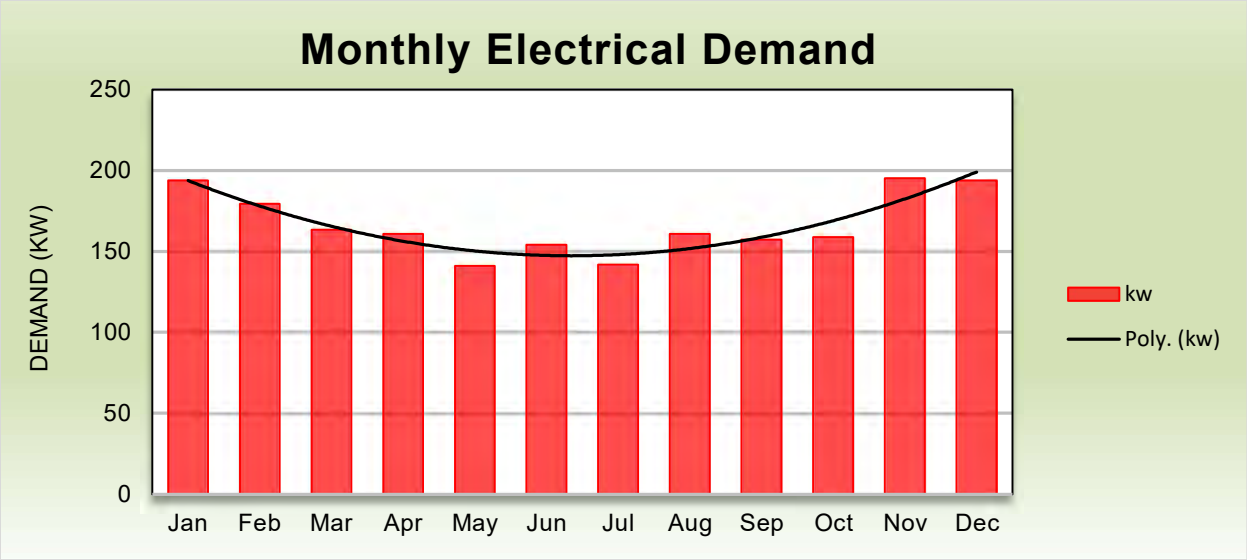

Natural gas is not used at this location.

2.3.1 Augusta Animal Services Facilities Improvement Measure (FIM)

Facility improvement measures (FIMs) are measures intended to improve the operation and value of building systems but are not associated directly with energy savings.

The Animal Services center is experiencing Chiller failure and unwanted odor propagation. The mechanical system will be upgraded to improve overall HVAC system performance. Below are the goals of this upgrade.

- Replacement of the Chiller to ensure cooling reliability and availability
- HVAC repair to eliminate animal odor propagation into office areas of the building
- Ensure reasonably efficiency operation of HVAC system
- Control Upgrades

The existing Trane air-cooled chiller will be replaced with a like for like replacement. The existing chiller is approximately 17 years old and is nearing the end of its usable life. The chiller has operational issues and a reduced operating efficiency due to age and degradation. A new chiller will provide a more efficient operation and reduce electrical consumption as well as provide more reliable operation and less maintenance. The existing chilled water piping will be removed from the existing chiller connections back to shut-off valves. New piping will be installed as required to connect to the new chiller. The new chilled water piping will be provided with insulation. Factory controls will be provided with the new chiller, including a touchpad interface for stand-alone chiller control. The chiller shall be interlocked with the chilled water pump to start the pump when the chiller starts. The chilled water chemical pot feeder will be valved off to prevent condensation. The new chiller and piping system will be filled and flushed with new chemical added as necessary to accommodate newly the installed chiller. The leak on the pump discharge of the chilled water pump will be corrected. Existing electrical feeders and disconnects to the existing air-cooled chiller shall be re-used with the new chiller. The energy recovery unit (ERU-1) will be re-furbished to return it to original design operation. All leaks in the supply ductwork form the ERU and the six (6) Trane blower coilers will be sealed. All supply and return ductwork throughout the building will be cleaned to remove accumulated dirt and pet hair. This included turning vanes and dampers in the ductwork. The duct liner will be removed in the exhaust ductwork. All outside air duct connections to the blower coil units will be inspected and verified for proper connections. Any found to be disconnected will be reconnected. All supply and return air grilles in the building will be cleaned to remove and dirt and objects restricting airflow.

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The operating condition of all splitter dampers installed in the ductwork at the ERU will be inspected and verified for proper operation. Any found to have improper operation will be restored to fully operable condition. The entire HVAC system will be rebalanced to design airflow conditions. Bipolar ionization will be installed on devices in the return air section of each blower coil unit. The existing boiler will have new boiler controls installed, including a new stand-alone DDC controller for the heating hot water system. A new DDC control system will also be installed for the entire facility.

Energy impact at Augusta Animal Services is not discussed under this IGA given that this location was handled under a separate contract. Only savings from lighting improvements measures are discussed in this report for this location.

2.4 Augusta Aquatic Center

Site Overview

Located at 4164 Mack Ln, the Augusta Aquatic center is an indoor public pool and is approximately 46,840 square feet. The pool is not only accessible to the public for open swim but is also used to host swim meets for local schools as well as league swim meets. There is a food court, offices, men and women's locker rooms, a weight room, as well as meeting room located in the building.

Lighting Systems

The interior lighting at the Augusta Aquatics Center is T8 linear fluorescent fixtures. There are also metal halides located in the pool room. The exterior perimeter lighting consists of metal halide lamps as well as high pressure sodium lamps.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The building is one story and built on a flat lot. The building has a brick and masonry façade and interior walls are sheetrock or block. The exterior is in good condition. Majority of the windows are located at the front of the buildings at the main vestibule entrance. There are three windows located at the back of the building. Windows are double paned glass.

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Mechanical Systems

The natatorium portion of the building is served by two PoolPak dehumidification units located in the mechanical mezzanine. The units are packaged units with remote air-cooled condensers located outside on grade. These units have hot water reheating coils for heat. The hot water loop has three primary hot water pumps. There are six pool pumps for water circulation. Heating hot water is supplied by two Peerless natural gas fired boilers for pool heating and heat to the dehumidification units. The system also includes heat recovery from the dehumidification units for heating the pool water, although it is currently not operational. This system consists of six plate and frame heat exchangers and four pumps, but the piping to the dehumidification units for the heat recovery is valved off. There are also four natural gas fired roof top packaged units as well as 6 split system air handling units that provide additional heating and cooling to the other portions of the building.

Controls

All HVAC systems are controlled by nine thermostats throughout the building. Four thermostats, all of which are located in publicly accessible areas, are in lockboxes to prevent setpoint change. The remaining thermostats are in offices and the kitchen and are not in lockboxes. Of these thermostats, four are programmable, although they are currently not programmed. These are in the offices, men's and women's locker room, and kitchen. The other five thermostats are pneumatic. The mixture of control types does not allow for effective communication for building systems.

Miscellaneous Loads

The largest miscellaneous load at the Augusta Aquatics Center that is unique to swimming pools is the pool circulation pumps.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	73	6a – 8p	6a – 8p	6a – 8p	6a – 8p	6a – 8p	6a – 8p	Closed
UnOccupied	72	73	8p – 6a	8p – 6a	8p – 6a	8p – 6a	8p – 6a	8p – 6a	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Augusta Aquatics Center.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for the Augusta Aquatics Center during the baseline year (2018). A different baseline periods was used at this location as some of the mechanical equipment was not operable during the project wide baseline of October 2018 through September 2019. Thus, the baseline year of 2018 was chosen as this utility data is a better representation of normal operating conditions at the building. The energy usage at the Augusta Aquatics Center largely depends on the schedule of events. The loads within the building are going to greatly influence how long pieces of electric equipment, such as AHUs, PTACs, and pumps, are going to run. As seen in the chart below, there is a consistent baseload likely from the pool circulation pumps running 24/7 year-round. That being said, there are still seasonal trends present in the data noted by the decreased cooling loads in the winter which corelates with higher gas usage during these months. Conversely, electrical usage peaks in the summer when the DX cooling systems run for longer periods of time to maintain building comfort.

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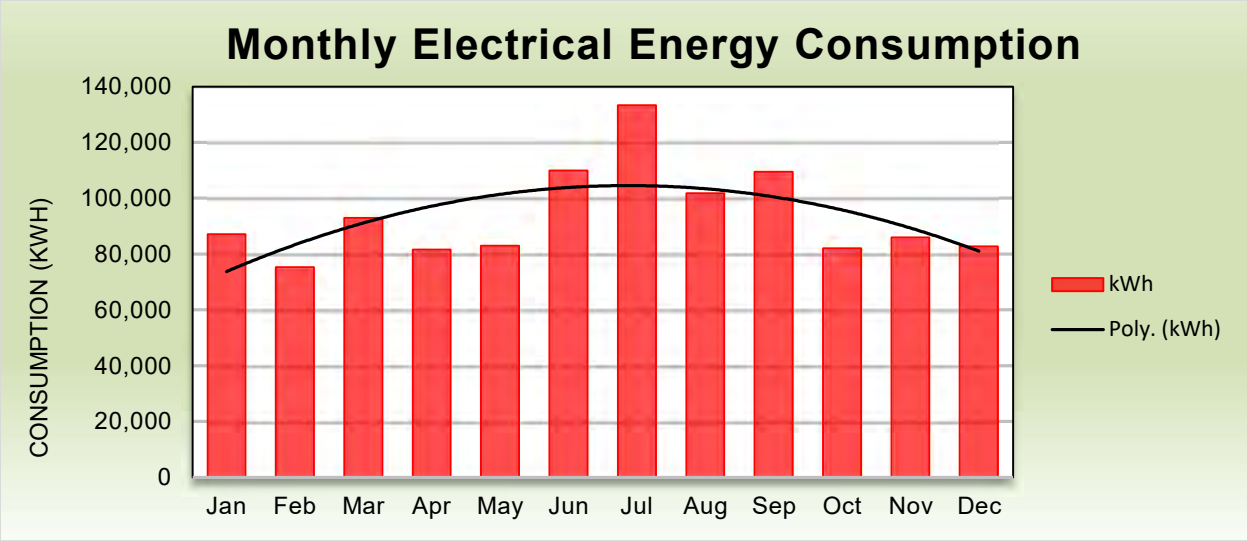
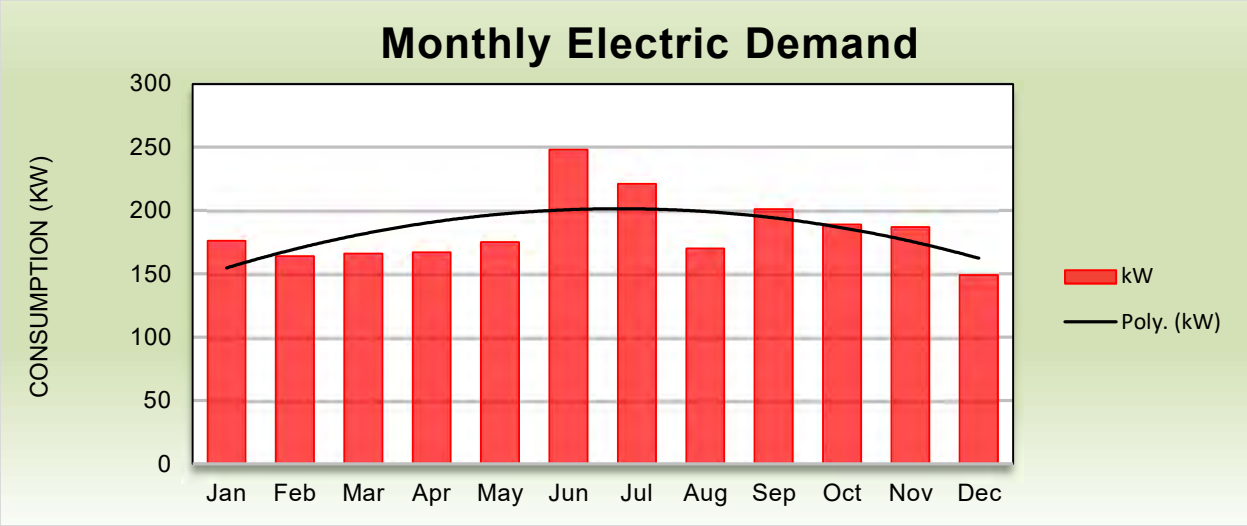


Monthly electrical demand (kW), shown below, for the baseline year follow the same trend as the monthly electrical energy data for the same reasons discussed above.



Monthly natural gas consumption follows a typical trend for a building with the same HVAC systems as Augusta Aquatics Center. As discussed above, gas consumption peaks in the months where the building requires heating. The small amounts of gas usage during the warmer months (May through September) is likely due to the building's base natural gas load where a small amount of natural gas is used for domestic water heating.

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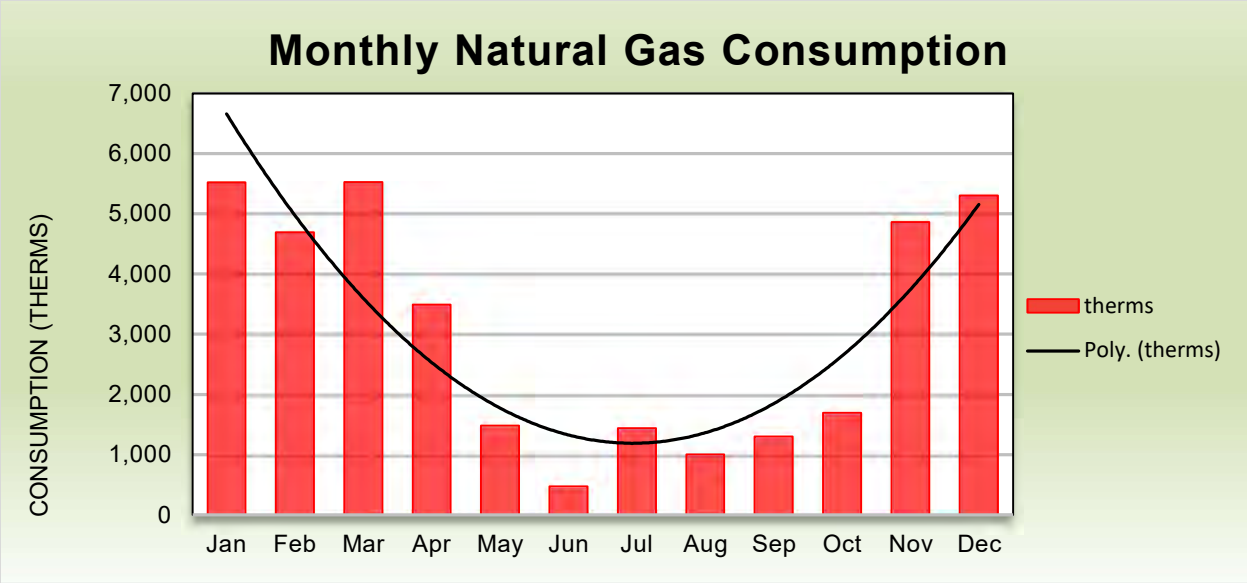

2.4.1 Augusta Aquatics Center Facilities Improvement Measure (FIM)

Facility improvement measures (FIMs) are measures intended to improve the operation and value of building systems but are not associated directly with energy savings.

The Augusta Aquatics Center are experiencing high humidity and air quality issues in the natatorium. The existing PoolPak units serving the space are near the end of their useful life and are not performing to original design to maintain the proper air conditions in the natatorium. Given this, upgrades to the mechanical system at this location were handled under a separate contract and such upgrades will be installed. Below are the goals of this upgrade.

- Replacement of the PoolPak units with new to meet the current needs of the space.
- Repair or replacement of the PoolPak heat recovery system
- Ensure reasonably efficient operation of HVAC system
- Optimize controls for the Pool HVAC and heat recovery systems.
- Replacement of the heating boilers with new high efficiency condensing boilers.
- Replacement of existing corroded electrical disconnects serving the Pool pumping systems.

The PoolPak dehumidification units are approximately 20 years old and have performance degradation and unit failure due to age. The pool heat recovery system is also not functional. Existing mechanical systems will be demolished. The PoolPak dehumidification units (DH-1 and DH-2) will have like for like replacement units located outside with new duct work feeding into the facility with newly poured pads and permanent security fencing. The exterior wall will also be demolished to allow for demolition of existing equipment. The exterior wall will be re-bricked once demolition is complete. The existing heating hot water piping will be modified as required to connect the hot water connections on the new units located on the exterior. All jacketed insulation will be provided for piping. The existing pool water piping will be modified to connect to the pool water heat recovery connections on the new units located on the exterior. The six (6) existing plate and frame heat exchangers will be replaced and provided with new insulation on disrupted piping for changeout. Two new heating hot water pumps will replace pumps P1 and P2. These pumps will have new VFD drives and automated controls. Two new boilers will also be installed and located in an exterior newly built building with poured pad and security door. This building will be located within the newly fenced mechanical yard. The six (6) existing split system HVAC heat pumps and four (4) gas fired rooftop HVAC units will be replaced with new units with factory mounted Air-Fi controls. A new Tracer SC+ automation control system will be installed to interface and control new facility equipment Web based with remote Digi-

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router. Trane will also provide new electrical disconnects and connection of replaced equipment, new starters, and disconnects for pool system pumps located on the first-floor mechanical room due to corrosion. New mezzanine lighting will be installed to allow for proper lighting of mechanical spaces. New electrical power to the first floor unit heater will also be provided. Existing duct exhaust will be repaired and rerouted. Newly installed electrical feeders for the exterior located equipment with new disconnects will be provided. 100% design documents for construction, permits, fees, and bond is included.

These upgrades were modeled in a Trace 700™ energy model. Energy impact at the Aquatics Center is not discussed under this IGA given that this location was handled under a separate contract. Only savings from lighting improvements measures are discussed in this report for the Aquatics Center.

2.5 Augusta Commons and Riverwalk

Site Overview

Augusta Commons and Riverwalk sits between the 8th and 9th Street Block on 836 Reynolds Street. This facility is used as a venue for weddings, parties, concerts, and special events in Downton Augusta.

Lighting Systems

Audit of interior lighting at this location only included the restrooms. All interior restroom fixtures were T12 linear fluorescent fixtures. Exterior lighting was incandescent fixtures, with one 90-watt metal halide fixture and some T12 and T8 linear fluorescent fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Augusta Commons and Riverwalk has a brick masonry façade with windows on the first and second floor. The roof is a pitched metal roof.

Mechanical Systems

No mechanical system information was recorded at this location, as it is not in scope.

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Controls

No control system information was recorded at this location, as it is not in scope.

Miscellaneous Loads

Miscellaneous loads at this location are subject to equipment used during the time of facility rental.

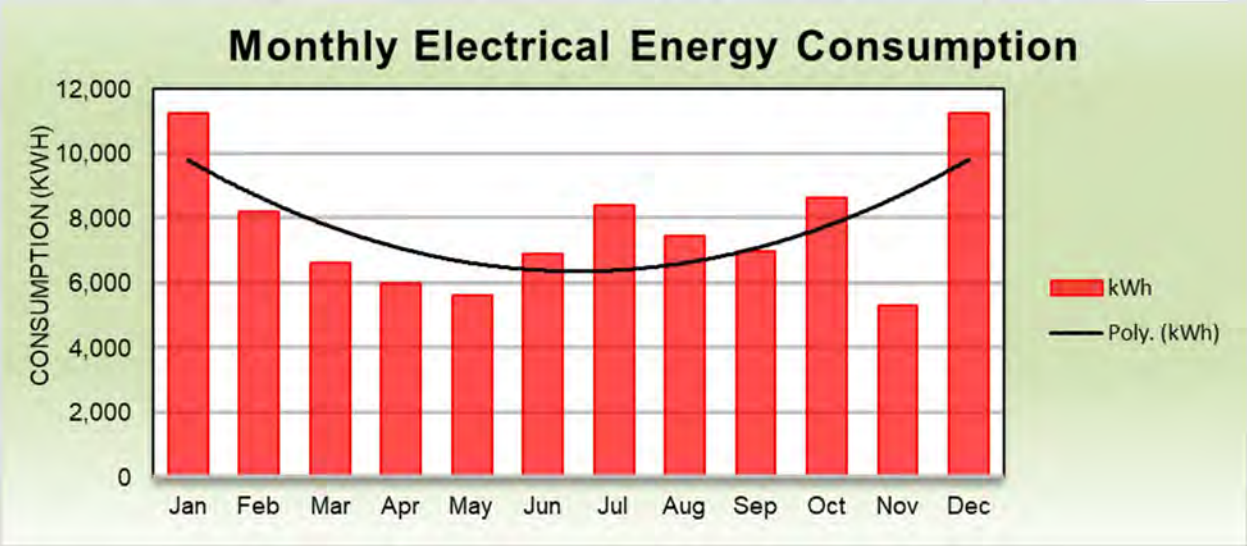
Operating Schedule Description

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	Rentable	Rentable	Rentable	Rentable	Rentable	Rentable	Rentable
UnOccupied	Rentable	Rentable	Rentable	Rentable	Rentable	Rentable	Rentable

There is not set operational hours at Augusta Commons and Riverwalk, as the building is primarily used as a rental space.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for the Augusta Commons and Riverwalk building during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods.



Monthly electrical demand (kW) is shown below, for the baseline year. The profile demand profile for this location varies significantly. This is expected, as this building is used as a rental facility for larger events, and thus demand will vary depending on schedule of events.

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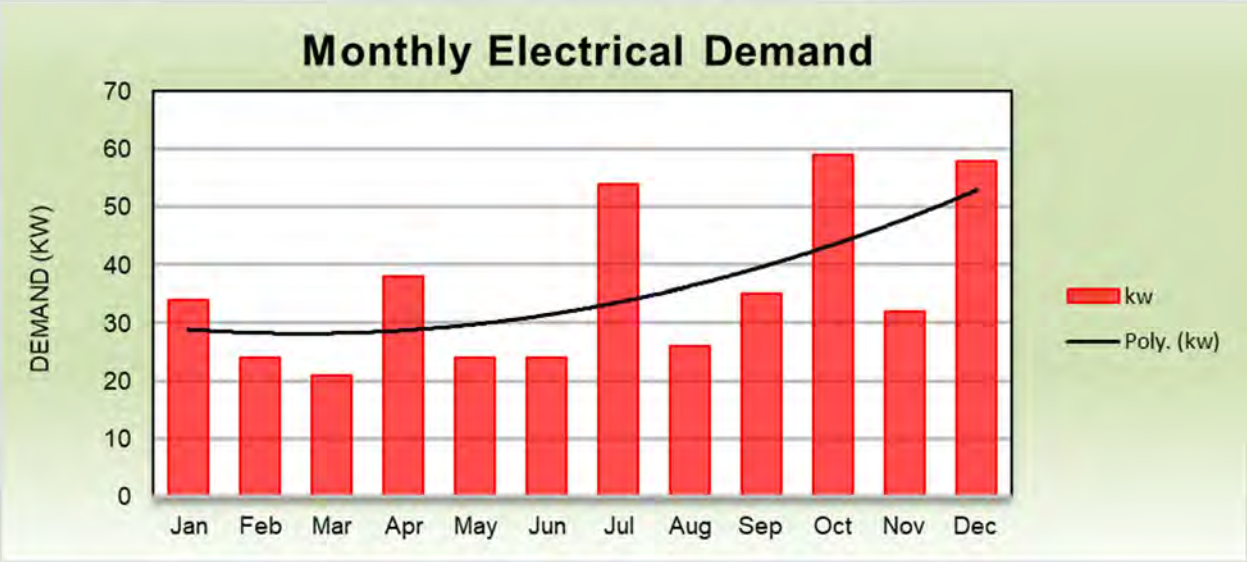

Natural gas is not used at this building.

2.6 Augusta Fire Department Administrative Building

Site Overview

The Augusta Fire Department Administrative Building houses not only administrative offices but also the prevention bureau and training division for Augusta-Richmond County's Fire Department. The building is approximately 17,361 square feet and is located at 3117 Deans Bridge Road.

Lighting Systems

Majority of light fixtures at this location are T8 linear fluorescent fixtures. There are also some compact fluorescent and incandescent fixtures throughout the building. Exterior lighting is provided by a combination of compact fluorescent and 100- or 70-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

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Building Envelope

The Augusta Fire Department Administrative Building is a single-story building located at 3117 Deans Bridge Road. The exterior walls are concrete, and the roof of the building is a flat membrane roof in good condition.

Mechanical Systems

The building has one ductless split AHU paired with a heat pump condensing unit. There are also two natural gas fired rooftop packaged units that serve the building as well as two exhaust fans on the roof for the kitchen.

Controls

Existing HVAC controls throughout the building include two Reliable pneumatic thermostats.

Miscellaneous Loads

Given this building is a call center for emergencies, there are multiple computers located throughout the building. These compromise the largest miscellaneous load at this location.

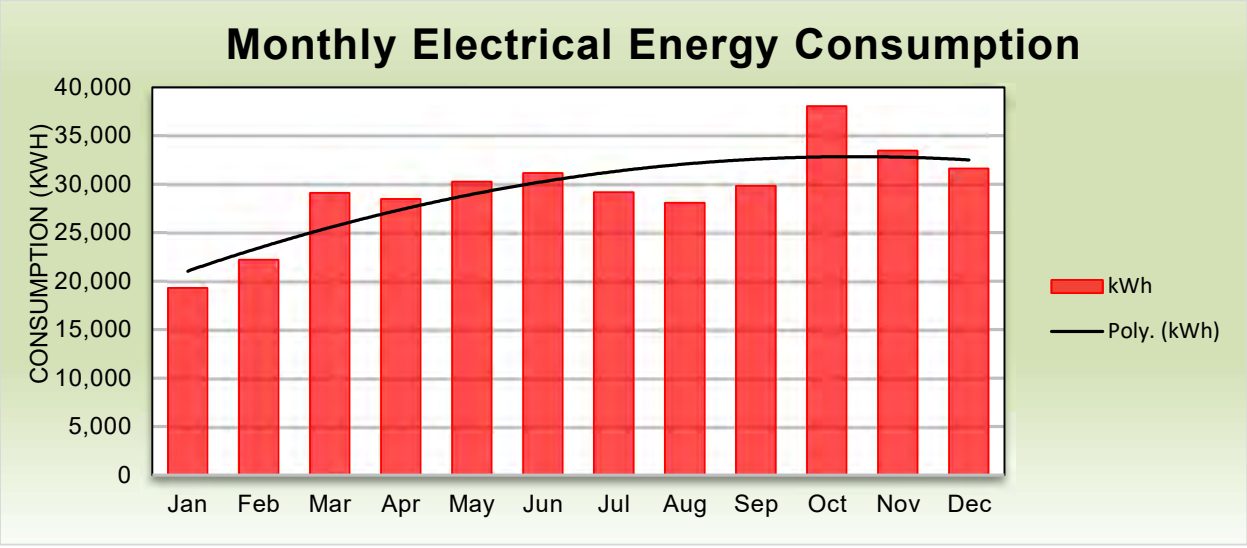
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	74	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	74	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Augusta Fire Department Administrative Building.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for the Augusta Fire Training Center for the baseline period of October 2018 through September 2019. This shows a relatively constant utility profile.



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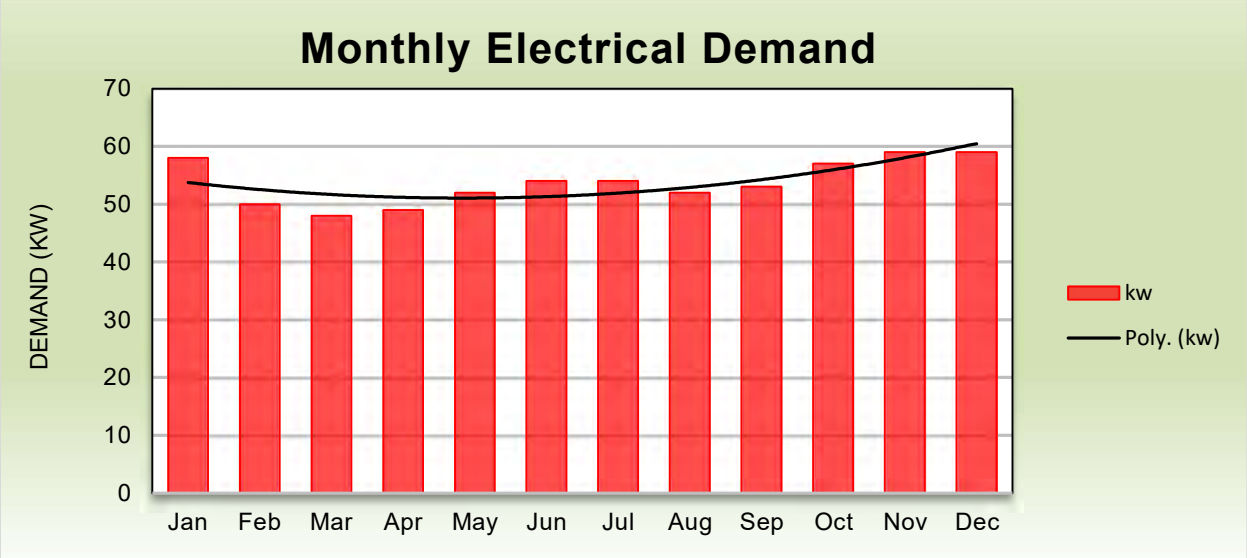
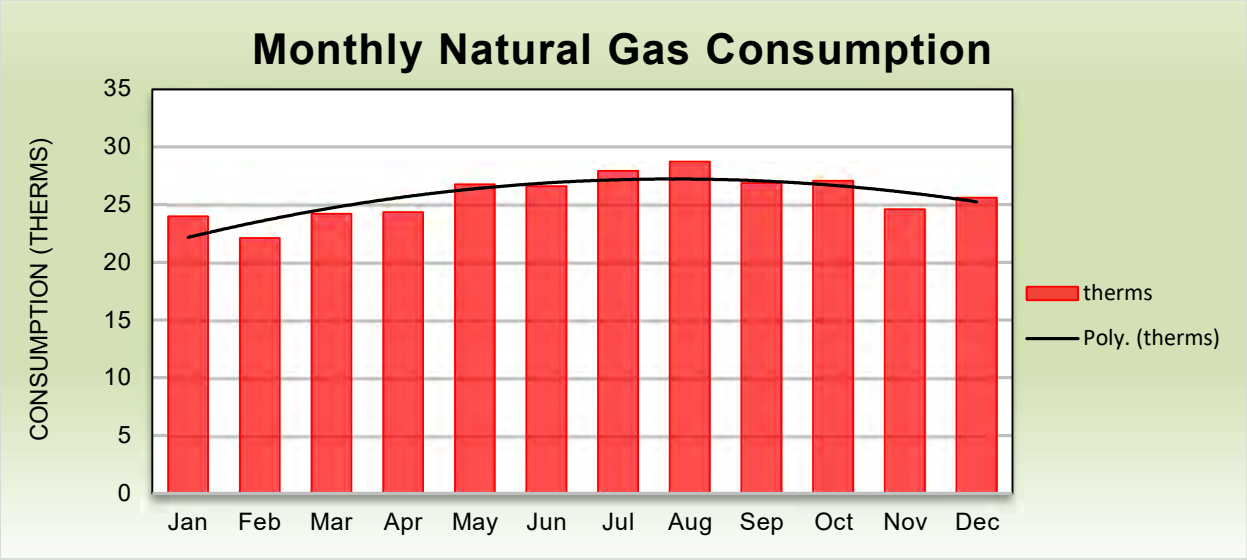
Monthly electrical demand (kW) is shown below for the baseline period. This profile is consistent with that of the energy consumption profile.



Monthly natural gas (therms) is shown below, for the baseline period. The profile shows relatively consistent consumption.



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2.7 *Augusta Fire Department Training Center*

Site Overview

The Augusta Fire Department Training Center houses the training division for Augusta-Richmond County's Fire Department. The building is approximately 17,361 square feet and is located at 3125 Deans Bridge Road.

Lighting Systems

Mechanical Systems

Only lighting improvements are in scope at this location, and thus no mechanical system information was collected at the time of the audit.

Controls

Only lighting improvements are in scope at this location, and thus no controls information was collected at the time of the audit.

Miscellaneous Loads

Only lighting improvements are in scope at this location, and thus no miscellaneous load information was collected at the time of the audit.

Operating Schedule Description

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy of the Augusta Fire Department Training Center.

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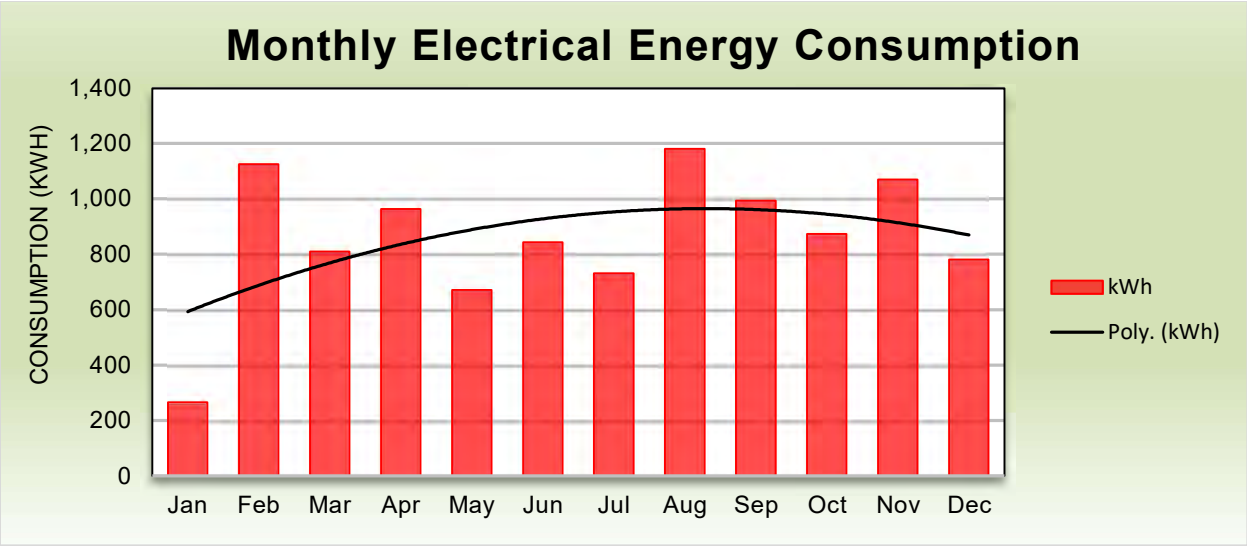
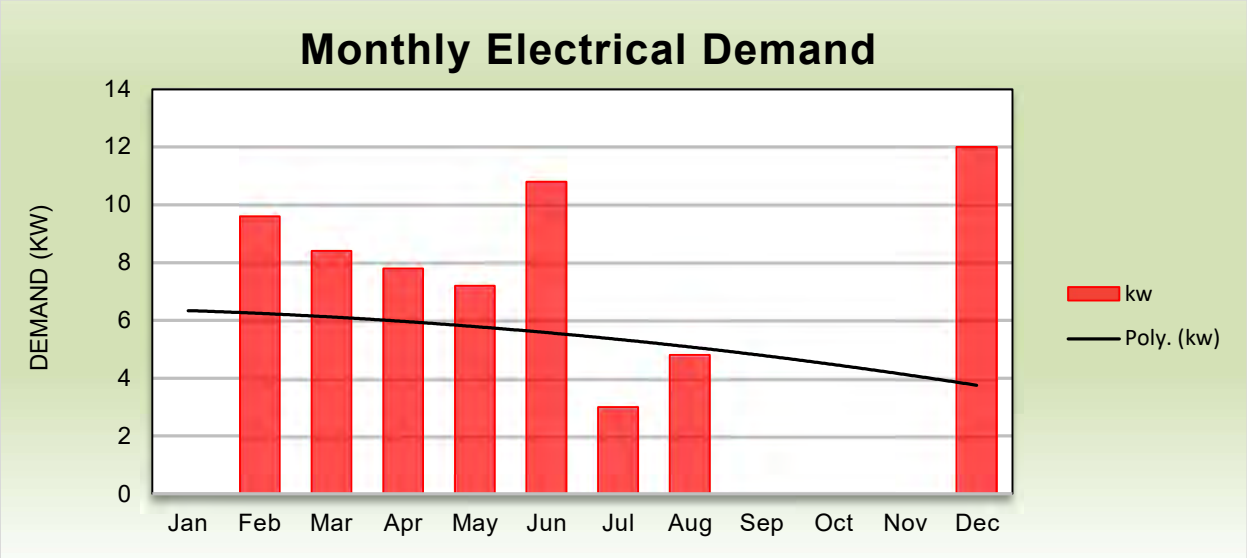
Utility Analysis

The chart below shows the monthly electric usage (kWh) for the Augusta Fire Training Center, but for September 2017 – August 2018. Much of the recent utility data was not available. This shows a relatively constant utility profile.



Monthly electrical demand (kW) is shown below, for the September 2017 – August 2018. Several data points were missing in this data set.



Monthly natural gas (therms) is shown below, for the baseline year of September 2017 – August 2018. Several data points were missing for the baseline year. It is possible the meter as this location is faulty, or natural gas fired equipment is only used periodically.

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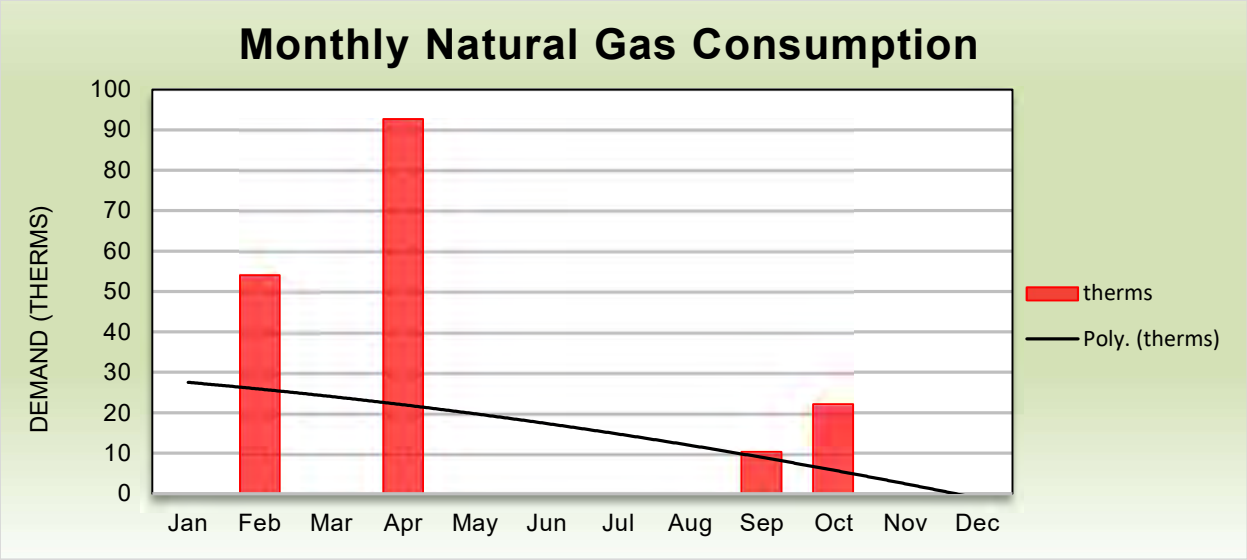

2.8 Augusta Municipal Building

Site Overview

The Municipal Building is a nine-story building located at 535 Telfair Street. and is approximately 129,450 square feet. The building is primarily used as an office space, although there are two large conference rooms located on the second floor used for commissioner meetings, as there are government officials whose offices are throughout the building.

Lighting Systems

The interior lighting at the Municipal Building is predominantly T8 linear fluorescent fixtures. There are also some compact fluorescent lamps located in some office spaces, hallways, restrooms, and receptions spaces. The exterior perimeter lighting consists of fluorescent lamps as well as high pressure sodium lamps.

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A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The Municipal Building has a concrete structure with marble cladding on the exterior walls and a flat built-up roof. The main entrance lobby, as well as the large rentable space on the lower level, have large amounts of tinted double-pane windows, while the remainder of the building exterior has smaller double-pane windows comprising approximately 10% of the façade. The exterior of the building is in good condition.

Mechanical Systems

The Municipal Building has 2 constant volume air handling units as well as 250+ fan coil units throughout the building. The fan coil units have chilled and hot water coils. There are 2 medium sized CHW/HW constant volume air handlers that serve the lobby and meeting room addition to the building. There are also dedicated ventilation units with Renew Aire energy recovery located on the upper floors that provide ventilation air for all the fan coils. The dedicated ventilation units cool all incoming air to 52-55F dewpoint, then heat the air back up near room neutral conditions. This pretreated outside air is dumped into the return air plenums where it can make its way to the numerous fan coils located above the ceiling. A heating and ventilation air handling unit serves the basement to provide heating via a hot water coil.

Chilled water is provided by two centrifugal water-cooled chillers. These chillers are paired with two induced draft open cooling towers located on the roof. There are two primary condenser water pumps, two primary chilled water pumps, and two secondary chilled water pumps, as well as a loop water primary pump that make up the chilled water loop. Hot water is provided via two Lochinvar electric hot water boilers. The hot water loop is made up of two primary pumps and two secondary pumps. While there is a waterside economizer, the building has not used this in the last 3.5 years due to system conversion from a two-pipe to four-pipe system. The maintenance staff hoped to use the economizer in the Winter of 2020. The chilled and hot water system provides cooling and heating not only for the Municipal Building, but two small nearby buildings as well. There is an additional plate and frame heat exchanger, although this serves the water source heat pumps in other buildings which are also connected to the chilled and hot water system located at this building.

Controls

All of the HVAC systems throughout the building are controlled via a Reliable Controls BAS but the controls systems have not been programmed for taking advantage of nighttime/unoccupied setback periods.

Miscellaneous Loads

Given this building is a mainly used as an office space, there are multiple computers located throughout the building. These compromise the largest miscellaneous load at this location.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	71	70	7a - 6p	7a - 6p	7a - 6p	7a - 6p	7a - 6p	Closed	Closed
UnOccupied	71	70	6p – 7a	6p – 7a	6p – 7a	6p – 7a	6p – 7a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Municipal Building.

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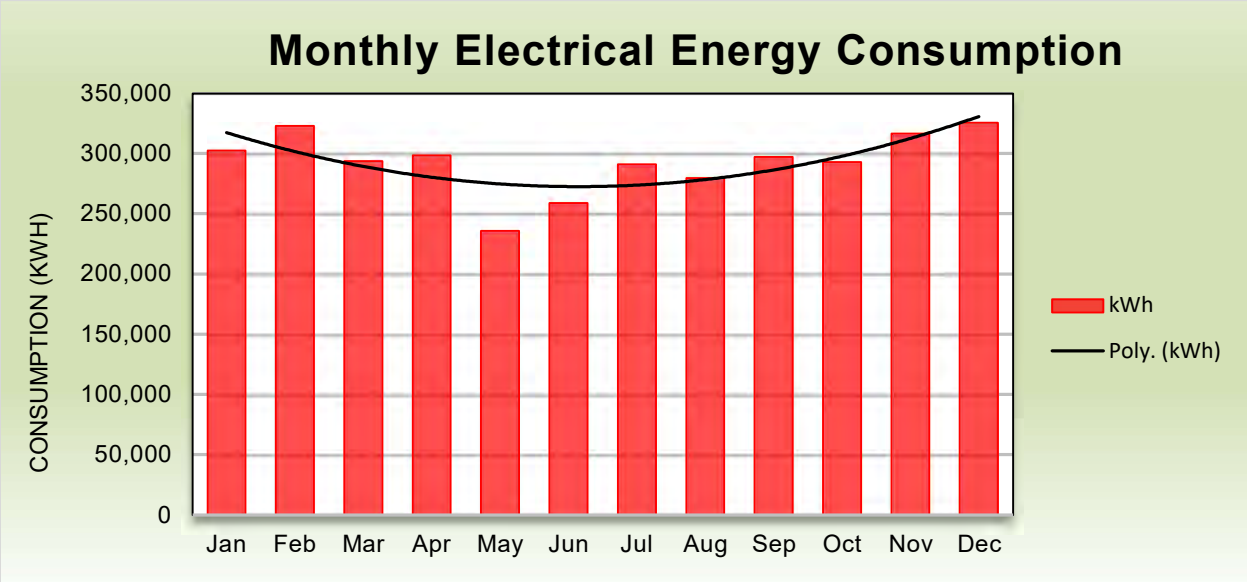
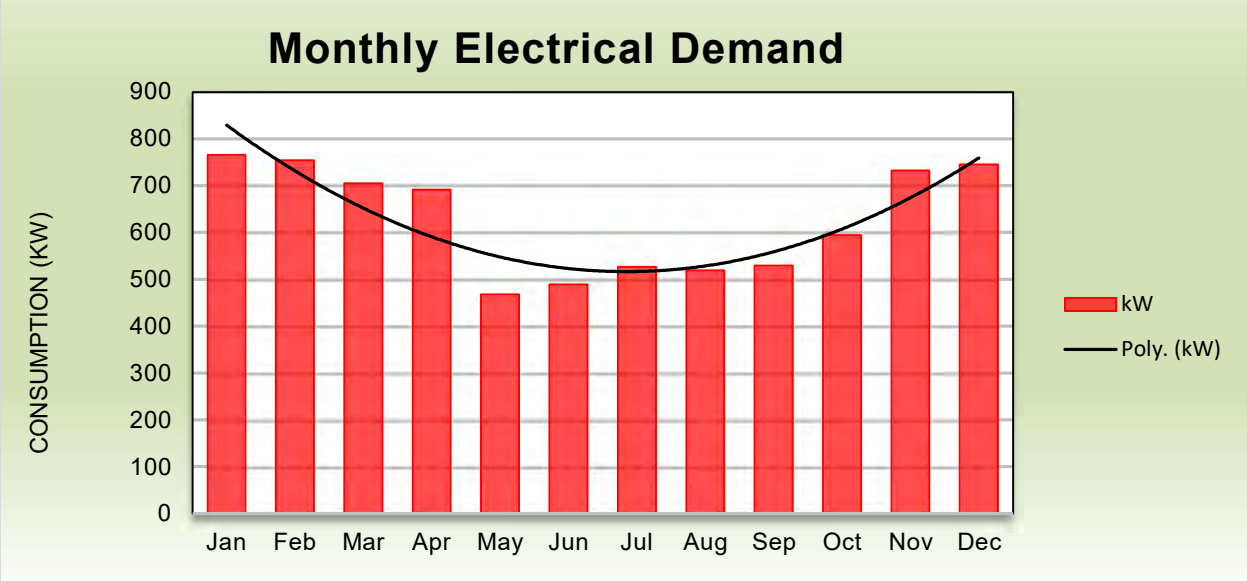
Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019), The Municipal Building is all electric mechanical equipment and there is no natural gas used at this location. Given the similarity of setpoints for heating and cooling, there electrical energy consumption at the Municipal Building is relatively consistent overtime, with a drop in consumption during the summer. This drop is predominantly due to the decreased heating loads and subsequent energy consumption by the electric boiler during summer months.



Monthly electrical demand (kW), shown below, for the baseline year follow the same trend as the monthly electrical energy data for the same reasons discussed above.



Natural gas is not used at this location.

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2.9 Augusta Public Library Headquarters

Site Overview

The Augusta Public Library Headquarters is located at 823 Telfair Street and is approximately 97,846 square feet. While the local community may access the building for books, the space is also used to provide electronic resources and Internet via the computers located predominantly on the 1st floor. There are also various events hosted at the library, such as group readings,

Lighting Systems

Majority of interior light fixtures are T5 and T8 linear fluorescent fixtures with several compact fluorescent fixtures and a few halogen luminaries throughout. Some Lobby areas on the first and second floor have LED fixtures as well. There is one U-bend fluorescent fixtures in a storage area on the first floor. Exterior lighting is provided predominantly by either 150-, 400-, or 70-watt metal halide and compact florescent fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The Augusta Public Library is a three-story building with a combination of concrete and masonry brick exterior walls. Interior walls are sheetrock, and the roof of the building is a flat membrane roof in good condition. There are double-paned glass windows throughout the exterior of the building. This type of glass also makes up majority of the main building entrance and vestibule area of the building.

Mechanical Systems

There is a total of 6 variable air volume air handling units throughout the building, with two AHUs dedicated to each floor. Each of these units has electric heat with cooling provided via chilled water. Chilled water is generated by two Trane air cooled rotary chillers located outside the building on grade. The chilled water loop is made up of two primary and two secondary chilled water pumps. There is also a Liebert computer room air handling unit which serves the server room located on the third floor. An additional ductless split air handling unit serves the IT closet located on the 2nd floor. This is paired with two 1.5-ton Mitsubishi condensing units located outside on grade.

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Controls

All of the HVAC systems throughout the building are controlled via a Reliable Controls BAS. The only equipment not controlled by this system is the Leibert AHU and ductless split system which has its own Mitsubishi nonprogrammable thermostat.

Miscellaneous Loads

There are multiple computers located on the 1st floor for public use as well as reception. There are also computers in the offices located on the third floor. These compromise the largest miscellaneous load at this location. There is also a backup generator and two transformers at this building as well as two domestic electric water boilers.

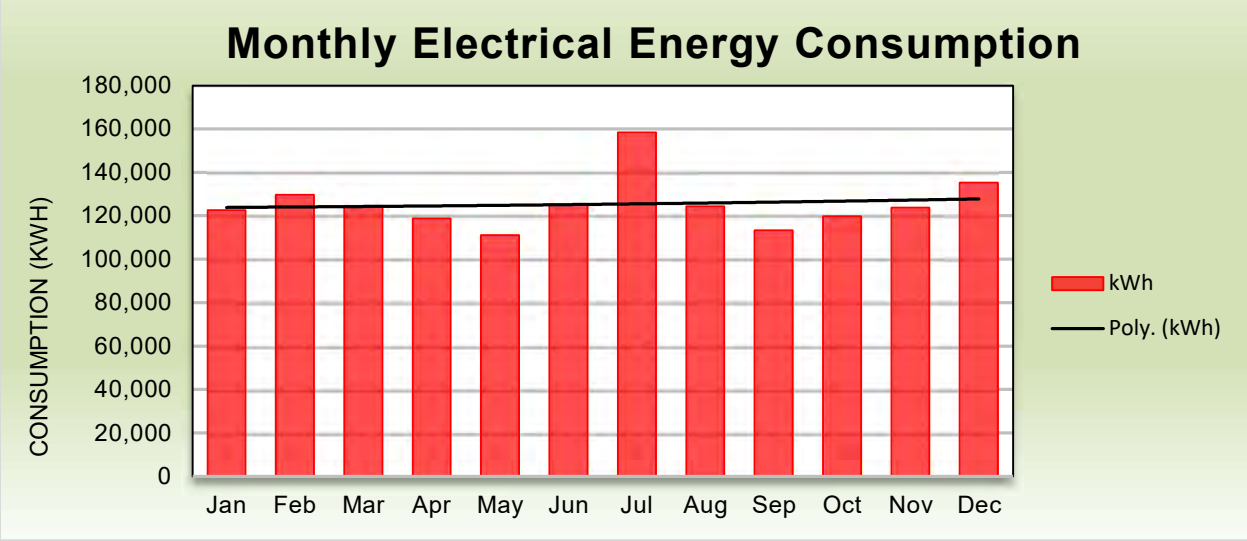
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	73	70	9a - 8p	9a - 8p	9a - 8p	9a - 8p	9a – 5:30p	9a – 5:30p	2p – 5:30p
UnOccupied	85	65	8p – 9a	8p – 9a	8p – 9a	8p – 9a	5:30p – 9a	5:30p – 9a	5:30p – 2p

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Augusta Public Library Headquarters.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The energy usage at the Augusta Public Library Headquarters largely depends on the schedule of events, although there are some trends seen in the data. Given that all HVAC equipment is electric, there is increased usage in the peak summer in winter months. Because the loads are relatively consistent outside of the month of July, the polynomial regression trend line is flat.



Monthly electrical demand (kW) demand does not follow the same trend as the electrical utility data. This is likely due to varying schedule of events at this location. The polynomial regression trend line indicates there is less demand in the summer months and greater demand in winter months.

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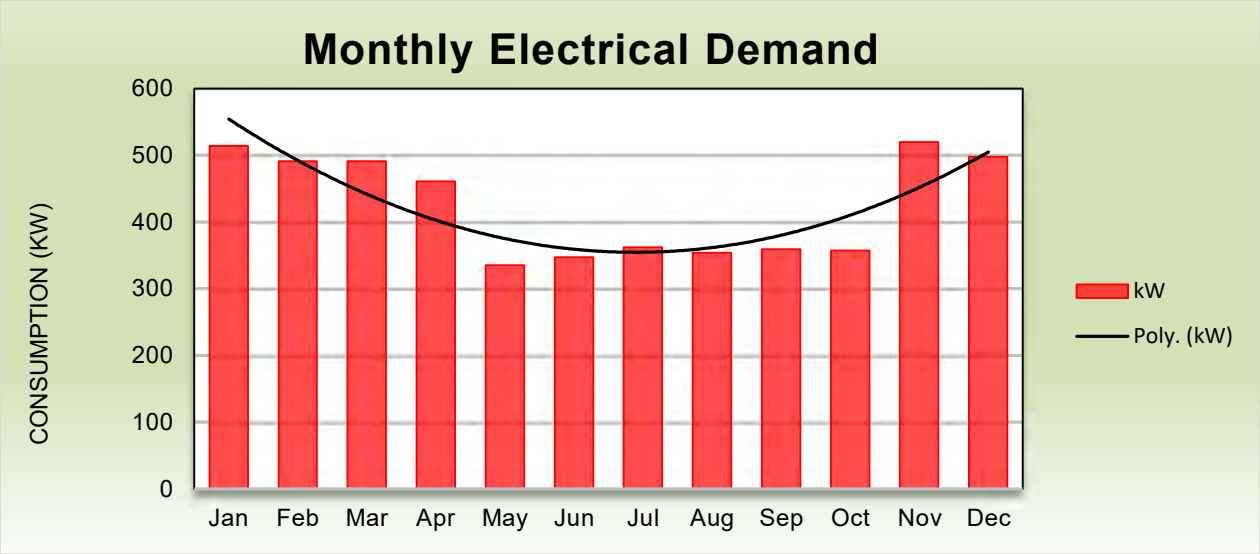

There is no natural gas used at this location.

2.10 Augusta-Richmond County Judicial Center

Site Overview

The Augusta-Richmond County Judicial Center is located at 735 James Brown Boulevard and is approximately 180,000 square feet. This building is used to hold hearings as well as serve as an office space for judges, the Solicitor General, and other court officials. The rectangular portion of the building is four stories where the semi-circular portion of the building is two stories.

Lighting Systems

The interior lighting at the Augusta-Richmond County Judicial Center is predominantly T5 and T8 linear fluorescent fixtures, although there are a few T12s on the fourth floor. Thera are also compact fluorescent light fixtures throughout the building. The exterior perimeter lighting consists of a combination of fluorescent, 70-watt halogen, LED, T5 linear fluorescent and 100- or 150-watt metal halide lamps.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

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Building Envelope

The building has a brick and masonry façade and interior walls are sheetrock. The roof is a flat membrane and in good condition.

Mechanical Systems

There are six variable volume air handling units total at the building, with two on each floor. AHU-4 and AHU-1 serve the first floor, AHU-2 and AHU-3 serve the second floor, AHU-5 serves the third floor, and AHU-6 serves the fourth floor. Each of these units has electric heat with cooling provided via chilled water. Chilled water is generated by two Trane water cooled centrifugal chillers. The chilled water loop is made up of two primary and two secondary chilled water pumps. Each chiller is paired with an induced draft open cooling tower located outside the building on grade. The condenser water loop is made up of two primary condenser water pumps. The Solicitor's General Office must be cooled or heated 24/7 and is a small portion of the building. The chillers are not designed to operate efficiently at the extremely low levels of cooling load exhibited by the small portion of the building that is occupied when the remainder of the building is unoccupied. To overcome this problem, the building will install a small 60-ton chiller to serve this space to prevent 24/7 operation of the entire building mechanical system. The building also has one electric domestic water boiler.

Controls

The building uses a Reliable Controls BAS to control all mechanical equipment throughout the building.

Miscellaneous Loads

Given this building is a predominantly used as an office space and for court hearings, largest miscellaneous loads are from computers throughout the building. There are also two transformers located in the main electrical room.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	69	71	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	69	71	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of operation and operational setpoints for HVAC equipment for the Augusta-Richmond County Judicial Building. The entire building currently runs 24/7, as the Solicitor's General Office is open 24/7. Given the way the chiller plan operates, the entire building must be maintained at 24/7 operation so the Solicitor's General office can be cooled 24/7.

Utility Analysis

The energy usage at the Augusta-Richmond County Judicial Center depends largely on the schedule of events, as multiple hearings are had each day in the various courtrooms throughout the building. The loads within the building are going to greatly influence how long pieces of electrical equipment, such as chillers, pumps, and AHUs, are going to run. The building also runs 24/7 causing the location to maintain a consistent load year-round.

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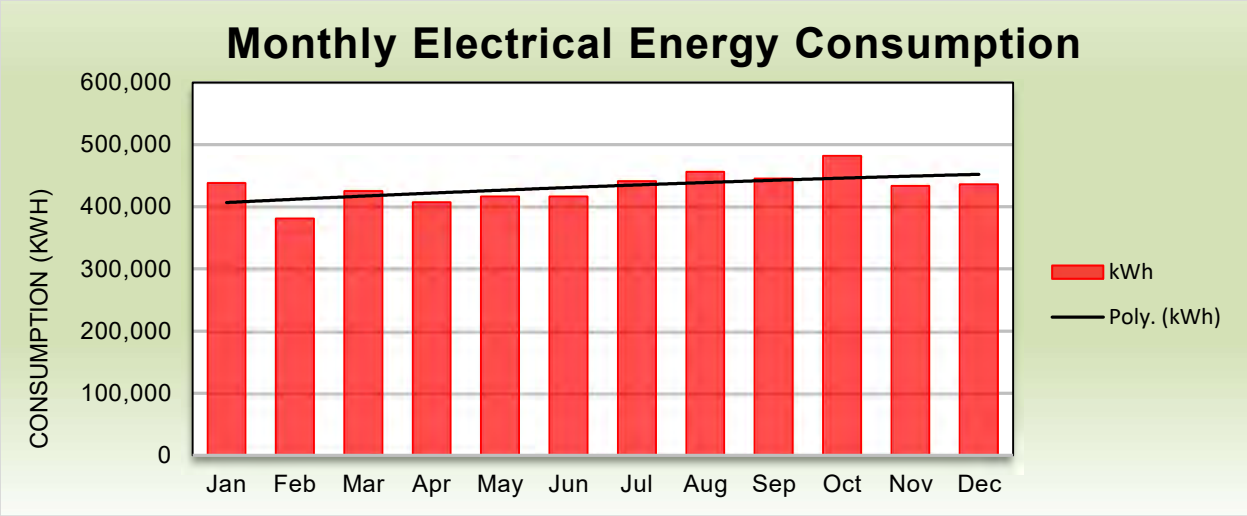
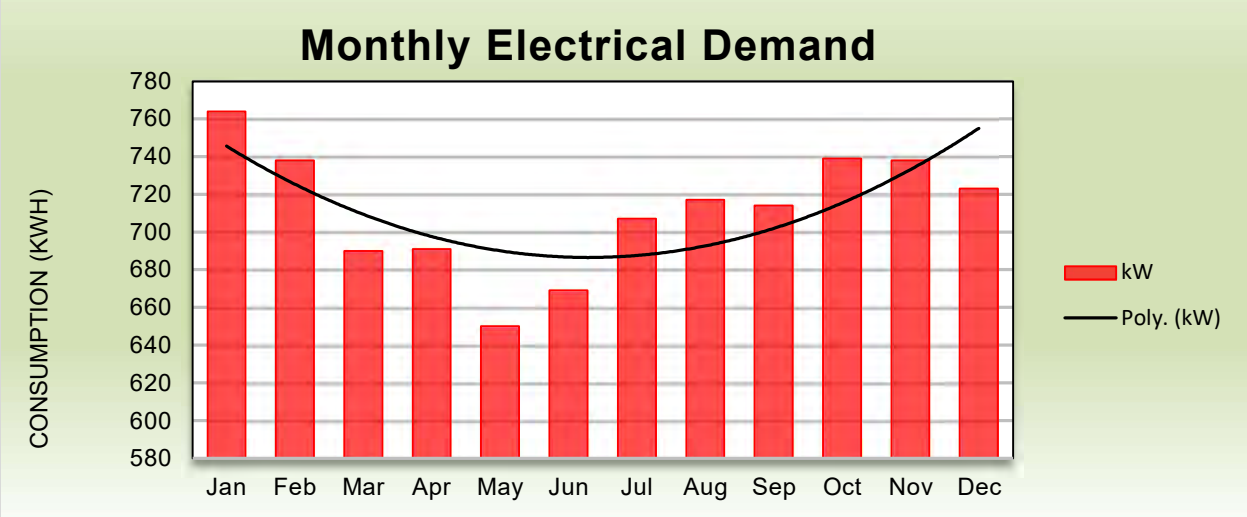


Monthly electrical demand (kW) is shown below, for the baseline year of October 2018 through September 2019). A significant drop in electrical demand is seen in the summer months. This is due to decreased heating loads in summer months and a subsequent drop in electrical energy consumption by the electric boiler.



There is no natural gas used at this location.

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2.11 Bernie Ward Community Center

Site Overview

The Bernie Ward Community Center serves as a place for group activities, social support, public information, and other purposes for the Augusta community. There is office space for building staff, activity rooms, a fitness room, and gymnasium in addition to a public pool. The building is approximately 18,125 square feet.

Lighting Systems

Majority of light fixtures inside Bernie Ward Community center are T8 and T12 linear fluorescent fixtures with a few incandescent fixtures throughout the building and 400-watt metal halides in the gym. All exterior light fixtures are 100-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Bernie Ward Community Center has a masonry brick façade and pitched shingle roof. Interior walls are painted cement brick. Majority of windows at this facility are on the Southwest and Northeast portions of the building.

Mechanical Systems

The building has seven ductless split air handling units, with one in the club room, three in the game room, and three in the fitness center. The AHU in the club room is served by a 2-ton Daikin ductless split condensing unit. The three AHUs in the game room are served by a 3.5-ton Gree ductless split condensing unit. The three AHUs in the fitness room are served by a 3-ton Gree ductless split condensing unit. There are also three packaged units at this location. Two of these units are located on the roof and serve the gym. The other packaged unit serves the private office. There is also a natural gas steam boiler as well as an electric hot water boiler onsite.

Controls

Two nonprogrammable Honeywell thermostats were recorded at the time of the audit. One is located in the gym portion of the building and the other is in the main office.

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Miscellaneous Loads

Majority of miscellaneous loads at this location would be from equipment in the fitness center and kitchen. There are also minimal loads from computers and other standard office equipment in the private office.

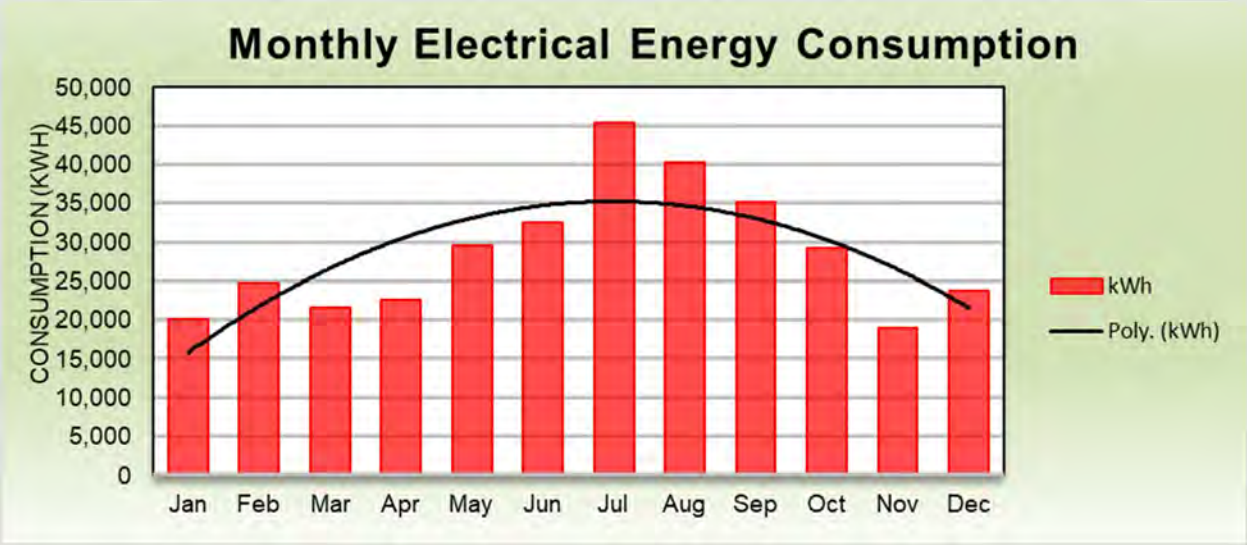
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	73	70	8a - 8p	8a - 8p	8a - 8p	8a - 8p	8a - 6p	Closed	Closed
UnOccupied	73	70	8p – 8a	8p – 8a	8p – 8a	8p – 8a	6p – 8a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Bernie Ward Community Center. The gymnasium, kitchen and club room are rentable, and hours may vary outside of standard operating hours.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for the Bernie Ward Community Center building during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods.



Monthly electrical demand (kW) is shown below, for the baseline year. This profile is consistent with that of the electrical consumption.

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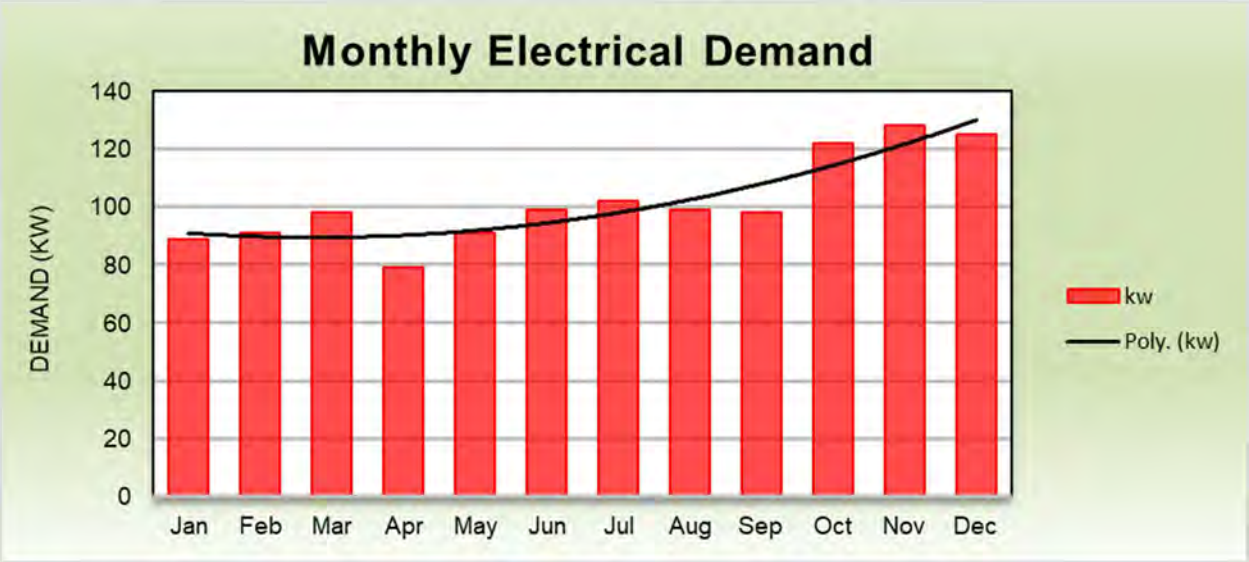

Natural gas is not used at this building.

2.12 Blythe Area Recreation Center

Site Overview

The Blythe Area Recreation Center is roughly 6,068 square feet and is located at 3129 Highway 88. The building serves as a recreation center for the local community and is used for a variety of purposes such as community activities and fitness. Spaces include Classroom, Crafting Room, Fitness Center, Kitchen, Office, and Storage.

Lighting Systems

The majority of existing interior lighting is provided by T8 linear fluorescent fixtures. The Activity Room is illuminated by 12 high-bay 400-watt metal halide fixtures. Exterior lighting consists of 70-watt metal halide fixtures and 90-watt PAR38 halogen fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

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Building Envelope

It is a single-story building with masonry walls constructed of CMU block with a façade comprised of brick and metal siding. This building has very few windows. The roof is metal and pitched.

Mechanical Systems

There are four ductless split wall-mounted fan coil units that serve the classroom spaces in the building, with one ductless split condensing unit per fan coil located outside on grade. There are also four split system air handling units paired with heat pump condensing units located outside on grade. Two of the condensing units were manufactured in 1999. These split systems serve the kitchen, reception and office area, and fitness center. There is also a PTAC that serves the office portion of this building, as well as an on-grade heat pump packaged unit that serves the multipurpose room. All equipment at this location is electric, and there is no gas service.

Controls

There are five non-programmable Honeywell thermostats located in the reception area, fitness center, staff room, kitchen, and multipurpose room, which control the four split system heat pumps and the packaged unit. The ductless split fan coil units have integral controls and/or remote controls.

Miscellaneous Loads

There are not significant miscellaneous loads at this location.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	75	67	9a - 6p	9a - 6p	9a - 6p	9a - 6p	9a - 6p	Rentable	Rentable
UnOccupied	75	67	6p – 9a	6p – 9a	6p – 9a	6p – 9a	6p – 9a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Blythe Area Recreation Center. The Multipurpose Room is available for rental.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods.

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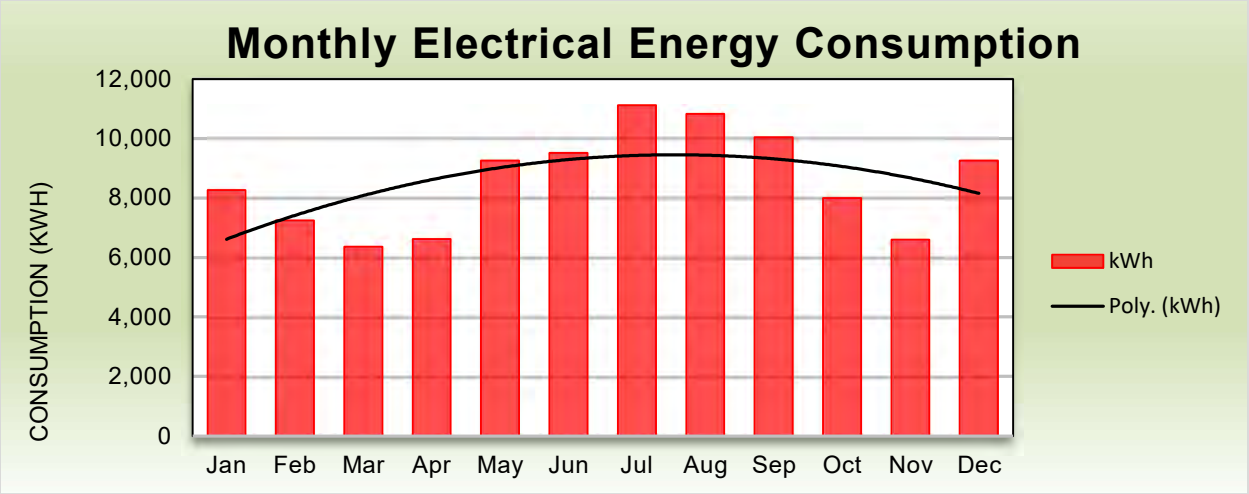
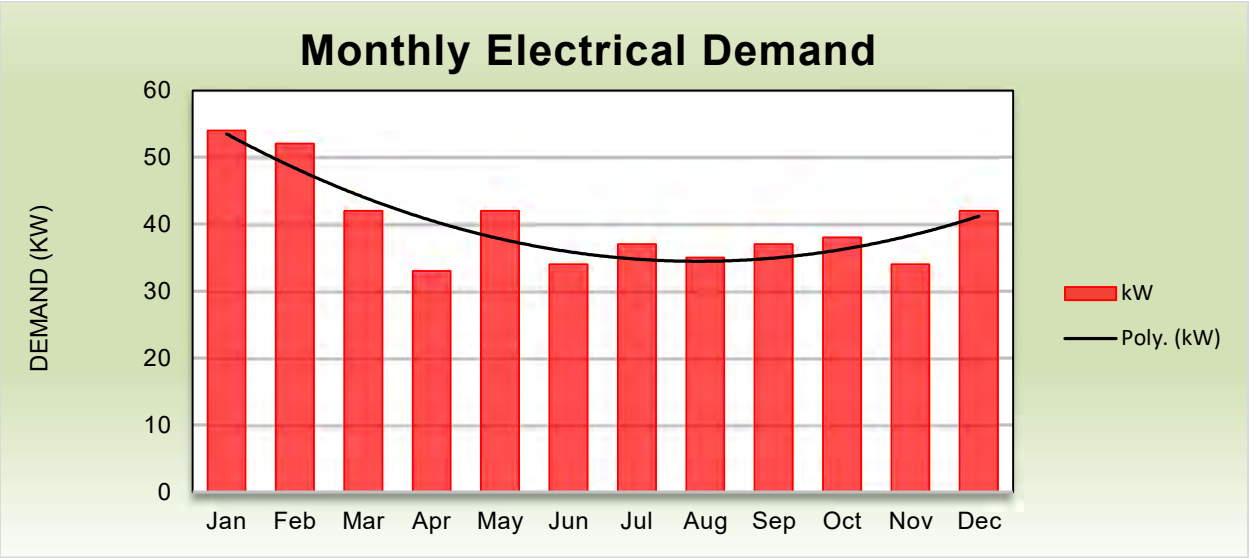


Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electric demand peaks in winter months due to the activation of electric-resistance auxiliary heaters in the split system heat pumps and packaged heat pump.



There is no natural gas at this building.

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2.13 Carrie J Mays Community Life Center

Site Overview

Carrie J. Mays Family Life Center is 8,000 square feet and is located at 1014 11th Avenue. The building is located beside the Carrie J. Mays Gymnasium. The building serves as a community and recreation center. Spaces within the building include meeting rooms, offices, kitchen, and storage. One of the meeting rooms contains fitness equipment.

Lighting Systems

Interior lighting primarily consists of linear fluorescent T12 fixtures. Exterior facade lighting is provided by pin base CFL and metal halide fixtures. The parking lot has LED fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a single-story building with masonry walls constructed of CMU block with a brick façade. The wall facing the parking lot has a window-to-wall ratio of approximately 10% and windows are single-pane. The remaining wall faces have no windows. The roof is pitched with asphalt shingles.

Mechanical Systems

There are three pairs of twinned upflow gas-fired furnaces located in the storage closet that serve the meeting rooms and activity rooms. Each set of twinned furnaces is paired with a shared cooling coil and a 7.5-ton condensing unit. There is one upflow gas-fired furnace located in a mechanical closet between the restrooms that serves the offices. This furnace is paired with a 5-ton condensing unit. All condensing units are located on grade behind a chain-link fence and are in fair or good condition.

Controls

There are three non-programmable thermostats that control the three sets of twinned furnaces, with two in the Community Room and one in the Game Room. The system serving the offices is controlled by a programmable thermostat that was observed in “hold” during the cooling season and operating with a program during the heating season.

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Miscellaneous Loads

The kitchen includes a gas range and oven with a commercial hood, along with a commercial refrigerator, ice maker, and warming trays. The kitchen does not appear to be used frequently. The offices contain computers and office equipment. The Fitness Room contains three treadmills and two stationary bikes. The Game Room has a drink vending machine. An electrical panel indicates that multiple electric kilns may be used for arts and crafts, which may represent a significant electrical load. Kilns were not observed during multiple site visits.

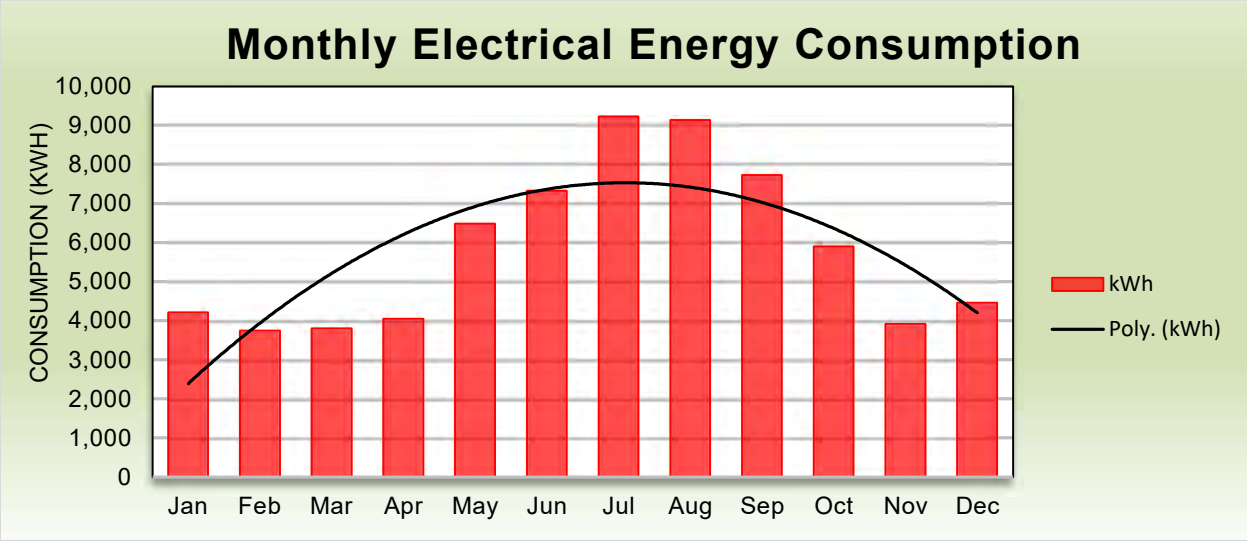
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	10a - 7p	10a - 7p	10a - 7p	10a - 7p	10a - 6p	Rentable	Rentable
UnOccupied	72	70	7p – 7a	7p – 7a	7p – 7a	7p – 7a	6p – 6a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the building. Weekend occupancy and schedules for the community center spaces vary since the facility is available for rental. Offices are closed during the weekend.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and electric cooling. Peaks occur over the summer months due to increased cooling demand.



Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand follows a similar trend to that of electricity consumption with peaks occurring in the warmest months. Winter demand is relatively flat, which indicates that there is no electric heating at this building.

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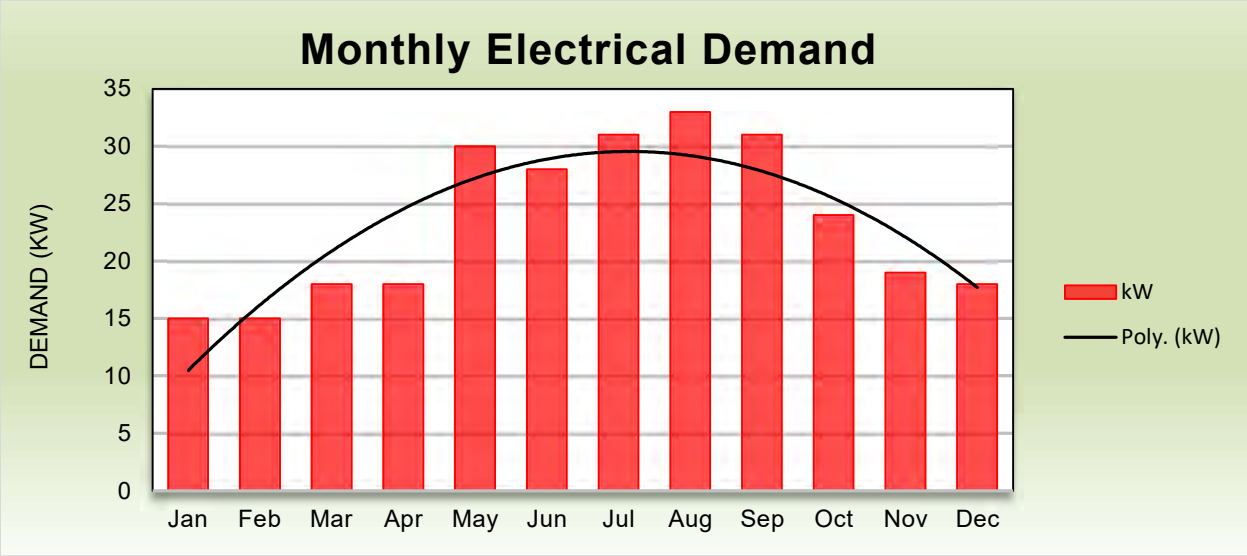
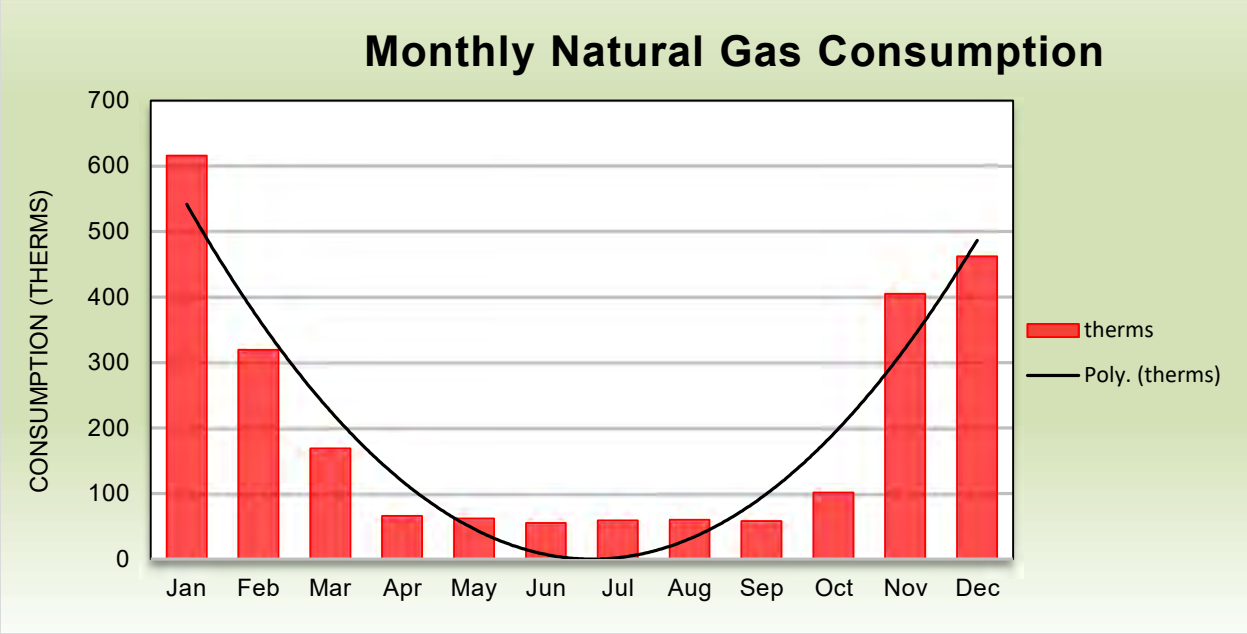


The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2019 to September 2019). Monthly natural gas consumption increases in winter months and is relatively flat during summer months, which is consistent with a building with gas heat and gas domestic hot water. Summer gas consumption is consistent and attributable mainly to gas water heating.



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2.14 Carrie J Mays Gymnasium

Site Overview

Carrie J. Mays – Gymnasium is 7,125 square feet and is located at 1014 11th Avenue. The building is located beside the Carrie J. Mays Family Life Center. The building serves as a gymnasium and office.

Lighting Systems

The gym is illuminated with 250-watt metal halide fixtures. Interior lighting for remaining spaces consists of linear fluorescent T8 and U-bend fluorescent T8 fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a single-story building with masonry walls constructed of CMU block with a façade comprised of brick and metal siding. The gym has 8 windows mounted near the roofline, and there is one window in the office area. The window-to-wall ratio of this building is less than 5%. The roof over the gym is metal and pitched, while the roof over the office area is flat with a built-up membrane.

Mechanical Systems

The gym is conditioned by two packaged units with electric-resistance heat located on the flat roof that were manufactured in 2004. The packaged units have economizers with enthalpy sensors. The office area is conditioned by a split system heat pump located on grade behind a chain-link fence that was manufactured in 2007. There is a 1/6-HP exhaust fan located on the flat roof above the offices.

Controls

There are two non-programmable thermostats in the gym that control the packaged units and one non-programmable thermostat in an office that controls the split system heat pump.

Miscellaneous Loads

Most of the building is a gym with minimal miscellaneous loads. The offices contain computers and office equipment.

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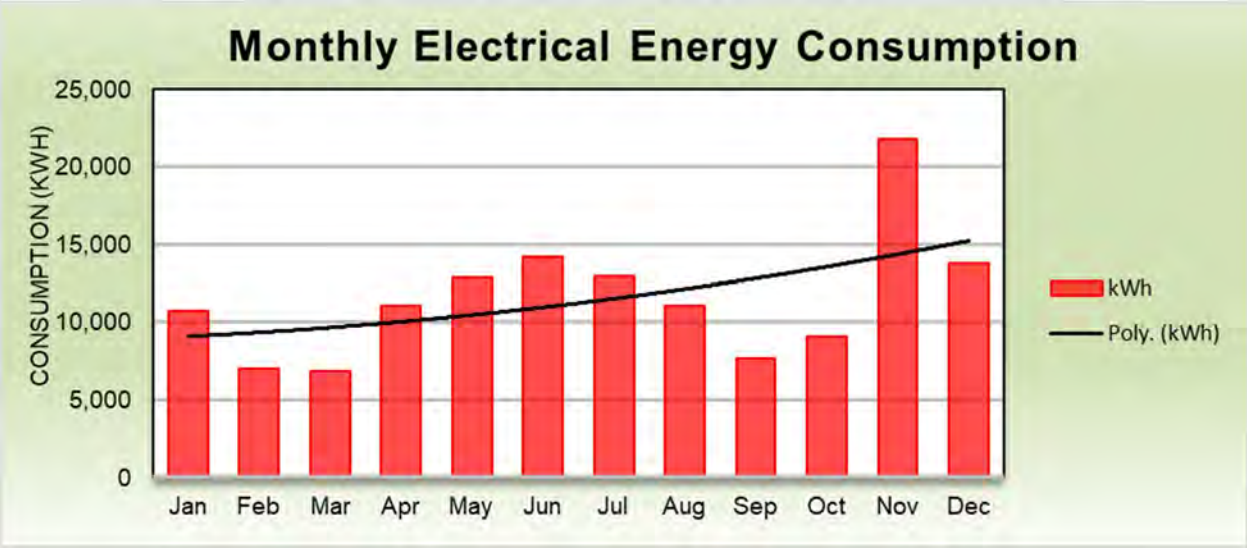
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	10a - 7p	10a - 7p	10a - 7p	10a - 7p	10a - 6p	Rentable	Rentable
UnOccupied	72	70	7p – 7a	7p – 7a	7p – 7a	7p – 7a	6p – 6a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the building. Weekend occupancy and schedules for the gym vary since the gym is available for rental. Offices are closed during the weekend.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for the Carrie Mays Gymnasium, for the baseline year (October 2018 – September 2019). The graph shows a slight bump in Summer, with a relatively high spike in November. The shape of this graph is quite odd for the building type, but could possibly be explained by the occasional use of the building.



Monthly electrical demand (kW) is shown below, for February 2019 to January 2020.

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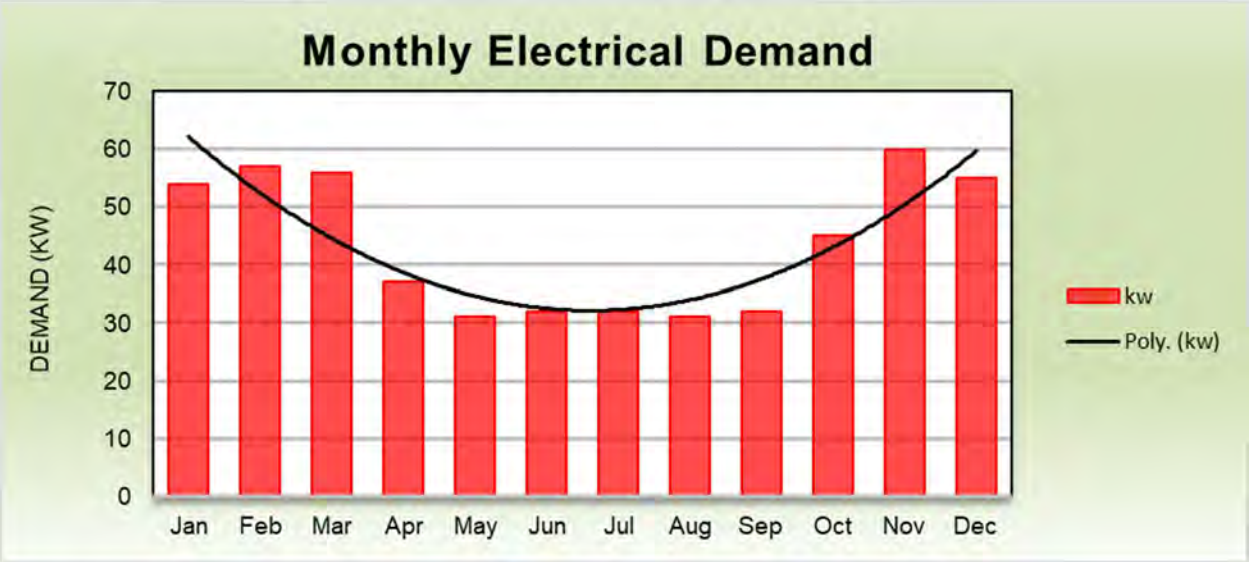

Natural gas is not used at this building.

2.15 Central Services

Site Overview

The Central Services building houses the Augusta Central Services Department which consists of the Augusta 311, Facilities Maintenance, Fleet Services, Real Estate, and Records Retention Divisions. The site is primarily used as an office space, although there is also a maintenance shop. This facility is approximately 7,400 square feet.

Lighting Systems

The office portion of the building has all LED fixtures throughout the interior with T8 linear fluorescent fixtures only in the mechanical room. A combination of LED and high pressure sodium fixtures serving the building perimeter. 400-watt metal halide fixtures provide parking lot lighting. The warehouse or maintenance shop portion of the building has a few incandescent fixtures in storage areas and restrooms,

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but majority of interior fixtures are T8 linear fluorescent fixtures. The exterior lighting of the warehouse is provided by a combination of LED and 100-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The Central Services building has a masonry brick façade and a flat membrane roof. There are double-paned glass windows throughout the building's exterior.

Mechanical Systems

The building has two ductless split air handling units and one split system air handling unit. One ductless split serves the vestibule area of the building. The other serves the open office portion of the building. The split system air handling unit serves the maintenance shop portion of the building. The split systems are paired with a 5-ton condensing unit that sits outside on grade. A 5-ton electric on grade packaged unit sits outside the maintenance shop. All equipment at this location is electric.

Controls

There are three non-programmable thermostats in the building, once in the open office space, hallway, and maintenance shop. The thermostat in the open office portion of the building is a Mitsubishi thermostat. The other two thermostats are Honeywell.

Miscellaneous Loads

Given this building is a predominantly used as an office space, there are a few computers located throughout the building. These compromise the largest miscellaneous load at this location, although there may be additional loads form equipment used in the maintenance shop.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	8:30a - 5p	8:30a - 5p	8:30a - 5p	8:30a - 5p	8:30a - 5p	Closed	Closed
UnOccupied	72	70	5p – 8:30a	5p – 8:30a	5p – 8:30a	5p – 8:30a	5p – 8:30a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Central Service building.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods. While this chart looks normal, the Energy Use Intensity (EUI) for this building is actually quite high at 463 kBtu/sqft. It is unknown what is causing this high of energy use.

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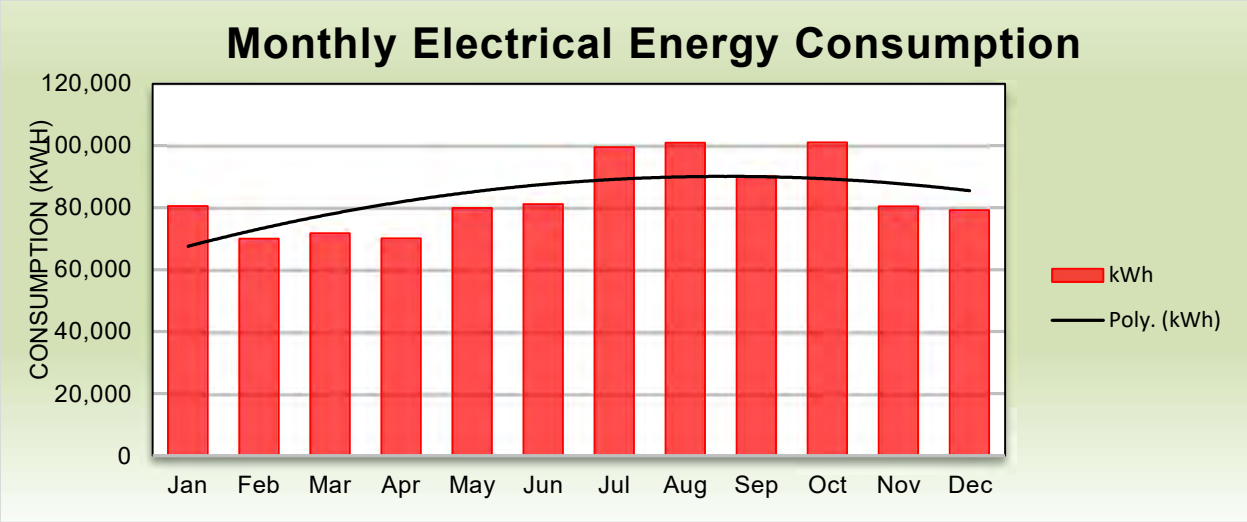
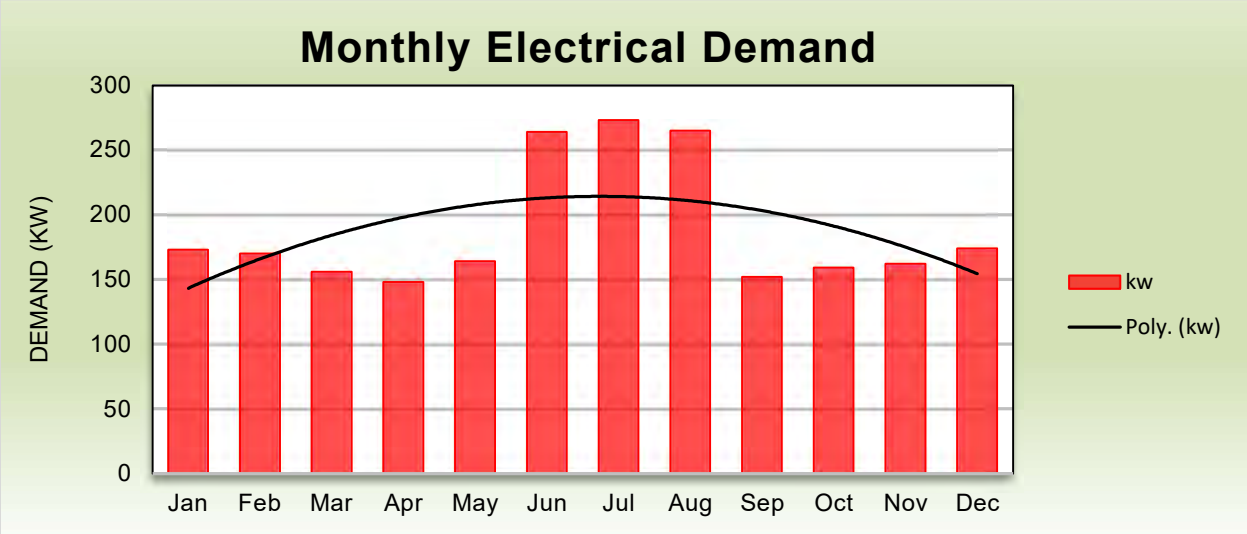


Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electric demand peaks in summer for cooling and in winter months due to the activation of electric-resistance auxiliary heaters in the split system heat pumps and packaged heat pump.



Natural gas is not used at this building.

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2.16 Charles B Webster Detention Center

Site Overview

The Webster Detention Center is located at 1941 Phinizy Rd and is approximately 224,375 square feet. The building has several pods and is continually being added to. There is also a separate building that is the visitor's center. Each pod has their own separate prisoner cells. Pods A, B, C, E, F, G, H, and I hold prisoners, with Pod H being medical and Pod I being processing. Pod D contains the dining, kitchen, laundry, and maintenance, and part of Pod E also contains the administration and front desk.

Lighting Systems

The interior lighting at the Charles B. Webster Detention Center is primarily T8 linear fluorescent fixtures, although there are also some T5 and T12 linear fluorescent fixtures as well. There is also a significant amount of compact fluorescent fixtures in addition to a few 75-watt halogen, 50-watt incandescent, LED, and 100-watt and 250-watt metal halide fixtures. Exterior parking lot lighting is all 400-watt metal halide fixtures. Yard perimeter lighting is all 250-watt metal halide fixtures. Building perimeter exterior lighting is predominantly metal halide fixtures of wattages varying from 100- to 400-watts with a few T8 linear fluorescent and compact fluorescent fixture as well.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Water Systems

Water fixtures in the Webster Detention Center predominately consist of high flow showerheads, low flow sinks, and toilets that are a mixture of low and high water usage per flush. High flow showerheads will be replaced by 1.5 gpm showerheads, and high flow faucets will be retrofitted with 0.5 gpm aerators. For common area toilets, 3.7 gpf and 1.6 gpf flush valves will be replaced with 1.6 gpf low flow flush valves. For cell toilets, 3.5-4.0 gpf flush and 1.6 gpf flush valves will be replaced with 2.4 gpf and 1.6 gpf flush valves respectively. The 1.6 gpf urinals will be retrofitted with 0.125 gpf low flow flush valves.

The table below describes the water fixture types and quantities in this building. A complete list of all water fixtures and quantities can be found in Appendix 2.

Description	Qty.
3.7 gallons per flush water closet	42
1.6 gallons per flush water closet	6

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3.5-4.0 gallons per flush cell water closet	556
1.6 gallon per flush urinal	2

Building Envelope

The building has a brick and masonry façade and interior walls are CMU. The roof is a flat built-up roof.

Mechanical Systems

There are two chilled water plants, one for the original portion of the building and one for the additions. The 2 chillers for the original portion have two cooling towers just outside the mechanical. The chilled water is pumped through constant primary-constant secondary system throughout the building. The original chillers serve the A, B, C, D, and E pods. It also includes the G pod from the first addition.

The other chilled water plant is called the “FC” plant and served the addition. The 2 chillers for the additional portion have two cooling towers just outside the mechanical. The chilled water is pumped through constant primary-constant secondary system throughout the building. This includes the F, H, and I pods, as well as the visitor’s center and parts of the Pod D corridors.

For heating systems, most air handling units have either electric strip heat or natural gas fired heating for each individual air handling unit. There is one 660 MBH hot water condensing boiler that serves the AHUs in the I Pod.

For air distribution, the building has numerous air handling units, 2 make-up air units, and various unit heaters.

For the A, B, and C pods, the prisoner cells are served by large constant volume units with natural gas heat (AHU-1A, 1B, & 1C). There are small constant volume air handling units with electric strip heat that serve the towers for each pod (AHU-2A, 2B, & 2C). In the A and B pods, there is another constant volume AHU with electric strip heat that serves the examination rooms (AHU-3A & 3B).

For the D pod, the Break Room, Dayroom, and Tower are served by a fan coil, and the maintenance office is served by another fan coil (AHU-2-Old, AHU-3-Dold). The Dining Room and expansion to the Dining Room are served by two fan coils with the same name (AHU-1D). The two Make Up Air units serve the Kitchen and the Laundry (MAU-1, MAU-2).

For the E pod, the offices are served by three constant volume AHUs (AHU-1E, 2E, & 3E). The exam rooms and waiting room are served by two constant volume AHUs (AHU-4E, 5E). The E pod control tower is served by a fan coil (AHU-6E). The pod E cells are served by two separate constant volume AHUs with natural gas heat (AHU-7E, 8E). The elevator equipment is served by its own AHU (AHU-11E).

For the F & G Pods, the cells are served by variable volume units with natural gas heat and have ERVs (AHU-1F, 1G, ERV-1F, 2F, & 1G)

For the H Pod, the cells are served by a variable volume unit with natural gas heat and has an ERV (AHU-1H, ERV-1H). The medical units are served by a variable volume unit (AHU-2H). The medical offices are served by fan coil units (AHU-4H, FCU-1H, 2H, & 3H).

For the I pod, the cells are served by two variable volume units with hot water heat from the condensing boiler in the I Pod mech. (AHU-1I, 2I). The support areas are served by the rest of the pod I units (AHU-3I, 4I, 5I, 6I, 7I, & 8I).

The Visitor center is served by a VAV AHU (AHU-1V). There is an IT room that is served by a fan coil (AHU-2V).

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The rest of the air handlers serve various hallway spaces and control towers. Finally, there are unit heaters that serve the various mechanical rooms.

Controls

The building uses a Reliable Controls BAS to control all mechanical equipment throughout the building.

Miscellaneous Loads

The miscellaneous loads for this building should be rather low, given the nature of the building.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	70	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	70	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Webster Detention Center main building.

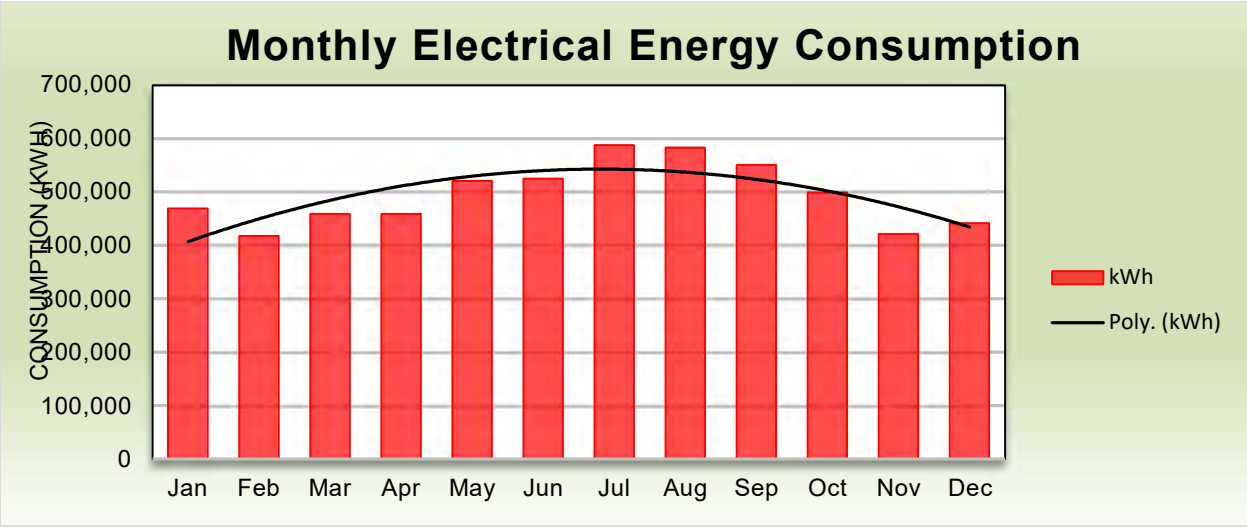
	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	70	70	8:30a-5p	8:30a-5p	8:30a-5p	8:30a-5p	8:30a-5p	Closed	Closed
UnOccupied	70	70	5p-8:30a	5p-8:30a	5p-8:30a	5p-8:30a	5p-8:30a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Webster Detention Center Visitor's Center.

Utility Analysis

The energy usage at the Charles B Webster Detention is relatively consistent month to month. There is a slight rise in electricity usage in the summer, but that is expected as cooling needs increase in the summer, and the same with natural gas in the winter. The building also runs 24/7 causing the location to maintain a consistent load year-round.

Monthly electrical consumption (kWh) is shown below, for the baseline year of October 2018 through September 2019). It is important to note that the electric meter is shared



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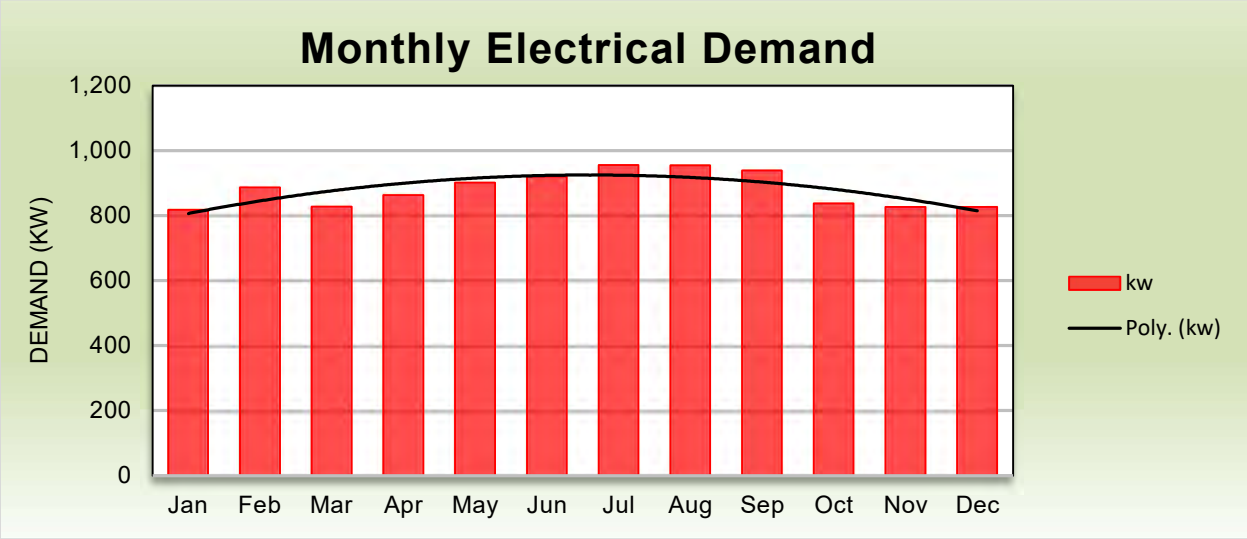
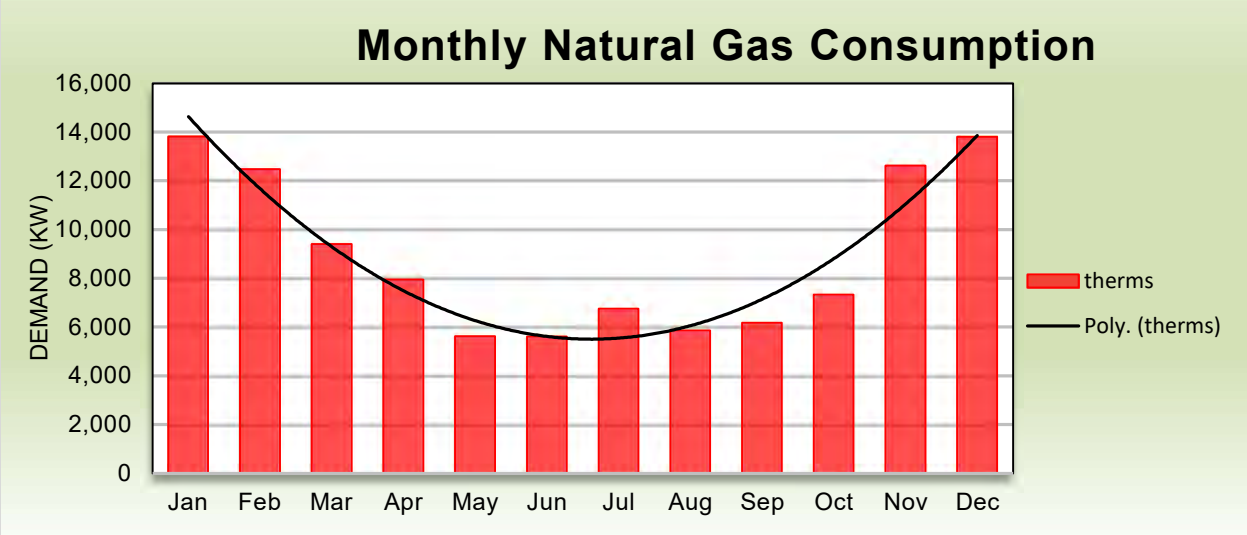
Monthly electrical demand (kW) is shown below, for the baseline year of October 2018 through September 2019).



Monthly natural gas consumption (therms) is shown below, for the baseline year of October 2018 through September 2019).



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2.17 Diamond Lakes Library and Robert Howard Community Center

Site Overview

The Diamond Lakes Library and Robert Howard Community Center are two side by side buildings served by the same 200-ton chiller. The approximate gross floor area of both buildings in 42,750 square feet. The library portion of the building is used as a library with various events as well as a space for the public to access computers. The Community Center portion of the buildings serves as a recreational facility with a gym, concession area, conference room, racquetball courts, walking track, and other public resources. The facility also hosts events for the community, such as work out classes. The facility gym and multipurpose room may also be rented for private events.

Lighting Systems

Majority of lighting at the Diamond Lakes Library is T8 linear fluorescent fixtures, with several compact fluorescents, incandescent, and U-bend fluorescent fixtures throughout as well. Exterior lighting is a combination of compact fluorescents and 100-watt metal halide fixtures. The Community Center interior primarily has linear T8 fluorescent fixtures, with several compact fluorescent fixtures as well. The Community Center exterior lighting is a combination of compact fluorescent and 400-watt metal halide fixtures, similar to the Library.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The Community Center and Library have a masonry brick façade with double pane glass windows throughout. Portions of the roof are flat and other portions are pitched. Interior walls of the Community Center are a combination of cement blocks and sheetrock whereas at the library they are all predominantly sheetrock.

Mechanical Systems

Both buildings are served by a 200-ton Trane air-cooled chiller. Regarding the Community Center mechanical system, there are two multizone air handling units with chilled and hot water coils located in the mechanical room. Hot water is generated by the natural gas hot water boiler located in the boiler shed. This boiler serves both buildings. The hot water loops are comprised of one hot water primary pump. Chilled water is generated by the air-cooled chiller that sits outside on grade. The chilled water loop has a two chilled water pumps. There is also a natural gas domestic hot water boiler located in the boiler shed.

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This boiler serves both buildings. Regarding the Library mechanical system, there is one multizone air handling unit located in the library mechanical room. This unit has chilled water and hot water coils and is served by chilled and hot water in the same manner as the Community Center.

Controls

There are 12 thermostats in the Community Center and 13 thermostats at the Library. All of the thermostats are Trane Air-Fi. These are in various locations throughout each building. There is also a zone sensor located in the basketball court portion of the building at the Community Sensor

Miscellaneous Loads

The Community Center has three refrigerators and a stove in the concession area, making up most of the miscellaneous loads for this portion of the building. There are various miscellaneous loads in the library portion of the building. There is a refrigerator, 12 desktop computers with monitors, a printer, and a display TV.

Operating Schedule Description

Robert Howard Community Center

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	80	6a - 8p	6a - 8p	6a - 8p	6a - 8p	6a - 6p	10a – 3p	Closed
UnOccupied	72	80	8p – 6a	8p – 6a	8p – 6a	8p – 6a	6p – 6	3p – 10a	Closed

Diamond Lakes Library

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	80	9a - 7p	9a – 5:30p	9a - 7p	9a – 5:30p	9a – 5:30p	9a – 5:30p	Closed
UnOccupied	72	80	7p –9a	5:30p –9a	7p –9a	5:30p –9a	5:30p –9a	5:30p –9a	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Robert Howard Community Center and Diamond Lakes Library. While heating setpoints were recorded as 80F at the Library portion of the building, actual space temperatures were closer to 73F. At the Community Center, space temperatures were on average 72F. The gym and multipurpose room at the Community Center are rentable, and use may vary outside of standard operating hours.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and electric cooling. Peaks occur over the summer months due to increased cooling demand.

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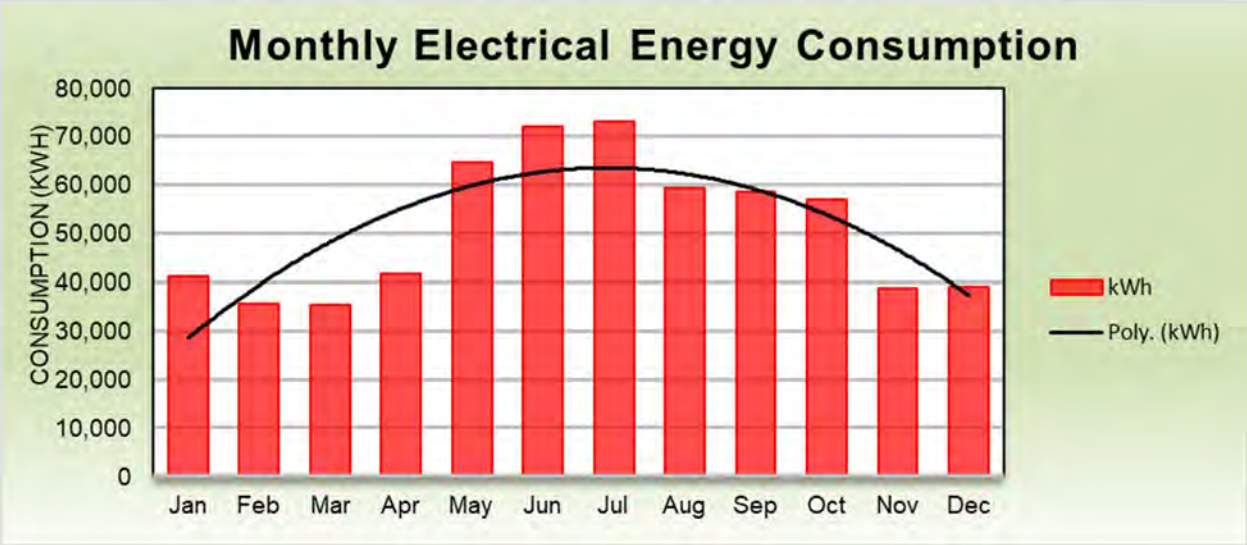
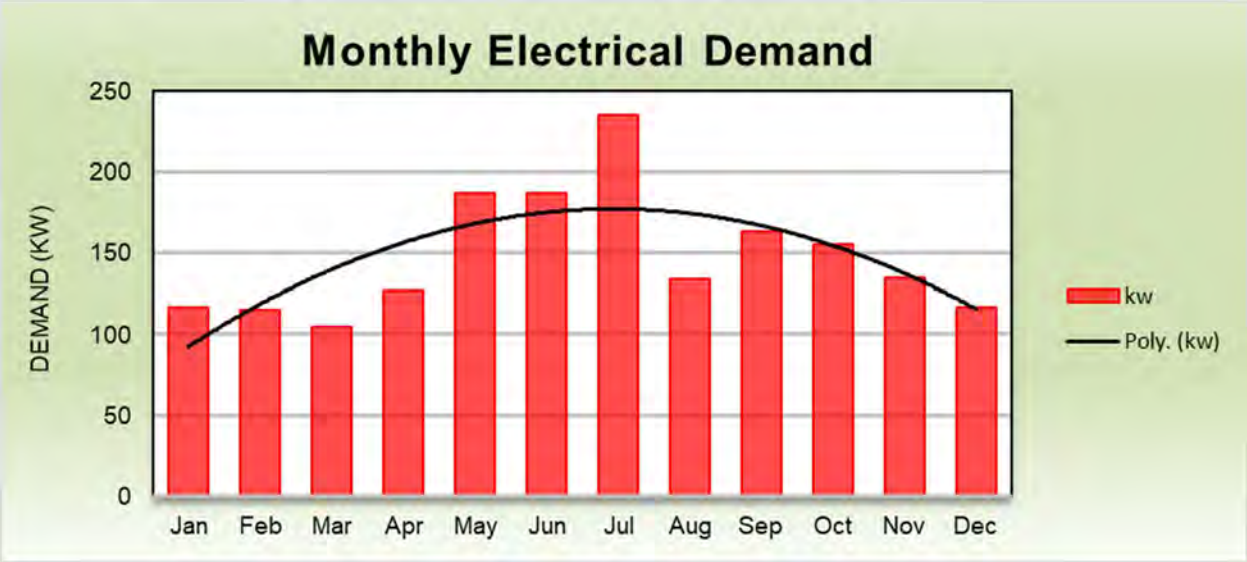


Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand follows a similar trend to that of electricity consumption with peaks occurring in the warmest months. Winter demand is relatively flat, which indicates that there is no electric heating at this building.



The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and is relatively flat during summer months, which is consistent with a building with gas heat and gas domestic hot water. Summer gas consumption is consistent and attributable mainly to gas water heating. There is a dip in October/November that is from the 2018 that wasn't present in 2019's data for August/September.

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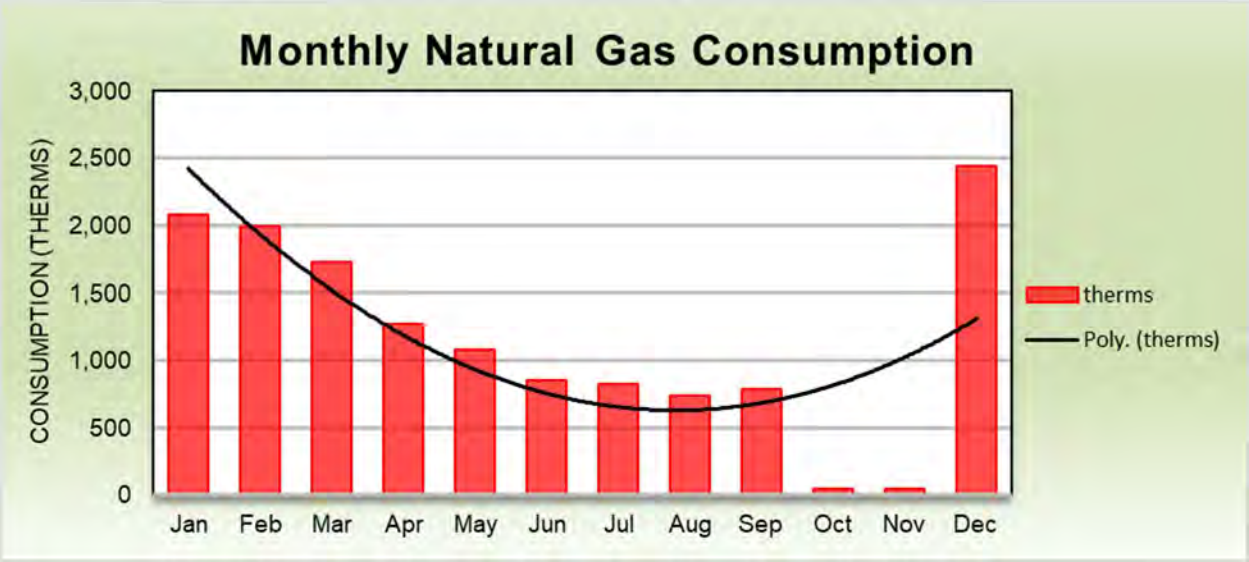

2.18 Doughty Community Center

Site Overview

Doughty Park Community Center is approximately 3,450 square feet and is located at 1200 Nellieville Rd. The Doughty Park facility features the community center, playground, athletic fields, tennis courts, and basketball courts. The community center is mainly used as an office and gathering place for various community events. There is also a kitchen at this location.

Lighting Systems

Majority of lighting at the Doughty Park Community Center is a combination of T8 and T12 linear fluorescents and T8 U-bend fixtures. There are also some incandescent fixtures in restrooms. Building perimeter lighting is all compact fluorescent fixtures. Nearby court and field lighting is a combination of 1000-watt metal halide, 1000-watt high pressure sodium, and 500-watt halogen fixtures. There are also some LED light fixtures on site as well.

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A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The Doughty Park Community Center has a cement block façade and a pitched shingled roof. Interior walls are also cement block.

Mechanical Systems

There are two natural gas split system air handling units that serve the entire building. These are paired with three condensing units located on the roof of the building.

Controls

There are three thermostats in the building, one in the office portion of the building and two in the community room. The thermostat located in the office is made by Venstar, whereas the other two are made by Totaline. All the thermostats are non-programmable.

Miscellaneous Loads

Majority of miscellaneous loads come from the equipment serving the kitchen. There is are also minimal miscellaneous loads associated with computers in the office of the center.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	71	8a – 6p	8a – 6p	8a – 6p	8a – 6p	8a – 6p	Closed	Closed
UnOccupied	72	71	6p – 8a	6p – 8a	6p – 8a	6p – 8a	6p – 8a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Doughty Park Community Center.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and electric cooling. Peaks occur over the summer months due to increased cooling demand.

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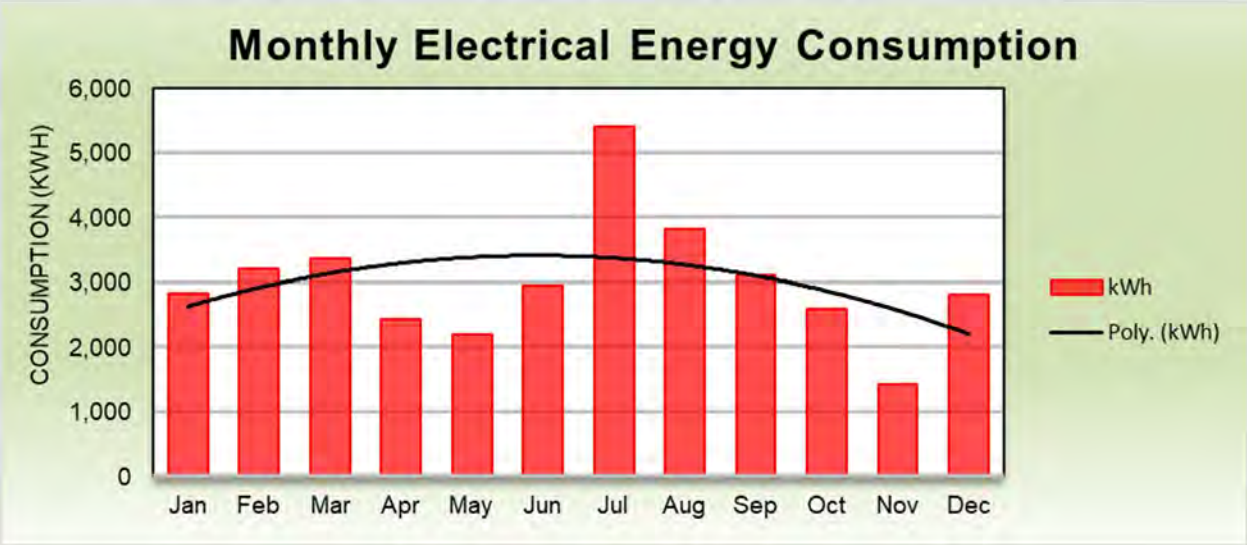
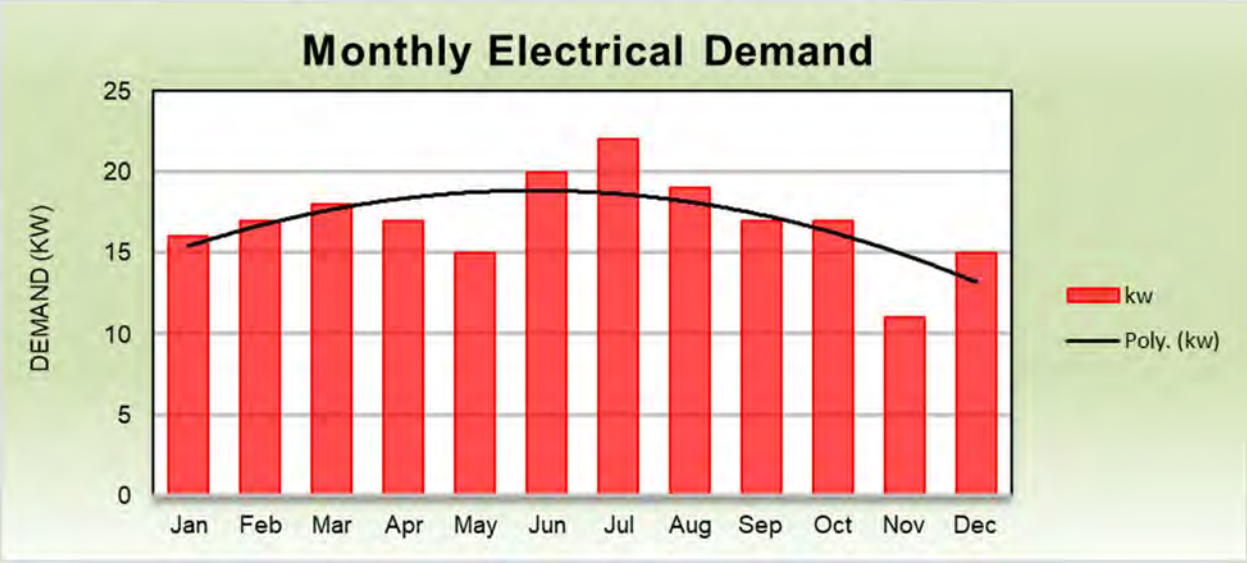


Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand follows a similar trend to that of electricity consumption with peaks occurring in the warmest months. Winter demand is relatively flat, which indicates that there is no electric heating at this building.



The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and zero in the summer months, which is consistent with a building with gas heat but no natural gas domestic heating.

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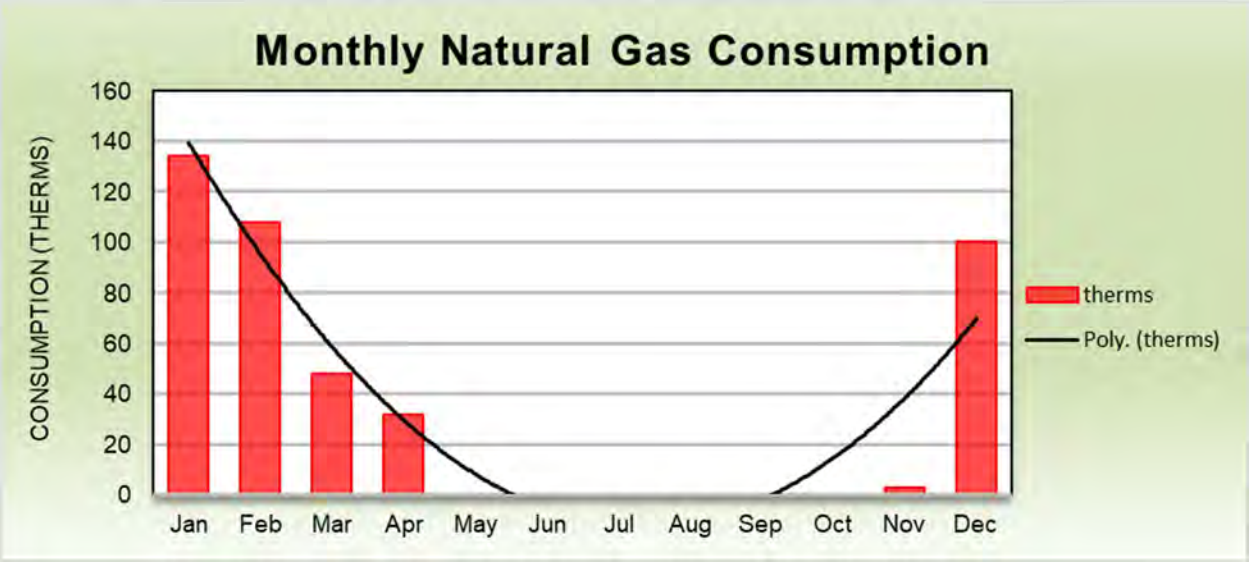

2.19 *Downtown Park Division*

Site Overview

Downtown Park Division is 4,255 square feet and is located at 302 Watkins Street. The building serves as an office and shop.

Lighting Systems

Lighting retrofits are not in scope at this location and thus no lighting system information was collected.

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Building Envelope

It is a single-story building comprised of two discrete phases of construction. The office area has masonry walls built with CMU block with an approximate height of 8 feet and a pitched roof with an asphalt membrane. The shop area has masonry walls constructed from brick with an approximate height of 15 feet and a pitched roof with asphalt shingles. The shop area has three roll-up garage doors with single-pane glazing that occupies one-third of the door surface area. The wall facing Watkins Street of the office portion of the building has a window-to-wall ratio of approximately 30%.

Mechanical Systems

The office area is conditioned by one upflow gas-fired furnace, which is paired with a 3-ton condensing unit located on grade in the corner between the office and shop with no fence. The condensing unit was manufactured in 1996. The kitchen within the office area is cooled by a window-hung packaged unit with a steel protective cage.

The shop area is conditioned by two upflow gas-fired furnaces mounted horizontally on the wall. These furnaces are paired with condensing units located on grade in a fenced area on the exterior face of the wall on which the furnaces are mounted. These condensing units were manufactured in 2004.

Controls

The office area has a non-programmable thermostat and the wall-hung packaged unit in the kitchen has integral, manually operated controls. The shop area has two programmable thermostats.

Miscellaneous Loads

The office area has a few computers and office equipment. The front office appears to be partially used for storage. The kitchen in the office area has a residential gas range and oven, coffee maker, and refrigerator. The shop area appeared to be used to store golf carts.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	8a - 6p	8a - 6p	8a - 6p	8a - 6p	8a - 6p	Closed	Closed
UnOccupied	82	70	6p – 8a	6p – 8a	6p – 8a	6p – 8a	6p – 8a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for Downtown Parks Division.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and electric cooling. Peaks occur over the summer months due to increased cooling demand.

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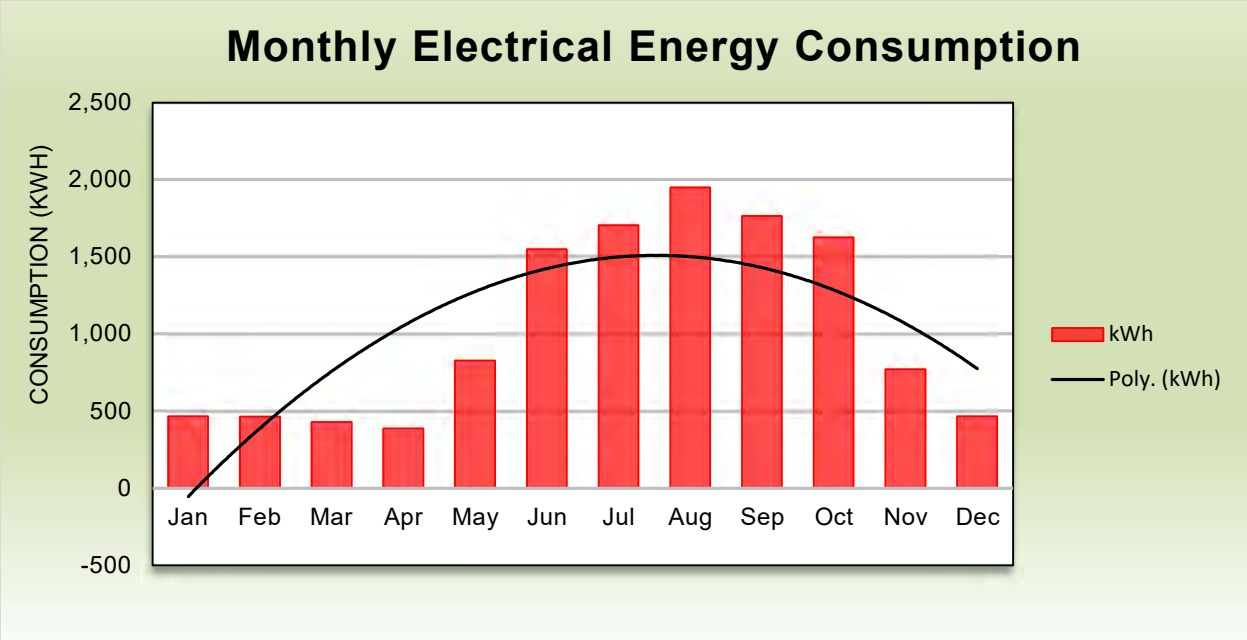
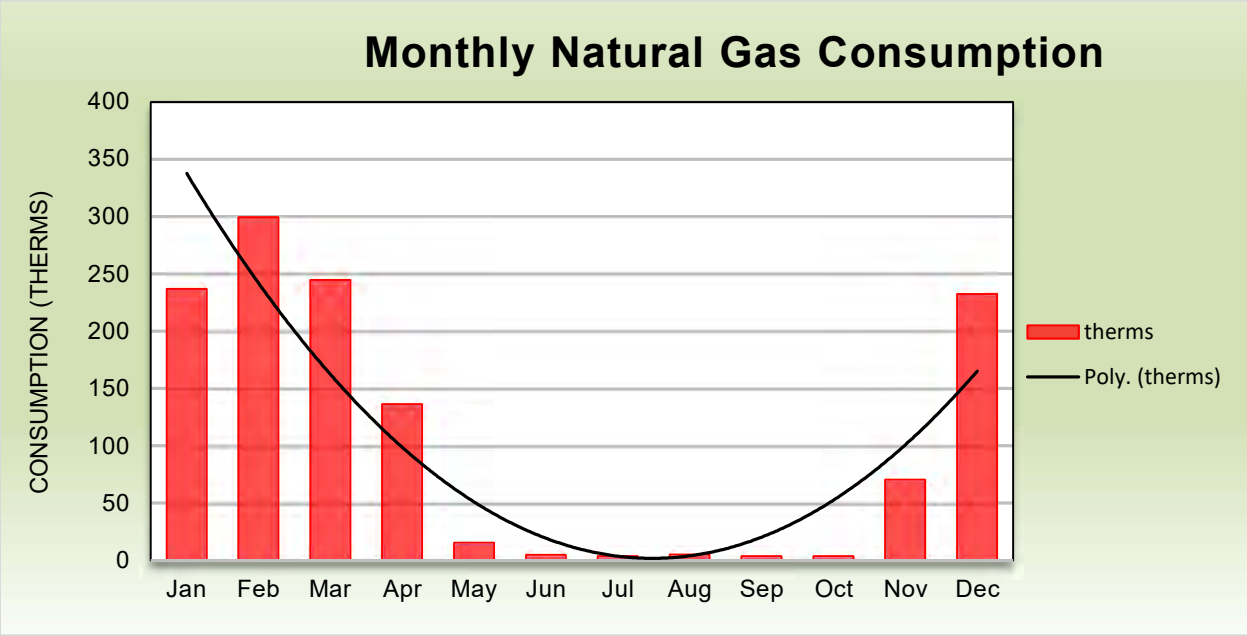


This building is billed for electricity on the General Service – Commercial rate structure, which does not use electric demand to adjust electricity pricing and electric demand is not provided in electric bills.

The chart below shows monthly gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and is negligible during summer months, which is consistent with a building with gas heat and electric domestic hot water.



2.20 *Eastview Community Center*

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Site Overview

Eastview Community Center is 3,920 square feet and is located at 644 Aiken Street. The building serves as a community center. Spaces include Youth Room, Senior Room, Kitchen, Study Room, Conference Room, Restrooms, and Office.

Lighting Systems

Interior lighting consists of linear fluorescent T8 fixtures. Exterior façade lighting is a mixture of 175-watt metal halide and 150-watt high pressure sodium fixtures. The exterior walkway is illuminated with LED fixtures. The sports field lighting is provided by 1000-watt high pressure sodium fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a single-story building with masonry walls constructed of CMU block with a brick façade. The roof is pitched with asphalt shingles.

Mechanical Systems

The building is conditioned with four split system heat pumps, with two serving the Senior Room and two serving the Youth Room. Air handling units are located in the attic, and condensing units are located on grade behind a chain-link fence in the rear of the building. The two 3-ton condensing units were manufactured in 2013, and the two 5-ton condensing units were manufactured in 2018.

Controls

There are two non-programmable thermostats in the Youth Room and two non-programmable thermostats in the Senior Room.

Miscellaneous Loads

The Youth Room has a drink vending machine, and the Senior Room has a stereo system. The Kitchen has a residential refrigerator, electric range and oven, and a microwave.

Operating Schedule Description

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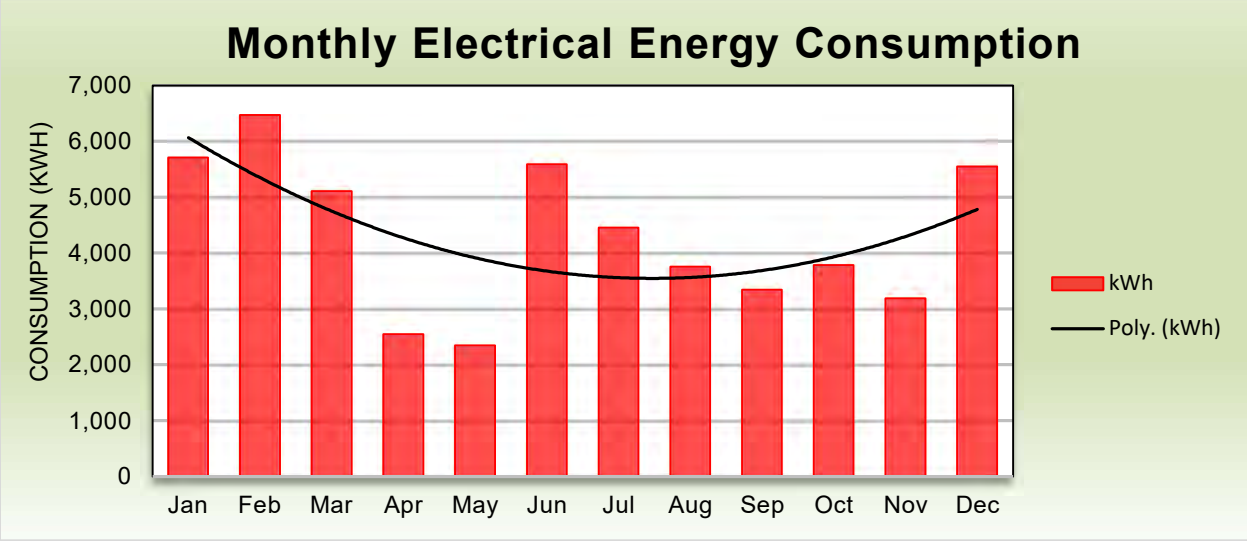
	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	9a - 5p	9a - 5p	9a - 5p	9a - 5p	9a - 5p	Rentable	Rentable
UnOccupied	82	70	5p – 9a	5p – 9a	5p – 9a	5p – 9a	5p – 9a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for Eastview Community Center. Weekend occupancy and schedules vary since the building is available for rental.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods.



Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand is relatively flat over the course of the year with troughs during shoulder months, where minimal heating or cooling is occurring. Typically, buildings heated with heat pumps will experience higher demand in winter months due to the activation of electric-resistance auxiliary heaters during the coldest periods or when recovering from a thermostat setback.

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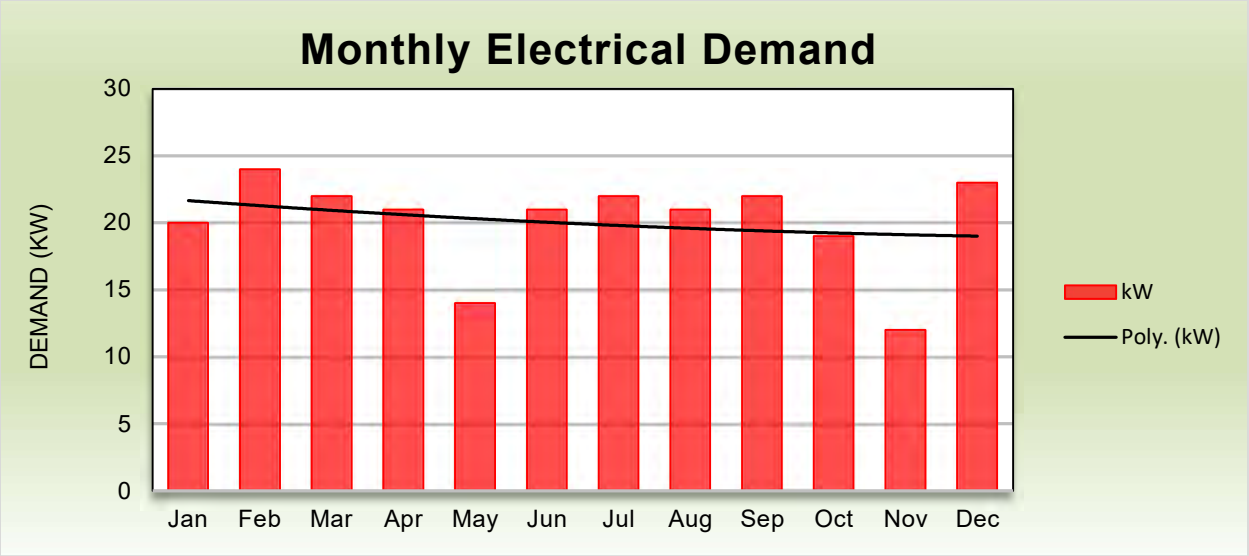
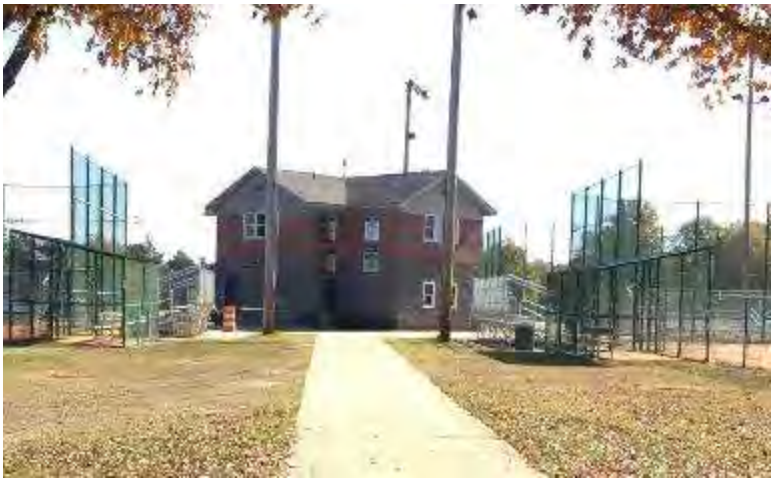


There is no natural gas at this building.

2.21 Eisenhower Athletic Complex



Site Overview

The Eisenhower Athletic complex is located at 1488 Eisenhower Drive and serves as the district athletic office.

Lighting Systems

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Interior lighting at the Eisenhower Athletic Complex is all T8 and T12 linear fluorescent fixtures besides a few incandescent light fixtures in the storage area. Building perimeter lighting is a combination of 150-watt high pressure sodium, 500-watt halogen, and T5 linear fluorescent fixtures. The nearby ballfields are all 1500-watt metal halide fixtures. The picnic shelter has T8 linear fluorescent fixtures. The walkway has a combination of 400-watt metal halide and LED fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The Doughty Park Community Center has a brick masonry façade and a pitched shingled roof. There are double paned glass windows throughout the building exterior. Interior walls are cement block.

Mechanical Systems

One Trane condensing unit serves this location.

Controls

There is one Honeywell non-programmable thermostat that controls the entire building.

Miscellaneous Loads

Miscellaneous loads are from standard office equipment.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	72	8:30a – 5p	8:30a – 5p	8:30a – 5p	8:30a – 5p	8:30a – 5p	Closed	Closed
UnOccupied	72	72	5p – 8:30a	5p – 8:30a	5p – 8:30a	5p – 8:30a	5p – 8:30a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Eisenhower Athletic Complex. The Eisenhower Park Complex and fields are also available for rent, and use may vary outside of standard operating hours.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods.

It is also worth noting that the EUI for this building was 196 kBtu/sq. ft. which is quite high.

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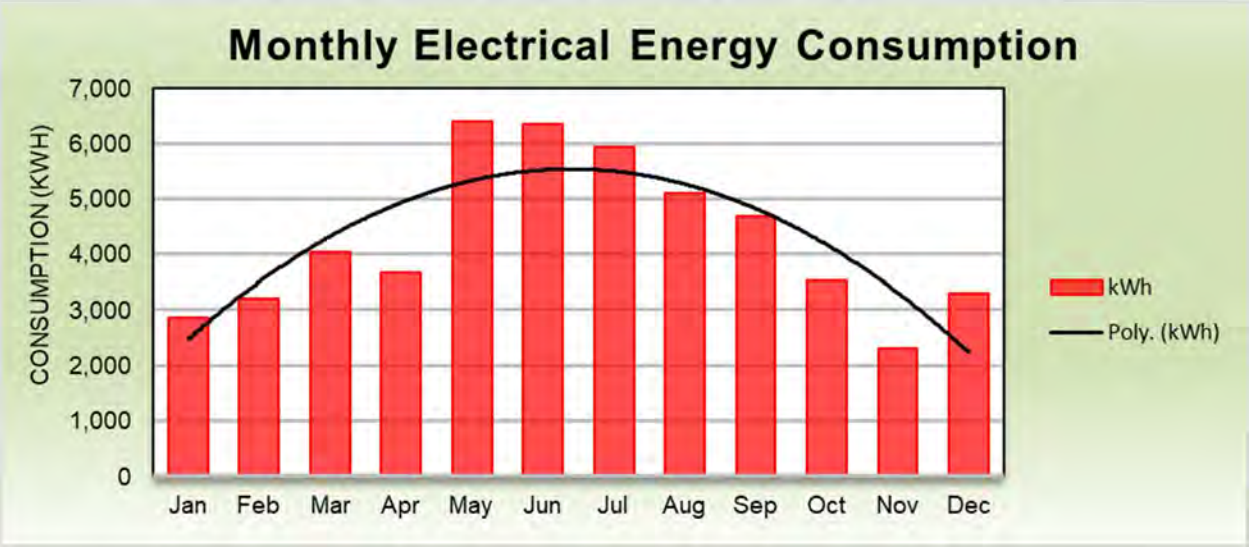
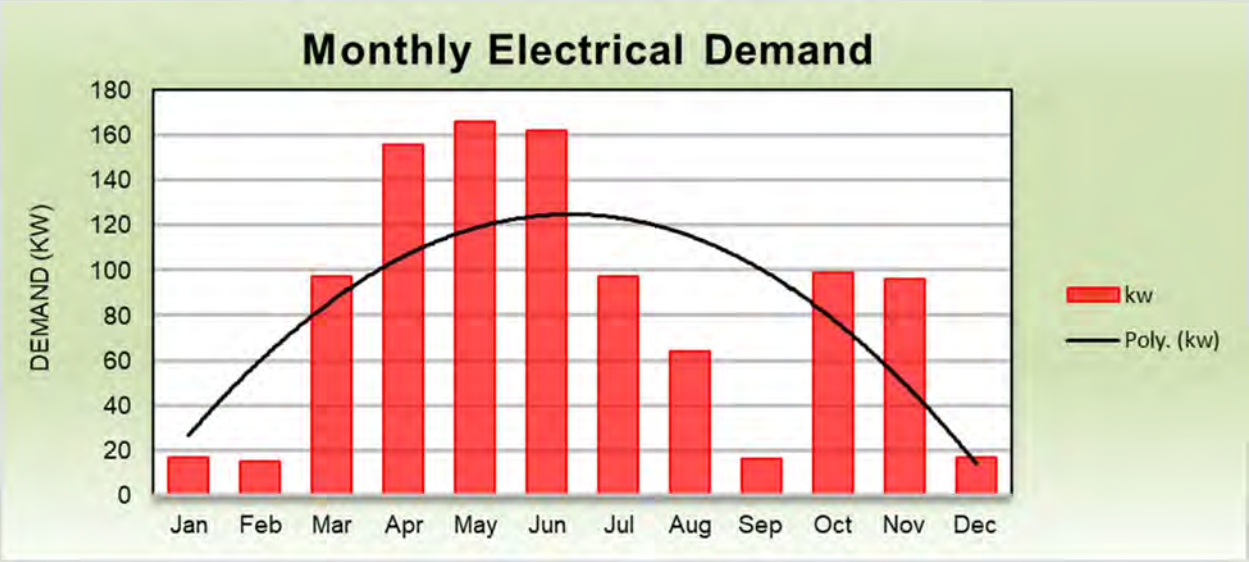


Monthly electrical demand (kW) is shown below, for the baseline year. This profile is consistent with the electrical consumption profile. However, there is a big dip in demand in September. This dip is consistent for most years and occurs in August and September. It is possible that this indicates the building is not used as much during that time.



Natural gas is not used at this building.

2.22 *Fire Station 1*

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Site Overview

Fire Station 1 is approximately 11,549 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 1 Broad Street.

Lighting Systems

Majority of interior lighting at this location is T8 linear fluorescent fixtures with some compact fluorescent and U-bend fluorescent fixtures. The engine bay has not only T8 linear fluorescent and compact fluorescent fixtures, but also 400-watt metal halide fixtures. All exterior lighting is either 175-, 50-, or 70-watt metal halide or compact fluorescent fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Fire Station 1 has a cement and brick masonry façade with a metal pitched roof. Interior walls are cement block. There are double paned windows throughout the building as well as eight large glass doors that enclose fire engines in the fire truck bay of the building. Overall, the exterior of Fire Station 1 is in good condition.

Mechanical Systems

There are four split system air handling units at this location. These AHUs are connected to two Trane electric condensing units. There are also two natural gas domestic water boilers. Thus, all cooling and heating at this facility is provided by electric equipment. Natural gas loads come from the domestic water boiler as well as loads from gas kitchen equipment. Two unit heaters heat the fire truck bay but this portion of the building is not cooled.

Controls

There is a thermostat in the Battalion Chief room, day room, telecom room, station office, laundry room, and sleeping quarters. While 6 of the thermostats in are Trane non-programmable pneumatic thermostats, there is one programmable thermostat in the day room.

Miscellaneous Loads

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Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from kitchen ice machine and refrigerator as well as the washer and dryer onsite. There is also a gas fired stove and oven with exhaust hood as well as a microwave in the kitchen. The fire truck bay also has significant lighting load in the bay where the trucks are held.

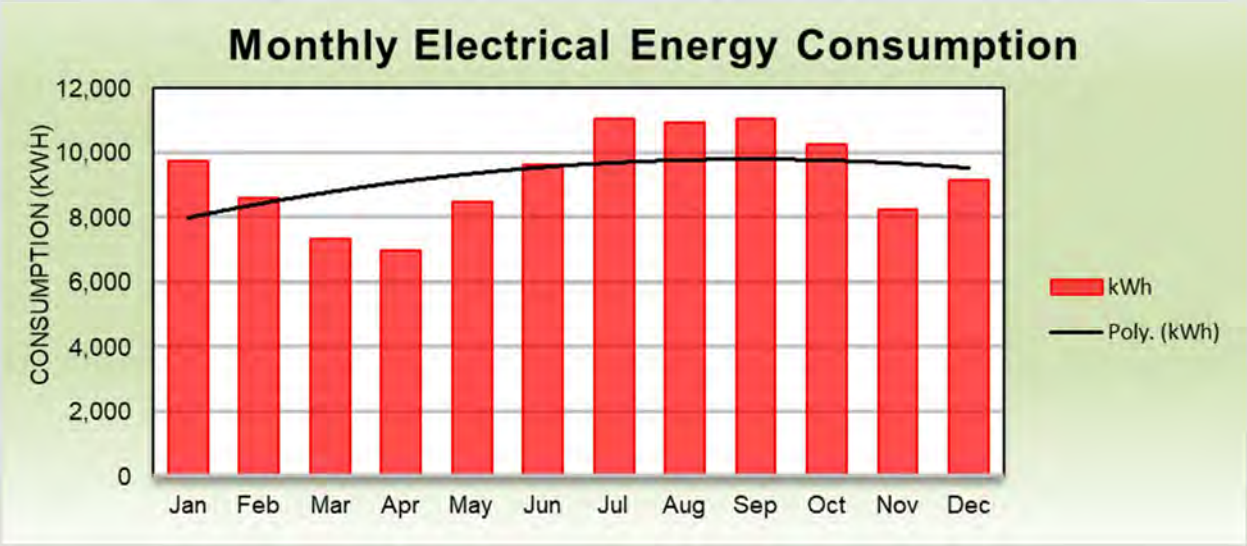
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	75	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	72	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 1.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these.



Monthly electrical demand (kW) is shown below, for the baseline year. This profile is consistent with the electrical consumption profile. There is a small rise in the winter due to the electric heating.

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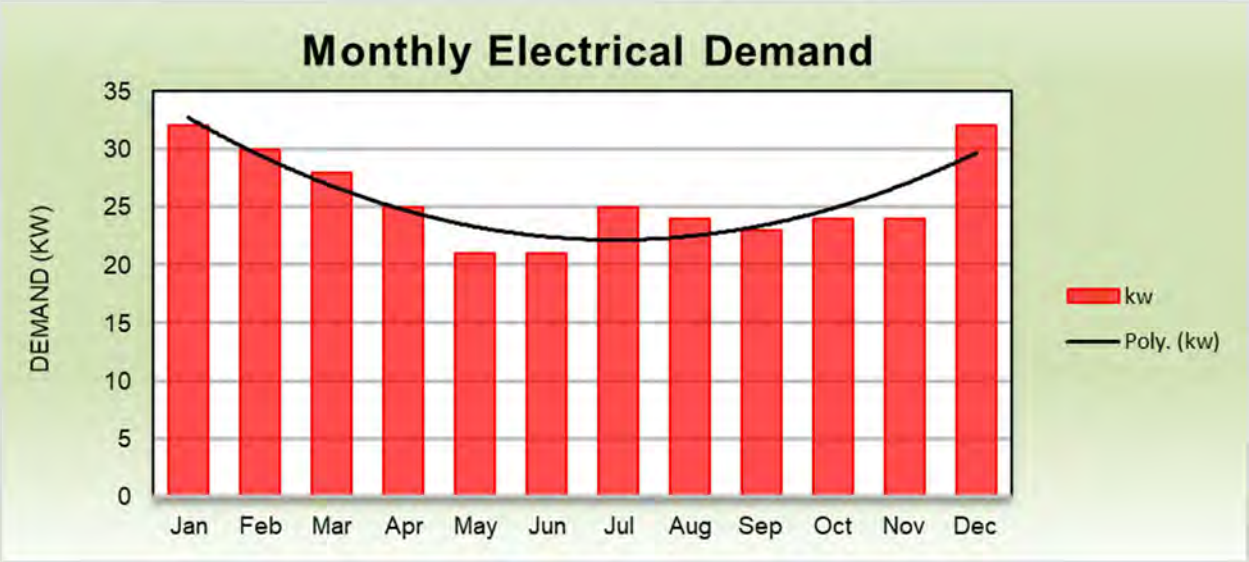

There is no natural gas information available for this building.

2.23 *Fire Station 4*

Site Overview

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Fire Station 4 is approximately 9,434 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 1866 Ellis Street.

Lighting Systems

Majority of interior lighting at this location is T8 and T12 linear fluorescent fixtures with some incandescent fixtures. Exterior lighting is a combination of incandescent, LED, and 100-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Fire Station 4 has a brick masonry façade with a flat membrane roof. Interior walls are predominantly painted cement block, although there are some walls, such as the weight room, that are sheetrock. There are two windows on the eastern and western sides of the building as well as five large glass doors that enclose fire engines in the fire truck bay of the building. The overall building exterior is in fair condition.

Mechanical Systems

This building is served by one Carrier natural gas split system air handling unit paired with a Carrier cooling only condensing unit, and there is also a natural gas roof top unit. There are also two natural gas unit heaters in the fire truck bay as well as a natural gas unit heater in the storage portion of the building. There is also an exhaust fan which serves the gas fired oven and stove in the kitchen. A single natural gas water boiler is used for domestic water loads at the building. The fire truck bay is not cooled.

Controls

There is a Honeywell thermostat in the lounge a Venstar thermostat in the sleeping area. Both of these thermostats are non-programmable.

Miscellaneous Loads

Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from kitchen refrigerator and gas stove and oven. There are also three TVs in the office and living portion of the building and a vending machine in the fire truck bay.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	73	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	72	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 4.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and electric cooling. Peaks occur over the summer months due to increased cooling demand.

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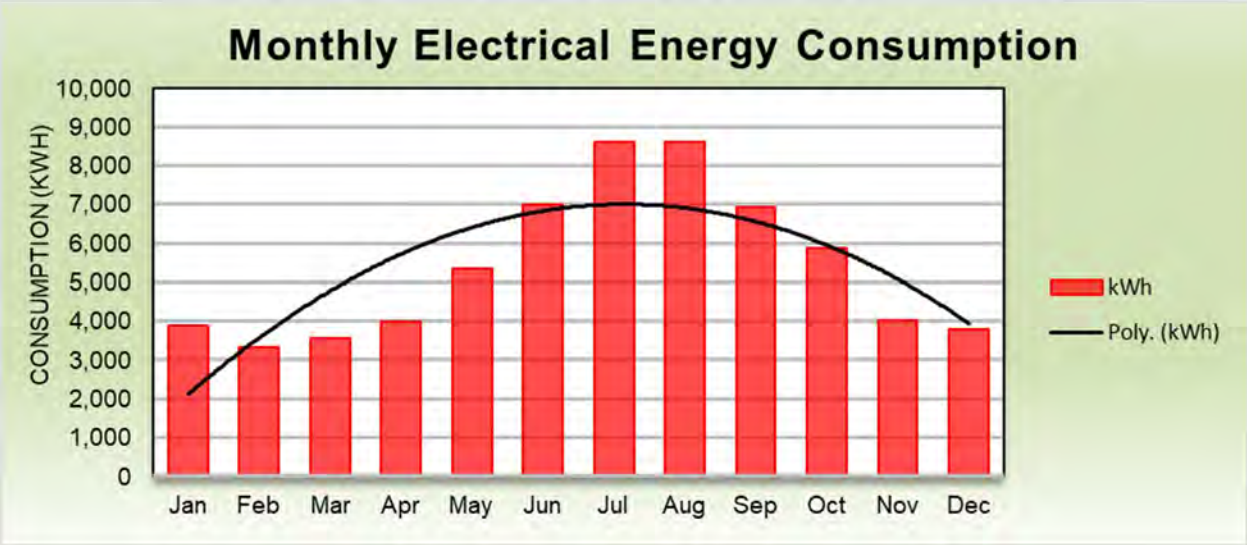
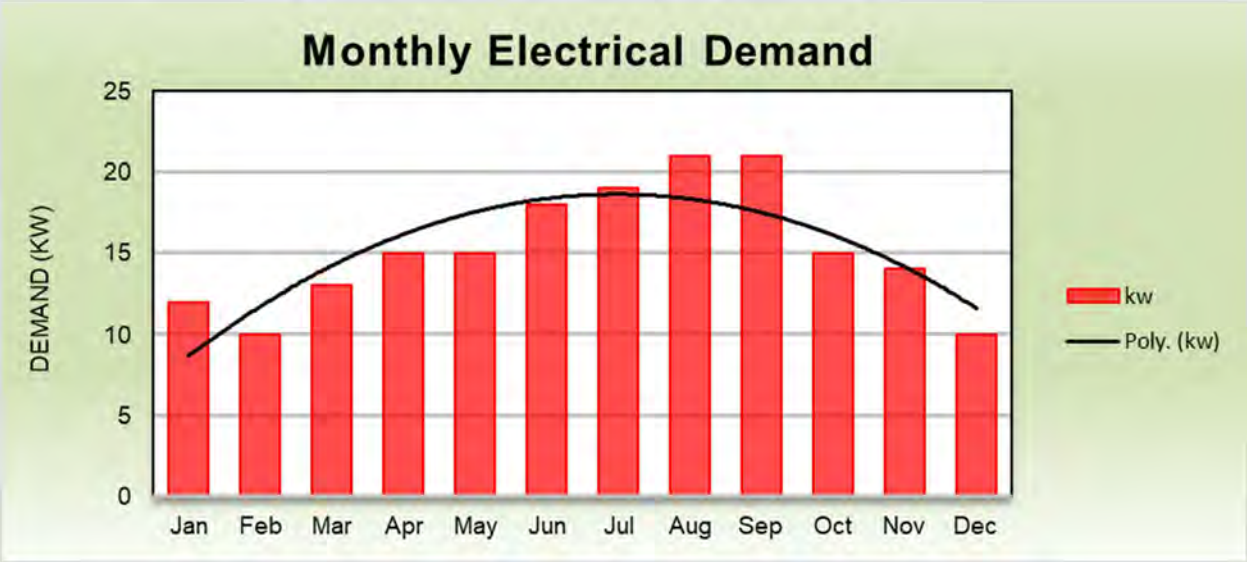


Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand follows a similar trend to that of electricity consumption with peaks occurring in the warmest months. Winter demand is relatively flat, which indicates that there is no electric heating at this building.



The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and is relatively flat during summer months, which is consistent with a building with gas heat and gas domestic hot water. Summer gas consumption is consistent and attributable mainly to gas water heating.

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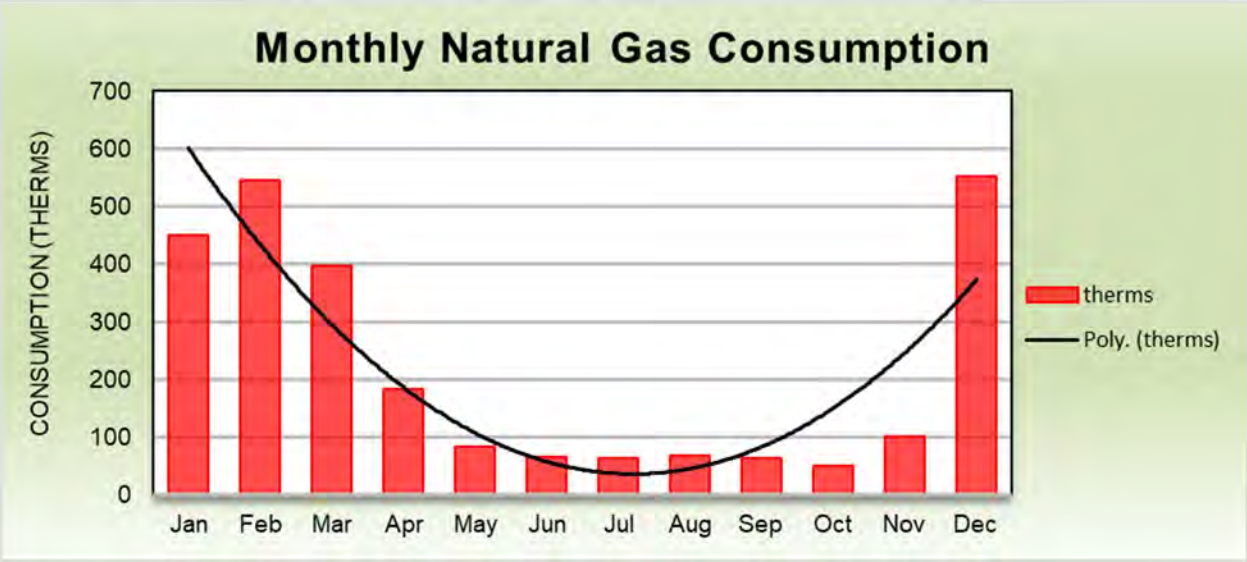

2.24 *Fire Station 5*

Site Overview

Fire Station 5 is approximately 9,434 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 1898 Martin Luther King Boulevard.

Lighting Systems

Majority of interior lighting at this location is T12 linear fluorescent fixtures with some incandescent and compact fluorescent fixtures. Exterior lighting is a combination of compact fluorescent and 400-watt high pressure sodium fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

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Fire Station 5 has a concrete and brick masonry façade with a pitched metal roof. Interior walls are painted cement block. There are windows around all sides of the building as well as four large glass doors that enclose fire engines in the fire truck bay of the building. The overall building exterior is in good condition.

Mechanical Systems

There are three natural gas split system air handling units as this location. Two of these units serve the sleeping and locker area of the building and are paired with two Trane 3.5-ton cooling only condensing units. The third split system AHU is in the mechanical room and serves the kitchen, lounge, and office portion of the building. This unit is paired with a 5-ton Trane condensing unit. There are also two Sterling natural gas unit heaters in the fire truck bay to provide heating as well as a natural gas domestic water boiler. The fire truck bay is not cooled.

Controls

There are two thermostats in the building, one located in the kitchen lounge and one located in the sleeping room. Both are non-programmable Honeywell thermostats.

Miscellaneous Loads

Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from the kitchen refrigerator and gas stove and oven, which also has an exhaust fan. There are also two TVs. There is also washer and dryers onsite. There is also a vending machine in the fire engine bay.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	72	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 5.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the period of February 2019 – January 2020, as there was not enough utility data available for the baseline year (October 2018 – September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and electric cooling. Peaks occur over the summer months due to increased cooling demand.

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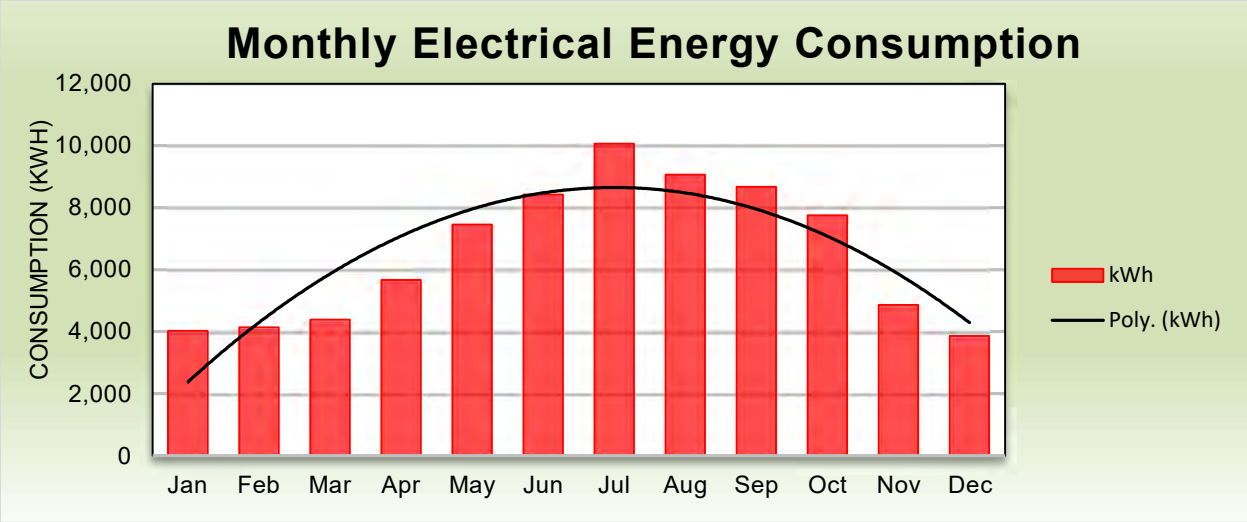
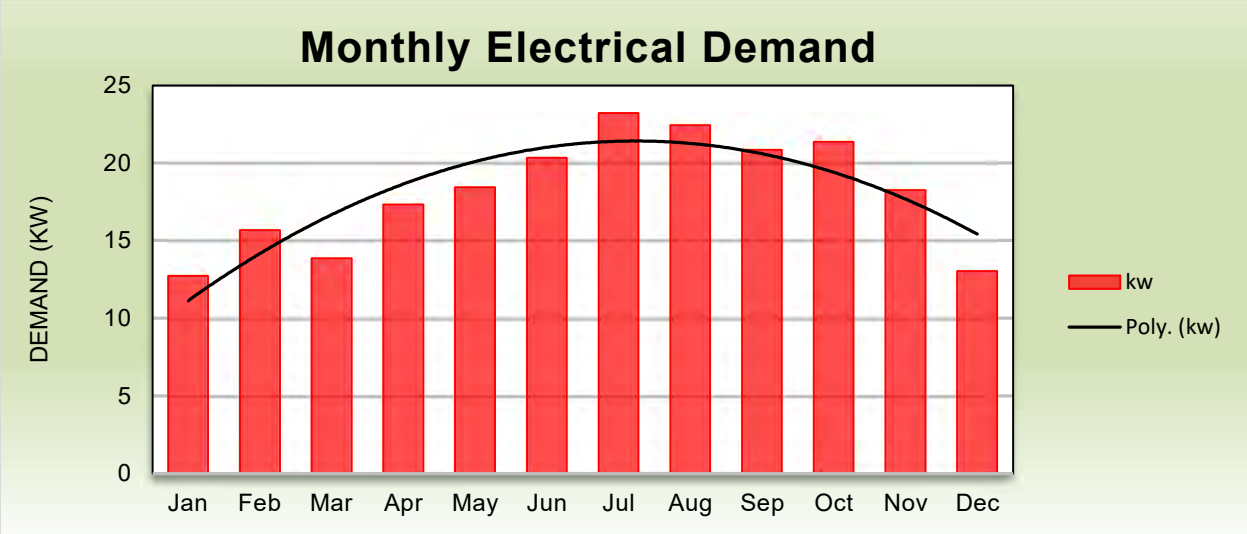


Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand follows a similar trend to that of electricity consumption with peaks occurring in the warmest months. Winter demand is relatively flat, which indicates that there is no electric heating at this building.



The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). The gas usage here is rather odd, not showing a whole lot of winter natural gas usage besides in February. There also seems to be 0 natural gas usage in September 2019.

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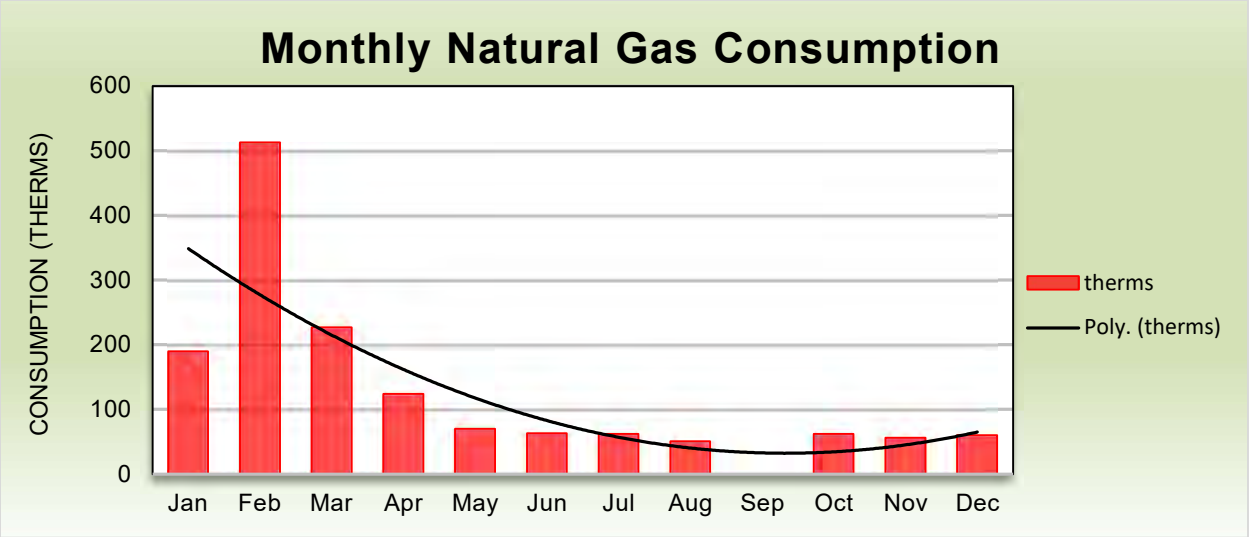

2.25 *Fire Station 6*

Site Overview

Fire Station 6 is approximately 7,038 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 2618 Richmond Hill Drive.

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Lighting Systems

Majority of interior lighting at this location is T8 linear fluorescent fixtures with some incandescent, compact fluorescent, and U-bend fluorescent fixtures. The engine bay has a combination of compact fluorescent, T8 linear fluorescent, and 400-watt metal halide fixtures. Exterior lighting is a combination of compact fluorescent and 175-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Fire Station 6 has a concrete and brick masonry façade on the front of the building and metal siding on the back portion of the building. The roof is a pitched metal roof above the fire engine bay and flat metal above the other portion of the building. Interior walls are painted sheetrock in a portion of the building. The fire truck bay has a combination of metal siding and painted cement blocks as walls. There are few windows around all sides of the building outside of the six large glass doors that enclose fire engines in the fire truck bay of the building.

Mechanical Systems

This station is served by one 1-ton Mitsubishi ductless split air handling unit and three 3.5-ton Trane split system air handling units. The ductless split system is paired with a 1-ton Mitsubishi heat pump condensing unit and the three Trane split systems are paired with three Trane 3.5-ton heat pumps condensing units. The ductless split system serves the electrical room. The other units serve the remainder of the building. There is also a natural gas domestic water boiler and a wall-fin heater in the mechanical room. Two unit heaters serve the fire truck bay to provide heat. The fire truck bay is not cooled.

Controls

There are two thermostats total in the building. One is a Honeywell non-programmable thermostat located in the sleeping area and the other is a Trane non-programmable thermostat located in the Captain's office.

Miscellaneous Loads

Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from the kitchen refrigerator, ice machine, microwave, and gas stove and oven, which also has an exhaust fan. The fire truck bay also has significant lighting load in the bay where the trucks are held. There is also a washer and dryers onsite as well as a treadmill in the weight room and two TVs.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	72	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 6.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods.

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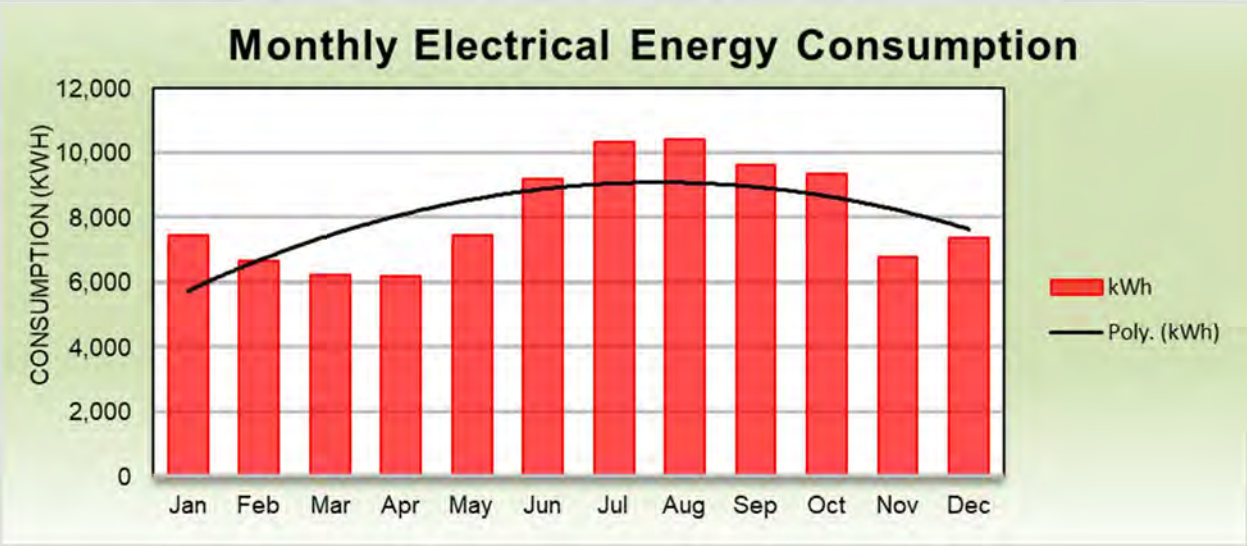
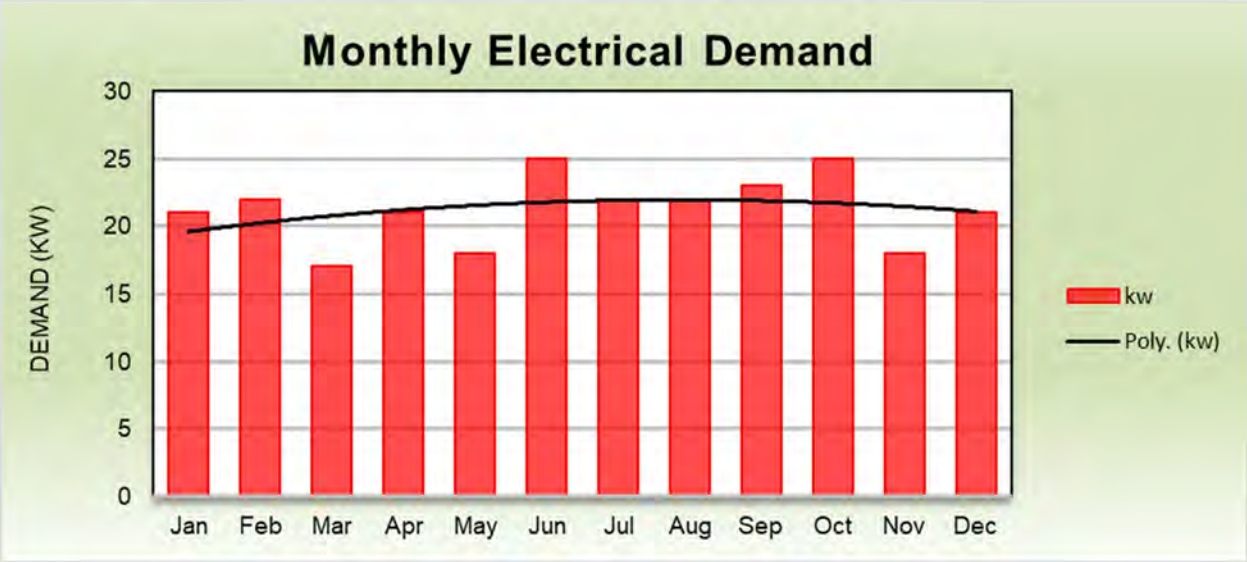


Monthly electrical demand (kW) is shown below, for the baseline year. This profile is consistent with the electrical consumption profile.



There is no natural gas information available for this building.

2.26 *Fire Station 7*

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Site Overview

Fire Station 7 is approximately 10,172 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 2917 Willis Foreman Road.

Lighting Systems

Majority of interior lighting at this location is T8 linear fluorescent fixtures with some compact fluorescent, and U-bend fluorescent fixtures. The engine bay has a combination of compact fluorescent, T8 linear fluorescent, and 400-watt metal halide fixtures. Exterior lighting is a combination of compact fluorescent and 175- or 70-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Fire Station 7 has a concrete and brick masonry façade. The roof is a pitched metal roof above the fire engine bay and a flat membrane above the other portions of the building. Interior walls are painted sheetrock in a portion of the building. The fire truck bay has a combination of metal siding and painted cement blocks as walls. There are few windows around all sides of the building outside of the six large glass doors that enclose fire engines in the fire truck bay of the building.

Mechanical Systems

Cooling at this location is provided by four Trane split system air handling units with a rated total capacity of 12 tons. Each of these units is served by Trane heat pump condensing unit, and combined these condensing units can provide up to 12 tons of cooling, matching that of the AHU rating. Two of these units serves the day room and bedroom and provide these areas with up to 6 tons of cooling. The other two units serve the laundry room and office portion of the building and provide a combined total of 6 tons of cooling. There are also two electric domestic water boilers located in the mechanical room as well as two unit heaters in the fire truck bay. The fire truck bay is not cooled.

Controls

There are four Trane non-programmable, pneumatic thermostats throughout the building. There is one thermostat in the day room, one in each of the sleeping rooms, and one in the Captain's office.

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Miscellaneous Loads

Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from the kitchen refrigerator, ice machine, microwave, and gas stove and oven, which also has an exhaust fan. The fire truck bay also has significant lighting load in the bay where the trucks are held. There is also a washer and dryers onsite as well as a treadmill in the weight room, a TV in the lounge area, a treadmill in the weight room, tele-data equipment in the tele-data room, and a vending machine in the fire engine bay.

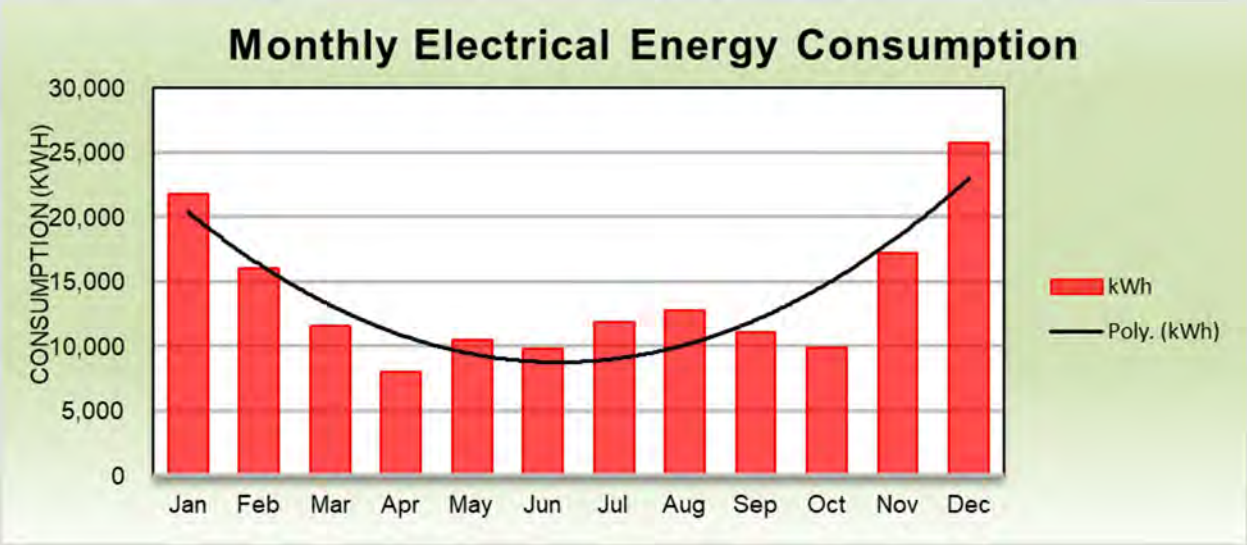
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	71	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	71	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 7.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for September 2018 – August 2019, which is one month different from the baseline year (October 2018 – September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods.



Monthly electrical demand (kW) is shown below, for the baseline year. This profile is consistent with the electrical consumption profile.

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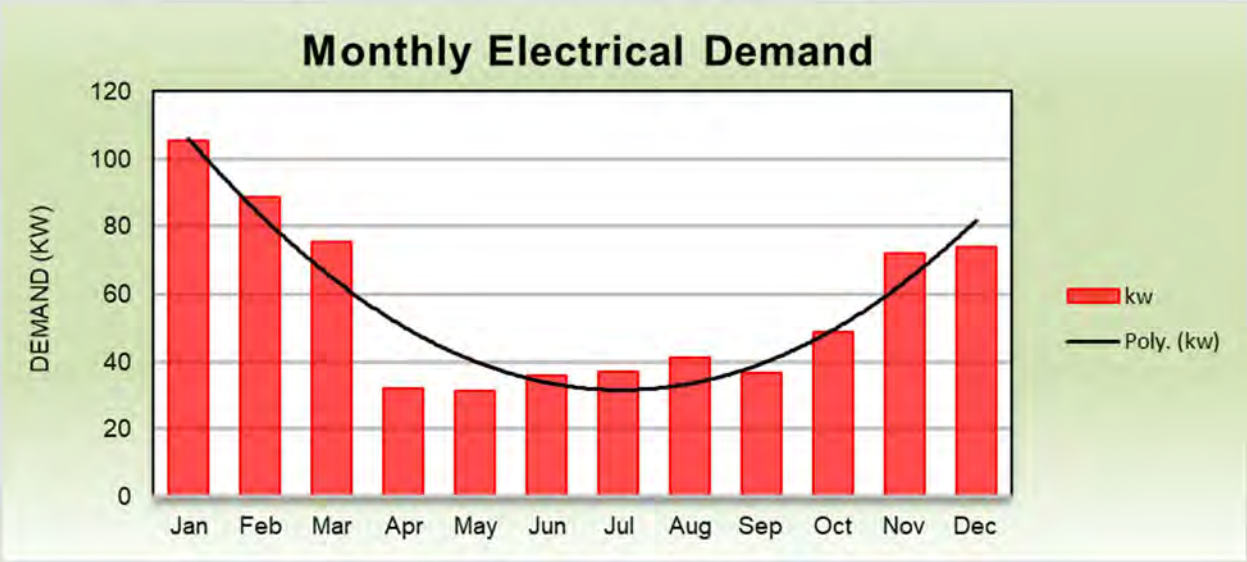

There is no natural gas used at this building.

2.27 *Fire Station 8*

Site Overview

Fire Station 8 is approximately 18,086 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 1898 Highland Avenue.

Lighting Systems

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Majority of interior lighting at this location is T8 linear fluorescent fixtures with some compact fluorescent, and T12 U-bend fluorescent fixtures. The engine bay has a combination of compact fluorescent, T8 linear fluorescent, and 400-watt metal halide fixtures. Exterior lighting is a combination of compact fluorescent and 175-watt or 70-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Fire Station 8 has a concrete and brick masonry façade. The roof is a pitched metal roof above the fire engine bay and a flat membrane above the other portions of the building. Interior walls are painted cement block. There are few windows around all sides of the building outside of the eight large glass doors that enclose fire engines in the fire truck bay of the building.

Mechanical Systems

Cooling at this location is provided by four Trane split system air handling units with a rated total capacity of 15 tons. Each of these units is served by electric Trane condensing units, and combined these condensing unite can provide up to 15 tons of cooling, matching that of the AHU rating. Two of these units serve the servicing gear, laundry, and office portion of the building and provide 7.5 tons of cooling. The other two units serve the kitchen and sleeping quarters and provide a combined total of 7.5 tons of cooling. There is also one natural gas domestic water boiler. There are also two unit heaters that serve the fire truck bay. The fire truck bay is not cooled.

Controls

There are five non-programmable thermostats throughout the building. Two are set at 75F located in the gear laundry room and station telecom room. There are two set at 70F located in the kitchen and sleeping quarter. There is an additional thermostat in the station office, but the setpoint was unable to be recorded for this thermostat.

Miscellaneous Loads

Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from the kitchen refrigerator, ice machine, microwave, and gas stove and oven, which also has an exhaust fan. The fire truck bay also has significant lighting load in the bay where the trucks are held. There is also a washer and dryers onsite, as well as an additional mini fridge and TV.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	73	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	72	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 8.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods.

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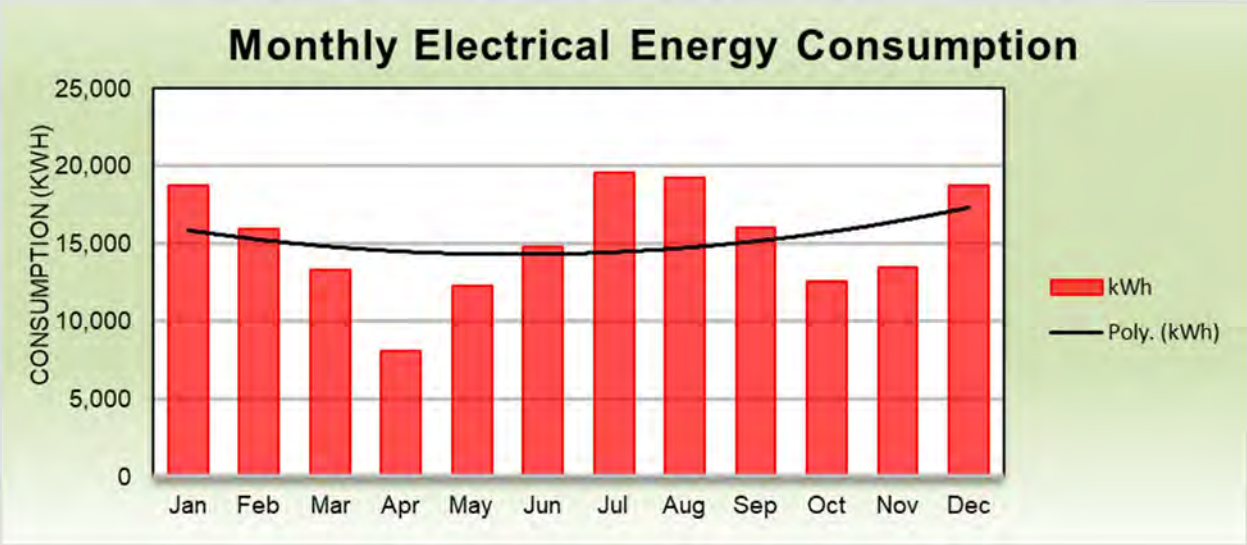
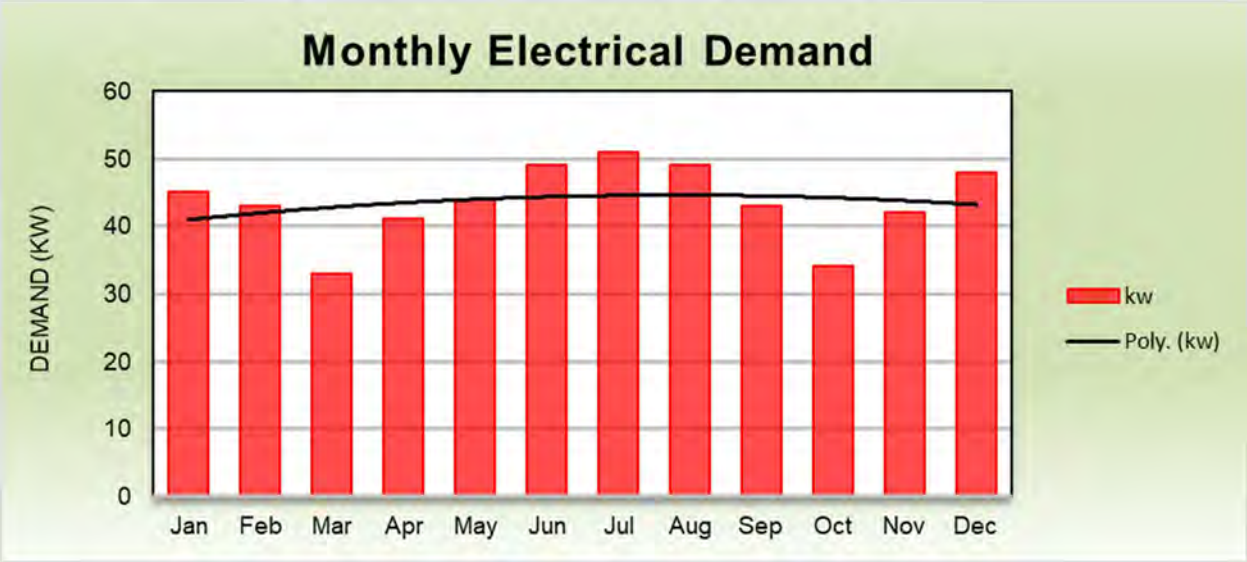


Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand follows a similar trend to that of electricity consumption with peaks occurring in the warmest and coldest months.



The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and is relatively flat during summer months, which is consistent with a building with gas heat and gas domestic hot water. In the case here, only some of the building has gas heating.

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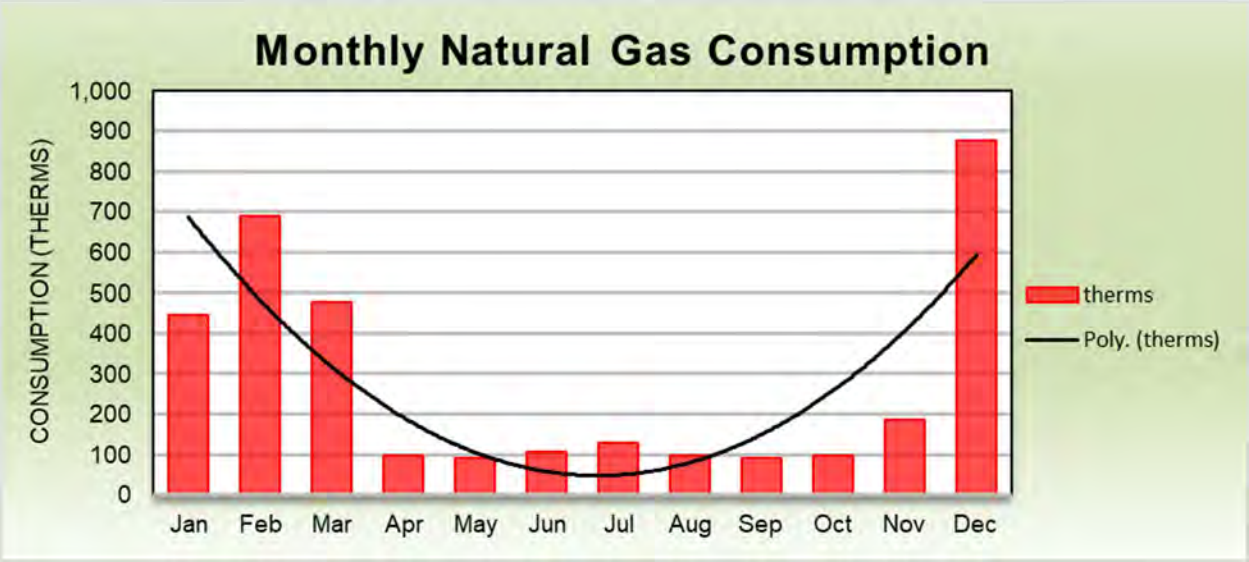

2.28 *Fire Station 9*

Site Overview

Fire Station 9 is approximately 4,789 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 3507 Walton Way Extension.

Lighting Systems

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Majority of interior lighting at this location is T8 and T12 linear fluorescent fixtures with some compact fluorescent and incandescent fixtures. Exterior lighting is a combination of compact fluorescent, incandescent, and LED fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Fire Station 9 has a brick masonry façade with vinyl siding. The roof is a pitched, black shingle roof. Interior walls are painted cement block and sheetrock. There are four large glass doors that enclose fire engines in the fire truck bay of the building.

Mechanical Systems

Cooling and heating at this location is provided by a split system air handling unit (natural gas/DX). This unit is served by a Carrier cooling only condensing unit rated at 2 tons of cooling. There is also one natural gas domestic water boiler and one electric domestic water boiler as well as a wall fin heater in the fire truck bay. The fire truck bay is not cooled.

Controls

There is one non-programmable Honeywell thermostat located in the office.

Miscellaneous Loads

Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from the kitchen refrigerator and gas stove and oven, which also has an exhaust fan. There is also a washer and dryers onsite, as well as two TVs and treadmill.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	69	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	69	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 9.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and electric cooling. Peaks occur over the summer months due to increased cooling demand.

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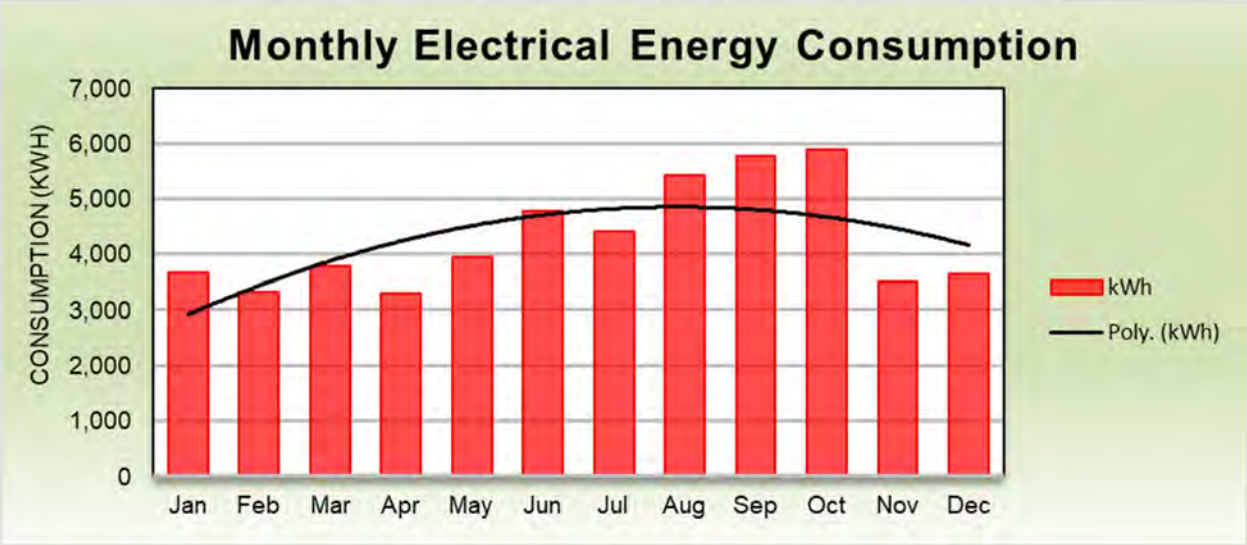
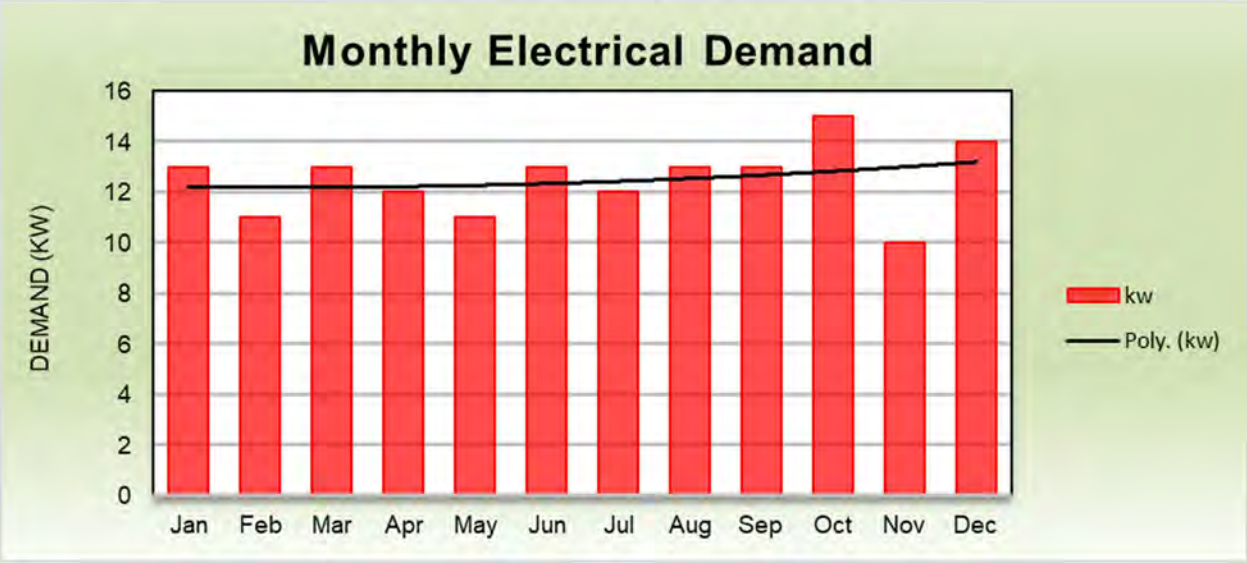


Monthly electrical demand (kW) is shown below, for the baseline year. This profile shows a very constant demand profile, which is atypical for this type of building, and does not really match the consumption profile.



The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and is relatively flat during summer months, which is consistent with a building with gas heat and gas domestic hot water. Summer gas consumption is consistent and attributable mainly to gas water heating.

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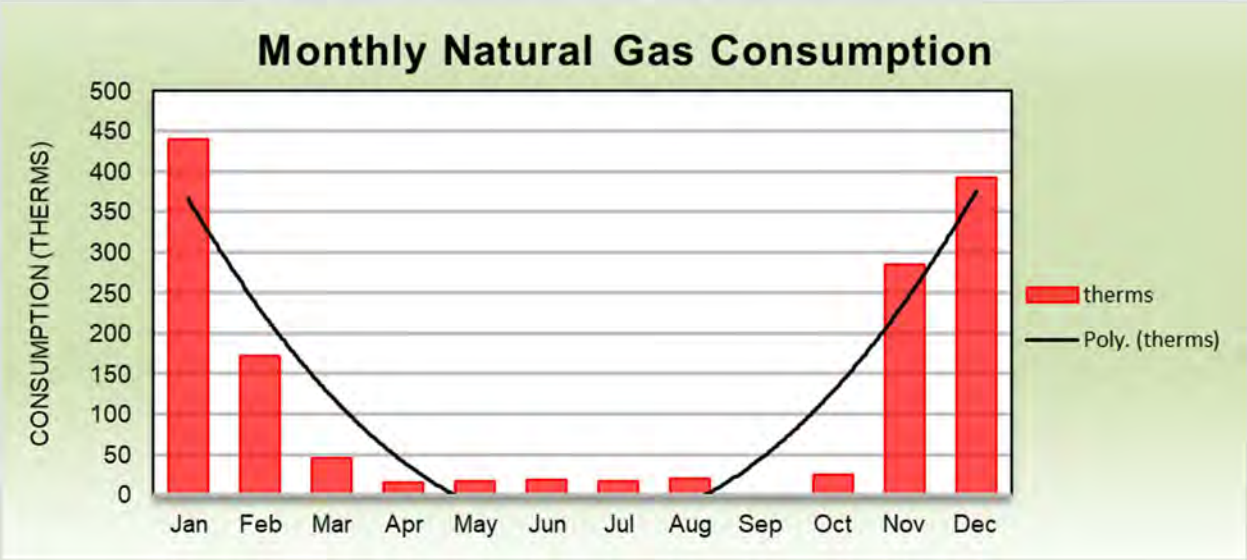

2.29 *Fire Station 10*

Site Overview

Fire Station 10 is approximately 8,935 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 1056 Alexander Drive.

Lighting Systems

Majority of interior lighting at this location is T8 linear fluorescent fixtures with some T5 linear fluorescent fixtures, and compact fluorescent fixtures. Exterior lighting is a combination of compact fluorescent and 150-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Fire Station 10 has a brick and cement masonry façade. The roof is a pitched metal roof above the fire engine room. The other portions of the building have a flat membrane roof. Interior walls are painted cement block. There are six large glass doors that enclose fire engines in the fire truck bay of the building.

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Mechanical Systems

There are five Carrier electric split system air handling units at Fire Station 10. Each of these is served by a condensing unit. The total amount of cooling provided by this system is roughly 16 tons. In addition, there is one domestic natural gas water boiler and one wall-fin heater located in the fire truck bay. The fire truck bay is not cooled.

Controls

There are five non-programable Honeywell thermostats throughout the building. There is one in the sleeping room, day room, laundry room, conference room, and exercise room.

Miscellaneous Loads

Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from the kitchen refrigerator and gas stove and oven, which also has an exhaust fan. There is also a washer and dryers onsite, as well as two TVs. There is also a data room with telecommunication equipment.

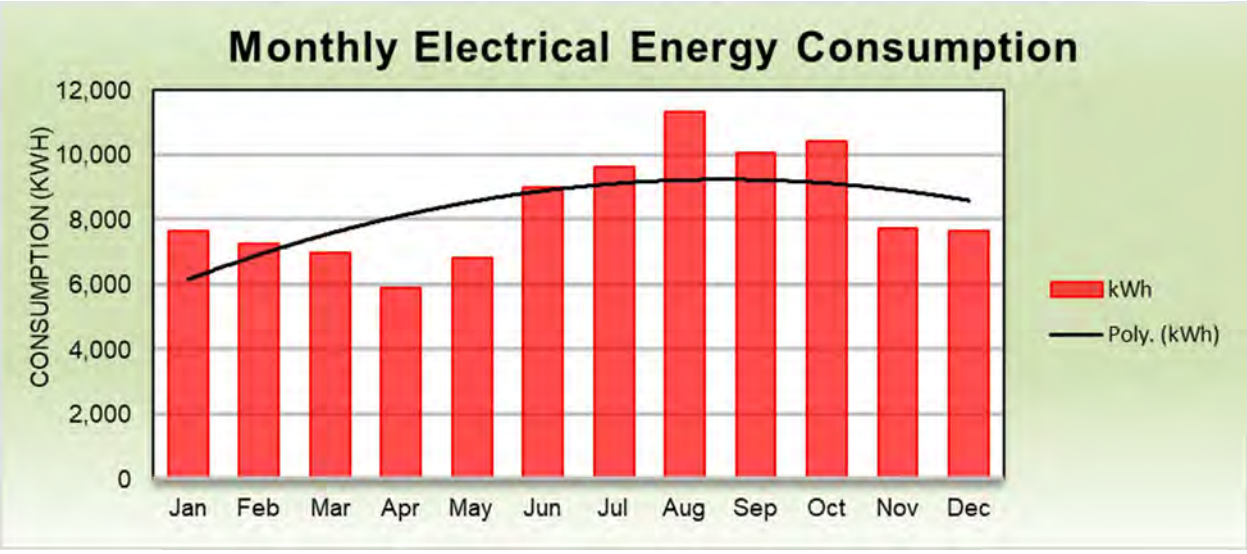
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	70	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	70	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 10.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and electric cooling. Peaks occur over the summer months due to increased cooling demand.



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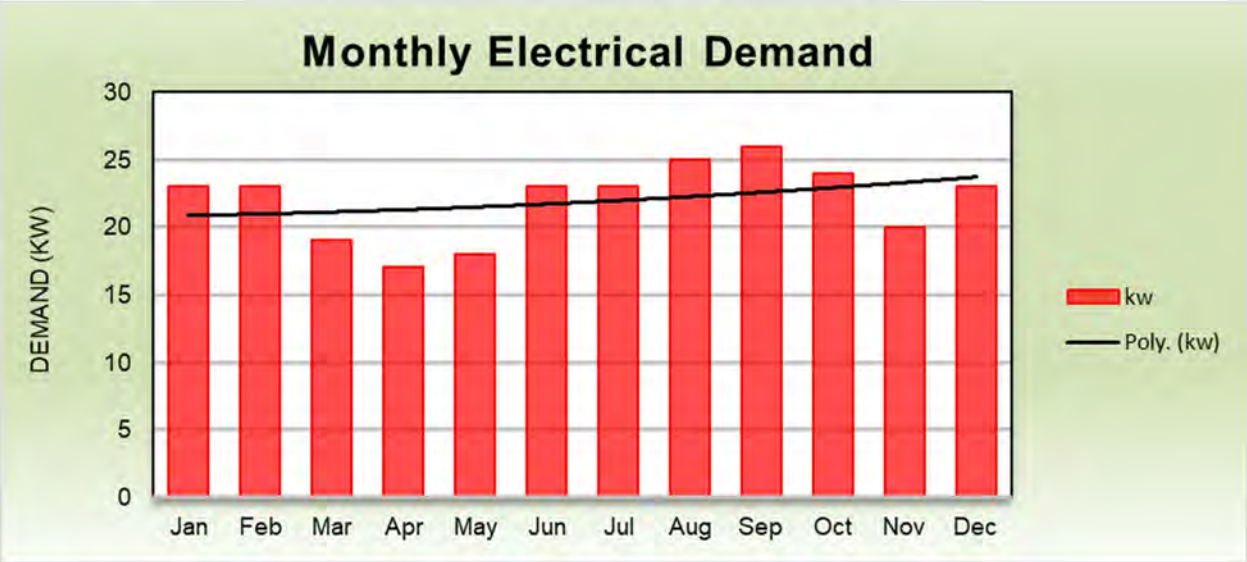
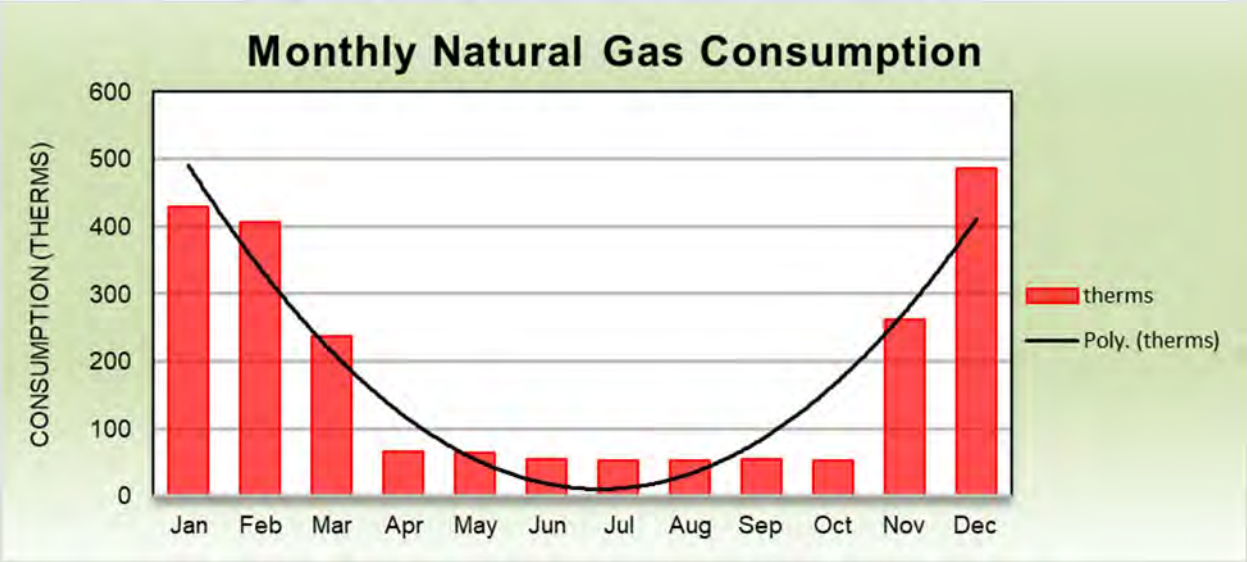
Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand follows a similar trend to that of electricity consumption with peaks occurring in the warmest months. Winter demand is relatively flat, which indicates that there is no electric heating at this building.



The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and is relatively flat during summer months, which is consistent with a building with gas heat and gas domestic hot water. Summer gas consumption is consistent and attributable mainly to gas water heating.



2.30 *Fire Station 11*

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Site Overview

Fire Station 11 is approximately 3,920 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 2243 Old Savannah Road.

Lighting Systems

Majority of interior lighting at this location is T9, T8, or T12 linear fluorescent fixtures with some incandescent fixtures. Exterior lighting is a combination of 250-watt high pressure sodium and 175-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Fire Station 11 has a cement masonry façade. The roof is a flat membrane roof. Interior walls are painted cement block. There are four large glass doors that enclose fire engines in the fire truck bay of the building.

Mechanical Systems

There are two split system air handling units (natural gas/DX). One is a Rheem unit and one is a Trane unit. Each of these are paired with one condensing unit located outside on grade made by the same manufacturer. Each of these units provides 3 tons of cooling for a total of 6 tons throughout the building. There is also a natural gas domestic water boiler onsite as well as two natural gas unit heaters. The fire truck bay is not cooled.

Controls

There are two non-programable Honeywell thermostats in the building, one is in the Day room and one is in the sleeping quarters.

Miscellaneous Loads

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Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from the kitchen refrigerator and gas stove and oven, which also has an exhaust fan. There is also a washer and dryers onsite.

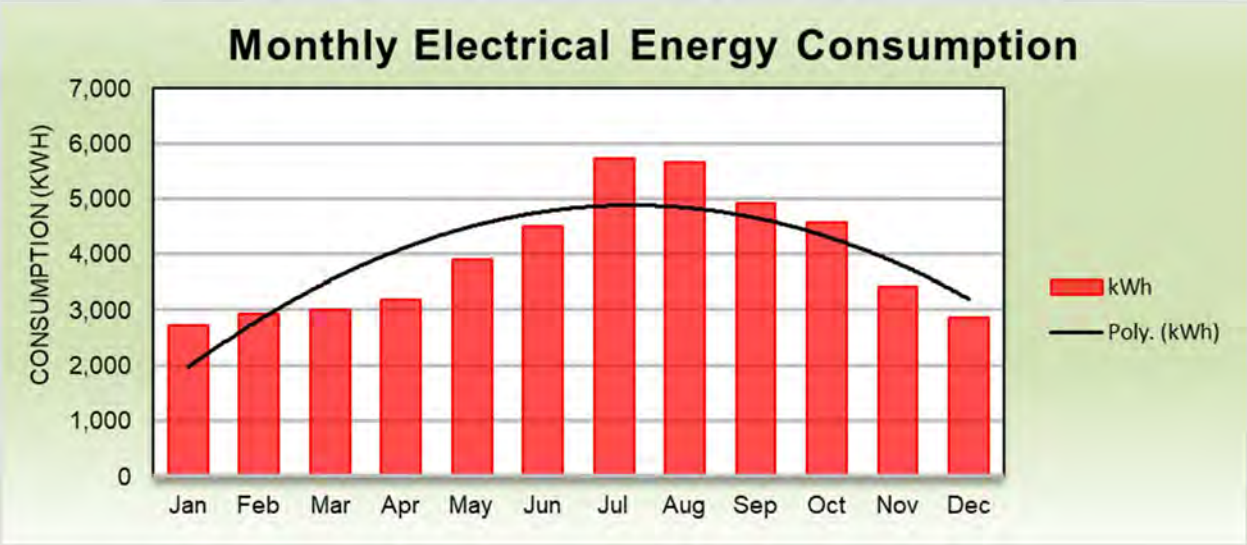
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	71	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	71	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 11.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and electric cooling. Peaks occur over the summer months due to increased cooling demand.



Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand follows a similar trend to that of electricity consumption with peaks occurring in the warmest months. Winter demand is relatively flat, which indicates that there is no electric heating at this building.

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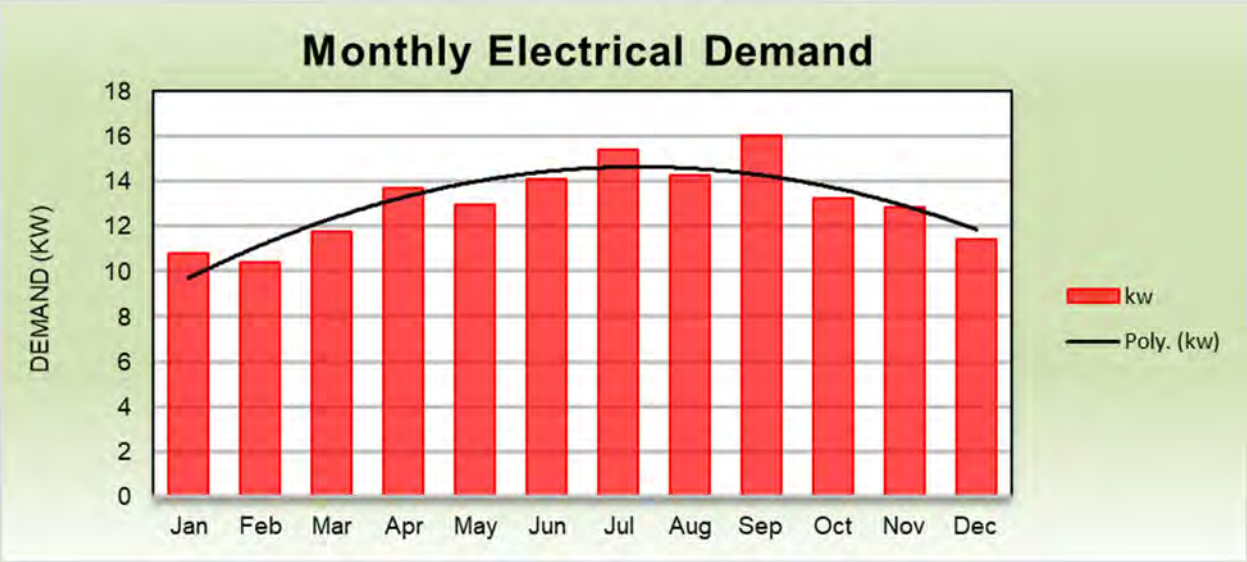
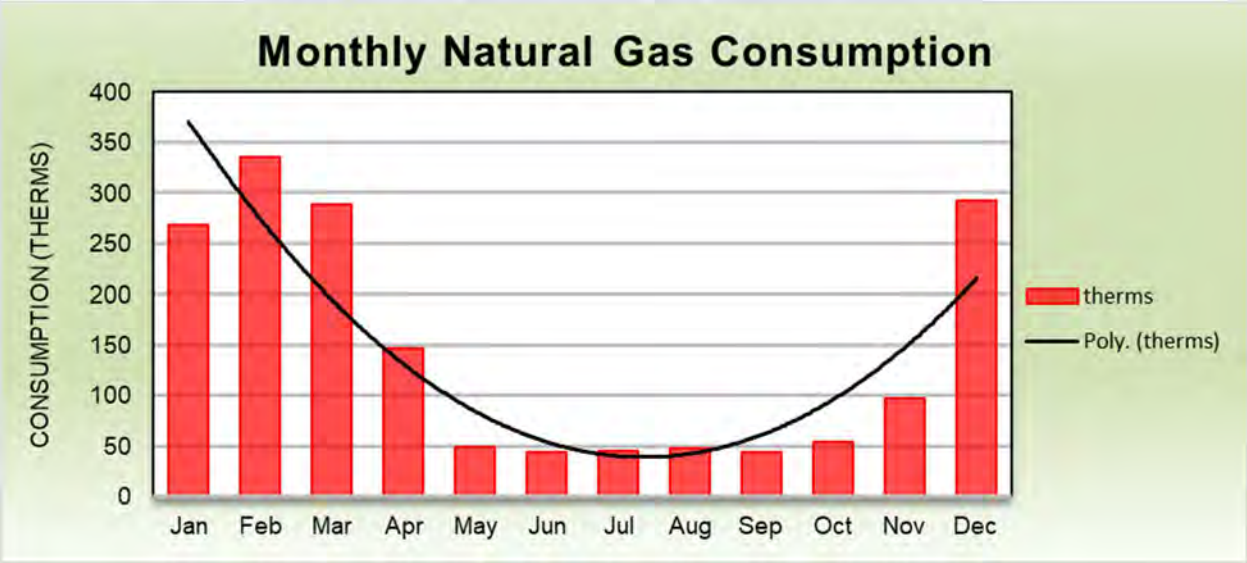


The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and is relatively flat during summer months, which is consistent with a building with gas heat and gas domestic hot water. Summer gas consumption is consistent and attributable mainly to gas water heating.



2.31 *Fire Station 12*

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Site Overview

Fire Station 12 is approximately 9,099 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 1151 Hephzibah-McBean Road.

Lighting Systems

Majority of interior lighting at this location is T8 linear fluorescent fixtures with some compact fluorescent and T8 U-bend fluorescent fixtures. The engine bay has compact fluorescent and 400-watt metal halide fixtures. Exterior lighting is a combination of compact fluorescent and metal 175- and 70-watt halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Fire Station 12 has a brick and cement masonry façade. The roof is pitched metal above the fire truck bay and a flat membrane above the remaining portions of the building. Interior walls are painted cement block. There are six large glass doors that enclose fire engines in the fire truck bay of the building.

Mechanical Systems

There are four electric split system air handling units. Each of these is a Trane unit and served by a condensing unit of the same cooling capacity. The total cooing provided by the four condensing units is 12 tons. There is a 4-ton, 2-ton, 3.5-ton, and 2.5-ton unit. In addition, there are two electric domestic water boilers that serve the building and unit heaters in the fire truck bay. The fire truck bay is not cooled.

Controls

There are three thermostats that control the building HVAC system. Two are nonprogrammable, pneumatic thermostats located in the office and laundry room. There is a third nonprogrammable Honeywell thermostat located in the kitchen.

Miscellaneous Loads

Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from the kitchen refrigerator and gas stove and oven, which also has an exhaust fan. There is also a washer and dryers onsite, telecommunication equipment, two TVs, and a microwave. The fire truck bay also has a significant lighting load.

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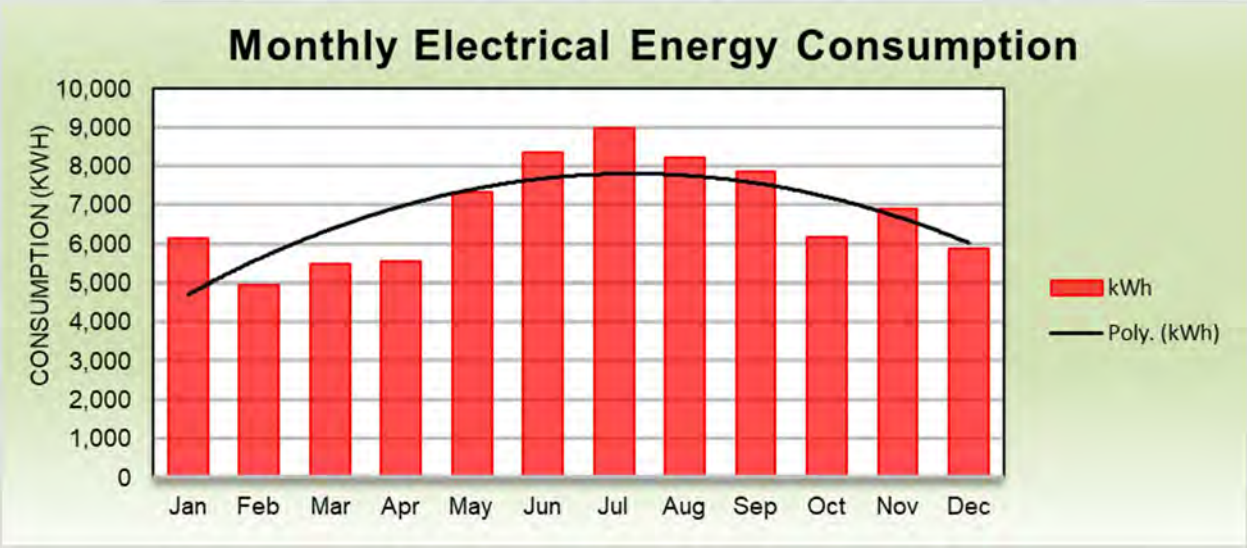
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	72	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 12.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for September 2018 – August 2019, which is one month different from the baseline year (October 2018 – September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods.



Monthly electrical demand (kW) is shown below, for the baseline year. This profile shows a spike in November 2018 for unknown reasons, but is otherwise reasonable.

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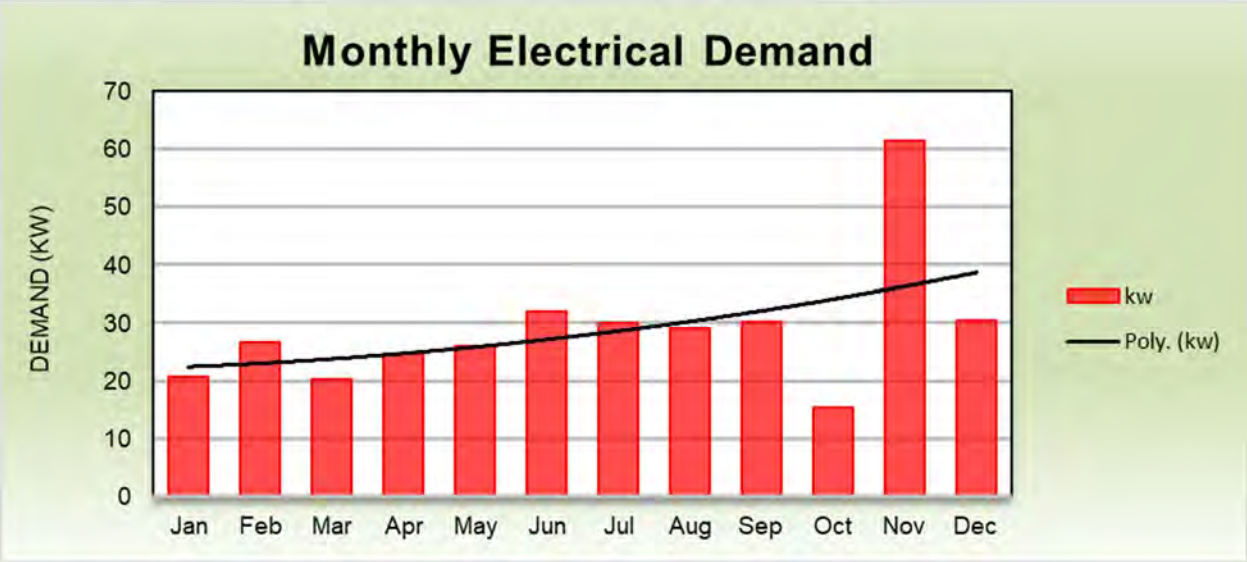

This building does not use natural gas.

2.32 Fire Station 13

Site Overview

Fire Station 13 is approximately 3,600 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 2619 Lumpkin Road.

Lighting Systems

Majority of interior lighting at this location is T8 linear fluorescent fixtures with some compact fluorescent and incandescent fixtures. Exterior lighting is all 150-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

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Fire Station 13 has a partial brick façade with metal siding on the fire truck bay portion of the building. The roof is a pitched metal roof. Interior walls are painted cement block. There are two large glass doors that enclose fire engines in the fire truck bay of the building.

Mechanical Systems

There is one natural gas split system air handling served by a cooling only condensing unit at Fire Station 13 that serves all areas outside of the fire truck bay. Both are manufactured by Carrier and provides 3 tons of cooling. There is also a natural gas domestic water boiler on site as well as two unit heaters in the fire truck bay. The fire truck bay is not cooled.

Controls

There is one thermostat which controls the HVAC system at this location.

Miscellaneous Loads

Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from the kitchen refrigerator and gas stove and oven, which also has an exhaust fan. There is also a washer and dryers onsite, microwave, and TV.

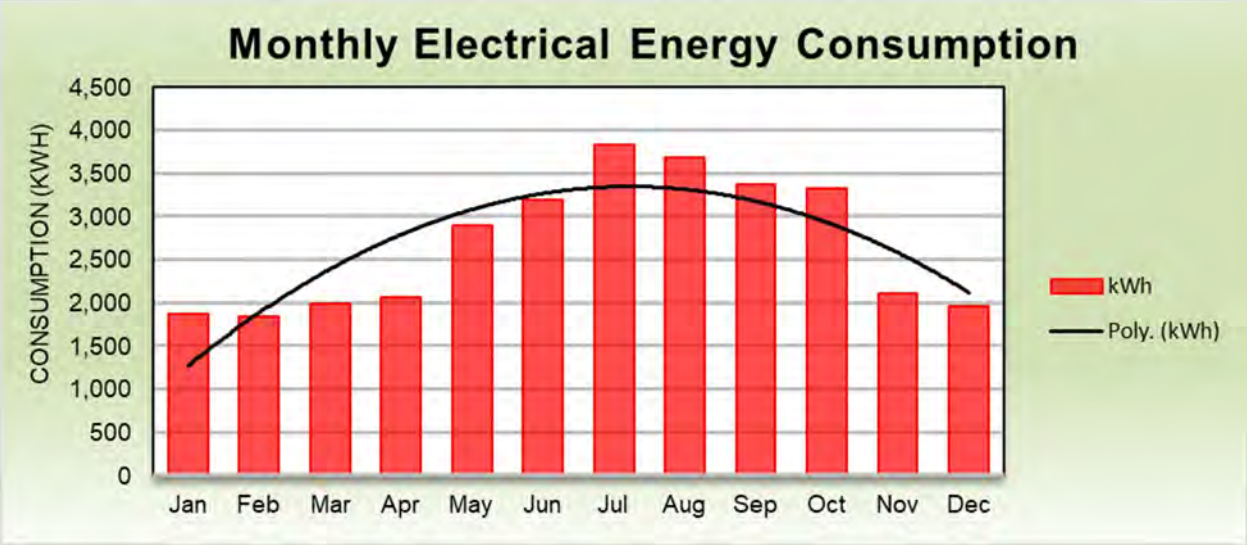
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	72	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 13.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and electric cooling. Peaks occur over the summer months due to increased cooling demand.



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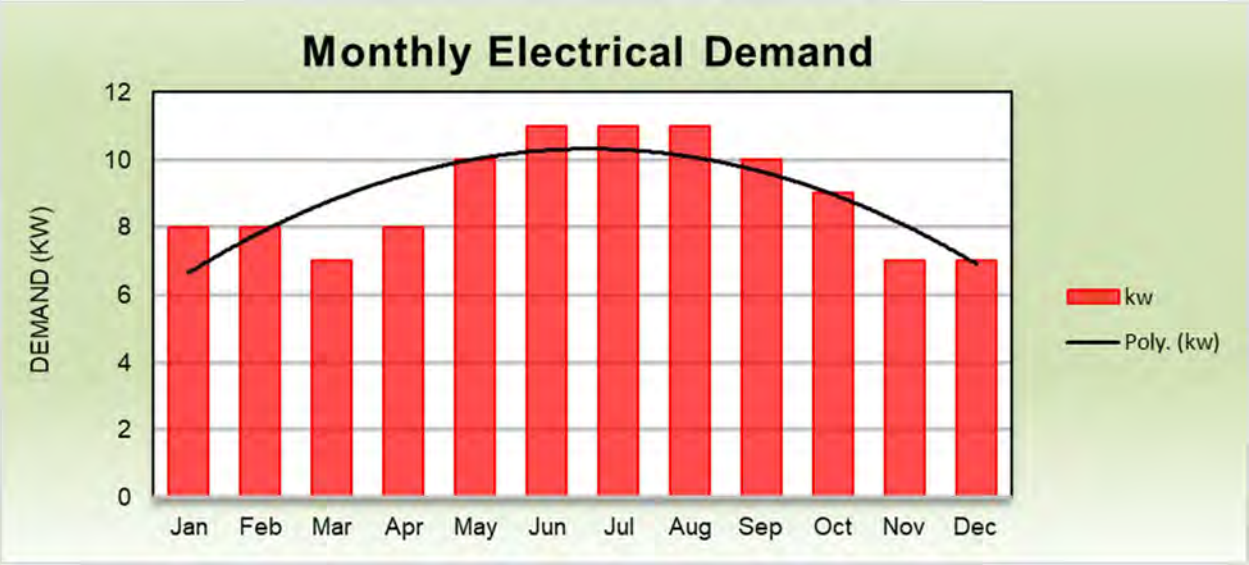
Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand follows a similar trend to that of electricity consumption with peaks occurring in the warmest months. Winter demand is relatively flat, which indicates that there is no electric heating at this building.



Natural gas is not used at this building.

2.33 *Fire Station 14*

Site Overview

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Fire Station 14 is approximately 3,600 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 3507 GA Highway 88.

Lighting Systems

Majority of interior lighting at this location is T8 and T12 linear fluorescent fixtures with some incandescent fixtures. Exterior lighting is a combination of incandescent and 175-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Fire Station 14 has a cement façade and flat membrane roof. Interior walls are painted cement block. There are two large glass doors that enclose fire engines in the fire truck bay of the building.

Mechanical Systems

There is one natural gas split system air handling served by a cooling only condensing unit at Fire Station 14 that serves all areas outside of the fire truck bay. Both are manufactured by Rheem and provides 3.5 tons of cooling. There is also an electric domestic water boiler on site as well as two unit heaters in the fire truck bay. The fire truck bay is not cooled.

Controls

There is one nonprogrammable Honeywell thermostat which controls the HVAC system at this location.

Miscellaneous Loads

Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from the kitchen refrigerator and gas stove and oven, which also has an exhaust fan. There is also a washer and dryers onsite, microwave, ice maker, and TV.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	70	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	70	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 14.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and electric cooling. Peaks occur over the summer months due to increased cooling demand.

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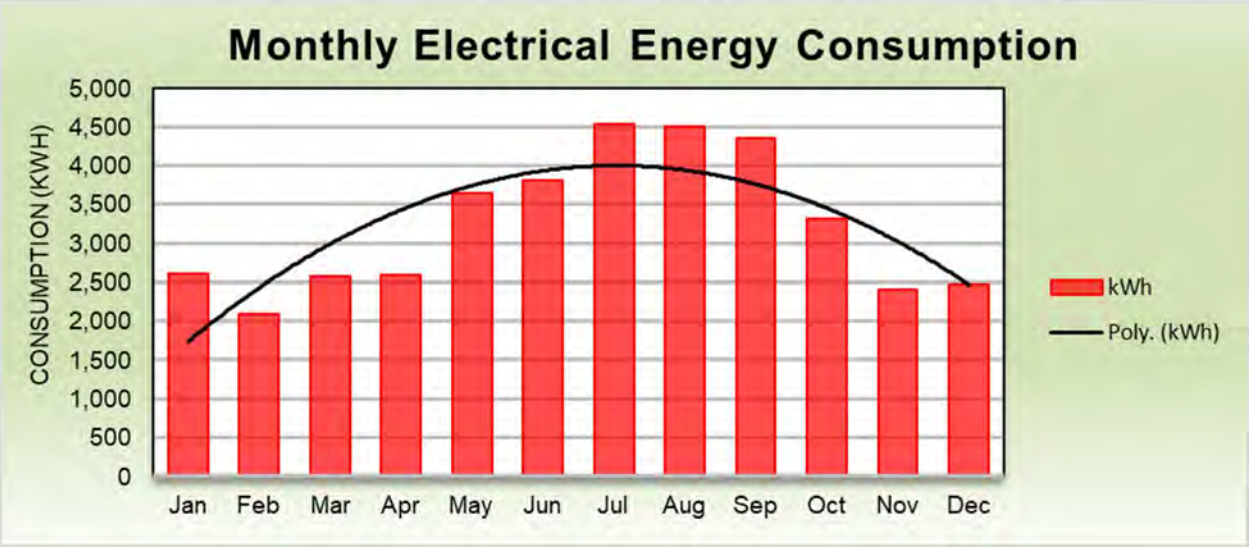
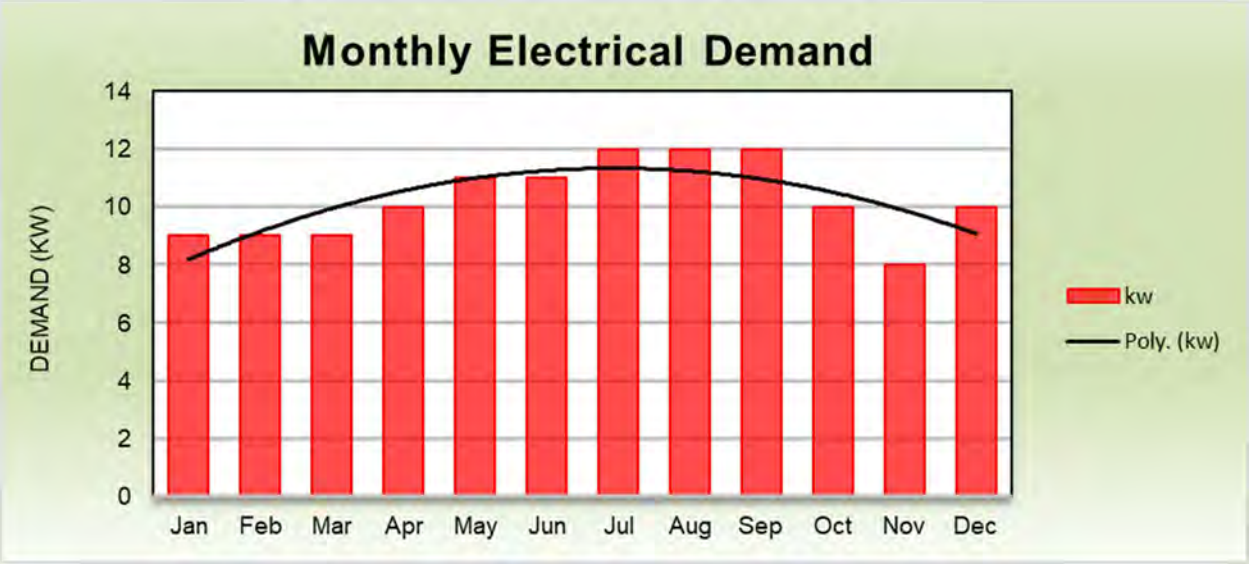


Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand follows a similar trend to that of electricity consumption with peaks occurring in the warmest months. Winter demand is relatively flat, which indicates that there is no electric heating at this building.



Natural gas is not used at this building.

2.34 *Fire Station 15*

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Site Overview

Fire Station 15 is approximately 9,433 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 1420 Flowing Wells Road.

Lighting Systems

Majority of interior lighting at this location is T8 linear fluorescent fixtures with some compact fluorescent, LED, and T8 U-bend fluorescent fixtures. The engine bay has compact fluorescent, T8 linear fluorescent, and 40-watt metal halide fixtures. Exterior lighting is a combination of compact fluorescent and 150-, 175-, and 70-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Fire Station 15 has a cement and brick masonry façade. The roof above the fire truck bay is pitched metal while the other portions of the building have a flat membrane roof. Interior walls are painted cement block. There are six large glass doors that enclose fire engines in the fire truck bay of the building.

Mechanical Systems

There are four Trane electric split system air handling units that serve the building and each are connected to a Trane condensing unit located outside. Two of these units serve the kitchen side of the fire station and the other two serve the office and community room portion of the building. The total cooling provided at this location is 12 tons. The fire truck bay is in the middle of the building and is not cooled. This room is heated by two unit heaters. There are also two natural gas domestic water boilers that serve the building.

Controls

There are four thermostats in the building, all of which are nonprogrammable Honeywell thermostats. There is one located in the office, laundry room, telephone data room, and kitchen.

Miscellaneous Loads

Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from the two kitchen refrigerators and gas stove and oven, which also has an

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exhaust fan. There is also a washer and dryers onsite, microwave, ice maker, three TVs, and telecommunication equipment. The fire truck bay also has a significant lighting load.

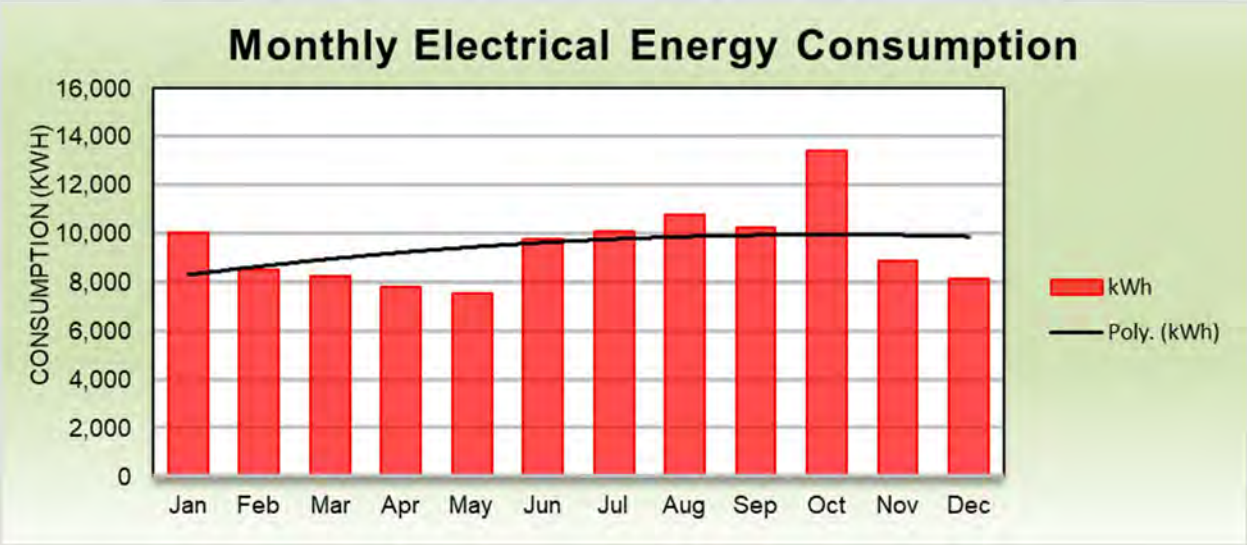
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	70	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	70	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 15.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods.



Monthly electrical demand (kW) is shown below, for the baseline year. This profile is consistent with the electrical consumption profile.

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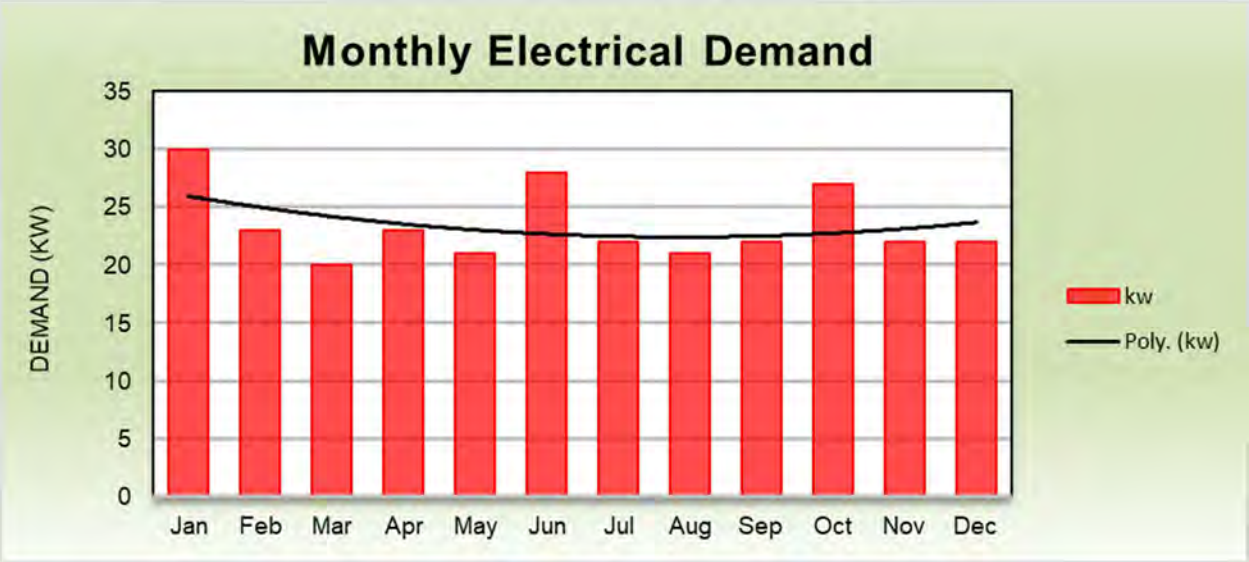
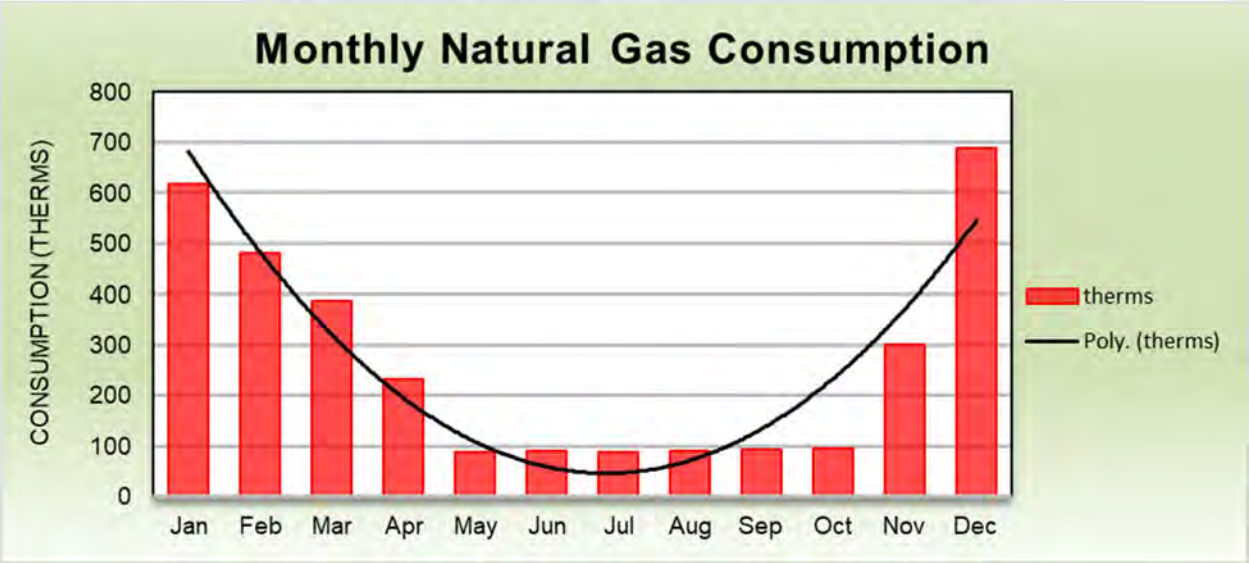


The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and is relatively flat during summer months, which is consistent with a building with gas heat (in the fire truck bay) and gas domestic hot water.



2.35 *Fire Station 16*

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Site Overview

Fire Station 16 is approximately 9,433 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 3446 Old Louisville Road.

Lighting Systems

Majority of interior lighting at this location is T12 and T8 linear fluorescent fixtures with some compact fluorescent fixtures. Exterior lighting is all 150-, 175-, and 250-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Fire Station 16 has a cement façade and a pitched metal roof. There are four large glass doors that enclose fire engines in the fire truck bay of the building. Interior walls are painted sheetrock.

Mechanical Systems

Fire Station 16 is served by a Trane electric split system air handling unit and a Payne natural gas split system air handling unit. Cooling for both units is provided by a 4-ton GrandAire condensing unit and 2.5-ton Payne condensing unit, respectively, allowing for a total cooling system cooling capacity of 6.5 tons. The fire truck bay is not cooled but does have on unit heater which heats the space during the Winter.

Controls

There are two nonprogrammable, pneumatic thermostats which, each controlling one of the AHUs. One is located in the kitchen and the other is located in the sleeping quarters.

Miscellaneous Loads

Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from the kitchen refrigerator and gas stove and oven, which also has an exhaust fan. There is also a washer and dryers onsite, microwave, ice maker, TV, and telecommunication equipment.

Operating Schedule Description

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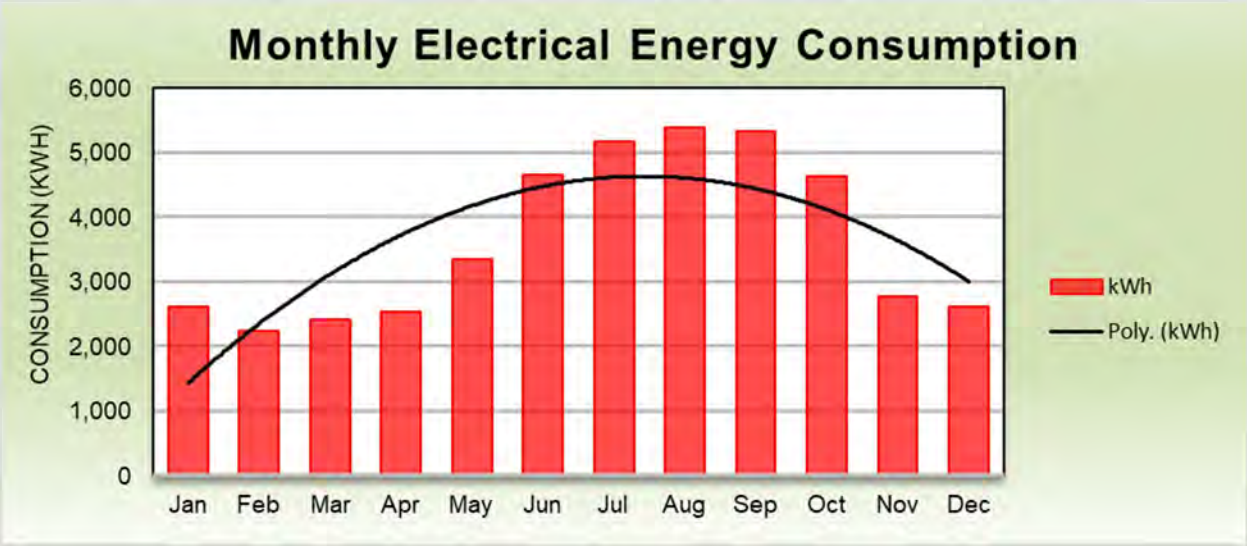
	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	72	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

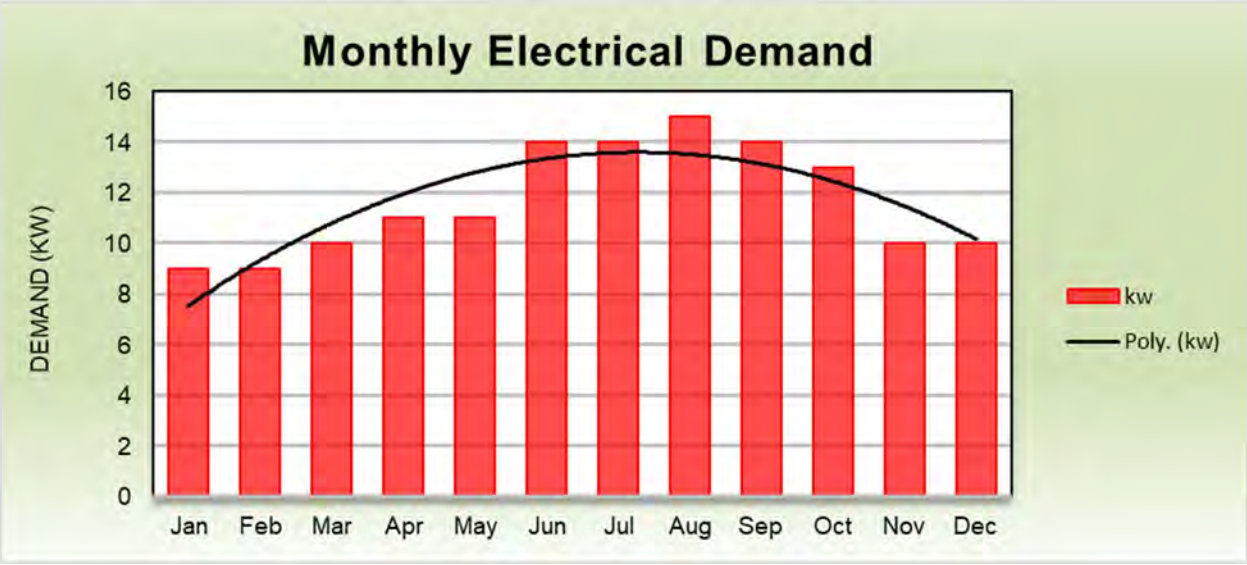
The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 16.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and electric cooling. Peaks occur over the summer months due to increased cooling demand.



Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand follows a similar trend to that of electricity consumption with peaks occurring in the warmest months. Winter demand is relatively flat, which indicates that there is minimal electric heating at this building.



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There is no natural gas data available for this building.

2.36 Fire Station 17

Site Overview

Fire Station 17 is a two-story building, approximately 4,200 square feet, and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 3705 Old Waynesboro Road.

Lighting Systems

Majority of interior lighting at this location is T8 and T12 linear fluorescent fixtures with some incandescent and LED fixtures. Exterior lighting is a combination of incandescent and 70-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Fire Station 17 has a metal siding exterior and a pitched metal roof. There are four large glass doors that enclose fire engines in the fire truck bay of the building. Interior walls are painted cement block.

Mechanical Systems

Fire Station 17 is served by tow natural gas split system air handling units, one which serves the upstairs portion of the building and one which serves downstairs. The fire truck bay of the building is not cooled but does have two unit heaters.

Controls

There are two Honeywell nonprogrammable thermostats located in the building, with one in the Kitchen and one in the sleeping quarters. Each of these controls one of the split systems.

Miscellaneous Loads

Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from the kitchen refrigerator and gas stove and oven, which also has an exhaust fan. There is also a washer and dryers onsite, microwave, ice maker, and TV.

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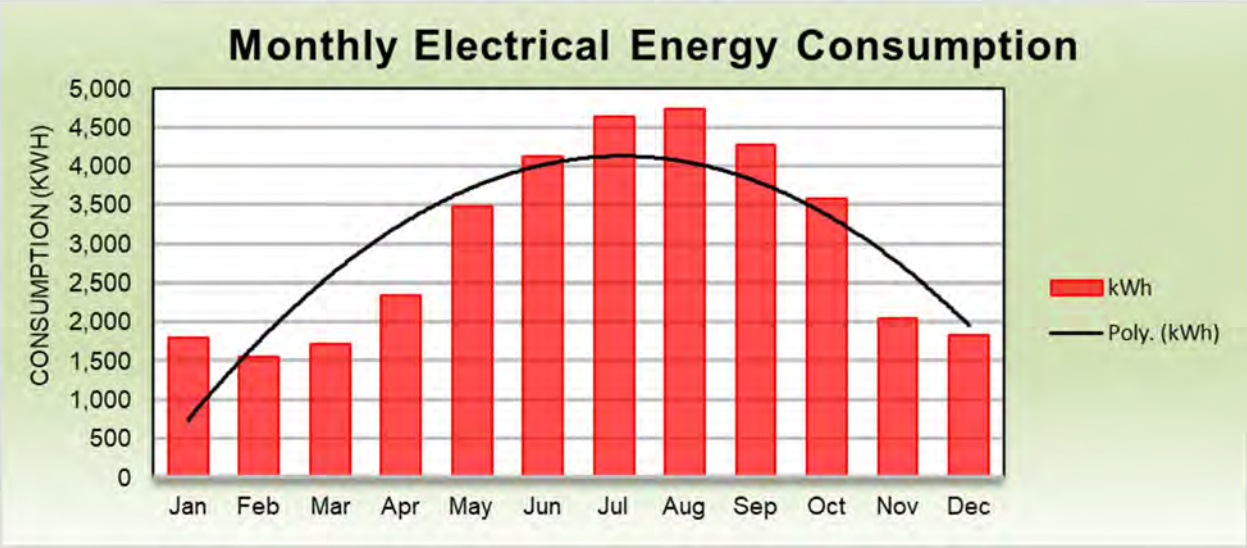
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	71	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	71	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 17.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and electric cooling. Peaks occur over the summer months due to increased cooling demand.



Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand follows a similar trend to that of electricity consumption with peaks occurring in the warmest months. Winter demand is relatively flat, which indicates that there is no electric heating at this building.

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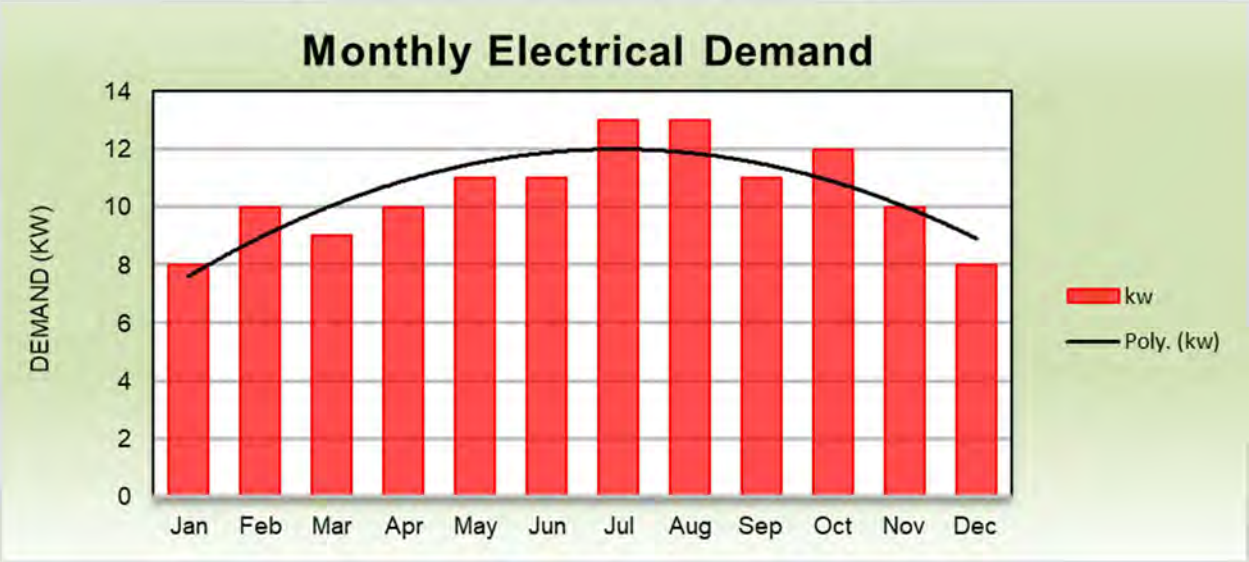
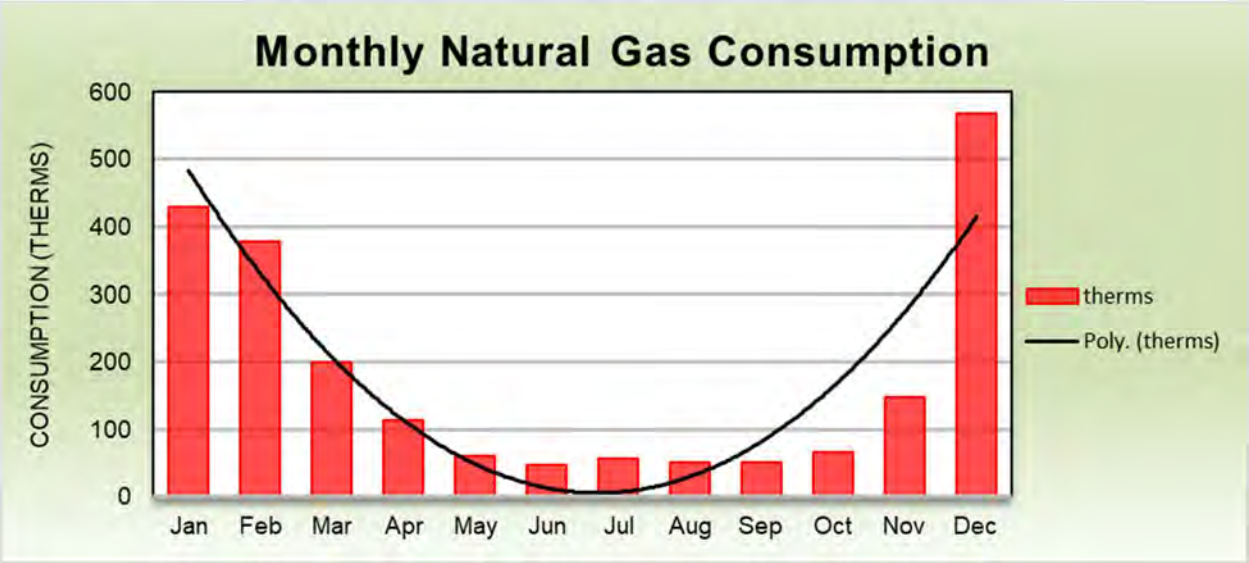


The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and is relatively flat during summer months, which is consistent with a building with gas heat and gas domestic hot water. Summer gas consumption is consistent and attributable mainly to gas water heating.



2.37 *Fire Station 18*

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Site Overview

Fire Station 18 is two-story building, approximately 5,804 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 4185 Windsor Spring Road.

Lighting Systems

Majority of interior lighting at this location is T8 and T12 linear fluorescent fixtures with some compact fluorescent, LED, and incandescent fixtures. Exterior lighting is a combination of LED and 175- and 250-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Fire Station 18 has a metal siding exterior and a pitched metal roof. There are four large glass doors that enclose fire engines in the fire truck bay of the building. Interior walls are painted cement block.

Mechanical Systems

There are two natural gas split system air handling units and one electric split system air handling unit that serves this location. These units provide a total of 7.5-tons of cooling. There is also a natural gas domestic water boiler which serves the building. The fire truck bay is not cooled but there is one unit heater in this room.

Controls

There are two thermostats as this location, both of which are nonprogrammable thermostats. Once is a Proselect thermostat located in the kitchen and the other is a Honeywell thermostat located in the sleeping room.

Miscellaneous Loads

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Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from the kitchen refrigerator and gas stove and oven, which also has an exhaust fan. There is also a washer and dryers onsite, microwave, ice maker, and TV.

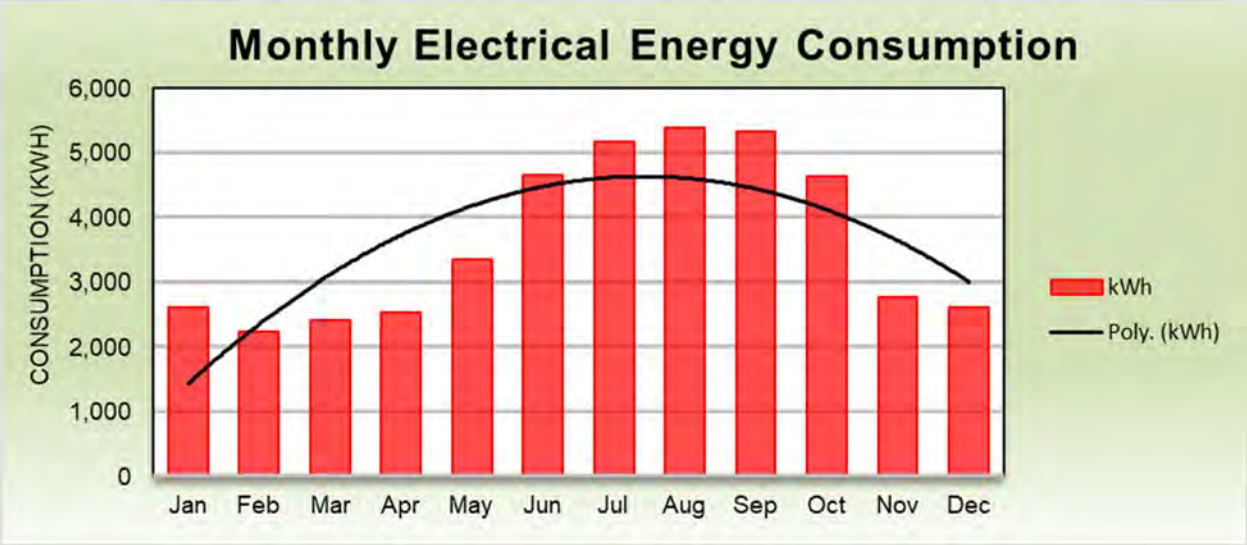
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	72	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 18.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for September 2018 – August 2019, which is one month different from the baseline year (October 2018 – September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and cooling. Peaks occur over the summer given the increased cooling loads during these periods.



Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand follows a similar trend to that of electricity consumption with peaks occurring in the warmest months. Winter demand is relatively flat, which indicates that there is no electric heating at this building, at least in the office portions.

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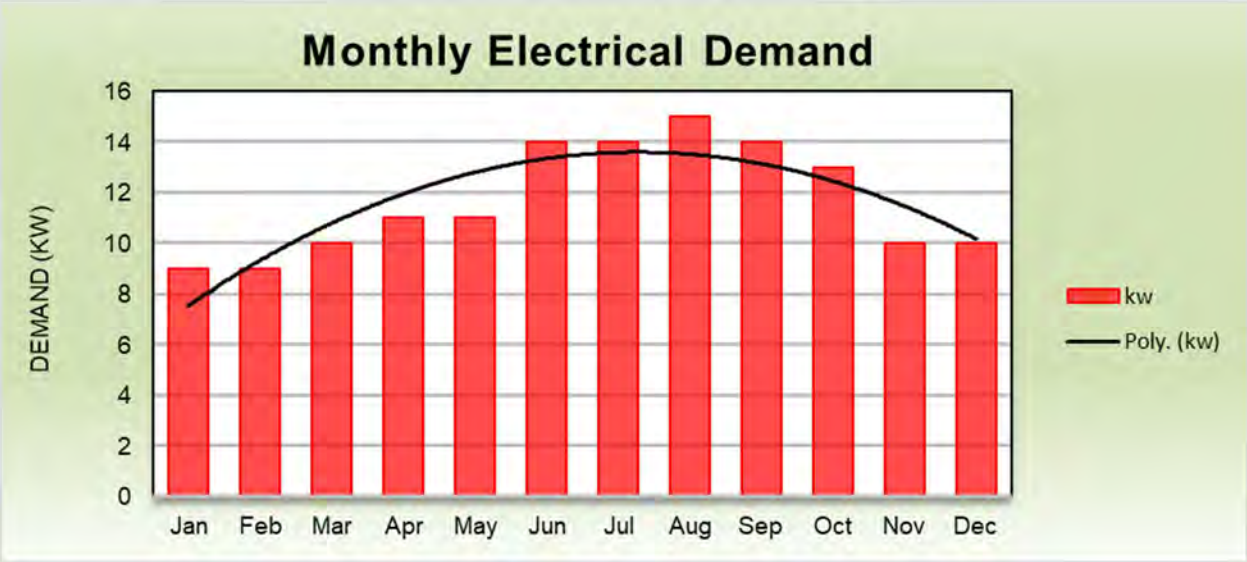

There is no natural gas data available for this building.

2.38 *Fire Station 19*

Site Overview

Fire Station 19 is approximately 5,804 square feet and serves as an office and living space for Augusta firefighters. There is also an engine room which houses the fire trucks. This station is located at 1600 Brown Road.

Lighting Systems

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Majority of interior lighting at this location is linear fluorescent fixtures with some compact fluorescent and U-bend fluorescent fixtures. The engine bay has compact fluorescent, T8 linear fluorescent, and 400-watt metal halide light fixtures. Exterior lighting is a combination of compact fluorescent and 150- or 250-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

Fire Station 19 has a cement and brick masonry façade. The roof above the fire truck bay is pitched metal while the other portions of the building have a flat membrane roof. Interior walls are painted cement block. There are six large glass doors that enclose fire engines in the fire truck bay of the building.

Mechanical Systems

There are four Trane electric split system air handling units that serve the building, and each are connected to a Trane condensing unit located outside. Two of these units are dedicated to each side of the building. The total cooling provided at this location is 12 tons. The fire truck bay is in the middle of the building and is not cooled. This room is heated by two unit heaters. There are also two natural gas domestic water heaters that serve the building.

Controls

There are a total of five thermostats in the building. Four of these are nonprogrammable Honeywell thermostats located in the office, captain's room, kitchen, and sleeping room. There is an additional fifth Honeywell thermostat which serves the telecommunications room.

Miscellaneous Loads

Given that this building also serves as living quarters for on duty firemen, there are not only plug loads from office computers but also from the kitchen refrigerator and gas stove and oven, which also has an exhaust fan. There is also a washer and dryers onsite, microwave, ice maker, and three TVs. The fire truck bay also has a significant lighting load.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	68	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	68	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for Fire Station 19.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for September 2018 – August 2019, which is one month different from the baseline year (October 2018 – September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods.

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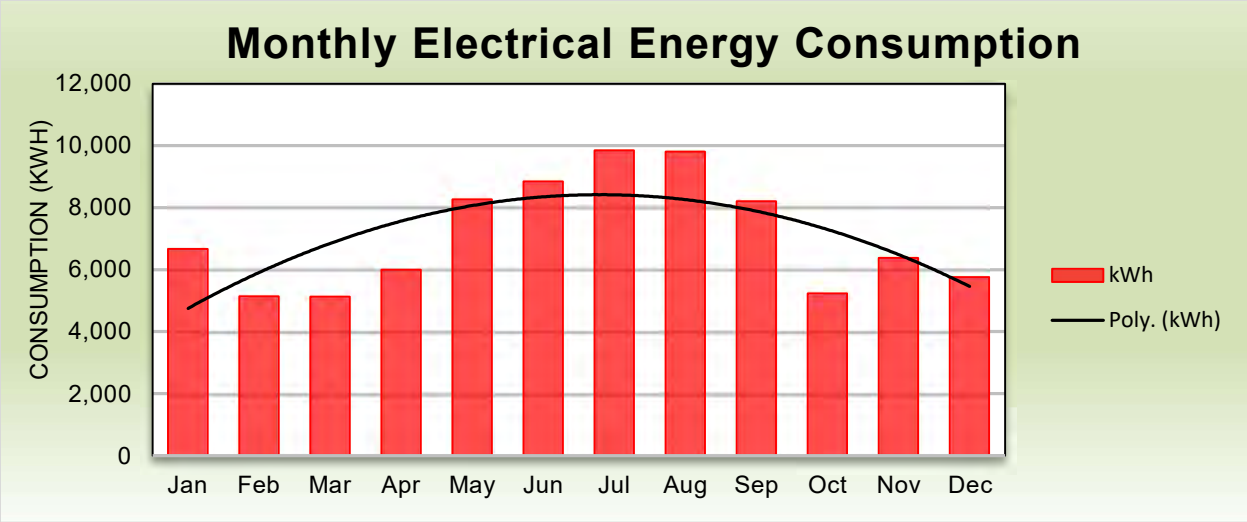
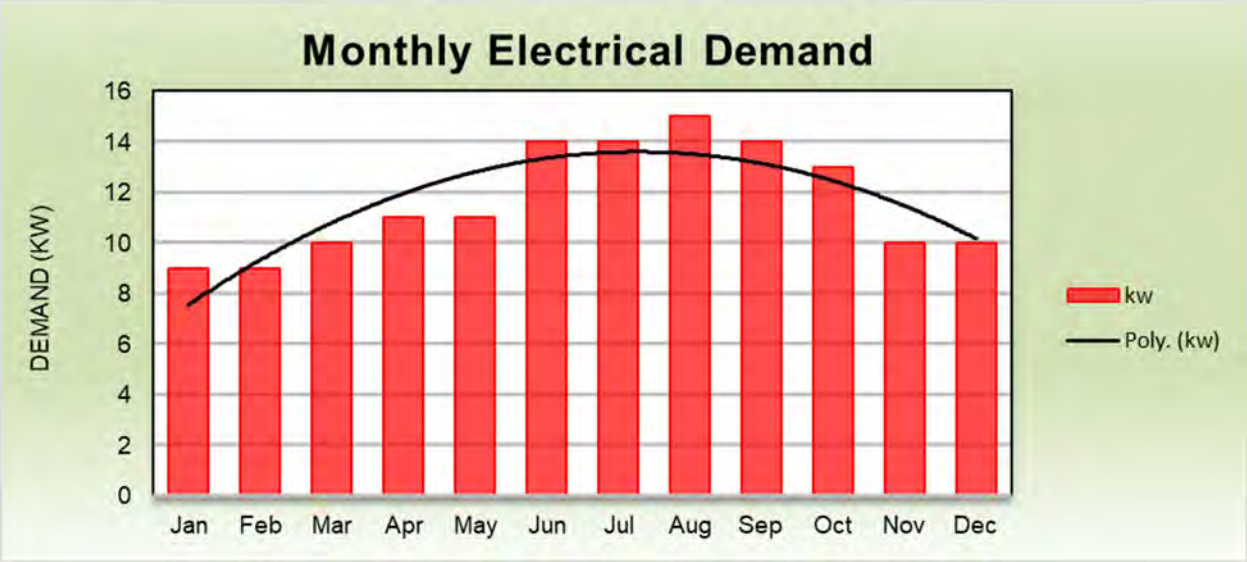


Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand follows a similar trend to that of electricity consumption with peaks occurring in the warmest months. Winter demand is relatively flat, although there is electric heat in the building.



There is no natural gas data available for this building.

2.39 *Fleming Tennis Center*

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Site Overview

The Fleming Tennis Center is a public tennis establishment that serves 13 tennis courts around the main building. The single-story building is located at 1850 Chester Ave and is approximately 4,025 square feet. The center is also utilized by MACH Academy to provide year-round classes and tennis camps to children of all ages.

Lighting Systems

The interior lighting at the Fleming Tennis Center is primarily made up of 4-lamp T8 linear fluorescent lighting fixtures. The exterior lighting for this building consists mostly of the lighting for the tennis courts. The tennis court lighting fixtures are 1000-Watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The building has a block and stone façade and a sloped metal roof. The exterior of the building is in good condition.

Mechanical Systems

The building is served by a 5-ton split system heat pump, with the condensing unit mounted on grade. The heat pump was manufactured by Payne in 2019 and is in very good condition.

Controls

The interior or the building was not accessible at the time of the audit, and thus no controls information was recorded.

Miscellaneous Loads

The interior or the building was not accessible at the time of the audit, and thus miscellaneous loads at this location are unknown.

Operating Schedule Description

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	8a - 9p	8a - 9p	8a - 9p	8a - 9p	8a - 9p	8a - 9p	8a - 9p

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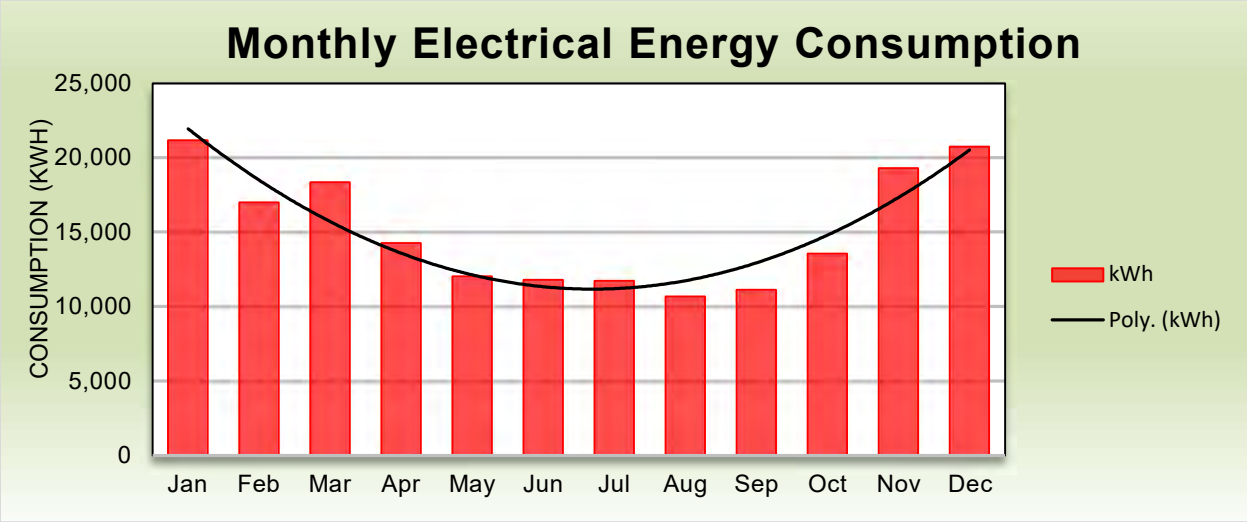
	Mon	Tues	Wed	Thu	Fri	Sat	Sun
UnOccupied	9p - 8a	9p - 8a	9p - 8a	9p - 8a	9p - 8a	9p - 8a	9p - 8a

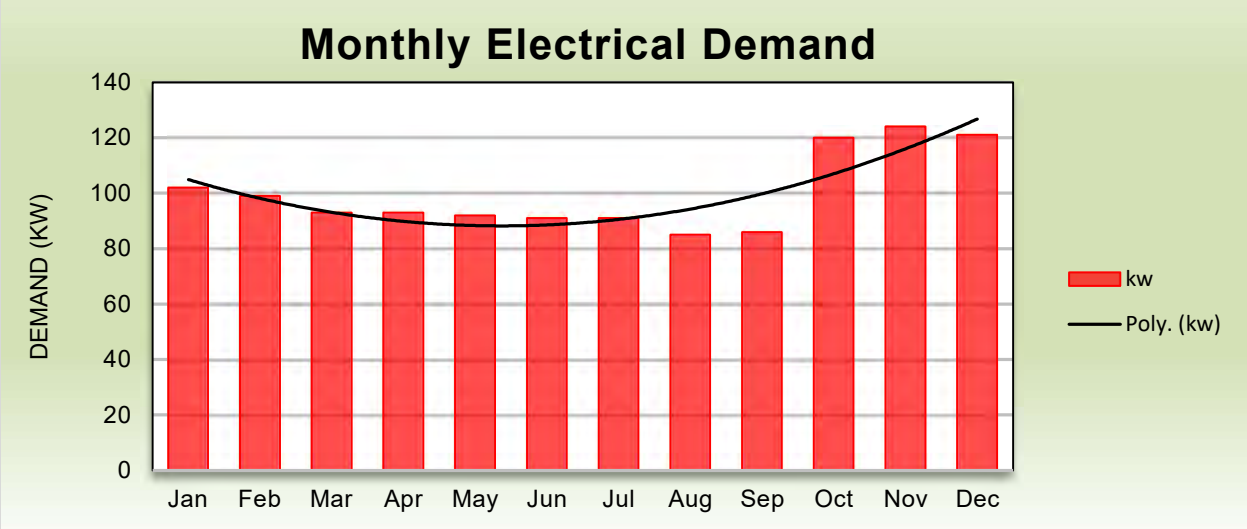
The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Fleming Tennis Center.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating. The cooling consumption for this building seems quite low, however, as can be seen by the lower Summer electricity consumption. The Energy Use Intensity (EUI) of this building is rather high at 154 kBtu/sq. ft.



Monthly electrical demand (kW) is shown below, for the baseline year. This profile is consistent with the electrical consumption profile.



Natural gas is not used at this building.

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2.40 Friedman Branch Library

Site Overview

The Friedman Branch Library is a public library and one of the six libraries that are part of the Augusta-Richmond County Library System. This single-story library is approximately 10,634 square feet and is located at 1447 Jackson Road.

Lighting Systems

The interior lighting at the Friedman Branch Library primarily consists of 2-lamp T12 linear fluorescent lighting fixtures, with R30 incandescent lighting fixtures in the support rooms such as restrooms and storage areas. The exterior lighting consists primarily of ED7 metal halide lighting fixtures along the building and ED28 metal halide lighting fixtures for the parking lot.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The building has a brick façade and a sloped metal roof with numerous solar photovoltaic panels mounted on the roof. The interior walls surfaces are painted concrete block. The exterior of the building is in good condition.

Mechanical Systems

The building is served by a 30-ton packaged Trane unit with electric heat, located on grade. This packaged unit was manufactured in 2017 and is in good condition. During the audit, the outside air dampers for the packaged unit were observed to be closed. The system provides a variable volume supply airflow to variable air volume (VAV) Trane terminal units, which serve different areas of the building.

Controls

Each of the VAV terminal units is controlled by a wall-mounted thermostat. These thermostats are by Reliable Technologies and have local controls. Observations from nine different thermostats showed mostly uniform setpoints and that temperatures were being maintained, albeit on a temperate day.

Miscellaneous Loads

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The majority of the miscellaneous loads for this building are due to the computers for the office staff as well as for the computer lab in the main area. There are also a few printers, copiers, and a refrigerator that contribute to the miscellaneous loads.

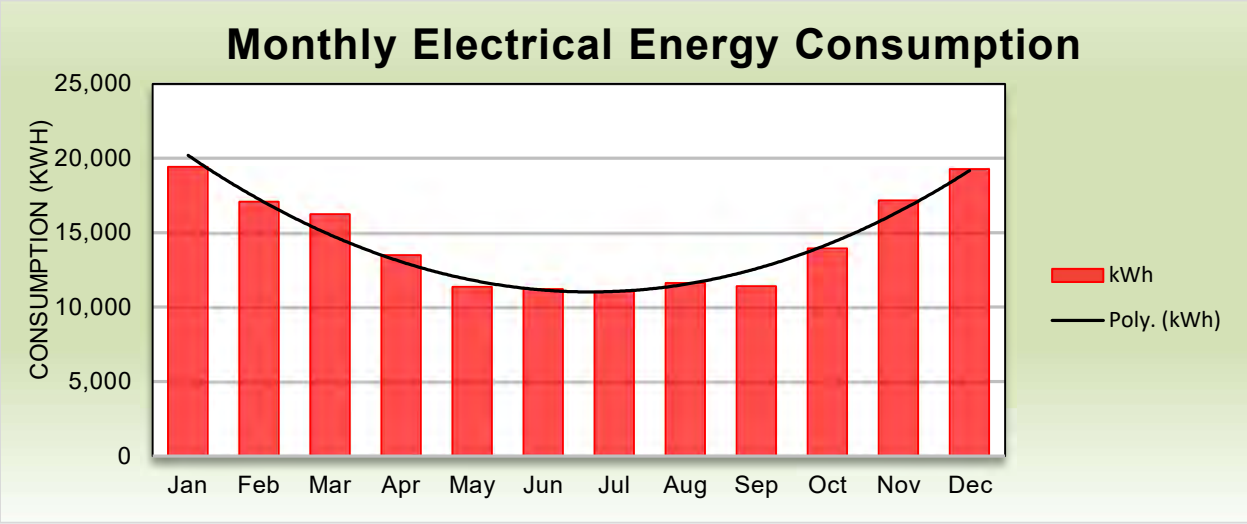
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	74	70	9a - 7p	9a – 5:30p	9a - 7p	9a – 5:30p	9a – 5:30p	9a – 5:30p	Closed
UnOccupied	74	70	7p - 9a	5:30p - 9a	7p - 9a	5:30p - 9a	5:30p - 9a	5:30p - 9a	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Friedman Branch Library.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating. The cooling consumption for this building seems quite low, however, as can be seen by the lower Summer electricity consumption.



Monthly electrical demand (kW) is shown below, for the baseline year. This profile is consistent with the electrical consumption profile.

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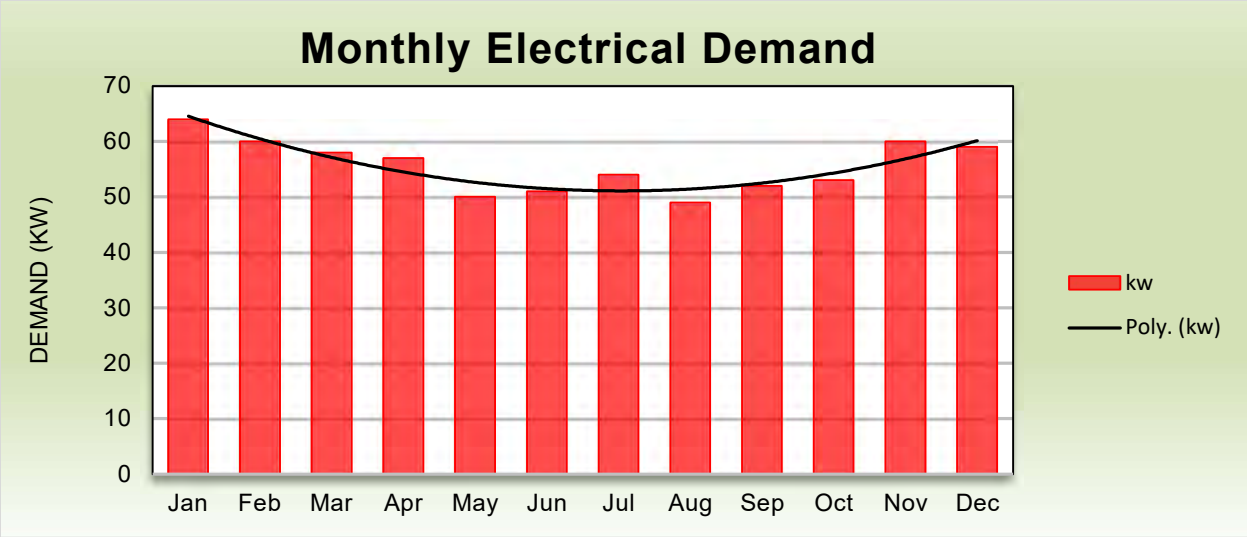

Natural gas is not used at this building.

2.41 Gracewood Community Center

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Site Overview

Gracewood Community Center is 3,360 square feet and is located at 2309 Tobacco Road. The building serves as a community center.

Lighting Systems

Interior lighting consists of T12 linear fluorescent fixtures and two incandescent fixtures in the restrooms. Exterior façade lighting is provided by a mix of LED, metal halide, and high pressure sodium fixtures. Ballfield lighting is provided by 1000-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a single-story building with masonry walls constructed of CMU block. The north-facing wall has four windows and a window-to-wall ratio of approximately 20%. The west-facing wall has three smaller windows and a window-to-wall ratio of about 5%. The roof is metal and pitched with thin layer of insulation.

Mechanical Systems

The building is conditioned with two upflow gas-fired furnaces located in the Storage Room with condensing units that are located on grade behind a chain-link fence in the rear of the building. The condensing units were manufactured in 2006.

Controls

There are two non-programmable thermostats in the Main Room.

Miscellaneous Loads

The only visible equipment for the Main Room was a single water cooler. The kitchen includes a gas range and oven with a commercial hood, along with a commercial refrigerator, ice maker, and microwave. The kitchen does not appear to be used frequently.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	9a - 5p	9a - 5p	9a - 5p	9a - 5p	9a - 5p	Rentable	Rentable
UnOccupied	82	70	5p – 9a	5p – 9a	5p – 9a	5p – 9a	5p – 9a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for Gracewood Community Center. Weekend occupancy and schedules vary since the building is available for rental.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and electric cooling. Peaks occur over the summer months due to increased cooling demand.

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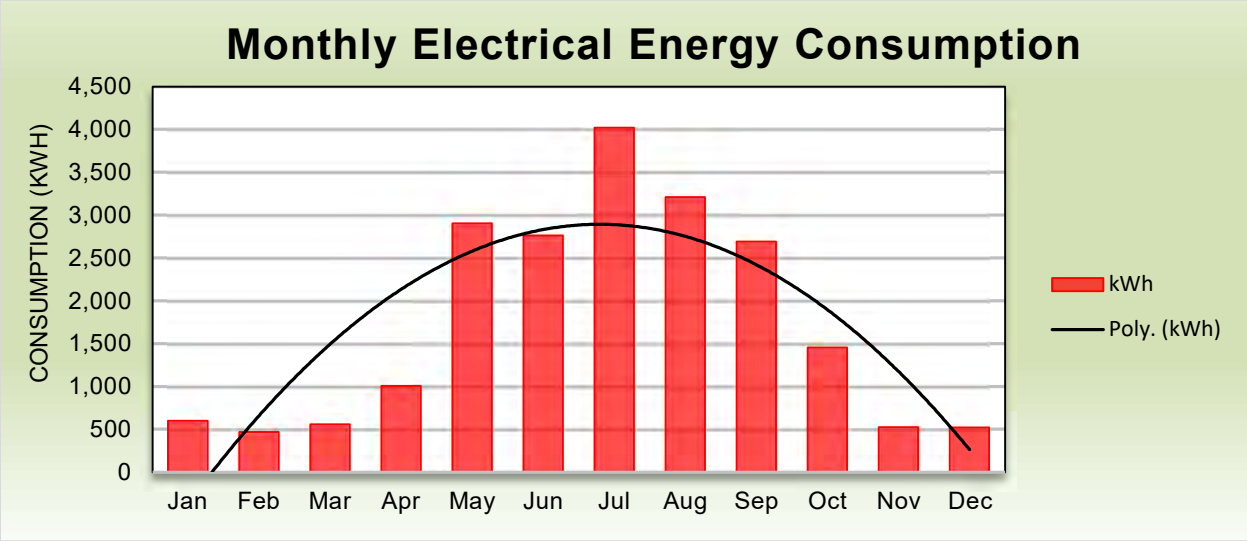
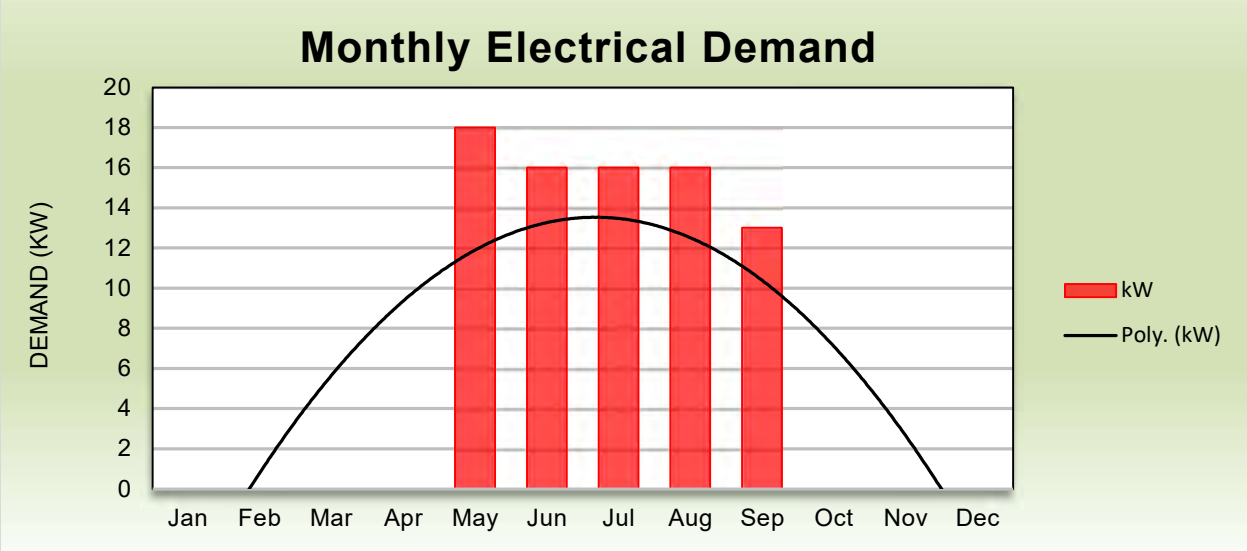


This building is billed for electricity on the General Service – Commercial rate structure, which does not use electric demand to adjust electricity pricing and electric demand is typically not provided in electric bills. Electric demand is only available for the last five months of the baseline period.



The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and is relatively flat during summer months, which is consistent with a building with gas heat and gas domestic hot water. Summer gas consumption is consistent and attributable mainly to gas water heating.

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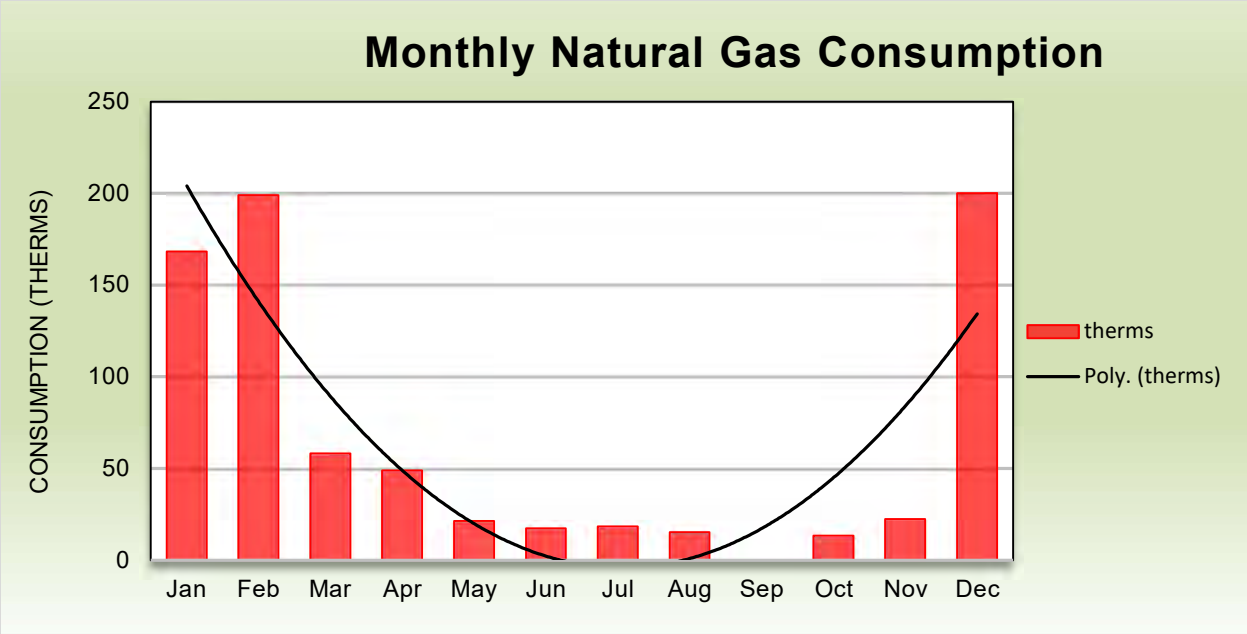

2.42 *Henry Brigham Park Senior Center*

Site Overview

The Henry Brigham Park Senior Center is located at 2463 Golden Camp Rd and is approximately 9,758 square feet. The building is used for a variety of activities for seniors in the community.

Lighting Systems

The interior lighting at the Henry Brigham Community Center is predominantly T8 and T12 linear fluorescent fixtures. There are also incandescent, 400-watt metal halide, 150-watt high pressure sodium, and U-Bend

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fluorescent light fixtures throughout the building as well. The exterior perimeter lighting consists of a combination of 70-watt high pressure sodium, compact fluorescent, and 400-watt and 100-watt metal halide light fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The building has a brick and masonry façade and interior walls are CMU. The roof is a sloped built-up roof.

Mechanical Systems

This building has 7 condensing units. Most of the units are split furnaces, but a few of them are heat pump systems. Of the split furnaces, 4 of them are from 1997. The other condensing units are newer.

Controls

Each condensing unit has an occupant-controlled thermostat associated with them.

Miscellaneous Loads

The miscellaneous loads for this building should be rather low, given the nature of the building.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	76	70	8a-3p	8a-3p	8a-3p	8a-3p	8a-3p	Closed	Closed
UnOccupied	81	60	3p-8a	3p-8a	3p-8a	3p-8a	3p-8a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Henry Brigham Park Senior Center.

Utility Analysis

While the energy usage at the Henry Brigham Park Community Center depends largely on the schedule of events, as the building holds various public gatherings, there is still a consistent overall profile seen between Winter and Summer months. Monthly electrical consumption (kWh) is shown below, for the baseline year of October 2018 through September 2019). It is important to note that the Senior Center shares an electric meter with the Community Center. However, since both buildings have similar hours and usage, there will not be a huge difference in profile. There is a spike in electric demand in the summer due to increased cooling loads. Since the building has natural gas heating, electricity consumption decreases and natural gas consumption increases in the Winter.

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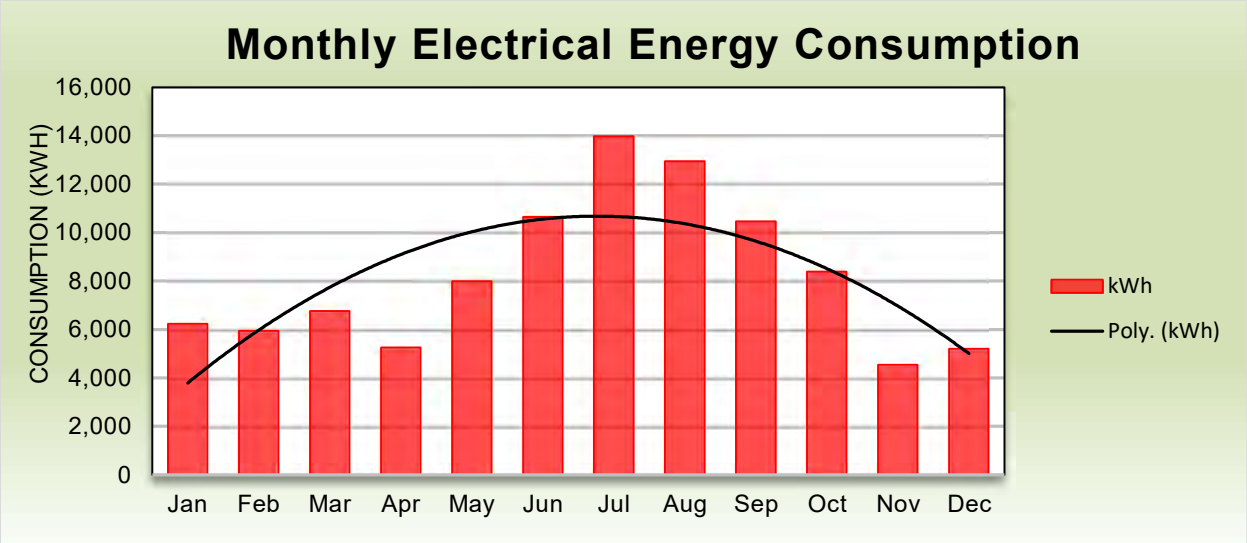
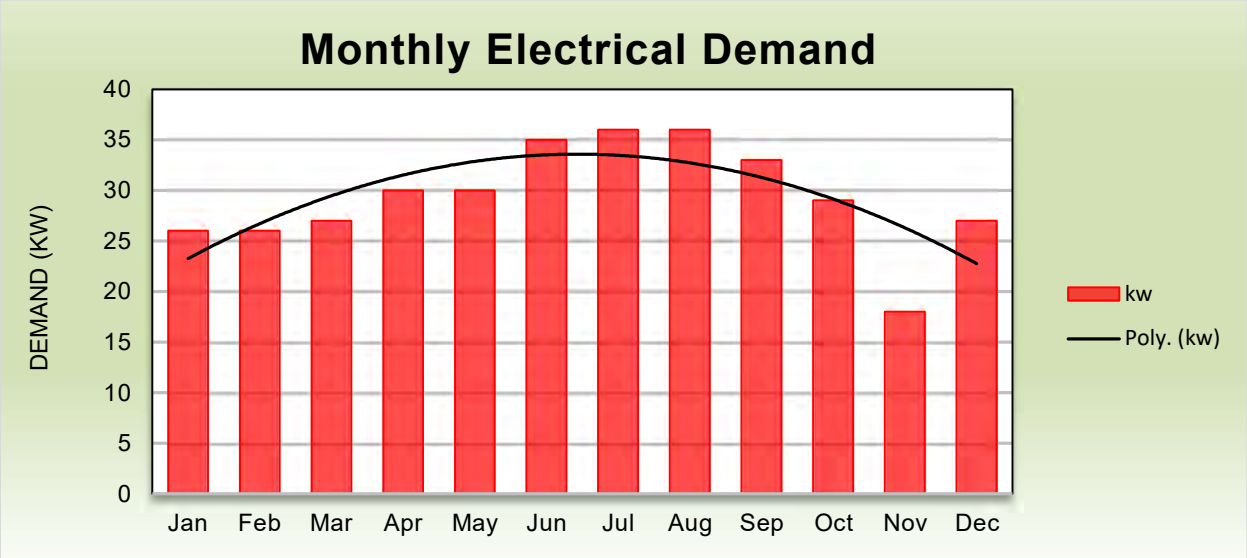


Monthly electrical demand (kW) is shown below, for the baseline year of October 2018 through September 2019).



Monthly natural gas consumption (therms) is shown below, for the baseline year of October 2018 through September 2019).

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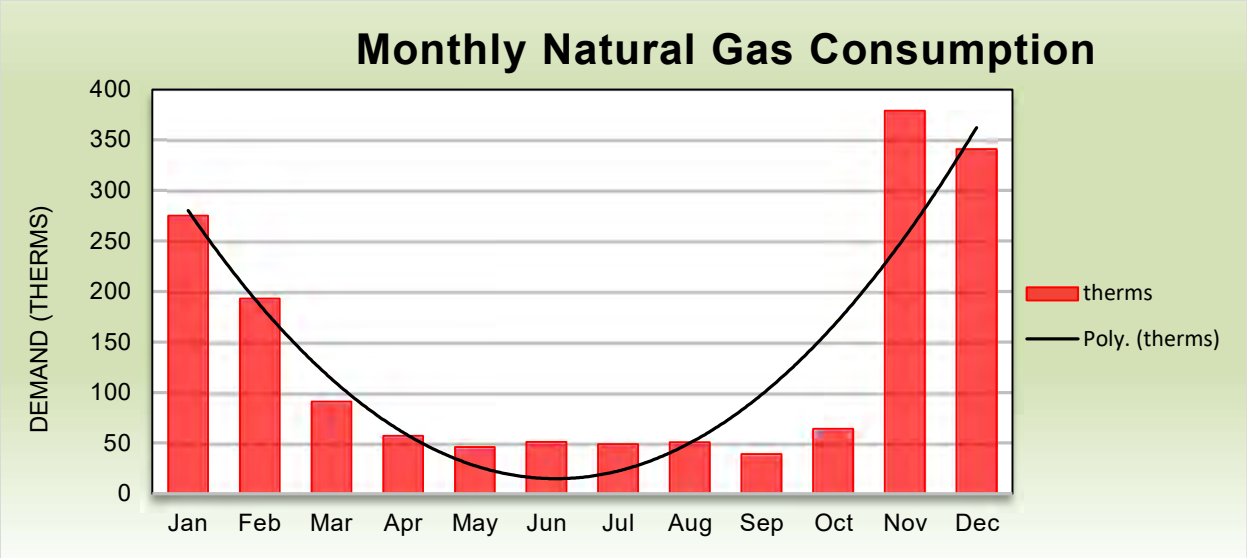

2.43 Henry Brigham Park Swim Center

Site Overview

The Henry Brigham Park Swim Center is located at 2463 Golden Camp Road and is approximately 13,656 square feet. This building is used as a community swim center where they hold swim meetups, as well as general recreational swimming. The building is rectangular and a single story. It is a part of the Henry Brigham Park, which also consists of the Senior Center and Community Center.

Lighting Systems

The interior lighting at the Henry Brigham Swim Center is primarily T8 linear fluorescent fixtures. There are also a few compact fluorescent fixtures. The pool area has some 400-watt metal halide fixtures as well. Exterior lighting consists of 90-watt high pressure sodium fixtures as well as compact fluorescent fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The building has a brick construction for the office/entry area. The pool area has concrete masonry units.

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Mechanical Systems

There is an outside 825 MBH Raypak hot water boiler with a 0.75 HP hot water pump that provides heating for the pool, as well as a pool circulation pump. There is an Aaon packaged unit that provides conditioning and dehumidification to the natatorium space. There is an exhaust fan that runs along the side of the natatorium near the packaged unit. There is a small condensing unit connected to a natural gas twinned upflow furnace that provides conditioning to the other spaces. There are 3 natural gas fired 200 MBH domestic hot water boilers that supply all domestic water needs, including to the locker rooms.

Controls

The building uses programmable thermostats to control all mechanical equipment throughout the building. The natatorium was observed to be set at 78.5°F during the time of the audit while the pool temperature was above that at 80°F. Having the room temperature lower than the pool temperature is generally not recommended as it encourages evaporation from the pool.

Miscellaneous Loads

The largest miscellaneous load at the Henry Brigham Swim Center that is unique to swimming pools is the pool circulation pumps.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
June – Aug. Occupied	78.5	72	9a – 8p	9a – 8p	9a – 8p	9a – 8p	9a – 5p	Closed	Closed
June – Aug. UnOccupied	78.5	72	8p – 9a	8p – 9a	8p – 9a	8p – 9a	5p – 9a	Closed	Closed
Sept. - May Occupied	78.5	72	10a – 12p, 4p – 8p	10a – 12p, 4p – 8p	10a – 12p, 4p – 8p	10a – 12p, 4p – 8p	10a – 5p	Closed	Closed
Sept. - May UnOccupied	78.5	72	12p – 4p, 8p – 10a	12p – 4p, 8p – 10a	12p – 4p, 8p – 10a	12p – 4p, 8p – 10a	5p – 10a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Henry Brigham Park Swim Center. Sometimes there is activity outside of these times due to swim meets.

Utility Analysis

The energy usage at the Henry Brigham Park Swim Center utility is what is expected for the electricity usage. There is also a pretty consistent natural gas usage for the pool heating. While the building is used more in the summer than winter, it has minimal impact on the utility of this building. This is due to the fact that it is a natatorium, so will have relatively constant heating needed for the pool and cooling based on weather.

Monthly electrical consumption (kWh) is shown below, for the baseline year of October 2018 through September 2019).

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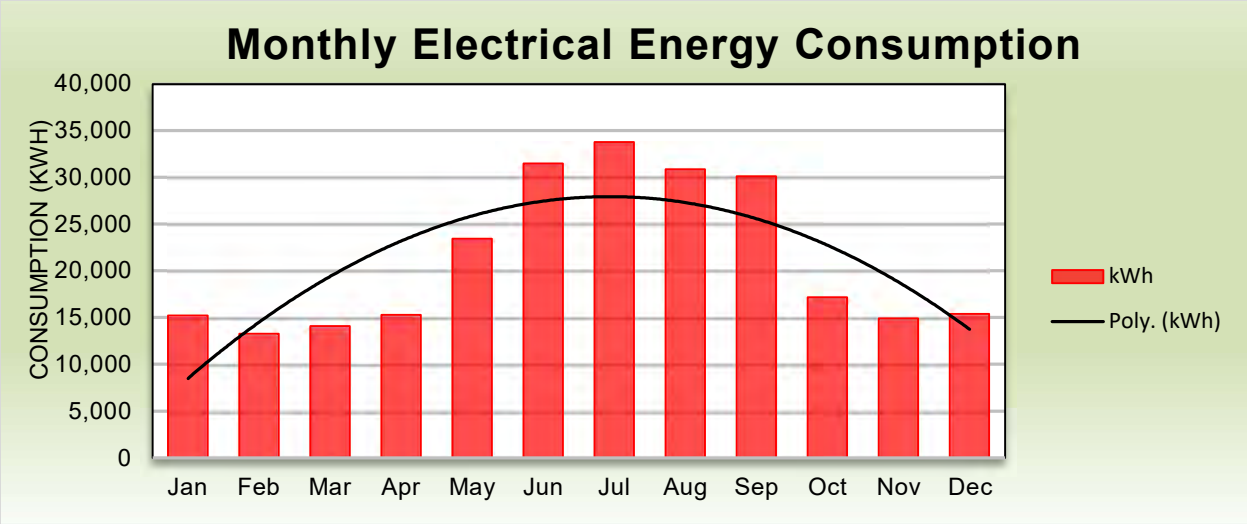
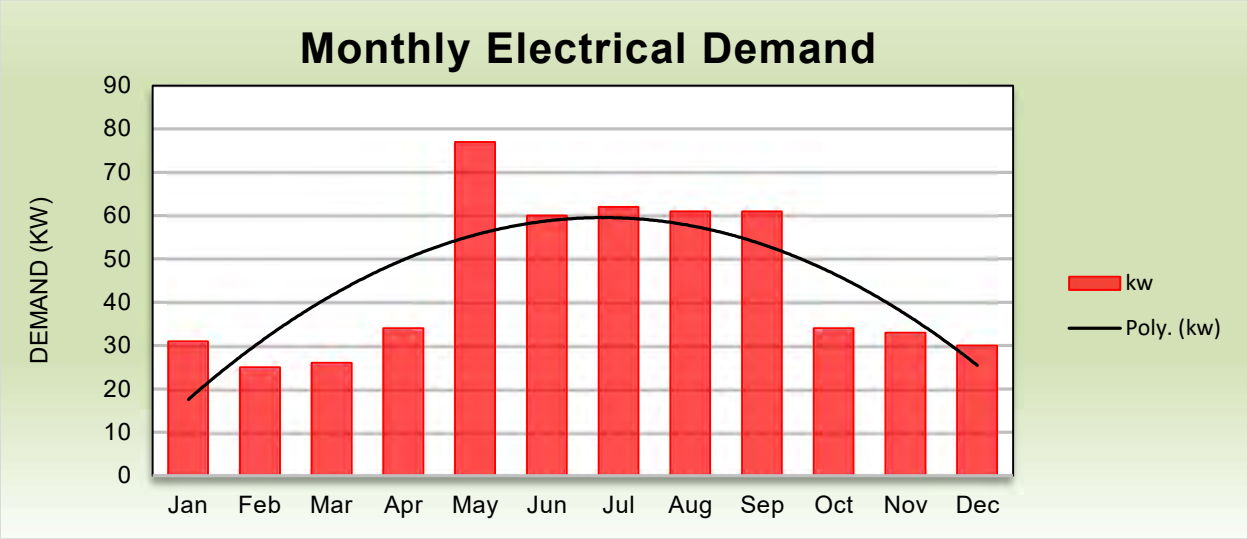


Monthly electrical demand (kW) is shown below, for the baseline year of October 2018 through September 2019).



Monthly natural gas consumption (therms) is shown below, for the baseline year of October 2018 through September 2019). It is important to note that the natural gas meter is shared between the Community Center and the Swim Center. However, the natural gas usage is predominately the swim center usage.

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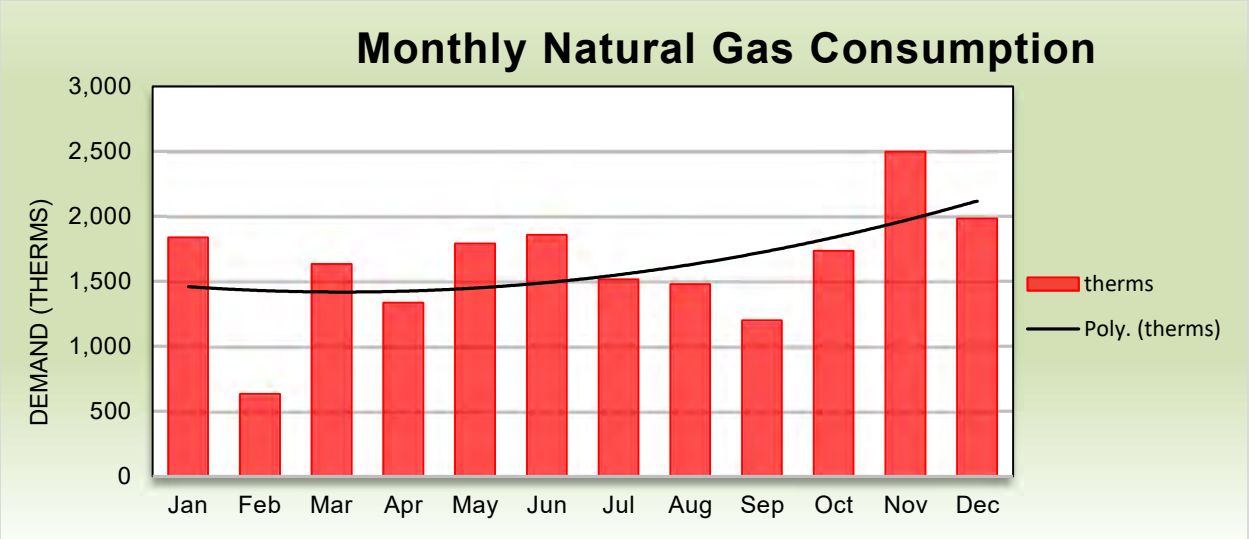

2.44 *Information Technology*

Site Overview

The Information Technology building, located at 535 Telfair Street, is a two-story office building. This building serves as the center for Augusta-Richmond County's computer, communications, and other technology support. The facility is approximately 18,000 square feet.

Lighting Systems

The interior lighting at the Information Technology building is primarily made up of 2-lamp and 3-lamp T12 linear fluorescent lighting fixtures, with some multi-tube compact fluorescent lighting fixtures in the restrooms and conference rooms. The exterior lighting along the building perimeter is primarily multi-tube compact fluorescent lighting fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

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Building Envelope

The building has a brick façade and a flat built-up roof. The interior walls surfaces are sheetrock, with windows comprising approximately 15% of the envelope. The exterior of the building is in good condition.

Mechanical Systems

The building is served primarily by two rooftop packaged 20-ton units with electric heat. Both units are Trane units manufactured in 2014 and are in fair condition. Each system provides a variable volume supply airflow and serves one of the floors of the building. Additional cooling is provided by three computer room air conditioners (CRAC) with the condensing units on the roof and the air handling units in the conditioned space. Three ductless splits systems with condensing units on the roof provide additional cooling where needed. The CRAC units are in fair condition, while the ductless split condensing units are in good condition.

Controls

Each of the VAV terminal units is controlled by a wall-mounted thermostat. These thermostats are by Trane and have the capability for local adjustments. The CRAC air handling units have their own integral temperature controls.

Miscellaneous Loads

Given the nature of the work in this building, the majority of the building's miscellaneous loads are due to the multitude of computers as well as the server equipment that is cooled by the CRAC units described previously.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	71	70	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	71	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Information Technology Department.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. There are very small peaks in the data, which makes sense for a building with IT equipment. It is expected for the electric utility profile for such a building to be relatively flat. It has a relatively high Energy Use Intensity (EUI) at 241 kBtu/sq. ft., but that is also well within reason for a building such as this.

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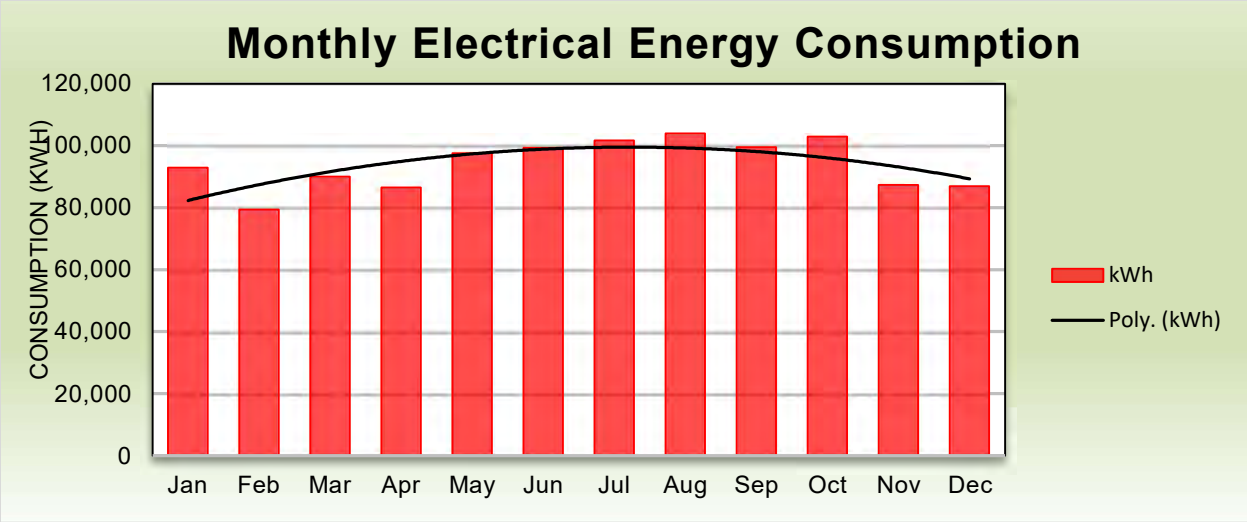
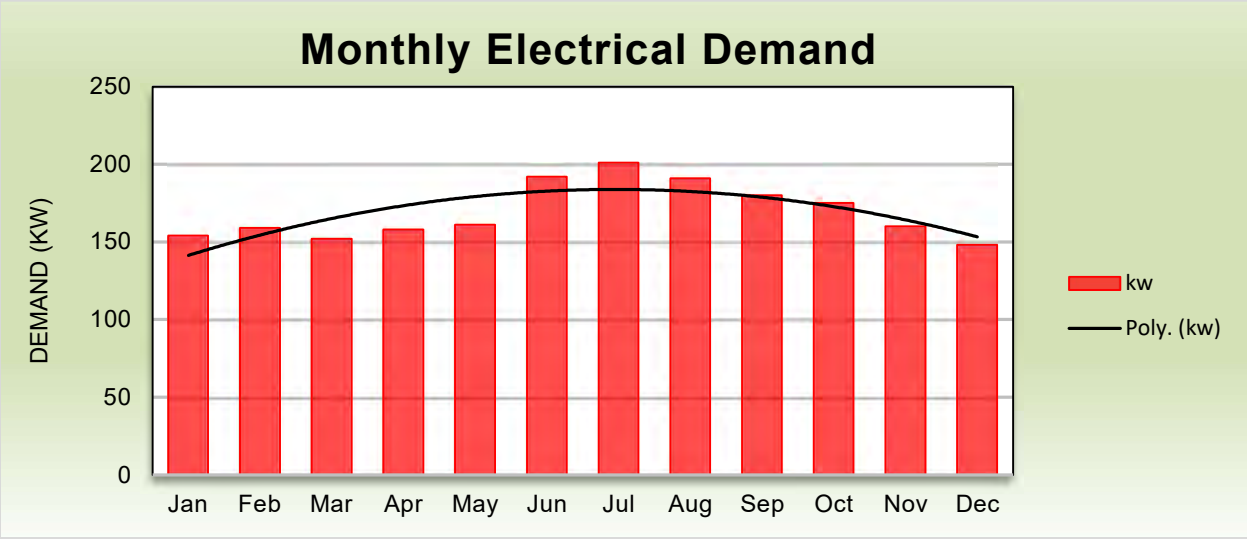


Monthly electrical demand (kW) is shown below, for the baseline year. This profile is consistent with the electrical consumption profile.



Natural gas is not used at this building.

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2.45 Jamestown Community Center

Site Overview

Jamestown Community Center is 6,000 square feet and is located at 3647 Karleen Road. The building serves as a community center. Spaces in the building include a Computer Lab, Conference Room, Kitchen, Manager's Office, and a Multipurpose Room.

Lighting Systems

Interior lighting consists primarily of linear fluorescent T8 and screw base compact fluorescent fixtures. Exterior facade lighting is a mixture of metal halide, high pressure sodium, and LED PAR38 fixtures. Parking lot lights are LED. Ballfield lighting is provided by fixtures with 1000-watt metal halide lamps.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a single-story building with masonry walls constructed of CMU block. There are only a few small windows. The roof is divided into two sections: A high section that is pitched with shingles and low section that is flat with a middle section that is metal and two side sections with an asphalt membrane. A tarp was visible on the low section of the roof.

Mechanical Systems

The building is conditioned with five upflow gas-fired furnaces that are paired with five condensing units. The furnaces that serve the Conference Room, Computer Lab, and Manager's Office are located on a difficult-to-access mezzanine level within the attic of the "high roof" section of the building, several feet above the suspended ceiling. The three condensing units associated with these furnaces are located behind a chain-link fence on the front-west face of the building. Two condensing units have a cooling capacity of 3 tons and were manufactured in 2008. The other unit is a 5-ton system manufactured in 2012.

The two furnaces that serve the Multipurpose room are mounted horizontally above the ceiling in the "low roof" section of the building, which are paired with one condensing unit on the rear-west face and one on the east face; both are on grade behind a chain-link fence and manufactured after 2012. There is also a window-hung packaged unit that serves the kitchen, which is also in "low roof" section of the building.

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Controls

There is a programmable thermostat in the Conference Room, Computer Lab, and Manager's Office. There are two programmable thermostats in the Multipurpose Room; though, one had an illuminated blank display. The window unit in the kitchen has manual, integral controls.

Miscellaneous Loads

The Computer Lab has approximately 10 computers. The Manager's Office has a desktop computer and LCD monitor. The Kitchen has a gas range/oven with commercial ventilation hood and make-up air unit.

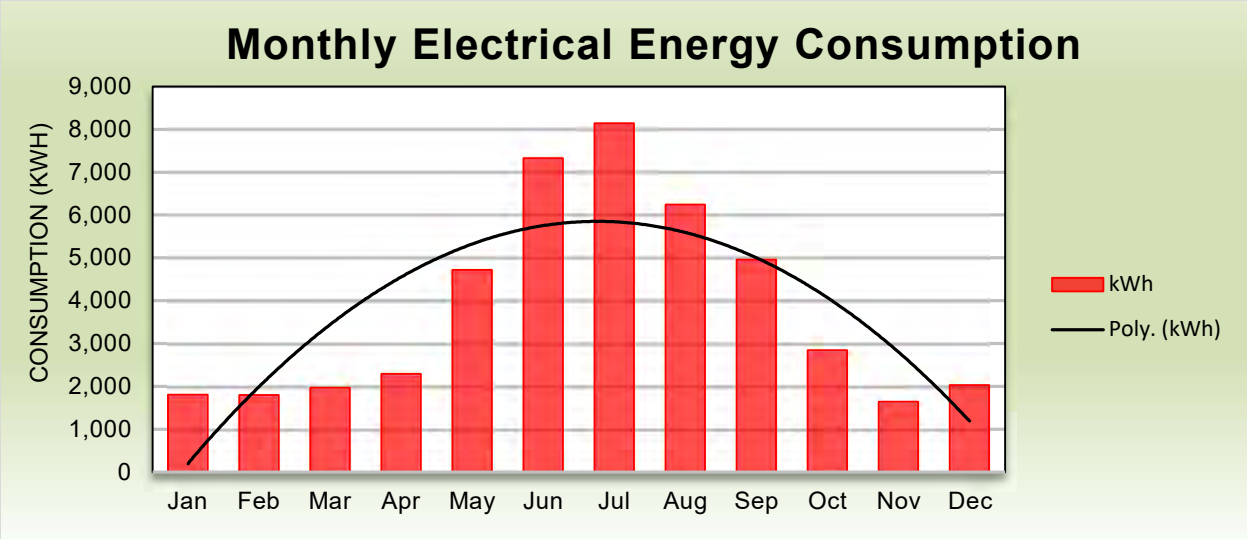
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	3p - 8p	3p - 8p	3p - 8p	3p - 8p	Rentable	Rentable	Rentable
UnOccupied	75	67	8p – 3p	8p – 3p	8p – 3p	8p – 3p	Closed	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for Jamestown Community Center. Weekend occupancy and schedules vary since the building is available for rental.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have gas heating and electric cooling. Peaks occur over the summer months due to increased cooling demand.



Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand follows a trend like that of electricity consumption, where demand increases as cooling demand increases. The spike in electric demand during January 2019 may indicate the use of electric-resistance space heaters or other forms of electric heat.

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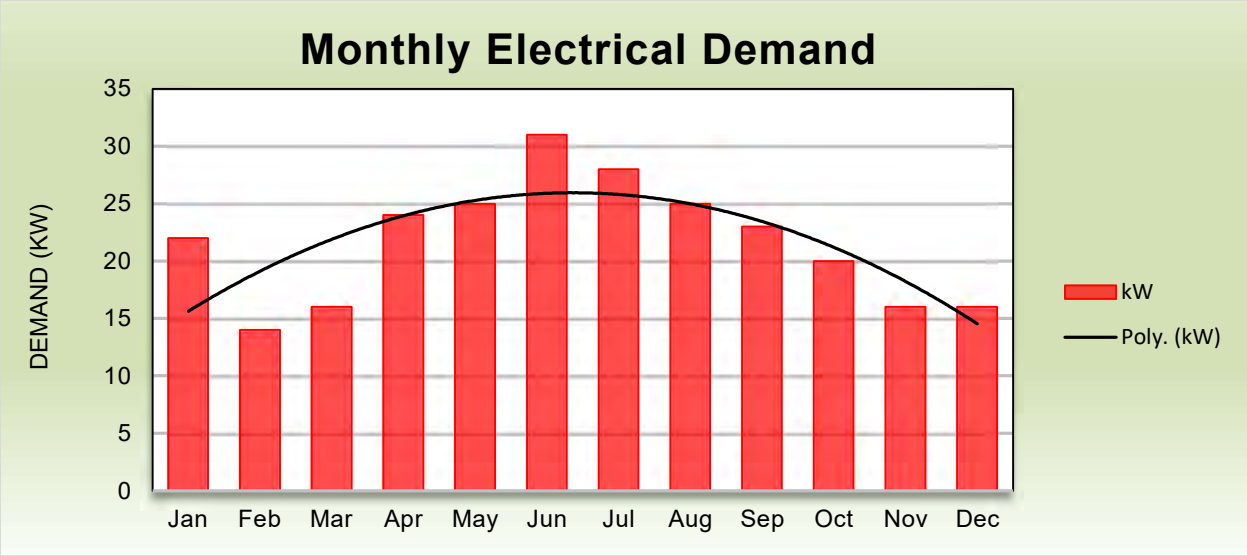
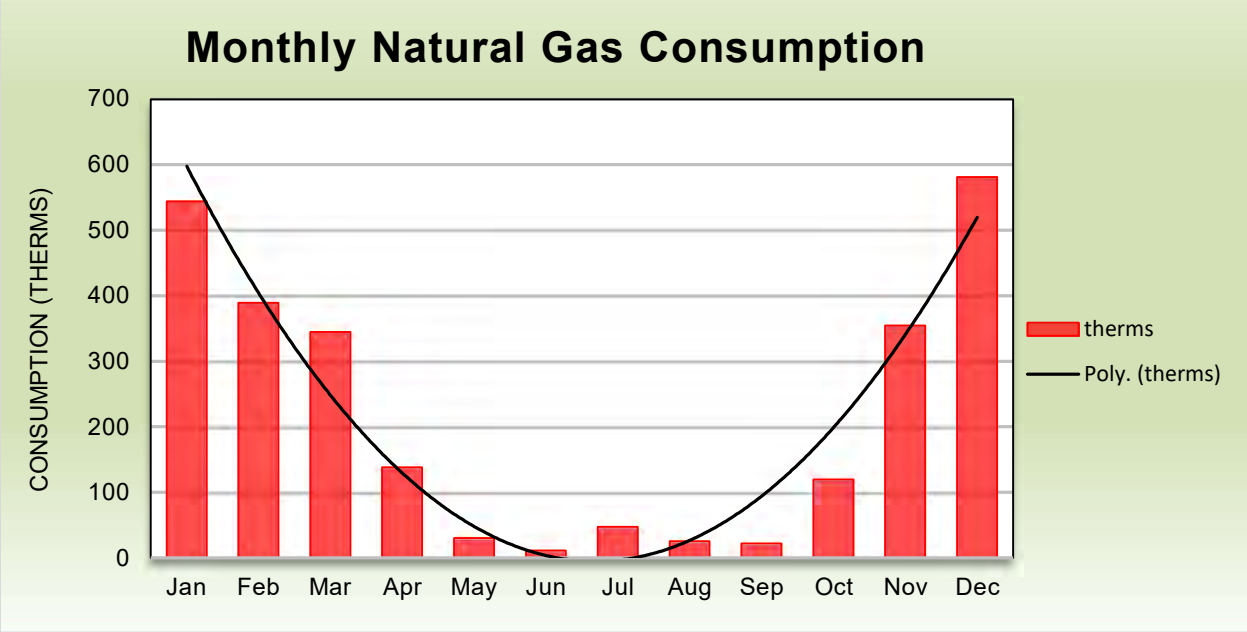


The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and is low but variable during summer months, which is consistent with a building with gas heat and gas domestic hot water. Summer gas consumption varies considerably, which may indicate changes in domestic hot water usage or gas cooking equipment usage.



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2.46 Jones Pool

Site Overview

Jones Pool is a public pool located at 1617 Holley Street. The pool is the oldest pool in Augusta at 70 years old.

Lighting Systems

Lighting information was only recorded in the pool changing rooms. There are two 60-watt incandescent fixtures and one T12 linear fluorescent fixture.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The Jones Pool changing room area has a brick masonry façade and a pitched membrane roof.

Mechanical Systems

No mechanical system information was recorded at this location, as it is not in scope.

Controls

No control system information was recorded at this location, as it is not in scope.

Miscellaneous Loads

Main miscellaneous loads at this location come from the pool pumps.

Operating Schedule Description

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	12p – 5p	12p – 5p	12p – 5p	12p – 5p	12p – 5p	12p – 5p	Closed
UnOccupied	5p – 12p	5p – 12p	5p – 12p	5p – 12p	5p – 12p	5p – 12p	Closed

The table above describes the hours of occupancy for Jones Pool.

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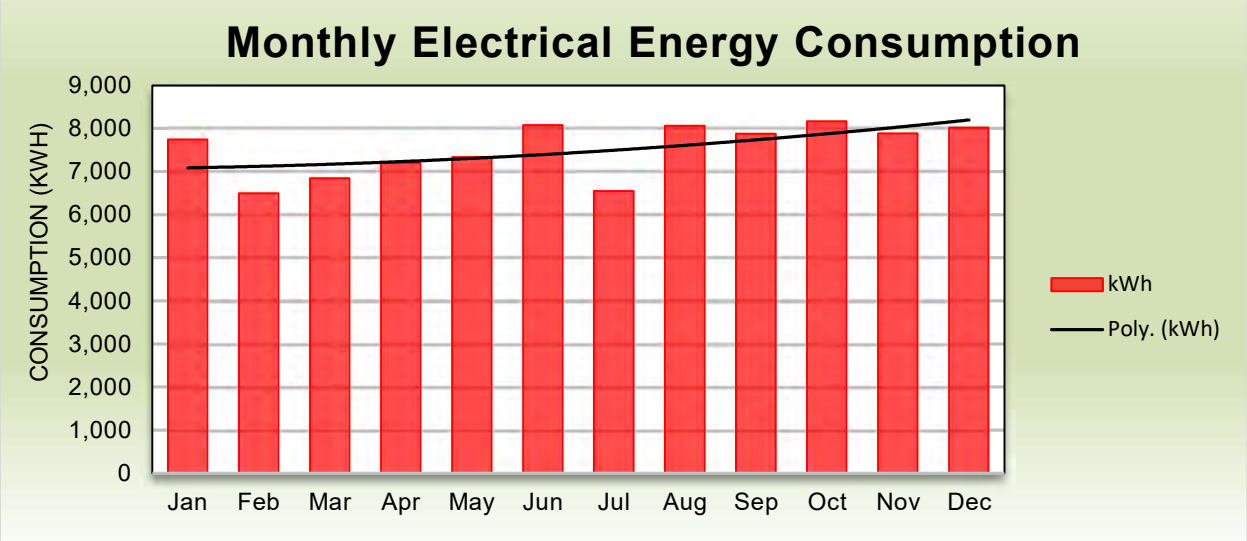
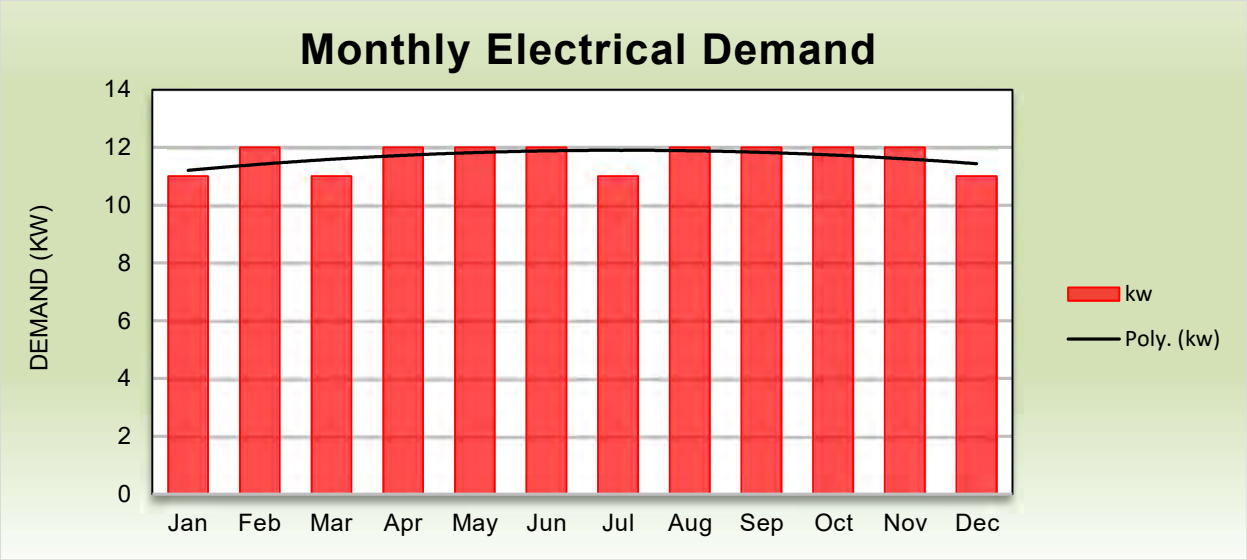
Utility Analysis

Jones Pool has relatively consistent electrical consumption throughout the year. This is likely from the pool pumps running 24/7 to maintain pool quality. No information is known about the mechanical equipment at this location, and thus, it is unclear if the electrical consumption profile matches that of the mechanical system at this location.



The demand profile is consistent with that of the electrical consumption profile.



Natural gas is not used at this location.

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2.47 Julian Smith BBQ Pit

Site Overview

The Julian Smith BBQ Pit is a rentable facility offering a restaurant-style barbecue pit, kitchen, dining hall, and patio area overlooking Lake Olmstead. With space for up to 150 people, this 4,500 square foot facility is located at 3 Milledge Road.

Lighting Systems

Interior lighting consists primarily of PAR30 light emitting diode (LED) fixtures. There are also a few linear fluorescent T8 and T12 fixtures, as well as some incandescent fixtures, in the restrooms and storage areas. Exterior facade lighting is a mixture of incandescent and LED fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The building has a façade of stone and siding, with a sloped shingle roof over the single-story structure. The building is comprised of a large dining hall, a kitchen, and barbecue pit. The interior features wood paneled walls and exposed wooden beams in the dining hall. The large windows on the back side of the structure provide a scenic view of the lake. The building envelope is in fair condition.

Mechanical Systems

The Julian Smith BBQ Pit is served by two Rheem packaged units with gas heat, as well as a natural gas split system paired with a condensing unit. The total cooling capacity provide by these three systems is 19-tons.

Controls

Two thermostats were recorded. One serves the main portion of the building and one serves the dining hall. Each of the thermostats is Honeywell programmable thermostat mounted on the wall.

Miscellaneous Loads

When in use, there are significant miscellaneous loads due to the kitchen equipment. The dining hall does not have significant miscellaneous loads.

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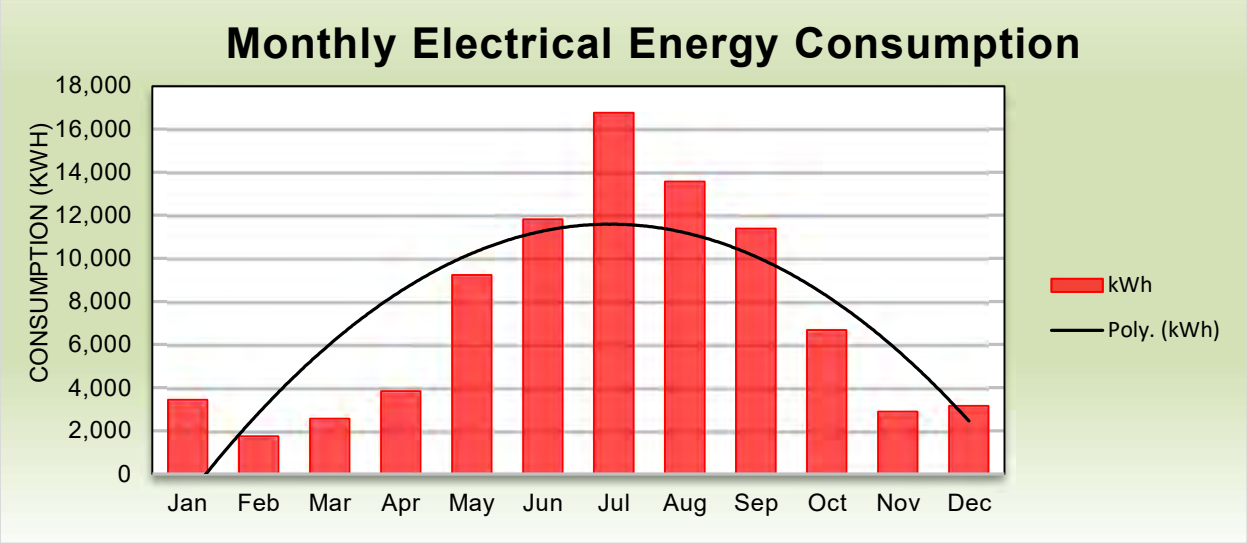
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	68	Rentable	Rentable	Rentable	Rentable	Rentable	Rentable	Rentable
UnOccupied	72	68	Rentable	Rentable	Rentable	Rentable	Rentable	Rentable	Rentable

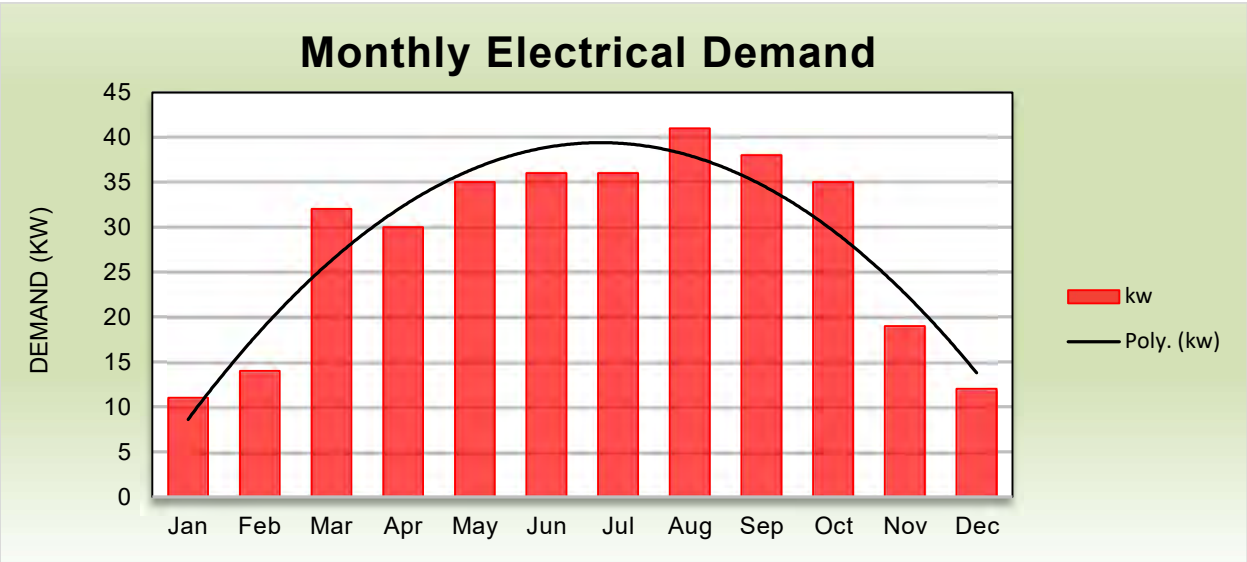
There is not set operational hours at Julian Smith BBQ Pit, as the building is primarily used as a rental space.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for the Julian Smith BBQ Pit during the baseline year (October 2018 to September 2019). This profile is indicative of a mechanical system with natural gas heating and electric cooling with peaks in electricity consumption in the summer and troughs in the winter.



Monthly electrical demand (kW) is shown below, for the baseline year. This profile is consistent with that of the electrical consumption profile.



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Trane was unable to obtain natural gas consumption data at this location.

2.48 Julian Smith Casino

Site Overview

The Julian Smith Casino is a rentable facility consisting of a large banquet hall and kitchen overlooking Lake Olmstead. This event venue is typically rented out for large parties and wedding. The single-story building is located at 2200 Broad Street and is approximately 9,075 square feet.

Lighting Systems

Interior lighting consists primarily of PAR30 light emitting diode (LED) fixtures. There are also a few linear fluorescent T8 and T12 fixtures, as well as some incandescent fixtures, in the restrooms and storage areas. Exterior facade lighting is a mixture of incandescent and LED fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The building has a stone façade with a sloped shingle roof over the single-story structure. The building has large palladium windows offering a scenic view of Lake Olmstead. The interior features cut-stone walls and exposed wooden beams in the banquet hall. The building envelope is in fair condition.

Mechanical Systems

The banquet hall is served by two 30-ton Trane packaged units with gas heat, located on grade outside of the building. Both systems date to 2010 and are in good condition. The systems have the capability for 100% economizing operation. A 7.5-ton Thermal Zone split system serves the kitchen, with the condensing unit mounted on grade and the fan coil unit located in the mechanical room. The fan coil makes use of natural gas heat. The split system was manufactured in 2014 and is in fair condition.

Controls

Each of the three systems has stand-alone controls mounted on the wall in the conditioned space. The split system has a manual Honeywell thermostat that is old and in poor condition. The packaged units have Trane programmable thermostats in good condition.

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Miscellaneous Loads

When in use, there are significant miscellaneous loads due to the kitchen equipment. The banquet hall does not have significant miscellaneous loads.

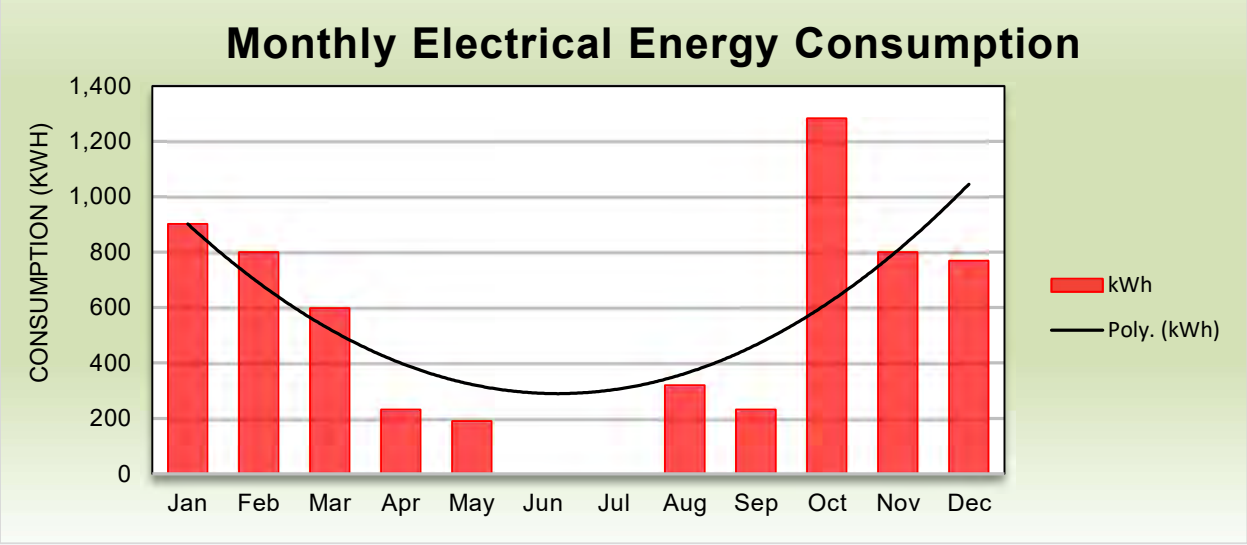
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	68	Rentable	Rentable	Rentable	Rentable	Rentable	Rentable	Rentable
UnOccupied	72	68	Rentable	Rentable	Rentable	Rentable	Rentable	Rentable	Rentable

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Julian Smith Casino. There is not set operational hours at Julian Smith Casino, as the building is primarily used as a rental space.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for the Julian Smith Casino during the baseline year (October 2018 to September 2019. This profile is not consistent with mechanical systems having natural gas heating and electric cooling. Typically, electricity consumption spikes in the summer and drops in the winter. The profile below shows the opposite. It is possible a meter is missing, although unlikely as the energy consumption per square foot at this building (60 kBtu/ft^2) is consistent for a building of this type. Given that the building is used as a rental facility, there may be more use during the winter than summer. This may also explain why there is a spike in consumption in October 2018. This spike consistent with consumption in October 2019 as well. Given that this facility is rentable, it is possible there are more events during this month, causing increased consumption. There are also data points missing in the utility data for the baseline period of June and July 2019, as well as June and July 2018. While the reason for this missing data is unknown, it is possible the building is not open during these months, or was not rented.



Monthly electrical demand (kW) is shown below, for the baseline year. The demand profile at this building is flat. This is likely because the building run-time hours varies depending on the schedule of events. Data for June and July 2019 is missing, as well as June and July 2018.

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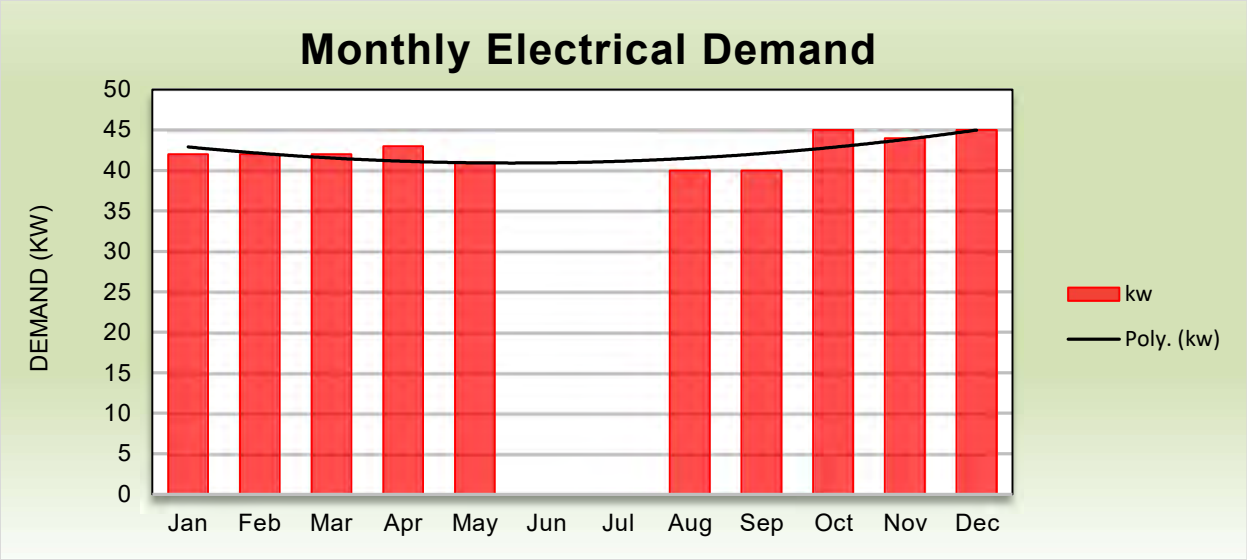
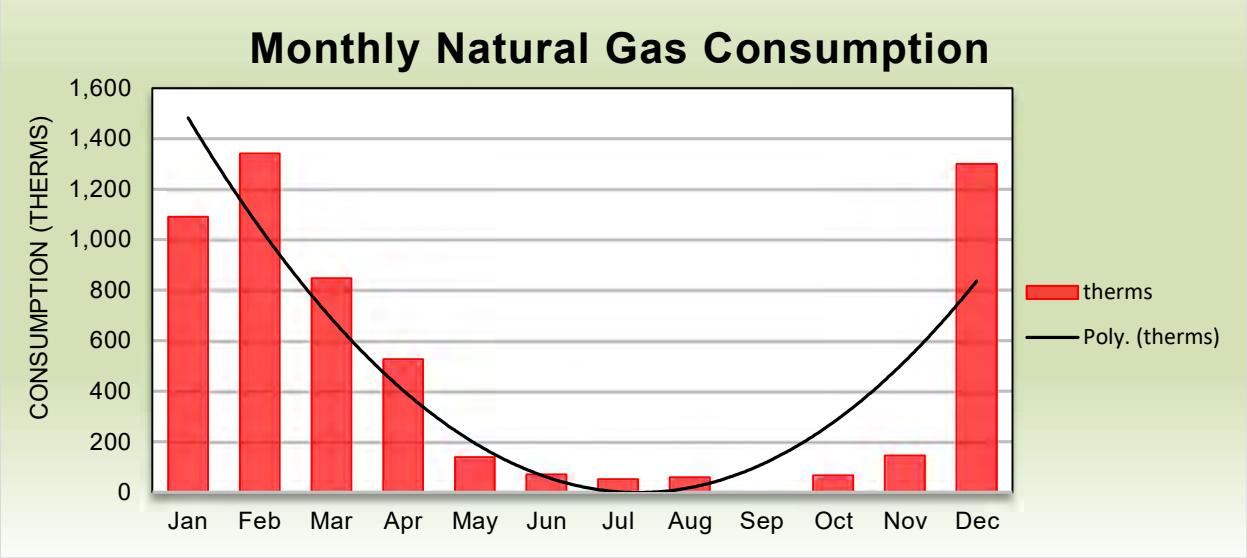


The natural gas consumption profile is consistent with that of the mechanical system at this location, with peaks during the heating season and troughs during the cooling season.



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2.49 May Park Community Center

Site Overview

May Park Community Center is 15,471 square feet and is located at 622 4th Street. The building serves as a community center. Spaces in the building include a Gym, Clubroom, Game Room, Fitness Center, Locker Rooms, Restrooms, and Offices.

Lighting Systems

Gym lighting is provided by 400-watt metal halide fixtures. Remaining interior lighting consists primarily of linear fluorescent T12 fixtures. There are also linear fluorescent T8 fixtures. Exterior façade lighting is provided by 70-watt and 150-watt metal halide fixtures. Ballfield lighting is provided by fixtures with 1000-watt high pressure sodium lamps.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a single-story building with masonry walls constructed of CMU block with a brick façade. There are six windows on the west face of the building and four windows on the east face. The roof above the gym in the center of the building is flat with an asphalt membrane. The roof over the perimeter areas is pitched with asphalt shingles.

Mechanical Systems

The gym is conditioned by two 20-ton heat pump packaged units that are mounted on the flat roof. The Main Office is conditioned by a 3-ton split system with electric-resistance heat from 2009, where the condensing unit is located on the flat roof and the air handler is located above the suspended ceiling. The Club Room is served by a split system heat pump that is in poor condition, where the condensing unit is located on grade and the air handler is in the Club Room. The Game Room is served by a 4-ton split system heat pump from 2001, where the condensing unit is on grade and the air handler is in the Game Room. The Fitness Center is conditioned by a 3-ton ductless split heat pump with 3 wall-mounted ductless fan coil units in the Fitness Center and a condensing unit located on grade. The ductless split system was not operating and the disconnect has no fuses. The Athletic Director's Office is conditioned by a 1-ton Packaged Terminal Heat Pump.

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Controls

There are five non-programmable thermostats: Two in the Gym, one in the Game Room, one in the Club Room, and one in the Main Office. The Packaged Terminal Heat Pump in the Athletic Director's Office has integral manual controls. The ductless fan coils were turned off at the disconnect.

Miscellaneous Loads

There is a television in the Fitness Center. The Game Room has an ice maker. The Gym has a score board and audio system. The Main Office has three desktop computers with LCD monitors and two printers.

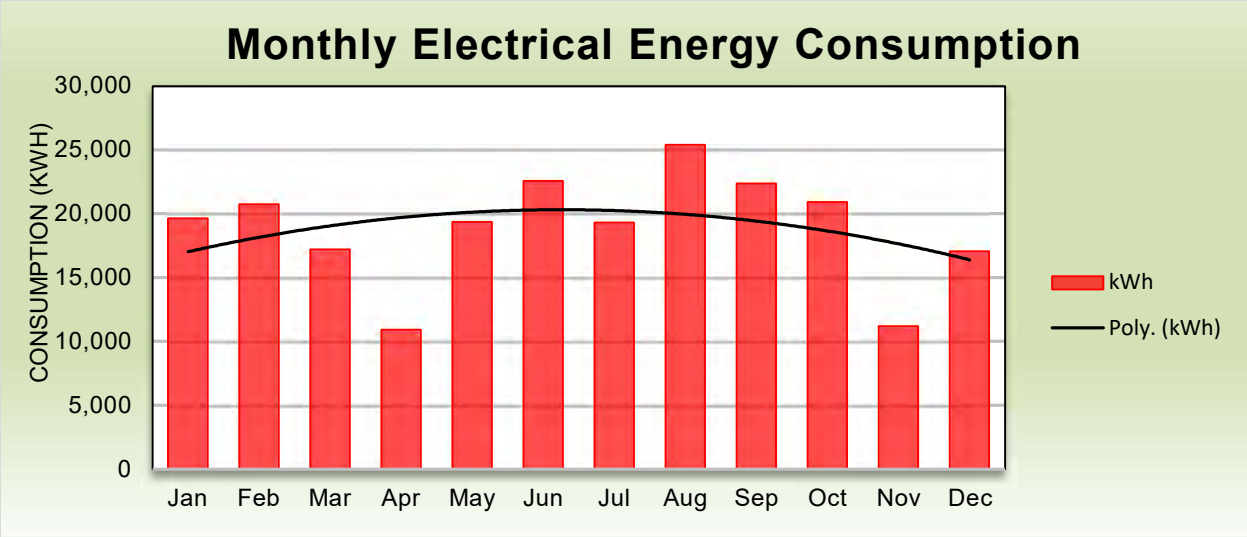
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	9a - 8p	10a - 8p	9a - 8p	10a - 8p	9a - 6p	Rentable	Rentable
UnOccupied	72	70	8p – 9a	8p – 10a	8p – 9a	8p – 10a	6p – 9a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for May Park Community Center. The Clubroom/Kitchen or the entire facility are available for rental.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods. Troughs occur during the shoulder months.



Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand also has peaks in both summer and winter; however, winter peaks are much higher than summer peaks due to the activation of electric-resistance auxiliary heaters during cold days or when systems are recovering from a heating setback.

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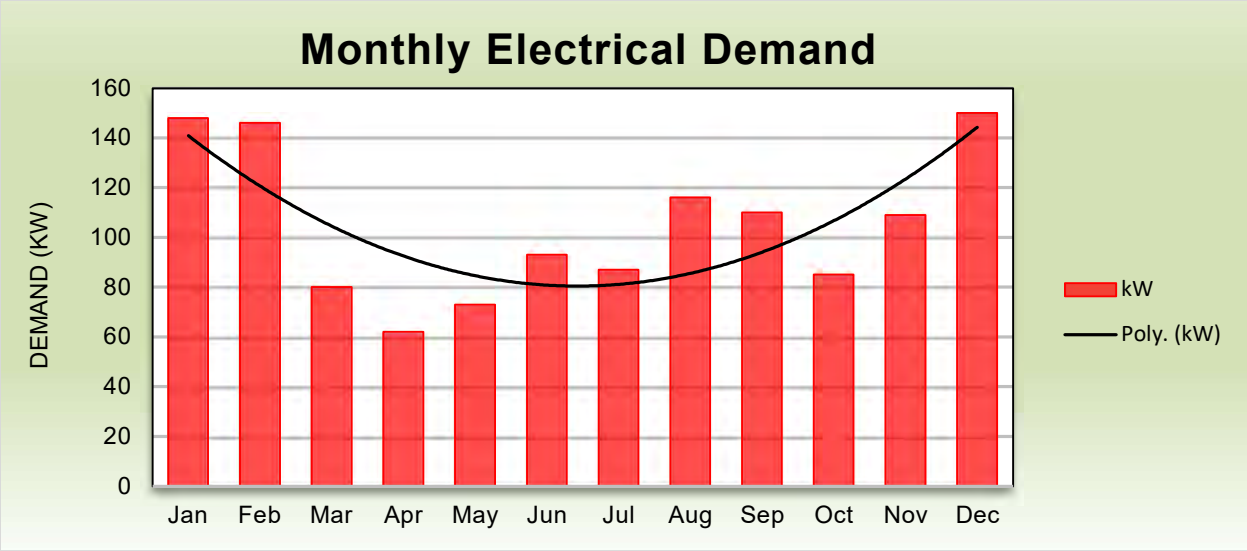
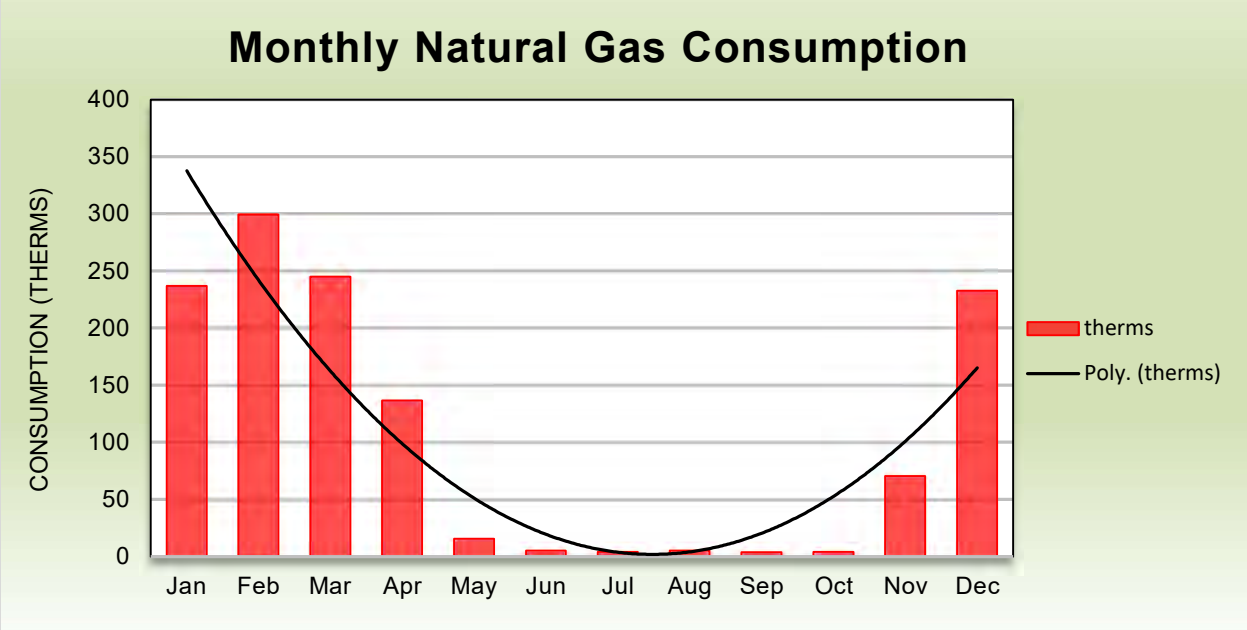


The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). There is no natural gas HVAC equipment at this building, but there is a gas meter with a service address of 622 4th Street.



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2.50 May Park Print Shop

Site Overview

May Park Print Shop is 4,950 square feet and is located at 712 4th Street. The building contains Open Office, a Closed Office, Break Room, Shipping/Receiving, Conditioned Storage, and Unconditioned Storage for Recreation.

Lighting Systems

No lighting audit was performed at this location, and thus, lighting information was not collected, as this location is not in scope for lighting upgrades.

Building Envelope

It is a single-story building with masonry walls constructed of CMU block. The wall facing 4th Street has four windows. The remaining wall faces have no windows. The roof is pitched with asphalt shingles.

Mechanical Systems

The perimeter of the building is conditioned with ductless split systems. One system serves the Elect & Storage Room, two systems serve the Shipping & Receiving Room, and one system serves the Front Office. All ductless fan coil units are wall mounted. The ductless condensing units are mounted on grade near their associated ductless fan coil unit.

The core area of the building is split evenly into two zones. A horizontally mounted Carrier air handler with electric-resistance heat serves the Women's Restroom, half of the Open Office, and the Files Room. A vertically mounted Payne upflow gas-fired furnace serves the Men's Restroom, half of the Open Office, and Break Room. The two condensing units are located on the roof above the mechanical room. The Carrier split system was manufactured in 2013. The Payne split system is brand new and was manufactured in 2019.

Controls

There are two non-programmable thermostats located near the restrooms in the Open Office area, which control the two split systems. The ductless split systems are controlled using remote controls.

Miscellaneous Loads

The office area has five desktop computers and monitors, four large to extra-large copiers, and various other machines used for processing printing materials. The Shipping area has two industrial-scale printing machines. The Break Room has a coffee maker, microwave, and range/oven.

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Operating Schedule Description

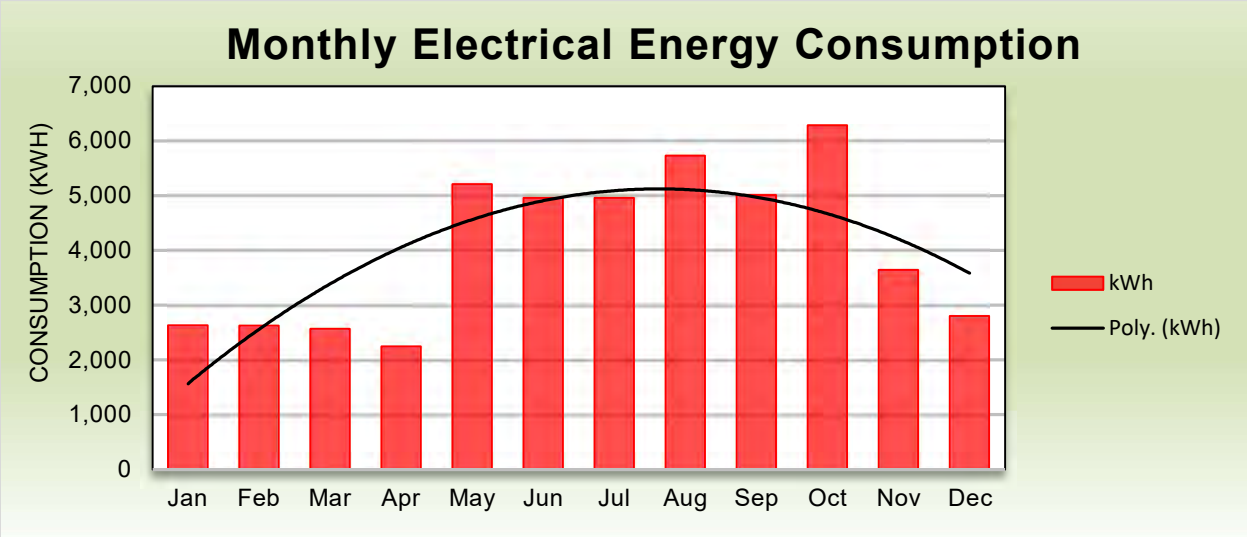
	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	9a - 5p	9a - 5p	9a - 5p	9a - 5p	9a - 5p	Closed	Closed
UnOccupied	82	70	5p – 9a	5p – 9a	5p – 9a	5p – 9a	5p – 9a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for the building.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric cooling and a combination of gas and electric heat; though, most of the heat is provided by gas. Electricity usage increases during the cooling season compared to the heating season, but electricity usage during the cooling season is nearly flat.

Electricity consumed by printing equipment, as well as internal heat gain, may also contribute to the unusual electricity consumption profile for May Park Print Shop.



Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand has a similar profile as electricity consumption.

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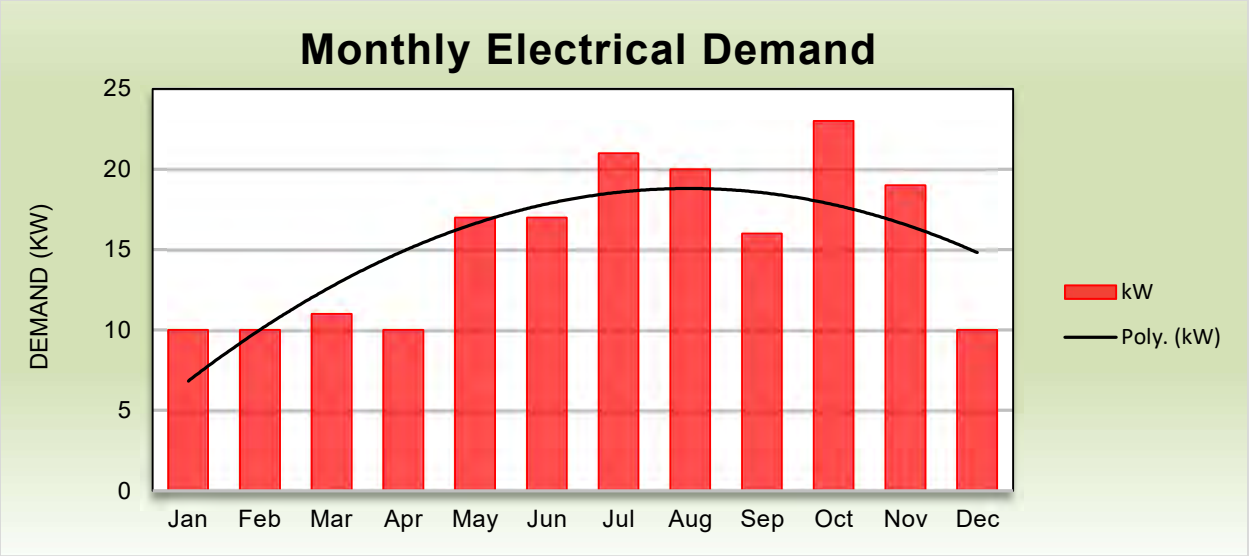
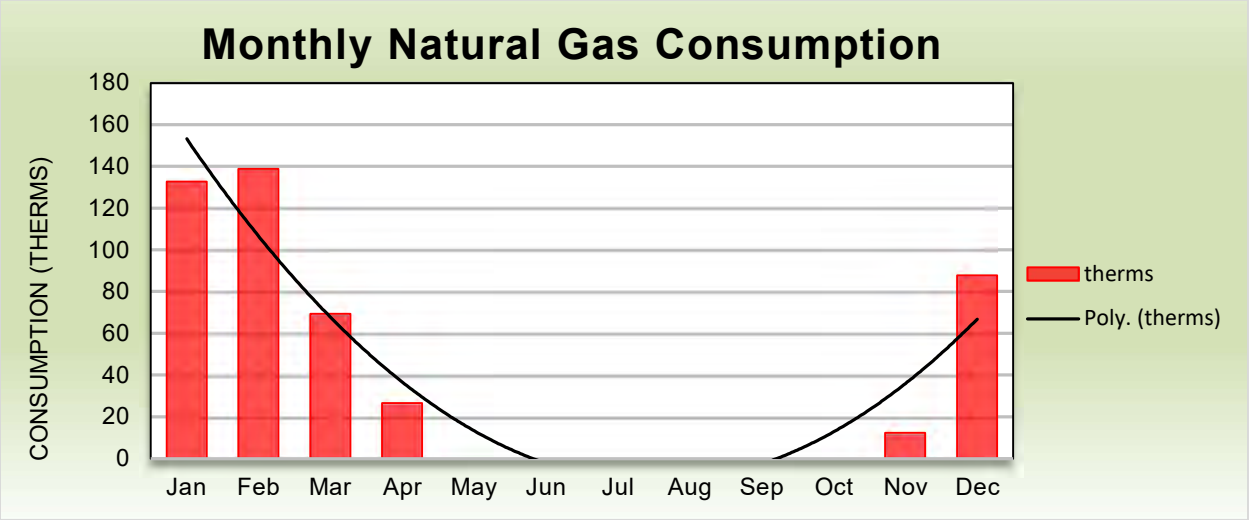


The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and falls to zero in summer months, which is consistent with a building with gas heat and electric domestic hot water. Gas usage is lower than would be expected because 1) a portion of the buildings heating load is satisfied by electric heat and 2) internal heat generated by printing equipment offsets the need for gas heat.



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2.51 McDuffie Community Center

Site Overview

McDuffie Woods Community Center is 15,600 square feet and is located at 3431 Old McDuffie Road. The building serves as a community center. Spaces in the building include a Gym, Computer Room, Game Room, Fitness Center, Restrooms, Offices, Kitchen, Gym Kitchen, and Sheriff Substation.

Lighting Systems

Gym lighting is provided by 400-watt metal halide fixtures. Remaining interior lighting consists primarily of a mixture of fluorescent T12, U-bend fluorescent T12, linear fluorescent T8, and 2-lamp U-bend fluorescent T8. Exterior façade lighting is provided by metal halide and LED fixtures. Ballfields and exterior basketball courts are illuminated with fixtures that have 1000-watt metal halide lamps.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a single-story building with masonry walls constructed of CMU block for the lower portion of the building and the upper portion of the walls have metal building construction with a thin layer of insulation. There are no windows in the building. The roof is metal and pitched with a thin layer of insulation.

Mechanical Systems

The gym is conditioned by eight 5-ton split systems with vertical upflow gas-fired furnaces. There are two furnaces in each corner of the gym, six are located on a mezzanine level in the gym and two are suspended above the floor. All condensing units are located on grade behind chain-link fences.

The Fitness Room is conditioned by a 5-ton split system from 2002 with electric resistance heat. The Multipurpose Room is conditioned by two 3-ton heat pump condensing units from 2003 that are connected to an air handler in a mechanical closet that is accessible from the Multipurpose Room.

Controls

There are 12 non-programmable thermostats: 8 in the Gym, one in the Game Room, one in the Computer Room, and One in the Multipurpose Room. There is also a Honeywell control panel that controls a fan system for drying out the gym floor.

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Miscellaneous Loads

The Fitness room has two treadmills. The Gym Kitchen has two full size refrigerators. The Kitchen has a commercial gas range/oven with a kitchen exhaust hood. The Multipurpose Room has a television. The Gym has a score board and audio system. The Sheriffs Substation has two desktop computers with LCD monitors and two printers. Several spaces such as the Game Room and Computer Room were empty rooms with no miscellaneous loads.

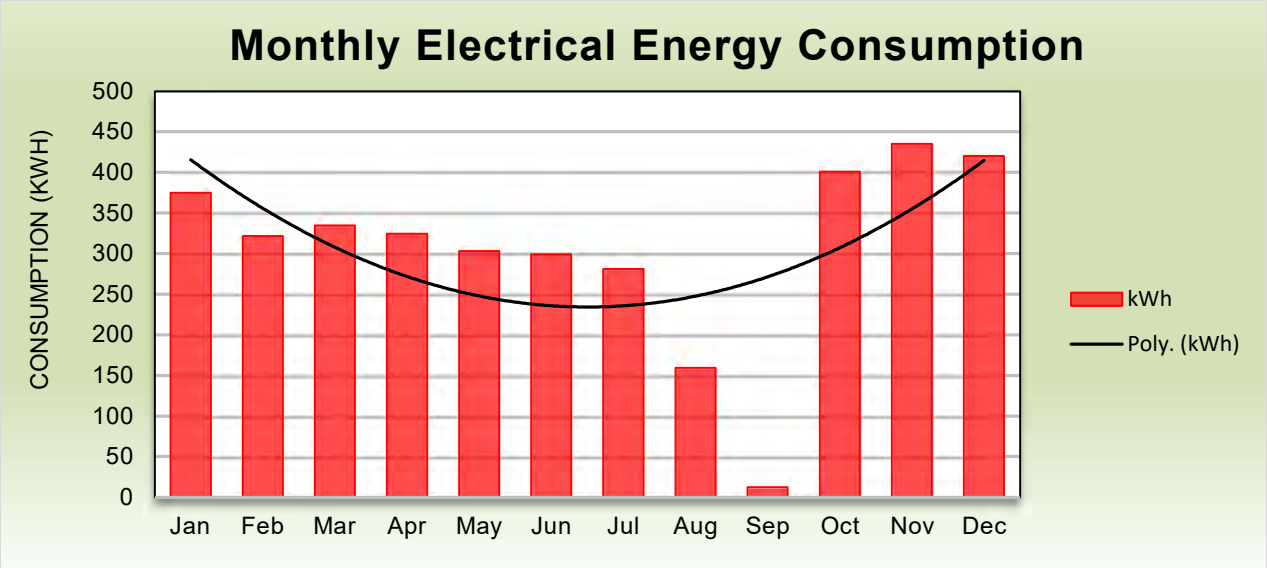
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	9a - 8p	9a - 8p	9a - 8p	9a - 8p	9a - 6p	Rentable	Rentable
UnOccupied	72	70	8p – 9a	8p – 9a	8p – 9a	8p – 9a	6p – 9a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for McDuffie Woods Community Center. The Multipurpose Room or the entire facility are available for rental.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the most recent year with complete data (October 2017 to September 2018). Data was not available for 2019. The electricity data shown below does not represent the complete electricity usage for McDuffie Woods Community Center. This building is over 15,000 square feet and the electricity usage at this location is low relative to building size. Thus, the utility baseline for this period was estimated based on usage at May Park and Warren Road, as show in the second monthly electrical consumption graph. These locations were used to estimate the baseline at McDuffie Community center because they have similar characteristics. The updated profile better matches the McDuffie Community center in terms of amount of consumption, but also overall shape given the building is cooled by split-systems and heated via a combination of gas furnaces and electrical resistance heat. The electrical resistance heat is what is responsible for the electrical energy consumption seen in the winter months outside of base and miscellaneous loads. The split systems are responsible for the electrical energy consumption in the summer months outside of base and miscellaneous loads.



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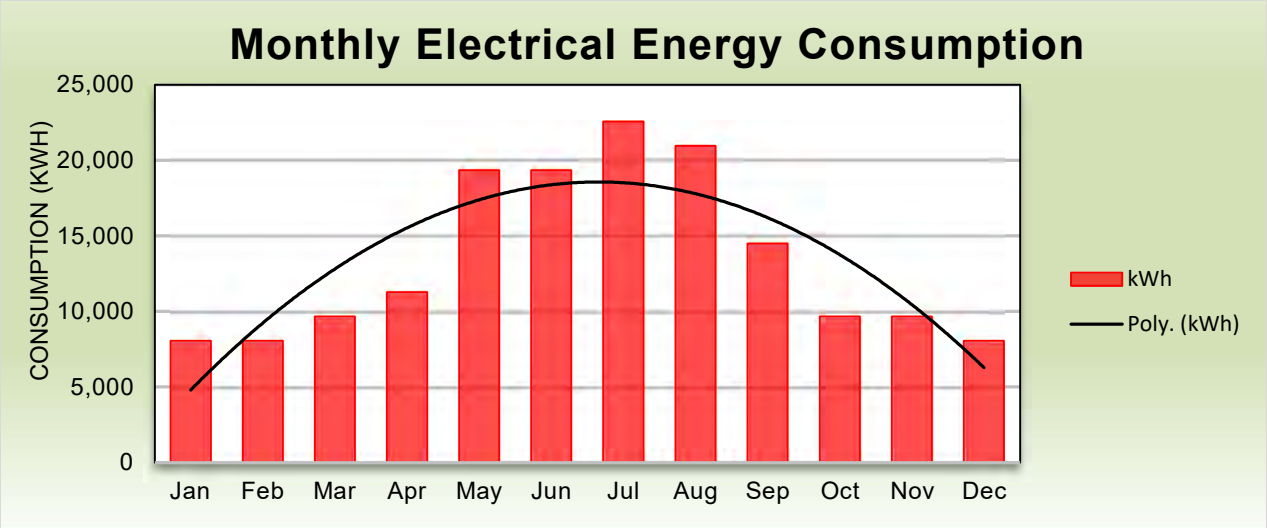
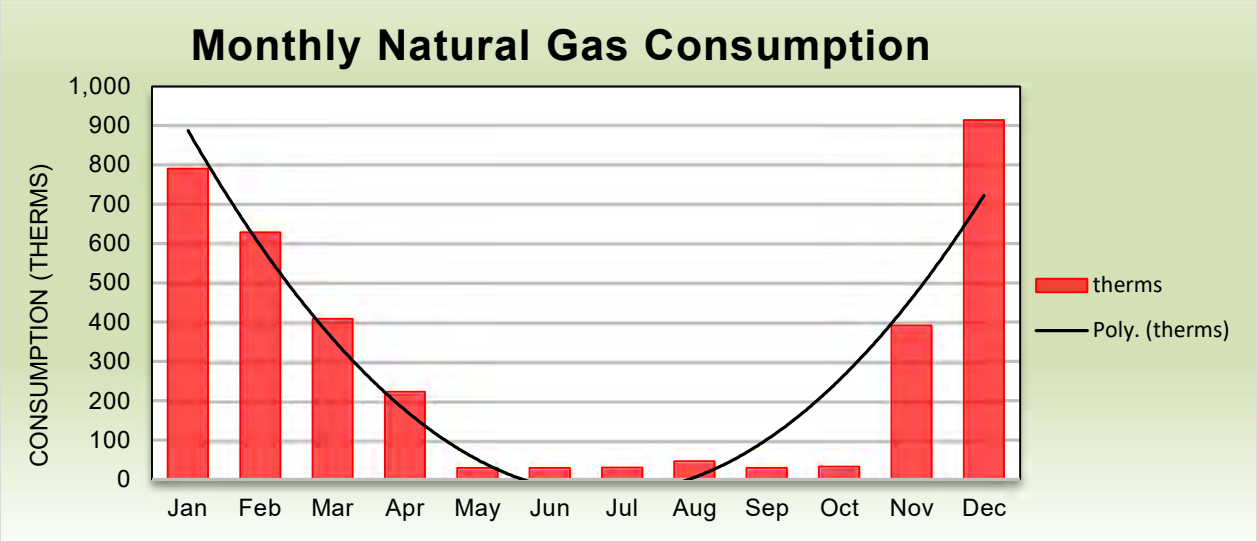


The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and is relatively flat during summer months, which is consistent with a building with gas heat and other gas loads such as cooking.



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2.52 Newman Tennis Center

Site Overview

Newman Tennis Center is 7,500 square feet and is located at 3103 Wrightsboro Road. Spaces in the building include a reception area, offices, locker rooms, and storage.

Lighting Systems

Interior lighting consists mostly of T12 and T8 fluorescent fixtures with a lamp quantity of two or four and a mixture of linear and U-bend lamp types. Exterior façade lighting is provided by 175-watt metal halide fixtures. Parking lot lights are LED. Exterior tennis court lighting is provided by 400-watt and 1000-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The building has a single above-ground story and a basement level. The building is located on an artificial hill that also serves as stadium seating for one of the tennis courts. Walls are constructed of CMU block with a brick façade. The window-to-wall ratio of the above-ground walls is around 50%. The roof is pitched with asphalt shingles.

Mechanical Systems

The building is conditioned by a single 5-ton split system with an upflow gas-fired furnace located in an electrical room in the basement with a condensing unit manufactured in 2008 located on a pad cut into a hill. The split system also includes an inline fan and electric duct heater, which may be acting as an outside air intake fan with electric resistance pre-heat, based on the posted sequence of operations.

Controls

The split system is controlled by a non-programmable thermostat located near the reception desk on the main level. A control panel in the basement also controls the operation of a make-up air fan, electric duct heater, electric wall heaters, and exhaust fans. The electric duct heater is energized with the entering air temperature drops to 65 F.

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Miscellaneous Loads

This building has a television, water cooler, two desktop computers and LCD monitors, and icemaker. Exterior tennis court lights are also a significant load.

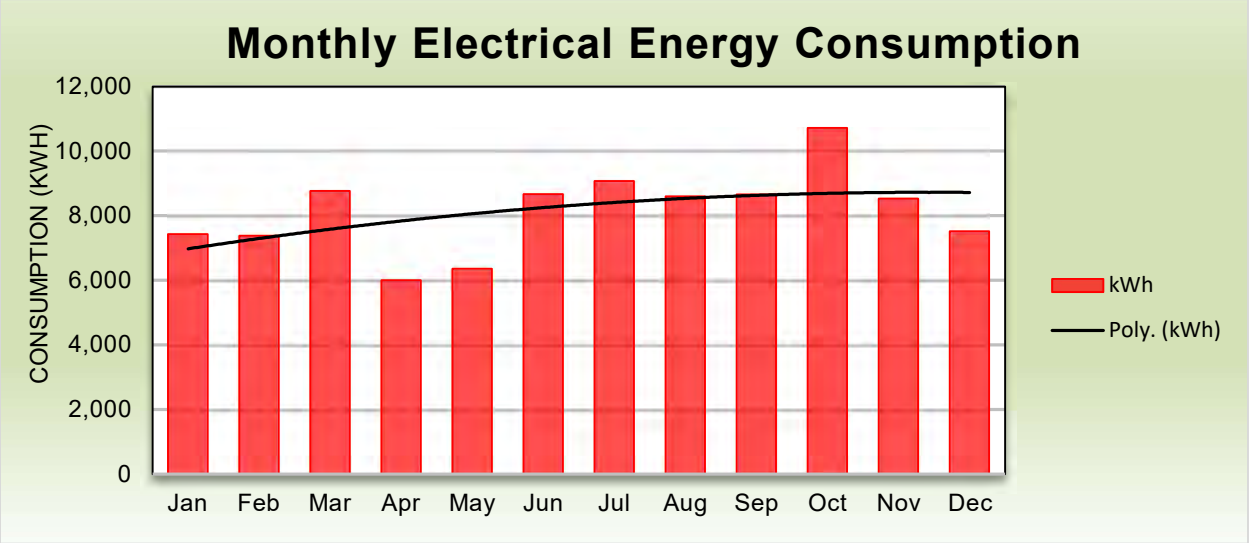
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	68	8a-9p	9a-9p	8a-9p	9a-9p	8a-5p	8a-9p	9a-5p
UnOccupied	72	68	9p-8a	9p-9a	9p-8a	9p-9a	5p-8a	9p-8a	5p-9a

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for Newman Tennis Center.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). This building has two electricity meters: One serves tennis court lights and the other serves the building and tennis court lights. The overall shape of the polynomial regression line shows consumption is highest in summer and fall, with a peak in October. This building has electric cooling and a combination of gas and electric heating. The tennis court lights are for each individual court are turned on as needed, resulting in variable usage patterns.



Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand remains mostly flat during the months of February through September, but this trend is caused by a lack of peak demand data for the meter serving the tennis court lights during 2018 and January 2019. The peak demand profile is likely flat during the entire year with peak demand driven by tennis court lights.

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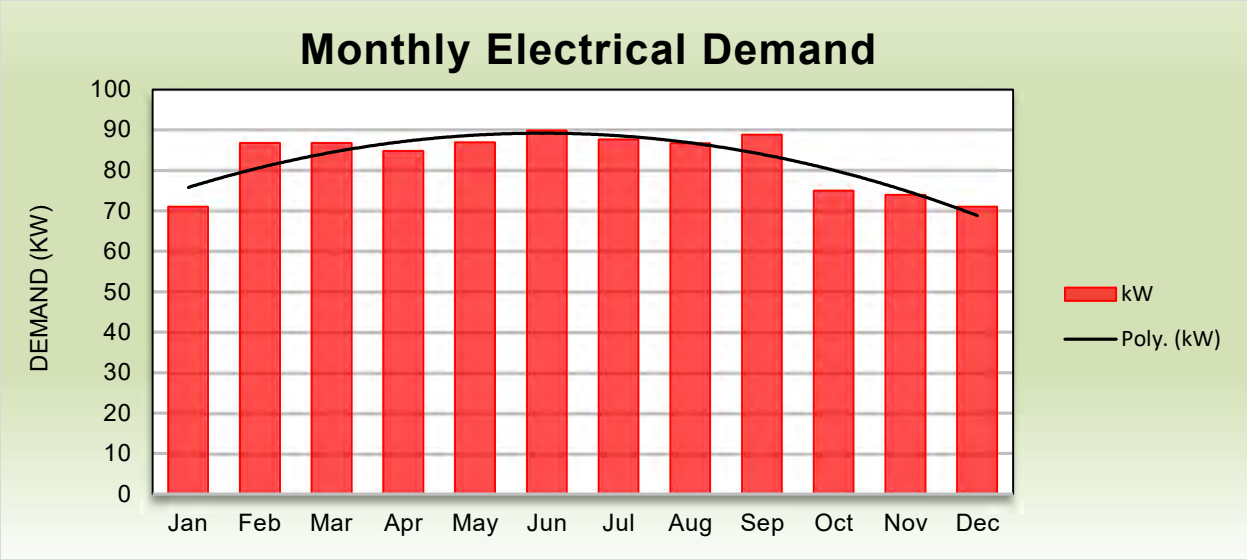
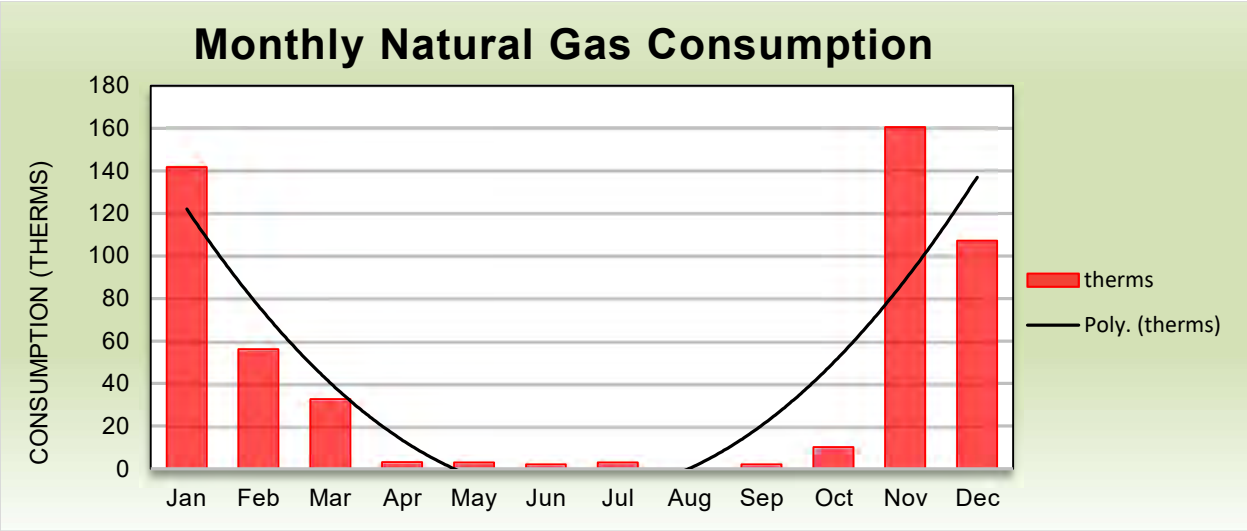


The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). This facility has a gas-fired furnace and gas water heater. However, an electric duct heater and electric wall heaters also provide a portion of the building's heating needs. Gas usage spikes in the winter as heating demand increases. Summer gas consumption for water heating is unusually low.



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2.53 Old Government House

Site Overview

Old Government House is 9,800 square feet and is located at 432 Telfair Street. The building is on the National Register of Historic Places with a construction date of 1801 and serves as an event space for weddings, banquets, and other events. Spaces in the building include a Dining Room, Kitchen, several gathering areas, storage, Restrooms, and Offices.

Lighting Systems

Interior lighting is a mixture of incandescent and linear fluorescent T12 fixtures. Most incandescent fixtures have dimmer switches. Exterior lighting is a mixture of high pressure sodium and incandescent.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a two-story building with an attic with wood-framed walls with a stucco façade and interior plaster or drywall. The roof above the attic is pitched with shingles with some insulation visible on the attic floor. The roof over the two-story foyer is flat with an asphalt membrane. The building has many large single-pane, wood-frame windows that are not shaded by a roof overhang but surrounding trees provide significant shading. The north face of the building has a window-to-wall ratio of around 40%. The remaining wall faces have a window-to-wall ratio of roughly 20%.

Mechanical Systems

The building is conditioned by nine split system heat pumps. Three condensing units are located on the flat roof and were not accessible due to structural issues with the roof. There are 6 heat pump condensing units located on grade, including four 5-ton units, a 3.5-ton unit, and a 3-ton unit. One of the 5-ton condensing units was manufactured in 1994, one 5-ton unit was manufactured in 2010, and two 5-ton units were manufactured in 2018. The 3-ton condensing unit was manufactured in 2017, and the 4-ton condensing unit was manufactured in 2013. Air handlers are located throughout the building. Three air handlers are located in the basement but were not accessible due to water damage to the access door.

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Controls

There are nine non-programmable thermostats.

Miscellaneous Loads

The Kitchen has an ice maker, a large commercial gas-fired range/oven with flat-top skillet and kitchen ventilation hood, commercial refrigerator, and a walk-in cooler. The office on the second floor had a desktop computer and LCD monitor. Most spaces in the building have no miscellaneous loads.

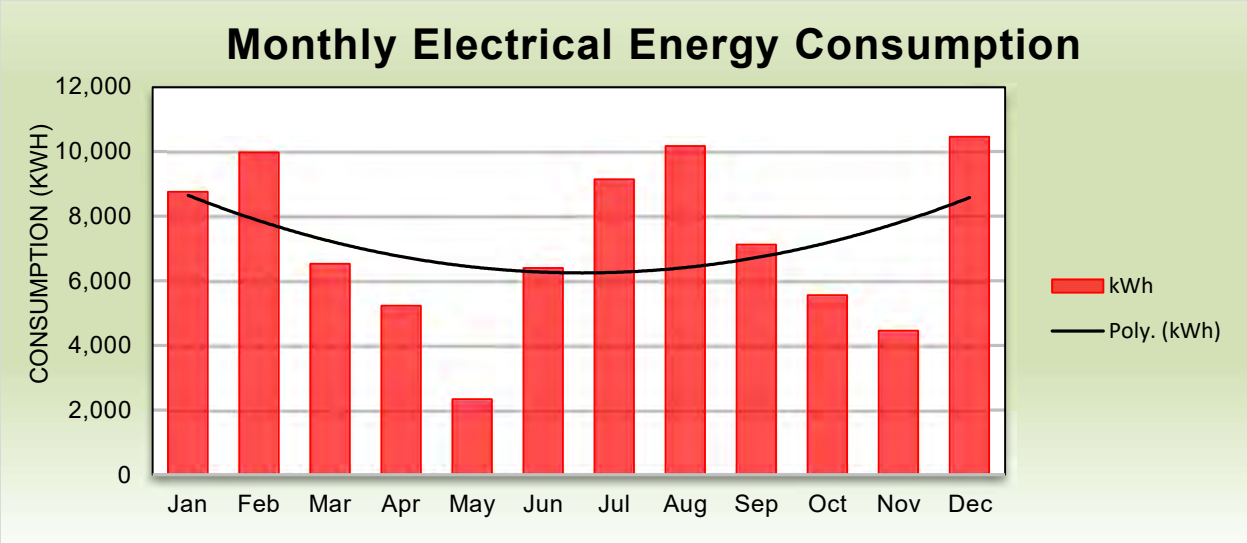
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	9a-5p	9a-5p	9a-5p	9a-5p	9a-5p	Rentable	Rentable
UnOccupied	72	70	5p – 9a	5p – 9a	5p – 9a	5p – 9a	5p – 9a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for Old Government House. This facility was modeled with a 9 AM to 5 PM schedule. Actual occupancy varies considerably since the main function is as a rentable event space.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods. Troughs occur during the shoulder months.



Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand also has peaks in both summer and winter of roughly equal magnitude.

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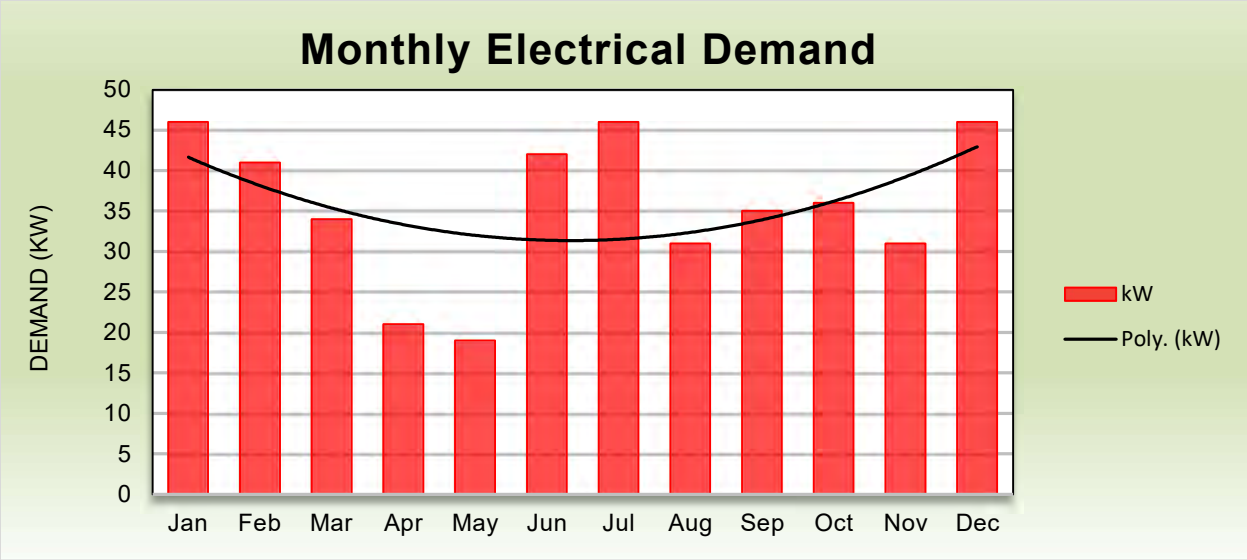

A natural gas meter supplies gas for the kitchen, but gas data is not available.

2.54 Recreation, Parks, And Facilities Administrative Offices

Site Overview

Recreation, Parks, and Facilities Admin Offices is 7,575 square feet and is located at 2027 Lumpkin Road. The building serves as an office. Spaces in the building include around 10 private offices, Sheriff's Substation, Conference Room, Restrooms, and Storage.

Lighting Systems

Interior lighting consists primarily of T12 and T8 fluorescent fixtures with a lamp quantity of two or four and a mixture of linear and U-bend lamp types. There are also incandescent fixtures. Exterior lighting is incandescent.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

This facility consists of four separate buildings/phases that are joined together. The two older buildings have two stories with a flat, built-up roof. The two newer buildings are single-story and have pitched roofs

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with asphalt shingles. All exterior walls are masonry construction using CMU blocks, except the oldest structure that has wall constructed of brick.

The flat-roof building with chimneys has a significant amount of glazing that has exterior shutters. The upper and lower floor of the north face and the upper floor of the west face have a window-to-wall ratio of approximately 25%, which is all shaded from the exterior by the shutters. The remaining walls of the building have a window-to-wall ratio of around 10%.

Mechanical Systems

The building is conditioned by four split system heat pumps, two ductless split heat pumps, and one packaged heat pump. Split system #4 is a 3.5-ton split system heat pump manufactured in 2003. The condensing units for the remaining split system heat pumps were manufactured after 2015. All condensing units or packaged units are located on grade. The ductless split systems from 2001 and 2003 with wall-mounted indoor units in Tonia's and Marilyn's offices.

Controls

There are five non-programmable thermostats. The ductless Mitsubishi system in Tonia's Office has a remote control. The ductless EMI system in Marilyn's Office has manual, integral controls.

Miscellaneous Loads

Sheriff's Substation has a refrigerator, television, two coffee makers, electric range/oven, and microwave. Each of the roughly 10 offices has a desktop computer and LCD monitor. One office had a mini-refrigerator. The Conference Room has a television.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	71	9a-5p	9a-5p	9a-5p	9a-5p	9a-5p	Closed	Closed
UnOccupied	72	71	5p-9a	5p-9a	5p-9a	5p-9a	5p-9a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for Recreation, Parks, and Facilities – Admin Office.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods. Troughs occur during the shoulder months. This building has three electricity meters.

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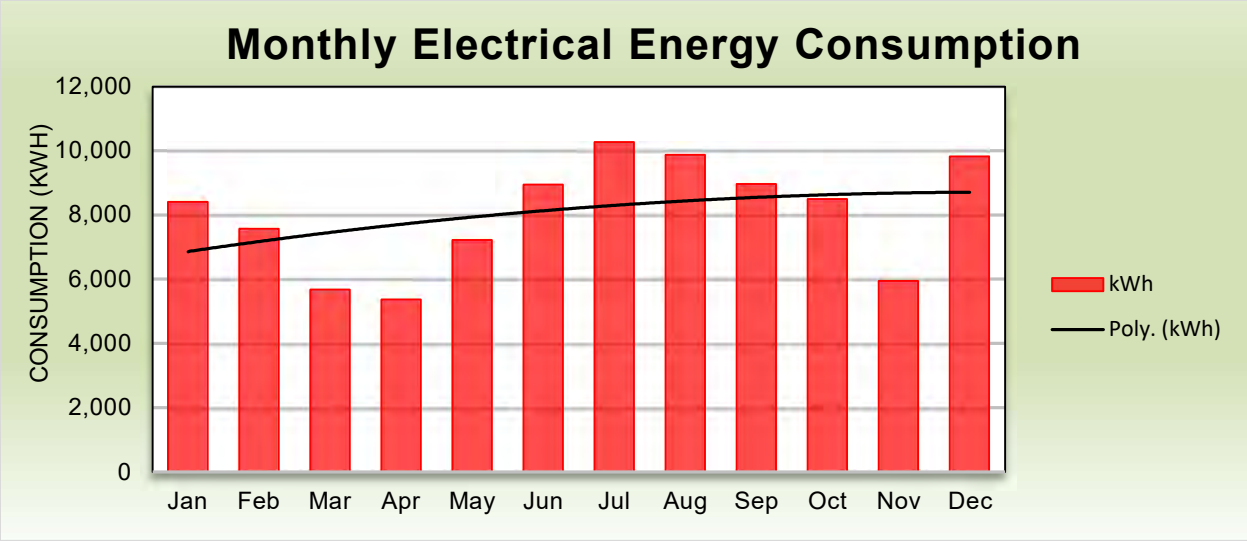
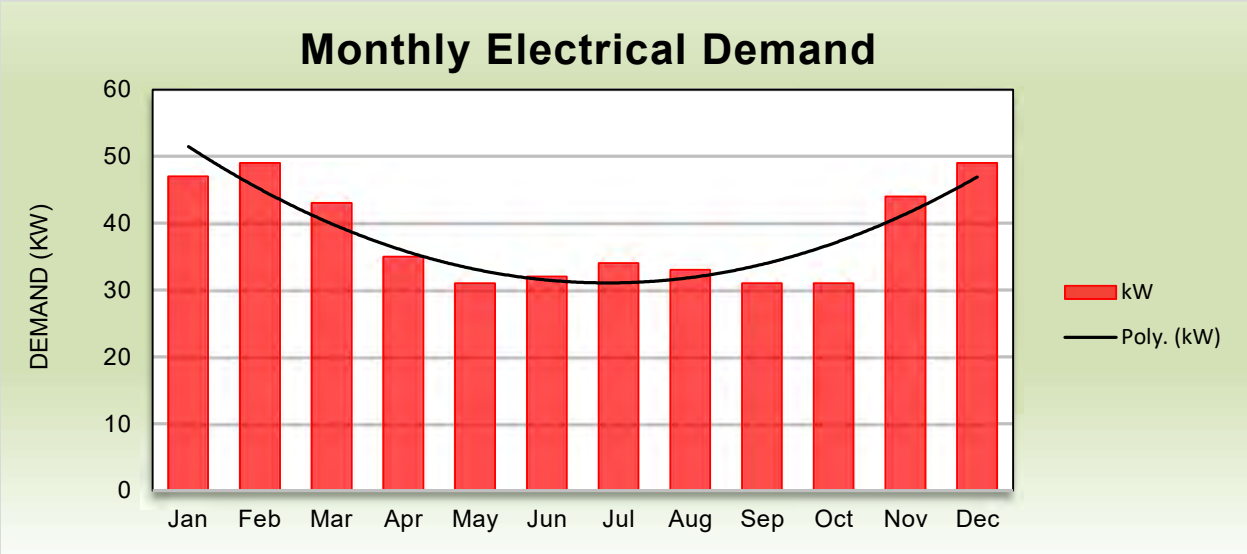


Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand peaks in winter months while remaining relatively flat during summer and shoulder months. Electric demand is highest during winter months due to the activation of electric-resistance auxiliary heat. One of the thermostats on the second floor was observed in emergency heat mode in which all heat is produced by electric-resistance heat.



There is no natural gas at this building.

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2.55 Recreation, Parks, And Facilities Equipment Repair

Site Overview

Recreation, Parks, and Facilities Equipment Repair is 4,800 square feet and is located at 2027 Lumpkin Road. The building serves as an equipment repair shop.

Lighting Systems

Interior lighting is a mixture of 2-lamp, 8-foot linear fluorescent T12 and 4-lamp, 4-foot linear fluorescent T8 fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a single-story building with wood-framed walls with wood siding and a pitched metal roof.

Mechanical Systems

Lighting retrofit is the only energy savings measure in scope at this location, thus no information on mechanical systems was recorded at the time of the audit.

Controls

Lighting retrofit is the only energy savings measure in scope at this location, thus no information on controls was recorded at the time of the audit.

Miscellaneous Loads

The building has an ice maker, kitchen appliances, tools, and office equipment.

Operating Schedule Description

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	9a-5p	9a-5p	9a-5p	9a-5p	9a-5p	Closed	Closed
UnOccupied	5p-9a	5p-9a	5p-9a	5p-9a	5p-9a	Closed	Closed

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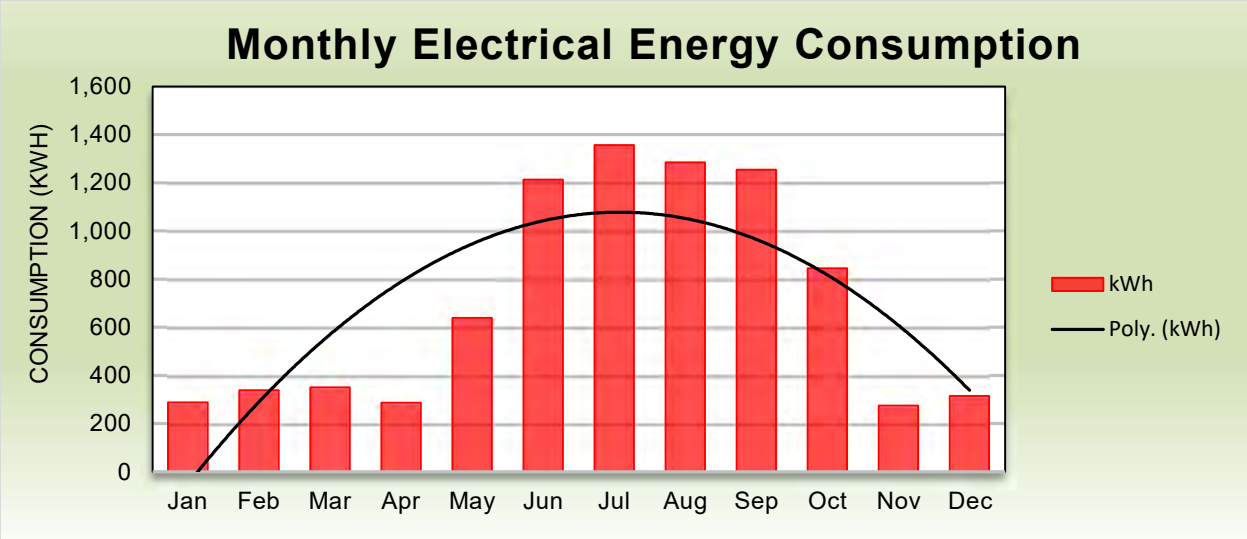
The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for the Equipment Repair building.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric cooling and gas heating. Peaks occur during summer months due to increased cooling load.



This building is billed for electricity on the General Service – Commercial rate structure, which does not use electric demand to adjust electricity pricing and electric demand is typically not provided in electric bills.

Trane was unable to obtain natural gas consumption data at this location.

2.56 Recreation, Parks, And Facilities Maintenance Shop

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Site Overview

Recreation, Parks, and Facilities Maintenance Shop is 2,400 square feet and is located at 2027 Lumpkin Road. The building serves as a shop.

Lighting Systems

Interior lighting is comprised of 2-lamp, 8-foot linear fluorescent T12 and 4-lamp, 4-foot linear fluorescent T8 fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a single-story building with masonry wall constructed of CMU block and a pitched metal roof.

Mechanical Systems

The building is mostly unconditioned. A small Packaged Terminal Air Conditioning (PTAC) unit serves one room in the building.

Controls

The PTAC unit has manual controls.

Miscellaneous Loads

Access to the inside of the building was not possible at the time of the audit, thus, miscellaneous loads at this location are unclear.

Operating Schedule Description

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	9a-5p	9a-5p	9a-5p	9a-5p	9a-5p	Closed	Closed
UnOccupied	5p-9a	5p-9a	5p-9a	5p-9a	5p-9a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for the Maintenance Shop.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line does not show an obvious pattern with regards to heating and cooling, which is consistent with a building that is unconditioned or semi-heated.

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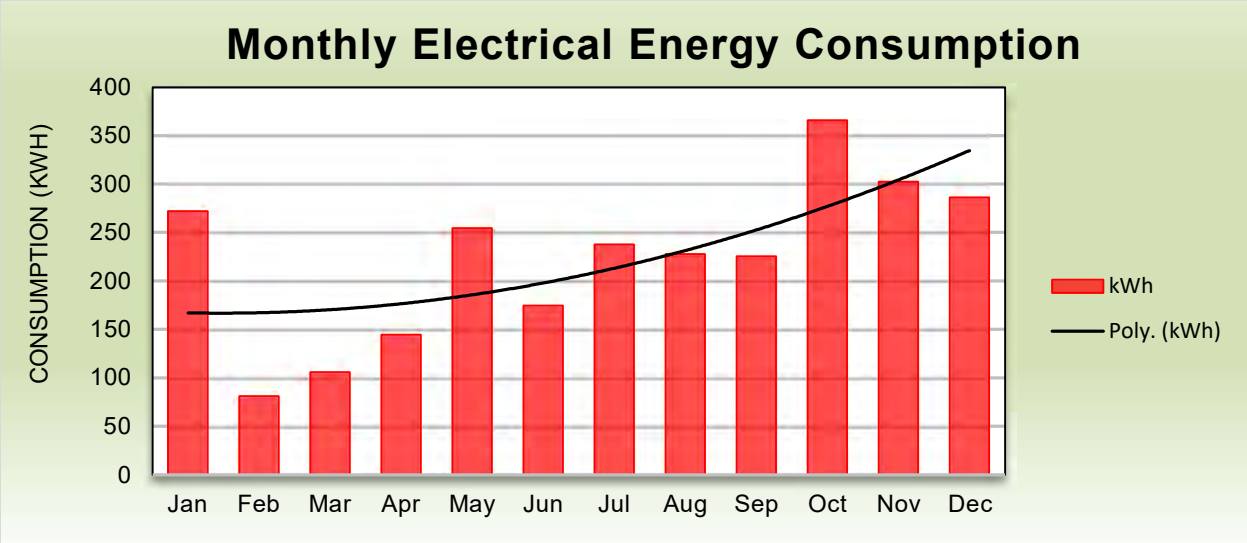

This building is billed for electricity on the General Service – Commercial rate structure, which does not use electric demand to adjust electricity pricing and electric demand is typically not provided in electric bills.

There is no natural gas at this building.

2.57 Recreation, Parks, And Facilities New Main Shop

Site Overview

Recreation, Parks, and Facilities Equipment Repair is 4,800 square feet and is located at 2027 Lumpkin Road. The building serves as an equipment repair shop. Spaces include Warehouse, Kitchen, Offices, Paint Room, and Restrooms.

Lighting Systems

Interior lighting consists of 2-lamp linear fluorescent T12, 4-lamp linear fluorescent T8, and 2-lamp linear fluorescent T8 fixtures. Exterior lighting comprised of nine 100-watt metal halide wall packs.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

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Building Envelope

It is a single-story building with masonry wall constructed of CMU block and a pitched metal roof. There are two roll-up garage doors on both northeast- and southwest-facing walls. The southeast-facing wall (facing Bulldog Way) has a roll-up garage door and three windows.

Mechanical Systems

The building is conditioned with a 4-ton packaged heat pump located on grade.

Controls

The packaged unit is controlled with a non-programmable thermostat.

Miscellaneous Loads

The building has an ice maker, kitchen appliances, tools, and office equipment.

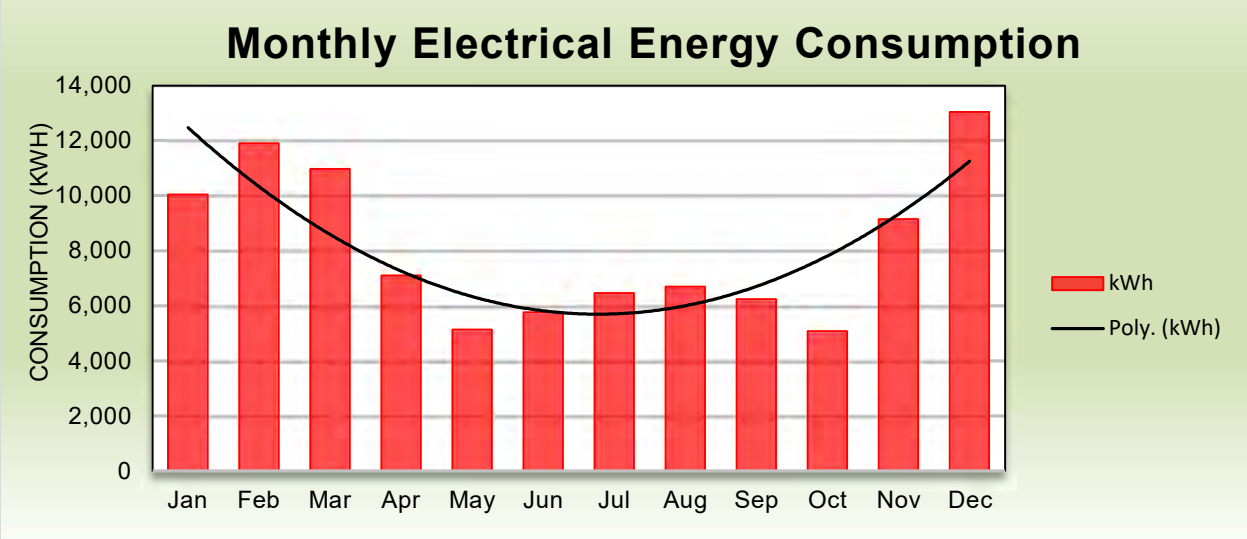
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	71	9a-5p	9a-5p	9a-5p	9a-5p	9a-5p	Closed	Closed
UnOccupied	72	71	5p-9a	5p-9a	5p-9a	5p-9a	5p-9a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for the Equipment Repair building.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric cooling and gas heating. Peaks occur during the winter and summer months for heating and cooling. There is a peak during summer months for cooling, although minimal compared to energy used during the winter months.



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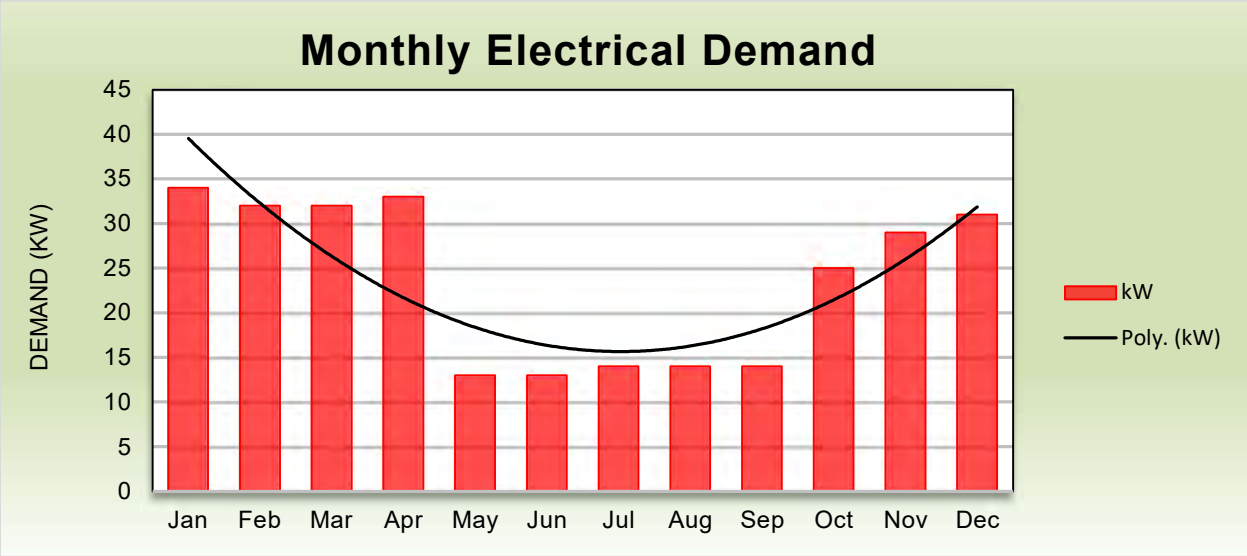
Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand peaks in winter months and summer months. Electric demand is highest during winter months due to the activation of electric-resistance auxiliary heat.



There is no natural gas at this building.

2.58 *Richmond County Municipal Solid Waste Landfill Main Building*

Site Overview

The Landfill Maintenance Building is 20,650 square feet and is located at 4330 Deans Bridge Road. The building serves as an office and a shop.

Lighting Systems

Interior lighting for the office area consists primarily of linear fluorescent T8 fixtures. The office area also has compact fluorescent fixtures in a few locations. The high bay shop area lighting consists of T5-HO fixtures. Exterior lighting is a mixture of metal halide and compact fluorescent fixtures.

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A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a two-story building with metal building construction for the walls and roof, which includes metal siding on the exterior and a thin layer of insulation. The bottom floor has CMU block on the interior of the metal building walls. The north-, east-, and south-facing walls of the office area have glazing that represents around 10% of the wall area. The shop area has roll-up doors that make up most of the wall area on the north and south walls.

Mechanical Systems

The office area of the building is conditioned with three split system heat pumps manufactured in 2008 or 2009 and one ductless split system heat pump manufactured in 2014. All condensing units are located on grade behind a metal fence near the front entrance to the building. Air handler AH-5 is located in a mechanical room on the second floor and is paired with two 3-ton condensing units (CU-5A and CU-5B). Air handler AH-9 is located in the same mechanical room as AH-5 and is paired with a 4-ton condensing unit (CU-5). Air hander AH-8 is in a separate mechanical room and is paired with a 4-ton condensing unit (CU-8). A 3/4-ton ductless split system serves a data closet.

The shop area is heated with 7 propane-fired unit heaters that are suspended from the ceiling.

Controls

The office area has three non-programmable thermostats: One in the open office area, one in the Assistant Director's Office, and one in the Manager's Office. The shop area has 7 non-programmable thermostats that control the unit heaters.

Miscellaneous Loads

The office area has desktop computers and LCD monitors, as well as printers and other office equipment. The shop has an air compressor and tools.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	72	8a-5p	8a-5p	8a-5p	8a-5p	8a-5p	Closed	Closed
UnOccupied	72	72	5p-8a	5p-8a	5p-8a	5p-8a	5p-8a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for the Landfill Maintenance Building.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods. Troughs occur during the shoulder months.

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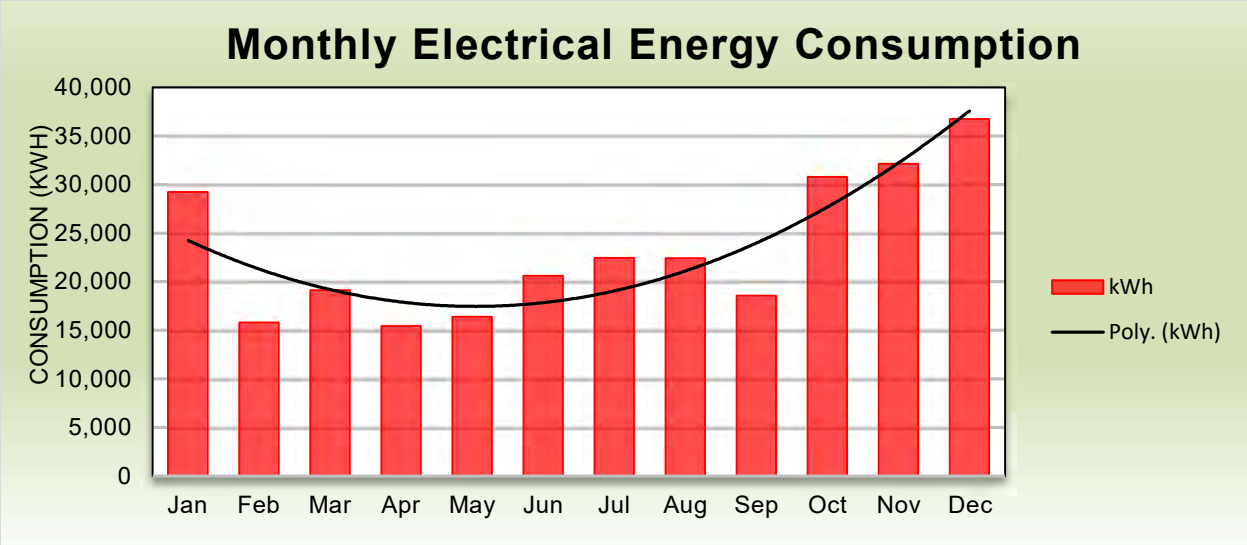
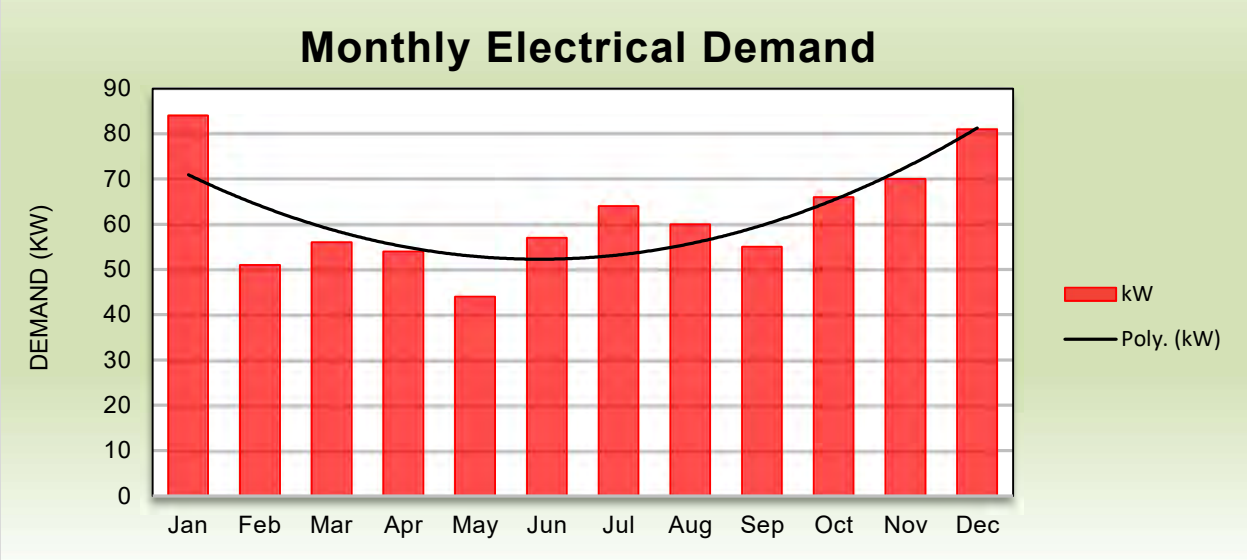


Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand peaks in winter months while remaining relatively flat during summer and shoulder months. Electric demand is highest during winter months due to the activation of electric-resistance auxiliary heat.



There is no natural gas at this building; however, there is a propane tank that supplies propane to the unit heaters. Trane was not able to obtain propane consumption data.

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2.59 Richmond County Municipal Solid Waste Landfill Scale House

Site Overview

The Landfill Scale House is around 680 square feet and is located at 4330 Deans Bridge Road. The building serves as an office.

Lighting Systems

No lighting audit was performed at this location, and thus, lighting information was not collected, as this location is not in scope for lighting upgrades.

Building Envelope

It is a single-story building with CMU walls with a brick façade. The roof is metal and pitched.

Mechanical Systems

The building is conditioned with a single 2.5-ton split system heat pump from 2007. The condensing unit is located on grade with no protective fence. The air handler has a high-efficiency filter and is located in a mechanical closet.

Controls

The building has a non-programmable thermostat that was installed between December 2019 and July 2020.

Miscellaneous Loads

The office area has two desktop computers and LCD monitors, a refrigerator, and a large truck scale.

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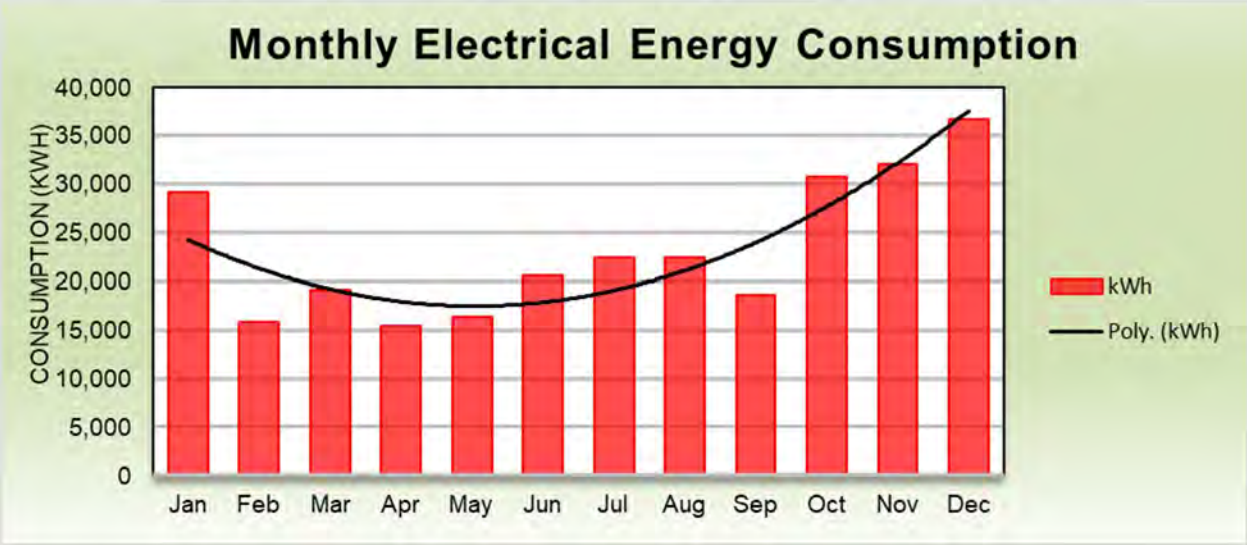
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	72	6a-5p	6a-5p	6a-5p	6a-5p	6a-5p	6a-12p	Closed
UnOccupied	72	72	5p-6a	5p-6a	5p-6a	5p-6a	5p-6a	6p-12a	Closed

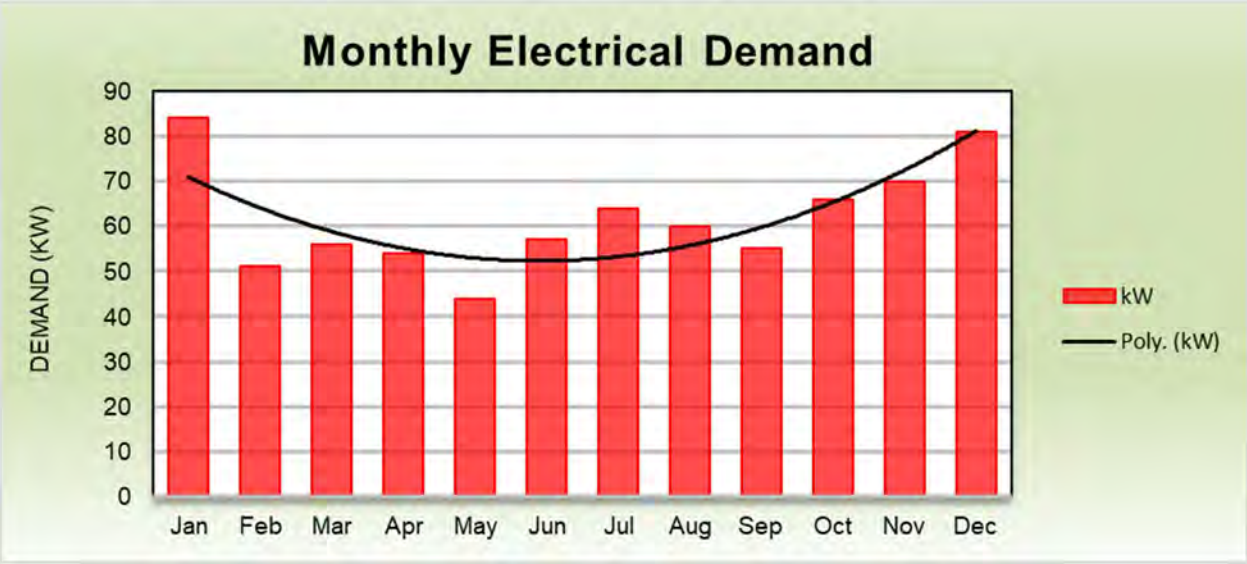
The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for the Scale House.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). This building has a profile consistent with the mechanical system at this location, having electric heating and cooling. Peaks in consumption are seen in the winter and summer as expected.



Monthly electrical demand (kW) is shown below, for the baseline year. The demand profile is consistent with that of the electrical consumption profile.



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There is no natural gas at this building.

2.60 Richmond County Sheriff's Office

Site Overview

The Richmond County Sheriff's Office is the largest full-service sheriff's office in Georgia. As the base of operations for the Office of the Sheriff, the mission of this building is to allow for the coordination of police activities with other law enforcement agencies to protect and serve the community. Located at 400 Walton Way, the building is approximately 40,000 square feet.

Lighting Systems

The interior lighting at the Richmond County Sheriff's Office is primarily made up of 1-lamp and 2-lamp T5 linear fluorescent lighting fixtures. There is also a good amount of multi-tube compact fluorescent lighting fixtures in hallways and restrooms. The exterior lighting is mostly a combination of ED17 and ED37 metal halide lighting fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The Sheriff's Office is a two-story brick building with a flat built-up roof. The building exterior has tall windows comprising approximately 25% of the façade. The exterior of the building is in good condition.

Mechanical Systems

The building is served by two variable volume air handling units and variable volume terminal units with hot water heating. Cooling for the air handling units is provided by an 80-ton Trane CGAM air-cooled chiller located on grade in the mechanical yard on the back side of the building. The chiller dates to 2011 and is in good condition. The system serving the first floor has ten VAV boxes, while the system serving the second floor has five zones. Hot water heating is provided to the terminal units from a 900 MBH Patterson Kelly condensing boiler manufactured in 2014 that is in good condition. Both air handling units date to 2011 and are in good condition.

Controls

The building's HVAC systems are controlled through a DDC control system by Reliable Controls. From the control system's front end, operating conditions can be monitored, with setting configured to optimize building operation.

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Miscellaneous Loads

The majority of the space miscellaneous loads are due to computers and standard office equipment in the building.

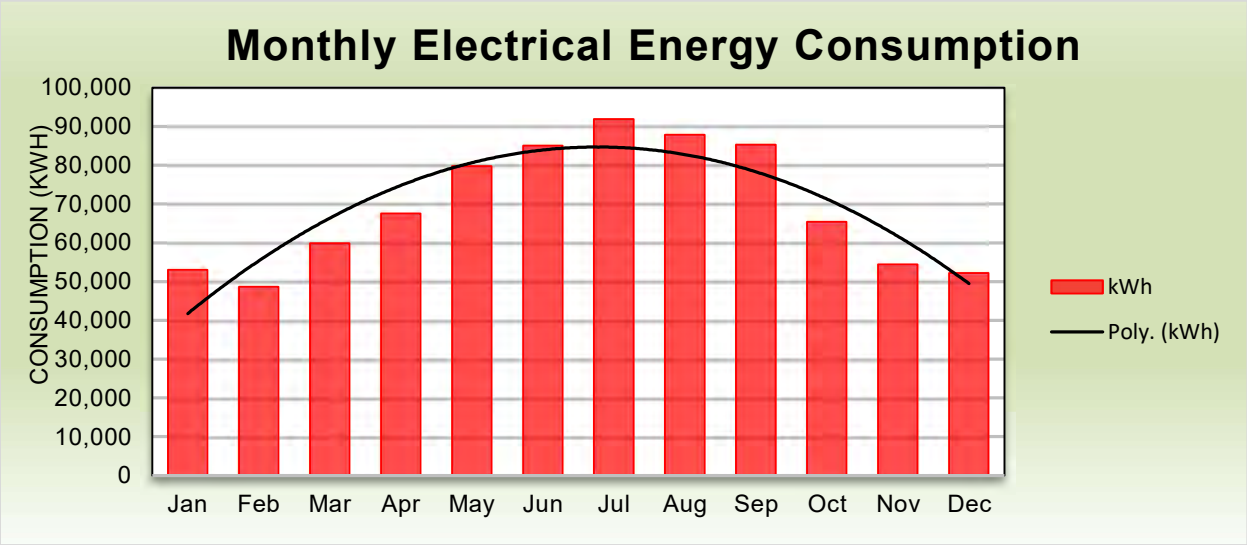
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	8a - 5p	8a - 5p	8a - 5p	8a - 5p	8a - 5p	Closed	Closed
UnOccupied	72	70	5p - 8a	5p - 8a	5p - 8a	5p - 8a	5p - 8a	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Richmond County Sheriff's Office.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for the Richmond County Sheriff's Office during the baseline year (October 2018 to September 2019). This profile at this location is consistent for a mechanical system with natural gas heating and electric cooling, with peaks in electricity consumption in the summer and troughs in the winter.



Monthly electrical demand (kW) is shown below, for the baseline year. The demand profile is consistent with that of the electricity consumption profile.

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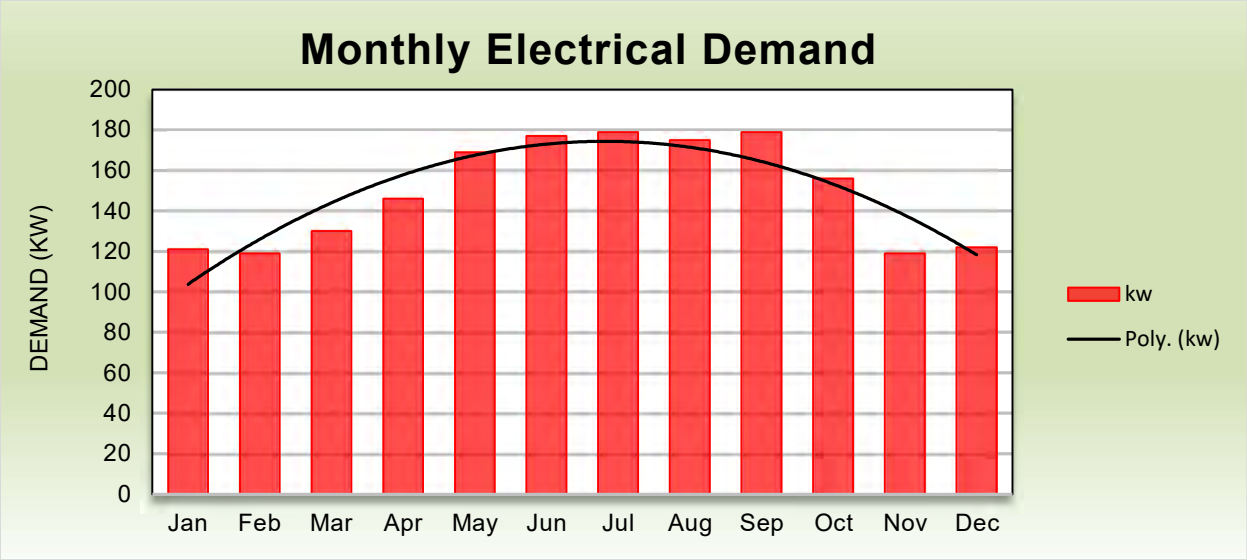
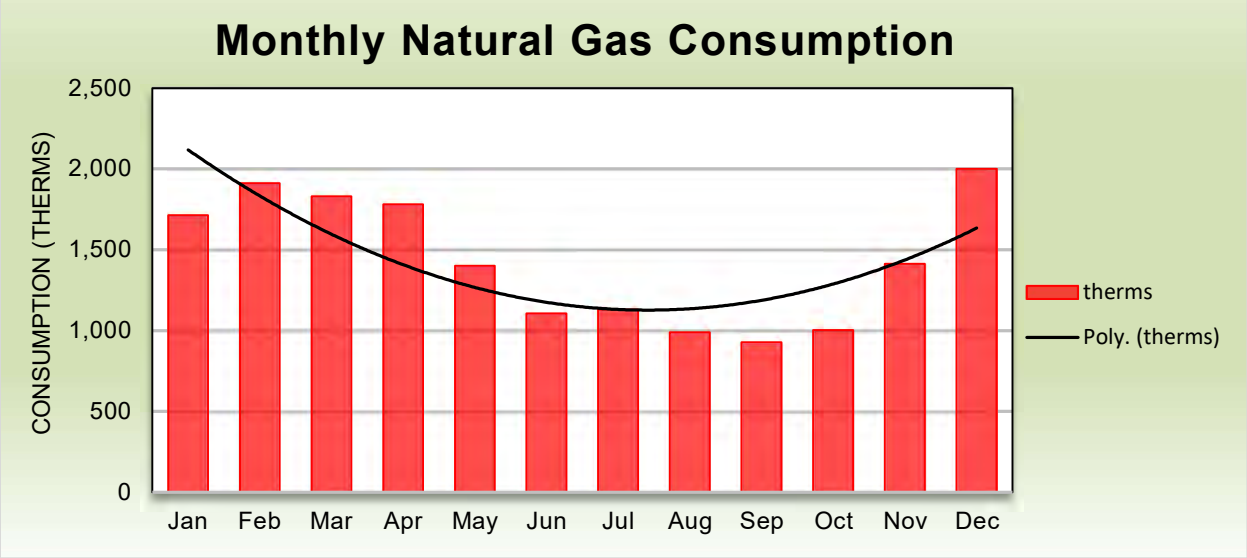


The natural gas profile is consistent for mechanical system with natural gas heating, with decrease in consumption during the summer and peaks during the winter.



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2.61 Richmond County Sheriff's Office South Precinct

Site Overview

The Richmond County Sheriff's Office South Precinct is one of two precincts that make up the Field Operations Division. The Field Operations Division works around the clock, providing assistance in life-threatening situations as well as patrols to assist in a variety of criminal, traffic, medical, and civil matters. The South Precinct is located at 3425 Mike Padgett Hwy and is approximately 14,000 square feet.

Lighting Systems

The interior lighting at the Richmond County Sheriff's Office South Precinct consists primarily of 2-lamp and 4-lamp T8 linear fluorescent lighting fixtures as well as single-lamp T9 circline fluorescent lighting fixtures. Exterior lighting is a mixture of ED17 metal halide, spiral compact fluorescent, and tubular halogen lighting fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The South Precinct is a single-story office building with block walls and a flat built-up roof. The building has minimal windows, mainly at the front entrance and at a clerestory in the middle portion of the building.

Mechanical Systems

There is an AHU split system with condensing unit and approximately 3 roof top units at this location. The roof was not accessible at the time of the adult, and thus information on the packaged units was not obtained.

Controls

Four thermostats were recorded at the time of the audit. One of these thermostats is a pneumatic Honeywell thermostat. The thermostat serving the Muster Room is a Totaline nonprogrammable thermostat. The third thermostat is a nonprogrammable Honeywell thermostat. The fourth thermostat is a nonprogrammable Totaline thermostat.

Miscellaneous Loads

Miscellaneous loads are from standard office equipment and the electric domestic water boiler.

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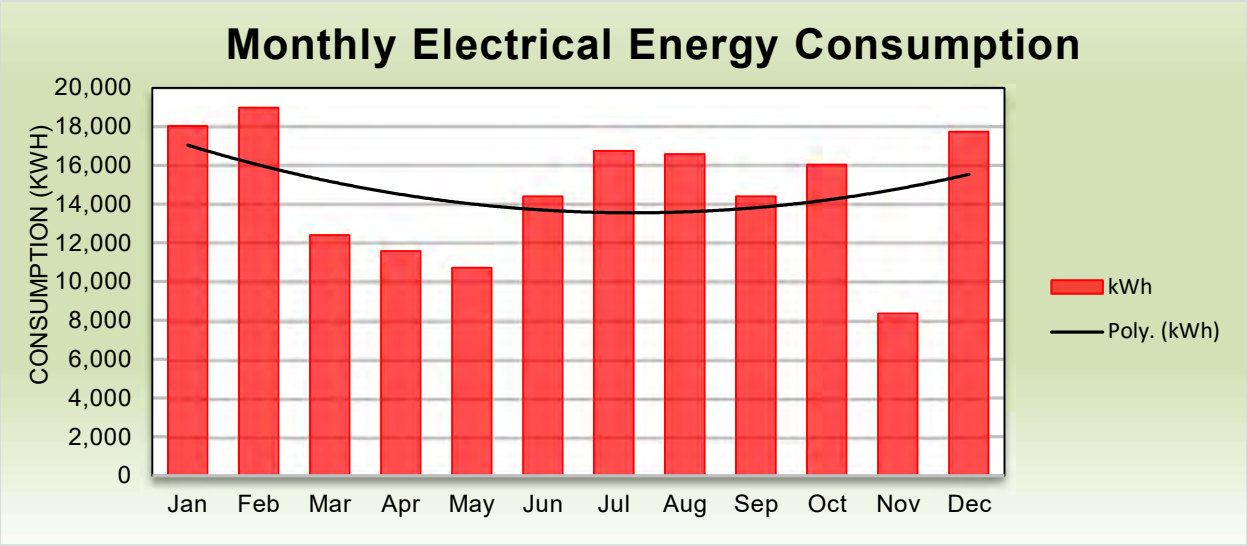
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	70	72	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	70	72	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Richmond County Sheriff's Office South Precinct.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for the Richmond County Sheriff's Office South Precinct during the baseline year (October 2018 to September 2019). This profile is consistent with mechanical systems that have electric cooling and heating, with peaks in consumption during the winter and summer.



Monthly electrical demand (kW) is shown below, for the baseline year. This profile is consistent with that of the electrical consumption profile.

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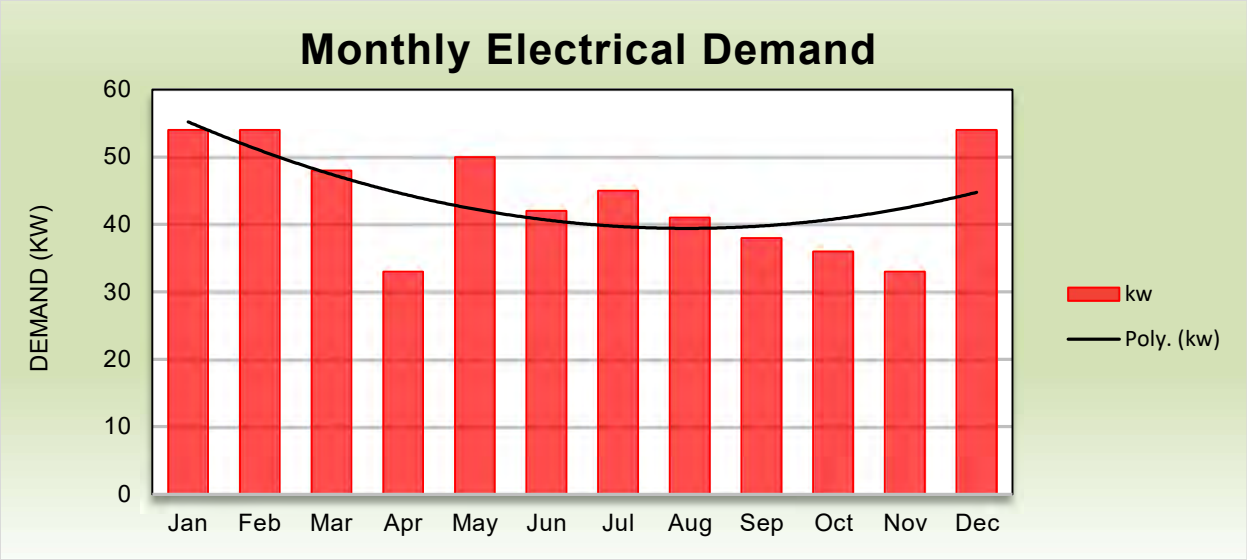

There is no natural gas at this location.

2.62 *Richmond County Sheriff's Special Ops Precinct*

Site Overview

The Special Ops Precinct is comprised of three separate buildings totaling approximately 14,000 square feet. Located on a secluded lot off Alvin Mitchell Drive about 0.5 mile west of Mike Padgett Hwy, this facility operates as a part of the Field Operations Division. Special Ops consists of units specializing in Crime Suppression, Bomb Squad, a K-9 Unit, and River Patrol.

Lighting Systems

This location was not in scope for lighting upgrades and thus no information on the current lighting system was collected at this location.

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Building Envelope

The Special Ops Precinct consists of three single-story buildings with light-colored siding and sloped metal roofs. The buildings have double-hung windows along each side and the envelope appears to be in fair condition.

Mechanical Systems

The buildings are served by split systems with condensing units on grade and fan coil units inside the buildings. The fan coil units have gas heat. All of the split systems were noted to be in good condition, as they are relatively new.

Controls

There are three nonprogrammable Honeywell thermostats throughout the building, one in Building B, one in Building A, and one in Building B.

Miscellaneous Loads

Miscellaneous loads at this location are from standard office equipment.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	71	72	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	71	72	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Special Ops Precinct.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for the Special Ops Precinct during the baseline year (October 2018 to September 2019). The profile below shows peaks in electrical consumption during summer months, as well as slight increase in consumption during winter months. Although not recorded at the time of the audit, it is possible there is also electric heating at this location in addition to the natural gas heating. The peaks in consumption during July 2019 through September 2019 are not consistent with previous years.

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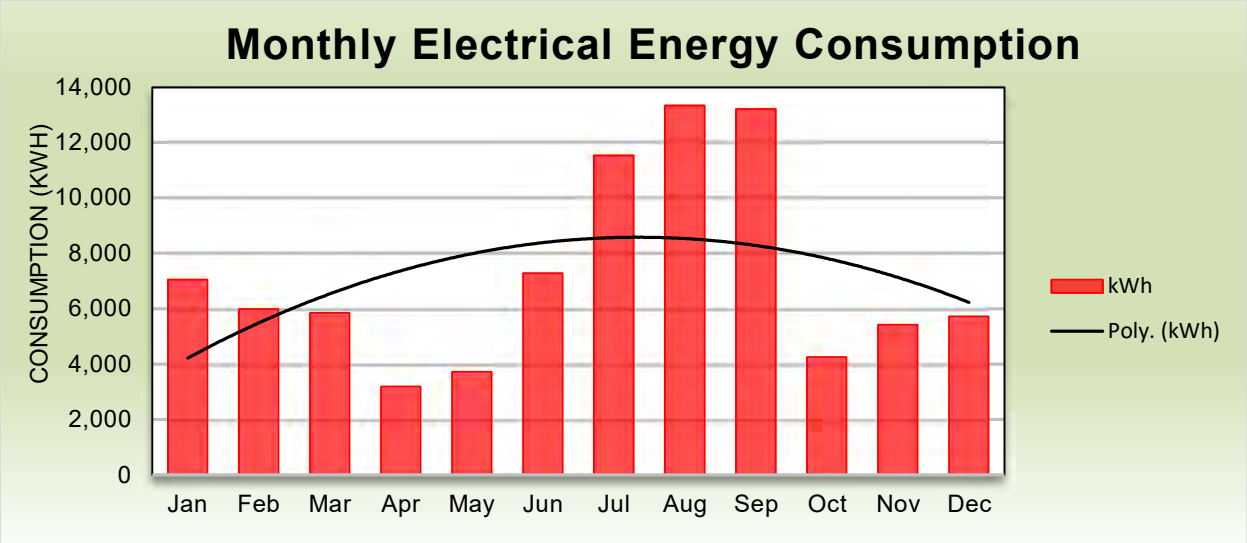
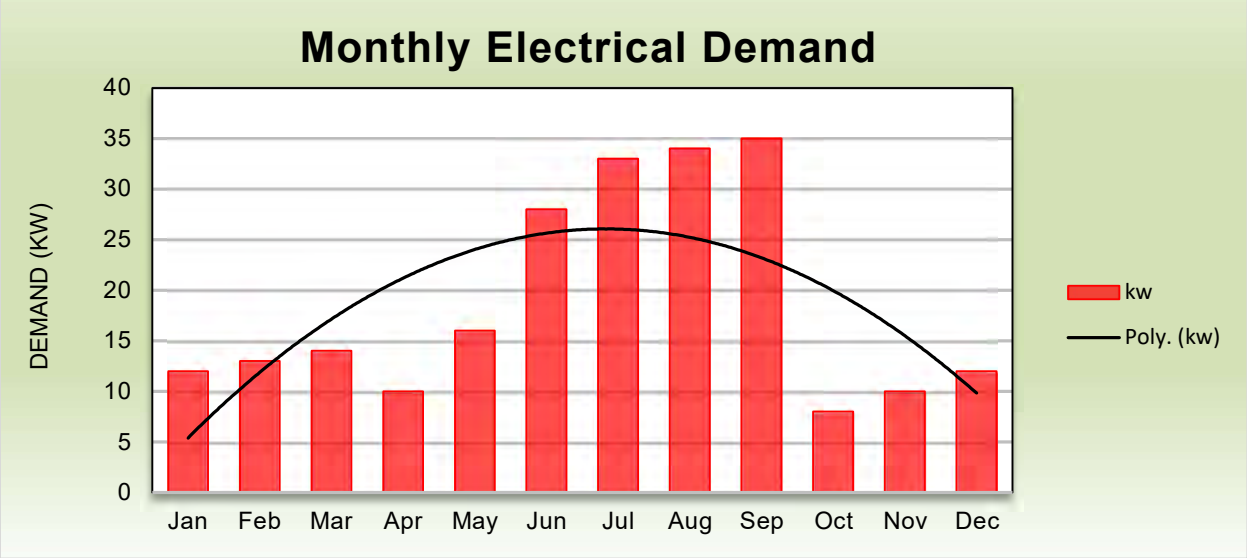


Monthly electrical demand (kW) is shown below, for the baseline year. The demand profile is consistent with that of the electrical consumption profile.



Below is the natural gas consumption profile for the baseline year. This profile is consistent with a building that has electric cooling and natural gas heating with peaks in gas consumption during the winter and decreased gas consumption during the summer. The increase in consumption in February 2019 is not consistent with February 2018. The reason for the spike in consumption is unknown.

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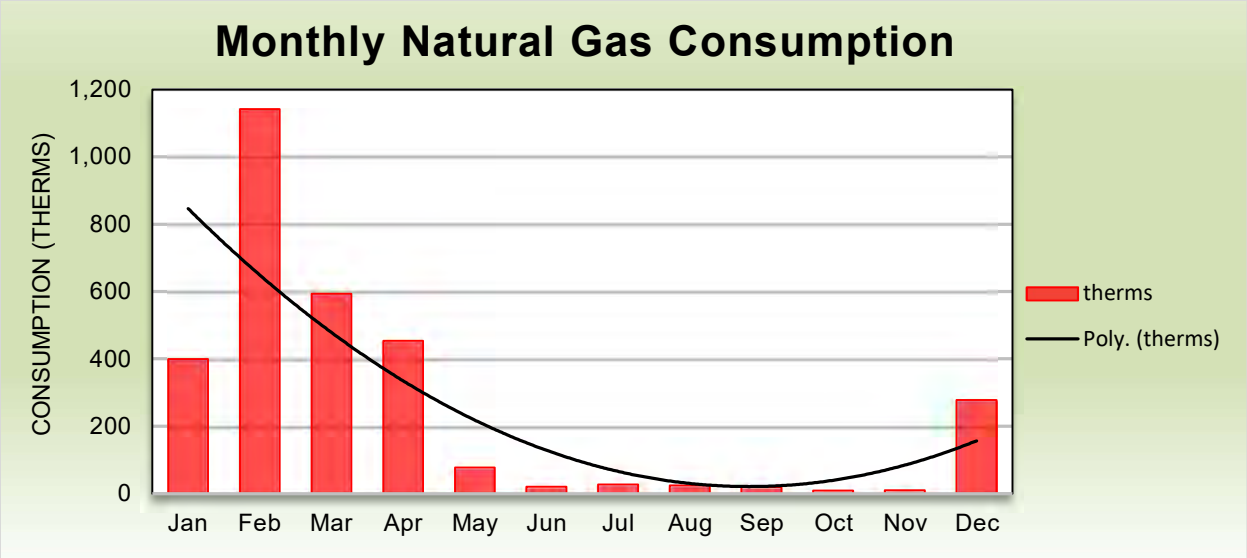

2.63 *Richmond County Sheriff's Training Center Administration Building*

Site Overview

Richmond County Sheriff Training Center – Administration Building is 1,166 square feet and is located at 2092 Greenland Road. The building serves as an office. Spaces include reception, offices, break room, restroom, and copy room.

Lighting Systems

Interior lighting is provided by 2-lamp linear fluorescent T8 fixtures and incandescent fixtures in the restroom. Exterior lighting is provided by LED PAR38 fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

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Building Envelope

This building is a double-wide mobile home. Exterior walls are wood-framed with exterior wood siding, cavity insulation, and interior gypsum board finish. The wall facing the parking lot has double-pane windows with a window-to-wall ratio of around 15%. The roof is pitched with asphalt shingles and a vented attic.

Mechanical Systems

The building is conditioned with a heat pump packaged unit with an approximate capacity of 3 tons.

Controls

There is one non-programmable thermostat.

Miscellaneous Loads

The building has several desktop computers and LCD monitors, copy machine, coffee maker, microwave, and a refrigerator.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	74	73	9a-5p	9a-5p	9a-5p	9a-5p	9a-5p	Closed	Closed
UnOccupied	74	73	5p-9a	5p-9a	5p-9a	5p-9a	5p-9a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for the Administration Building.

Utility Analysis

Trane was unable to obtain electrical consumption or electrical demand data at this location.

There is no natural gas at this building.

2.64 Richmond County Sheriff's Training Center Bunk House

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Site Overview

Richmond County Sheriff Training Center – Bunk House is 3,000 square feet and is located at 2092 Greenland Road. The building serves as a dormitory.

Lighting Systems

Interior lighting consists primarily of linear fluorescent T12 fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a single-story building with masonry wall constructed of CMU block and a pitched roof with asphalt shingles.

Mechanical Systems

The building is conditioned with a 5-ton split system heat pump and a 5-ton split system with electric-resistance heat. Both condensing units are located on grade.

Controls

There are two non-programmable thermostats.

Miscellaneous Loads

The building has minimal miscellaneous loads.

Operating Schedule Description

The Bunk House is occupied sporadically. Thus, there is no set period of occupancy schedule at this location.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods. Troughs occur during the shoulder months. Electricity usage varies from month to month due to inconsistent building occupancy.

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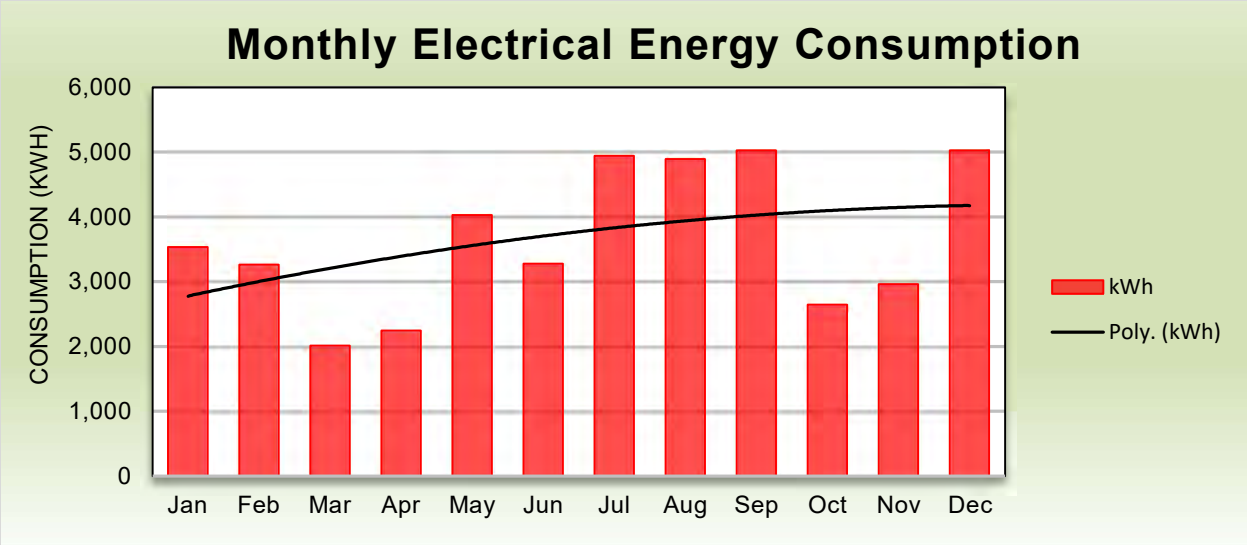
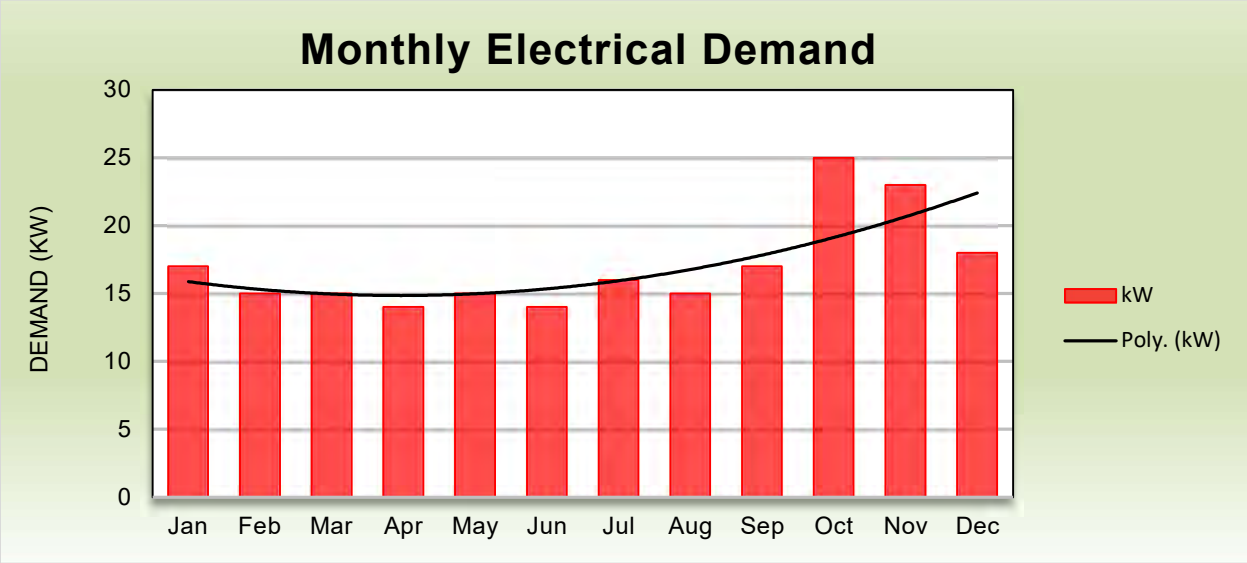


Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand is flatter than what would be expected for a building with electric heating and cooling.



There is no natural gas at this building.

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2.65 *Richmond County Sheriff's Training Center Dog Kennel*

Site Overview

The Richmond County Training Center Dog Kennel is part of the Sheriff's Training facility located in Blythe, Georgia. This location is where the K-9 unit dogs are housed.

Lighting Systems

Only the storage audit had lighting information recorded at the time of the audit. The storage area had all T12 lighting fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

No information on the building envelope was collected at this location, as it is not in scope.

Mechanical Systems

No mechanical system information was recorded at this location, as it is not in scope.

Controls

No control system information was recorded at this location, as it is not in scope.

Miscellaneous Loads

There are no miscellaneous loads other than lighting at this location.

Operating Schedule Description

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	24/7	24/7	24/7	24/7	24/7	24/7	24/7

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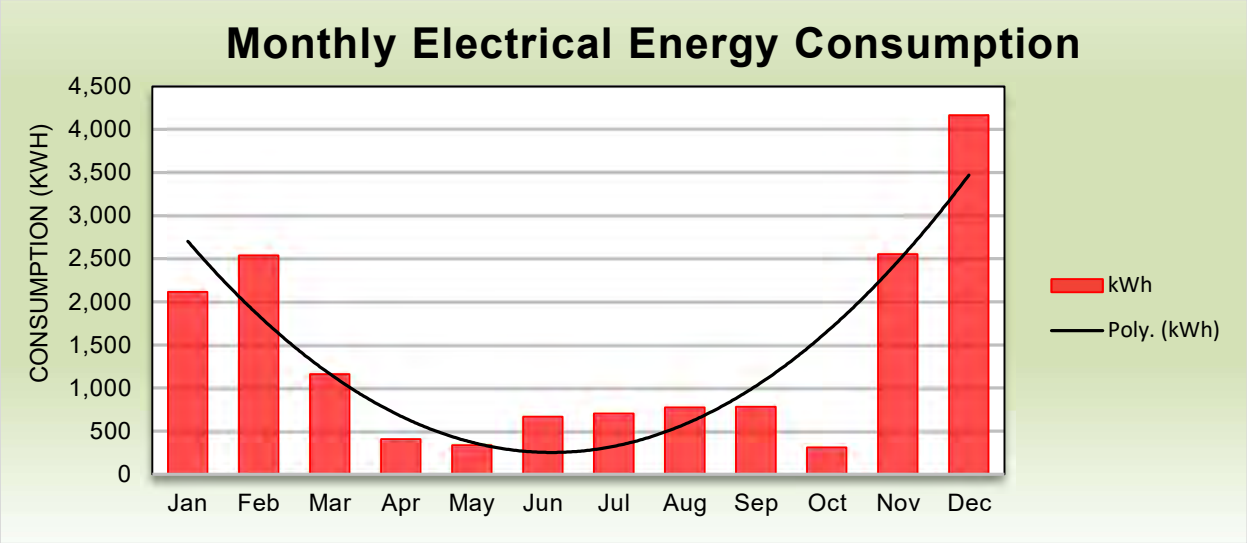
	Mon	Tues	Wed	Thu	Fri	Sat	Sun
UnOccupied	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The table above describes the hours of occupancy for Richmond County Sheriff's Training Center Dog Kennel.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). This profile is consistent with a mechanical system that has electric cooling and heating with electricity consumption peaks in the winter and summer months.



This building is billed for electricity on the General Service – Commercial rate structure, which does not use electric demand to adjust electricity pricing and electric demand is not provided in electric bills.

There is no natural gas at this location.

2.66 Richmond County Sheriff's Training Center EVOC Training Office

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Site Overview

The Richmond County Sheriff's Training Center EVOC Office is located at 2092 Greenland Avenue. This location is used as an office space and is approximately 1,980 square feet.

Lighting Systems

Interior lighting at this location is primarily T12 linear fluorescent fixtures with some incandescent fixtures as well. Exterior lighting is a combination of 100-watt halogen, 70-watt high pressure sodium, and incandescent fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The EVOC Office has vinyl and wood siding with double paned glass windows. Interior walls are painted sheet rock. The roof is a pitched shingle roof.

Mechanical Systems

There is one Rheem split system air handling unit paired with a Mitsubishi ductless split condensing unit that provides 2 tons of cooling to the building. This unit also provides heating for the building. There is also one electric domestic water boiler at this location.

Controls

There is one nonprogrammable Honeywell thermostat that controls the HVAC system.

Miscellaneous Loads

Majority of miscellaneous loads at this location come from office equipment.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	74	70	8a – 5p	8a – 5p	8a – 5p	8a – 5p	8a – 5p	Closed	Closed
UnOccupied	74	70	5p – 8a	5p – 8a	5p – 8a	5p – 8a	5p – 8a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Richmond County Sheriff's EVOC Office.

Utility Analysis

Trane was unable to obtain electrical consumption or electrical demand data at this location.

There is no natural gas at this building.

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2.67 Richmond County Sheriff's Training Center Mess Hall

Site Overview

Richmond County Sheriff Training – Dining Hall is 2,772 square feet and is located at 2092 Greenland Road. The building serves as a cafeteria with a kitchen and dining area.

Lighting Systems

Interior lighting consists of 4-lamp linear fluorescent T12 and incandescent fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a single-story building with masonry wall constructed of CMU block and a pitched roof with asphalt shingles. The west-facing wall has a significant amount of glazing with a window-to-wall ratio of approximately 40%. The south-facing wall has a window-to-wall ratio of around 10%. The north-facing wall has a window-to-wall ratio of roughly 40%.

Mechanical Systems

The building is conditioned with a 3-ton split system paired with a propane-fired upflow furnace, a ductless split system heat pump with a wall-mounted fan coil, and a 1.25-ton window hung packaged unit. The condensing unit for the split system was manufactured in 2014 and the ductless split condensing unit was manufactured in 2005.

Controls

There are two programmable thermostats. The thermostat that controls the ductless split system was showing an error during the second site visit.

Miscellaneous Loads

The building has 7 ceiling fans, ice maker, propane range/oven with a ventilation hood, refrigerator, and warming trays.

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Operating Schedule Description

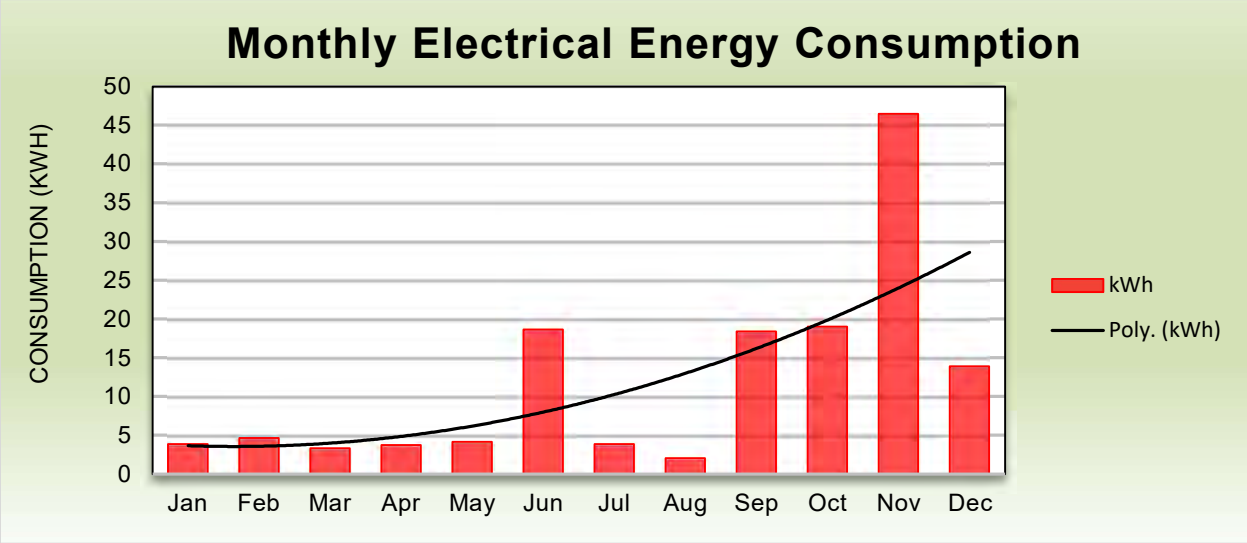
This location serves 2 meals a day. The set schedule at this location was not known. Thus, the following schedule was used as an assumption.

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	71	6a-1p	6a-1p	6a-1p	6a-1p	6a-1p	Closed	Closed
UnOccupied	82	71	1p-6a	1p-6a	1p-6a	1p-6a	1p-6a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for the Dining Hall.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The electricity usage shown in the chart below does not appear correct for this building. The building is roughly 3,850 square feet in size, and the electricity consumption is low relative to building size. The data is also not representative of the heating and cooling system at this location. All heating and cooling at this location is provided electrically, thus, the profile should reflect increase in use during peak summer months and winter months. It is likely the meter at this location is reading incorrectly or there is an additional meter at the location not represented in this data.



There is no natural gas at this building. However, there is a propane tank that supplies the furnace and cooking equipment. Trane was not able to obtain propane data at this location.

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2.68 Richmond County Sheriff's Training Center Myers Building

Site Overview

Richmond County Sheriff Training – Myers Building is 5,200 square feet and is located at 2092 Greenland Road. The building serves as a classroom.

Lighting Systems

Interior lighting consists of linear fluorescent T12 fixtures. Exterior lighting is provided by high pressure sodium and halogen fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a single-story building with masonry wall constructed of CMU block and a pitched roof with asphalt shingles. The east-facing wall has nine windows and a window-to-wall ratio of less than 10%. The north-facing wall has one window. The west-facing wall has two windows. The south-facing wall has no windows.

Mechanical Systems

The building is conditioned with two 5-ton split system heat pumps from 2018 and three 2-ton ductless split system heat pumps that are roughly 15 years old. All condensing units are located on grade.

Controls

There are two non-programmable thermostats.

Miscellaneous Loads

The building has minimal miscellaneous loads.

Operating Schedule Description

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	9a-5p	9a-5p	9a-5p	9a-5p	9a-5p	Closed	Closed
UnOccupied	5p-9a	5p-9a	5p-9a	5p-9a	5p-9a	Closed	Closed

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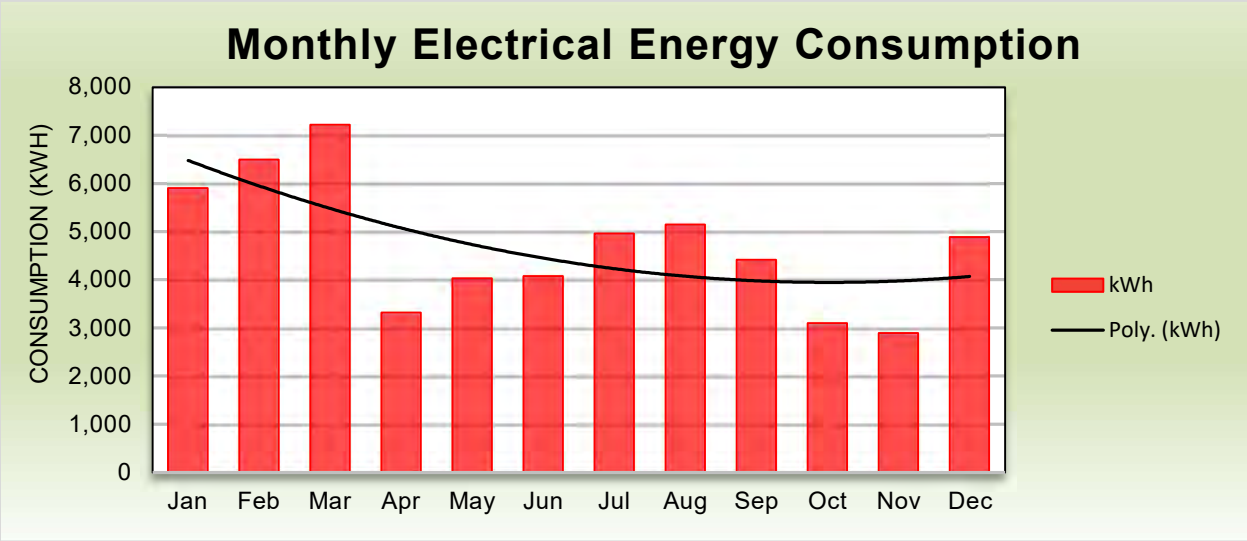
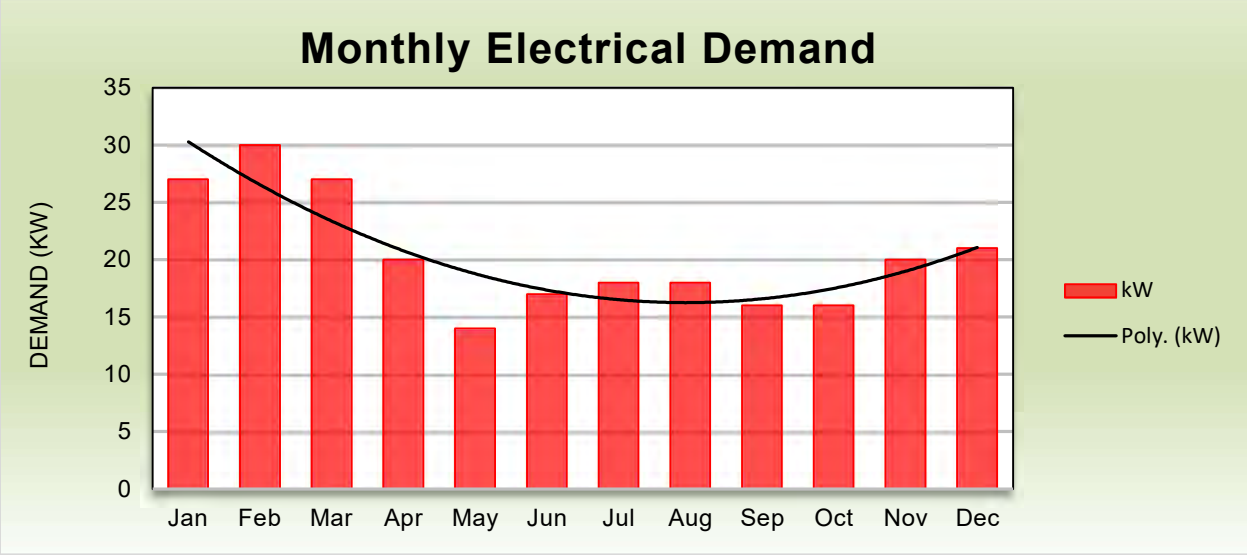
The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for the Myers Building.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods. Troughs occur during the shoulder months.



Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand peaks in winter months while remaining relatively flat during summer and shoulder months. Electric demand is highest during winter months due to the activation of electric-resistance auxiliary heat.



There is no natural gas at this building.

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2.69 Richmond County Sheriff's Training Center Shop

Site Overview

The Richmond County Sheriff's Training Center Shop is located at 2092 Greenland Avenue. This location is used a shop to w.

Lighting Systems

Interior lighting at this location consists of T8 linear fluorescent fixtures. Exterior lighting is a combination of 70-watt high pressure sodium and 300-watt halogen fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The Shop has concrete block exterior and a pitched shingle roof.

Mechanical Systems

No mechanical equipment was recorded at this location, as it was not in scope as an energy conservation measure at this location.

Controls

Building controls were not in scope at this location and thus no control systems was recorded at this location.

Miscellaneous Loads

Miscellaneous loads at this location are predominantly from power tools used onsite.

Operating Schedule Description

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	8a – 5p	8a – 5p	8a – 5p	8a – 5p	8a – 5p	Closed	Closed
UnOccupied	5p – 8a	5p – 8a	5p – 8a	5p – 8a	5p – 8a	Closed	Closed

The table above describes the hours of occupancy for the Richmond County Sheriff's Training Center Shop.

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Utility Analysis

Trane was unable to obtain electrical consumption or electrical demand data at this location.

There is no natural gas at this building.

2.70 Sand Hill Community Center

Site Overview

Sand Hills Community Center is 8,500 square feet and is located at 2540 Wheeler Road. The building serves as a community center. Spaces include a Fitness Room, Game Room, Sheriff's Substation, Kitchen, Multipurpose Room, Computer Lab, and Offices.

Lighting Systems

Interior lighting consists primarily linear fluorescent T8 with a small quantity of compact fluorescent, incandescent, and metal halide fixtures. Exterior lighting is a mixture of linear fluorescent T8, high pressure sodium, and metal halide. Parking lot lighting is LED.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a single-story building with masonry walls constructed of CMU block with a brick façade. The roof is pitched with asphalt shingles. The attic is vented with fiberglass batt insulation along the attic floor. The front entrance has floor-to-ceiling glazing. The remaining walls have a window-to-wall ratio of 5 to 10%.

Mechanical Systems

The building is conditioned with three split system heat pumps with condensing units located on grade behind a chain-link fence. IHP/OHP-1 is a 10-ton system that serves the Multipurpose Room from 2011 and its air handler is located in the attic. IHP/OHP-2 is a 4-ton system that serves the Fitness Room from 2017 and its air handler is in a mechanical closet near the Fitness Room. IHP/OHP-3 is a 5-ton system that serves the Hallway and Offices from 2004 and its air handler is in a mechanical closet near the offices.

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Controls

There are three non-programmable thermostats: One in the hallway near the offices, one in the Multipurpose Room, and one in the hallway near the Fitness Room. All thermostats were in emergency heating mode during the first site visit in December 2019.

Miscellaneous Loads

There is a television in the Multipurpose Room; a drink vending machine in the hallway; six desktop computers, six LCD monitors, and a CRT TV in the Computer Lab; and three desktop computers and monitors in the offices/Sheriff's Substation. The kitchen was not accessed during the site visit, but it is assumed to have an electric range/oven with a commercial hood and a refrigerator.

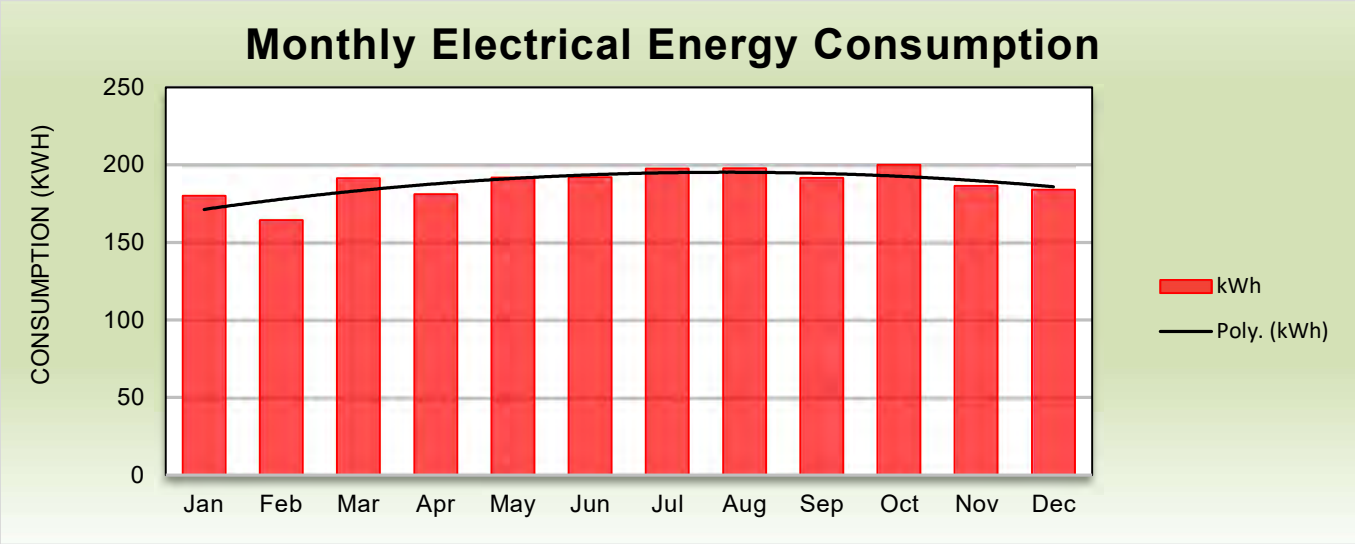
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	72	9a - 5p	9a - 5p	9a - 5p	9a - 5p	9a - 5p	Rentable	Rentable
UnOccupied	72	72	5p – 9a	5p – 9a	5p – 9a	5p – 9a	5p – 9a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for the building. This facility is available for rental.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for the year of 2018. Baseline data for the period of October 2018 through September 2019 was not available at this location. The electricity data shown in the chart below does not represent the total electricity consumption for this building, as it the consumption is low relative to building size. Likely the meter is inaccurate, or meter information is missing at this location.



There is no natural gas at this building.

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2.71 Sign Shop AED

Site Overview

The traffic engineering division sign shop is located at 452 Walker Street. This shop oversees production of Richmond County's street signs as well as electronic and traffic control equipment.

Lighting Systems

Interior lighting at this location is primarily T12 and T8 linear fluorescent fixtures with some 200-watt incandescent fixtures. Exterior lighting is all 100-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The sign shop is a metal building with flat metal roof. There are no windows at this location.

Mechanical Systems

There is one split system air handling unit paired with a Frigidaire condensing unit at the Traffic Engineering Sign Shop.

Controls

There is one Pro thermostat which controls the HVAC system.

Miscellaneous Loads

Majority of miscellaneous loads at this location come from office equipment and equipment used to make signs.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	67	75	8a – 4:30p	8a – 4:30p	8a – 4:30p	8a – 4:30p	8a – 4:30p	Closed	Closed
UnOccupied	67	75	4:30p – 8a	4:30p – 8a	4:30p – 8a	4:30p – 8a	4:30p – 8a	Closed	Closed

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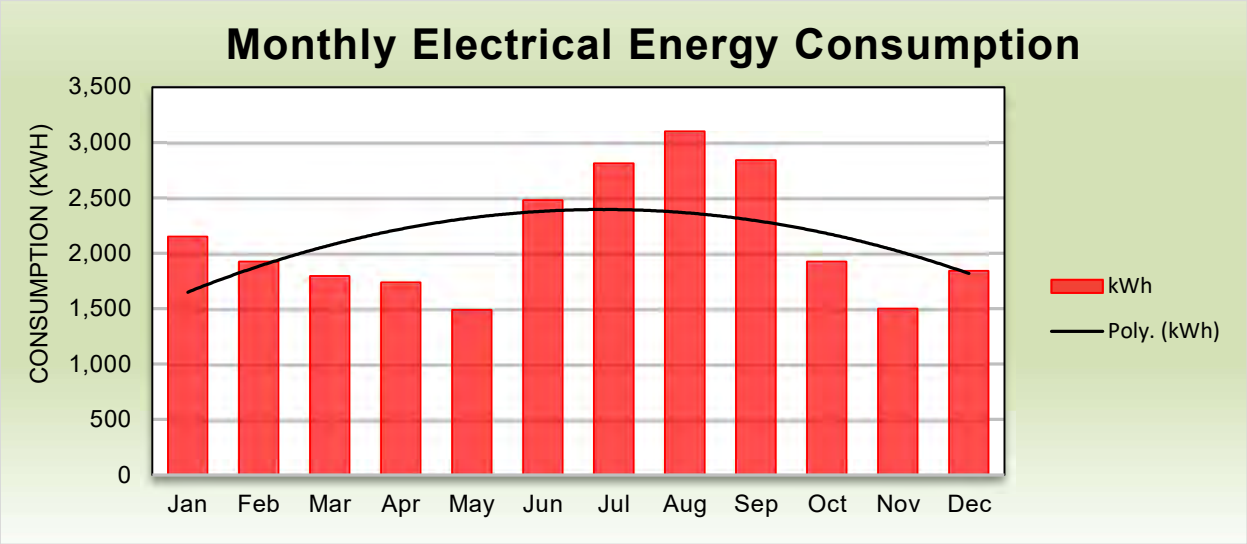
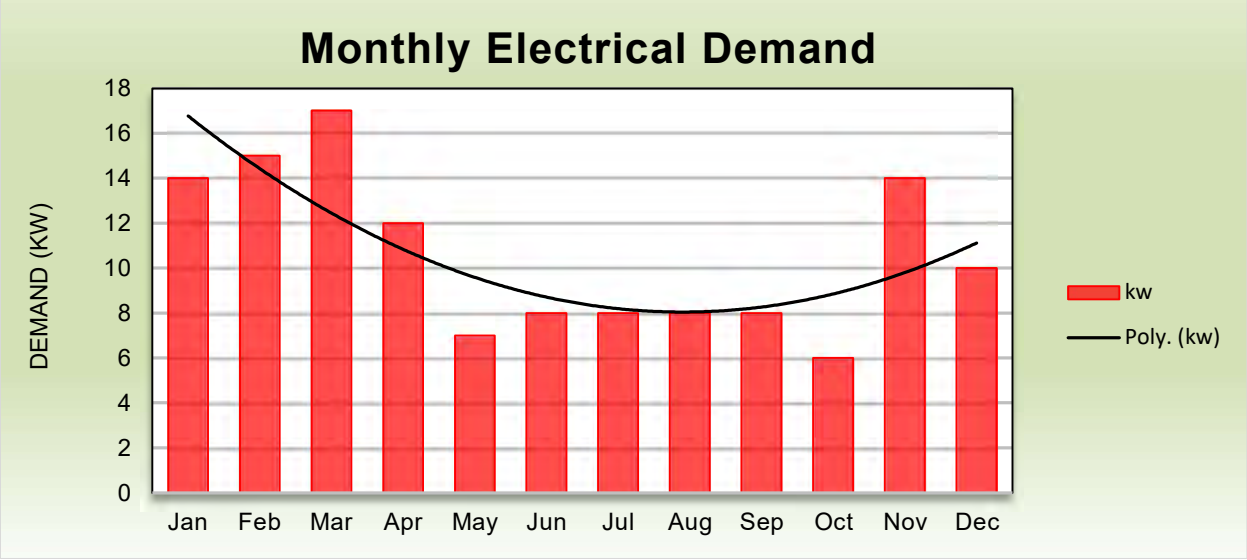
The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Traffic Engineering Sign Shop.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). This profile is consistent of mechanical systems with electric heating and cooling, with peaks in the summer and winter.



Monthly electrical demand (kW) is shown below, for the baseline year. The demand profile is consistent with that of the electrical consumption profile.



There is not natural gas at this location.

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2.72 The Boathouse

Site Overview

The Boathouse is 11,500 square feet and is located at 101 Riverfront Drive. The building serves as an event space and boat storage area. Spaces in the building include two multipurpose rooms, kitchen, an office, boat storage, and workout room.

Lighting Systems

Majority of interior fixtures at the Boathouse are T12 linear fluorescent lighting fixtures. There are also a few less than 65-watt incandescent luminaires and compact fluorescents. Exterior lighting is a combination of 60- to 65-watt incandescent and 70-watt metal halide fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The Boathouse is a two-story building with a basement and wood-framed construction. Exterior walls have wood siding, wall cavity with unknown insulation content, and interior gypsum board finish. The roof is pitched with asphalt shingles. The north-, east-, and west-facing walls overlooking the river have a significant amount of glazing with a window-to-wall ratio of around 40%.

Mechanical Systems

The two multipurpose rooms are conditioned by two large packaged units (15 ton and 20 ton) from 2002 with gas heat located on a wooden deck that has structural damage. The remainder of the building is conditioned by five split system heat pumps. Three condensing units are located on grade without a protective fence, and two condensing units are located on the wooden deck. The 2-ton system serving the upstairs office has a condensing unit manufactured in 1999 and the 2.5-ton system serving the lower-level Workout Room has a condensing unit manufactured in 1996. The remaining condensing units were manufactured after 2013.

Controls

There are 7 non-programmable thermostats.

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Miscellaneous Loads

The Kitchen has a gas range/oven with a commercial exhaust hood and make-up air unit, a large ice maker, commercial refrigerator, and walk-in cooler with remote condensing unit.

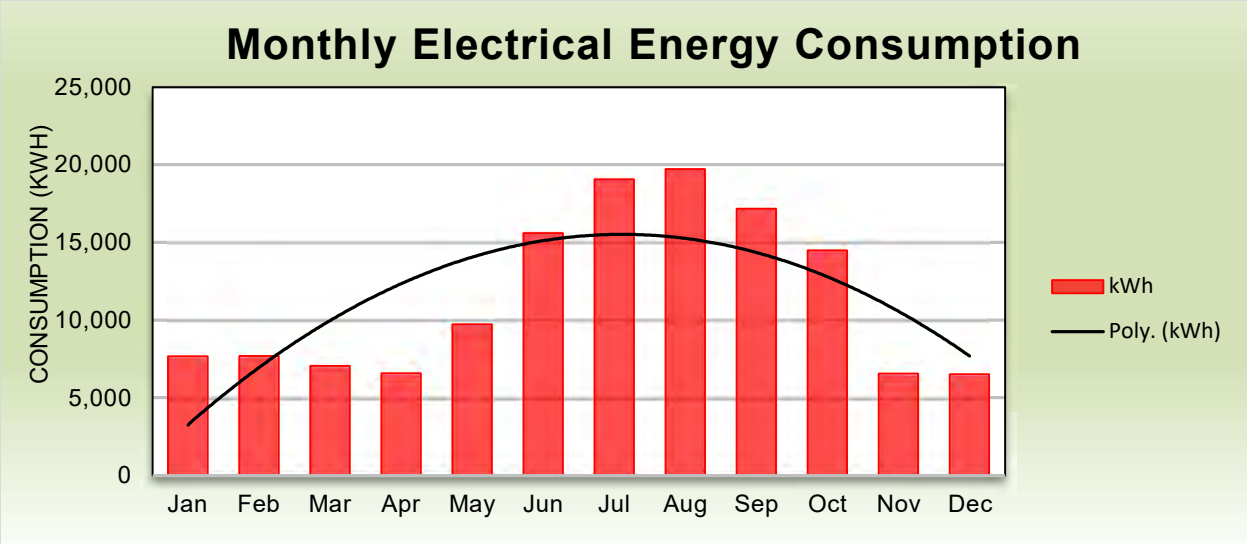
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	70	9a-5p	9a-5p	9a-5p	9a-5p	9a-5p	Rentable	Rentable
UnOccupied	72	70	5p-9a	5p-9a	5p-9a	5p-9a	5p-9a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for The Boathouse. This facility is primary used as an event space that is available for rental.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric cooling and heating that is mostly gas. Peaks occur during the summer due to the increased cooling energy use.



Monthly electric demand (kW) for the baseline year is shown in the chart below. Electric demand peaks in the summer. The electric demand from the five s

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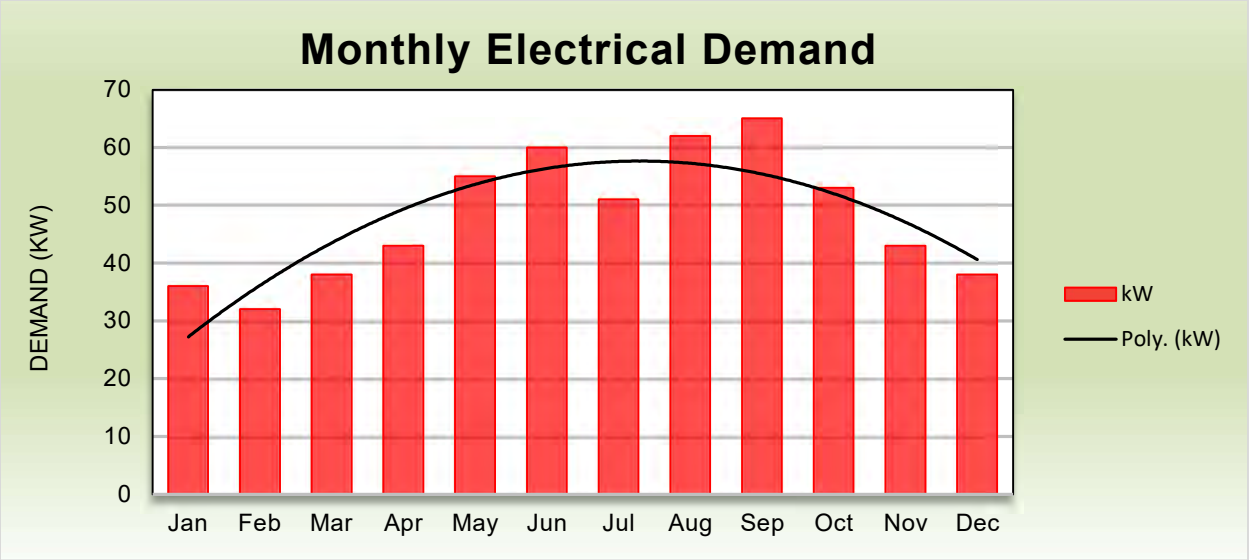
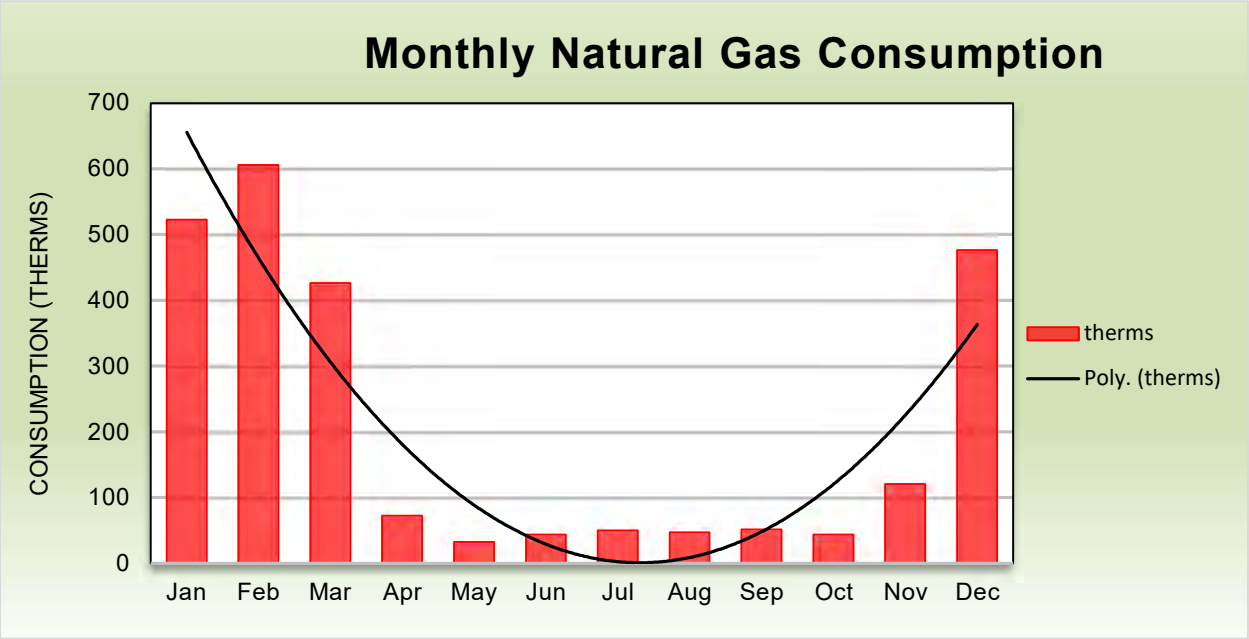


The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and remains flat during summer months. This usage profile is consistent with a building that has gas heat and gas domestic hot water.



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2.73 Traffic Engineering Street Lighting

Site Overview

The Traffic Engineering Street Lighting building is a shop building that is used by the Traffic Engineering Division in its mission of maintaining and enhancing Augusta's roadways. This single-story building, located at 1559 Eagles Way, is a prefabricated metal building of approximately 9,000 square feet.

Lighting Systems

The interior lighting at the Traffic Engineering Street Lighting building is primarily made up of T12 linear fluorescent lighting fixtures. The exterior lighting consists of two 175-watt metal halide lighting fixtures and a single incandescent lighting fixture.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The building is prefabricated metal, with a block façade on the front where the offices are located. The building has a couple of metal overhangs to allow for a truck to park and load/unload. There are no windows, but the building has a roll-up door to allow access for large equipment into the shop area. The exterior of the building is in fair condition.

Mechanical Systems

The building is served by a 3-ton packaged Rheem unit located on grade as well as a 4-ton Ruud split system with the condensing unit mounted on grade. The packaged unit has gas heating. Both systems were manufactured in 2015 and are in fair condition.

Controls

No information on controls was collected, as controls is not in scope at this location.

Miscellaneous Loads

Interior equipment information was not collected at the time of the audit, thus miscellaneous loads at this location are unknown.

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Operating Schedule Description

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	8a – 4:30p	8a – 4:30p	8a – 4:30p	8a – 4:30p	8a – 4:30p	Closed	Closed
UnOccupied	4:30p – 8a	4:30p – 8a	4:30p – 8a	4:30p – 8a	4:30p – 8a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Traffic Engineering Street Lighting.

Utility Analysis

Trane was unable to obtain utility data at this location.

2.74 Wallace Branch Library

Site Overview

The Wallace Branch Library is a public library and one of the six libraries that are part of the Augusta-Richmond County Library System. This single-story library is approximately 5,620 square feet and is located at 1237 Laney Walker Blvd.

Lighting Systems

The interior lighting at the Wallace Branch Library is mostly 4-lamp T8 linear fluorescent lighting fixtures, though there are also some 2-lamp and 4-lamp T12 linear fluorescent lighting fixtures there as well. The exterior lighting is a combination of ED17 and ED28 metal halide lighting fixtures as well as compact fluorescent lighting fixtures.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

The building has a brick and stone façade and a flat built-up roof. The front side of the building has floor to ceiling glazing, while the remaining three sides of the building have no windows. The interior walls surfaces are sheetrock, with lots of natural light from the large windows. The exterior of the building is in good condition.

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Mechanical Systems

The building is served by two split systems, with condensing units on the roof and furnaces in the mechanical room. Each system has a pair of twinned furnaces with gas heating, which were in fair condition and date to 2010.

Controls

Each split system is controlled by a wall mounted thermostat enclosed in a clear plastic cover. These thermostats are programmable and appear to be in fair condition.

Miscellaneous Loads

The majority of the miscellaneous loads for this building are due to the computers for the office staff as well as for the computer lab in the main area. There are also a few printer/copiers in the building.

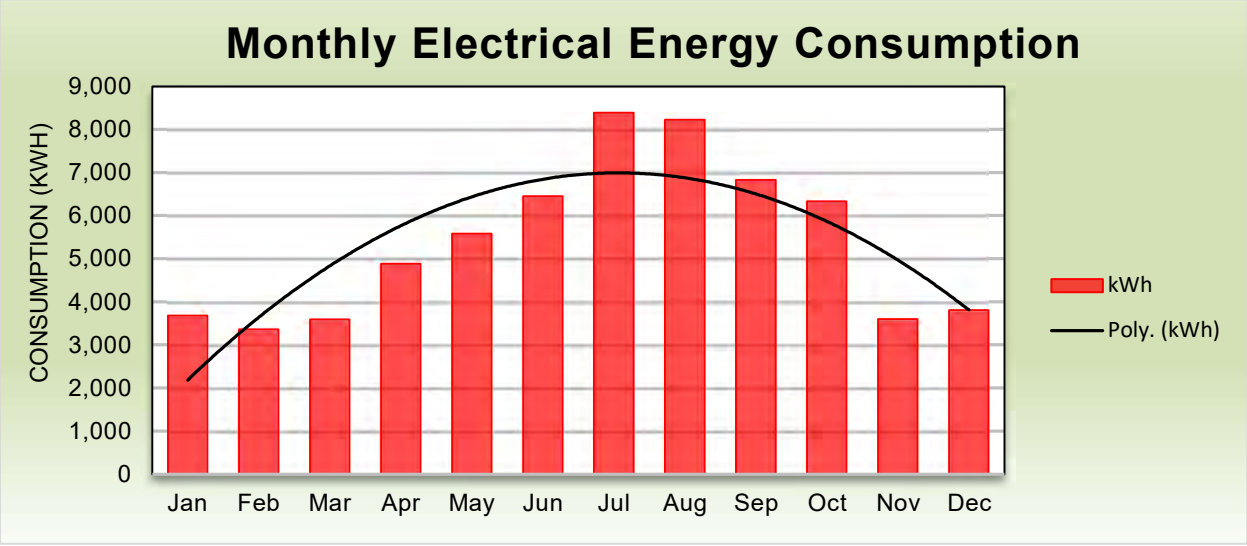
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	75	70	9a – 5:30p	9a – 5:30p	9a – 5:30p	9a – 5:30p	9a – 5:30p	9a – 5:30p	Closed
UnOccupied	75	70	5:30p - 9a	5:30p - 9a	5:30p - 9a	5:30p - 9a	5:30p - 9a	5:30p - 9a	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment for the Wallace Branch Library.

Utility Analysis

The chart below shows the monthly electric usage (kWh) for the Wallace Branch Library during the baseline year (October 2018 to September 2019). This profile is consistent for mechanical systems with electric cooling and natural gas heating, with peaks in electricity consumption during the summer and troughs in the winter.



Monthly electrical demand (kW) is shown below, for the baseline year. The profile is consistent with that of the electricity consumption profile.

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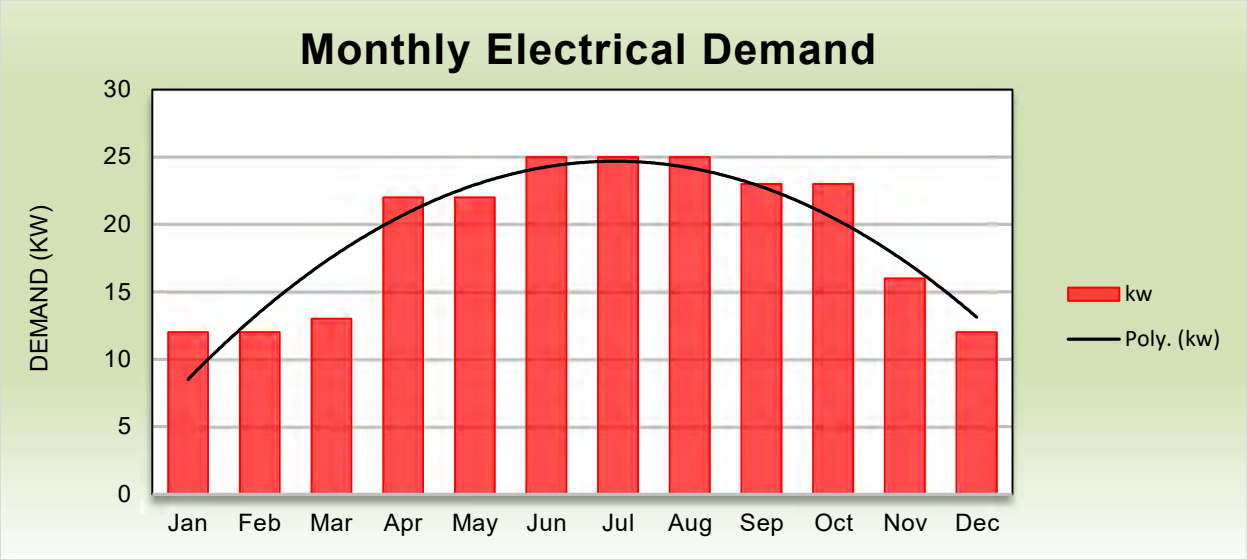
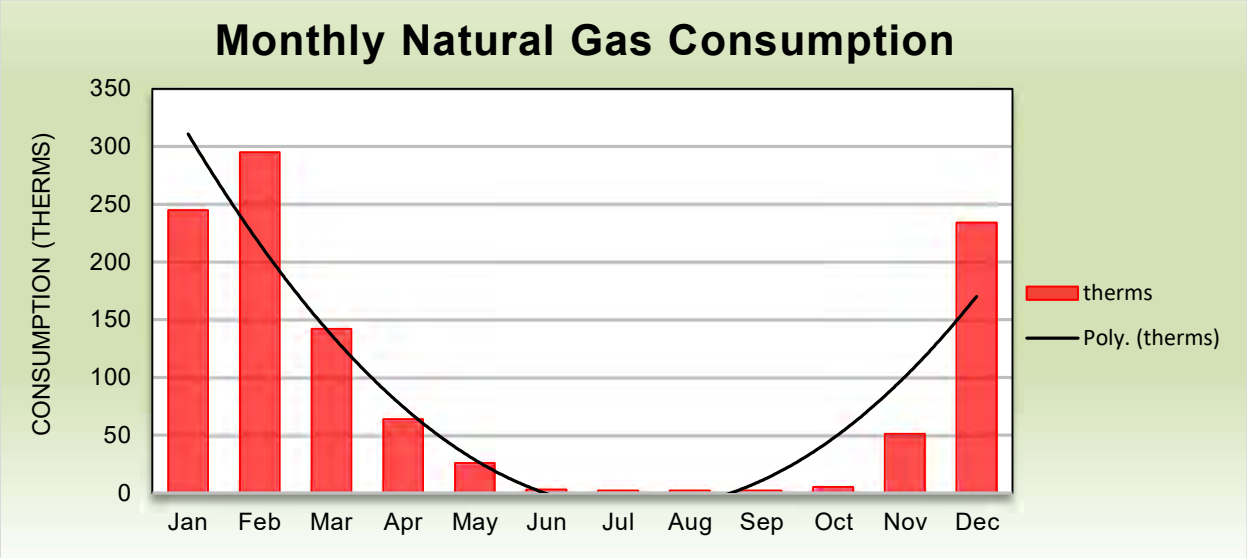


Monthly natural gas peaks in the months where the building requires heating. This profile is consistent with mechanical systems with natural gas heating and cooling, with an increase in gas consumption during winter months.



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2.75 Warren Road Community Center

Site Overview

Warren Road Community Center is 15,369 square feet and is located at 300 Warren Road. The building serves as a community center. Spaces in the building include a Gym, Clubroom, Game Room, Weight Room, Locker Rooms, Restrooms, and Offices.

Lighting Systems

Gym lighting is provided by 400-watt metal halide fixtures. Remaining interior lighting is a mixture of T12 and T8 linear fluorescent fixtures. Exterior lighting is a mixture of LED, metal halide, and high pressure sodium.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

Building Envelope

It is a single-story building with masonry walls constructed of CMU block with a brick façade. The roof above the gym in the center of the building is flat with an asphalt membrane. The roof over the perimeter areas is pitched with asphalt shingles.

Mechanical Systems

The gym is conditioned by two 20-ton heat pump packaged units from 2015 that are mounted on the flat roof. The Main Office is conditioned by a 3-ton split system with electric-resistance heat from 2017, where the condensing unit is located on the flat roof and the air handler is located above the suspended ceiling. The Club Room is served by a split system heat pump that is in poor condition, where the condensing unit is located on grade and the air handler is in the Club Room. The Game Room is served by a 3-ton split system heat pump from 2019, where the condensing unit is on grade and the air handler is in the Game Room. The Weight Room is conditioned by a 2-ton split system heat pump from 2008 and a 2-ton ductless split system heat pump from 2006 with two ductless wall-mounted fan coil units.

Controls

The gym has two internet-connected programmable thermostats, but the thermostats do not have setbacks. There are five non-programmable thermostats: Two in the Weight Room, one in the Game Room, one in the Club Room, and One in the Main Office.

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Miscellaneous Loads

The Weight Room has three treadmills. The Game Room has a television. The Gym has a score board and audio system. The Main Office has a desktop computer and LCD monitor.

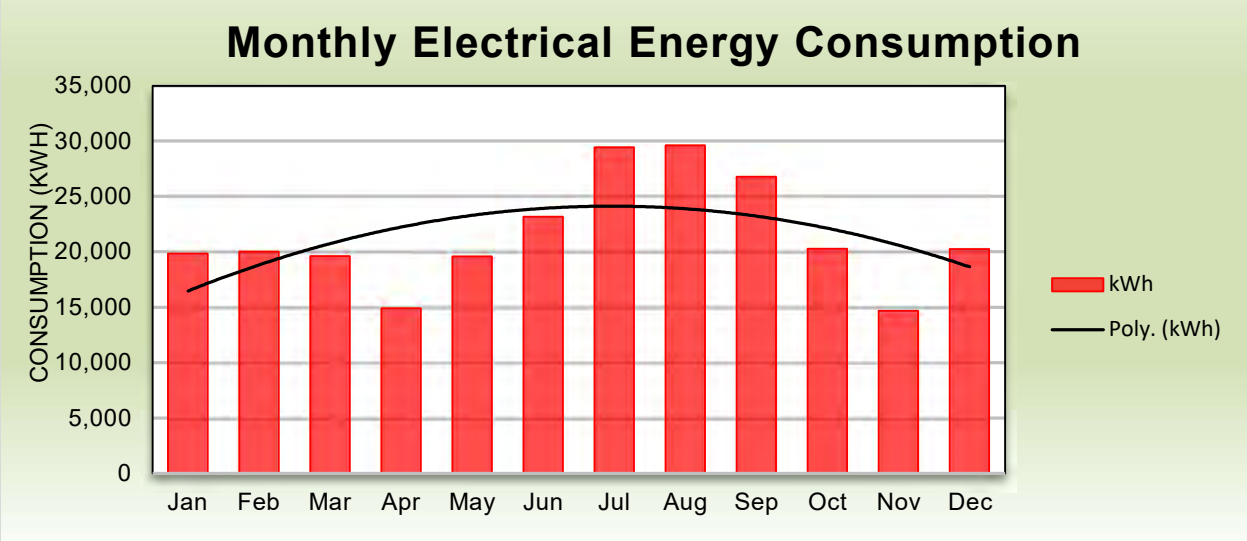
Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	72	10a - 8p	10a - 8p	10a - 8p	10a - 8p	10a - 6p	Rentable	Rentable
UnOccupied	72	72	8p – 10a	8p – 10a	8p – 10a	8p – 10a	6p – 10a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for Warren Road Community Center. The Clubroom or the entire facility is available for rental.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric heating and cooling. Peaks occur over the summer and winter months given the increased cooling and heating loads during these periods. Troughs occur during the shoulder months.



Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand varies between 64 and 80 kW with peaks during the shoulder months of October and March.

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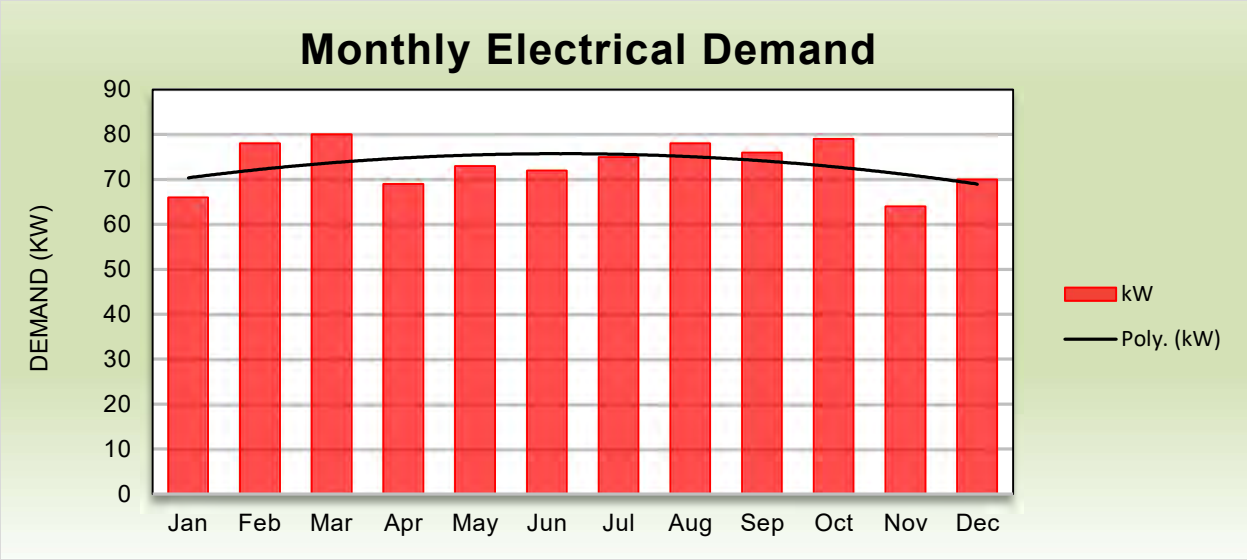

There is no natural gas at this building.

2.76 WT Johnson Center

Site Overview

WT Johnson Center is 18,435 square feet and is located at 1606 Hunter Street. The building serves as a community center. Spaces in the building include a Gym, Teen Room, Game Room, Back Room, Power Hour Room, Computer Room, Restrooms, Kitchen, and Boys & Girls Club Offices.

Lighting Systems

Gym lighting is provided by 400-watt metal halide fixtures. Remaining interior lighting consists primarily of 2-lamp and 4-lamp linear fluorescent T12 fixtures. Around 20% of the linear fluorescent fixtures are T8. Exterior lighting is a mixture of metal halide and incandescent.

A complete list of all lighting fixtures and quantities can be found in Appendix 1.

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Building Envelope

The facility consists of two separate buildings joined together: The gym building and the community center building. Both buildings are single-story buildings with masonry walls constructed of CMU block with a brick façade. The roof above the gym building is metal. The roof above the community center building has a built-up membrane with gravel ballast, a wooden roof deck, and a suspended ceiling. This building has almost no glazing. There are two windows on the east facing wall for the Computer Room.

Mechanical Systems

The gym is conditioned by three split system heat pumps with an approximate capacity of 7.5 tons each. The gym condensing units are located on grade behind a chain-link fence.

All condensing units for the community center building are located on the roof. The Teen Room is conditioned by a 3-ton split system from around 2002 that does not function with a furnace located in the corridor between the Game Room and Restroom. The Teen Room also has a heating-only furnace with 125 MBH gas input from 1990 located in a mechanical closet. The Offices are conditioned by a 2-ton packaged unit with gas heat located on the roof from 2018. The Game Room is served by three 5-ton systems with air handlers suspended above the ceiling: Two have gas heat with a manufacture date of 1998 and one has electric heat with a manufacture date of 2018. The Back Room is conditioned by two 5-ton systems with air handler suspended above the ceiling: One has gas heat from 1998 and one has electric heat from 2019. The Computer Room is conditioned by a 2-ton split system with electric heat with an air handler above the ceiling in the Computer Room. The Kitchen is conditioned by a 5-ton wall-hung packaged unit with electric heat from 2009.

Controls

There are 13 non-programmable thermostats (plus one that is no longer connected in the gym): Three in the gym, two in the Teen Room, three in the Game Room, one in the Back Room, one in the corridor near the Back Room, one in the Computer Room, one in the Office, and one in the Kitchen.

Miscellaneous Loads

The Kitchen has a gas range/oven with a commercial hood, gas fryer, ice maker, and commercial refrigerator. The Computer Room has 10 desktop computers with LCD monitors. The Game Room has a large television and a small television. The Power Hour Room has a television. The Offices have a television and two desktop computers and LCD monitors. The Gym has a scoreboard and audio system.

Operating Schedule Description

	Clg	Htg	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	72	72	8a-5p	8a-5p	8a-5p	8a-5p	8a-5p	Rentable	Rentable
UnOccupied	72	72	5p-8a	5p-8a	5p-8a	5p-8a	5p-8a	Closed	Closed

The table above describes the hours of occupancy and operational setpoints for HVAC equipment assumed for WT Johnson Center. The Multipurpose Room or the entire facility are available for rental.

Utility Analysis

The chart below shows the monthly electric usage (kWh) during the baseline year (October 2018 to September 2019). The overall shape of the polynomial regression line is consistent with buildings that have electric cooling and heating that is mostly gas, but the consumption is low relative to building size. Peaks occur during the summer due to the increased cooling energy use. Winter electricity usage seems unusually low, especially since the gym is heated with heat pumps and there are three systems with electric resistance heat in the community center building. This facility is likely missing data, or the meter is faulty.

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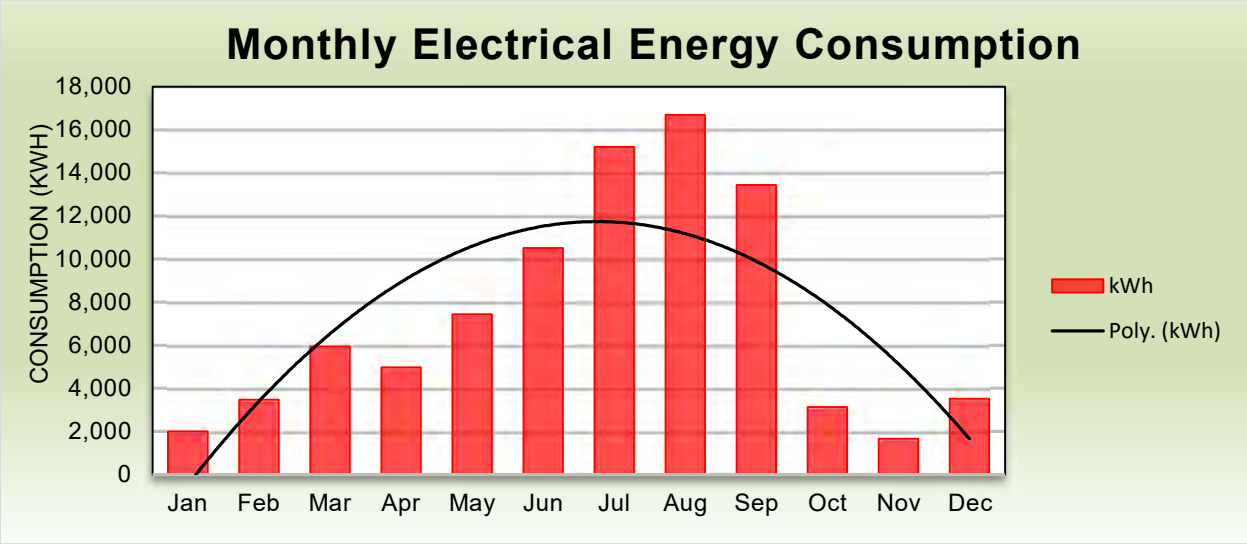
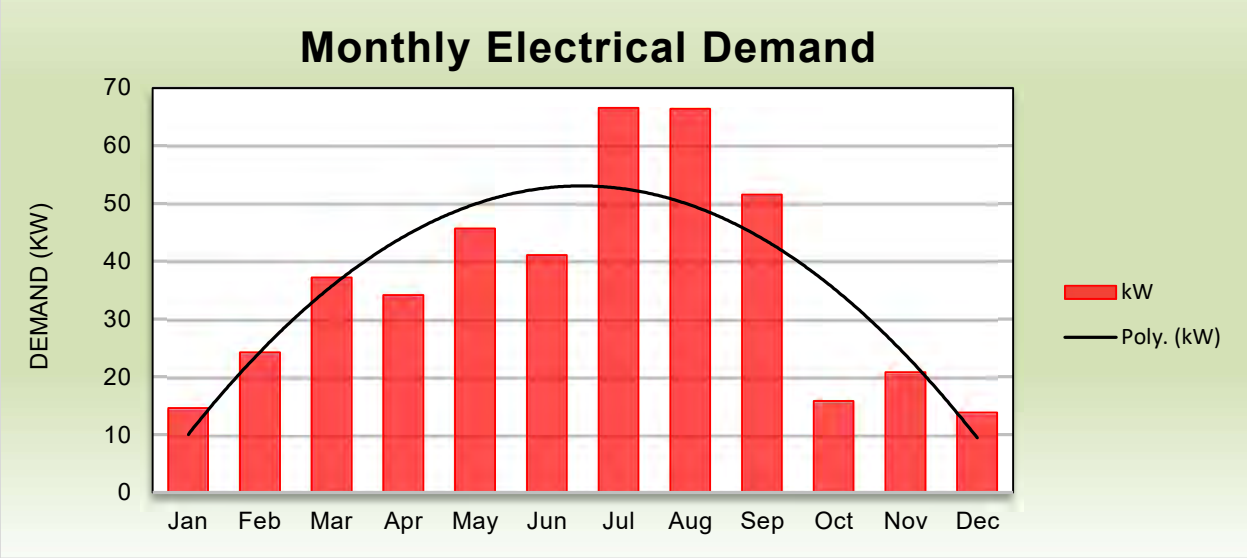


Monthly electric demand (kW) for the baseline year is shown in the chart below. Monthly electrical demand also peaks during the summer due to cooling, but is low in the winter, likely because of missing data.



The chart below shows the monthly natural gas usage (therms) during the baseline year (October 2018 to September 2019). Monthly natural gas consumption increases in winter months and decreases to zero in summer months. The Kitchen has a gas water heater and gas-fired cooking equipment; hence, gas usage should not decrease to zero. This facility may be missing gas data, or the gas meter may be faulty.

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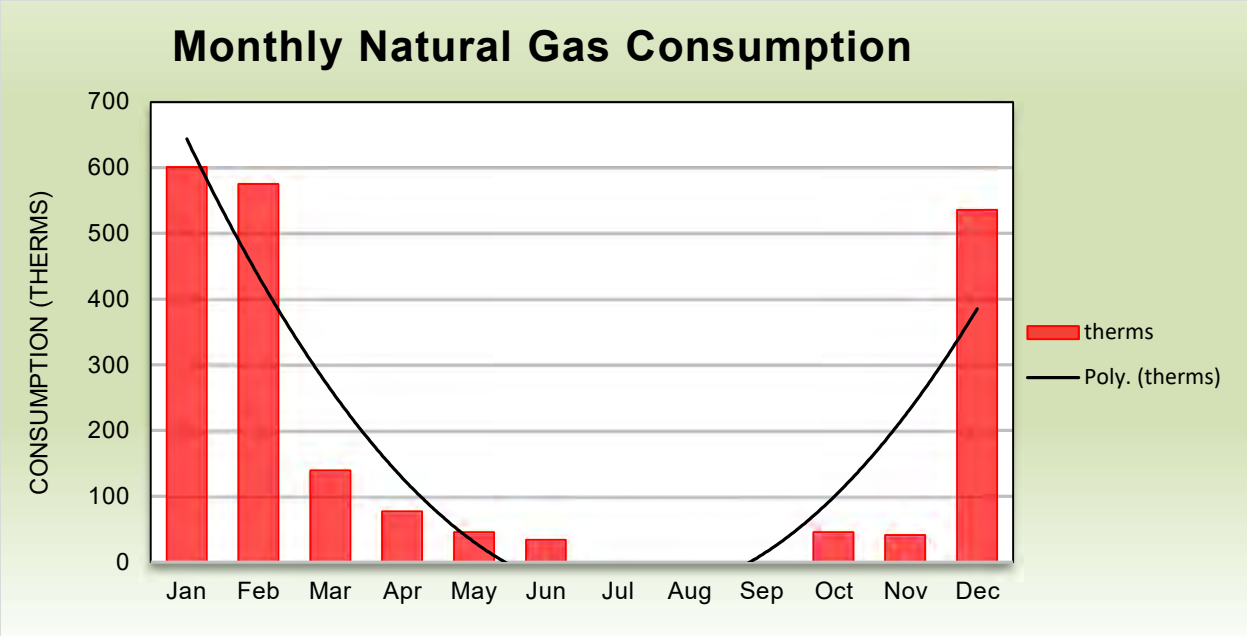

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3. BASE UTILITY RATES

3.1 OVERVIEW OF UTILITY RATES

Augusta-Richmond County predominantly purchases electricity from Georgia Power Company, although Jefferson Energy Cooperative provides electricity for eight buildings. Natural gas is provided by Constellation, Georgia Natural Gas, Scana, and Walton EMC. Water is provided by the Augusta Utilities department. The table below lists each building that was surveyed and their corresponding provider, account number, meter number, and rate schedule for electricity and natural gas service.

Table 5: Metering and Utility Rate Information

Building Name	Electricity				Natural Gas			
	Provider	Acct #	Meter #	Rate	Provider	Acct #	Meter #	Rate
911 Emergency Services	Georgia Power		3144047		All electric			
Appleby Library	Georgia Power	18385-71002	3173772	TOUEO-C	Constellation		3457889	
Augusta Animal Services	Jefferson Energy Cooperative	10048001-005	41215093		All electric			
Augusta Aquatics Center	Georgia Power	04579-08020	3522438	PLM-C	Scana	1-3101-0232-4542	1638943	
Augusta Commons and Riverwalk								
Augusta Fire Department Administrative Building	Georgia Power	56575-67055	3144067	PLM-C	Georgia Natural Gas	003162248-3180236	2973449	
Augusta Fire Department Training Center	Georgia Power	56785-67037	3231120	GS-C	Georgia Natural Gas	003206929-3224707	2900081	
	Georgia Power	17942-38002	5797723	GS-C				
	Georgia Power	12456-96012	5797730	GS-C				
	Georgia Power	09391-02146	3584588	GS-C				
	Georgia Power	52095-65001	5246831	GS-C				
Augusta Municipal Building	Georgia Power	26745-69005	3180583	PLM-C	All electric			
	Georgia Power	24592-88005	3072310	TOUGSD-C				
Augusta Public Library Headquarters	Georgia Power	02759-79069	3179081	PLM-C	All electric			
Augusta-Richmond County Judicial Center	Georgia Power	30816-48029	EB7261	RTDPLMC	All electric			
Bernie Ward Community Center	Georgia Power	47715-71007	3231204	PLM-C	All electric			
Blythe Area Recreation Center	Georgia Power	02092-82011	3531194	PLM-C	All electric			
Carrie J Mays Community Life Center	Georgia Power	04405-69004	3227946	TOUEO-C	Walton EMC	627233-017	3315378	
Carrie J Mays Gymnasium			3531368		All electric			
Central Services	Georgia Power	93515-67004	3504462	PLM-I	All electric			
	Georgia Power	95195-67008	5311944	PLS-C				
Charles B Webster Detention Center	Georgia Power	00030-61103	EB7225	RTDPLMC	Walton EMC		1528066	

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Diamond Lakes Library and Robert Howard Community Center	Jefferson Energy Cooperative	1000771 1-014	41169 502		Constellation	4408534158	20002885	Constellation Flex Price (Variable)
Doughty Community Center	Georgia Power	30291-17005	52365 14	PLS-C	Walton EMC		1770833	
Downtown Park Division	Georgia Power	47895-73033	32071 59	GS-C	Walton EMC		3314418	
Eastview Community Center	Georgia Power	22111-26002	52364 61	PLS-C	All electric			
Eisenhower Athletic Complex	Georgia Power	61212-36008	35307 70	PLM-C	All electric			
	Georgia Power	24356-05004	33388 73	PLM-C	All electric			
Fire Station 1	Georgia Power	12612-61028	35304 87	PLS-C			1639704	
Fire Station 4	Georgia Power	52075-68004	31783 67	PLS-C	Constellation	3206800154		Monthly Variable
Fire Station 5	Georgia Power	06505-69001	52364 71	PLS-C	Walton EMC		61215	
Fire Station 6	Georgia Power	15175-65017	35312 59	PLS-C				
Fire Station 7	Jefferson Energy Cooperative	1004800 3-002	41215 090		All electric			
Fire Station 8	Georgia Power	09189-99014	32310 92	PLS-C	Scana	6-3101-0758-2635	75163	Commercial Two-Part Variable
Fire Station 9	Georgia Power	30855-66019	53129 59	PLS-C	Walton EMC	627233020	3603175	
Fire Station 10	Georgia Power	26611-40023	32431 95	PLS-C	Scana	8-3101-2384-3403	3139191	Commercial Two-Part Variable
Fire Station 11	Georgia Power	23685-66001	53132 78	PLS-C	Scana	7-3101-0215-8979	3246367	
Fire Station 12	Jefferson Energy Cooperative	1000771 1-009	21226 476		All electric			
Fire Station 13	Georgia Power	48945-65036	52369 00	PLS-C				
Fire Station 14	Georgia Power	67245-69006	32346 36	PLS-C				
Fire Station 15	Georgia Power	01795-09025	35304 68	PLS-C	Georgia Natural Gas	002076080-2097919	1968783	
Fire Station 16	Georgia Power	80215-65004	54787 08	PLS-C				
Fire Station 17	Georgia Power	06265-67002	53117 25	PLS-C	Constellation	7913189	1840699	Monthly Variable
Fire Station 18	Jefferson Energy Cooperative	1004800 3-001	20001 1503				3839335	
Fire Station 19	Jefferson Energy Cooperative	1004800 3-003	41001 804		Scana	1-3101-0759-2834	1680788	Commercial Two-Part Variable
Fleming Tennis Center	Georgia Power	15480-85017	57314 86	PLM-C	All electric			
	Georgia Power	11761-43017	70530 36	PLM-C				
	Georgia Power	21905-67001	31681 18	TOUE O-C				
Friedman Branch Library	Georgia Power	17725-68001	33374 19	TOUE O-C	All electric			
Gracewood Community Center	Georgia Power	78295-66008	32349 88	GS-C	Walton EMC		3256232	
Henry Brigham Park Senior Center	Georgia Power	67645-66007	33212 17	PLM-C	Walton EMC		966983	
Henry Brigham Park Swim Center	Georgia Power	68065-66009	35220 44	PLS-C	Walton EMC		1889607	
	Georgia Power	45272-96004	35152 53	PLM-C	Walton EMC		2986208	
Information Technology	Georgia Power	00913-90171	31579 32	PLM-C	All electric			

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Jamestown Community Center	Georgia Power	41755-65003	32035 17	PLM-C			83169/L956092	
Jones Pool	Georgia Power	96955-71002	35304 36	PLS-C	All electric			
Julian Smith BBQ Pit	Georgia Power	17075-71007	35308 21	PLM-C				
Julian Smith Casino	Georgia Power	26315-71001	32036 12	PLM-C	Walton EMC		3187921	
May Park Community Center	Georgia Power	48525-73001	32352 57	PLM-C	Scana	7-3101-2841-6974	3314418	Commercial Two-Part Variable
May Park Outdoor Lighting	Georgia Power		55107 31		All electric			
May Park Print Shop	Georgia Power	48735-73001	31839 83	PLS-C	Walton EMC		1161903	
Mcduffie Woods Community Center	Georgia Power				Scana	9-3101-0167-9111	3086490	
	Georgia Power	21305-81003	57996 29	GS-C				
	Georgia Power	88465-64009	32039 53	GS-C				
Newman Tennis Center	Georgia Power	42235-68003	32050 31	PLM-C	Walton EMC		3285161	
	Georgia Power	00362-90025	32039 21	GS-C				
Old Government House	Georgia Power	47535-69009	35227 36	PLM-C	Walton EMC		3010407	
Recreation, Parks, and Facilities Administrative Offices	Georgia Power	49185-71004	52353 33	PLS-C	All electric			
	Georgia Power	49815-71004	53119 32	PLS-C				
	Georgia Power	50025-71007	42500 37	PLS-C				
Recreation, Parks, and Facilities Equipment Repair	Georgia Power	48765-71009	54455 58	GS-C			1819876	
Recreation, Parks, and Facilities Maintenance Shop	Georgia Power	48975-71009	53119 35	GS-C	All electric			
Recreation, Parks, and Facilities New Maintenance Shop	Georgia Power	24487-43013	53119 34	PLM-C	All electric			
Richmond County Municipal Solid Waste Landfill Main Building	Georgia Power	89033-61006	35311 95	PLM-C	Propane			
Richmond County Municipal Solid Waste Scale House					All electric			
Richmond County Sheriff's Office	Georgia Power	06690-80059	35148 21	PLM-C	Walton EMC		3116108	
Richmond County Sheriff's Office South Precinct	Georgia Power	86665-68018	35368 73	PLM-C				
Special Ops Precinct	Georgia Power	59995-69055	33075 74	PLM-C	Scana			
Richmond County Sheriff's Training Center Administration Building	Georgia Power	73755-69017	54866 47	GS-C	All electric			
Richmond County Sheriff's Training Center Bunk House	Georgia Power	53175-69006	54790 77	PLM-C	All electric			
Richmond County Sheriff's Training Center Dog Kennel	Georgia Power	09430-63018	32107 98	GS-C	All electric			
Richmond County Sheriff's Training Center EVOC Training Office	Georgia Power	51705-69002	33060 72	GS-C	All electric			
Richmond County Sheriff's Training Center Mess Hall	Georgia Power	53385-69006	54790 79 54790 78	GS-C	Propane			

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Richmond County Sheriff's Training Center Myers Building	Georgia Power	06915-15018	3202741	PLM-C	All electric			
Richmond County Sheriff's Training Center Training Center Shop	Georgia Power	71235-69001	7136822	GS-C	All electric			
Sand Hills Community Center	Georgia Power	16954-17023	5481908	GS-C	All electric			
	Georgia Power		5481908					
Sign Shop AED	Georgia Power	62925-68002	3242685	PLS-C				
The Boathouse	Georgia Power	75925-72003	3295974	TOUEO-C	Walton EMC		917360	
Traffic Engineering Street Lighting Building	Georgia Power	10054-62001	3300342	GS-C			3396012	
	Georgia Power		3212035					
	Georgia Power	23335-69003	3212035	PLM-C				
Wallace Branch Library	Georgia Power	87695-73004	3178793	TOUEO-C	Constellation			
Warren Road Community Center	Georgia Power	45265-71008	3522066	PLM-C				
WT Johnson Center	Georgia Power	87505-71001	3530478	TOUEO-C	Walton EMC		3283997	
	Georgia Power	87505-71001	3184112	TOUEO-C				

3.2 ELECTRICITY RATE STRUCTURES

The figures in this section describe the applicable electric rate schedules for each building described in Table 6. Included are all the applicable rates from Georgia Power Company and the Jefferson Energy Cooperative. Table 7 summarizes the tariffs that are applied to the base bill of Georgia Power customers. Tariffs applied to the base bill include Demand Side Management Commercial (DSM-C), Environmental Compliance Cost Recovery (ECCR), and Nuclear Construction Cost Recovery (NCCR). Note that DSM applies only to commercial customers, which are denoted in Table 5 by appending "-C" to the electric rate. For additional information on electricity rate structures, refer to Appendix 5.

Table 6: Georgia Power Company – Base Bill Increase Fee Summary

Base Bill Increase	DSM-C	ECCR	NCCR	Total
	2.8801%	20.4194%	9.4596%	32.7591%

Table 7 describes the Fuel Cost Recovery tariff, which is applied to electricity consumption for Georgia Power customers on all rate schedules except Time of Use – Energy Only (TOUEO) and Time of Use – General Service Demand (TOU-GSD).

Table 7: Georgia Power Company – Fuel Cost Recovery Schedule

Months	Secondary	Primary	Transmission
June through September (cents/kWh)	2.5104	2.4862	2.4636
October through May (cents/kWh)	2.4557	2.4321	2.4100

Table 8 describes the Time of Use – Fuel Cost Recovery tariff, which is applied to electricity consumption for Georgia Power customers on time of use rate schedules.

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Table 8:Georgia Power Company – Time of Use - Fuel Cost Recovery Schedule

Use Time	Secondary	Primary	Transmission
On-Peak (cents/kWh)	3.2176	3.1867	3.1577
Off-Peak (cents/kWh)	2.4199	2.3967	2.3749

Table 9 describes the Municipal Franchise Fee tariff, which is applied to the total bill for electricity consumption for Georgia Power customers after applying the fees described above.

Table 9: Georgia Power Company – Municipal Franchise Fee

Total Bill Increase	Inside City Limits	Outside City Limits
	3.0541%	1.1805%

Buildings that receive electricity from Georgia Power are billed for electricity on several different rate schedules, including General Service (GS), Power and Light Small (PLS), Power and Light Medium (PLM), Time of Use – Energy Only (TOU-EO), Time of Use – General Service Demand (TOU-GSD), and Real Time Pricing – Day Ahead (RTPDA). Descriptions of each electricity rate schedule are included in the appendix.

General Service is appropriate for buildings with low electricity usage and electricity usage less than 200 hours times billing demand. Power and Light Small is appropriate for buildings with a peak demand less than 30 kW and electricity usage of more than 200 hours times billing demand. Power and Light Medium is appropriate for buildings with a peak demand between 30 kW and 500 kW with electric usage of more than 200 hours times billing demand. Time of Use – Energy Only is appropriate for buildings with a peak demand less than 200 kW and electricity usage of less than 200 hours times billing demand or electric heat.

The Augusta-Richmond Judicial Center and Charles B. Webster Detention Center are billed for electricity on Real Time Pricing (RFP) Day-Ahead. RTP billing is based on both actual electricity consumption and a historical electricity profile called Customer Baseline Load (CBL). These facilities have a contractually defined CBL. The CBL portion the bill for Augusta-Richmond County Judicial Center and Charles B. Webster Detention Center is billed on PLM. The customer is required to buy this power under a normal specified rate. However, if real used power is greater or less than the CBL power consumption, Georgia Power will bill or credit Augusta-Richmond County this power at hourly Real Time Pricing (RTP) rates. For these two facilities, the actual use power is generally more than the CBL amount. This is beneficial as the additional power billed on RTP rates is usually much cheaper than it would be if it were billed on the same rate as the CBL.

Several buildings are missing information on their current electricity rate schedule.

3.3 NATURAL GAS RATES

In Georgia, natural gas is deregulated. Atlanta Gas Light (AGL) owns and operates the distribution infrastructure for natural gas, while natural gas marketers sell gas to customers. AGL charges customers based on their Dedicated Design Day Capacity (DDDC), which is a measure of peak daily natural gas demand measured in units of dekatherms. AGL passthrough charges for commercial customers are summarized in Figure 1. Monthly passthrough charges are 1/12 of annual charges.

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General Gas Delivery Service (G-11)	Rate
Annual Customer Charge	
Design Day < 2.5 Dth (per customer):	$403.92
Design Day ≥ 2.5 Dth and < 7 Dth (per customer):	$654.00
Design Day ≥ 7 Dth and < 20 Dth (per customer):	$716.52
Design Day ≥ 20 Dth and < 200 Dth (per customer):	$1,091.76
Design Day ≥ 200 Dth (per customer):	$2,342.28
Dedicated Design Day Annual Capacity Charge (per Dth):	$92.40
Annual Peaking Service Charge (if applicable, see below):	
Annual Meter Reading Charge:	$8.52
Synergy Credit Per Month	($0.7540)

Figure 1: Natural Gas Rate Structure – AGL General Gas Delivery Service

The following tables describe the applicable natural gas rate schedules for each building described in Table 5. These charges are in addition to the AGL pass-through charges described above. Note that the energy rate for fixed pricing plans varies by the length of the contract and the date that the contract is renewed. The energy rate for fixed price plans shown below is based on a 12-month contract plan available on 9/30/2020. The energy rate for variable pricing plans varies based on the market rate for natural gas.

Table 10: Natural Gas Rate Structure – Walton Gas Commercial Fixed

Walton Gas - Commercial Fixed	
Energy Rate ($/therm)	0.599
Demand Charge ($/Dth-DDDC)	8.50
Service Charge ($/month)	5.95

Table 11: Natural Gas Rate Structure – Walton Gas Commercial Variable

Walton Gas - Commercial Variable	
Energy Rate ($/therm)	varies
Demand Charge ($/Dth-DDDC)	8.50
Service Charge ($/month)	5.95

Table 12: Natural Gas Rate Structure – SCANA Commercial Two-Part Fixed

SCANA - Commercial Two-Part Fixed	
Energy Rate ($/therm)	0.53
Demand Charge ($/Dth-DDDC)	varies by location
Service Charge ($/month)	6.95

Table 13: Natural Gas Rate Structure – SCANA Commercial Variable

SCANA - Commercial Variable	
Energy Rate ($/therm)	varies
Demand Charge ($/Dth-DDDC)	varies by location
Service Charge ($/month)	6.95

Table 14:Natural Gas Rate Structure – Georgia Natural Gas Commercial Fixed

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Georgia Natural Gas - Commercial Fixed	
Energy Rate ($/therm)	0.59
Demand Charge ($/Dth-DDDC)	8.5
Service Charge ($/month)	5.95

Table 15: Natural Gas Rate Structure – Georgia Natural Gas Commercial Variable Select

Georgia Natural Gas - Commercial Variable Select	
Energy Rate ($/therm)	varies
Demand Charge ($/Dth-DDDC)	8.50
Service Charge ($/month)	6.95

Constellation natural gas rate structures are customized for commercial customers.

3.4 AUGUSTA UTILIES - WATER

Water is provided by the Augusta Utilities department. Water and sewer rates for 2019 are summarized in the figure below. Note that many Augusta-Richmond County buildings receive discounts on water and sewer bills. Water and sewer rates have an anticipated escalation rate of 3% per year, based on the disclaimer stated on the Augusta Utilities website.

Table 16: Water and Sewer Rates for 2019

Commercial (Non-residential)

	Water		Sewer	
Meter Size	**Base Charge**	**Rate per Kgal**	**Base Charge**	**Rate per Kgal**
5/8" & ¾"	$ 18.84	$3.38	$ 33.27	$3.67
1"	$ 26.71	Same	$ 47.53	Same
1-1/4" &1-1/2"	$ 44.22	Same	$ 79.43	Same
2"	$ 63.56	Same	$ 114.77	Same
3"	$ 106.31	Same	$ 193.19	Same
4"	$ 153.99	Same	$ 279.87	Same
6"	$ 259.72	Same	$ 473.06	Same
8"	$ 376.70	Same	$ 686.74	Same
10"	$ 503.12	Same	$ 918.00	Same
12"	$ 652.91	Same	$ 1,162.60	Same

3.5 UTILITY RATES USED TO COMPUTE SAVINGS

Electricity and water rates used to calculate utility cost savings for ECMs are summarized in Table 18.

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Table 17: Electricity and Water Rates Used to Compute Savings

Rate Code	Rate Description	Electric Rate ($/kWh)	Water Rate ($/kGal)
A	PLM Lighting	$0.119893	
B	PLS Lighting	$0.123645	
C	PLM HVAC/Controls/BE	$0.099195	
D	PLS HVAC/Controls/BE	$0.113124	
E	TOUGSDC Solar PV	$0.103774	
F	Solar Avoided Energy Cost Rate	$0.032380	
G	TOUEO-C Lighting	$0.125094	
H	TOUEO-C HVAC/Controls/BE	$0.114254	
I	RTP Lighting – Judicial*	$0.080000	
J	RTP Controls/HVAC - Judicial	$0.044200	
K	RTP Lighting – Webster*	$0.080000	
L	RTP Controls/HVAC - Webster	$0.042800	
M	GS	$0.178496	
N	Jefferson Energy Cooperative	$0.110641	
W	Combined Water and Sewer Rate		$3.53

*Trane and Augusta-Richmond County awaiting a finalized for rate from Georgia Power for rate K and rate I.

Electricity and water rates are summarized by building and measure type in Table 20. Electricity cost savings for PV Solar measures accrue at two different rates: The first rate is for solar generation that offsets electricity needs of the building, and the second rate, Solar Avoided Energy Rate (F), applies to excess generation that is exported to the grid.

Table 18: Electricity and Water Rates by Building

Building Name	Rate	Lighting	HVAC	Controls	Water	PV Solar	Building Envelope
911 Emergency Services	PLM-C	A					C
Appleby Library	TOUEO-C	G					H
Augusta Animal Services	JEC	N					
Augusta Aquatics Center	PLM-C	A					C
Augusta Commons and Riverwalk	PLM-C	A					
Augusta Fire Department Administrative Building	PLM-C	A					C
Augusta Fire Department Administrative Training Center	GS	M					
Augusta Municipal Building	PLM-C / TOUGSD-C	A	C	C		E / F	C
Augusta Public Library Headquarters	PLM-C	A					C
Augusta-Richmond County Judicial Center	RTDPLMC	I	J	J			
Bernie Ward Community Center	PLM-C	A					C
Blythe Area Recreation Center	PLM-C	A	C	C			C
Carrie J Mays Community Life Center	TOUEO-C	G	H	H			H
Carrie J Mays Gymnasium	PLM-C	A	C	C			
Central Services	PLM-I / PLS-C	B					D
Charles B Webster Detention Center	RTDPLMC	K	L	L	W		

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Building Name	Rate	Lighting	HVAC	Controls	Water	PV Solar	Building Envelope
Diamond Lakes Library and Robert Howard Community Center	JEC	N				N	N
Diamond Lakes Park Fields 1-5 Concession Stand	JEC	N					
Diamond Lakes Park Larger Fields 1-5	JEC	N					
Diamond Lakes Park Outdoor Pavilion	JEC	N					
Diamond Lakes Tennis Center	JEC	N					
Doughty Community Center	PLS-C	B					D
Downtown Park Division	GS-C	M	M	M			
Eastview Community Center	PLS-C	B		D			D
Eisenhower Athletic Complex	PLM-C	A					C
Fire Station 1	PLS-C	B					D
Fire Station 4	PLS-C	B					D
Fire Station 5	PLS-C	B					D
Fire Station 6	PLS-C	B					D
Fire Station 7	JEC	N					N
Fire Station 8	PLS-C	B					D
Fire Station 9	PLS-C	B					
Fire Station 10	PLS-C	B					D
Fire Station 11	PLS-C	B					D
Fire Station 12	JEC	N					N
Fire Station 13	PLS-C	B					D
Fire Station 14	PLS-C						D
Fire Station 15	PLS-C						D
Fire Station 16	PLS-C	B					D
Fire Station 17	PLS-C	B					D
Fire Station 18	JEC	N					N
Fire Station 19	JEC	N					N
Fleming Tennis Center	PLM-C / TOUEO-C	A					
Friedman Branch Library	TOUEO-C	G					H
Gracewood Community Center	GS-C	M	M	M			M
Henry Brigham Park Senior Center	PLM-C	A		C			C
Henry Brigham Park Swim Center	PLS-C	B		D			D
Information Technology	PLM-C	A		C			C
Jamestown Community Center	PLM-C	A	C	C			C
Jones Pool	PLS-C	B					
Julian Smith BBQ Pit	PLM-C	A					C
Julian Smith Casino	PLM-C	A					C
May Park Community Center	PLM-C	A	C	C			C
May Park Print Shop	PLS-C			D			D
McDuffie Community Center	GS-C	M	M	M			M
Newman Tennis Center	PLM-C / GS-C	A	C	C			C
Old Government House	PLM-C	A	C	C			C

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Building Name	Rate	Lighting	HVAC	Controls	Water	PV Solar	Building Envelope
Recreation, Parks, And Facilities Administrative Offices	PLS-C	B	D	D			D
Recreation, Parks, And Facilities Equipment Repair	GS-C	M					
Recreation, Parks, And Facilities Maintenance Shop	GS-C	M					
Recreation, Parks, And Facilities New Maintenance Shop	PLM-C	A		C			
Richmond County Municipal Solid Waste Landfill Main Building	PLM-C	A		C			
Richmond county Municipal Solid Waste Scale House	PLM-C		C	C			
Richmond County Sheriff's Office	PLM-C	A					C
Richmond County Sheriff's Office South Precinct	PLM-C	A					C
Richmond County Sheriff's Office Special Ops Precinct	PLM-C	A					C
Richmond County Sheriff's Training Center Administration Building	GS-C	M					
Richmond County Sheriff's Training Center Bunk House	PLM-C	A	C	C			
Richmond County Training Center Dog Kennel	GS-C	M					
Richmond County Sheriff's Training Center EVOC Training Office	GS-C	M					
Richmond County Sheriff's Training Center Mess Hall	GS-C	M	M	M			
Richmond County Sheriff's Training Center Myers Building	PLM-C	A	C	C			
Richmond County Sheriff's Training Center Training Center Shop	GS-C	M					
Sand Hill Community Center	GS-C	M	M	M			M
Sign Shop AED	PLS-C	B					
The Boathouse	TOUEO-C	G					
Traffic Engineering Division Street Lighting	PLM-C	A					
Wallace Branch Library	TOUEO-C	G					H
Warren Road Community Center	PLM-C	A	C	C			C
WT Johnson Center	TOUEO-C / GS-C	G	H	H			H

Natural gas and propane rates are based on the annual average rate for each building/site for the baseline period. These rates are used to calculate cost savings for any measure that produces natural gas or propane savings. Natural gas and propane rates used to calculate utility cost savings are summarized by building in Table 22.

Table 19: Natural Gas and Propane Rates Used to Compute Savings

Building Name	Natural Gas Rate ($/therm)	Propane Rate ($/therm)
Appleby Library	1.369	
Augusta Aquatics Center	1.788	
Augusta Fire Department Administrative Building	3.031	
Carrie J Mays Community Life Center	1.456	
Charles B Webster Detention Center	0.769	
Diamond Lakes Library and Robert Howard Community Center	1.125	
Doughty Community Center	1.551	

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Building Name	Natural Gas Rate ($/therm)	Propane Rate ($/therm)
Downtown Park Division	1.456	
Fire Station 4	1.751	
Fire Station 5	1.128	
Fire Station 11	2.332	
Fire Station 17	1.565	
Gracewood Community Center	1.576	
Henry Brigham Park Swim Center	0.777	
Jamestown Community Center	1.304	
Julian Smith Casino	1.377	
May Park Community Center	2.761	
May Park Print Shop	2.070	
McDuffie Community Center	2.109	
Newman Tennis Center	1.983	
Richmond County Municipal Solid Waste Landfill Main Building		-
Richmond County Sheriff's Office	0.661	
Richmond County Sheriff's Training Center Mess Hall		-
The Boathouse	1.318	
Wallace Branch Library	0.563	
WT Johnson Center	3.982	

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4. AUDIT METHODOLOGY

4.1 AUDIT OVERVIEW

An energy audit is a systematic approach to problem solving and decision making. The primary goals of the audits for Augusta-Richmond County facilities were to qualify and quantify how the building energy systems are performing now, how that performance can be improved, and what the results of those improvements will be in financial and non-financial terms.

To create a comprehensive and multi-faceted energy savings approach, Trane gathered industry experts with multiple different technology focuses, as well as tapping Trane's own expert staff. This helped create a detailed plan with the lowest level of risk for final implementation. By using trusted industry partners Augusta-Richmond County can take comfort that estimated implementation plan, price and energy reduction potential are feasible and realistic. The following separate audits were completed to ensure success in this approach

- Lighting Systems Audits, performed by Envocore
- HVAC and Controls Audits, performed by Griffith Engineering Inc., and Trane personnel
- Water Fixture Audits, Performed by Pedal Valves
- Building Envelope Audits, performed by The Energy Partners
- Solar PV Audits, performed by Radiance Solar

4.2 LIGHTING SYSTEMS ENERGY AUDITS

Trane's trusted partner Envocore, along with Trane personnel performed lighting audits on all facilities in the scope of this project. The procedure for performing the detailed lighting audit is to survey each room in each building so that the existing lighting system applications can be fully understood. With this information the current operating characteristics can be compared to the current requirements needed by the customer. Following this assessment, the appropriate fixture and lamp retrofit or replacement decisions can be made to reduce energy consumption, provide recommended light levels, and meet other customer requirements.

The lighting audit takes into account the following:

- Perform and provide the customer with a complete audit of all light fixtures in all identified facilities. The audit shall include the following data broken down on a room-by-room basis:
  - Representative light level readings (one of each typical type of room shall be measured)
  - Light fixture counts and detailed descriptions.
  - Typical hours of operation in hours/year.
  - Lamp quantity/fixture and watts/lamp.
  - Note major factors effecting lighting retrofit cost, including but not limited to A/B switching, emergency fluorescent ballasts that must be replaced, existing dimming controls, possibility of tandem wiring fixtures, etc.
- Determine recommended lighting retrofits, incorporating:
  - Lighting retrofits to be performed on a room-by-room basis with a detailed description of all proposed lighting fixture retrofits.
  - IES recommended light levels in all rooms, unless directed otherwise by the end-user.
  - Reasonable effort in finding problems with the existing lighting systems, and recommend solutions.
- Perform energy savings calculations on a room-by-room basis, incorporating:
  - Actual rate structures.
  - Energy savings in terms of kW and kWh, as well as dollars.
  - Hours of operation and kW for each fixture, before and after the retrofit.
- Provide turnkey installation costs and savings for all buildings.
- Should maps or floorplans be available, prior to the audit, a detailed mapping plan will be developed. This detailed mapping plan allows for a numbering system to be put into place where

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each space or room on the maps are numbered and will match an ID # in the detailed room by room spreadsheet within the detailed lighting proposal.

For this project a representative sample of existing fixtures were measured to determine existing or as is wattage levels. These wattage values were used to tune the savings calculations developed in the room by room audit spreadsheet. Pre-measurements were complete at the time of the lighting audit. During the installation phase a full scale M&V plan will be implemented which includes the post retrofit measurement of a statistically valid sample of all the lighting fixtures. These new values will be used to calculate the actual lighting savings.

During the lighting audit the following options are considered for reducing lighting energy costs:

- Regular Maintenance - A thorough lamp maintenance program can extend lamp life and improve lighting levels by up to 30%.
- Lamp Replacement - Fluorescent lamps should be replaced at the end of their useful life (defined as 70% of the rated life), since lumens-per-watt rating starts to decline at this point, lowering overall light levels.
- Lower Fixtures - Lowering ceiling fixtures to bring them closer to the workspace increases the amount of available light focused on the task. If the distance between fixture and work plane is 10 feet or more, further investigation may be required.
- Repainting - Overall lighting efficiency is directly affected by the color of the ceilings, walls, equipment and other surfaces in the workplace. Selecting lighter, more reflective colors when repainting can enhance contrast and promote safety by increasing the amount of available light.
- Daylighting - Installation of skylights in conjunction with automatic dimming devices can yield significant savings in some environments. However, the use of natural light from windows and skylights requires a thorough analysis, both from a lighting and heating/cooling standpoint. Consult the IES Lighting Handbook, 1984 Reference Volume, and 1987 Applications Volume for more information on this option.
- Control Devices - The installation of various lighting control devices can reduce energy costs. Recent technological advances in industrial lighting system components and controls make it possible to reduce consumption significantly through scheduling and automatic control.
- Convert to Energy Efficient Lamps - One attractive alternative for energy conservation is replacing existing fluorescent lamps with the new lower wattage energy efficient LED lamps.

The existing lighting systems are described in Section 2 of this report, while a general description of the lighting ECM as a whole is contained in section 6, along with all applicable locations where this ECM is proposed. Appendix 1 is comprised of the line-by-line lighting audit.

4.3 DESCRIPTION OF HVAC AND CONTROLS SYSTEMS ENERGY AUDITS

HVAC and controls audits were performed by Griffith Engineering Inc, an expert energy engineering firm, and Trane personnel. Trane local staff familiar with the Augusta-Richmond County facilities, and Corporate energy services staff helped develop the plan, pricing, and savings for these measures. A senior energy engineer visited each location in the scope of this project, to collect detailed information, both on building operation and installed equipment. During the audit, information recorded included hours of operations, building type, mechanical systems, lighting systems, as well as other additional information. This was used to determine baseline operation as well as to identify potential energy conservation measures throughout the Augusta-Richmond County's buildings. The detailed energy audit referred to as an Investment Grade Audit (similar to an ASHRAE level II/III audit) requires further investigation resulting in a more comprehensive energy end use analysis.

The detailed energy audit for Augusta-Richmond County included, but was not limited to:

- Visual inspection and inventory of the buildings

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- Construction details of the building envelope (e.g., walls, roof, windows, doors and related insulation values)
- An inventory of the heating and cooling systems (HVAC) capacities and rated efficiency
- Manual, timeclock or automated HVAC control methods
- Service hot water systems
- Investigation into operations and maintenance procedures, schedules, and typical building occupancy.
- The cost analysis considers current energy costs, measure implementation costs and potential savings over time help to determine practicality and priority of ECM's
- Review of any upgrades since initial construction

Once this information was collected at the various building Trane evaluated potential savings at each location as well as which building would require energy models to further evaluate savings opportunities. This will be detailed further in Section 6.

4.4 DOMESTIC WATER AUDITS

Trane investigated the potential for implementing water fixture retrofits at Augusta-Richmond County facilities to reduce the water and energy utility use. However, since the utility is owned by the municipality, water costs were low enough that this measure was only deemed to make sense at the Charles Webster Detention Center. To investigate this opportunity, Trane teamed up with Pedal Valves, and expert water systems consultant.

The water conservation audit included a detailed location by location inventory of all the water and water related infrastructure the Detention Center property. The information collected was used to analyze domestic water use, treatment, heating, and distribution throughout the property. The water systems engineers then proposed improvement to help reduce the facilities water use and energy consumption.

Water modeling and proposal development utilizes various procedures and guidelines to calculate, establish, and quantify the utility savings resulting from sustainability projects surrounding water related utility and maintenance measures. All measurements and tests are conducted both during the audit phase and after construction is completed. All results are documented and incorporated into water utility modeling data and proposals.

Water conservation is an essential part of sustainability projects, ensuring that our most precious natural resource is delivered in a clean, healthy, and efficient manner to everyone. With water rates climbing across the country at record levels, and with current water resources dwindling in many parts of the county, it is essential that everyone keeps water conservation in mind and is proactive about implementing ways to protect this most precious natural resource and everyone's bottom line.

4.5 BUILDING ENVELOPE AUDITS

The Energy Partners, Trane's trusted building envelop consultant, lead up the building envelop audits into Augusta-Richmond County's facilities. The building envelop encompasses the architectural systems in the facility to separate the building's interior conditioned air from the exterior outside weather. For an energy audit, the primary focus is to ensure the architectural components (windows, doors, attics, wall insulation, etc.) tightly seal and insulate the building to reduce unneeded energy consumption from the HVAC systems. Additional benefits of tightly sealed buildings, such as improved air quality, improved occupant comfort, and reduced water intrusion are also considered.

Trane had the energy partners perform building envelop audits on the majority of building in the scope of this project. At each location, deficiencies, such as poor air sealing around fenestrations (windows and doors), air leakage around architectural joints, and poor envelop insulation were observed and noted. The envelop engineers evaluated the feasibility, price, and energy savings associated with each deficiency in order to develop a comprehensive plan to save energy consumption for each facility.

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Section 6 had more detailed information on the proposed building envelop ECMs. Additionally, Appendix 4 has the detailed audit information on a building by building basis

4.6 SOLAR PHOTOVOLTAIC AUDIT

Trane AND PARTNER Radiance Solar has identified locations that would benefit from the addition of a photovoltaic (PV) solar array. The PV solar audit focused on buildings that have both the available space for the array as well as a utility profile that lends itself to optimal usage of the array. The size of the array is dependent on its energy capacity, which needs to be sized with the utility profile taken into consideration.

When auditing a building for a suitable PV solar array location, it is important to take note of not only the square footage needed for the array, but also any existing or anticipated obstructions that can shield the array from the desired solar energy. Locating an array on or near ground level involves consideration of shading from nearby buildings and landscaping. Appraising opportunities for a roof-mounted PV solar array reduces some of the potential shading from buildings and landscape but does not eliminate them. Roof-mounted arrays are also evaluated based on the roof's slope and orientation, which has an impact on the amount of solar energy available at different times throughout the day and the year.

The audit also took into consideration the utility profiles of buildings with potential for arrays. In most situations, the best use of a PV solar array is to fully utilize its energy potential throughout the year. The benefits of the array should be able to be used by the building for as much of the year as possible. If the energy production of the PV solar array exceeds the building's energy demands, this excess energy may be sold back to the utility, though this is typically at a lower rate and is less desirable than direct utilization of the energy at the building. It is therefore important to coordinate the capacity of the array with the utility analysis to obtain an optimized energy solution from the array.

The PV solar audit also investigates how the array will be interconnected into the building's electricity distribution and any potential connections to allow for selling energy back to the utility grid. The audit will focus on any modifications that are needed to the existing electrical system to account for a new PV solar array.

Section 6 had more detailed information on the proposed solar PV ECMs. Additionally, Appendix 5 has the detailed solar PV information from Radiance Solar.

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5. BASELINE ANALYSIS METHODOLOGY

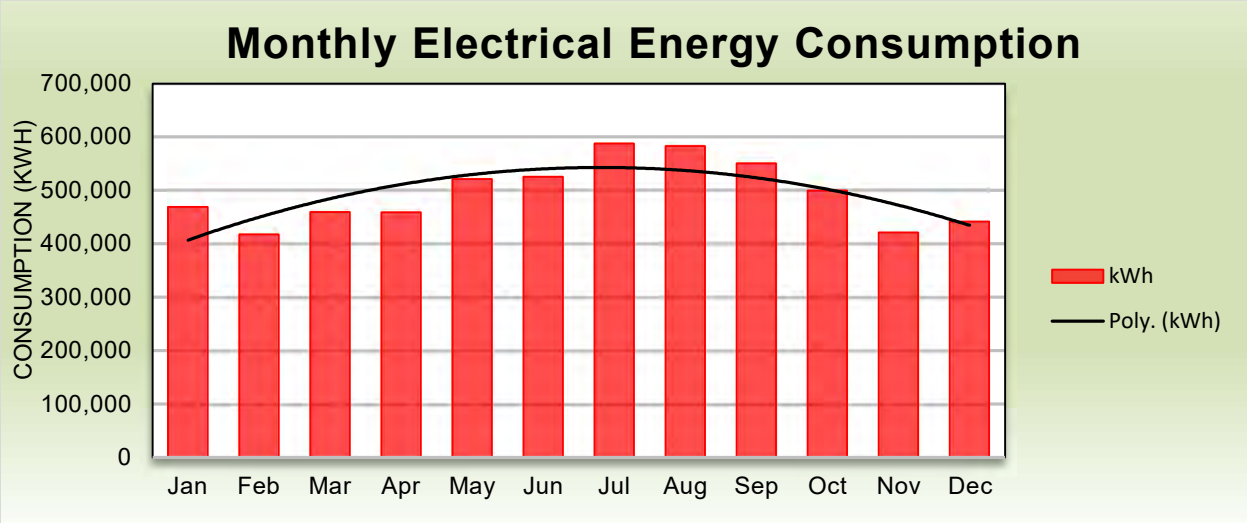
5.1 BASELINE OVERVIEW

This "baseline" as defined here is a period of energy use over a 12-month period, which properly represents existing building systems and operation during the heating and cooling season. The development of energy baselines for this project is an important exercise in performance contracting is this baseline will be the reference metric for the performance of the project in each guarantee year. Energy consumption for each building, each year, is compared to this baseline energy consumption.

To develop the baselines, Trane collected historical electricity, natural gas, and water bills for the recent few years (wherever available). Trane's goal in establishing a baseline energy consumption is to have a monthly energy/water consumption profile that is representative of normal facility operation. Given the extraordinary upheaval the COVID-19 virus has had on all public facility operations, it was determined that this baseline period had to end before March 2020, when major disrupters started happening.

In Addition to COVID-19 concerns, Trane wanted to select data that was both recent enough to be representative of current building operation and equipment, and mostly complete for all facilities in this project. Due to the data available, and these noted concerns, utility data from the 12-month period of October 2018 through September 2019 was chosen as the foundation of each building's energy use baseline.

Each building's utility profile is investigated to identify potential outliers or errors that need to be addressed. For Augusta-Richmond County, there were few situations where a billed data point was "corrected" as the billing data was reliable. However, the analysis of each building's energy profile also helps Trane understand system energy use and potential for energy improvement. Figure 4.1 shows an example of a utility analysis for electric and natural gas consumption at Charles B. Webster Detention Center. Building level utility analyses may be found in each location's building description in Section 2.



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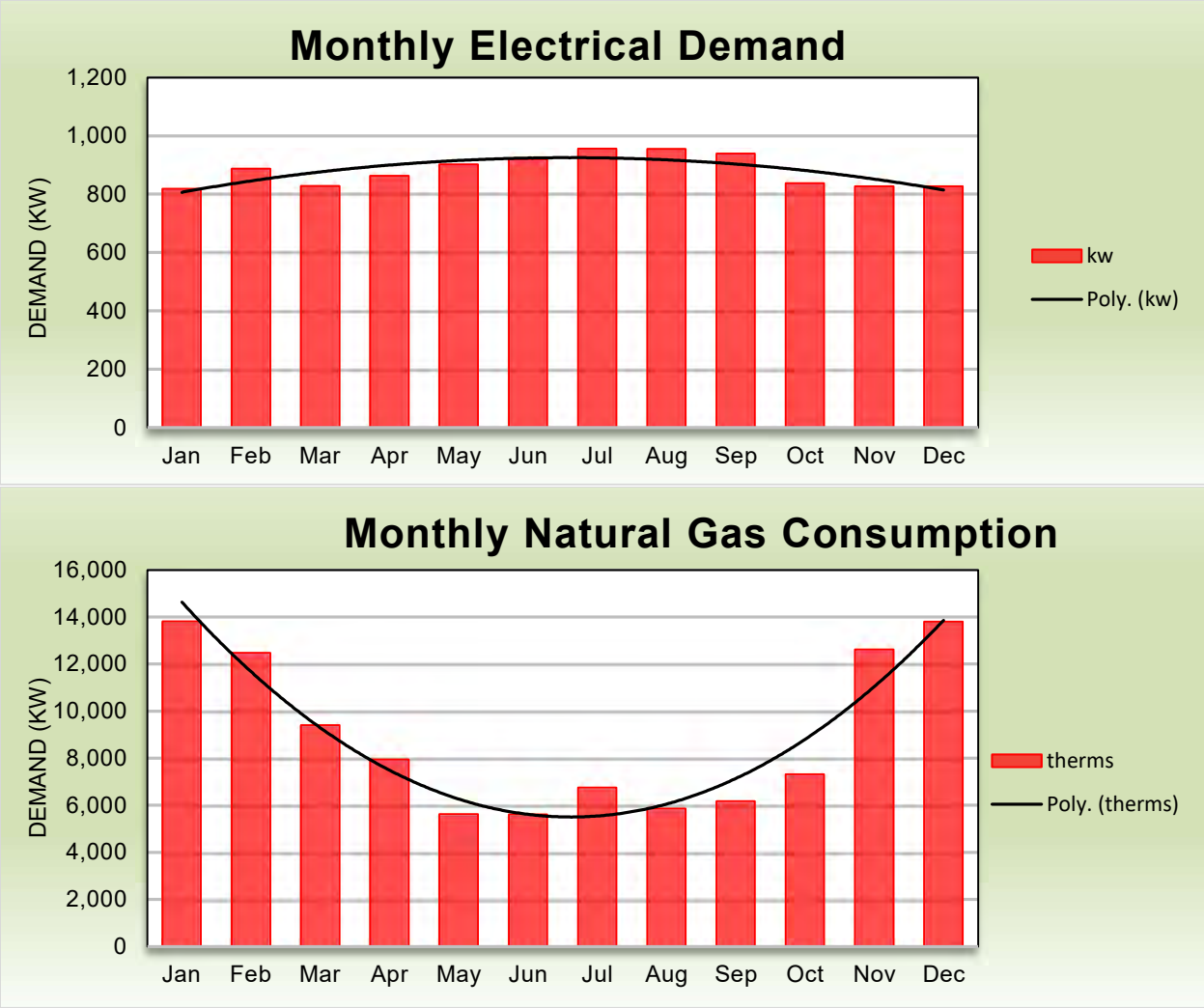

Figure 2: Charles B Webster Baseline Consumption View

5.2 ENERGY BENCHMARKING

To analyze the baseline energy consumption, the utility bill data was collected to establish a calculation known as an energy use index (EUI). These benchmark metrics are then used to compare the building's energy usage to that of similar buildings in the same region with similar principle building activities. Electricity and Natural Gas data is normalized into a single kBtu/ft^2 index. When totalized for all Augusta-Richmond County buildings yielded an overall value of 94 kBtu/ft^2 which when compared to the U.S. Department of Energy – Commercial Buildings Energy Consumption 2012 Survey (CBECS) average of 67 kBtu/ft^2, indicates that some energy conservation measures (ECMs) opportunities certainly exist.

The table below shows the pertinent utility data for the Baseline Year (October 2018 through September 2019) on a building by building basis for calculating EUI and ECI (Energy Cost Index) for this period. While it might be obvious, water consumption and associated cost are not included in the calculation for EUI and ECI, because water is not directly associated with energy usage.

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Table 20: Utility Benchmarking by Building

Building	Square Footage	Electricity					Gas		Benchmarks		Total Utility Spend
		Energy (kWh)	Energy Cost	Demand (kW)	Demand Cost	Total Cost	Energy (therms)	Cost	EUI (kBTU/sq. ft)	ECI ($/sq. ft)	
911 Emergency Services	9,100	323,569	$ 31,351	72	-	$ 31,351	-	-	121	**$ 3.45**	**$ 31,351**
Appleby Library	7,000	55,837	$ 7,879	18	-	$ 7,879	2,674	$ 3,661	65	**$ 1.65**	**$ 11,540**
Augusta Animal Services[1]	17,500	821,665	$ 69,184	195	-	$ 69,184	-	-	160	**$ 3.95**	**$ 69,184**
Augusta Aquatics Center	46,840	1,125,237	$ 105,180	248	-	$ 105,180	36,794	$ 54,880	161	**$ 3.42**	**$ 160,060**
Augusta Commons and Riverwalk	4,840	92,447	$ 15,264	59	-	$ 15,264	-	-	65	**$ 3.15**	**$ 15,264**
Augusta Fire Department Administrative Building[1]	17,361	350,750	$ 31,733	59	-	$ 31,733	309	$ 936	71	**$ 1.88**	**$ 32,669**
Augusta Fire Department Training Building[1]*	17,361	10,309	$ 2,893	64	-	$ 2,893	179	$ 648	3	**$ 0.20**	**$ 3,541**
Augusta Municipal Building	129,450	3,515,587	$ 295,952	766	-	$ 295,952	-	-	93	**$ 2.29**	**$ 295,952**
Augusta Public Library Headquarters	97,846	1,505,948	$ 150,441	520	-	$ 150,441	-	-	53	**$ 1.54**	**$ 150,441**
Augusta-Richmond County Judicial Center	180,000	5,180,625	$ 284,615	764	-	$ 284,615	-	-	98	**$ 1.58**	**$ 284,615**
Bernie Ward Community Center	18,125	343,432	$ 41,904	128	-	$ 41,904	-	-	65	**$ 2.31**	**$ 41,904**
Blythe Area Recreation Center	6,068	103,117	$ 14,986	54	-	$ 14,986	-	-	58	**$ 2.47**	**$ 14,986**
Carrie J Mays Community Life Center	7,125	69,979	$ 8,907	33	-	$ 8,907	2,374	$ 3,189	67	**$ 1.70**	**$ 12,096**
Carrie J Mays Gymnasium	8,000	139,006	$ 18,036	60	-	$ 18,036	-	-	59	**$ 2.25**	**$ 18,036**
Central Services	7,400	1,004,261	$ 95,758	273	-	$ 95,758	-	-	463	**$ 12.94**	**$ 95,758**
Charles B. Webster Detention Center[1]	218,375	5,933,642	$ 329,350	956	-	$ 329,350	106,364	$ 82,359	141	**$ 2.42**	**$ 411,709**
Diamond Lakes Library and Robert Howard Community Center	42,750	616,383	$ 68,197	235	-	$ 68,197	13,864	$ 15,597	82	**$ 1.96**	**$ 83,794**
Diamond Lakes Park Fields 1-5 Concession Stand	-	-	-	-	-	-	-	-	-	-	-
Diamond Lakes Park Larger Fields 1-5	-	-	-	-	-	-	-	-	-	-	-
Diamond Lakes Park Outdoor Pavilion	-	-	-	-	-	-	-	-	-	-	-
Diamond Lakes Tennis Center	1,260	356	$ 807	39	-	$ 807	-	-	1	**$ 0.64**	**$ 807**

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Doughty Community Center	3,450	36,116	$ 6,438	22	-	$ 6,438	425	$ 672	48	**$ 2.06**	**$ 7,110**
Downtown Parks Division	4,225	12,398	$ 2,206	-	-	$ 2,206	-	-	10	**$ 0.52**	**$ 2,206**
Eastview Community Center	3,920	51,851	$ 16,796	24	-	$ 16,796	-	-	45	**$ 4.28**	**$ 16,796**
Eisenhower Athletic Complex	896	51,380	$ 13,855	166	-	$ 13,855	-	-	196	**$ 15.46**	**$ 13,855**
Fire Station 1	11,549	111,290	$ 12,104	32	-	$ 12,104	-	-	33	**$ 1.05**	**$ 12,104**
Fire Station 4	9,434	64,827	$ 8,548	21	-	$ 8,548	2,617	$ 4,584	51	**$ 1.39**	**$ 13,132**
Fire Station 5	9,434	78,336	$ 9,743	23	-	$ 9,743	1,478	$ 2,951	44	**$ 1.35**	**$ 12,694**
Fire Station 6	7,038	96,858	$ 11,684	25	-	$ 11,684	-	-	47	**$ 1.66**	**$ 11,684**
Fire Station 7[1]	10,172	166,320	$ 17,002	105	-	$ 17,002	-	-	81	**$ 2.42**	**$ 17,002**
Fire Station 8	18,086	182,448	$ 22,260	51	-	$ 22,260	3,380	$ 7,322	53	**$ 1.64**	**$ 29,582**
Fire Station 9	4,789	51,447	$ 6,514	15	-	$ 6,514	1,448	$ 2,639	67	**$ 1.91**	**$ 9,153**
Fire Station 10	8,935	100,250	$ 11,292	26	-	$ 11,292	2,213	$ 5,251	63	**$ 1.85**	**$ 16,543**
Fire Station 11	3,920	47,375	$ 6,976	16	-	$ 6,976	1,712	$ 3,993	85	**$ 2.80**	**$ 10,969**
Fire Station 12[1]	9,099	81,717	$ 19,532	61	-	$ 19,532	-	-	31	**$ 2.15**	**$ 19,532**
Fire Station 13	3,600	32,132	$ 4,674	11	-	$ 4,674	-	-	30	**$ 1.30**	**$ 4,674**
Fire Station 14	3,600	38,890	$ 5,322	12	-	$ 5,322	-	-	37	**$ 1.48**	**$ 5,322**
Fire Station 15	9,433	113,348	$ 13,067	30	-	$ 13,067	3,251	$ 7,552	75	**$ 2.19**	**$ 20,619**
Fire Station 16	9,433	43,663	$ 6,080	15	-	$ 6,080	-	-	16	**$ 0.64**	**$ 6,080**
Fire Station 17	4,200	36,129	$ 5,068	13	-	$ 5,068	2,166	$ 3,390	81	**$ 2.01**	**$ 8,458**
Fire Station 18[1]	5,804	64,200	$ 6,446	17	-	$ 6,446	-	-	38	**$ 1.11**	**$ 6,446**
Fire Station 19[1]	9,860	85,264	$ 8,319	24	-	$ 8,319	3,492	$ 7,085	65	**$ 1.56**	**$ 15,404**
Fleming Tennis Center	4,025	181,657	$ 27,902	124	-	$ 27,902	-	-	154	**$ 6.93**	**$ 27,902**
Friedman Branch Library	10,634	173,268	$ 17,668	64	-	$ 17,668	-	-	56	**$ 1.66**	**$ 17,668**
Gracewood Community Center	3,360	20,712	$ 3,821	18	-	$ 3,821	767	$ 1,233	44	**$ 1.50**	**$ 5,054**
Henry Brigham Park Senior Center	10,125	98,318	$ 28,597	36	-	$ 28,597	1,636	-	13	**$ 0.72**	**$ 28,597**
Henry Brigham Park Swim Center	24,000	255,030	$ 28,597	77	-	$ 28,597	19,493	-	71	**$ 0.72**	**$ 28,597**
Information Technology	18,000	1,127,490	$ 96,595	201	-	$ 96,595	-	-	214	**$ 5.37**	**$ 96,595**

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Jamestown Community Center	6,080	45,751	$ 7,476	31	-	$ 7,476	2,607	-	69	**$ 1.23**	**$ 7,476**
Jones Pool	2,844	90,255	$ 7,726	12	-	$ 7,726	-	-	108	**$ 2.72**	**$ 7,726**
Julian Smith BBQ Pit	4,500	87,053	$ 12,417	41	-	$ 12,417	-	-	66	**$ 2.76**	**$ 12,417**
Julian Smith Casino*	9,075	6,128	$ 1,370	45	-	$ 1,370	5,633	$ 7,757	-	**-**	**$ 9,127**
May Park Community Center	15,471	226,557	$ 34,399	150	-	$ 34,399	1,257	$ 3,472	58	**$ 2.45**	**$ 37,871**
May Park Outdoor Lighting	-	-	-	-	-	-	-	-	-	-	-
May Park Print Shop	4,950	48,664	$ 7,432	23	-	$ 7,432	458	$ 967	43	**$ 1.70**	**$ 8,399**
McDuffie Community Center*1	15,601	161,109	$ 29	-	-	$ 29	3,551	$ 7,489	58	**$ 0.48**	**$ 7,518**
Newman Tennis Center	7,500	97,648	$ 16,240	90	-	$ 16,240	511	$ 1,034	51	**$ 2.30**	**$ 17,274**
Old Government House	9,839	86,136	$ 13,886	46	-	$ 13,886	-	-	30	**$ 1.41**	**$ 13,886**
Recreation, Parks, And Facilities Administrative Offices	7,575	157,665	$ 20,418	59	-	$ 20,418	-	-	71	**$ 2.70**	**$ 20,418**
Recreation, Parks, And Facilities Equipment Repair	4,800	8,444	$ 1,573	-	-	$ 1,573	-	-	6	**$ 0.33**	**$ 1,573**
Recreation, Parks, And Facilities Maintenance Shop	2,400	2,677	$ 636	-	-	$ 636	-	-	4	**$ 0.27**	**$ 636**
Recreation, Parks, And Facilities New Maintenance Shop	4,800	25,895	$ 7,474	16	-	$ 7,474	2,674	$ 1,359	74	**$ 1.84**	**$ 8,833**
Richmond County Municipal Solid Waste Landfill Main Building	20,650	279,607	$ 28,597	84	-	$ 28,597	-	-	24	**$ 0.72**	**$ 28,597**
Richmond county Municipal Solid Waste Scale House	-	-	-	-	-	-	-	-	-	-	-
Richmond County Sheriff's Office	40,000	831,047	$ 80,648	179	-	$ 80,648	17,209	$ 11,601	114	**$ 2.31**	**$ 92,249**
Richmond County Sheriff's Office South Precinct	14,000	175,892	$ 24,055	54	-	$ 24,055	-	-	43	**$ 1.72**	**$ 24,055**
Richmond County Sheriff's Office Special Ops Precinct	17,500	86,524	$ 10,298	35	-	$ 10,298	3,052	$ 4,376	34	**$ 0.84**	**$ 14,674**
Richmond County Sheriff's Training Center Administration Building	5,250	-	-	-	-	-	-	-	-	-	**-**
Richmond County Sheriff's Training Center Bunk House	3,000	43,863	$ 6,726	25	-	$ 6,726	-	-	50	**$ 2.24**	**$ 6,726**
Richmond County Sheriff's Training Center Conference Room	-	-	-	-	-	-	-	-	-	-	-
Richmond County Sheriff's Training Center Defensive Tactics Training Office	-	-	-	-	-	-	-	-	-	-	-
Richmond County Training Center Dog Kennel	1,500	16,520	$ 2,838	-	-	$ 2,838	-	-	38	**$ 1.89**	**$ 2,838**

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Richmond County Training Center Exercise Building	-	-	-	-	-	-	-	-	-	-	-
Richmond County Sheriff's Training Center EVOC Training Office	1,980	-	-	-	-	-	-	-	-	-	-
Richmond County Sheriff's Training Center Indoor Live Range	-	-	-	-	-	-	-	-	-	-	-
Richmond County Sheriff's Training Center Mess Hall*	3,850	142	$ 286	-	-	$ 286	-	-	0	**$ 0.07**	**$ 286**
Richmond County Sheriff's Training Center Myers Building	5,200	56,437	$ 8,113	30	-	$ 8,113	-	-	37	**$ 1.56**	**$ 8,113**
Richmond County Training Center Outdoor Instructional Canopies	-	-	-	-	-	-	-	-	-	-	-
Richmond County Training Center Ranger Tower Building	-	-	-	-	-	-	-	-	-	-	-
Richmond County Sheriff's Training Center Shop	5,225	-	-	-	-	-	-	-	-	-	-
Richmond County Sheriff's Training Center Tank House	-	-	-	-	-	-	-	-	-	-	-
Richmond County Sheriff's Training Center Wash House	-	-	-	-	-	-	-	-	-	-	-
Sand Hill Community Center*[1]	8,500	2,258	$ 585	-	-	$ 585	-	-	1	**$ 0.08**	**$ 585**
The Boathouse	11,500	137,843	$ 17,226	65	-	$ 17,226	2,444	$ 3,216	62	**$ 1.78**	**$ 20,442**
Traffic Engineering Division Street Lighting Building	9,500	36	$ 263	-	-	$ 263	-	-	-	**$ 0.03**	**$ 263**
Traffic Engineering Division Sign Shop	4,500	25,592	$ 4,063	17	-	$ 4,063	-	-	19	**$ 0.90**	**$ 4,063**
Wallace Branch Library	5,620	64,714	$ 8,602	25	-	$ 8,602	1,071	$ 603	58	**$ 1.64**	**$ 9,205**
Warren Road Community Center	15,369	258,067	$ 32,502	80	-	$ 32,502	-	-	57	**$ 2.11**	**$ 32,502**
WT Johnson Center*	18,435	87,946	$ 14,019	67	-	$ 14,019	2,052	$ 3,000	27	**$ 0.92**	**$ 17,019**
Totals (All Available Information)	**1,346,036**	**27,740,893**	**$ 2,364,821**	**6,961**	**-**	**$ 2,364,821**	**249,154**	**$ 252,814**	**-**	**-**	**$ 2,617,635**
Totals (Only Buildings w/ Reliable Utility Data)	**1,188,487**	**25,711,324**	**$ 2,185,728**	**6,346**	**-**	**$ 2,185,728**	**239,571**	**$ 233,657**	**94**	**$ 2.04**	**$ 2,419,385**

*Buildings with compromised utility data

[1]Building with baseline other than October 2018 through September 2019

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BUILDING TYPES

To help understand the energy consumption in each facility it can be beneficial to classify the primary activity of each facility, in a similar way to how the national CBECS energy database does. During the initial audit phase, several interviews were conducted with Augusta-Richmond County's personnel to get a clearer understanding as to what type of activities occur within the buildings.

The Trane team classified the Augusta-Richmond County facilities in to building types as noted in the table below. These classifications were used when running simple analyses on the facility utility data (listed in Section 2) to ensure baseline utility profiles were accurate given the building's type and use. These classifications were also used to ensure modeling of applicable buildings was accurate.

Table 21: Building Types

Building Name	Type
911 Emergency Services	Public Safety
Appleby Library	Library
Augusta Animal Services	Service/Other
Augusta Aquatics Center	Park and Rec
Augusta Commons and Riverwalk	Mercantile
Augusta Fire Department Administrative Building	Public Safety
Augusta Municipal Building	Admin/Ofc
Augusta Public Library Headquarters	Library
Augusta-Richmond County Judicial Center	Admin/Ofc
Bernie Ward Community Center	Park and Rec
Blythe Area Recreation Center	Park and Rec
Carrie J Mays Community Life Center	Park and Rec
Carrie J Mays Gymnasium	Park and Rec
Central Services	Admin/Ofc
Charles B Webster Detention Center Main Building	Services/Other
Diamond Lakes Library and Robert Howard Community Center	Library/Park and Rec
Diamond Lakes Park Fields 1-5 Concession Stand	Park and Rec
Diamond Lakes Park Larger Fields 1-5	Park and Rec
Diamond Lakes Park Outdoor Pavilion	Park and Rec
Diamond Lakes Tennis Center	Park and Rec
Doughty Community Center	Park and Rec
Downtown Park Division	Admin/Ofc
Eastview Community Center	Park and Rec
Eisenhower Athletic Complex	Park and Rec
Fire Station 1	Public Safety
Fire Station 4	Public Safety
Fire Station 5	Public Safety
Fire Station 6	Public Safety
Fire Station 7	Public Safety

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Building Name	Type
Fire Station 8	Public Safety
Fire Station 9	Public Safety
Fire Station 10	Public Safety
Fire Station 11	Public Safety
Fire Station 12	Public Safety
Fire Station 13	Public Safety
Fire Station 14	Public Safety
Fire Station 15	Public Safety
Fire Station 16	Public Safety
Fire Station 17	Public Safety
Fire Station 18	Public Safety
Fire Station 19	Public Safety
Fleming Tennis Center	Park and Rec
Friedman Branch Library	Library
Gracewood Community Center	Park and Rec
Henry Brigham Park Senior Center	Park and Rec
Henry Brigham Park Swim Center	Park and Rec
Information Technology	Admin/Ofc
Jamestown Community Center	Park and Rec
Jones Pool	Park and Rec
Julian Smith BBQ Pit	Mercantile
Julian Smith Casino	Mercantile
May Park Community Center	Park and Rec
May Park Outdoor Lighting	Park and Rec
May Park Print Shop	Park and Rec
McDuffie Community Center	Park and Rec
Newman Tennis Center	Park and Rec
Old Government House	Mercantile
Recreation, Parks, And Facilities Administrative Offices	Admin/Office
Recreation, Parks, And Facilities Equipment Repair	Service/Other
Recreation, Parks, And Facilities Maintenance Shop	Service/Other
Recreation, Parks, And Facilities New Maintenance Shop	Service/Other
Richmond County Sheriff's Office	Admin/Ofc
Richmond County Sheriff's Office South Precinct	Admin/Ofc
Richmond County Sheriff's Office Special Ops Precinct	Admin/Ofc
Richmond County Sheriff's Training Center Administration Building	Admin/Ofc
Richmond County Sheriff's Training Center Bunk House	Admin/Ofc
Richmond County Sheriff's Training Center Conference Room	Admin/Ofc
Richmond County Sheriff's Training Center Defensive Tactics Training Office	Admin/Ofc

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Building Name	Type
Richmond County Training Center Dog Kennel	Service/Other
Richmond County Training Center Exercise Building	Service/Other
Richmond County Sheriff's Training Center EVOC Training Office	Admin/Ofc
Richmond County Sheriff's Training Center Indoor Live Range	Service/Other
Richmond County Sheriff's Training Center Mess Hall	Service/Other
Richmond County Sheriff's Training Center Myers Building	Admin/Ofc
Richmond County Training Center Outdoor Instructional Canopies	Service/Other
Richmond County Training Center Ranger Tower Building	Service/Other
Richmond County Sheriff's Training Center Shop	Service/Other
Richmond County Training Center Tank House	Service/Other
Richmond County Training Center Wash House	Service/Other
Richmond County Municipal Solid Waste Landfill Main Building	Service/Other
Richmond county Municipal Solid Waste Scale House	Service/Other
Sand Hill Community Center	Park and Rec
The Boathouse	Mercantile
Traffic Engineering Division Street Lighting Building	Admin/Ofc
Traffic Engineering Division Sign Shop	Admin/Ofc
Wallace Branch Library	Library
Warren Road Community Center	Park and Rec
WT Johnson Center	Park and Rec

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6. ENERGY CONSERVATION MEASURE EVALUATION

6.1 OVERVIEW OF ECMs CONSIDERED

Trane is proposing ECMs for 89 separate facilities in this project. The ECMs, which will result in both annual energy and cost reduction, can be divided into 6 categories. These categories are:

1) Lighting Fixture and System Retrofits and Improvements
2) HVAC (Heating Ventilation and Air Conditioning) System Improvements
3) Controls (for building mechanical and electrical systems) Improvements
4) Water (domestic) Fixture Retrofits and Improvements
5) Solar PV installations
6) Building Envelope (Walls, Windows, Doors, Roof) Improvements

Details on these ECMs is presented in this section. The ECM Matrix below shows which ECMs are proposed in each building surveyed during the Detail Energy Audit. For detailed information regarding modeling methodology for these locations and ECMs, refer to Appendix 6.

Table 22: ECM Matrix

Building Name	Lighting Improvements	HVAC	Controls	Water and Sewer Conservation	PV Solar	Building Envelope
911 Emergency Services	X					X
Appleby Library	X					X
Augusta Animal Services	X					
Augusta Aquatics Center	X					X
Augusta Commons and Riverwalk	X					
Augusta Fire Department Administrative Building	X					X
Augusta Fire Department Training Center	X					
Augusta Municipal Building	X	X	X		X	X
Augusta Public Library Headquarters	X					X
Augusta-Richmond County Judicial Center	X	X	X			
Bernie Ward Community Center	X					X
Blythe Area Recreation Center	X	X	X			X
Carrie J Mays Community Life Center	X		X			X
Carrie J Mays Gymnasium	X	X	X			
Central Services	X					X
Charles B Webster Detention Center	X	X	X	X		
Diamond Lakes Library and Robert Howard Community Center	X				X	X
Doughty Community Center	X					X
Downtown Park Division		X	X			
Eastview Community Center	X		X			X
Eisenhower Athletic Complex	X					
Fire Station 1	X					X
Fire Station 4	X					X
Fire Station 5	X					X
Fire Station 6	X					X
Fire Station 7	X					X
Fire Station 8	X					X
Fire Station 9	X					

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Building Name	Lighting Improvements	HVAC	Controls	Water and Sewer Conservation	PV Solar	Building Envelope
Fire Station 10	X					X
Fire Station 11	X					X
Fire Station 12	X					X
Fire Station 13	X					X
Fire Station 14						X
Fire Station 15						X
Fire Station 16	X					X
Fire Station 17	X					X
Fire Station 18	X					X
Fire Station 19	X					X
Fleming Tennis Center	X					
Friedman Branch Library	X					X
Gracewood Community Center	X	X	X			X
Henry Brigham Park Senior Center	X					X
Henry Brigham Park Swim Center	X		X			X
Information Technology	X		X			X
Jamestown Community Center	X	X	X			X
Jones Pool	X					
Julian Smith BBQ Pit	X					X
Julian Smith Casino	X					X
May Park Community Center	X	X	X			X
May Park Print Shop			X			X
McDuffie Community Center	X	X	X			X
Newman Tennis Center	X	X	X			X
Old Government House	X	X	X			X
Recreation, Parks, And Facilities Administrative Offices	X	X	X			X
Recreation, Parks, And Facilities Equipment Repair	X					
Recreation, Parks, And Facilities Maintenance Shop	X					
Recreation, Parks, And Facilities New Maintenance Shop	X		X			
Richmond County Municipal Solid Waste Landfill Main Building	X	X	X			
Richmond county Municipal Solid Waste Scale House		X	X			
Richmond County Sheriff's Office	X					X
Richmond County Sheriff's Office South Precinct	X					X
Richmond County Sheriff's Office Special Ops Precinct						X
Richmond County Sheriff's Training Center Administration Building	X					
Richmond County Sheriff's Training Center Bunk House	X		X			
Richmond County Training Center Dog Kennel	X					
Richmond County Sheriff's Training Center EVOC Training Office	X					
Richmond County Sheriff's Training Center Mess Hall	X	X	X			
Richmond County Sheriff's Training Center Myers Building	X	X	X			

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Building Name	Lighting Improvements	HVAC	Controls	Water and Sewer Conservation	PV Solar	Building Envelope
Richmond County Sheriff's Training Center Training Center Shop	X					
Sand Hill Community Center	X	X	X			X
Sign Shop AED	X					
The Boathouse	X					
Traffic Engineering Street Lighting	X					
Wallace Branch Library	X					X
Warren Road Community Center	X	X	X			X
WT Johnson Center	X	X	X			X

6.2 LIGHTING IMPROVEMENTS SCOPE AND ECMS

This measure involves converting older style lighting fixtures, such as fluorescent and incandescent, to modern LED lighting fixtures and lamps. Unless a building has been built or renovated in the past few years, it is common to find extensive use of fluorescent, metal halide, and incandescent fixtures throughout the building. These older lighting technologies are a product of their time and often remain without intentional replacement. Older lighting technologies require more wattage to produce the same amount of light as LED fixtures. This results in more electrical energy consumption for lighting systems and also a higher heat output from the lamps which raises HVAC cooling costs.

For this measure, existing fluorescent, metal halide and incandescent lighting fixtures will be replaced/retrofitted with new LED tubes, lamps, retrofit kits, and/or fixtures. This will greatly reduce the energy required to illuminate the building. Additionally, cooling systems will have to run less often to offset the heat generated by the lighting.

There are several additional benefits to LED lighting technology. LED lighting has longer burn hour life, faster on/off response time, and easier dimming capabilities compared to fluorescent and incandescent technologies. Because LED light fixtures have longer burn hour life, this will reduce the material and time cost of replacing burned out lamps. This is especially advantageous in building areas with high ceilings, such as high-bay areas, where the maintenance costs associated with lamp replacements includes renting or obtaining lifts to reach the fixtures.

Currently, a wide variety of fluorescent, incandescent, metal halide, and other types of lighting technologies exist throughout Augusta-Richmond County's facilities. The specific retrofits, replacements, or upgrades for this building are described in Appendix 1, the Lighting Room by Room audit worksheet. In this table the proposed descriptions and quantities are given for each of the rooms listed. Short summaries of existing lighting equipment for each building can also be found in section 2.

Overall, the customer will receive the following benefits from the lighting upgrades:

- Energy savings
- Maintenance cost savings
- Improved aesthetics
- Better security and employee safety
- Environmental sensitivity / ability to help your organization improve its sustainability
- Tenant satisfaction, including potentially improved health and efficiency

Affected Locations and Scope

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Below is a list of buildings that are in scope for energy savings associated with lighting.

Table 23: Lighting Improvements Facilities Affected

Building Name
911 Emergency Services
Appleby Library
Augusta Animal Services
Augusta Aquatics Center
Augusta Commons and Riverwalk
Augusta Fire Department Administrative Building
Augusta Fire Department Training Center
Augusta Municipal Building
Augusta Public Library Headquarters
Augusta-Richmond County Judicial Center
Bernie Ward Community Center
Blythe Area Recreation Center
Carrie J Mays Community Life Center
Carrie J Mays Gymnasium
Central Services
Charles B Webster Detention Center
Diamond Lakes Library and Robert Howard Community Center
Doughty Community Center
Eastview Community Center
Eisenhower Athletic Complex
Fire Station 1
Fire Station 4
Fire Station 5
Fire Station 6
Fire Station 7
Fire Station 8
Fire Station 9
Fire Station 10
Fire Station 11
Fire Station 12
Fire Station 13
Fire Station 16
Fire Station 17
Fire Station 18
Fire Station 19
Fleming Tennis Center
Friedman Branch Library

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Building Name
Gracewood Community Center
Henry Brigham Park Senior Center
Henry Brigham Park Swim Center
Information Technology
Jamestown Community Center
Jones Pool
Julian Smith BBQ Pit
Julian Smith Casino
May Park Community Center
McDuffie Community Center
Newman Tennis Center
Old Government House
Recreation, Parks, And Facilities Administrative Offices
Recreation, Parks, And Facilities Equipment Repair
Recreation, Parks, And Facilities Maintenance Shop
Recreation, Parks, And Facilities New Maintenance Shop
Richmond County Municipal Solid Waste Landfill Main Building
Richmond County Sheriff's Office
Richmond County Sheriff's Office South Precinct
Richmond County Sheriff's Training Center Administration Building
Richmond County Sheriff's Training Center Bunk House
Richmond County Training Center Dog Kennel
Richmond County Sheriff's Training Center EVOC Training Office
Richmond County Sheriff's Training Center Mess Hall
Richmond County Sheriff's Training Center Myers Building
Richmond County Sheriff's Training Center Training Center Shop
Sand Hill Community Center
Sign Shop AED
The Boathouse
Traffic Engineering Street Lighting
Wallace Branch Library
Warren Road Community Center
WT Johnson Center

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6.3 HVAC SCOPE AND ECMS

As part of the scope of this project, Trane will be furnishing and installing several different HVAC system types and implementing different Energy Conservation Measures (ECMs) including those listed in the table below. Most of the new equipment and systems that will be installed serve to replace and/or to retrofit existing HVAC equipment and systems. The table below provides a listing of the ECMs which will be implemented in each building. A description of each of these ECMs is presented in the body of this section below.

Table 24: Summary of HVAC Energy Conservation Measure by Building

Building Name	Chiller/ Cooling Tower Retrofit	Variable Primary Variable Secondary Pumping CHW/HW	Re-commission Water-Side Economizer	DX Unit Retrofits	Add Condenser Water Pump VFDs	DHW Retrofit	Dynamic Air Filtration	FIM 1: AHU Replacement	FIM 2: New 60-ton Chiller	FIM 3: Bi-polar Ionization	FIM 4: Dynamic Air Filtration
Augusta Municipal Building	X	X	X		X					X	
Augusta Richmond County Judicial Center		X					X		X	X	X
Blythe Community Center				X							
Carrie J Mays Gymnasium				X							
Charles B Webster Detention Center	X	X					X	X		X	X
Downtown Park Division				X							
Gracewood Community Center				X							
Henry Brigham Park Swim Center						X					
Jamestown Community Center				X							
May Park Community Center				X							
McDuffie Woods Community Center				X							
Newman Tennis Center				X							
Old Government House				X							
Recreation, Parks, and Facilities Administrative Offices				X							

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Building Name	Chiller/ Cooling Tower Retrofit	Variable Primary Variable Secondary Pumping CHW/HW	Re-commission Water-Side Economizer	DX Unit Retrofits	Add Condenser Water Pump VFDs	DHW Retrofit	Dynamic Air Filtration	FIM 1: AHU Replacement	FIM 2: New 60-ton Chiller	FIM 3: Bi-polar Ionization	FIM 4: Dynamic Air Filtration
Richmond County Municipal Solid Waste Main Building				X							
Richmond County Municipal Solid Waste Landfill Scale House				X							
Richmond County Sheriff's Training Center Mess Hall				X							
Richmond County Sheriff's Training Center Myers Building				X							
Sand Hill Community Center				X							
Warren Road Community Center				X							
WT Johnson Community Center				X							

Abbreviation Notes:
DX = Direct Expansion (cooling technology used in residential and small commercial HVAC systems)
DCV: Demand Control Ventilation
CHW = Chilled Water
VFDs = Variable Frequency Drives
CV = Constant Air Volume
VAV = Variable Air Volume
RCx = Re-Commissioning
The following ECMs apply to the buildings listed in the table above

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6.3.1 Chiller / Cooling Tower Retrofit

This measure proposes replacing the existing water-cooled chillers with new, high-efficiency chillers. In some cases, new cooling towers will be installed to accompany these new chillers. The existing chillers to be removed as part of this measure are older, degraded efficiency chillers. These machines provide chilled water to coils in air handling units and fan coils to cool the building. Cooling towers provide condenser water which accepts heat rejected from a chiller and transfers it to the environment (outdoors) via evaporative cooling.

Over time, chillers lose efficiency due to fouling, which is the build-up of contaminants on the heat exchanger surfaces. Chillers also lose efficiency as they age due to corrosion and typical wear on moving parts. Additionally, the chillers being replaced are 20 years old or older and nearing the end of their useful life. Replacing them in this project will eliminate capital replacements costs in the near future.

The new chillers that are installed will provide a higher IPLV (integrated part-load value) than the existing chillers they will replace, thereby providing cooling operation energy savings. The new chillers also support variable flow through the evaporator barrels, which allows pumping systems to be converted to lower power consuming variable flow set-ups. Also, with the newer on-board controllers, Tran can employ chiller/tower optimization control

Affected Equipment

This measure is proposed for two locations: The Augusta Municipal Building, and The Charles B. Webster Detention Center. Note that the cooling tower replacements will only occur at the Detention Center's older plant, as the towers for the Detention Center's newer plant, and the towers at the municipal building are in decent shape. Below is a list of equipment affected by this measure.

Table 25: Chiller/Cooling Tower Retrofit Affected Equipment

Building	Equipment	Model No.	Serial No.	Unit Size	Date of Manufacture/Age of Unit
Augusta Municipal Building	Water-Cooled Chiller	CVHE400	L01B06967	250 tons	2001
Augusta Municipal Building	Water-Cooled Chiller	CVHE400	L01B06968	250 tons	2001
Charles B Webster Detention Center	Water-Cooled Chiller	CVHE450	L97A00016	200 tons	1997
Charles B Webster Detention Center	Water-Cooled Chiller	CVHE450	L97A00061	200 tons	1997
Charles B Webster Detention Center	Cooling Tower	Tag: CT-1	-	-	-

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Calculation Methodology

Savings were calculated in Trace 700™. To see detailed methodology for savings calculations for this ECM, refer to the Trace 700™ Methods of Estimating Savings Appendices.

Existing and Proposed Value Assumptions

Savings were calculated based on changing key inputs and assumptions from an existing value to a proposed value. For a chiller/cooling tower retrofit, the key variables to be changed are the cooling efficiency and the cooling tonnage. The table below shows the key values that were modified to calculate the energy savings for this measure.

Table 26: Chiller/Cooling Tower Retrofit Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Augusta Municipal Building	Full Load Chiller Efficiency	0.6711 kW/ton	0.5418 kW/ton
	Chiller Tonnage	205 tons	250 tons
Charles B Webster Detention Center	Full Load Chiller Efficiency	0.72 kW/ton	0.5886 kW/ton
	Cooling Tower Fan Control	Constant	VFD w/ 10°F ΔT

6.3.2 Variable Primary Variable Secondary Pumping / VFDs

A variable primary, variable secondary flow CHW retrofit will be implemented in several buildings where traditional primary/secondary flow systems exist. In these systems, constant volume flow primary chilled water is currently in place. This is usually due to older chillers being unable to support variable flow through the evaporator barrels. With newer chillers the existing pumping systems can be easily converted to variable flow, using the existing pumps.

Variable primary, variable secondary flow chilled water systems are configured to use the existing separate primary and secondary loops, implying that two sets of pumps remain to move chilled water. One set of pumps (primary loop) moves water through the chiller(s), and another (secondary loop) moves chilled water through the distribution system in the building. New Variable speed/frequency drives (VSD/VFDs) will be installed to adjust and control pump speed. The existing constant volume pump motors will be retrofit with new grounding rings or replaced with new inverter duty motors to support new VFDs. Chilled water coils

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on air handlers with existing three-way (constant flow) chilled water valves will be retrofit with new two-way chilled water valves as part of this work.

In a variable primary, variable secondary system, and flow meter is installed on the primary flow bypass. The controls system uses this to help match chiller evaporator (primary) flow rate to system flow demand as close as possible. This reduces the average chiller evaporator flow rate during part-load cooling conditions. Reduction of chilled water primary flow rate leads to hydraulic (pumping) energy savings during these conditions. In addition, reduced chiller evaporator flow (primary loop) at a given load serves to improve chiller operating efficiency at that load.

This measure requires more complicated controls algorithms than traditional variable primary system, which require only one set of primary pumps for the entire system. But if designed and controlled properly, both types of pumping system use similar amounts of energy. However, it is much cheaper to retrofit existing primary/secondary systems to this type of all-variable pumping system, as new pumps and piping modifications are not needed.

For this project, the Augusta Municipal Building and the Augusta Richmond County Judicial Center already have variable flow secondary systems. For these buildings, only the primary loop must be converted to variable flow. For the Charles B. Webster Detention Center, both the primary and secondary loop for the old chiller water plant are constant volume. At this facility both loops will be converted to variable flow and AHU chilled water coils will be replaced with 2-way valves.

Affected Equipment

Below is a list of equipment affected by this measure.

Table 27: Affected Equipment

Building	Qty	Equipment	Unit Size
Augusta Municipal Building	2	Primary Chilled Water Pump	7.5 HP
Augusta Richmond County Judicial Center	2	Primary Chilled Water Pump	30 HP
Charles B Webster Detention Center	2	Primary Chilled Water Pump	5 HP
Charles B Webster Detention Center	2	Secondary Chilled Water Pump	50 HP
Charles B Webster Detention Center	1	Primary Chilled Water Pump	5 HP
Charles B Webster Detention Center	1	Primary Chilled Water Pump	7.5 HP
Charles B Webster Detention Center	1	Secondary Chilled Water Pump	10 HP
Charles B Webster Detention Center	1	Secondary Chilled Water Pump	15 HP

Building	Qty	Equipment	Equipment Tag	Flow (GPM)
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-1A	110
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-1B	110
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-1C	110
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-1D	8.2
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-2D	5
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-3D	19
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-7E	33.6
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-8E	49.2
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-1F	96
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-2F	2.4

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Building	Qty	Equipment	Equipment Tag	Flow (GPM)
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-3F	9.6
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-4F	-
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-1G	114
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-2G	2.4
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-3G	4.8
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-4G	9.6
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-1H	110
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-2H	22
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-3H	2.4
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-4H	7.2
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-1I	30.7
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-2I	45.7
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-3I	1.8
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-2V	7.2
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-1V	58
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-1FC	9.6
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-2FC	4.8
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-3FC	4.8
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-4FC	4.8
Charles B Webster Detention Center - Main Building	1	AHU (2-Way Control Valve)	AHU-5FC	4.8

Calculation Methodology

Savings were calculated in Trace 700™. To see detailed methodology for savings calculations for this ECM, refer to the Trace 700™ Methods of Estimating Savings appendices.

Existing and Proposed Value Assumptions

Savings were calculated based on changing key inputs and assumptions from an existing value to a proposed value. For the variable primary variable secondary pumping, the key variables to be changed are the pump power curves. For the existing systems, constant volume pumps were used. With constant volume pumps, the pump power does not change with load on the system. For the proposed case, variable speed pump power curves were used. These curves have a roughly cubic power reduction as load decreases. At the noted minimum speed the pump curves flatten, having roughly constant power for all loads below the load when the pump reaches minimum flow.

The table below shows the key values that were modified to calculate the energy savings for this measure.

Table 28: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Augusta Municipal Building	Primary CHWP Minimum Speed	100%	50%
Augusta Richmond County Judicial Center	Primary CHWP Minimum Speed	100%	50%

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Building Name	Input Name	Existing Value	Proposed Value
Charles B Webster Detention Center	Secondary CHWP Power (original building)	28.94 kW	17.36 kW
	Secondary CHWP Minimum Speed	100%	30%
	Primary CHWP Minimum Speed	100%	50%

6.3.3 Recommission Water-Side Economizer

Existing water side economizers already installed in the Municipal Building will be recommissioned to facilitate operation during conditions when outdoor air wet bulb temperature is low enough to provide “free cooling”. Water side economizers typically consist of a plate and frame heat exchanger which transfers heat from a chilled water system to a cooling tower water system during these favorable ambient conditions.

Tower free cooling water-side economizer operation saves energy by allowing the cooling tower water system to extract thermal energy from the chilled water system without mechanical (chiller) cooling operation. This project will recommission a couple of existing tower free cooling water-side economizers, thereby maximizing their operation during periods when ambient wet bulb temperature is low (cool & dry time periods).

Affected Equipment

Table 29: Affected Equipment

Building	Equipment	Model No.	Serial No.
Augusta Municipal Building	Plate & Frame Heat Exchanger	AT40 F-20	262679-3

Calculation Methodology

Savings for this measure were calculated in Trace 700™. To see detailed methodology for savings calculations for this ECM, refer to the Trace 700™ Methods of Estimating Savings appendices.

Existing and Proposed Value Assumptions

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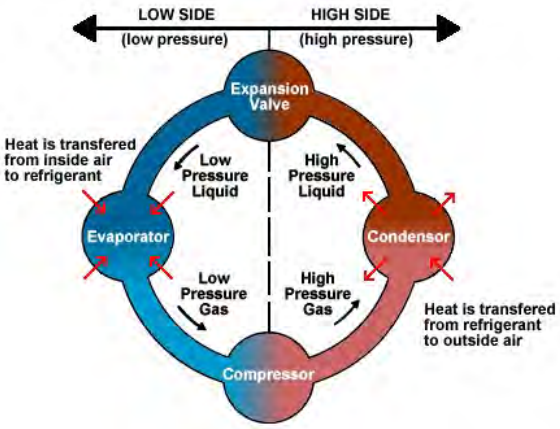
Savings were calculated based on changing key inputs and assumptions from an existing value to a proposed value. For recommissioning the waterside economizer, the key variables to be changed are the availability of the free cooling and adding in the pump power necessary for operation of the economizer. The table below shows the key values that were modified to calculate the energy savings for this measure.

Table 30: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Augusta Municipal Building	Free Cooling Type	None	Plate and Frame
	Free Cooling Pump Power	None	4.30 kW

6.3.4 DX Unit Retrofits



This measure proposes to replace existing DX equipment which is at or nearing the end of its predicted useful life. Direct expansion (DX) air conditioning equipment is the technical name for typical residential and small commercial style rooftop units and split systems. Many Augusta facilities are cooling and heated with these systems.

DX systems consist of a refrigerant loop, in which the refrigerant is compressed and expanded at different points of the loop to transfer thermal energy. Typically, a refrigerant coil is placed directly in the supply air stream, where the refrigerant absorbs thermal energy as it evaporates and expands. Thermal energy is rejected at a compressor, where the refrigerant is compressed and condenses, rejecting the heat that was removed from the supply air steam.

Over time, HVAC units degrade in operational efficiency as coil surfaces oxidize on the exterior and sometimes scale on the interior which reduces heat transfer efficiency. The moving mechanical components also wear, which further reduces the operational efficiency of the equipment. The new equipment will be installed in place of the existing equipment, including providing new refrigerant line sets for all split systems.

Additionally, older DX equipment uses R-22 as its refrigerant, which has been phased out in favor of newer refrigerants with lower adverse environmental impact. Because it has been phased out, R-22 is far less available, meaning increased maintenance costs if additional refrigerant is required. Existing refrigerant will be handled and disposed of in a manner consistent with local environmental requirements.

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Affected Equipment

Table 31: DX retrofit Affected Equipment

Building	Qty	Tag	Equipment	Manufacturer	Model No.	Serial No.	Unit Size	Date of Manufacture/Age of Unit
Blythe Community Center	1	OHP-1	Condensing Unit	Trane	TWA060	P354D491F	5 ton	1999
Blythe Community Center	1	IHP-1	Split System AHU	Trane	TWE060C15FD0	P35535G1V	5 ton	1999
Blythe Community Center	1	OHP-3	Condensing Unit	Trane	TWA030	P352EC3CF	-	1999
Blythe Community Center	1	IHP-3	Split System AHU	Trane	TWE060C15FD0	P3213PF1V	2.5 ton	1999
Blythe Community Center	1	OHP-27	Condensing Unit	Trane	FY4ANF030	2809A68714	2.5 ton	2009
Blythe Community Center	1	IHP-27	Split System AHU	Trane	25HCB330A300	0709E13603	-	2009
Carrie J Mays Gymnasium	1	Offices	Condensing Unit	Rheem	RPNE-036JAZ	7348 M1907 10704	3 ton	2007
Carrie J Mays Gymnasium	1	Offices	Split System AHU	Rheem	RHSA-HM3617JA	M2707 02620	3 ton	2007
Carrie J Mays Gymnasium	1	RTU-1	Rooftop Unit	Trane	TCH180B30BHB	419100476D	15 ton	2004
Carrie J Mays Gymnasium	1	RTU-2	Rooftop Unit	Trane	TCH180B30BHB	-	15 ton	2004
Downtown Parks Division	1	-	Condensing Unit	Rheem	RAKA-042JAZ	5461 M0604 04766	3.5 ton	2004
Downtown Parks Division	1	-	Split System Furnace	Rheem	RGPH-10EBRJR	-	100 MBH	2004
Downtown Parks Division	1	-	Condensing Unit	Rheem	RAKA-042JAZ	5461 M0604 04826	3.5 ton	2004
Downtown Parks Division	1	-	Split System Furnace	Rheem	RGPH-10EBRJR	-	100 MBH	2004
Downtown Parks Division	1	-	Condensing Unit	Rheem	RAKA-037JAZ	5429 M1996 09265	3.0 ton	1996
Downtown Parks Division	1	-	Split System Furnace	Rheem	RGPH-10EBRJR	FU5D307F130407987	100 MBH	1996
Gracewood Community Center	1	-	Condensing Unit	Ruud	RGPH-12EARJR	FD5D307F130006503	5 ton	2006
Gracewood Community Center	1	-	Split System Furnace	Rheem	UAND-060JAZ	7307 M3906 03971	-	2006
Gracewood Community Center	1	-	Condensing Unit	Ruud	RGPH-12EARJR	-	5 ton	2006
Gracewood Community Center	1	-	Split System Furnace	Rheem	UAND-060JAZ	-	-	2006
Jamestown Community Center	1	-	Condensing Unit	Rheem	RANL-060JAZ	7390W071200856	5 ton	2012
Jamestown Community Center	1	-	Split System Furnace	Rheem	-	-	-	2012
Jamestown Community Center	1	-	Condensing Unit	Rheem	RANL-060JAZ	7390W071200844	5 ton	2012
Jamestown Community Center	1	-	Split System Furnace	Rheem	-	-	-	2012
Jamestown Community Center	1	-	Condensing Unit	Rheem	13AJN24A01	W091438450	2 ton	2014
Jamestown Community Center	1	-	Split System Furnace	Rheem	-	-	-	2014
Jamestown Community Center	1	-	Condensing Unit	Tempstar	N2A360AKB200	E082715009	3 ton	2008
Jamestown Community Center	1	-	Split System Furnace	Tempstar	-	-	-	2008
Jamestown Community Center	1	-	Condensing Unit	Tempstar	N2A360AKB200	E081702146	3 ton	2008
Jamestown Community Center	1	-	Split System Furnace	Tempstar	-	-	-	2008

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Building	Qty	Tag	Equipment	Manufacturer	Model No.	Serial No.	Unit Size	Date of Manufacture/Age of Unit
May Park Community Center	1	-	Condensing Unit	Ruud	UPKA-049JAZ	6583 M2101 17463	4 ton	2001
May Park Community Center	1	-	Split System AHU	Ruud	UBHA-21J14SUAA	TM370004103	-	2001
May Park Community Center	1	Club Room	Condensing Unit	-	-	-	~3 ton	~2001
May Park Community Center	1	Club Room	Split System AHU	-	-	-	-	~2001
May Park Community Center	1	Main Office	Condensing Unit	Trane	4TTA3036A3000AA	9061LW93F	3 ton	2009
May Park Community Center	1	Main Office	Split System AHU	-	-	-	-	2000
McDuffie Woods Community Center	1	Fitness Room (AHU-12)	Condensing Unit	Trane	2TTA0060A3000AA	23252FJ3F		2002
McDuffie Woods Community Center	1	Fitness Room (AHU-12)	Split System AHU	Trane	TWE060	34617LH2V	5 ton	2002
McDuffie Woods Community Center	1	Multipurpose Room	Condensing Unit	Trane	2TWA0036A300AB	3371P3K3F	3 ton	2003
McDuffie Woods Community Center	1	Multipurpose Room	Condensing Unit	Trane	2TWA0036A300AB	3371P1N3F	3 ton	2003
McDuffie Woods Community Center	1	Multipurpose Room	Split System AHU	Trane	TWE090	3414TABD	7.5 ton	2003
McDuffie Woods Community Center	1	Gym Northeast	Condensing Unit	Payne	PA13PR060-J	4511X65696	5 ton	2011
McDuffie Woods Community Center	1	Gym Northeast	Split System Furnace	Carrier	58STA110---14122	2311A22142	110 MBH	2011
McDuffie Woods Community Center	1	Game Room	Condensing Unit	Payne	PA13PR060-J	1512X64425	5 ton	2012
McDuffie Woods Community Center	1	Game Room	Split System Furnace	ICP	N8MPN100F20B2	A073343942	100 MBH	2007
McDuffie Woods Community Center	1	Gym Northeast	Condensing Unit	Payne	PA13PR060-J	1512X64634	5 ton	2012
McDuffie Woods Community Center	1	Gym Northeast	Split System Furnace	Frigidaire	FG7SA 126C-45D1	FGG170378070	126 MBH	2003
Newman Tennis Center	1	-	Condensing Unit	Rheem	RANL-060JAZ	7390M340806667	5 ton	2008
Newman Tennis Center	1	-	Split System Furnace	Rheem	RGPN-12EARJR	FU5D307F170903946	-	2009
Old Government House	1	-	Condensing Unit	Trane	TWA060	J02209663	5 ton	1994
Old Government House	1	-	Split System AHU	Trane	BWE060	C26177502	-	1988
Recreation, Parks, and Facilities Administrative Offices	1	2nd Floor Admin (#4)	Condensing Unit	Ruud	UPKA-043JAZ	M4303 04521	3.5 ton	2003
Recreation, Parks, and Facilities Administrative Offices	1	2nd Floor Admin (#4)	Split System AHU	Ruud	UBHC-21J14SFA	6391 M4303 04521	-	2004
Recreation, Parks, and Facilities Administrative Offices	1	Tonia's Office	Ductless Split	Mitsubishi	MU15TN	1000584	1.25 ton	2001
Recreation, Parks, and Facilities Administrative Offices	1	Marilyn's Office	Ductless Split	EMI	SHC09D	1-03-B-4194-09	0.75 ton	2003
Richmond County Municipal Solid Waste Landfill Main Building	2	CU-5A/5B	Condensing Unit	Carrier	25HCB360A00	5008E09035, 3508E23604	5 ton	2008

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Building	Qty	Tag	Equipment	Manufacturer	Model No.	Serial No.	Unit Size	Date of Manufacture/Age of Unit
Richmond County Municipal Solid Waste Landfill Main Building	1	AH-5	Split System AHU	Carrier	40RMQ012—B611HC	3409U17932	-	2009
Richmond County Municipal Solid Waste Landfill Main Building	1	CU-8	Condensing Unit	Carrier	25HBS348A300	3409E21527	4 ton	2009
Richmond County Municipal Solid Waste Landfill Main Building	1	AH-8	Split System AHU	Carrier	FV4CNB006	3109A87310	-	2009
Richmond County Municipal Solid Waste Landfill Main Building	1	CU-9	Condensing Unit	Carrier	25HBS348A300	2108E12780	4 ton	2008
Richmond County Municipal Solid Waste Landfill Main Building	1	AH-9	Split System AHU	Carrier	FV4CNB006	3109A87312	-	2009
Richmond County Municipal Solid Waste Landfill Scale House	1	CU-11	Condensing Unit	Carrier	25HBA330A310	1207E02209	2.5 ton	2007
Richmond County Municipal Solid Waste Landfill Scale House	1	AH-11	Split System AHU	Carrier	FV4BNF002	3707A83520	-	2007
Richmond County Sheriff's Training Center Mess Hall	1	-	Ductless Split	Mitsubishi	MSY-D36NA	5002123T	3 ton	2005
Richmond County Sheriff's Training Center Myers Building	2	-	Ductless Split	Fujitsu	AOU24RLXFW	KTN010133, KTN015000	2 ton	~2005
Richmond County Sheriff's Training Center Myers Building	1	-	Ductless Split	Daikin	-	-	2 ton	~2005
Sand Hill Community Center	1	-	Condensing Unit	Trane	2TWB000A	4063J1K2F	5 ton	2004
Sand Hill Community Center	1	-	Split System AHU	Trane	TWE060	3454XB42V	-	2003
Warren Road Community Center	1	Weight Room	Condensing Unit	Rheem	RPNL-024JAZ	7475 M0208 08219	2 ton	2008
Warren Road Community Center	1	Weight Room	Split System AHU	Rheem	RHSL-HM2417JA	M030801161	-	2008
WT Johnson Community Center	1	Computer Room	Condensing Unit	York	-	-	~2 ton	~1998
WT Johnson Community Center	1	Computer Room	Split System AHU	Ruud	UBHC-17J11NFA	T M2102 26278	-	2002
WT Johnson Community Center	1	Teen Room	Condensing Unit	Ruud	UAKA-037JAZ	5429 M3302 13179	3 ton	2002
WT Johnson Community Center	1	Teen Room	Split System Furnace	Rheem	UGPH-12EARJR	FD5D307F430101180	-	2001
WT Johnson Community Center	3	Game Room (#1, #2), Back Room (#5)	Condensing Unit	Trane	TTA060C300A1	N301MEGFF, N301L93FF, N312481FF	5 ton	1998
WT Johnson Community Center	3	Game Room (#1, #2), Back Room (#5)	Split System Furnace	Trane	TUD100RSV5H5	-	-	1998

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Calculation Methodology

Savings for this ECM were calculated via macro-enable spreadsheets and Trace 700™ energy models. To see detailed methodology for savings calculations for this ECM, refer to the Trace 700™ and Spreadsheet Methods for Estimating Savings appendices. Note that savings for DX equipment retrofit at the Augusta Aquatics Center are not included in this report, as these were handled under a separate contract.

Existing and Proposed Value Assumptions

Savings were calculated based on changing key inputs and assumptions for this measure. The key assumption for this measure was the average heating and cooling efficiency of the DX equipment. The table below shows the key values that were modified to calculate the energy savings for this measure.
To get the numbers below, Trane used standard methods. The existing efficiency for equipment was calculated from the original manufacturer's data. For cooling, this was the reported SEER or IEER. In some cases, only EER was report and it was converted to SEER with the following formula.

$$SEER = EER/.875$$

If no SEER, IEER or EER value from the manufacturer could be found, the 90.1 minimum efficiency from the appropriate year was used.

For heat efficiencies, the listed manufacturer's value was used. For Heat pumps, a HSPF or COP at 47F was used. If this was not available, the 90.1 minimum value from the appropriate year was used.

Finally, to all original efficiencies were degraded by a consistent annual value. For cooling and heat pump heating, this was 1% per year. For gas heating this was 0.5%. Electric strip heating efficiency was not degraded.

For all "proposed" efficiencies, the proposed equipment manufacturer's efficiency was used.

Table 32: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Blythe Community Center	IHP/OHP-1 Cooling/ Heating Efficiency	9.0 SEER / 2.04 COP	15.0 SEER / 3.90 COP
	IHP/OHP-3 Cooling/ Heating Efficiency	9.0 SEER / 2.04 COP	17.0 SEER / 3.90 COP
	IHP/OHP-27 Cooling/ Heating Efficiency	11.76 SEER / 3.24 COP	17.0 SEER / 3.90 COP
Carrie J Mays Gymnasium	Office Split System Cooling/Heating Efficiency	12.41 SEER / 3.10 COP	17.0 SEER / 3.90 COP
	RTU-1,2 Cooling/ Heating Efficiency	8.77 SEER / 1.00 COP	13.5 SEER / 3.20 COP
Downtown Parks Division	Shop Split Systems Cooling/Heating Efficiency	8.86 SEER / 0.74 COP	17.0 SEER / 0.80 COP
	Front Office Split System Cooling/Heating Efficiency	8.17 SEER / 0.74 COP	17.0 SEER / 0.80 COP
Gracewood Community Center	Split Systems Cooling/ Heating Efficiency	11.41 SEER / 0.73 COP	16.0 SEER / 0.95 COP
Jamestown Community Center	Tempstar Split Systems Cooling/Heating Efficiency	10.74 SEER / 0.78 COP	17.0 SEER / 0.80 COP
May Park Community Center	Game Room Split System Cooling/Heating Efficiency	8.43 SEER / 2.55 COP	17.0 SEER / 4.20 COP
	Club Room Split System Cooling/Heating Efficiency	9.09 SEER / 2.07 COP	17.0 SEER / 3.90 COP
	Main Office Split System Cooling/Heating Efficiency	11.76 SEER / 1.00 COP	17.0 SEER / 3.90 COP

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Building Name	Input Name	Existing Value	Proposed Value
McDuffie Woods Community Center	AHU-12 Cooling/ Heating Efficiency	10.12 SEER / 1.00 COP	15.0 SEER / 3.90 COP
	Multipurpose Split System Cooling/Heating Efficiency	9.37 SEER / 2.13 COP	12.40 SEER / 3.30 COP
	Gym North Split System Cooling/Heating Efficiency	12.00 SEER / 0.77 COP	16.0 SEER / 0.80 COP
	Game Room Split System Cooling/Heating Efficiency	12.12 SEER / 0.75 COP	16.0 SEER / 0.95 COP
	Gym East Split System Cooling/Heating Efficiency	12.12 SEER / 0.74 COP	16.0 SEER / 0.80 COP
Newman Tennis Center	Split System Cooling/ Heating Efficiency	11.64 SEER / 0.76 COP	16.0 SEER / 0.95 COP
Old Government House	IHP-9/Old OHP-3 Cooling/ Heating Efficiency	7.78 SEER / 1.94 COP	15.0 SEER / 3.90 COP
Recreation, Parks, and Facilities Administrative Offices	2nd Floor Admin Split Sys. Cooling/Heating Efficiency	10.22 SEER / 2.13 COP	17.0 SEER / 4.20 COP
	Tonia's Office Split Sys. Cooling/Heating Efficiency	9.18 SEER / 2.09 COP	15.3 SEER / 2.78 COP
	Marilyn's Office Split Sys. Cooling/Heating Efficiency	9.37 SEER / 1.77 COP	15.3 SEER / 2.78 COP
Richmond County Municipal Solid Waste Landfill Main Building	AH-5/CU-5A,5B Cooling/ Heating Efficiency	12.53 SEER / 3.35 COP	12.4 SEER / 3.30 COP
	AH/CU-8 Cooling/ Heating Efficiency	11.64 SEER / 2.24 COP	17.0 SEER / 4.20 COP
	AH/CU-9 Cooling/ Heating Efficiency	11.64 SEER / 2.24 COP	17.0 SEER / 4.20 COP
Richmond County Municipal Solid Waste Landfill Scale House	AH/CU-11 Cooling/ Heating Efficiency	12.41 SEER / 3.16 COP	17.0 SEER / 3.90 COP
Richmond County Sheriff's Training Center Bunk House	Nordyne Split System Cooling/Heating Efficiency	8.51 SEER / 1.00 COP	15.0 SEER / 3.90 COP
Richmond County Sheriff's Training Center Mess Hall	Dining Hall Split System Cooling Efficiency	13.12 SEER	14.0 SEER
Richmond County Sheriff's Training Center Myers Building	Fujitsu Split System Cooling/Heating Efficiency	15.64 SEER / 2.55 COP	17.0 SEER / 3.16 COP
	Daikin Split System Cooling/Heating Efficiency	11.29 SEER / 2.17 COP	17.0 SEER / 3.16 COP
Sand Hill Community Center	IHP-3/OHP-2 Cooling/ Heating Efficiency	8.60 SEER / 2.36 COP	15.0 SEER / 3.90 COP
WT Johnson Center	Computer Rm Split System Cooling/Heating Efficiency	9.09 SEER / 1.00 COP	17.0 SEER / 3.80 COP
	Teen Room Split System Cooling/Heating Efficiency	8.66 SEER / 0.73 COP	17.0 SEER / 0.96 COP
	Game Room (#1,#2), Back Room (#5) Split System Cooling/Heating Efficiency	8.91 SEER / 0.73 COP	16.0 SEER / 0.80 COP

6.3.5 Add Condenser Water Pump VFDs

This measure involves installing variable frequency drives (VFDs) on constant volume motors for balancing purposes. When a pumping system is designed, the pump is selected based on a design flow and an estimated pressure drop through the distribution piping system. Often times, the design engineer will add one or more safety factors to their pump selection, which allows for the potential of additional pressure drop in the system due to unforeseen field conditions. Once the system is installed, the flow is typically balanced for the actual installed conditions. A common method for balancing constant flow pumps is to partially close triple duty valves, or balancing valves, introducing additional pressure drop. This shifts the pump along its performance curves until it reaches the desired flow, but doesn't reduced pump speed or power draw very much.

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Instead of using balancing valves, A VFD will be installed on the pump motor and used to reduce the sump speed in order to balance the constant volume system to its design flow. The VFD will allow the pump motor to operate at a more efficient point on the performance curve, as well as reducing the overall power draw of the motor by operating at a lower speed.

Affected Equipment

Table 33: Affected Equipment

Building	Tag	Equipment	Model No.
Augusta Municipal Building	CWP-1	Cond Water Pump	6E 10.00 BF
Augusta Municipal Building	CWP-2	Cond Water Pump	5E 9.375 BF

Calculation Methodology

Savings for this measure were calculated in Trace 700™. To see detailed methodology for savings calculations for this ECM, refer to the Trace 700™ Methods of Estimating Savings appendices.

Existing and Proposed Value Assumptions

Savings were calculated based on changing key inputs and assumptions from an existing value to a proposed value. For the Add VFDs measure, the key variable to be changed is the motor kW. The table below shows the key values that were modified to calculate the energy savings for this measure.

Table 34: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Augusta Municipal Building	Condenser Water Pump Power	18.16 kW	12.42 kW

6.3.6 Domestic Hot Water Retrofit

The existing three (3) domestic water heaters in the mechanical room for the Henry Brigham County Swim Center provide hot water needs for any non-pool areas, such as showers and sinks. They currently are from 2017, but when they were replaced, it was with a standard efficiency unit. Replacing these with condensing domestic water heaters can greatly improve the coefficient of performance (efficiency) for them, resulting in energy savings. They will be replaced with new domestic water heaters. The new domestic water heater shall be condensing type with stainless steel heat exchanger. The flue for the new domestic water heater shall be ducted to outdoor with stainless steel flue pipe.

Affected Equipment

Building	Qty	Equipment	Model No.	Serial No.	Unit Size	Date of Manufacture/Age of Unit
Henry Brigham Park Swim Center	3	Domestic Water Heater	G91-200	W241749207	200 MBH / 91 gallons	2017

Calculation Methodology

Savings for this measure were calculated in Trace 700™. To see detailed methodology for savings calculations for this ECM, refer to the Trace 700™ Methods of Estimating Savings appendices.

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Existing and Proposed Value Assumptions

Savings were calculated based on changing key inputs and assumptions from an existing value to a proposed value. For the Domestic Water Heater Retrofits measure, the key variable to be changed is the Domestic Water Heater Efficiency. The table below shows the key values that were modified to calculate the energy savings for this measure.

Table 35: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Henry Brigham Park Swim Center	Domestic Water Heater Efficiency	70%	90%

6.3.7 Dynamic Air Filtration

Facility improvement measures (FIMs) are measures intended to improve the operation and value of building systems but are not associated directly with energy savings.

Filters are a required AHU component throughout any facility for cleanliness and IAQ concerns. Newer technology in filters can give excellent performance with regards to particle filtration with less pressure drop than older technology.

Electrostatic filter technology combines the benefits of passive filtration with those of electro-static attraction. A charge is applied to the filter, which polarizes the media and the surrounding particles. This causes particles in the air to be attracted to the filter and stick to it, including very fine particulates as well as gas contaminants which traditional air filters cannot capture. Due to this, the filters don't need to be as invasive to the airstream, and there's less pressure drop across the filter.

For more information on Dynamic Air Filtration, refer to Appendix 9.

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Affected Equipment

Table 36: Existing and Proposed Values

Building	Tag	Equipment	Model No.	Serial No.
Augusta-Richmond County Judicial Center	AHU-1	AHU	MCCB050	K09G15687
Augusta-Richmond County Judicial Center	AHU-2	AHU	MCCB066	K09G15696
Augusta-Richmond County Judicial Center	AHU-3	AHU	MCCB066	K09G15705
Augusta-Richmond County Judicial Center	AHU-4	AHU	MCCB066	K09G15713
Augusta-Richmond County Judicial Center	AHU-5	AHU	MCCB066	K09G15730
Augusta-Richmond County Judicial Center	AHU-6	AHU	MCCB050	K09G15685
Charles B. Webster Detention Center	AHU-1A	AHU	MCCA035	K96M10202A
Charles B. Webster Detention Center	AHU-1B	AHU	MCCA035	K96M10185A
Charles B. Webster Detention Center	AHU-1C	AHU	MCCA035	K96M10875A
Charles B. Webster Detention Center	AHU-7E	AHU	MCCA010	K96L04782A
Charles B. Webster Detention Center	AHU-8E	AHU	MCCA014	K96M126703A
Charles B. Webster Detention Center	AHU-1F	AHU	MCCB025	K09J34326
Charles B. Webster Detention Center	AHU-1G	AHU	MCCB030	K09J34279
Charles B. Webster Detention Center	AHU-1H	AHU	MCCB030	K09J34310
Charles B. Webster Detention Center	AHU-1I	AHU	CSAA010	K13C18512
Charles B. Webster Detention Center	AHU-2I	AHU	CSAA017	K13C18500
Charles B. Webster Detention Center	AHU-1V	AHU	MCCB017	K09F05424

Existing and Proposed

Savings were calculated based on changing key inputs and assumptions for this measure. The key assumption for this measure is the fan power curve. The table below shows the key values that were modified to calculate the energy savings for this measure.

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Building	Tag	Existing	Proposed
Augusta-Richmond County Judicial Center	AHU-1	Used “FC Centrifugal var freq drive” TRACE 700™ value	Modified the “FC Centrifugal var freq drive” to a different fan curve, modifying the maximum power as 85% instead of 100% and interpolated the curve down based on 0.5 average Static Pressure (in. wg) reduction
	AHU-2		
	AHU-3		
	AHU-4		
	AHU-5		
	AHU-6		
Charles B Webster Detention Center	AHU-1A	Used “FC Centrifugal const vol” TRACE 700™ value	
	AHU-1B		
	AHU-1C		
	AHU-7E		
	AHU-8E		
	AHU-1F	Used “FC Centrifugal var freq drive” TRACE 700™ value	
	AHU-1G		
	AHU-1H		
	AHU-1I		
	AHU-2I		
	AHU-1V		

6.3.8 FIM 1 – AHU Replacements at Charles B. Webster Detention Center

Facility improvement measures (FIMs) are measures intended to improve the operation and value of building systems but are not associated directly with energy savings.

Trane has been requested by the facility staff to replace 11 air handlers in pod “E” at the Charles B. Webster Detention Center. These eleven air handlers are named “AHU E1”, though “AHU E11”. The air handlers are aging, and the facility has been planning replacement of them. The upgrade of the building automation controls provides a cost effect opportunity to perform this work. The new Air Handlers will be designed to match original facility specifications barring any space changes or previous deficiencies revealed during the design investigation.

While the new AHUs will have upgraded controls, cleaner heating and cooling coils, and potentially more efficient motors, savings from this measure are assumed to be small and were not calculated as part of this project.

Affected Equipment

Table 37: Affected Equipment

Building	Tag	Equipment	Model No.	Serial No.
Charles B Webster Detention Center	AHU-1E	AHU	BCVC036	T13D18042
Charles B Webster Detention Center	AHU-2E	AHU	BCVC072	T13D18043
Charles B Webster Detention Center	AHU-3E	AHU	BCVC042	T13D18045
Charles B Webster Detention Center	AHU-4E	AHU	BCVC072	T13D18044
Charles B Webster Detention Center	AHU-5E	AHU	BCVC072	T13D23607

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Building	Tag	Equipment	Model No.	Serial No.
Charles B Webster Detention Center	AHU-6E	AHU	BC??024	-
Charles B Webster Detention Center	AHU-7E	AHU	MCCA010	K96L04782A
Charles B Webster Detention Center	AHU-8E	AHU	MCCA014	K96M126703A
Charles B Webster Detention Center	AHU-9E	AHU	-	-
Charles B Webster Detention Center	AHU-10E	AHU	-	-
Charles B Webster Detention Center	AHU-11E	AHU	-	-

Calculation Methodology

This is a like for like replacements of existing AHUs. There are no savings associated with this measure, and thus there is no calculation methodology.

Existing and Proposed Values

This is a like for like replacement of existing AHUs. There will be no significant changes in efficiency between the existing and proposed replacements.

6.3.9 FIM 2 – New Chiller at Augusta-Richmond County Judicial Center

FIMs are measures intended to improve the operation and value of building systems but are not associated directly with energy savings.

In the Judicial Center, there is an energy savings measure for retrocommissioning the controls system there. As a part of that ECM, there was setback being taken for all areas except the Solicitor's 24/7 spaces. However, it was said that the current chillers cannot handle setback occurring everywhere due to issues with the chillers during low loads. As a result, this FIM was developed to help facilitate being able to setback the temperature in those spaces. There will be a new 60-ton auxiliary air-cooled chiller that will handle cooling during setback/low load conditions. The existing controls shall be updated to allow for this auxiliary chiller mode when at low loads. In this mode, the existing chilled water control valve shall close, to direct chilled water flow from the new air-cooled chiller to AHU-3.

It is very important to note that this upgrade is required to realize the full savings potential from retrocommissioning measure for the Judicial Center.

Affected Equipment

All controls equipment, AHUs, and chiller/cooling equipment is affected by this measure.

6.3.10 FIM 3 – Bipolar Ionization

FIMs are measures intended to improve the operation and value of building systems but are not associated directly with energy savings.

This measure proposes to install bipolar ionization units as a means to improve indoor air quality. Bipolar ionization works to clean the air by producing ions, which induce the particles in air to clump together and become caught in the filters. This also helps reduce odors and airborne pathogens while simultaneously cleaning the coils of HVAC equipment. The improved indoor air quality has also been shown to lead to greater levels of occupant attentiveness, productivity, and comfort, and can reduce the number of airborne infectious disease particulates, including SARS-CoV-2 which causes COVID-19, from the air. Global

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Plasma Solutions conducted a study of their bipolar ionization technology and its effectiveness in reducing SARS-CoV-2 from the air, and found that it's possible that it could eliminate 99.4% of the virus from the air in 30 minutes of continuous use. (Aircare Engineering, 2020 Sept 15, "Global Plasma Solutions (GPS) Launches Needlepoint Bipolar Ionization to Virtually Elimiate Static SARS-CoV-2 with Proprietary NPBI™ Technology", PR Newswire, https://www.prnewswire.com/in/news-releases/global-plasma-solutions-gps-launches-needlepoint-bipolar-ionization-to-virtually-eliminate-static-sars-cov-2-with-proprietary-npbi-tm-technology-860417185.html)

For more information on Bipolar Ionization, refer to Appendix 10.

Affected Equipment

Table 38: Affected Equipment

Building	Qty	Tag	Equipment	Model No.	Serial No.
Augusta-Richmond Judicial Center	1	AHU-1	AHU	MCCB050	K09G15687
Augusta-Richmond Judicial Center	1	AHU-2	AHU	MCCB066	K09G15696
Augusta-Richmond Judicial Center	1	AHU-3	AHU	MCCB066	K09G15705
Augusta-Richmond Judicial Center	1	AHU-4	AHU	MCCB066	K09G15713
Augusta-Richmond Judicial Center	1	AHU-5	AHU	MCCB066	K09G15730
Augusta-Richmond Judicial Center	1	AHU-6	AHU	MCCB050	K09G15685
Charles B Webster Detention Center	40	Various	AHU	-	-
Municipal Building	27	Various	AHU	-	-

6.4 CONTROLS SCOPE AND ECMS

Under the scope of this project, Trane will be providing Augusta-Richmond County with a Tracer Ensemble Enterprise (Tracer ES) building automation system which allows multiple buildings to be managed as a single enterprise. The Tracer ES will reside on Trane's "Trane Connect" Cloud Based Servers via locally installed digi routers in each facility. This network will receive and store building data that is being gathered from each individual building's system level controllers. The Tracer system will also consist of a centralized and interactive graphical user interface. In addition to the centralized user interface, the Tracer ES offers remote access via the Web as well as mobile devices, allowing the Augusta-Richmond County enterprise of buildings to be effectively managed from nearly any location by authorized facility's staff.

At the individual building level, Trane will be providing Tracer System Controllers (Tracer SC's). These controllers will be the "brain" of each building in terms of building automation. Like the Tracer ES, each Tracer SC will offer remote access via the Web as well as mobile devices. At many of the smaller sites, the Tracer SC will be paired with a Tracer Concierge touchscreen display, offering the end user with the ability to toggle set points with the touch of a finger. End devices and unit controllers in each building will ultimately tie back to that building's Tracer SC via wireless and/or wired communications. The Tracer SC will also offer device graphics and floor plan graphics, which will aid facility's staff in physically locating issues that need to be addressed.

Trane controls systems will enable the Augusta-Richmond County Facilities Team to efficiently manage buildings from nearly anywhere with one system, leading to high performance and consistent comfort in each building. The centralized interface will allow facilities staff to monitor buildings across Augusta-Richmond County from a single access point. This will reduce response time to possible issues, often without having to spend time traveling from building to building. Staff can manage and respond to alarms, change set points, and modify schedules conveniently from their computers.

Many operational improvements will also be seen in each individual building. Each building can be custom scheduled to match building occupancy so that mechanical equipment runs only when it is needed. This

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leads to energy savings, extended system life, and reduced lifecycle operating costs. Alarms will be sent to established facilities staff, informing them of any issues that need to be addressed in the building. This real time data helps reduce response time and enables predictive maintenance. Lastly, Trane control systems offer graphics that allow staff to easily navigate between equipment and find the root cause of a problem leading to greater occupant comfort.

Augusta Richmond County's facilities can be divided up into two main categories of solution.

- Complete Retrofit of existing Controls with new Trace SC+ and Retrocommissioning
- New Air-Fi Trane Concierge Building Controls

Additionally, the addition of "Demand Control Ventilation" at the Judicial Center and "Kitchen Demand Control Ventilation & Exhaust" at the Detention Center were evaluated separately.

The following table shows where each of these measures will be implemented.

Table 39: Summary of Controls Energy Conservation Measure by Building

Building Name	Air-Fi Trane Concierge Building Controls	New Tracer SC + Building Automation System w/ Retrocommissioning (RCx)	Demand Control Ventilation (DCV)	Kitchen DCV
Augusta Municipal Building		X		
Augusta Richmond County Judicial Center		X	X	
Blythe Area Recreation Center	X			
Carrie J Mays Community Life Center	X			
Carrie J Mays Gymnasium				
Charles B Webster Detention Center		X		X
Downtown Park Division	X			
Eastview Community Center	X			
Gracewood Community Center	X			
Henry Brigham Park Senior Center	X			
Henry Brigham Park Swim Center	X			
Information Technology	X			
Jamestown Community Center	X			
May Park Community Center	X			
May Park Print Shop	X			
McDuffie Community Center	X			
Newman Tennis Center	X			
Old Government House	X			
Recreation, Parks, And Facilities Administrative Offices	X			
Recreation, Parks, And Facilities New Maintenance Shop	X			
Richmond County Municipal Solid Waste Landfill Main Building	X			
Richmond County Municipal Solid Waste Landfill Scale House	X			
Richmond County Sheriff's Training Center Bunk House	X			

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Building Name	Air-Fi Trane Concierge Building Controls	New Tracer SC + Building Automation System w/ Retrocommissioning (RCx)	Demand Control Ventilation (DCV)	Kitchen DCV
Richmond County Sheriff's Training Center Mess Hall	X			
Richmond County Sheriff's Training Center Myers Building	X			
Sand Hill Community Center	X			
Warren Road Community Center	X			
WT Johnson Community Center	X			

6.4.1 New Tracer SC + Building Automation System w/ Retrocommissioning (RCx)

As part of Trane's system-wide controls solution, three large buildings (Augusta Municipal Building, Augusta-Richmond County Judicial Center, and Charles B. Webster Detention Center) with older DDC controls will be upgraded to New Trane systems and interconnected back to the central Tracer ES. Additionally, Trane teams will provide a full retro-commissioning of air-side and water-side systems, replacing malfunctioning hvac equipment. All controls equipment in this building will be replaced or upgraded as part of this retrofit.

The new system will be programed with a suite of energy savings strategies to reduce energy consumption of HVAC systems. The following strategies will be used

- HVAC system scheduling and setback
- Temperature setpoint optimization
- Optimum Start (morning warm-up)
- Static Pressure Reset
- Airflow/Ventilation Improvements
- Fan Cycling Optimization
- Chiller plant/Cooling Tower Optimization
- Condenser Water Reset

While this controls upgrade and Retrocommissioning (RCx) effort is described as one measure, there are a variety of upgrades that will be made specifically due to RCx efforts. Retrocommissioning is being performed in all facilities to identify and correct potential unknown operational issues with hvac and controls equipment. However, Trane is already planning for a number of known issues included for the Judicial center, identified by Trane personnel.

The judicial center was observed to have several issues resulting in significant and excessive energy consumption. Over the years, issues with the system have resulted in the operations staff needed to over-ride original controls algorithms and set to the systems into manual operation. Some of these issues are the result of broken or malfunctioning equipment, and some of this is due to initial control sequences not being able to handle the use of the facility. By replacing the controls and malfunctioning air-side devices, the remaining equipment will be able to operate much more efficiently.

Below are lists of the various upgrades that compromise the RCx efforts at the Judicial Center specifically. While these are listed individually, this it to provide clarity on what each of these upgrades accomplishes. Savings for each of these upgrades cannot be evaluated on an individual basis. Savings will be one value associated with this ECM.

It should be noted that a recent project was undertaken by Trane at the Judicial Center to address operational and health issues on the 4th floor and with some other AHUs. Since the impact of these

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upgrades is not represented in the baseline utility data, a baseline adjustment was taken for these measures before applying savings for improvements made with this project.
Strategies were divided into baselines adjustments and savings measures

Baseline Adjustment Strategies (Judicial Center only)
- Chiller Leaving Water Setpoint Adjustment
- Increase AHU Outside Air Flow
- Set AHU Cooling Discharge Air Temperature
- Balance Return Air

Energy Savings Controls & RCx Strategies (Judicial Center Specific)
- Reprogram AHU K Factors
- Chiller plant/Cooling Tower Optimization
- HVAC system scheduling and setback
- Temperature setpoint optimization
- Optimum Start (morning warm-up)
- Replace Malfunctioning VAV boxes

Calculation Methodology

All savings for this measure at all three buildings were calculated in Trane Trace 700.

Baseline Adjustments (Judicial Center Only)

The Augusta Judicial Center has several energy savings opportunities that will be realized with this measure. However, a few of the problems that were found in the audit are building air quality issues and need to be addressed as part of the project. However, these issues do not result in energy savings, and actually will result in more energy consumption. While some of these issues have been recently addressed, the historical utility data used for this project's baselines does not represent operation after these changes were implemented, nor future needed changes. To account for this, Trane is taking a baseline adjustment to account for the additional energy consumption needed to address these issues. This was calculated in the Trane Trace 700 energy model. This means that the original energy model was calibrated first to the utility data, and then the adjustments were made to the model that account for these air quality changes. This accounts for the extra energy that these changes will make.

Some of this work is currently underway and being corrected outside of this project, specifically fixing emergency issues with the 4th floor AHU. Correcting these issues provides energy savings but is being done outside of the project and hence was included in the baseline adjustment.

Chiller Leaving Water Setpoint Adjustment (Baseline Adjustment)

This measure involves changing the chilled water leaving the chiller to 42°F. Currently, the chilled water temperature is higher than that and the building is experiencing humidity issues as a result. This means that the chiller will be dehumidifying the air more effectively, but it will consume more energy to do so. This measure also helps facilitate another measure, *Set AHU Cooling Discharge Air Setpoint*.

This is a retroactive measure to improve air quality in the building and will not result in energy savings.

Existing and Proposed Values

Calculations were made based on changing key inputs and assumptions from an existing value to a proposed value. For the chiller leaving water setpoint adjustment, the key variable to be changed was the chiller efficiency. The table below shows the key values that were modified to calculate the energy consumed for this measure.

Table 40: Existing and Proposed Values

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Building Name	Input Name	Existing Value	Proposed Value
Augusta Richmond County Judicial Center	Chiller Efficiency	0.64 kw/ton	0.66 kw/ton

Increase AHU Outside Air (Baseline Adjustment)

Currently, half of the Air Handling Units in the building are not providing the appropriate amount of outside air to the building based on their original design values. This can cause unwanted smells and odors to linger in the building. Increasing the amount of outside air entering the building will help resolve those issues. This will cause an increase in energy consumption due to the building having to condition more outside air than it was before. This Affects AHUs 1, 3 and 4.

AHU-5 was also found to be providing too much OA, which was reduced in this measure. This will save energy for AHU-5 but was included in the baseline adjustment, in order to be consistent.

This is a retroactive measure to improve air quality in the building and will not result in energy savings but consume more energy.

Existing and Proposed Values

Calculations were made based on changing key inputs and assumptions from an existing value to a proposed value. For the chiller leaving water setpoint adjustment, the key variable to be changed was the chiller efficiency. The table below shows the key values that were modified to calculate the energy consumed for this measure.

Table 41: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Augusta Richmond County Judicial Center	AHU 1 OA Value	0.045 cfm/sqft	0.16 cfm/sqft
	AHU 3 OA Value	0.099 cfm/sqft	0.144 cfm/sqft
	AHU 4 OA Value	0.044 cfm/sqft	0.129 cfm/sqft
	AHU 5 OA Value	0.217 cfm/sqft	0.149 cfm/sqft

Set AHU Cooling Discharge Air Setpoint (Baseline Adjustment)

This measure involves changing the air handling unit supply air temperature to 55°F. Currently, the supply air temperatures are set manually, and several of them are set to higher than 55°F. This means that the air is not getting to a low enough temperature to dehumidify properly. Overall, this will consume more energy to properly dehumidify the air.

This measure will affect all 6 main air handlers. This is a retroactive measure to improve air quality in the building and will not result in energy savings but consume more energy.

Existing and Proposed Values

Calculations were made based on changing key inputs and assumptions from an existing value to a proposed value. For changing the AHU cooling discharge setpoint, the key variable to be changed was the cooling supply air temperature. The table below shows the key values that were modified to calculate the energy consumed for this measure.

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Table 42: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Augusta Richmond County Judicial Center	AHU 1 Cooling Supply Air Setpoint	58°F	Set all cooling supply air temperatures to 55°F. Implement Supply Air Reset of 55°F Supply Temp at 60°F OA Temp linearly interpolated to 60°F Supply Temp at 50°F OA Temp.
	AHU 2 Cooling Supply Air Setpoint	58°F	
	AHU 3 Cooling Supply Air Setpoint	55°F	
	AHU 4 Cooling Supply Air Setpoint	58°F	
	AHU 5 Cooling Supply Air Setpoint	58°F	
	AHU 6 Cooling Supply Air Setpoint	63°F	

Balance Return Air (Baseline Adjustment

Currently, AHU-6's return air damper is set to open. As well, the supply air temperature is set to 63°F, which is too high to provide humidity. The setpoint will be set to 55°F with the *Set AHU Cooling Discharge Air Setpoint* part of this measure, but also the return air damper will be fixed so that it is automatically controlled. This will allow the economizer to function properly.

This part of the measure produces energy savings, but it is already being done as part of another project so needs to be included in the baseline adjustment for the energy model.

Existing and Proposed Values

Calculations were made based on changing key inputs and assumptions from an existing value to a proposed value. For changing the balance air return, the key variable to be changed was the economizer availability. The table below shows the key values that were modified to calculate the energy impact for this measure.

Table 43: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Augusta Richmond County Judicial Center	AHU-6 Economizer Availability	50%	100%

Controls Improvements

HVAC System Scheduling and Setback (All facilities)

These three Augusta-Richmond County buildings are conditioned at the same space temperature set point on a 24/7/365 basis even though parts of these buildings are occupied only a portion of the time (Monday – Friday daytime hours for example). Scheduled HVAC setback turns off or sets back HVAC systems during unoccupied times and is the controls measure which will provide the greatest quantity of energy savings. This ECM involves implementation of space temperature set point reset / setback schedules for each building area and system which does not exhibit constant occupancy. Humidistats will also be incorporated to initiate air-conditioning system operation override, as needed, to prevent excessive relative humidity during unoccupied time periods.

Existing and Proposed Values

Savings were calculated based on changing key inputs and assumptions from an existing value to a proposed value. For the unoccupied time period HVAC setback measure, the key variables to be changed were the occupied versus unoccupied schedules and unoccupied setpoint for HVAC equipment. The tables

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below shows the setpoints and schedules that were modified to calculate the energy savings for this measure.

To see existing occupancy schedules by location, refer to the building descriptions in Section 2. Schedules in Section 2 represent the time the buildings are occupied versus not. This is typically different than the schedule for when HVAC equipment is operational, as often buildings are either pre-cooled or pre-heated prior to the arrival of occupants. Below are the proposed operating schedules.

Table 44: Occupied versus Unoccupied Cooling and Heating Setpoint Values

State	Cooling Setpoint	Heating Setpoint
Occupied	72°F	70°F
Unoccupied	*82°F	60°F

*subject to RH or humidistat feedback

Note: The Occupied mode cooling temperature setpoint for inmate housing and congregation areas within Webster Detention Center is 70 degrees F and the occupied heating temperature setpoint is 68 degrees F.

Table 45: Augusta Municipal Building Main Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	7a – 6p	7a – 6p	7a – 6p	7a – 6p	7a – 6p	Closed	Closed
UnOccupied	6p – 7a	6p – 7a	6p – 7a	6p – 7a	6p – 7a	Closed	Closed

Table 46: Augusta Municipal Building Lobby Schedule (AHU-1, Elevator Lobby FCUs)

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The Judicial Center is mostly occupied Monday through Friday from 7am to 6pm. There were some area that needed to be active 24/7. The areas served by AHU-4 are used after hours by the Solicitor General and Police and need to be occupied 24/7.

Table 47: Augusta Richmond County Judicial Center Office & Courtroom Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	7a – 6p	7a – 6p	7a – 6p	7a – 6p	7a – 6p	Closed	Closed
UnOccupied	6p – 7a	6p – 7a	6p – 7a	6p – 7a	6p – 7a	Closed	Closed

Table 48: Augusta Richmond County Judicial Center 24/7 Offices Operation Schedule (Police & Solicitor General areas)

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	N/A	N/A	N/A	N/A	N/A	N/A	N/A

At the Charles B. Webster Detention Center there are a few 24/7 office spaces assumed to have peak hours occur from 8:00am to 5:00pm. Occupancy is assumed to be variable outside of this time period. The kitchen is also assumed to operate on the same schedule.

Table 49: Charles B. Webster Detention Center 24/7 Office (Maintenance, security) and Kitchen Operation Schedule

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	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 50: Charles B. Webster Detention Center Main Prison Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 51: Charles B. Webster Detention Center Administration Area Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	8a – 5p	8a – 5p	8a – 5p	8a – 5p	8a – 5p	N/A	N/A
UnOccupied	5p – 8a	5p – 8a	5p – 8a	5p – 8a	5p – 8a	12a-12p	12a-12p

Table 52: Charles B. Webster Detention Visitor's Center Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	N/A	9a – 3p	9a – 3p	9a – 3p	9a – 3p	9a – 3p	N/A
UnOccupied	12a-12p	3p – 9a	3p – 9a	3p – 9a	3p – 9a	3p – 9a	12a-12p

Setpoint Optimization (All Facilities)

This measure also optimizes systems with appropriate temperature setpoints that maintain occupant comfort but do not allow for occupant control outside of +/- 2°F. This prevents occupants from using extreme temperature settings and also reduces the potential for adjacent spaces within the building to be "fighting" each other. It is believed this is happening currently at the Municipal Building, where one spaces cooling thermostat settings cause the adjacent spaces to go into heating and the systems to fight for temperature control. Setpoints will be optimized for all buildings in this scope.

Existing and Proposed Values

Savings were calculated based on changing key inputs and assumptions from an existing value to a proposed value. For the setpoint optimization measure, the key variables to be changed were the cooling and heating setpoints. The table below shows the key values that were modified to calculate the energy savings for this measure. Periods when the building is not occupied are proposed to have unoccupied setback to produce additional savings. See more detail about this measure in the section below.

Table 53: Occupied versus Unoccupied Cooling and Heating Setpoint Values

State	Cooling Setpoint	Heating Setpoint
Occupied	72°F	70°F
Unoccupied	82°F	60°F

Optimum Start (All Facilities)

Optimum start is also a controls optimization measure in scope for this project. This measure applies to any air-side system at the three facilities that are scheduled unoccupied for some period of time. Often, schedules are started a couple hours early to ensure the building warms up or cools down to the proper temperature before occupants get to the building. However, this is often over-aggressive and causes systems to run longer than needed.

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Optimum start is a control measure designed to automatically adjust the start time of a space conditioning system each day, based on space temperature and outside air temperature. The intent is to bring the space to desired occupied temperature levels right at the beginning of scheduled occupancy. By monitoring warm-up times for each system, the controls system learns to stat the warm-up at the exact right time to ensure building temperature meets the setpoint when the building goes occupied. This eliminates over-aggressive warm-up times.

Existing and Proposed Values

Savings were calculated based on changing key inputs and assumptions from an existing value to a proposed value. For the optimum start measure, the key variable to be changed is the start time of the equipment. Given the nature of this measure, the proposed start time will vary. The table below shows the key values that were modified to calculate the energy savings for this measure.

Table 54: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Augusta Municipal Building	FCUs w/ ERVs, AHU-2, Chamber FCUs	n/a (24/7 run time)	Active optimum start
Charles B. Webster Detention Center	AHU-1V, -1E, AHU -2E, -3E	n/a (24/7 run time)	Active optimum start
Judicial Center	All units (except AHU-4)	n/a (24/7 run time)	Active optimum start

Static Pressure Reset (Judicial and Detention Centers)

This measure applies to the Judicial Center and the Charles B. Webster Detention Center only. Static pressure is the pressure or resistance a fan must overcome to move air through ducts as needed for heating, ventilation, and cooling. Components such as coils, filters, diffusers, etc. can increase the resistance in a system. To overcome this resistance, fans produce enough pressure to push airflow to conditioned spaces. In a VAV systems, fan speed is typically controlled to maintain a constant static pressure under all conditions. This fan speed is typically determined as the minimum pressure needed to move air to the farthest point in a system to meet design conditions. Thus, static pressure and airflow are the main driver of an energy consumption in a VAV system.

In a static pressure reset strategy, the minimum pressure is adjusted or reset at regular intervals to only be as high as needed to satisfy the zone of highest airflow demand. Fan speed is adjusted to meet this lower pressure set point. This reduction in pressure is proportional to the reduction in fan horsepower required. Thus, reduction in the pressure set point reduces the fan speed, and subsequently fan energy consumption.

Existing and Proposed Values

Note that Judicial center savings here were modeled with the k-factor adjustment so this includes only the Detention center input values,

Building Name	Input Name	Existing Value	Proposed Value
Charles B. Webster Detention Center	AHU-1F, 1H, 1I, 1V, 2H, 2I	70% % Clg Airflow	35% Clg Airflow
Charles B. Webster Detention Center	AHU-1G, 1I, 1V, 2H, 2I	50% % Clg Airflow	35% Clg Airflow

Airflow/Ventilation Improvements

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This measure applies to the Augusta Municipal Building only (For the Judicial center ventilation improvements are handled with the demand control ventilation measure). The Augusta Municipal building has dedicated ventilation units that provide outside air for each floor. These units' pre-condition the outside air and blow it into the return-air plenums for each floor. To ensure that the ventilation air is properly de-humidified, the ventilation units cool all the air to a dew point of 54F. However, to avoid potential condensation in the fresh air ductwork and the return air plenum, the air is then reheated to 65F. This is likely more reheat than is needed to prevent condensation. Trane is proposing to reduce the reheat setpoint to 62F. This is a small change, but it will have a large impact on energy consumption. This change will be made on fresh air units at the Municipal Building.

Existing and Proposed Values

Savings were calculated based on changing key inputs and assumptions from an existing value to a proposed value. For the airflow/ventilation measure, the key variables to be changed were the occupied versus unoccupied schedules for ventilation. The table below shows the key values that were modified to calculate the energy savings for this measure.

Table 55: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Augusta Municipal Building	AHU-2, Chamber, FCUs	Available 100%	Occupied 7a – 6p: 100%
			Unoccupied: 6p – 7a: 0%
Augusta Municipal Building	Dedicated OA heating setpoint	65F	62F

Fan Cycling Optimization (Fan coils at the Municipal Building)

This measure applies to the Augusta Municipal Building only. There are many fan coil units (FCUs) throughout the entire building. Air handling units and fan coil units help regulate temperature of one or more spaces by circulating air with a fan. These units currently do not cycle the fan off, meaning the fan is constantly running, regardless of building operation. This is done to ensure fresh air is brought into the building. However, for the municipal building, a separate fan powered system brings fresh air into the plenum and the fans could cycle some and still provide this to the spaces effectively. This strategy here is to cycle the non-ventilation system fans based on whether there is a call for cooling or heating in the space. An override will also be programmed into the fan coil controllers ensuring the systems cycle on at least 30 minutes every occupied hour for ventilation purposes. Fans coil fans will cycle off at night and only come on if spaces drift beyond setback temperatures, For dedicated OA fans(ventilation and exhaust air), the fans will be set to run only when the building is occupied, but will run constantly. This strategy will reduce fan energy consumption, especially during shoulder months when the heating and cooling loads are lower.

Existing and Proposed Values

Table 56: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Augusta Municipal Building	FCUs w/ ERVs, Equipment Room FCUs, Mech-Elec	No Fan Cycling	Cycle with All Loads
	AHU-2, Chamber FCUs	No Fan Cycling	Cycle with Occupancy

Chiller plant / Tower Optimization & Condenser Water Reset (All Facilities)

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Trane proposes to furnish and install a complete chiller plant control system. This will include taking control of the chiller, economizer loop, chilled water pumps, tower fans, condenser water pumps, changeover valves, and plant actuators. As part of this measure, the new system will support the all-variable chilled water flow ECM. Trane will accomplish this through all new Trane controls, reprogramming the entire plant for Variable Flow operations, along with Trane's patented 'Tower Optimization' programming sequence.

The Trane systems approach to minimization of cooling tower chiller subsystem energy use is unique. It uses a powerful algorithm to model the interaction of the cooling tower and chiller using real-time ambient conditions and chiller loading to calculate the optimal setpoint. Other systems use a broad assumption concerning the best method for determining the optimal setpoint to operate a cooling tower. The Trane strategy determines the cooling tower setpoint that minimizes the system energy usage. Trane will also program the system to utilize the existing piping and valve arrangement for free cooling /economizer during the cooler parts of the year, in support of the re-commissioning of the Water-side economizer ECM. This will be programmed as a building changeover system, controlling the existing valve actuators and tower water temperature to achieve this during colder outside temperatures. This new plant configuration will correlate into substantial energy savings, and improved tenant comfort.

Existing and Proposed Values

Savings for the Municipal Building were calculated based on changing key inputs and assumptions from an existing value to a proposed value. For the condenser water reset measure, the key variables to be changed are the minimum condenser water temperature and the cooling tower equipment type. The table below shows the key values that were modified to calculate the energy savings for this measure.

Table 57: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Augusta Municipal Building	Chiller Minimum Condenser Water Temperature	79°F	60°F
	Cooling Tower Equipment Type	Cooling Tower (DOE)	Optimized Tower (DOE)

Savings for the Judicial Center were calculated based on changing key inputs and assumptions from an existing value to a proposed value. For this measure, the only direct savings claimed for this measure was reducing the chiller and primary pump run times from always-on to only on when needed. This was done by removing a small false load on the plant so the plant always remained on. The table below shows the key values that were modified to calculate the energy savings for this measure.

Table 58: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Augusta Richmond County Judicial Center	Chiller Base Load	0.001 kW	0 kW
	Chilled Water & Condenser Water Pump Operation	Runs constantly	Energized based on load

Savings for the Detention Center were included in the chiller retrofit.

Reprogram AHU K Factors (Judicial Center)

Currently, the AHUs have many overridden values that don't allow the programming to determine the best way to operate their heating sequences. Changing these so the programming figures out the optimum way to operate would allow the program to figure out what is best for each space. This would allow for lower minimum airflow values, which would save energy on fan power, cooling energy, and heating energy used.

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Existing and Proposed Values

Savings were calculated based on changing key inputs and assumptions from an existing value to a proposed value. For the reprogram AHU K factors measure, the key variable to be changed was the VAV minimum speed. The table below shows the key values that were modified to calculate the energy savings for this measure.

Table 59: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Augusta Richmond County Judicial Center	AHU 1 VAV Minimum	53%	44%
	AHU 2 VAV Minimum	58%	49%
	AHU 3 VAV Minimum	100%	70%
	AHU 4 VAV Minimum	61%	45%
	AHU 5 VAV Minimum	57%	50%
	AHU 6 VAV Minimum	65%	39%

Replace Malfunctioning VAV Boxes Judicial Center RCx measure)

This measure involves replacing at least 93 know older and/or malfunctioning VAV boxes. Through previous trending of the building systems, Trane personnel were able to identify VAV boxes scattered through the building that appear to be having operation problems. This includes bad controllers, air valves, and other potential issues. To ensure that the final building solution will be working to the high quality, Trane will replace these older boxes with new VAVs optimized for the new control system.

6.4.2 Air-Fi Trane Concierge Building Controls

Under the scope of this project, Trane will be providing Augusta-Richmond County with their Tracer® Concierge™ control system for HVAC equipment in numerous locations. Tracer Concierge uses Trane® Air-Fi™ wireless technology to communicate between devices, eliminating the need for wired components. Utilizing wireless technology makes installation of the system simpler and less time consuming, with less disruption to the facility and its occupants.

As a bundled controls system of Trane components, Concierge comes with a range of built-in functions to maximize building performance including overrides, temperature setpoint changes, and daily monitoring. A single intuitive interface is used to control multiple systems, allowing for you to see and control everything from a single location. The control system is also web-enabled so that the controls can be accessed on a mobile device if desired for quicker access by maintenance personnel. Tracer Concierge is built on a platform that supports open standards and is flexible enough to work with new and existing equipment, whether or not it is from Trane. This allows for easily adding new systems and components as they are integrated into the building.

Existing manual and local programmable thermostats will be replaced with new wireless thermostats. A new local interface will be installed for each building to control all of that building's new thermostats. New thermostats will be programmed with the facility and space-specific occupancy schedules for each HVAC unit. HVAC systems will enter unoccupied mode, with setback temperatures, during typically unoccupied times, only to be energized when space temperature drifts past the unoccupied setback. The new thermostats will have override buttons to allow the system to be returned to occupied setpoint for a fixed period in the case of off-hour occupancy. Typically, this period is preset between 1 and 3 hours.

The new Trane controls systems will generate energy savings by applying the following measures:

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- HVAC Scheduling and unoccupied Setback
- Optimized thermostat temperature setpoints

Affected Equipment

Unoccupied Time Period HVAC setback will affect all equipment at all locations listed in the table below except the following. The Henry Brigham Swim Center does not have setback for the pool area, and the Webster Detention Center is only affected for the equipment shown below.

Table 60: Affected Equipment

Building	Qty	Tag	Area Served	Equipment	Unit Size	New or Existing
Augusta Aquatics Center	6	-/-	-	Split Heat Pump System	5.0 Tons	New
	4	-/-	-	Gas Fired Roof Top Unit	-	New
Blythe Area Recreation Center	1	IHP/OHP-1	Kitchen	Split Heat Pump System	5.0 Tons	New
	1	IHP/OHP-2	Reception/Office	Split Heat Pump System	4.0 Tons	Existing
	1	IHP/OHP-3	Fitness Center	Split Heat Pump System	2.5 Tons	New
	1	IHP/OHP-27	Staff Room	Split Heat Pump System	2.5 Tons	New
	1	-/-	Classrooms	Ductless Split Heat Pump System	3.0 Tons	Existing
	1	-	Office	Packaged Terminal Air Conditioner	1.0 Tons	Existing
	1	-	Multipurpose	On Grade Packaged Heat Pump	15.0 Tons	Existing
Carrie J Mays Community Life Center	1	-/-	Reception	Split System w/ Gas Heat	5.0 Tons	Existing
	3	-/-	-	Split System w/ Gas Heat	7.5 Tons	Existing
Carrie J Mays Gymnasium	2	RTU-1,2	Gym	Rooftop Packaged Heat Pump	15.0 Tons	New
	1	-/HP-1	-	Split Heat Pump System	3.0 Tons	New
Downtown Park Division	2	-/-	-	Split System w/ Gas Heat	3.5 Tons	New
	1	-/-	-	Split System w/ Gas Heat	3.0 Tons	New
Eastview Community Center	2	-/-	Senior	Split Heat Pump System	5.0 Tons	Existing
	2	-/-	Youth Room	Split Heat Pump System	3.0 Tons	Existing
Gracewood Community Center	2	-/-	-	Split System w/ Gas Heat	5.0 Tons	New
Henry Brigham Park Swim Center	1	-	Pool Area	On Grade Packaged Unit w/ Gas Heat	50.0 Tons	Existing
	1	-/-	Non-Pool Areas	Split System	10.0 Tons	Existing
	1	-	-	Pool Boiler	825 MBH	Existing
	1	-	-	Pool Pump	7.5 HP	Existing
Information Technology	2	RTU-1,2	Office Areas	Rooftop Packaged Unit	20 Tons	Existing
Jamestown Community Center	2	-/-		Split System w/ Gas Heat	5.0 Tons	Existing
	1	-/-		Split System w/ Gas Heat	2.0 Tons	Existing
	2	-/-		Split System w/ Gas Heat	3.0 Tons	New

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Building	Qty	Tag	Area Served	Equipment	Unit Size	New or Existing
May Park Community Center	1	-/-	-	Split Heat Pump System	4.0 Tons	New
	2	-/-	-	Split Heat Pump System	3.0 Tons	New
	1	-/-	-	Ductless Split Heat Pump System	3.0 Tons	Existing
	2	RTU-1,2-MP	Gym	Rooftop Packaged Heat Pump	20.0 Tons	Existing
	1	-	Side Office	Packaged Terminal Air Conditioner	1.0 Tons	Existing
May Park Print Shop	1	-/CU-MECH-1	Open Office	Split System w/ Gas Heat	4.0 Tons	Existing
	1	-/CU-MECH-2	Open Office	Split System w/ Gas Heat	3.0 Tons	Existing
	3	-/-	Perimeter	Ductless Split Heat Pump System	1.25 Tons	Existing
	1	-/-	Perimeter	Ductless Split Heat Pump System	2.0 Tons	Existing
McDuffie Community Center	2	-/-	Multipurpose	Split Heat Pump System	3.0 Tons	New
	1	-/-	Fitness	Split Heat Pump System	5.0 Tons	New
	3	-/-	-	Split System w/ Gas Heat	5.0 Tons	New
	7	-/-	-	Split System w/ Gas Heat	5.0 Tons	Existing
Newman Tennis Center	1	-/-	-	Split System w/ Gas Heat	5.0 Tons	New
Old Government House	1	IHP-9/Old OHP3	-	Split Heat Pump System	5.0 Tons	New
	1	#1/#1	-	Split Heat Pump System	3.0 Tons	Existing
	3	#2/-, #7/Old OHP4, #8/#1	New Addition, Overlook	Split Heat Pump System	5.0 Tons	Existing
	1	#3	New Addition	Split Heat Pump System	3.5 Tons	Existing
Recreation, Parks, And Facilities Administrative Offices	1	FCU/CU #4	Level 2	Split Heat Pump System	3.5 Tons	New
	1	-/-	Tonia's Office	Ductless Split Heat Pump System	1.25 Tons	New
	1	-/-	Marilyn's Office	Ductless Split Heat Pump System	0.75 Tons	New
	2	-/-	-	Split Heat Pump System	5.0 Tons	Existing
	1	-/-	-	Split Heat Pump System	3.0 Tons	Existing
	1	-/-	-	Packaged Heat Pump	3.5 Tons	Existing
Recreation, Parks, And Facilities New Maintenance Shop	1	-	-	On Grade Packaged Heat Pump	4.0 Tons	Existing
Richmond County Municipal Solid Waste Landfill Main Building	1	-/CU-5A,5B	Office	Split Heat Pump System	10.0 Tons	New
	2	-/CU-8,9	Office	Split Heat Pump System	4.0 Tons	New
	6	-	Shop	Propane Heaters	-	Existing
Richmond County Municipal Solid Waste Scale House	1	-/CU-11	-	Split Heat Pump System	2.5 Tons	New
Richmond County Sheriff's Training Center Bunk House	1	-/-	-	Split Heat Pump System	5.0 Tons	Existing
	1	-/-	-	Split Heat Pump System	5.0 Tons	Existing
Richmond County Sheriff's Training Center Mess Hall	1	-/-	Dining Area	Ductless Split System	3.0 Tons	New

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Building	Qty	Tag	Area Served	Equipment	Unit Size	New or Existing
	1	-/-	Kitchen	Split System w/ Propane Heat	5.0 Tons	Existing
Richmond County Sheriff's Training Center Myers Building	3	-/-	-	Ductless Split Heat Pump System	2.0 Tons	New
	2	-/-	-	Split Heat Pump System	5.0 Tons	Existing
The Boathouse	1	PU-1	Multipurpose	Rooftop Packaged Unit (Natural Gas)	20.0 Tons	Existing
	1	PU-2	Multipurpose	Rooftop Packaged Unit (Natural Gas)	15.0 Tons	Existing
	1	CU-1	Other	Split System w/ Electric Heat	1.5 Tons	Existing
	1	CU-2	Storage	Split Heat Pump System	2.5 Tons	Existing
	1	CU-3	Office/Shop	Split Heat Pump System	2.0 Tons	Existing
	1	CU-4	Other	Split Heat Pump System	5.0 Tons	Existing
	1	CU-5	Other	Split System w/ Gas Heat	3.5 Tons	Existing
Sand Hill Community Center	1	IHP-2/OHP-3	Fitness	Split Heat Pump System	4.0 Tons	Existing
	1	IHP-3/OHP-2	Front Hall, Offices, Computer Lab	Split Heat Pump System	5.0 Tons	New
	1	IHP-1/OHP-1	Multipurpose	Split Heat Pump System	10.0 Tons	Existing
Warren Road Community Center	2	-/-	Clubroom, Game Room	Split Heat Pump System	3.0 Tons	Existing
	1	-/-	Weight Room	Ductless Split Heat Pump System	2.0 Tons	Existing
	1	-/-	Weight Room	Split Heat Pump System	2.0 Tons	Existing
	1	-/-	-	Split System	3.0 Tons	Existing
	2	-/-	Gym	Rooftop Packaged Heat Pump	20.0 Tons	Existing
WT Johnson Center	1	-/-	Teen Room	Split System w/ Gas Heat	3.0 Tons	New
	1	-/-	Offices	Split System w/ Gas Heat	2.0 Tons	Existing
	3	#1, #2, #5	Game Room, Back Room	Split System w/ Gas Heat	5.0 Tons	New
	3	OHP-1,2,3	Gym	Split Heat Pump System	7.5 Tons	Existing
	1	-	Kitchen	Wall Mounted Packaged Heat Pump	5.0 Tons	Existing
	1	-/-	Computer Room	Split System	2.0 Tons	New
	2	-/-	Back Room, Game Room	Split System w/ Gas Heat	5.0 Tons	Existing

Calculation Methodology

Savings for this ECM were calculated via a macro-enabled spreadsheet model. To see detailed methodology for savings calculations for this ECM, refer to the Spreadsheet Methods for Estimating Savings appendices.

Existing and Proposed Values

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Using a spreadsheet energy mode, savings were calculated by changing key inputs and assumptions from an existing value to a proposed value. For the unoccupied time period HVAC setback measure, the key variables to be changed were the occupied versus unoccupied schedules and unoccupied setpoint for HVAC equipment. The table below shows the proposed setpoints that were modified to calculate the energy savings for this measure.

Table 61: Occupied versus Unoccupied Cooling and Heating Setpoint Values

State	Cooling Setpoint	Heating Setpoint
Occupied	72°F	70°F
Unoccupied	82°F	60°F

To see existing occupancy schedules by location, refer to the building descriptions in Section 2. Schedules in Section 2 represent the time the buildings are occupied versus not. This is typically different than the schedule for when HVAC equipment is operational, as often buildings are either pre-cooled or pre-heated prior to the arrival of occupants. Below are the proposed operating schedules.

Table 62: Blythe Area Recreation Center Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	8a – 6p	8a – 6p	8a – 6p	8a – 6p	8a – 6p	Closed	Closed
UnOccupied	6p – 8a	6p – 8a	6p – 8a	6p – 8a	6p – 8a	Closed	Closed

Table 63: Carrie J. Mays Community Life Center Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	9a – 7p	9a – 7p	9a – 7p	9a – 7p	9a – 6p	Closed	Closed
UnOccupied	7p – 9a	7p – 9a	7p – 9a	7p – 9a	6p – 9a	Closed	Closed

Table 64: Carrie J. Mays Gymnasium Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	9a – 7p	9a – 7p	9a – 7p	9a – 7p	9a – 6p	Closed	Closed
UnOccupied	7p – 9a	7p – 9a	7p – 9a	7p – 9a	6p – 9a	Closed	Closed

Table 65: Downtown Park Division Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	7a – 6p	7a – 6p	7a – 6p	7a – 6p	7a – 6p	Closed	Closed
UnOccupied	6p – 7a	6p – 7a	6p – 7a	6p – 7a	6p – 7a	Closed	Closed

Table 66: Eastview Community Center Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	8a – 5p	8a – 5p	8a – 5p	8a – 5p	8a – 5p	Closed	Closed
UnOccupied	5p – 8a	5p – 8a	5p – 8a	5p – 8a	5p – 8a	Closed	Closed

Table 67: Gracewood Community Center Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	8a – 5p	8a – 5p	8a – 5p	8a – 5p	8a – 5p	Closed	Closed

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	Mon	Tues	Wed	Thu	Fri	Sat	Sun
UnOccupied	5p – 8a	5p – 8a	5p – 8a	5p – 8a	5p – 8a	Closed	Closed

Table 68: Henry Brigham Park Senior Center Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	8a – 5p	8a – 5p	8a – 5p	8a – 5p	8a – 5p	Closed	Closed
UnOccupied	5p – 8a	5p – 8a	5p – 8a	5p – 8a	5p – 8a	Closed	Closed

Table 69: Henry Brigham Park Swim Center Operation Schedule (June – August)

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	8a – 9p	8a – 9p	8a – 9p	8a – 9p	8a – 6p	Closed	Closed
UnOccupied	9p – 8a	9p – 8a	9p – 8a	9p – 8a	6p – 8a	Closed	Closed

Table 70: Henry Brigham Park Swim Center Operation Schedule (September – May)

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	9a – 9p	9a – 9p	9a – 9p	9a – 9p	9a – 6p	Closed	Closed
UnOccupied	9p – 9a	9p – 9a	9p – 9a	9p – 9a	6p – 9a	Closed	Closed

Table 71: Jamestown Community Center Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	24/7	24/7	24/7	24/7	24/7	24/7	24/7
UnOccupied	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 72: Jamestown Community Center Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	6a – 8p	6a – 8p	6a – 8p	6a – 8p	6a – 8p	Closed	Closed
UnOccupied	8p – 6a	8p – 6a	8p – 6a	8p – 6a	8p – 6a	Closed	Closed

Table 73: May Park Community Center Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	8a – 8p	9a – 8p	8a – 8p	9a – 8p	8a – 6p	Closed	Closed
UnOccupied	8p – 8a	8p – 9a	8p – 8a	8p – 9a	6p – 8a	Closed	Closed

Table 74: May Park Print Shop Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	8a – 8p	9a – 8p	8a – 8p	9a – 8p	8a – 6p	Closed	Closed
UnOccupied	8p – 8a	8p – 9a	8p – 8a	8p – 9a	6p – 8a	Closed	Closed

Table 75: McDuffie Community Center Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	8a – 8p	8a – 8p	8a – 8p	8a – 8p	6a – 6p	Closed	Closed
UnOccupied	8p – 8a	8p – 8a	8p – 8a	8p – 8a	6p – 6a	Closed	Closed

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Table 76: Newman Tennis Center Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	7a – 9p	8a – 7p	7a – 9p	8a – 7p	7a – 5p	12p – 5p	12p – 8p
UnOccupied	9p – 7a	7p – 8a	9p – 7a	7p – 8a	5p – 7a	5p – 12p	8p – 12p

Table 77: Old Government House Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	9a – 5p	9a – 5p	9a – 5p	9a – 5p	9a – 5p	Closed	Closed
UnOccupied	5p – 9a	5p – 9a	5p – 9a	5p – 9a	5p – 9a	Closed	Closed

Table 78: Recreation, Parks, and Facilities Administrative Offices Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	9a – 5p	9a – 5p	9a – 5p	9a – 5p	9a – 5p	Closed	Closed
UnOccupied	5p – 9a	5p – 9a	5p – 9a	5p – 9a	5p – 9a	Closed	Closed

Table 79: Recreation, Parks, and Facilities New Maintenance Shop Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	9a – 5p	9a – 5p	9a – 5p	9a – 5p	9a – 5p	Closed	Closed
UnOccupied	5p – 9a	5p – 9a	5p – 9a	5p – 9a	5p – 9a	Closed	Closed

The Richmond County Sheriff's Training Center is occupied sporadically, and the existing operation schedule is unknown. Thus, for the purposes of calibration and estimation of savings, the schedule for occupied versus unoccupied hours was used below. This is not the suggested schedule at this location.

Table 80: Richmond County Sheriff's Training Center Bunk House Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	Closed	24/7	Closed	Closed	Closed	Closed	Closed
UnOccupied	Closed	N/A	Closed	Closed	Closed	Closed	Closed

Table 81: Richmond County Sheriff's Training Center Mess Hall Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	6a-1p	6a-1p	6a-1p	6a-1p	6a-1p	Closed	Closed
UnOccupied	1p-6a	1p-6a	1p-6a	1p-6a	1p-6a	Closed	Closed

Table 82: Richmond County Sheriff's Training Center Myers Building Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	Closed	24/7	Closed	Closed	Closed	Closed	Closed
UnOccupied	Closed	N/A	Closed	Closed	Closed	Closed	Closed

Table 83: Richmond County Municipal Solid Waste Landfill Main Building Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	7a – 5p	7a – 5p	7a – 5p	7a – 5p	7a – 5p	Closed	Closed

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	Mon	Tues	Wed	Thu	Fri	Sat	Sun
UnOccupied	5p – 7a	5p – 7a	5p – 7a	5p – 7a	5p – 7a	Closed	Closed

Table 84: Richmond County Municipal Solid Waste Landfill Scale House Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	5a – 5p	5a – 5p	5a – 5p	5a – 5p	5a – 5p	5a – 12p	Closed
UnOccupied	5p – 5a	5p – 5a	5p – 5a	5p – 5a	5p – 5a	12a – 5a	Closed

Table 85: Sand Hill Community Center Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	8a – 5p	8a – 5p	8a – 5p	8a – 5p	8a – 5p	Closed	Closed
UnOccupied	5p – 8a	5p – 8a	5p – 8a	5p – 8a	5p – 8a	Closed	Closed

86: The Boathouse Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	8a – 5p	8a – 5p	8a – 5p	8a – 5p	8a – 5p	Closed	Closed
UnOccupied	5p – 8a	5p – 8a	5p – 8a	5p – 8a	5p – 8a	Closed	Closed

Table 87: Warren Road Community Center Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	9a – 8p	9a – 8p	9a – 8p	9a – 8p	9a – 6p	Closed	Closed
UnOccupied	8p – 9a	8p – 9a	8p – 9a	8p – 9a	6p – 9a	Closed	Closed

Table 88: WT Johnson Community Center Operation Schedule

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Occupied	7a – 5p	7a – 5p	7a – 5p	7a – 5p	7a – 5p	Closed	Closed
UnOccupied	5p – 7a	5p – 7a	5p – 7a	5p – 7a	5p – 7a	Closed	Closed

6.4.3 Demand Control Ventilation

Demand control ventilation ensures a building is properly ventilated by basing ventilation rates on current occupancy versus using a pre-determined or constant rate. Using occupancy sensors, the mechanical

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systems detects the level of occupancy in the room at that time and this feeds back to space controls. Dampers and fan speeds then adjust appropriately. This will not only improve occupant comfort and air quality but generate energy savings as well.

Using the occupancy sensors, dampers and fan speeds are adjusted by modulating the ventilation rate to match the specific use and occupancy. Typical building ventilation systems operate at constant or pre-determined ventilation rates. This measure allows fans speeds to backdown during periods of low occupancy, reducing energy consumption by motors and fans. It also reduces the amount of outside air being brought in, reducing the overall cooling load on the building while still ensuring fresh air requirement and comfort standards are met.

Affected Equipment

Table 89: Affected Equipment

Building	Tag	Equipment	Model No.	Serial No.	Date of Manufacture/Age of Unit
Augusta Richmond County Judicial Center	AHU-1	AHU	MCCB050	K09G15687	2009
Augusta Richmond County Judicial Center	AHU-2	AHU	MCCB066	K09G15696	2009
Augusta Richmond County Judicial Center	AHU-3	AHU	MCCB066	K09G15705	2009
Augusta Richmond County Judicial Center	AHU-4	AHU	MCCB066	K09G15713	2009
Augusta Richmond County Judicial Center	AHU-5	AHU	MCCB066	K09G15730	2009
Augusta Richmond County Judicial Center	AHU-5	AHU	MCCB066	K09G15685	2009

Calculation Methodology

For details on how the building load was calculated, please refer to the Controls-Retrofit Plus spreadsheet explanation for controls optimization.

Multiple spreadsheets use the methodology below to calculate savings associated with reducing the amount of outside air being brought in by a space, such as the Controls Retrofit Plus and the Kitchen DCV spreadsheet.

The methodology below explains how savings were estimated for each of these scenarios.

Air Handler Airflow

The current total CFM (Current CFM) for each hour was calculated using the following equation. This is either constant reduced airflow in variable volume systems or the average of a cycled unit's airflow with constant volume systems:

$$Current\ CFM = Max.CFM * \frac{Current\ Building\ Load}{Peak\ Building\ Load} * \frac{Heating}{Cooling} coeff.$$

The "Heating/Cooling coefficient" is 1 for Cooling, and the "Maximum heating CFM %" input if the system is in heating mode. The above equation was used for constant volume systems where the unit fans cycled. Otherwise the unit maintains a constant volume and its CFM is always the full load value. For VAV systems, the same equation is used, but the spreadsheet makes sure it never falls below the VAV minimum airflow.

Existing Outside Air CFM

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The current outside air CFM for each hour was calculated from the “Current CFM” value. For constant volume systems, the following formula was used.

$$Current\ OA\ CFM_{CV} = Current\ CFM * \frac{Minimum\ Outside\ Air\ CFM}{Total\ Unit\ Nominal\ CFM}$$

If the building has outside air dampers that closed at night, this value was zeroed for unoccupied times. For variable volume systems, the outside air CFM was assumed to be constant, as most VAV systems can use damper control to adjust the total airflow CFM, while maintaining constant code minimum outside air. If the building has outside air dampers that closed at night, this value was zeroed for unoccupied times as well.

New Outside Air CFM with DCV

Outside air CFM with DCV was calculated by multiplying the current outside air CFM by the assumed outside air reduction gained by DCV. This reduction is different if it’s in occupied or unoccupied mode. The assumption section lists the reduction percentages used for each building. It should be noted that an economizer lockout function was used to eliminate DCV operation when the systems are in cooling mode and the outside air has less enthalpy than the return air.

Outside Air Conditioning Energy Savings

The energy required to cool the outside air during cooling hours is calculated by the following equation, where Δh is enthalpy difference from the return air and outside air:

$$Cooling\ Energy = \frac{\frac{60}{v}(\Delta h * Current\ OA\ CFM)}{Equip\ Eff.}$$

For heating energy, the following formula was used, where Δt is temperature differential between return air and outside air:

$$Heating\ Energy = \frac{\frac{60}{v}(\Delta t * Current\ OA\ CFM) * 0.24}{Efficiency}$$

The differences between energy required to condition the outside air with and without DCV was calculated for every hour and summed up to determine to total yearly savings.

Existing and Proposed Values

Savings were calculated based on changing key inputs and assumptions from an existing value to a proposed value. For the demand control ventilation measure, the key variable to be changed was the schedule of outside air. The table below shows the key values that were modified to calculate the energy savings for this measure.

Table 90: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Augusta Richmond County Judicial Center	Outside Air Schedule	Constant	Varies with Occupancy

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6.4.4 Kitchen Demand Control Ventilation

Kitchen demand control ventilation uses the same concept as general demand control ventilation but focuses on kitchen equipment. The sensors are typically located in the exhaust hood above industrial kitchen equipment, such as range stove and oven, and detect cooking activity under the hood. This allows the exhaust fans to back down the amount of exhausted air during periods of low or no cooking activity. A substantial amount of air passes through the hood during normal operation, and this exhausted air must be made up via makeup air units. Thus, backing down the amount of exhausted air also allows the makeup air unit fan to back down as well. Makeup air that replaces exhausted air is often supplied by the building HVAC system. Thus, lowing the kitchen ventilation equipment in turn reduces the heating and cooling usage. Not only is occupant comfort improved through this system, but energy consumption by exhaust and makeup fan motors is decreased in addition to savings from reduced cooling and heating loads.

This measure is similar to the demand control ventilation ECM above, but instead of adjusting ventilation rates based on occupancy sensors, this method uses sensors that detect cooking activity under the exhaust hood above kitchen equipment. Periods of reduced cooking activity allow the air flow of the exhaust hood to be decreased, allowing exhaust and makeup fan motors to be used less intensely and less often, resulting in energy and cost savings. This also in turn reduced the amount of air being exhausted and makeup air required, reducing HVAC heating and/or cooling usage.

Affected Equipment

Table 91: Affected Equipment

Building	Qty	Tag	Equipment	Model No.	Serial No.	Date of Manufacture/Age of Unit
Charles B. Webster Detention Center	2	-	Kitchen Hoods	CUBE 240 HP	(5,000 CFM)	-
Charles B. Webster Detention Center	1	MUA-1	Make-Up Air	OAGD360A	-	2018

Calculation Methodology

See the calculation methodology section for the demand control ventilation measure.

Existing and Proposed Values

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Savings were calculated based on changing key inputs and assumptions from an existing value to a proposed value. For the kitchen demand control ventilation measure, the key variable to be changed was the supply and exhaust fans minimum speed during operation and allowing it to shutoff at night. For the calculations, this allows the fan speed to vary with the variable cooking loads. The table below shows the key values that were modified to calculate the energy savings for this measure.

Table 92: Existing and Proposed Values

Building Name	Input Name	Existing Value	Proposed Value
Charles B Webster Detention Center	Exhaust Fan Minimum Speed	100%	50%

6.5 WATER AND SEWER CONSERVATION SCOPE AND ECMS

Below is a list of buildings that are in scope for energy savings associated with water fixture upgrades. For detailed information regarding the audit, refer to the water audit appendix. Given the low water rate in Augusta and that facilities outside of the Detention Center do not pay for sewer service, water conservations measures were only financially feasible at this location.

Table 93: Water and Sewer Conservation Facilities Affected

Building Name	Water Efficiency Retrofit	Cooling Tower Credit	Flush Valve Control	Ozone Laundry
Charles B Webster Detention Center	X	X	X	X

6.5.1 Water Efficiency Retrofit

This measure proposes to replace existing plumbing fixtures, such as toilets, urinals, sinks, and showers, with low-flow fixtures. Toilets and urinals are rated based on the amount of water per flush, while showers and sinks are rated on their flow rate during use. Over time, building codes have changed to mandate lower flow fixtures than were previously allowed. Advances in technology allow for new low-flow fixtures to provide similar performance while using a fraction of the water.

The existing fixtures will be replaced, including all wear parts, with new low-flow equivalents. Replacing wear components puts the entire assembly back to its original condition and eliminates any potential for existing degradation to affect the new fixtures. While existing low flow fixtures may be excluded from this measure, including the replacement of their wear components will lead to standardized parts as well as resetting the expected lifespan of the fixtures, both of which reduce maintenance costs.

Detailed information regarding the water retrofit can be found in Appendix 2.

6.5.2 Cooling Tower Credit

Often when water gets billed from a utility company to the customer, it is assumed that all water that is used by the customer is going to make its way to the sewer, so the total amount of water delivered is also assumed to be the same amount of water for the purposes of sewer charges. While this is true of many processes that use water, in the case of cooling towers this assumption is not true. Cooling towers use water evaporation to cool down the condenser water loop, and hence there's no sewage produced by cooling towers. As a result, this project proposes to put a water meter on the cooling tower make-up water

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line and getting a sewage credit for that water that is used by the cooling tower make-up water, hence only being charged for the water being delivered to the cooling towers and not the sewage charge.

6.5.3 Flush Valve Control

Often in detention centers, water closets can get abused and used way more by the inmates for various purposes, such as trying to eradicate evidence of contraband or just repeatedly flushing the toilet for no reason. This project proposes to install a Flush Valve Control system that helps reduce the number of times that inmates can flush the toilet in a short period of time. This allows remote access of parameters, and can set how many times inmates can flush the toilet in a certain amount of time. It is also capable of locking out flushing for a period of time if it detects abuse. This can greatly reduce the amount of water consumption used by the Detention Center.

6.5.4 Ozone Laundry

This measure proposes installing an Ozone Laundry System at the Detention Center. The oxidation of the ozone sterilizes the fabrics with a 99%+ bacterial and viral kill count, reducing risk of spreading pathogens throughout the prison.

Other benefits included reduced hot water usage. This can reduce hot water usage up to 80% depending on local groundwater temperatures. Fabric drying times are also shorter, as the ozone helps release moisture in the dryer, reducing drying times by up to 20% in most cases. This furthers energy savings by reducing energy consumption by the dryers.

6.6 PV SOLAR SCOPE AND ECMS

This measure proposes to install a solar photovoltaic assembly to convert solar radiation into electrical energy for use in the building. Only the Municipal Building and Diamond Lakes Library/Robert Howard Community Center are in scope for this measure.

Electricity is typically provided by the utility company, who sets the tariff schedule and associated costs. Depending on the utility profile, there may be separate charges for consumption and demand. Utilizing a source of free energy such as solar radiation can offset significant utility energy costs. Additionally, it is more environmentally friendly than purchasing electricity from the utility provider, as there are no grid distribution losses and uses a 100% renewable energy source.

A solar photovoltaic assembly, consisting of panels with semiconductor materials, will be installed in an area that receives large amounts of sunlight throughout the day. When sunlight contacts the panels, electrons are knocked free from the semiconductor material. Electric fields within the panels push the electrons to conducting plates which transfer the electrons to wire, creating electricity for use in the building. The image below shows how the photovoltaic cells work to produce an electrical current.

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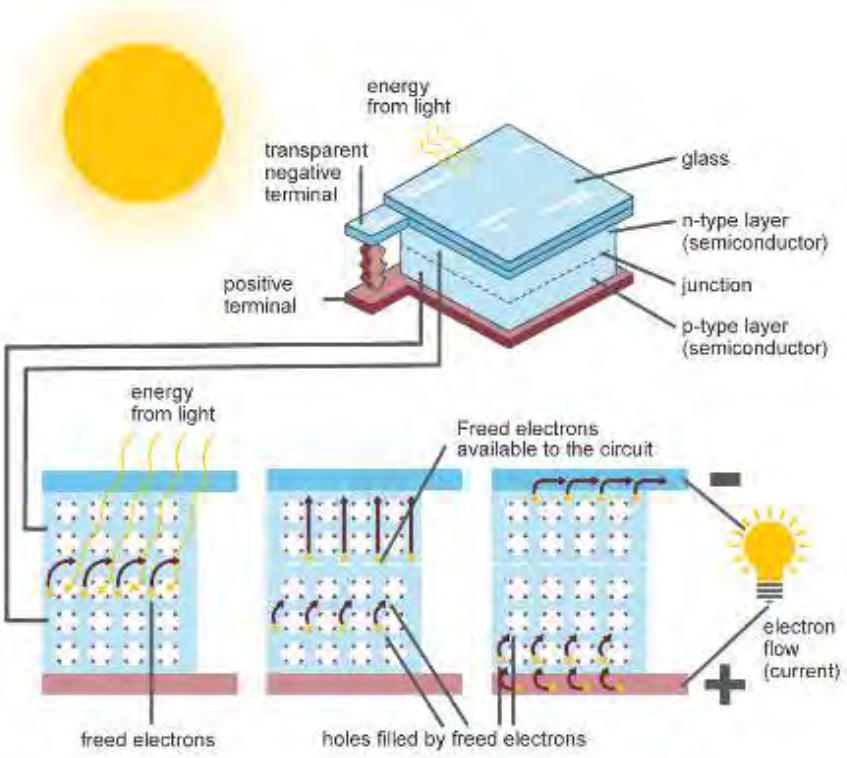

Figure 3: Photovoltaic Cell

Below is a list of buildings that are in scope for energy savings associated with building envelope improvements. For detailed information regarding the PV solar upgrade, refer to Appendix 11.

Table 94: PV Solar Facilities Affected

Building Name	Peak kW	Annual kWh
Augusta Municipal Building	108 kW	209,796 kWh
Diamond Lakes Library and Robert Howard Community Center	100 kW	186,642 kWh

6.7 BUILDING ENVELOPE SCOPE AND ECMS

This measure primarily focuses on improving the architectural envelope of buildings. This is accomplished by adding insulation to the building envelope to reduce heat transfer and sealing cracks, gaps, and holes in the building envelope to reduce the amount of infiltration into the building. Heat is transferred through opaque surfaces by thermal conduction, where thermal energy excites the molecules causing collisions which transfer heat. Heat transfer typically occurs through different layers of composite structures with differing thermal properties, with some conducting heat much more rapidly than others.

While some components of the building envelope are included for structural or other needs, building insulation is required by current energy codes to reduce the amount of heat transfer and improve thermal comfort. Older buildings may have never had portions of their envelope insulated, or the insulation may have deteriorated over time or been removed. New insulation will be added to the building envelope to improve thermal comfort and reduce energy usage by the HVAC systems. When properly insulated, the heat transfer through the building envelope is reduced and the HVAC systems do not have to work as hard

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to maintain temperature setpoints. A properly insulated building will also reduce hot and cold spots, allowing for a more uniform temperature distribution throughout the space.

"Weatherization" involves reducing unwanted infiltration through small openings in the building envelope that can form over time due to degrading door and window seals, building settling, general wear and tear, or from bad repairs. These gaps in the envelope allow air infiltration and exfiltration, which is uncontrolled air passing into and out of the building. Infiltration air is unconditioned, which can result in humidity problems and must eventually be conditioned by HVAC systems, which increases energy consumption. Cracks and holes in the envelope can sometimes be detected with the naked eye but are often detected using infrared thermal imaging and smoke testing.

Existing cracks, gaps, and holes will be sealed to reduce building infiltration and exfiltration. By reducing the air transfer through the building envelope, less outside air will need to be conditioned, which reduces the amount of energy expended by the HVAC systems. Because excess infiltration can result in drafts and humidity problems, this measure will also improve thermal comfort and allow the HVAC systems to better maintain their comfort setpoints.

Trane has identified five categories of building envelope improvements for Augusta-Richmond County. A description of each building envelope improvement is below as well as a matrix showing which improvement types are applicable to each building.

- *Air Leakage/Penetrations* – Usually occur where building envelope elements are connected, where penetrations exist, or where cracks have developed over time. Various techniques will be used to seal these openings including insulation, drywall, polyurethane spray foam, and urethanized elastomeric sealants.

- *Air Leakage/Windows* – Occurs where the window frames are attached to the walls. These areas will be caulked with a premium urethanized elastomeric sealant.

- *Conduction/Insulation* – Heat transfer occurs in attic and plenum spaces where there is insufficient insulation. In these areas, polyurethane spray foam, standard batt insulation, or blown-in insulation will be applied.

- *Weatherstripping/Exterior Doors* – Weatherstripping, door sweeps, and vertical door sweeps on exterior doors and even roll-up doors gets old, brittle, or cracked and allows air infiltration.

- *Compartmentalization* – When not properly sealed (or compartmentalized), pipe chases and other vertical shafts can allow stack effects to exist. This creates air infiltration/exfiltration and drafty conditions within a building. These areas will be properly sealed to eliminate the stack effects.

Affected Locations and Scope

Below is a list of buildings that are in scope for energy savings associated with building envelope improvements. For detailed information regarding the building envelope audit, refer to the building envelope appendix.

Table 95: Building Envelope Matrix

Building Name	Air Leakage/ Penetrations	Air Leakage/ Windows	Conduction/ Insulation	Weatherstripping/ Exterior Doors	Compartmentalization
911 Emergency Services			X		
Appleby Library	X		X		
Augusta Aquatics Center	X		X		X

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Building Name	Air Leakage/ Penetrations	Air Leakage/ Windows	Conduction/ Insulation	Weatherstripping/ Exterior Doors	Compartmentalization
Augusta Fire Department Administrative Building			X		
Augusta Municipal Building	X		X		
Augusta Public Library Headquarters	X				
Bernie Ward Community Center	X		X		
Blythe Area Recreation Center	X		X		
Carrie J Mays Community Life Center	X		X		
Central Services	X		X		
Diamond Lakes Library and Robert Howard Community Center	X		X		
Doughty Community Center			X		
Eastview Community Center			X		
Fire Station 1	X		X		X
Fire Station 4	X		X		
Fire Station 5	X		X		
Fire Station 6	X		X		
Fire Station 7	X		X		X
Fire Station 8	X		X		
Fire Station 10	X		X		X
Fire Station 11	X		X		
Fire Station 12	X		X		X
Fire Station 13	X		X		
Fire Station 14	X		X		
Fire Station 15	X		X		X
Fire Station 16	X		X		
Fire Station 17	X		X		
Fire Station 18	X		X		X
Fire Station 19	X		X		X
Friedman Branch Library	X	X	X		
Gracewood Community Center	X		X		
Henry Brigham Park Senior Center	X		X		
Henry Brigham Park Swim Center	X				
Information Technology	X				
Jamestown Community Center	X		X		
Julian Smith BBQ Pit			X		
Julian Smith Casino			X		X
May Park Community Center			X		
May Park Print Shop	X		X		X
McDuffie Community Center	X		X		
Newman Tennis Center			X		
Old Government House			X		

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Building Name	Air Leakage/ Penetrations	Air Leakage/ Windows	Conduction/ Insulation	Weatherstripping/ Exterior Doors	Compartmentalization
Recreation, Parks, And Facilities Administrative Offices			X		
Richmond County Sheriff's Office	X		X		
Richmond County Sheriff's Office South Precinct			X	X	
Richmond County Sheriff's Office Special Ops Precinct			X		
Sand Hill Community Center			X		
Wallace Branch Library	X		X		
Warren Road Community Center	X		X		
WT Johnson Center	X		X		

6.8 OPERATIONAL SAVINGS

Implementing the described measures has many benefits in addition to reducing facility energy usage and associated cost. In most instances, maintenance costs will also be reduced due to a reduction in equipment operating hours and/or loads imposed on equipment. Replacing old equipment nearing the end of its useful life will also reduce maintenance costs. New system designs often improve system diagnostics, detecting, and repairing problems before building occupants are aware they exist. Lighting system retrofits often improve space lighting level and HVAC measures often result in improved space comfort conditions and indoor air quality. Spaces are more pleasant to occupants, which often results in an increase in productivity. The operational savings benefits Trane identified during the Detailed Energy Audit for the City of Birmingham are detailed below.

6.8.1 Lighting Operational Savings

The lighting material deferment savings apply to the energy conservation measure involving the retrofit of various T8, T12, Incandescent Task, Exit Signs, Metal Halide high bay and other lighting fixtures located in certain buildings in Augusta-Richmond County. The room for room lighting audit in Appendix 1 details the number of fixtures to be retrofitted. Based on the detailed audit of the lighting systems and industry standard methodology the average failure rates for new lamps and ballasts are calculated.

Material Savings Calculations: Lamps

The first step is to calculate the *Existing Average Annual Lamp Burn Outs* (EAALB). This is the annual percentage of burned out lamps expected each year. It is calculated by dividing the annual hours of operation by the manufacturers stated lamp life, then multiplying by the number of lamps in each fixture. See Eq.1.

Eq.1 $$EAALB = \frac{Annual\ Hours\ of\ Operation}{Lamp\ Life} * Total\ Number\ of Lamps$$

Next, for each specific lamp type, the Existing Average Annual Lamp Burn Outs percentage is multiplied by the *Existing Estimated Lamp Purchase Cost* (EELPC), giving us the *Existing Estimated Lamp Replacement Cost* (EELRC). This cost is assumed based on historical data. See Eq.2.

Eq.2 $$EELRC = EAALB * Existing\ Estimated\ Lamp\ Purchase\ Cost$$

Equation 2 gives the total annual cost of replacement lamps per fixture which is then multiplied by the *Total Number of Existing Fixtures* (TNEF) resulting in the *Existing Total Lamp Replacement Material Cost* (ETLRMC). See Eq.3.

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Eq.3 $$ETLRMC = EELRC * Total\ Number\ of\ Existing\ Fixtures$$

Equations 1-3 are then repeated for the proposed lighting system. The difference between the *Existing Total Lamp Replacement Material Cost* and the *Proposed Total Lamp Replacement Material Cost* will yield the *Total Lamp Material Savings* (TLMS). *This procedure is performed for each specific type of lamp and fixture configuration.* See Eq.4.

Eq.4 $$Exising\ TLRMC - Proposed\ TLRMC = Lamp\ Material\ Savings$$

Material Savings Calculations: Ballasts

The first step is to calculate the *Existing Average Annual Ballast Burn Outs* (EAABB). This is the percentage of annual percentage of burned out ballasts expected each year. It is calculated by dividing the annual hours of operation by the manufacturer's stated operating life, then multiplying by the number of ballasts in each fixture. See Eq.5.

Eq.5 $$EAABB = \frac{Annual\ Hours\ of\ Operation}{Operating\ Life} * Total\ Number\ of Ballasts$$

Next, the Existing Average Annual Ballast Burn Outs percentage is multiplied by the *Existing Estimated Ballast Purchase Cost* (EEBPC). This cost is assumed based on historical data. See Eq.6.

Eq.6 $$EEBRC = EAABB * Existing\ Estimated\ Ballast\ Replacement\ Cost$$

Equation 2 gives the total annual cost of replacement ballasts per fixture which is multiplied by the *Total Number of Existing Fixtures* (TNEF) resulting in the *Existing Total Ballast Replacement Material Cost* (ETBRMC). See Eq.7.

Eq.7 $$ETBRMC = EEBRC * Total\ Number\ of\ Existing\ Fixtures$$

Equations 5 - 7 are then repeated for the proposed lighting system. The difference between the *Existing Total Ballast Replacement Material Cost* and the *Proposed Total Ballast Replacement Material Cost* will yield the *Total Ballast Material Savings* (TLMS). See Eq.8.

Eq.8 $$Exising\ TBRMC - Proposed\ TBRMC = Ballast\ Material\ Savings$$

Labor Savings Calculations: Lamps

The first step is to calculate the *Existing Average Annual Lamp Burn Outs* (EAALB) as per Eq.1 above.

Next, for each specific lamp type, the EAALB percentage is multiplied by the *Existing Estimated Lamp Replacement Labor* (EELRL) which is multiplied by the Labor Cost per Hour (LCpH), giving us the *Existing Estimated Lamp Replacement Labor Cost* (EELRLC). The lamp replacement labor and labor cost per hour is assumed based on historical data. See Eq.10.

Eq.10 $$EELRLC = EAALB * Existing\ Estimated\ Lamp\ Replacement\ Labor * Labor\ Cost\ per\ Hour$$

Note: Trane conservatively applied the Labor Cost per Hour at only 1/3 of the customary rate so only 33% of the labor savings are being captured.

Equation 10 gives the total annual cost of replacement lamp labor cost per fixture which is then multiplied by the *Total Number of Existing Fixtures* (TNEF) resulting in the *Existing Total Lamp Replacement Labor Cost* (ETLRLC). See Eq.11.

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Eq.11 $$ETLRLC = EELRLC * Total\ Number\ of\ Existing\ Fixtures$$

Equations 10 & 11 are then repeated for the proposed lighting system. The difference between the *Existing Total Lamp Replacement Labor Cost* and the *Proposed Total Lamp Replacement Labor Cost* will yield the *Total Lamp Labor Savings (TLLS)*. *This procedure is performed for each specific type of lamp and fixture configuration.* See Eq.12.

Eq.12 $$Exising\ TLRLC - Proposed\ TLRLC = Lamp\ Labor\ Savings$$

Labor Savings Calculations: Ballasts

The first step is to calculate the *Existing Average Annual Ballast Burn Outs* (EAABB) as per Eq.5 above.

Next, for each specific ballast type, the EAABB percentage is multiplied by the *Existing Estimated Ballast Replacement Labor* (EEBRL) which is multiplied by the Labor Cost per Hour (LCpH), giving us the *Existing Estimated Ballast Replacement Labor Cost* (EEBRLC). The ballast replacement labor and labor cost per hour is assumed based on historical data. See Eq.13.

Eq.13 $$EEBRLC = EAABB * Existing\ Estimated\ Ballast\ Replacement\ Labor * Labor\ Cost\ per\ Hour$$

Note: Trane conservatively applied the Labor Cost per Hour at only 1/3 of the customary rate so only 33% of the labor savings are being captured.

Equation 13 gives the total annual cost of replacement lamp labor cost per fixture which is then multiplied by the *Total Number of Existing Fixtures* (TNEF) resulting in the *Existing Total Lamp Replacement Labor Cost* (ETLRLC). See Eq.14.

Eq.14 $$ETLRLC = EELRLC * Total\ Number\ of\ Existing\ Fixtures$$

Equations 13 & 14 are then repeated for the proposed lighting system. The difference between the *Existing Total Ballast Replacement Labor Cost* and the *Proposed Total Ballast Replacement Labor Cost* will yield the *Total Ballast Labor Savings (TBLS)*. *This procedure is performed for each specific type of ballast and fixture configuration.* See Eq.15.

Eq.15 $$Exising\ TBRLC - Proposed\ TBRLC = Ballast\ Labor\ Savings$$

The savings for each of the 4 categories listed above are then added together to yield the *Total Lighting Operational Savings* (TLOS). See Eq.16

Eq.16 $$Total\ Lighting\ Operational\ Savings = Lamp\ Material\ Savings + Ballast\ Material\ Savings + Lamp\ Labor\ Savings + Ballast\ Labor\ Savings$$

6.8.2 Capital Cost Avoidance

Much of the Customer's existing HVAC equipment and systems are near the end of useful service life or past the end of useful service life (e.g., operating at reduced capacity and/or efficiency, or not operating at all). Implementation of new HVAC equipment as part of proposed Services Trane will furnish will reduce the need for the City to procure replacement HVAC equipment in many of the City's buildings over the course of Guarantee Term. Trane quantified the value of aforementioned equipment near or at the end of useful service life as presented in the tables below.

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Table 96: Future replacement expenditures avoided as result of new equipment installed.

Capital Cost Avoidance - Annual Average (18 yrs)		**$ 241,649**								
Capital Cost Avoidance - TOTAL (Net Present Value)		$ 4,349,675	Forecast Replacement Out-Year							
Escalation Factor for each column (3% per year)				1.030	1.061	1.093	1.126	1.159	1.194	1.230
Building	**Equipment ID**	**2020 Cost Est**	**Current Age**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Municipal Building	Chiller #1	$ 508,620	19				X			
	Chiller #2	$ 508,620	19				X			
Webster Detention	Chiller #1	$ 650,000	23	X						
	Chiller #2	$ 650,000	23	X						
	AHUs 1-11E	$ 321,600	23	X						
Blythe Park & Rec Center	5-ton split AC hea	$ 80,872	21	X						
New DDC controls - all AC systems	2.5 ton split AC he	Incl	21	X						
	2.5 ton split AC he	Incl	11				X			
Carrie Mays Gymnasium	3 ton split AC hea	$ 134,403	13		X					
New DDC controls - all AC systems	15 ton rooftop AC	Incl	17	X						
	15 ton rooftop AC	Incl	17	X						
Downtown Parks Division	3.5 ton split AC he	$ 75,412	16	X						
New DDC controls - all AC systems	3.5 ton split AC he	Incl	16	X						
	3.5 ton split AC he	Incl	24	X						
Gracewood CC	5-ton split system	$ 86,956	14		X					
New DDC controls - all AC systems	5-ton split system	Incl	14		X					
Jamestown CC	3-ton split system	$ 67,888	12				X			
New DDC controls - all AC systems	3-ton split system	Incl	12				X			
May Park CC	4 ton split AC hea	$ 99,241	19	X						
New DDC controls - all AC systems	3 ton split AC hea	Incl	20	X						
	3 ton split AC hea	Incl	19	X						
McDuffie Woods CC	5-ton split system	$ 300,845	18	X						
New DDC controls - all AC systems	6-ton split AC hea	Incl	17	X						
	5-ton split system	Incl	9							X
	5-ton split system	Incl	17	X						
	5-ton split system	Incl	13			X				
Newman Tennis Center	5-ton split system	$ 38,095	12				X			
New DDC controls - all AC systems		Incl								
Old Government House	5-ton split AC hea	$ 139,187	32	X						
New DDC controls - all AC systems		Incl								
Rec , Parks, and Facilities Admin Offices	3.5 ton split AC he	$ 79,283	17	X						
New DDC controls - all AC systems	1.25 ton ductless	Incl	19	X						
	.75 ton ductless sp	Incl	17	X						
Richmond Co STC - Dining Hall	3 ton ductless spli	$ 12,000	17	X						
New DDC controls - all AC systems		Incl								
Richmond Co STC - Myers Building	2 ton ductless spli	$ 141,201	15	X						
New DDC controls - all AC systems	2 ton ductless spli	Incl	15	X						
	3 ton ductless spli	Incl	15	X						
Richmond Co Municipal Solid Waste Landfill	3 ton split AC hea	$ 121,129	12				X			
New DDC controls - all AC systems	4 ton split AC hea	Incl	12				X			
	4 ton split AC hea	Incl	12				X			
Richmond Co Landfill - Scalehouse	2.5 ton split AC he	$ 21,853	13			X				
New DDC controls - all AC systems		Incl								
Sand Hills CC	5-ton split AC hea	$ 39,531	17	X						
New DDC controls - all AC systems		Incl								
WT Johnson Center	5-ton split system	$ 224,630	22	X						
New DDC controls - all AC systems	5-ton split system	Incl	22	X						
	5-ton split system	Incl	22	X						
	3-ton split system	Incl	19	X						
	2-ton split system	Incl	22	X						
Warren Road CC + new DDC controls all AC systems	2-ton split system	$ 48,309	12				X			

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Table 97: Direct Cost Avoidance

Direct Cost Avoidance - TOTAL	**$89,260**
Annual BAS Service Savings - these savings are based BAS service contract expenditures that will no longer be necessary, or will be replaced by a new service contract after the project is completed. A separate cost will be carried in the project for future BAS Service.	**$19,213**
Augusta Utilities Department - per Trane quote 6/25/19	$3,716
Augusta Mixed Use Facility - per Trane quote 7/1/19	$1,390
Diamond Lakes Park - per Trane quote 6/25/19	$5,240
Webster Detention Center - per Trane quote 5/5/20	$8,868
Annual Lighting Maintenance Savings - calculated base on typical material expenditures for replacement of old fluorescent lamps and ballasts. These types of expenditures will not be required with the new LED fixtures that will be installed.	**$70,047**
Augusta-Richmond County Public Library	$4,015
Municipal Building	$5,215
Augusta-Richmond County Judicial Center	$9,785
911 Emergency Services	$660
Appleby Branch Library	$42
Augusta Animal Services Center	$1,225
Augusta Aquatics Center	$581
Augusta Commons	$4,037
Augusta Fire Department Training Division	$419
Bernie Ward Community Center	$543
Blythe Area Recreation Center and Park	$336
Carrie J. Mays Family Life Center	$671
Central Services office and warehouse	$164
Diamond Lakes Library and Robert Howard CC, Tennis Center & park	$2,873
Doughty Park Com Center	$170
Eastview Community Center and Park	$139
Eisenhower Athletic Complex and Park	$229
Fire Station 01	$520
Fire Station 04	$416
Fire Station 05	$217
Fire Station 06	$363
Fire Station 07	$314
Fire Station 08	$282
Fire Station 09	$147
Fire Station 10	$277
Fire Station 11	$191
Fire Station 12	$313
Fire Station 13	$101
Fire Station 16	$183
Fire Station 17	$239
Fire Station 18	$413
Fire Station 19	$330
Fleming Tennis Center	$98
Friedman Branch Library	$932
Gracewood Community Center	$128
Information Technology	$590
Jamestown Community Center and Park	$182
Jones Pool	$32
Lake Olmstead Park and Casino and BBQ pit	$103
May Park Community Center	$457
Mcduffie Woods Community Center	$502
Newman Tennis Center	$282
Old Government House	$934
Recreation , Parks, and Facilities Admin Offices,Equip Repair, Main Shop, New Main Shop	$683
Richmond Co Sheriff Training Center - bunk house, myers building, mess hall, & outdoor lighting	$1,582
Richmond County Sheriff's Office	$2,883
Richmond County Sheriff's Office - South Precinct	$1,707
Sand Hills Community Center and Park	$286
Sign Shop AED	$88
Richmond County Municipal Solid Waste Landfill	$346
Street Lighting	$320
The Boathouse	$1,130
Wallace Branch Library	$488
Warren Road Community Center	$452
WT Johnson Community Center	$711
Wellness Center - Board of Elections	$342
Henry Brigham Swim Center, Sr Center, Park	$559
Charles B Webster Detention Center	$18,820

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6.9 ENERGY SAVINGS RESULTS

Tables 98A & 98B below summarize guaranteed savings by ECM at each location in scope.

Table 98A: Guaranteed Utility Savings and Cost Savings by ECM – Option A Buildings

Building	ECM	Guaranteed Dollar Savings	Guaranteed kWh Saved	Guaranteed kW Saved	Guaranteed Therms Saved	Guaranteed kGal Saved
911 Emergency Services	Lighting Retrofit	$7,636	63,690	0	0	0
911 Emergency Services	Building Envelope	$1,952	19,678	0	0	0
Appleby Branch Library	Interior/Exterior Lighting Upgrade	$1,576	12,601	25	0	0
Appleby Branch Library	Building Envelope	$1,576	3,288	0	877	0
Augusta - Richmond County Public Library	Interior/Exterior Lighting Upgrade	$27,938	233,023	683	0	0
Augusta - Richmond County Public Library	Building Envelope	$2,757	27,795	-791	0	0
Augusta Animal Services	Interior/Exterior Lighting Upgrade	$9,014	81,467	183	0	0
Augusta Aquatics Center	Interior/Exterior Lighting Upgrade	$7,944	100,578	295	-1,779	0
Augusta Aquatics Center	Natatorium HVAC	$35,763	188,291	196	7,387	0
Augusta Aquatics Center	Boiler Retrofit	$7,756	-2,314	-3	3,647	0
Augusta Aquatics Center	Variable Primary Hot Water Pumps	$1,938	19,540	25	0	0
Augusta Aquatics Center	Facility Controls Upgrade	$2,963	19,524	-14	444	0
Augusta Aquatics Center	Split Systems and RTU's	$1,168	11,200	47	25	0
Augusta Aquatics Center	Buildign Envelope	$5,153	13,170	0	1,663	0
Augusta Commons	Interior/Exterior Lighting Upgrade	$23,459	195,665	59	0	0
Augusta Fire Department - Admin	Interior/Exterior Lighting Upgrade	$0	0	0	0	0
Augusta Fire Department - Admin	Building Envelope	$2,407	2,337	0	718	0
Augusta Fire Department Training Center	Interior/Exterior Lighting Upgrade	$2,496	24,278	0	0	0
Bernie Ward Community Center	Interior/Exterior Lighting Upgrade	$6,350	52,967	172	0	0
Bernie Ward Community Center	Building Envelope	$2,892	29,157	0	0	0
Blythe Area Recreation Center	Interior/Exterior Lighting Upgrade	$3,472	28,959	6	0	0
Blythe Area Recreation Center	Controls Retrofit	$1,686	16,995	0	0	0
Blythe Area Recreation Center	HVAC Upgrade	$638	6,431	31	0	0
Blythe Area Recreation Center	Building Envelope	$1,912	19,274	0	0	0
Carrie J. Mays Family Life Center	Interior/Exterior Lighting Upgrade	$8,173	65,336	10	0	0
Carrie J. Mays Family Life Center	Controls Retrofit	$1,481	3,613	0	734	0
Carrie J. Mays Family Life Center	Building Envelope	$2,871	9,874	0	1,198	0
Carrie J. Mays Gymnasium	Interior/Exterior Lighting Upgrade	$0	0	0	0	0
Carrie J. Mays Gymnasium	Controls Retrofit	$3,450	34,781	0	0	0
Carrie J. Mays Gymnasium	HVAC Upgrade	$2,555	25,754	98	0	0
Central Services	Interior/Exterior Lighting Upgrade	$3,004	25,054	3	0	0
Central Services	Building Envelope	$1,238	12,478	0	0	0
Charles B. Webster Detention Center	Lighting Upgrade	$101,511	1,352,139	2,274	-8,664	0
Charles B. Webster Detention Center	Controls	$15,258	202,719	245	8,560	0
Charles B. Webster Detention Center	Chiller Retrofit	$3,132	73,173	270	0	0
Charles B. Webster Detention Center	Variable-Primary Pumping	$13,680	319,625	425	0	0
Charles B. Webster Detention Center	Cooling Tower Retrofit	$4,274	99,853	187	0	0
Charles B. Webster Detention Center	Dynamic Air	($149)	10,468	60	-777	0
Charles B. Webster Detention Center	Water Retrofit	$80,408	0	0	47,451	12,444
Charles B. Webster Detention Center	Coolint Tower Credit ECM	$7,249	0	0	0	3,940
Diamond Lakes Library and Robert Howard Communi	Interior/Exterior Lighting Upgrade	$11,441	103,410	248	0	0
Diamond Lakes Library and Robert Howard Communi	PV Solar	$20,891	188,816	0	0	0
Diamond Lakes Library and Robert Howard Communi	Building Envelope	$4,523	27,177	0	1,348	0
Diamond Lakes Regional Park	Interior/Exterior Lighting Upgrade	$17,445	157,673	77	0	0
Diamond Lakes Tennis Center	Interior/Exterior Lighting Upgrade	$2,188	19,774	8	0	0
Doughty Park	Interior/Exterior Lighting Upgrade	$1,408	11,387	34	0	0
Doughty Park	Building Envelope	$1,907	2,897	0	1,018	0
Downtown Parks Division	Lighting Retrofit	$0	0	0	0	0
Downtown Parks Division	Controls Retrofit	$687	0	0	472	0
Downtown Parks Division	HVAC Upgrade	$747	3,786	0	51	0
Eastview Community Center	Interior/Exterior Lighting Upgrade	$1,663	13,447	2	0	0
Eastview Community Center	Controls Retrofit	$1,282	10,365	-2	0	0
Eastview Community Center	Building Envelope	$1,829	16,167	0	0	0
Eisenhower Athletic Complex	Interior/Exterior Lighting Upgrade	$4,446	37,087	23	0	0
Fire Station 01	Interior/Exterior Lighting Upgrade	$6,750	54,594	85	0	0
Fire Station 01	Building Envelope	$3,574	31,595	-107	0	0
Fire Station 04	Interior/Exterior Lighting Upgrade	$2,832	22,901	60	0	0
Fire Station 04	Building Envelope	$2,536	5,823	0	1,072	0
Fire Station 05	Interior/Exterior Lighting Upgrade	$2,890	23,375	58	0	0
Fire Station 05	Building Envelope	$1,965	5,460	0	1,195	0
Fire Station 06	Interior/Exterior Lighting Upgrade	$3,475	28,102	55	0	0
Fire Station 06	Building Envelope	$961	8,492	0	0	0
Fire Station 07	Interior/Exterior Lighting Upgrade	$3,247	29,348	58	0	0
Fire Station 07	Building Envelope	$2,498	22,575	0	0	0
Fire Station 08	Interior/Exterior Lighting Upgrade	$2,964	23,972	38	0	0
Fire Station 08	Building Envelope	$1,131	10,001	0	0	0
Fire Station 09	Interior/Exterior Lighting Upgrade	$729	5,897	19	0	0
Fire Station 10	Interior/Exterior Lighting Upgrade	$3,561	28,798	64	0	0
Fire Station 10	Building Envelope	$2,118	18,727	0	0	0
Fire Station 11	Interior/Exterior Lighting Upgrade	$1,498	12,112	25	0	0
Fire Station 11	Building Envelope	$857	1,324	0	303	0
Fire Station 12	Interior/Exterior Lighting Upgrade	$3,131	28,296	55	0	0
Fire Station 12	Building Envelope	$2,449	22,139	0	0	0
Fire Station 13	Interior/Exterior Lighting Upgrade	$669	5,410	10	0	0
Fire Station 13	Building Envelope	$155	1,373	0	0	0
Fire Station 14	Building Envelope	$266	2,348	0	0	0
Fire Station 15	Building Envelope	$1,955	17,284	0	0	0
Fire Station 16	Interior/Exterior Lighting Upgrade	$1,669	13,501	31	0	0
Fire Station 16	Building Envelope	$193	1,707	0	0	0

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Building	ECM	Guaranteed Dollar Savings	Guaranteed kWh Saved	Guaranteed kW Saved	Guaranteed Therms Saved	Guaranteed kGal Saved
Fire Station 17	Interior/Exterior Lighting Upgrade	$1,224	9,902	28	0	0
Fire Station 17	Building Envelope	$2,059	10,891	0	528	0
Fire Station 18	Interior/Exterior Lighting Upgrade	$2,279	20,597	50	0	0
Fire Station 18	Building Envelope	$314	2,839	0	0	0
Fire Station 19	Interior/Exterior Lighting Upgrade	$3,572	32,281	59	0	0
Fire Station 19	Building Envelope	$1,912	17,284	0	0	0
Fleming Tennis Center	Interior/Exterior Lighting Upgrade	$829	6,918	26	0	0
Friedman Branch Library	Interior/Exterior Lighting Upgrade	$6,544	52,316	147	0	0
Friedman Branch Library	Building Envelope	$2,608	22,826	0	0	0
Gracewood Community Center	Interior/Exterior Lighting Upgrade	$1,966	10,654	2	0	0
Gracewood Community Center	Controls Retrofit	$1,213	3,657	-2	347	0
Gracewood Community Center	HVAC Upgrades	$521	2,087	14	86	0
Gracewood Community Center	Building Envelope	$1,581	2,767	0	679	0
Henry Brigham Senior Center	Interior/Exterior Lighting Upgrade	$1,875	15,636	49	0	0
Henry Brigham Senior Center	Building Envelope	$2,737	27,590	0	0	0
Henry Brigham Senior Center	Controls	$2,488	25,079	0	0	0
Henry Brigham Swim Center	Interior/Exterior Lighting Upgrade	$1,291	10,768	15	0	0
Henry Brigham Swim Center	Controls	$3,645	38,866	20	-270	0
Henry Brigham Swim Center	DHW Retrofit	$27	0	0	35	0
Henry Brigham Swim Center	Building Envelope	$258	2,597	0	0	0
Information Technology	Interior/Exterior Lighting Upgrade	$3,035	25,312	80	0	0
Information Technology	Controls	$7,733	77,953	0	0	0
Information Technology	Building Envelope	$669	6,743	0	0	0
Jamestown Community Center	Interior/Exterior Lighting Upgrade	$1,831	15,276	4	0	0
Jamestown Community Center	Control Retrofit	$1,401	5,520	0	654	0
Jamestown Community Center	HVAC Upgrades	$303	2,814	19	18	0
Jamestown Community Center	Building Envelope	$2,032	5,813	0	1,116	0
Jones Pool	Interior/Exterior Lighting Upgrade	$73	592	0	0	0
Julian Smith BBQ Pit	Building Envelope	$1,909	19,242	0	0	0
Julian Smith Casino	Interior/Exterior Lighting Upgrade	$522	4,355	16	0	0
Julian Smith Casino	Building Envelope	$2,779	6,591	1,522	1,543	0
May Park Community Center	Interior/Exterior Lighting Upgrade	$6,809	56,790	188	0	0
May Park Community Center	Controls Retrofit	$4,177	42,111	0	0	0
May Park Community Center	HVAC Upgrades	$892	8,988	39	0	0
May Park Community Center	Building Envelope	$1,979	3,082	0	606	0
May Park Print Shop	Controls Retrofit	$568	5,017	0	206	0
May Park Print Shop	Building Envelope	$2,019	2,774	0	823	0
McDuffie Woods Community Center	Interior/Exterior Lighting Upgrade	$12,026	67,375	186	0	0
McDuffie Woods Community Center	Controls Upgrade	$7,071	23,589	0	1,356	0
McDuffie Woods Community Center	HVAC Upgrade	$2,282	12,138	0	55	0
McDuffie Woods Community Center	Building Envelope	$5,460	9,092	0	1,819	0
Newman Tennis Center	Interior/Exterior Lighting Upgrade	$6,614	55,166	0	0	0
Newman Tennis Center	Controls Retrofit	$414	897	0	164	0
Newman Tennis Center	HVAC Upgrade	$278	1,635	9	59	0
Newman Tennis Center	Building Envelope	$544	5,486	0	0	0
Office of the Public Defender	Interior/Exterior Lighting Upgrade	$0	0	0	0	0
Old Government House	Interior/Exterior Lighting Upgrade	$4,296	35,833	10	0	0
Old Government House	Controls Retrofit	$1,668	16,811	0	0	0
Old Government House	HVAC Upgrades	$529	5,335	23	0	0
Old Government House	Building Envelope	$1,052	10,604	0	0	0
Recreation, Parks, and Facilities Admin Offices	Interior/Exterior Lighting Upgrade	$4,762	38,512	10	0	0
Recreation, Parks, and Facilities Admin Offices	Controls Retrofit	$2,044	18,071	0	0	0
Recreation, Parks, and Facilities Admin Offices	HVAC Upgrades	$388	3,432	0	0	0
Recreation, Parks, and Facilities Admin Offices	Building Envelope	$2,054	18,153	-12	0	0
Recreation, Parks, and Facilities New Maintenance Sh	Controls Retrofit	$1,005	10,129	-2	0	0
Richmond County Municipal Solid Waste Landfill	Interior/Exterior Lighting Upgrade	$5,786	48,256	9	0	0
Richmond County Municipal Solid Waste Landfill	Controls Retrofit Main Building	$5,829	40,795	0	704	0
Richmond County Municipal Solid Waste Landfill	Controls Retrofit Scale House	$169	1,699	0	0	0
Richmond County Municipal Solid Waste Landfill	HVAC Upgrade Scale House	$80	805	4	0	0
Richmond County Municipal Solid Waste Landfill	HVAC Upgrade Main Building	$1,786	18,002	19	0	0
Richmond County Sheriffs Office	Interior/Exterior Lighting Upgrade	$11,482	95,772	17	0	0
Richmond County Sheriffs Office	Building Envelope	$802	1,936	0	923	0
Richmond County Sheriffs Office - South Precinct	Interior/Exterior Lighting Upgrade	$4,858	40,517	8	0	0
Richmond County Sheriffs Office - South Precinct	Building Envelope	$4,466	45,022	0	0	0
Richmond County Sheriffs Training Center - Admin Bu	Interior/Exterior Lighting Upgrade	$10,363	57,722	18	0	0
Richmond County Sheriffs Training Center - Bunk Hou	Controls Retrofit	$959	9,663	0	0	0
Richmond County Sheriffs Training Center - Mess Hall	Controls Retrofit	$663	0	0	262	0
Richmond County Sheriffs Training Center - Mess Hall	HVAC Upgrade	$19	129	0	0	0
Richmond County Sheriffs Training Center - Myers Bu	Controls Retrofit	$1,124	11,336	0	0	0
Richmond County Sheriffs Training Center - Myers Bu	HVAC Upgrade	$518	5,220	6	0	0
Sand Hills Community Center	Interior/Exterior Lighting Upgrade	$2,790	23,272	6	0	0
Sand Hills Community Center	Controls Retrofit	$2,603	26,245	0	0	0
Sand Hills Community Center	HVAC Upgrade	$466	4,695	19	0	0
Sand Hills Community Center	Building Envelope	$1,436	14,476	0	0	0
Sign Shop AED	Interior/Exterior Lighting Upgrade	$610	5,085	1	0	0
Special Ops Precinct	Building Envelope	$1,998	20,139	0	0	0
Street Lighting	Interior/Exterior Lighting Upgrade	$3,093	25,794	71	0	0
The Boathouse	Interior/Exterior Lighting Upgrade	$2,464	19,701	3	0	0
The Boathouse	Controls Retrofit	$4,654	30,908	0	852	0

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Building	ECM	Guaranteed Dollar Savings	Guaranteed kWh Saved	Guaranteed kW Saved	Guaranteed Therms Saved	Guaranteed kGal Saved
The Boathouse	HVAC	$2,504	20,920	132	87	0
Wallace Branch Library	Interior/Exterior Lighting Upgrade	$3,176	25,386	6	0	0
Wallace Branch Library	Building Envelope	$244	790	0	273	0
Warren Road Community Center	Interior/Exterior Lighting Upgrade	$6,145	51,251	13	0	0
Warren Road Community Center	Controls Retrofit	$4,159	41,922	0	0	0
Warren Road Community Center	Building Envelope	$653	6,579	0	0	0
WT Johnson Community Center	Interior/Exterior Lighting Upgrade	$9,179	73,377	19	0	0
WT Johnson Community Center	Controls Retrofit	$5,883	45,351	0	176	0
WT Johnson Community Center	HVAC Upgrade	$1,253	9,278	56	49	0
WT Johnson Community Center	Building Envelope	$1,730	28,195	0	0	0
Board of Elections	Interior/Exterior Lighting Upgrade	$2,625	21,228	73	0	0

Table 99B: Guaranteed Utility Savings and Cost Savings by ECM – Option C Buildings

Building	ECM	Guaranteed Dollar Savings	Guaranteed kWh Saved	Guaranteed kW Saved	Guaranteed Therms Saved	Guaranteed kGal Saved
Augusta - Richmond County Judicial Center	Lighting Upgrade	$11,823	147,789	329	0	0
Augusta - Richmond County Judicial Center	Retrocommissioning and New 30 ton Chiller	$78,033	1,765,454	-1,182	0	0
Augusta - Richmond County Judicial Center	Variable Pumping	$386	8,738	10	0	0
Augusta - Richmond County Judicial Center	DCV	$5,967	134,997	134	0	0
Augusta - Richmond County Judicial Center	Dynamic Air	$822	18,586	26	0	0
Municipal Building	3-01 - Controls Optimization	$90,108	908,394	-142	0	0
Municipal Building	2-01 - Chiller Retrofit	$4,086	41,196	46	0	0
Municipal Building	2-02 - Variable Primary Pumping	$2,089	21,056	20	0	0
Municipal Building	2-03 - Condenser Water Reset	$581	5,862	31	0	0
Municipal Building	2-04 - Water-Side Economizer	$107	1,080	63	0	0
Municipal Building	8-02 - Add VFDs	$3,833	38,637	41	0	0
Municipal Building	PV - Boiler Usage	$12,334	118,853	0	0	0
Municipal Building	PV-Excess Energy	$782	24,142	0	0	0
Municipal Building	Building Envelope	$11,897	119,939	0	0	0

7. M&V METHODOLOGY

Trane is proposing a Measurement and Verification (M&V) plan that will provide Augusta Richmond County with verification of project guaranteed savings while balancing costs incurred during the M&V process. This section provides an overview of the M&V process, guidelines for the M&V approach, and details on how each ECM will be handled. Trane's team have selected both Option A and Option C methodologies for different ECMs and locations

7.1 OVERVIEW

During the **Project Development phase**, we strive for the ideal balance between conservative savings projections and sufficient scope to maximize your benefits from the improvements.

The following process is followed during the **Performance Period phase** of a contract to document actual energy savings compared to the guaranteed amount. Our team will invest significant time proactively planning and scheduling data collection, analysis, and reporting activities in conjunction with your needs and availability.

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Collaboration: Our Performance Period process is collaborative and transparent. We're focused on providing deliverables that communicate actual results in a manner that is easily grasped by all stakeholders.

Data Collection: We will automate data collection wherever possible through leveraging the existing Trane digital controls systems and any data acquisition software from metering improvements, utility bill auditing, and renewable energy measures. This will minimize the cost of multi-year data collection and maximize value to Augusta-Richmond County.

Data Analysis and As-Built Energy Savings: We will aggregate and evaluate all energy data to quantify performance and savings for each ECM.

Reporting: Trane will reconcile savings and report to Augusta-Richmond County on a mutually agreed upon frequency. At the end of each guarantee year, a reconciliation report will be presented to your team for review.

Resolution of Potential Issues: Trane has a long-standing history of excellence in fulfilling our promises. **More than 99% of our performance contracting projects generate more savings than are guaranteed.** In the event of a savings shortfall, we will stand behind our commitments and either provide Augusta-Richmond County a check for the difference or provide products or services equal to the shortfall amount (at your discretion). It is that simple.

7.1.1 IPMVP Protocol

Trane adheres to the well-established International Performance Measurement and Verification Protocol (IPMVP) for confirming the benefits of the installed ECMs. The four IPMVP methods are summarized below. Together, we will select whichever Option proves to be the most prudent for each individual ECM after the project is fully developed.

IPMVP Protocol		Typical Uses for this Option
A	**Retrofit Isolation: Key Parameter Measurements**	Option A is applied to ECMs where there is one specific and key variable that best indicates the potential for energy savings.
B	**Retrofit Isolation: All Parameter Measurements**	Verification techniques for Option B are designed for projects where long-term continuous measurement of performance is desired.
C	**Whole Facility**	Verification techniques for Option C determine savings by studying overall energy use in a facility and identifying the effects of energy projects from changes in overall energy use patterns.
D	**Calibrated Simulation**	Option D is intended for energy retrofits where calibrated simulation of baseline energy use and calibrated simulations of post-installation energy consumption are used to measure savings from the retrofit.

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7.1.2 M&V Cost Considerations

The ongoing effort (e.g., predominately labor) required to monitor the performance of a project carries a cost over the life of the M&V term. Hence, it is an expense and typically must be shown separate from asset expenditures. At a minimum, each M&V Option should be considered within the context of the:

- Absolute magnitude of the savings
- Relative magnitude of savings compared to the total energy consumption of the facility
- Complexity of the ECM(s) implemented

Trane's team have selected both Option A and Option C methodologies for different ECMs and locations

Option A Costs

This option is typically applied to lighting, water and building envelope retrofits. In the case of lighting, for example, the reduction in power consumption by replacing an inefficient lamp with a more efficient lamp is well understood. Therefore, if the hours of operation can be agreed upon (and therefore stipulated), then the amount of savings is easily determined. If the size of the building/retrofit was small, then it would not make sense to erode savings by paying for an ongoing reconciliation of the energy consumption via a more expensive M&V option. Even in a large building/retrofit, if the magnitude of lighting savings was small compared to the total energy consumption, then the natural fluctuation of the building's energy consumption may obscure the lighting reduction.

Option C Costs

Typically applied when multiple ECMs are implemented within a facility and there is no need to measure and verify the performance of each ECM independently. Also, the aggregate of the savings should be significant enough that normal building energy fluctuations will not obscure the ability to see the savings at the whole building utility meter(s). This method compares the monthly utility bills with calibrated computer models, and is routinely adjusted for weather conditions, production conditions, etc. that may materially affect the tuning of the computer models.

7.2 M&V ECM TABLE

The following table details the proposed M&V methodology, by IPMVP Option category, for each proposed ECM.

Building Name	Lighting	HVAC	Controls	Water	PV Solar	Building Envelope
911 Emergency Services	A					A
Appleby Library	A					A
Augusta Animal Services	A					
Augusta Aquatics Center	A					A
Augusta Commons and Riverwalk	A					
Augusta Fire Department Administrative Building	A					A
Augusta Municipal Building	C	C	C		C	C
Augusta Public Library Headquarters	A					A
Augusta-Richmond County Judicial Center	C	C	C			
Bernie Ward Community Center	A					A
Blythe Area Recreation Center	A	A	A			A
Board of Elections / Wellness Center	A					
Carrie J Mays Community Life Center	A		A			A

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Building Name	Lighting	HVAC	Controls	Water	PV Solar	Building Envelope
Carrie J Mays Gymnasium	A	A	A			
Central Services	A					A
Charles B Webster Detention Center	A	A*	A	A*		
Diamond Lakes Library and Robert Howard Community Center	A		A		A	A
Doughty Community Center	A					A
Downtown Park Division		A	A			
Eastview Community Center	A		A			A
Eisenhower Athletic Complex	A					
Fire Station 1	A					A
Fire Station 4	A					A
Fire Station 5	A					A
Fire Station 6	A					A
Fire Station 7	A					A
Fire Station 8	A					A
Fire Station 9	A					
Fire Station 10	A					A
Fire Station 11	A					A
Fire Station 12	A					A
Fire Station 13	A					A
Fire Station 14						A
Fire Station 15						A
Fire Station 16	A					A
Fire Station 17	A					A
Fire Station 18	A					A
Fire Station 19	A					A
Fleming Tennis Center	A					
Friedman Branch Library	A					A
Gracewood Community Center	A	A	A			A
Henry Brigham Park Senior Center	A		A			A
Henry Brigham Park Swim Center	A		A			A
Information Technology	A		A			A
Jamestown Community Center	A	A	A			A
Jones Pool	A					
Julian Smith BBQ Pit	A					X
Julian Smith Casino	A					X
May Park Community Center	A	A	A			A
May Park Print Shop			A			A
McDuffie Community Center	A	A	A			A
Newman Tennis Center	A	A	A			A
Old Government House	A	A	A			A
Recreation, Parks, And Facilities Administrative Offices	A	A	A			A
Recreation, Parks, And Facilities New Maintenance Shop			A			
Richmond County Sheriff's Office	A					A
Richmond County Sheriff's Office South Precinct	A					A
Richmond County Sheriff's Office Special Ops Precinct						A

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Building Name	Lighting	HVAC	Controls	Water	PV Solar	Building Envelope
Richmond County Sheriff's Training Center Administration Building	A					
Richmond County Sheriff's Training Center Bunk House	A		A			
Richmond County Training Center Dog Kennel			A			
Richmond County Sheriff's Training Center Mess Hall	A	A	A			
Richmond County Sheriff's Training Center Myers Building	A	A	A			
Richmond County Municipal Solid Waste Landfill Main Building	A		A			
Richmond county Municipal Solid Waste Scale House		A	A			
Sand Hill Community Center	A	A	A			A
The Boathouse	A		A			
Traffic Engineering - Street Lighting	A					
Traffic Engineering Sign Shop	A					
Wallace Branch Library	A					A
Warren Road Community Center	A	A	A			A
WT Johnson Center	A	A	A			A

*small parts of this measure will be stipulated to reduce M&V costs – see details

7.3 IPMVP OPTION A ECMs

Trane proposes performing the "Option A – Retrofit Isolation: Key Parameter Measurement" methods on the following ECMs associated with all buildings except the Municipal Building and Judicial Center.

7.3.1 Lighting

Currently, a wide variety of fluorescent, incandescent, metal halide, and other types of lighting technologies exist throughout Augusta-Richmond County facilities. As stated in the scope exhibit Trane will retrofit/upgrade certain fixtures with LED technology. Measured power draw (watts) for a statistically valid sample of the lamp/ballast combinations have already been measured by Trane and its partners. This added up to 180 individual measurements across numerous facilities. This represents the data set for the projects' pre-retrofit measurement. These same locations will also receive Post-Retrofit testing in order to verify the avoided energy consumption (savings). The average burn hours for these lamps are determined from the occupancy schedules and light sensing data logging during the survey phase. These burn hours will be agreed upon by Trane and Augusta Richmond County as fact and would not be otherwise measured or confirmed. For this project, energy consumption reduction will be the only measured cost reduction. the measured kW difference is multiplied by the agreed upon burn hours to obtain kWh savings. The kWh multiplied by the rate schedule kWh charges will be the avoided costs. This ECM will only be validated one time, occurring during the installation period; and those same results will be reported as fact in all future reports without any future measurements.

7.3.2 Water Fixtures

Currently, the Charles B Webster Detention Center has a variety of water fixtures. Many of them are of the older high flow variety. Trane will retrofit/upgrade the older, high flow fixtures with modern low flow fixtures. A statistically valid sample of the toilets, urinals, shower, faucets, etc. would receive Pre & Post-Retrofit testing in order to determine the avoided water consumption per usage. The average number of uses per year for a given fixture type in a given type of occupancy is published in many engineering manuals such as ASHRAE and by associations such as AWWA. The avoided (saved) water usage would be multiplied by the published rate schedule to determine the annual savings.

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For the flush valve controls, the avoided water usage comes from a reduction in occupant use of the fixture. To avoid interaction with occupants or equipment having to be installed in occupant areas, this reduction in use will be stipulated and agreed upon by both Trane and Augusta Richmond County. Trane will inspect and verify proper operation of the flush valve controls after installation.

Two measures included in this scope will be fully stipulated. These are the ozone laundry system and upgrades to the ice machines. These two measures make up less than 23% of the total savings, most of which is energy savings instead of water savings. It will be stipulated and reported as fact on an annual basis and will not otherwise be measured or confirmed for the life of the contract.

As with lighting, this ECM will only be validated one time, occurring during the installation period; and those same results will be reported as fact in all future reports without any future measurements.

7.3.3 Building Envelope ECM

Currently, many of the Augusta Richmond County buildings have holes/cracks in the walls, soffit/fascia failures, insulation deficiencies, window frame deficiencies, etc. These issues impose excessive HVAC loads on the buildings as well as create comfort issues for the occupants. Trane will seal the openings and add insulation (as outlined in the scope exhibit) to reduce the factors leading to the inefficiency. The ECMs basically consists of sealing cracks and holes by various means and adding insulation where needed. The savings are developed using common engineering equations & techniques with the appropriate factors applied. On the 50 buildings where this ECM is proposed, the savings represents around 13% of the total project savings. For the Pre-Retrofit measurement Trane measured the size of each opening and the existing amounts of insulation. The Post-Retrofit measurement is to measure the size of the opening after it has been repaired. Since in this project the openings are to be completely sealed, then effectively, all this means is that a visual inspection can be made confirming that the work was completed. Similarly, for the insulation a visual inspection can be made that the work was completed. This ECM will only be validated one time, occurring during the installation period; and those same results will be reported as fact in all future reports without any future measurements.

7.3.4 Cooling Tower Water Submetering

Currently, domestic city water is used as makeup water for the cooling towers at the Charles B Webster Detention Center and sewage charges are applied even though most of this water never enters the sewage system. New water meters will be installed on the cooling towers to record the water consumption. This data will be reported to or read by the water utility which will issue a credit back to the Detention Center.

The sewer cost savings for submetering cooling tower makeup water and blowdown were calculated using the industry standard engineering equations and techniques. Trane will verify the proper installation and operation of the proposed Cooling Tower Submeters and that the submeters are communicating with the Customer's BAS to facilitate Customer submission of sewer credit request documentation to the sewer authority. Due to the dynamic operation of cooling towers and their dependence on the weather, this estimated avoided consumption is agreed upon by Trane and the Augusta Richmond County. It will be stipulated and reported as fact on an annual basis and will not otherwise be measured or confirmed for the life of the contract.

7.3.5 HVAC Equipment ECMs

Currently, Augusta Richmond County has a large number of pieces of HVAC equipment that is at or near the end of its useful life. As outlined in the scope exhibit, Trane will replace certain DX equipment and chillers, as well as adding VFDs to pumps and cooling tower fans. For the DX equipment, Trane will select a representative sample of the equipment and perform Pre-Retrofit testing on the selected existing

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equipment. Trane will use manufacturer data to determine Post-Retrofit performance on the related new equipment to determine the avoided energy consumption. The Pre & Post measurements will be applied across all DX equipment to calculate the total avoided energy consumption. For the chillers, and VFDs, there are only a few locations that use Option A, so all equipment will be measured.

Chillers (Webster Detention Center)

The location for this measure is the Charles B Webster Detention Center old chiller plant. Trane utilized TRACE™ 700 energy models to simulate energy consumption of the Detention Center and calibrated the model against historical energy consumption data. Trane will measure chilled water supply temperature, chilled water return temperature, chilled water flow rate, and chiller input power (kW) at multiple chiller load points and ambient temperature conditions in order to compute chiller operating efficiency, kW/Ton, for each chiller for the Pre-Retrofit and Post-Retrofit cases. The Pre & Post measurements will be used as inputs to the applicable TRACE™ 700 energy model. The model will be recalibrated and then rerun to calculate avoided energy consumption. This ECM will only be validated one time, occurring during the installation period; and those same results will be reported as fact in all future reports without any future measurements.

HVAC: DX Rooftop Units and Split Systems

Trane utilized a spreadsheet energy model to simulate building energy consumption of the existing AC systems. Known parameters such as local weather data, occupancy data, utility costs, percent outside air, etc., were all utilized in modeling of the systems. The accuracy of the pre-retrofit energy use is partially validated by its correlation to the actual utility data for the buildings under consideration.

Trane will also measure energy consumption and cooling output for a representative sample of the units being replaced. This will include units from a variety of locations. For these locations one-time measurements of the unit efficiency will be performed, by measuring unit power draw, air temperatures, and unit air flow.

Trane will use manufacturer's energy performance data for the new AC systems that will be installed during the Installation period to compute energy performance for these new AC systems. During the Installation Period, Trane will use equipment cutsheet data to confirm that the correct units have been procured and properly installed to ensure that the new AC system energy performance meets or exceeds what was used to compute AC system energy performance as part of the Investment Grade Audit. Confirmation of new AC system energy performance rating data will be conducted one time only, during the Installation Period

Trane will apply the Pre-Retrofit and Post-Retrofit AC system energy performance data as input to the applicable spreadsheet energy models. This measured AC system energy performance data was used as input to the spreadsheet energy model or software energy model, as applicable, which was used to calculate AC system energy performance and resultant energy savings.

All-Variable Chilled Water Pumping (Webster Detention Center)

Savings for this measure were calculated in Trane Trace 700. The majority of the savings will be achieved by a reduction in pumping energy. The energy consumption of the current pumps can be defined as the power draw of the pump times the number of annual operating hours total for all pumps. For the Pre-retrofit performance, an amp and voltmeter will be used to measure the power draw of the existing pumps. Hours of operation will be an agreed upon parameter, based on the run-time calculated in the Trane Trace 700 energy model.

For the Post retrofit performance, Trane will trend operation of the chilled water system over a range of operating points during normal operation. Trane will compare the chiller load and pump speed to determine a relative average pump power draw of typical operation ranges. The measured power draw based on the VFD readings will be multiplied by the agreed upon run hours to get Post retrofit energy consumption.

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Cooling Tower Retrofit & New VFD (Webster Detention Center)

This measure will include replacement of the old plant cooling tower and the addition of VFD for the new tower fan. Operation of this equipment will be directed by the newly installed chiller plant optimization sequencing. Trane will fully commission the new tower and controls system and ensure the equipment is operating properly. Avoided energy consumption for this measure was calculated in a Trane Trace 700 energy model. It will be stipulated and reported as fact on an annual basis and will not otherwise be measured or confirmed for the life of the contract.

7.3.6 HVAC Controls Set Back ECMs

For the buildings where currently the HVAC equipment runs 24/7 without any unoccupied (generally nights & weekends) temperature setbacks, schedules will be implemented to allow the equipment to run at reduced levels during unoccupied time periods. Trane utilized either spreadsheet calculations or Trane TRACE™ 700 building energy models to simulate the energy consumption of the buildings. Known parameters such as local weather data, occupancy data, utility costs, percent outside air, etc., were all utilized in modeling the systems. The accuracy of the pre-retrofit energy use was validated by its correlation to the actual utility data for the buildings under consideration.

Trane proposes to confirm on a periodic basis that the schedules are still in effect. If the schedule is active then the savings will be deemed to have been obtained. Although, this is in the Option A M&V category, the confirmations would be throughout the life of the project as opposed to just a one-time M&V as on the other ECMs. Performing this confirmation periodically helps to ensure that the savings will persist over the life of the project. The applicable spreadsheet calculations and TRACE™ 700 model consumption savings are multiplied by the project agreed utility rates for each location. Therefore, the spreadsheet or model can calculate the appropriate energy units saved as well as dollars saved. If the schedule is in effect, then the applicable spreadsheet/model will serve to determine the savings. If the schedules are modified, then the appropriate edits will be made to the applicable spreadsheet or model for recalculation. The updated calculations will be used to make baseline adjustments to the savings calculations.

7.3.7 Solar PV ECM

This applies to the Diamond Lakes Library and Robert Howard Community Center. The savings here have been calculated using the PV Watts, based on typical local weather and solar data, and design peak output of the PV system. The weather and solar data for the site will be stipulated and not measured. After the installation of this system, Trane will use installed metering equipment to monitor and measure the peak kW output of the system. The measured peak output will be re-input into the PV watts program to calculate the annual savings. This measurement will be taken on once.

7.4 IPMVP OPTION C ECMs

The energy savings at the Municipal Building and the Judicial Center will be measured and verified according to IPMVP Option C guidelines. This option determines savings by measuring the energy use of the whole building by collecting, monitoring, and comparing utility bills for the Baseline Year (2018-2019) and the Performance Period. All energy (electricity and gas) savings for these locations will fall under Option C. Calculations will follow the below framework:

Avoided Energy Consumption/Cost (i.e. – Savings) = ***Energy That Would Have Been Consumed*** (had the ECMs not been installed) – ***Actual Energy Consumption*** (from the current bills) for the reporting period. Utility bill cycles spanning the middle of a month to the middle of the next month must be adjusted to match the guarantee term which begins with the first day of a month.

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Trane proposes performing the IPMVP “Option C – Whole Facility” method on two buildings:

Augusta Municipal Building
Augusta Richmond County Judicial Center

These buildings constitute about 22.5% of the total program square footage and about 28% of the total energy savings. Option C M&V consists of gathering several pieces of data each month. This data consists of the Electrical and Natural Gas utility bills, local weather data, and any changes in building usage. The data is then keypunched into an energy accounting/analysis software called Metrix and the adjusted baseline energy consumption is calculated. This value is then compared to the actual energy consumption for the same time period to determine the level of avoided consumption. The respective savings/deficit amounts are multiplied by the proper utility rate schedule to determine the value of the dollar savings.

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8. TRANE SERVICE

Trane plans to provide two types of on-going service once the proposed energy performance contract is implemented and commissioned. This service offering consists of the following: Mechanical-HVAC service, and Building Automation System (BAS) - TIS (Trane Intelligent Services) - M&V (measurement and verification) service. Georgia energy performance contracting statute requires that Trane provide M&V and accompanying services necessary to maintain the energy performance guarantee during the first year of the project finance term. Afterward, Trane and ARC will have the opportunity to renew this service agreement during each year of the finance term. The proposed services that Trane will serve to ensure optimal comfort and energy performance, and to enhance the perpetuity of energy savings that ARC will benefit from over the course of time. Trane will require that the BAS-TIS-M&V services remain in force to maintain the energy performance guarantee during the finance term. The cost for all of the aforementioned services is included on a continuing basis as part of the energy project cash flow proforma.

8.1 Mechanical-HVAC Service

The following table summarizes the proposed services that Trane will provide regarding the mechanical-HVAC service.

Table 100: Mechanical-HVAC Service Summary

Building Name	Currently Under SELECT Contract	Proposed SELECT Contract per this Agreement	Proposed SCHEDULED Contract	(1) Annual Visit	(1) Semi-Annual Visit	(3) Quarterly Visits	Filter Change Each Visit	Annual Belt Replacement Where Applicable	Dynamic Filtration Replacement Annually	UVC Lamp Replacement
Augusta Municipal Building	Chillers			X		X				
Augusta Richmond County Judicial Center	Chillers	New Chiller to be added		X		X			AHU 1-6 Furnish only (installed by others) on an Annual basis	Furnish only (installed by others) at 3 year intervals
Diamond Lakes Community Center		Existing Chiller		X		X				
Augusta Animal Services		Existing Chiller	Existing ERU, Boiler, Pumps, BCU's	X		X	X			
Blythe Community Center			X	X	X		X	X		
Carrie J Mays Gymnasium			X	X	X		X	X		
Charles B Webster Detention Center	Chillers			X		X	X		Furnish only (installed by others) on an Annual basis	Furnish only (installed by others) on an Annual basis
Downtown Park Division			X	X	X		X	X		
Gracewood Community Center			X	X	X		X	X		
Henry Brigham Park Swim Center			X	X	X		X	X		

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Building Name	Currently Under SELECT Contract	Proposed SELECT Contract per this Agreement	Proposed SCHEDULED Contract	(1) Annual Visit	(1) Semi-Annual Visit	(3) Quarterly Visits	Filter Change Each Visit	Annual Belt Replacement Where Applicable	Dynamic Filtration Replacement Annually	UVC Lamp Replacement
Jamestown Community Center			X	X	X		X	X		
May Park Community Center			X	X	X		X	X		
McDuffie Woods Community Center			X	X	X		X	X		
Newman Tennis Center			X	X	X		X	X		
Old Government House			X	X	X		X	X		
Recreation, Parks, and Facilities Administrative Offices			X	X	X		X	X		
Richmond Cty Muni S Waste Main Bldg*			X	X	X		X	X		
Richmond Cty Muni S Waste Scale House			X	X	X		X	X	X	
Richmond County Sheriff's Training Center Mess Hall			X	X	X		X	X		
Richmond County Sheriff's Training Center Myers Building			X	X	X		X	X		
Sand Hill Community Center			X	X	X		X	X		
WT Johnson Community Center			X	X	X		X	X		

*Richmond County Municipal Solid Waste Main Building service includes the parts and labor to replace the chemical media in the new odor control unit once per year.

8.1.1 Mechanical-HVAC Service Notes

1. SELECT contracts are those that carry a commitment from Trane to cover costs associated with certain equipment failures. They include annual and quarterly maintenance visits as recommended by Trane operating manuals.
2. SCHEDULED contracts carry no commitment from Trane to cover costs associated with equipment failures, but the Owner can have assurance that the equipment has been maintained at the optimum levels to minimize failures and realize longer equipment life. SCHEDULED contracts as offered here can include either annual/semi-annual or annual/quarterly visits.

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3. Semi-annual visits are included on each piece of equipment and are usually performed prior to the beginning of cooling season.
4. Annual visits are included at various sites and are usually conducted at the beginning of heating season.
5. Quarterly visits are included at various more heavily used sites and allow us to keep a more critical eye on this equipment.
6. Filter changes are included at each visit. Filters are left on site for occupant/building manager use as needed.
7. Belt changes are included annually on equipment as needed.
8. Dynamic Air Filtration and Purafil Odor Control Unit replacement media are included at noted sites.

8.2 Building Automation System (BAS) - TIS (Trane Intelligent Services) - M&V (Measurement and Verification) Service

The following table summarizes the proposed services that Trane will provide regarding the BAS-TIS M&V service.

Table 101: BAS-TIS M&V Service Summary

Building Name	BAS Service	TIS Service	M&V Service Type	Notes
Augusta Municipal Building	X	X	Option C	BAS service includes annual SMP (service maintenance plan), and combination of OS (on-site service) and RSS (remote support specialist) service
Augusta Richmond County Judicial Center	X	X	Option C	BAS service includes annual SMP, replacement of (42) CO2 sensors every three years, replacement of (36) relative humidity sensors every three years, and combination of OS (on-site service) and RSS (remote support specialist) service
Diamond Lakes Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Augusta Animal Services	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Blythe Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Carrie J Mays Gymnasium	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Charles B Webster Detention Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service. M&V service not only applies to the HVAC and BAS measures, but also to the water efficiency measure.
Downtown Park Division	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Gracewood Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Henry Brigham Park Senior Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service

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Building Name	BAS Service	TIS Service	M&V Service Type	Notes
Henry Brigham Park Swim Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
IT Building	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Jamestown Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
May Park Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
McDuffie Woods Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Newman Tennis Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Old Government House	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Recreation, Parks, and Facilities Administrative Offices	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Richmond County Municipal Solid Waste Main Building	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Richmond County Municipal Solid Waste Landfill Scale House	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Richmond County Sheriff's Training Center Mess Hall	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Richmond County Sheriff's Training Center Myers Building	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
Sand Hill Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service
WT Johnson Community Center	X	X	Option A	BAS service includes annual SMP, and combination of OS (on-site service) and RSS (remote support specialist) service

BAS-TIS-M&V Service Notes:

8.2.1 From Analytics to Results

As a service partner, Trane puts more knowing behind our doing. Data from your building enables Trane service technicians to focus their time and attention more productively. With analytics running constantly, Trane knows what's working fine, which issues need attention immediately—and which can wait—before our technicians ever enter your building.

Software Updates and training provides software installation and maintenance, along with information and demonstrations on new features and functionality.

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Advantages:

- Proactively maintain BAS system software to each new version
- Gain new and improved capabilities as technology progresses
- Know how to gain the full advantages of system enhancements
- Keep BAS software compatible with current operating systems and browsers

Implementation:

- Proactive notification of software releases
- Installation and administration of software and/or firmware upgrades
- Comprehensive system and database backup and archiving
- Operator coaching and/or up-front discussion on new features

Alarm Log Review assesses each alarm that has been triggered since the last review, sorting nuisance alarms from events that require corrective action. Trane provides both an explanation of what each alarm means and guidance on next steps.

Advantages:

- Identify critical events within your mechanical and/or BAS systems
- Troubleshoot and initiate repairs proactively
- Prioritize repair/replace decisions through root-cause analysis
- Reassess whether set alarm parameters reflect your environmental requirements
    - For example, if an alarm set at 74 degrees triggers repeatedly, you may determine there is minimal risk to resetting the alarm to 76 degrees

Implementation:

- Alarm nature/cause determination through data analysis and customer discussions
- Differentiation of significant events and nuisance alarms
- Guidance on alarm parameters, if needed

Critical Sensor Health Check inspects specified environmental sensors for accuracy, calibration, and signs of developing failures. Trane will validate sensors according to your direction: Zone temperature and Humidity for the Data Center space

Advantages:

- Maintain accurate and consistent environmental control
- Increase uptime; reduce downtime caused by environmental variances
- Confirm the accuracy of data, and minimize the consequences of inaccurate readings

Implementation:

- Review critical sensors for accuracy and proper calibration
- Repair/replace recommendations for faulty sensors
- Check relationships between connected sensors

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SYSTEM ANALYSIS AND REVIEW

Trane will review the building automation system to minimize software problems identify and correct programming errors, failed points, points in alarm and points that have been overridden. Software optimization improves system efficiency, assures compliance to specified conditions, and reduces the risk of costly and disruptive system problems. Regularly scheduled on-site visits by Trane technicians also provide the opportunity to meet with on-site operators, review the system and address any questions or concerns they may have.

CONTROL LOOP TUNING

Loop Tuning assures the system is operating at peak performance for the upcoming season. Operators may make manual changes during the heating or cooling season to accommodate current comfort requirements. During Control Loop Tuning, any changes that were made in previous months are reviewed and adjusted to accommodate changing seasonal conditions. The operation of mechanical loop components is verified, as well.

SEQUENCE OF OPERATION VERIFICATION

Sequence of Operation Verification assures the system is operating as intended. During this assessment, unreleased manual overrides are discovered, scheduling discrepancies are corrected, and appropriate set point values are evaluated.

TRACER DATABASE BACKUP

Throughout the year, changes are continuously being made to the database in response to energy efficiency, occupant comfort or operator interface issues. Trane maintains current and archived backups of all vital Tracer databases to expedite system recovery and restoration to the last known set-up following a catastrophic event.

SOFTWARE SERVICE PACK UPDATES (On-Site)

The latest service pack updates will be downloaded and installed to the existing software version when available. This assures the software is always up to date with the current versions that enhance usability and functionality.

OPERATOR COACHING (RSS) Local Trane Remote Service Technician

During regularly scheduled remote inspections, Trane technicians will work with on-site operators to develop their skills and proficiencies to help ensure they fully understand how to effectively use the system.

8.3 Trane Training

It is important for Trane to regularly communicate the goals, purpose, and operational and maintenance functionality of the ECMs (energy conservation measures) that are being employed as part of this energy project in order for ARC to realize the full effect of the benefits offered by this project over the course of

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time. To meet this objective, Trane plans to provide training for facilities/building maintenance personnel on a regular basis which can be summarized as follows:

Table 102: Training Plan

Training Description	Buildings Affected	Target Audience	Training Frequency	Notes/Comments
Chiller Plant Operation & Maintenance including BAS sequences	Judicial Center	Building maintenance personnel	Initial + every three years Directed by Trane	Training to include operational sequence for new air-cooled chiller which will operate during low-load conditions, chiller-tower optimization, and primary-secondary flow matching pumping system control.
Chiller Plant Operation & Maintenance including BAS sequences	Municipal Building & Webster Detention Center	Building maintenance personnel, facilities director (Webster)	Initial + every three years Directed by Trane	One chiller plant at the Municipal Building + two chiller plants at Webster Detention Center
Air-side HVAC Operation & Maintenance including BAS sequences	Judicial Center, Municipal Building, Webster Detention Center	Building maintenance personnel, facilities director (Webster)	Initial + every three years Directed by Trane	Training to include operational sequences for conditioned air systems, occupied and unoccupied mode operational sequences (Judicial & Municipal) and space cooling and heating temperature setpoints
HVAC System maintenance & service provided by Trane, and ARC maintenance requirements	Judicial Center, Municipal Building, Webster Detention Center, Animal Services, Diamond Lakes Library, and (23) small buildings covered by Trane BAS-TIS-M&V service agreement	Building maintenance personnel, facilities directors, Rec and Parks director, and Central Services director	Initial + every three years Directed by Trane	It is important for both ARC and Trane to perform equipment and system maintenance on a prescribed basis to maintain equipment reliability and energy efficiency.
Solar Photovoltaic System Operation and Maintenance	Municipal Building & Diamond Lakes Library	Building maintenance personnel	Initial Facilitated by Trane with vendor support	The proposed solar PV systems will exhibit minimal maintenance requirements over the course of time.
Ozone Laundry System and Flush Valve Control System Operations and Maintenance	Webster Detention Center	Facilities Director	Initial Facilitated by Trane with vendor support	
Measurement & Verification and Energy Performance Guarantee	All	Central Services director, Rec and Parks director, Facilities director (Webster), CFO	Initial + every three years Directed by Trane	Review Trane and ARC contractual operations and maintenance responsibilities including building occupancy schedules and temperature setpoints, Option C M&V versus Option A M&V, what will be measured versus what is stipulated, Trane TIS, Trane utilities trending and energy performance reporting, etc.

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This Cash Flow Sheet Includes the Muncipal Building Lighting Retrofit

Program Cash Flow Profile (Financing Term)

**the project costs and savings contained herein are preliminary in nature and do not constitute a guarantee by Trane Technologies*

Augusta - Richmond County

Project Costing Assumptions			Credit Facility Assumptions	
Program Construction Cost	From Customer M7	$ 25,608,583	Quoting Date	12/2/2020
Deduct - IGA Direct Customer Payment	From Customer K7	$ (590,000)	Loan Type	Debt Sculpting
Deduct -	$ -	$ -	Debt Svc Cover	1.0 X
Deduct -	$ -	$ -	Maximum Financing Term	18
Subtotal		$ 25,018,583		
Add - Loan Fees (Estimated)	0.60%	$ 150,111	**Economic Results**	
Add - Customer Direct Contracted Work	Environmental Remed	$ 98,850	Payback Year	Year 16
Base Loan Amount	Subtotal	$ 25,267,544	Breakeven Rate	2.11%
Construction Period Interest Incurred	From Escrow Sheet	$ 870,168	NPV at: 0.000%	$4,835,207
Construction Period Interest Earned	From Escrow Sheet	$ -	NPV at: 0.000%	$4,835,207
Total Financed Amount		$ 26,137,713	Max $ at Rate: 2.35%	$ 25,662,907

	Amount (%)	Applied Amount (%)	Amount ($)	Term	Payments / Yr	Index Rate	Spread	Rate	Index Type	Index Term	Balloon (%)	Balloon ($)	Payment	Ann. Payments
LOAN 1	100.00%	100.00%	$ 26,137,713	18	12	0.350%	2.000%	2.350%	Specified Rate	Term of 18. Yrs	0.00%	$ -	$ 148,517	$ 1,782,201
LOAN 2	0.00%	0.00%	$ -	0	1	0.000%	0.000%	0.000%	Term Swaps	Term of 1.5 Yrs	100.00%	$ -	$ -	$ -
LOAN 3	0.00%	0.00%	$ -	0	1	0.000%	0.000%	0.000%	Term Swaps	Term of 1.5 Yrs	100.00%	$ -	$ -	$ -
Total			$ 26,137,713									$ -	$ 148,517	$ 1,782,201

US Treasury Bo	Term	Term	Term	Term	Term	Target Term	
Quote Date	5	7	10	20	30	15	Term
12/2/2020	0.22%	0.68%	0.92%	1.46%	1.66%		Extrapolated Rate

Year			2023 1	2024 2	2025 3	2026 4	2027 5	2028 6	2029 7	2030 8	2031 9	2032 10	2033 11	2034 12	2035 13	2036 14	2037 15	2038 16	2039 17	2040 18	2041 19	2042 20	Total
PROGRAM SAVINGS																							
Guaranteed Energy Savings		Inflator																					
All Energy Savings		3.0%	$ 1,117,520	$ 1,151,045	$ 1,185,577	$ 1,221,144	$ 1,257,778	$ 1,295,512	$ 1,334,377	$ 1,374,408	$ 1,415,641	$ 1,458,110	$ 1,501,853	$ 1,546,909	$ 1,593,316	$ 1,641,116	$ 1,690,349	$ 1,741,060	$ 1,793,291	$ 1,847,090	$ -	$ -	$ 26,166,097
Other		3.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$ -
Other		3.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$ -
Subtotal Energy			$ 1,117,520	$ 1,151,045	$ 1,185,577	$ 1,221,144	$ 1,257,778	$ 1,295,512	$ 1,334,377	$ 1,374,408	$ 1,415,641	$ 1,458,110	$ 1,501,853	$ 1,546,909	$ 1,593,316	$ 1,641,116	$ 1,690,349	$ 1,741,060	$ 1,793,291	$ 1,847,090	$ -	$ -	$ 26,166,097
Specified Savings	Term																						
Operational Savings-Lighting	18	3.0%	75,372	$ 77,633	$ 79,962	$ 82,361	$ 84,832	$ 87,377	$ 89,998	$ 92,698	$ 95,479	$ 98,343	$ 101,294	$ 104,332	$ 107,462	$ 110,686	$ 114,007	$ 117,427	$ 120,950	$ 124,578	$ -	$ -	$ 1,764,791
Operational Savings-Other	18	3.0%	20,995	21,624	22,273	22,941	23,630	24,338	25,069	25,821	26,595	27,393	28,215	29,061	29,933	30,831	31,756	32,709	33,690	34,701	-	-	$ 491,576
Operational Savings-Cap Cost Avoid	18	0.0%	190,019	190,019	190,019	190,019	190,019	190,019	190,019	190,019	190,019	190,019	190,019	190,019	190,019	190,019	190,019	190,019	190,019	190,019	-	-	$ 3,420,340
Category 4	0	3.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$ -
	0 0	0.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$ -
	0 0	0.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$ -
	0 0	0.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$ -
	0 0	0.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$ -
	0 0	0.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$ -
Subtotal Other Savings			$ 286,385	$ 289,276.39	$ 292,254.11	$ 295,321.17	$ 298,480.24	$ 301,734.08	$ 305,085.53	$ 308,537.53	$ 312,093.09	$ 315,755.32	$ 319,527.41	$ 323,412.66	$ 327,414.48	$ 331,536.35	$ 335,781.87	$ 340,154.76	$ 344,658.83	$ 349,298.03	$ -	$ -	$ 5,676,707
Pre-Performance Payments																							
Utility Rebates			$ 450,000																				
Grant - SPLOST or Other Money			$ 4,500,000																				
Construction Period Savings			$ 752,187																				
Annual Program Savings			$ 7,106,092	$ 1,440,322	$ 1,477,831	$ 1,516,465	$ 1,556,259	$ 1,597,246	$ 1,639,463	$ 1,682,946	$ 1,727,734	$ 1,773,865	$ 1,821,381	$ 1,870,322	$ 1,920,731	$ 1,972,652	$ 2,026,131	$ 2,081,214	$ 2,137,950	$ 2,196,388	$ -	$ -	$ 31,842,804
Cumulative Savings			7,106,092	8,546,414	10,024,245	11,540,711	13,096,969	14,694,215	16,333,678	18,016,624	19,744,358	21,518,223	23,339,604	25,209,925	27,130,656	29,103,308	31,129,439	33,210,653	35,348,603	37,544,991	37,544,991	37,544,991	
PROGRAM COSTS		Inflator																					
Annual Service Support		3.0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal Operational			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specified Costs	Term																						
BAS-TIS-M&V Service quote	18	3.0%	166,371	171,362	176,503	181,798	187,252	192,869	198,655	204,615	210,754	217,076	223,588	230,296	237,205	244,321	251,651	259,200	266,976	274,986	-	-	$ 3,895,478
Mechanical Service quote	18	3.0%	114,314	117,743	121,276	124,914	128,661	132,521	136,497	140,592	144,809	149,154	153,628	158,237	162,984	167,874	172,910	178,097	183,440	188,943	-	-	$ 2,676,594
	18	3.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$ -
		0.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$ -
	0 0	0.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$ -
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	0 0	0.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$ -
Subtotal Other Costs			280,685	289,105	297,778	306,712	315,913	325,390	335,152	345,207	355,563	366,230	377,217	388,533	400,189	412,195	424,561	437,297	450,416	463,929	-	-	$ 6,572,072
Annual Program Costs			$ 280,685	$ 289,105	$ 297,778	$ 306,712	$ 315,913	$ 325,390	$ 335,152	$ 345,207	$ 355,563	$ 366,230	$ 377,217	$ 388,533	$ 400,189	$ 412,195	$ 424,561	$ 437,297	$ 450,416	$ 463,929	$ -	$ -	$ 6,572,072
Cumulative Costs			280,685	569,790	867,568	1,174,280	1,490,193	1,815,583	2,150,735	2,495,942	2,851,505	3,217,735	3,594,951	3,983,484	4,383,674	4,795,868	5,220,429	5,657,726	6,108,143	6,572,072	6,572,072	6,572,072	
Cash Flow Available for Debt Service (CFADS)																							
Program - Annual Net Cash Flow			$ 6,825,408	$ 1,151,217	$ 1,180,053	$ 1,209,754	$ 1,240,346	$ 1,271,856	$ 1,304,311	$ 1,337,739	$ 1,372,171	$ 1,407,636	$ 1,444,164	$ 1,481,788	$ 1,520,541	$ 1,560,457	$ 1,601,570	$ 1,643,917	$ 1,687,534	$ 1,732,459	$ -	$ -	$ 30,972,920
FINANCING FACILITIES																							
Debt Obligation 1			$ 6,825,408	$ 1,151,217	$ 1,180,053	$ 1,209,754	$ 1,240,346	$ 1,271,856	$ 1,304,311	$ 1,337,739	$ 1,372,171	$ 1,407,636	$ 1,444,164	$ 1,481,788	$ 1,520,541	$ 1,560,457	$ 1,601,570	$ 1,643,917	$ 1,687,534	$ 2,453,728	$ -	$ -	$ 31,694,188
Debt Obligation 2			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Debt Obligation 3			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal Debt Payments			$ 6,825,408	$ 1,151,217	$ 1,180,053	$ 1,209,754	$ 1,240,346	$ 1,271,856	$ 1,304,311	$ 1,337,739	$ 1,372,171	$ 1,407,636	$ 1,444,164	$ 1,481,788	$ 1,520,541	$ 1,560,457	$ 1,601,570	$ 1,643,917	$ 1,687,534	$ 2,453,728	$ -	$ -	$ 31,694,188
Debt Service Interest			$ 614,236	$ 468,274	$ 452,225	$ 435,121	$ 416,917	$ 397,566	$ 377,020	$ 355,229	$ 332,140	$ 307,699	$ 281,851	$ 254,536	$ 225,696	$ 195,267	$ 163,185	$ 129,383	$ 93,792	$ 56,339	$ -	$ -	$ 5,556,475
EOY Debt Service Principal Payment			$ 6,211,172	$ 682,943	$ 727,828	$ 774,633	$ 823,429	$ 874,289	$ 927,290	$ 982,510	$ 1,040,031	$ 1,099,936	$ 1,162,313	$ 1,227,252	$ 1,294,845	$ 1,365,190	$ 1,438,385	$ 1,514,534	$ 1,593,742	$ 2,397,389	$ -	$ -	$ 26,137,713
Remaining Debt			$ 19,926,541	$ 19,243,598	$ 18,515,770	$ 17,741,137	$ 16,917,708	$ 16,043,418	$ 15,116,128	$ 14,133,618	$ 13,093,587	$ 11,993,651	$ 10,831,337	$ 9,604,085	$ 8,309,240	$ 6,944,050	$ 5,505,665	$ 3,991,131	$ 2,397,389	$ -	$ -	$ -	
NET ANNUAL CASH FLOW																							
			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (721,268)	$ -	$ -	$ (721,268)

Item # 9

Administrative Services Committee Meeting
4/13/2021 1:05 PM
Travel of Commissioners in 2021

Department:

Presenter: Commissioner Sean Frantom

Caption: Discuss and approve allocated funding for travel of Commissioners in 2021 via a recommendation of the administrator on timeline for safe travel. **(Requested by Commissioner Sean Frantom)**

Background:

Analysis:

Financial Impact:

Alternatives:

Recommendation:

Funds are Available in the Following Accounts:

REVIEWED AND APPROVED BY:

Administrative Services Committee Meeting
4/13/2021 1:05 PM
Probate Court Clerk's Position

Department: Probate Court

Presenter: Judge Harry James

Caption: Consider request from Probate Judge Harry James regarding a new staff position in the Probate Court.

Background:

Analysis:

Financial Impact:

Alternatives:

Recommendation:

Funds are Available in the Following Accounts:

REVIEWED AND APPROVED BY:

Administrative Services Committee Meeting
4/13/2021 1:05 PM
Fleet Policy

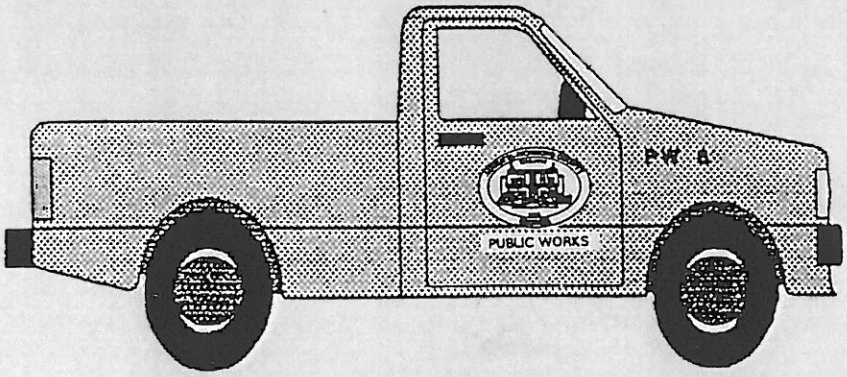
Department:	Central Services - Fleet Management
Presenter:	Takiyah Douse
Caption:	Request approval of the Comprehensive Fleet Management Operations, Maintenance and Replacement Policy. (Deferred from March 9 Administrative Services Committee)
Background:	The original Fleet Management Operations and Maintenance policy was first developed and approved by the Commission in 1997. This policy has not been updated since, although changes have been made in the form of Administrative Regulations or Memorandums signed by the Administrator. Several changes in a number of supported and administrative departments that support fleet operations have been made, over the years, which necessitated the need for a comprehensive revision of the policy
Analysis:	Organizational structure, administrative changes in process' in various departments have affected the original policy to the extent that a revision was necessary for the efficient management, operation and maintenance of the Augusta fleet.
Financial Impact:	No known financial impact is anticipated with this revision.
Alternatives:	(1). Approve the revisions as indicated (2) Disapprove the revision in part and provide guidance. (3) Disapprove the revision and provide guidance.
Recommendation:	Request approval of the comprehensive Fleet Management Operations, Maintenance and Replacement Policy.
Funds are Available in the Following Accounts:	No funds.

REVIEWED AND APPROVED BY:

AUGUSTA - RICHMOND COUNTY COMMISSION

Policy on

FLEET MANAGEMENT, OPERATIONS AND MAINTENANCE



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Item # 12

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The proponent agency for this policy is the Finance Office (Attention: Fleet Manager). Any comments, questions or recommendations should be refered to: Augusta - Richmond County Fleet Manager. The provisions of this policy applies to government owned or leased vehicles and equipment; it does not apply to privately owned vehicles and equipment owned by employees.

FLEET MANAGEMENT, OPERATIONS AND MAINTENANCE

A. **POLICY:** Vehicles belonging to the Augusta-Richmond County Commission will be maintained and operated in a legal, safe and prudent manner, consistent with all Federal, State and Local laws and ordinances. The proper management of vehicles is the responsibility of all supervisors, managers, and directors. Every effort will be made to eliminate misuse, misappropriation and abuse of vehicles and/or equipment belonging to the government. Employees responsible for driving vehicles will ensure the vehicle is available for maintenance consistent with the appropriate maintenance schedule(s). It is the responsibility of every employee of Augusta - Richmond County, regardless of position, to support a cost effective operation. Vehicles and/or allowances, associated with private vehicle use for official business, will not be used for salary compensation.

B. **RESPONSIBILITIES:**

1. Administrator:

   a. Has authority for the management, operations and maintenance of all Augusta-Richmond County (A-RC) motor vehicles and equipment, as provided by the powers entrusted to the position of Administrator by the Commission.

   b. Establish department vehicle allowances and approves annually departmental motor vehicle authorization for vehicles to be driven home.

   c. Recommend surplus vehicles for auction/salvage sales to the Commission (See Fixed Asset Policy; proponent agency is Comptroller's Office).

2. Department Heads:

   a. Responsible for the safe, economical and efficient management, operations and maintenance of A-RC motor vehicles assigned to their departments.

   b. Ensure all vehicles receive scheduled service/maintenance with no more than a 10% variance in miles/hours as recommended by the manufacturers maintenance schedule.

   c. Implement a system of departmental inspections to ensure drivers compliance with daily vehicle and /or equipment inspections.

d. Implement procedures to insure vehicle and driver accountability (dispatch).

e. Insure departmental vehicles are clean (interior and exterior) and reflects a professional appearance. As a minimum, vehicles will be cleaned once each week.

f. Periodically review justification for vehicles being driven home to insure the need exists. Annual justification will be submitted to the Administrator once each year, in June, using the form at Appendix 1.

g. Implement procedures for reporting of vehicle damage/accidents to Risk Management within 24 hours of the damage occurring or being noticed.

h. Submit requests for "Out-of-County" use at least one working day prior to the trip. Requests will be sent to Risk Management, Appendix 3.

i. Ensure all vehicles are properly marked, see paragraph F below.

j. May approve non-employees riding in government vehicles, when necessary to conduct official business. In these cases the vehicle will be driven by an employee.

3. Fleet Manager:

a. Responsible for the management functions of fleet operations and maintenance. Serves as the central point of contact between Department Heads and contract services in support of the fleet and operational equipment belonging to Augusta-Richmond County.

b. Develop or review all equipment specifications (prior to bidding process by Purchasing) for practicality, economy, standards and need. Recommends standard classes and specifications as policy.

c. Maintain an active fleet list and records associated with proper management of vehicles and operational equipment.

d. Conduct vehicle and equipment assessments to ensure cost effectiveness and has the authority to designate vehicles and equipment as uneconomically repairable.

e. Monitor contract service operations and costs to ensure efficient and effective operations.

f. Recommend policy and procedures on Fleet maintenance, operations and management.

g. Provide status reports as appropriate.

h. Provide administrative support to the Administrator in "annual vehicle justification" for vehicles being driven home.

i. Establishe procedures to conform to policy.

4. Director, Purchasing:

a. Coordinate/conduct vehicle auctions of excess vehicles belonging to Augusta - Richmond County.

b. When publishing bid specifications for the purchase of vehicles ensures vehicle specifications are in line with Augusta-Richmond County Policy; specifically as it applies to the color of vehicles.(See paragraph G, below)

5. Risk Management:

a. Provide administrative support to the Administrator in:

(1) "Out-of-County" Use of County Vehicles.

(2) Claims investigation/administration for vehicles involved in accidents.

(3) Investigate complaints of misappropriation, misuse and abuse of vehicles and equipment.

b. Conduct periodic safety inspections of vehicles to ensure compliance with driver inspection requirements.

c. Coordinate vehicle repair incident to accidents/incidents resulting in vehicle damage.

d. Upon initial hire and annually, there after, review driving records of employees authorized to drive government vehicles (Appendix 4).

b. Department Heads may withdraw government vehicle driving privileges of any employee under his/her charge, for cause. This must be documented in writing and filed in the employees personnel file. Should driving a government vehicle be a job qualification, the employee may be terminated for loss of job qualification.

2. Department Heads must request, in writing, approval of "Summer Hire" personnel to operate A-RC vehicles. The request will include the results of a Motor Vehicle Records check through the Augusta - Richmond County Sheriff Department. Department Heads will provide Risk Management with a copy of the approved request along with a copy of the individual drivers license.

3. Employees working at temporary sites may use their assigned government vehicle for transportation during eating periods when on duty if:

   a. It is more advantageous to Augusta - Richmond County for the vehicle not to return to the primary job site (headquarters).

   b. When the driver's duties are such that returning to the primary job site would result in more miles being put on the vehicle.

   c. If the employee is approved to drive the vehicle home.

4. When the vehicle is to be parked in a commercial parking lot the driver should take every precaution to park the vehicle in a protected location. This may mean passing up a parking spot next to or near the entrance and parking the vehicle away from congestion.

5. Only Certified Law Enforcement Officers, Arson Investigators, and designated personnel from the District Attorney's Office will be authorized to carry weapons in Augusta-Richmond County vehicles.

6. Employees authorized to drive Augusta-Richmond County vehicles home may make "quick stops" at commercial establishments as long as the establishment is along the route of travel to the employee's residence. Diversions over a quarter mile from the route of travel are excessive and not authorized. Augusta-Richmond County vehicles will not be used during non-duty hours for travel at the convenience of the employee (personal use is not authorized). **The following items are prohibited from being carried in Augusta-Richmond County vehicles:**

a. Any item classified as contraband or illegal substance (Exception: Public Safety Officers when in the execution of their legal and expected duties.)

b. Firearms or weapons of any type except by Public Safety Officers who are certified and hold a position of employment as a Public Safety Officer.

c. Alcoholic beverages.

7. Smoking of tobacco products in Augusta - Richmond County vehicles is prohibited; however, the Sheriff shall establish the policy for Sheriff's Department vehicles.

8. Seat belts will be worn by the driver and all passengers when the vehicle is moving; see Section III, paragraph E, "Vehicle Safety", Safety/Risk Management Manual (approved February 20, 1996).

9. Family members may not be transported in A-RC vehicles. Family members who are employees of Augusta-Richmond County may not be given rides to and from work, on a daily/routine basis, by an employee authorized to drive an A-RC vehicle home. The exception to this policy is that both employees are required at the same location or written permission is granted by the Administrator.

10. Any exceptions to the above listed restrictions must be made in writing and approved by the Administrator.

DISCLAIMER OF LIABILITY

Employees who are in violation of this policy by transporting family members or using Augusta-Richmond County vehicles for personal use and involved in a vehicle accident resulting in physical damage and/or bodily injury may: (1) be personally responsible for any and all damages to property resulting from the accident and/or (2) be personally responsible for any and all medical related costs resulting from the accident and/or (3) be subject to disciplinary action up to and including termination of employment.

~~D. AUTHORIZATION TO DRIVE HOME:~~ DELETED APRIL 2010

1. Authorization to drive assigned vehicles home must be approved, in writing, by the Administrator (Appendix 1). Requests will be reviewed every year.

2. Approvals will be granted only when allowing the employee to drive the vehicle home is for the convenience of the government.

3. Department Heads must enclose a full justification in the "Comments" portion of the "Vehicle Identification/Utilization" form. Additional justification may be put on the back of the form or on a separate piece of paper.

4. The following condition(s) must exist for consideration of "home" driving privileges.

   a. A real need exists and the need is for the convenience of the government and the employee must meet one of the four test criteria listed at Appendix 2.

   b. The vehicle is a law enforcement/public safety vehicle (Sheriff, Marshal, Fire Departments) and/or;

   c. The employee resides in Richmond County (employees living outside Richmond County will not be authorized to drive their vehicles to their residence). Sheriff's Department employees authorized to take Department vehicles home may exceed Richmond County boundaries up to seven (7) miles; however, no vehicles are to be taken home out of State.

E. OUT OF COUNTY USE:

1. Drivers of government vehicles may drive out of the County boundaries when the department mission requires. This would be in the course of routine requirments of the respective department. The "Out of County Travel Notification" form is not required. These requirements will be controled at the department level.

2. Department Heads must receive authorization from the Administrator when the vehicle is to be driven out of the County boundaries (appendix 3) for such travel to: seminars, training activities, civic support requirements, etc. Authority is delegated to the Risk Management Manager in the event the Administrator is not available. Law enforcement vehicles (including the District Attorney's Office) are exempt from this provision when executing official duties (ie: prisoner transport, investigations, etc.)

3. Risk Management will be sent the original request and obtain a decision from the Administrator.

4. Requests will be maintained on file with Risk Management.

5. Only the approved driver(s) will be authorized to operate the vehicle.

F. **VEHICLE MARKINGS:**

1. All regular department, service type, vehicles will bear at least an 8 inch circular decal affixed to the driver and front passenger doors of vehicles; ie: pick-up trucks, vans, utility and dump trucks. Construction equipment will be decaled as appropriate to the type and shape of the equipment. Vehicles assigned to Bush Field Airport may use the Bush Field logo decal.

2. Vehicles will also have a 12 inch by 3 inch decal designating the department (The length of the decal will be be between 12' to 18" depending on the length of the department name). This decal will be affixed below the circular decal.

3. All vehicles, other than public safety vehicles, will have the appropriate departmental vehicle number displayed in at least 3" letters/numbers on the left rear trunk area, readily visible from the rear and right and left fender, 4 inches forward of the leading edge of the front door. Abbreviations for each department for stenciling is included as appendix 5.

4. "Public Safety" vehicles will be marked in accordance with the respective department policies.

5. Exceptions to vehicle markings are not authorized without the expressed written permission of the Administrator.

G. **VEHICLE COLORING:** A-RC vehicles will bear the following colors.

1. Department Heads and regular department (non-public safety) vehicles including: automobiles, pick-up trucks, vans, utility body (service) and dump trucks (cab and hood) will be white in color; construction equipment excluded.

2. Fire Department: As prescribed by the Fire Department Chief but will be only a single color.

3. Sheriff's Department: As prescribed by the Sheriff.

4. Marshal's Department: Dark Blue.

5. Vehicles transferred from the Sheriff's Department to another A-RC Department will be painted white prior to putting the vehicle in service at the gaining department.

H. **TAGS:**

1. All vehicles will display the proper state government tag in the proper manner.

2. Tags will be removed from Vehicles **only** by Risk Management, Shop 1 or Shop 2 personnel and processed/coordinated with Central Services.

3. **No tag will be transferred** from one vehicle to another. Coordination with Central Services is required.

4. Temporary tags will be used on new vehicles until permanent tags are received. Tags removed from other vehicles (excess/salvage) will **NOT** be placed on new vehicles, in lieu of "paper" tags.

5. Exceptions to paragraph H, 1-4 above are granted only to the Sheriff's Department under cover cars; however, Sheriff's Department must notify Central Services of the transfer.

I. **FUEL CARDS:** Fuel cards are accountable items and should be periodically checked/inspected by supervisors. Fuel cards are issued by Finance. Department Heads should request fuel cards for drivers and vehicles/equipment from Finance. Any lost card should be immediately reported as missing. Vehicles turned in as excess will have the fuel card removed from the vehicle and turned in to Finance.

J. **NEW VEHICLES:**

1. Under normal circumstances A-RC vehicles will be replaced on a basis of need or economic reasons. Administrative requirements associated with turn in and request for replacement vehicles can be found in the "Fixed Asset Policy".

2. New vehicles will be delivered by the vendor to the appropriate repair shop by the vendor for distribution to the departments. The respective shop will notify the Fleet Manager who will coordinate with Purchasing and Central Services. Departments will be notified that the vehicle is ready for issue by the Fleet Manager. Prior to being issued the following

will be completed:

a. An asset number has been applied (Purchasing);

b. The vehicle is properly stenciled (Shop);

c. Special equipment (other than bid specification items) mounted and operational (Department);

d. A vehicle safety inspection is performed (Shop);

e. The vehicle has been added to the Fleet List (Finance-see Fixed Asset Policy);

f. Finance has been contacted and a vehicle fuel card ordered.

3. The gaining department must turn in the old vehicle before the time of pickup (if the vehicle was purchased as a replacement), unless a turn in has already been made.

4. Any vehicle which is non-operational and non-repairable will be turned in to the appropriate Shop for disposal. Vehicles in the above mechanical status will NOT be stored at the respective department pending the arrival of a new/replacement vehicle. A completed Fixed Asset Tracking Forms serves as a valid turn in document. The tracking form will be sent to the Fleet Manager for processing.

K. VEHICLE TRANSFERS:

1. Department Heads desiring to receive vehicles from another department must request, in writing, authorization to transfer the vehicle from the Administrator. Requests will be submitted to the Fleet Manager for staffing and sent to the Administrator for final decision.

2. Vehicle transfers will be made to replace vehicles NOT add to a department's inventory of vehicles. Refer to FIXED ASSET POLICY, dated February 8, 1995 for administrative procedures required prior to transfer (proponent agency of Fixed Asset Policy is Comptroller).

3. If approved the Fleet Manager will notify the gaining department and;

a. Provide copies of the approved request to:

(1) Finance: Attention Fixed Assets

(2) Central Services

(3) General Manager of the Contract Maintenance provider

(4) Department Head of the loosing vehicle.

b. The gaining department has financial responsibility for:

(1) Repainting, if necessary

(2) Maintenance

(3) Re-stenciling

c. The gaining department will ensure:

(1) The vehicle meets the criteria for department operations as set forth in this policy, ie: coloring, stenciling, etc.

(2) Coordination with Central Services for tag transfer.

(3) Coordination with Finance for Asset transfer.

L. EXCESS and SALVAGE VEHICLE AUCTIONS:

1. Vehicles which are excess to department needs, uneconomically repairable or damaged beyond repair will be turned in to the appropriate Shop for auction or salvage sales. Departments are responsible for completing the requirements of the "Fixed Asset Tracking Form".

a. The Fleet Manager will prepare a list of vehicles by asset number, year, make, model and vehicle identification number.

b. The list will be coordinated with those departments which the vehicles came from to ensure all vehicles are no longer needed.

c. The list will be sent to the Administrator to declare the vehicles excess/surplus.

d. Once approved a signed copy of the approval along with the vehicle list will be provided to:

(1) Risk Management - information

(2) Central Services

(3) General Manager of the Contract Maintenance provider

(4) Department Head of the loosing vehicle.

b. The gaining department has financial responsibility for:

(1) Repainting, if necessary

(2) Maintenance

(3) Re-stenciling

c. The gaining department will ensure:

(1) The vehicle meets the criteria for department operations as set forth in this policy, ie: coloring, stenciling, etc.

(2) Coordination with Central Services for tag transfer.

(3) Coordination with Finance for Asset transfer.

L. EXCESS and SALVAGE VEHICLE AUCTIONS:

1. Vehicles which are excess to department needs, uneconomically repairable or damaged beyond repair will be turned in to the appropriate Shop for auction or salvage sales. Departments are responsible for completing the requirements of the "Fixed Asset Tracking Form".

a. The Fleet Manager will prepare a list of vehicles by asset number, year, make, model and vehicle identification number.

b. The list will be coordinated with those departments which the vehicles came from to ensure all vehicles are no longer needed.

c. The list will be sent to the Administrator to declare the vehicles excess/surplus.

d. Once approved a signed copy of the approval along with the vehicle list will be provided to:

(1) Risk Management - information

(2) Finance - asset accountability

(3) Central Services - title check

(4) Purchasing - auction announcement, sale coordination and execution

e. Coordination will be made between all departments listed in paragraph K, d (1) - (3), above, to establish a sale date and appropriate advertising.

2. Vehicles which have been confiscated by the Sheriff's Department and turned over to Augusta - Richmond County may be sold at public auction when all of the following requirements have been met:

a. Purchasing notifies the Sheriff's Department of an impending auction.

b. The Sheriff's Department representative provides a list of releasable/saleable vehicles to Purchasing.

c. Purchasing provides a list of vehicles to Central Services for a title check.

d. Central Services notifies Purchasing of vehicles on the list whose title is clear.

e. Coordination/confirmation of cleared vehicles, auction date and coordination to move confiscated vehicles to the auction site is made between Purchasing and the Sheriff's Department.

3. Proceeds of the Sale are as follows:

a. Revenue from the sale of Fleet vehicles deposited in the "Capital Replacement Fund".

(1) Proceeds from the sale of vehicles, originally purchased from enterprise funds will be deposited in enterprise fund accounts.

(2) Proceeds from the sale of vehicles, originally purchased from grant funds will be deposited in grant fund accounts.

b. Revenue from the sale of Confiscated vehicles will be distributed as prescribed by the appropriate judicial authority.

4. The proponent agency for vehicle auctions, for vehicles belonging to Augusta-Richmond County is the Purchasing Department.

M. VEHICLE and/or EQUIPMENT ABUSE:

1. Employees driving or using A-RC vehicles or equipment are responsible for the overall upkeep of their vehicles and equipment. Failure to: perform daily checks, keep their vehicle/equipment clean and serviced, make the vehicle available for servicing, or use their vehicle or equipment for other than its intended official use constitutes vehicle/equipment abuse (beyond normal fair wear and tear). Employees are subject to having their driving privileges revoked for A-RC vehicles. If damage is associated with misuse, abuse, neglect or misappropriation; a damage assessment may be directed by the Safety Review Committee. Abuse will be reported to the Risk Management Committee for review. Examples may include, but not limited to:

   a. Failure to perform daily vehicle safety checks (no oil or coolant).

   b. Excessively dirty vehicle.

   c. Failure to make the vehicle available for scheduled servicing.

   d. Driving the vehicle in a manner or location which:

      (1) Discredits the Department or Augusta - Richmond County.

      (2) Driving the vehicle in a location not appropriate for the type of vehicle.

      (3) Using the vehicle for personal use.

      (4) Causing or exposing the vehicle or equipment to damage beyond normal "fair wear and tear".

2. Employees having a conviction for Driving Under the Influence or more than 15 points (within 24 consecutive month period) against their Georgia Drivers License; or 15 administrative points by the Safety Review Committee over a 3 year period (consecutive years) will **not** be permitted to drive an Augusta-Richmond County Vehicle. Driving records will be reviewed annually by Risk Management. Employees falling in this category and whose primary job function requires they drive an A-RC vehicle may be terminated for loss of job qualification (See Personnel Policy and Procedures Manual).

3. The Safety Review Committee may recommend to the Risk Management Committee that the driver's A-RC driving privileges be revoked and recommend a damage assessment, based on the estimated cost of repair. The Risk Management Committee has the authority to revoke any employees vehicle driving privileges of A-RC vehicles.

4. Department Heads have the same authority as the Risk Management Committee but will exercise this authority in writing and forward a copy to Risk Management and the Human Resources Department for inclusion into the employees file.

N.

DAMAGED VEHICLES: Any A-RC vehicle which has been involved in an accident and must be towed to the appropriate shop will be under "quarantine" until released by the Risk Management Manager. No one is authorized to touch, remove items, move or remove parts, or otherwise physically alter any part of the vehicle unless authorized to do so by the Risk Management Manager. The only exception would be the authorized law enforcement investigator or driver of the vehicle to remove personal property or criminal evidence being transported. This will ensure protection of physical evidence for potential liability.

O. **AUTOMOBILE ALLOWANCES:** A bimonthly cash payment may be made to compensate an employee for the availability and use, for official purposes, of a privately owned vehicle. Automobile allowances will be authorized by the Administrator only. A full justification, in writing, must be made by the Department Head of the employee concerned. The test criteria at appendix 6 must be met by the employee and explained in the written request. Employees authorized automobile allowances must posses a valid drivers license, current vehicle registration and must have insurance of a type and level required by state law.

P. **MILEAGE REIMBURSEMENT:** Mileage reimbursement may be authorized by the department head for an employee who must utilize his/her personal vehicle to conduct official business and who receives no other form of allowance.

1. Claims for mileage reimbursement shall be made in accordance with current Travel Expense Reimbursement procedures.

2. The standard rate of the mileage reimbursement shall be set annually, by the Administrator, upon the recommendation of the Finance Director/Comptroller.

Administrator: _____Approved Disapproved_____

VEHICLE IDENTIFICATION/UTILIZATION

VEHICLE

DEPARTMENT:_____ **SECTION;**_____

YEAR:_____ **MAKE:**_____ **MODEL:**_____ **STYLE:**_____

ASSET #:_____**TAG #:**_____ **VIN #:**_____

DEPT STENCIL #:_____ **Vehicle Mounted Radio:** ☐ **Yes/No** ☐ **Gov't Car Phone:** ☐ **Yes/No** ☐_

DRIVER

ASSIGNED/ PRIMARY DRIVER:_____

JOB TITLE:_____

DRIVERS LICENSE #:_____**STATE:**_____ **EXPIRES:**_____

PURPOSE

("X" as appropriate)

☐ **On Call Vehicle** ☐ **Inspections** ☐ **Equipment Transport**

☐ **Law Enforcement** ☐ **Public Safety** ☐ **Work/Utility Veh (Light)** ☐ **Work Veh (heavy)**

☐ **Crew Transport(crew cab)** ☐ **Coordination** ☐ **Public Support Program** ☐ **Transit**

VEHICLE USE

Estimated miles driven per week:_____ Vehicle is driven to assigned drivers residence: ☐Yes, ☐ No

☐This vehicle is driven home for emergency on call basis and the driver (is)(is not) rotated.

If the vehicle is driven home by the assigned driver:

Employee's County of Residence_____

Number of miles to residence (1 way)_____

Number of days driven home each week:_____

Justification for approval to drive vehicle home will be placed on the rear of this form or attached as an enclosure. Department Heads will initial only when recommending approval for the vehicle to be driven home.

Submitted by:_____Title:_____

Department Head Initials_____ Date:_____

Item # 12

Appendix 2 (Take Home Vehicle Guidelines)

GUIDELINES
Government Vehicle Driven Home

TEST 1: The employee is (1) subject to frequent after-hours emergency call back or other unscheduled work and (2) such unscheduled work involves the first response to a real or present threat to life or property requiring an immediate response and (3) specialized vehicle, tools, or equipment are required for the performance of emergency duties.

TEST 2: The employee is (1) subject to frequent after-hours call back and (2) such call back arrangements are to locations other than the employee's normal duty station and (3) a special vehicle, tools or equipment are required to perform after-hour assignments and (4) an unacceptable delay in the response would result from the employee's return to the normal duty station to retrieve the needed equipment. This category is normally reserved for emergency maintenance response situations where a group of employees share formal on call responsibilities on a rotational basis, typically for a week at a time. In such cases, the use of the take-home vehicle is for the period of on-call assignment only.(On-call, **rotational**, duties are managed at department level).

TEST 3: The employee is (1) subject to frequent before/after hours call back and (2) the nature of job requirements are unique to the employee and (3) the location of job requirements are routinely varied and (4) an unacceptable delay in response would jeopardize job requirements from being completed which could result in a loss to this government.

TEST 4: Certified Law Enforcement personnel required to use an individually assigned vehicle during their normal tour of duty may use the vehicle for commuting purposes. While not on-duty during such commutes, officers are expected to take action on incidents they may encounter.

OUT OF COUNTY TRAVEL NOTIFICATION

TO: Risk Management

DATE:_____

NAME OF ORGANIZATION:_____

CONTACT:_____

PHONE:_____

DRIVER:_____

DRIVERS LICENSE #_____EXPIRES:_____

VEHICLE ASSET NUMBER:_____

DATE OF DEPARTURE:_____

DATE OF RETURN:_____

DESTINATION:_____

REASON FOR TRAVEL:_____

_____

Number of people to be transported:____Are they employees? ____Yes No___

If not, explain:_____

_____
(signature)

_____
(title)

This request must be received by Risk Management 24 working hours (3 days) prior to the requested travel.

Appendix 4 (MVR Release)

AUGUSTA - RICHMOND COUNTY

MOTOR VEHICLE RECORDS

RELEASE FORM

WARNING

PLEASE READ THE STATEMENT OF UNDERSTANDING AT THE BOTTOM OF THIS REQUEST FORM. IF YOU DO NOT UNDERSTAND THE FORM OR HAVE QUESTIONS PLEASE ASK BEFORE SIGNING THE FORM. PLEASE PRINT AND COMPLETE ALL THE BLANKS.

LAST NAME: _____ FIRST: _____ MIDDLE: _____

DEPARTMENT: _____ JOB TITLE: _____

SOCIAL SECURITY NUMBER: _____ DOB: _____ RACE: _____

LICENSE NUMBER: _____ ISSUING STATE: _____ ISSUE DATE: _____

CIRCLE LICENSE TYPE: CDL REGULAR

I CERTIFY THAT THE INFORMATION PROVIDED IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I UNDERSTAND THAT AUGUSTA - RICHMOND COUNTY WILL OBTAIN MY DRIVING RECORD AND THAT IT IS TO BE USED TO DETERMINE MY ELIGIBILITY FOR EMPLOYMENT OR CONTINUATION OF DRIVING PRIVILEGES. I ALSO UNDERSTAND THAT MY DRIVING RECORD WILL BE OBTAINED ON A YEARLY BASIS AND THAT I MUST INFORM MY SUPERVISOR IMMEDIATELY IF MY LICENSE IS SUSPENDED.

_____

SIGNATURE OF EMPLOYEE\APPLICANT DATE

_____

SIGNATURE OF WITNESS DATE

Item # 12

Augusta Richmond GA

DOCUMENT NAME: Fleet Replacement Policy

DOCUMENT TYPE:

YEAR: 1998

BOX NUMBER: 21

FILE NUMBER: 17208

NUMBER OF PAGES: 13

APPROVED
APR 2 0 2004
(AUGUSTA-RICHMOND COUNTY COMMISSION)

AUGUSTA, GEORGIA
FINANCE DEPARTMENT-FLEET MANAGEMENT DIVSION
FLEET REPLACEMENT POLICY

1. POLICY: Timely and appropriate acquisition and maintenance of fleet resources is essential in this Governments mission to provide services to the Citizens of Augusta. This Governments fleet is nothing more than a tool for the provision of services to the general public by government employees. To facilitate budgeting and planning of resources this regulation establishes "Life Expectancies" for fleet equipment. The Life Expectancies are used as planning parameters and identify potential candidates for replacement. Actual replacement criteria is established using a point system which considers; age, miles/hours, reliability, maintenance and repair costs and overall condition. The criteria will identify specific units requiring replacement. Vehicles and equipment purchased with government funds represent a valuable resource and as such will be preserved and maintained to legal and established standards published in this policy. The replacement criteria published in this regulation are not absolute and are contingent on available funds and overall condition of equipment within the "window" of replacement.

2. PURPOSE: The timely replacement of fleet vehicles and equipment is necessary to encourage and maintain a safe, efficient, reliable and cost effective fleet. This policy establishes acceptable replacement criteria for replacement consideration of existing fleet assets. In addition, it establishes minimum safety and mechanical standards of equipment that are not replaced due to budgetary constraints. The overall goal of this policy is to reduce overall equipment life cycle costs (procurement, maintenance, and disposal). It is the intent of this policy to replace vehicles and equipment when owning and operating them cost more than owning and operating their replacements.

3. ECONOMIC CONCEPT: All vehicles and equipment within the fleet will eventually wear out. As they age they become increasingly more expensive to operate and maintain and less reliable and safe to use. In order to minimize total vehicle or equipment cost, replacement should be made when the operating cost (maintenance, repair and fuel) exceeds the value of the vehicle over time.

4. REFERENCES:

4.1 Managing Public Equipment (Second Edition), American Public Works Association, August 2000.
4.2 Fleet Maintenance Staffing Guide, National Association of Fleet Administrators, 2002.
4.3 Fleet Management; IQ Report (Fleet Management) – Volume 34/Number 7, International City/County Management Association, July 2002.
4.4 Official Code of Georgia, Chapter 8, Equipment and Inspection of Motor Vehicles.

5. DEFINITIONS:

5.1 Life Cycle Cost- those costs associated with ownership, operating expenses throughout the working life of equipment.

5.2 Life Expectancy: The expected number of years a vehicle or piece of equipment is expected to provide economical, cost effective service in the performance of its primary intended use.

6. GENERAL:

6.1 In establishing the Fleet Replacement Policy, the Augusta Commission will establish a life expectancy for each vehicle and piece of fleet equipment, (Appendix I). The life expectancy will be expressed in age, miles, or hours of operation.

6.2 The life expectancy of any new type equipment or vehicle, not currently in the inventory, will be established and presented as part of the agenda item presented to the Commission for the approval to purchase the item.

6.3 The life expectancy allows for the timely planning of replacements of fleet assets for the purpose of annual budget submission. It has a direct affect on the annual Capital Outlay program as well as the "Non-Contract" maintenance budget.

6.4 The life expectancy is a primary factor, but not sole factor, in consideration of potential replacements and is used for budget planning.

6.5 Replacement criteria is an evaluative process whereby potential replacements, identified from the Life Expectancy evaluation, are graded individually to determine the necessity of replacement and assist in prioritizing replacements. Each vehicle will be evaluated according to the matrix at Appendix II.

6.6 Vehicle replacement is contingent on available funding.

7. PROCESS of REPLACEMENT:

7.1 Fleet Management will maintain an inventory of all fleet assets, the department/division assigned to, the date acquired and the replacement date. This information will be provided to each department at the beginning of each annual budget process.

7.2 Department Heads will review their inventories to determine those items that require replacement and establish a priority of need for their department. The information will be displayed on the Budget Form C, Capital Equipment/Budget Request (Appendix IV).

7.3 A copy of this form will be forwarded to the Fleet Manager with the original being submitted with the requested budget to Finance.

7.4 Fleet Management will consolidate all capital outlay requests, by major fund, and formulate a recommendation of replacement, through the Finance Director to the Administrator.

8. Replacement Criteria: (See Appendix II)

8.1 Consideration for replacement will be based on several factors: life expectancy, actual age, operating cost (maintenance and fuel), annual mileage/utilization, reliability, and resale value. Each vehicle or piece of equipment (capital expenditure) will be evaluated by Fleet Management using the form at Appendix II to determine if replacement is required.

8.2 Should the vehicle meet the replacement requirements and funding is available, the information will from the evaluation will be transposed to the Replacement Criteria Form, (Appendix IV) and submitted with the Agenda for purchase approval.

8.2 Vehicles which have been classified as totaled will have priority in the replacement process in the next fiscal year.

9. Vehicles Retained Beyond Life Expectancy.

9.1 A number of Public Safety, pursuit vehicles are replaced in order to ensure reliability.
9.2 Public Safety vehicles taken out of public safety service will be assessed by Fleet Management to determine the possibility of continued use in an administrative capacity.
9.3 Vehicles retained beyond their life expectancy will be maintained to a level which meets the legal requirements of safety established by Georgia Law (O.C.G.A. Chapter 8, Section 40) Appendix V.

10. ANNUAL FLEET REVIEW: At the end of each calendar year, Fleet Management will calculate the annual mileage for each vehicle within the fleet. Vehicles which have been driven 5,000 miles or less in the year will be identified and a list published to the Finance Director and Administrator. Each Department Director will be provided a list of vehicles within their department with 5,000 miles or less (miles driven in a year). Directors must justify the retention of these vehicles in their active fleet. Fleet Management will consolidate the individual justifications and provide a recommendation through the Director of Finance to the Administrator for approval to retain or recommendation to turn the vehicle in.

11. FUNDING:

11.1 General Fund: Departments funded by the General Fund will submit capital asset requirements each year as part of the budget process. Fleet Management will consolidate all capital outlay requests and provide a General Fund Capital Outlay replacement plan for that calendar year. The recommendation will be forwarded through the Director of Finance to the Administrator.
11.2 Enterprise Funds – Each Department funded as an Enterprise Fund will submit capital asset requirements as part of the budget process. Fleet Management will review all requirements to ensure they are consistent with this policy.
11.3 Grant Funds – Departments which have access to grants are responsible for the application and administration required to obtain the grant. Fleet Management will provide any necessary vehicle/equipment specifications and appropriate purchasing processing (including proposals in accordance with purchasing requirements).
11.4 Seizure Funds – (applicable to Sheriff and District Attorney) – These funds are awarded based on a court order and are under the control of the respective elected official. They may be used by the receiving agency, have no affect on the General Fund and may be used for vehicle and/or equipment purchases and/or used in compliance with the Court Order. Fleet Management will assist with the processing of necessary administration associated with the purchase of vehicles or equipment.
11.5 Special One Cent Sales Tax (SPLOST) – The purchase of vehicles or equipment using SPLOST funds will be closely monitored to ensure that any expenditures are consistent with the approved referendum.

12. PROPONENT: The proponent agency for this policy is: Finance Department, Attention: Fleet Management Division. Any suggestions for improvement or comments should be addressed to Finance Department, Attention: Fleet Management Division.

13. This policy supercedes the Augusta-Richmond County Vehicle and Equipment Replacement Criteria, dated 1 September 1998.

APPENDIX I
LIFE EXPECTANCY

EQUIPMENT TYPE	AGE	MILES/ HOURS
Air Tools (construction)	5	N/A
Asphalter	10	N/A
ATV	8	N/A
Auger, Portable	6	N/A
Automobile, Administrative	8	125,000
Automobile, Pursuit	4	90,000
Blower, Leaf	4	N/A
Boat	12	N/A
Boring Machine	10	8,000 hr
Bus, Small	10	1,250,000
Cart, Utility	7	N/A
Chipper, Wood	8	5,000 hr
Compactor, Landfill	6	10,000 hr
Compressor, Air	6	5,000 hr
Dozer, Tracked	7	8,500 hr
Dozer, Tracked - Landfill	6	8,500 hr
Edger, Lawn	2	N/A
Engine, Outborad	10	N/A
Excavator, Tracked	8	8,000 hr
Excavator, Wheeled	8	9,000 hr
Finisher, Concrete	5	N/A
Flusher, Sewer (trailer mtd)	8	N/A
Forklift	12	N/A
Generator, Portable	8	N/A
Grader, Road	10	9,000 hr
Grinder, Stump	8	5,000 hr
Lawn Equipment - small	2	N/A
Loader, Front End	10	9,000 hr
Machine, Smoke	5	N/A
Mixer, Cement (towed)	6	N/A
Motorcycle	6	75,000
Mower, Self Propelled W/B	3	N/A
Mower, Sidearm	8	7,000 hr
Mower, Small Riding	4	2,500 hr
Mower, Towed -all types	8	N/A
Paint Machine, Line Traffic	6	N/A
Prunner	2	N/A
Pulverizer	4	N/A
Pump - all types	7	3,000 hr
Rodder, Sewer (towed)	8	N/A

EQUIPMENT TYPE	AGE	MILES/ HOURS
Roller, Asphalt	8	9,500 hr
Sandblaster	7	N/A
Saw, Chain	2	N/A
Saw, Concrete	4	N/A
Saws, Other	4	N/A
Scraper/Motor grader	12	9,500 hr
Snow Plow	15	N/A
Sprayer, trailer mtd	6	5,000 hr
Steam Cleaner (diesel)	8	N/A
Steam Cleaner (gas)	6	N/A
Sweeper (floor/street)	8	9,500 hr
Tractor, AG	10	9,500 hr
Trailer, Cargo (small)	12	N/A
Trailer, Equipment	15	N/A
Trailer, Tanker	10	N/A
Trailer, Trash Haul 12 Ton	10	N/A
Trailer, Trash Haul 24 Ton	10	N/A
Trencher	8	7,500 hr
Truck, Animal Contain	6	125,000
Truck, Bucket (over 45 ft)	10	125,000
Truck, Bucket (under 45 ft)	8	125,000
Truck, Crane	12	125,000
Truck, Dump-Single Axle	10	150,000
Truck, Dump-Tandem	12	150,000
Truck, Fire Ladder	15	N/A
Truck, Fire Pumper	15	N/A
Truck, Flatbed/Stakebody	10	125,000
Truck, Fuel/Lube	10	150,000
Truck, Grapple	10	125,000
Truck, Landscape	10	125,000
Truck, Leaf Vac	8	125,000
Truck, Pickup - below 1 Ton	8	125,000
Truck, Pickup- 1 Ton & over	9	125,000
Truck, Pole Digger	12	125,000
Truck, SUV	8	125,000
Vacuum, Lawn	5	N/A
Van, Cargo & Passenger	8	125,000
Van, Prisoner/work Detail	8	125,000
Washer, Pressure	5	N/A
Welder	7	N/A

FINANCIAL IMPACT: Deferring or not replacing vehicles and equipment beyond their life expectancy impacts on the operating budget, directly affecting vehicle cost allocation (maintenance budget). As vehicle move beyond the life expectancy, maintenance costs move from contract repairs to non-contract repairs, directly affecting their operating budget.

APPENDIX II
REPLACEMENT EVALUATION MATRIX
FLEET REPLACEMENT POLICY

FACTOR	POINT DESCRIPTION	POINTS
Age	One point for each year of chronological age. For Pursuit vehicles (road patrol and traffic cars) use 1.5 points for each year. Use .5 for each year for equipment with life expectancy of 10 years or more.	
Miles/Hours	One point for each 10,000 miles of use or 1,000 hours (500 hrs small equipment)	
Type of Service	5 points for vehicles/equipment for severe duty service 3 points for public service work type vehicles. 1 point administrative or passenger transport type vehicles.	
Reliability	Points are assigned based on the average number of times an item is in the shop over the past year. The repair is not a "quick fix" repair, "come-back" or PM service. 5 points = average of 2 times each month or a total of 15 times within 12 months (add one point for road patrol/traffic car, and one for fire machine). 3 points = average of one time each month or up to 10 times within a 12 month period. 1 point = average of one time every 3 months.	
Maintenance And Repair Costs	Considers total repair costs against the purchase price of the equipment. 5= maintenance and repair costs equal to or greater than the purchase price of the equipment. 1= maintenance and repair costs 20% or less than the purchase price of the vehicle	
Condition	Considers overall body condition, interior and exterior; accident history future repair estimates. Scale of 1 to 5 with 5 being a vehicle that is in poor condition.	
	TOTAL POINTS	

RANGES:

Under 18 points	Excellent
18 to 22 points	Good
23 to 27 points	Qualifies for Replacement
28 points or more	Needs immediate consideration for replacement

APPENDIX III

AUGUSTA, GEORGIA
FINANCE DEPARTMENT-FLEET MANAGEMENT DIVISION
REPLACEMENT CRITERIA FORM

<table>
<tr><td colspan="2">Department Name:</td><td colspan="2">Department Number:</td><td colspan="2">Date:</td></tr>
<tr><td colspan="6">Vehicle Description:</td></tr>
<tr><td colspan="4">Assigned Use:</td><td colspan="2">Signature of Director/Elected Official</td></tr>
<tr><td colspan="2">Actual Age:</td><td colspan="2">Current miles/hours:</td><td colspan="2">Purchase Price:</td></tr>
<tr><td colspan="6">Life Expectancy Criteria Requirements- (Policy Evaluation)</td></tr>
<tr><td>Age</td><td>Mi/Hr:</td><td>Type of Service:</td><td>Reliability:</td><td>Maint/Repair:</td><td>Condition:</td></tr>
<tr><td colspan="3">Evaluation Points:</td><td colspan="3">Policy Evaluation Results:</td></tr>
<tr><td colspan="6">Fleet Manager Recommendation</td></tr>
<tr><td colspan="6">Finance Director Approval:</td></tr>
<tr><td colspan="3">Replacement Date:</td><td colspan="3">Fiscal Year Replacement:</td></tr>
<tr><td colspan="3">Estimated Replacement Cost:</td><td colspan="3">Funding Source:</td></tr>
</table>

APPENDIX IV
Budget Worksheet
FLEET REPLACEMENT POLICY

Augusta, Georgia
Capital Equipment/Budget Request
2005 Budget Worksheet

Form C

Page: _____

FUND NO: _____

DEPARTMENT No. & NAME: _____

ACCOUNT No.: _____

Item/Project Description	Priority Rank	Acct. No.	Estimated Cost	Amt. Approved
Replace Asset No.				
Replace Asset No.				
Replace Asset No.				
Replace Asset No.				
Replace Asset No.				
Total				

Appendix V
Mechanical Standards
FLEET REPLACEMENT POLICY

The following represents the standards of equipment for vehicles from the Georgia Code. Augusta government vehicles will comply with the mechanical standards established by law. Any item not in compliance with Georgia law will render the vehicle "out of service" or not operational on the public highway until the short-coming is corrected. No employee, supervisor or manager has the authority to "over-ride" these provisions. Policy dictates that employees of Augusta will operate their vehicles in a "safe, legal and prudent manner consistent with all Federal, State, and local laws and ordinances".

Chapter	Sec	Para	Sub-Para	SUBJECT	DESCRIPTION
40	8	22	(d)	Head lights	Headlights shall be maintained in proper working condition
40	8	23	(b)	Tail lights	Tail lights shall be maintained in proper working condition
40	8	23	(b)	Trailer Tail Lights	Every motor vehicle, trailer, semi-trailer, and pole trailer shall be equipped with 2 tail lights
40	8	25	(b)	Brake lights	If a motor vehicle is manufactured with 2 brake lights, both must be operational.
40	8	26	(d)	Rear lights-general	All lenses on brake lights and signal devices shall be maintained in good repair and shall meet manufactures' specs
40	8	27	(a)	Flag on Projected Load	A 12 inch by 12 inch (orange/red) flag for any projection beyond 4 feet from the rear of the vehicle
40	8	50	(a)	Brakes	Every vehicle to have two separate means of applying the brakes. (ref: park brake)
40	8	50	(c)	Trailer brakes	Every trailer of 2,500 pounds gross weight or more shall be equipped with brakes on all wheels.
40	8	53		Brake Performance	@ 20 mph stop in 30 feet
40	8	54		Maintenance of Brakes	All brakes shall be maintained in good working order and shall be so adjusted as to operate as equally as practicable with respect to the wheels on opposite sides of the vehicle.
40	8	70	(a)	Horns	Every motor vehicle when operated upon a highway shall be equipped with a horn in good working order (200 feet)
40	8	71	(a)	Exhaust System	Must be in good working order

40	8	72		Mirrors	Must be equipped to reflect to the driver, 200 feet to the rear of the vehicle
40	8	73	(c)	Windshield & Wipers	Wipers to be maintained in good working order
40	8	73	(d)	Windshield & Wipers	No motor vehicle shall be operated with a windshield or rear window having a starburst or spider webbing effect greater than three inches by three inches.
40	8	74	(a)	Tires (non-CDL)	(1)Shall have not less than 2/32 inch tread measurable in all major grooves. (2)Shall be free from cuts, breaks or snags deep enough to expose body cord. (3)Shall be free from bumps, bulges or separations
40				Tires (CDL)/Buses	(1) Front tires 4/32, shall be of the same tread and not recapped. (2) All other tires, 2/32 (3) Same as (2) & (3) (non-CDL)
40	8	75		Mud Flaps	(1) Mounted on the rear most wheels (2) Shall have a ground clearance of not more than one-half the distance from the center of the rearmost axle to the center of the tires they are covering unless equipped with fenders that accomplish the same purpose.
40	8	76.1	All	Safety belts	
40	6	254	All	Placing load on or in vehicle	No person shall operate any motor vehicle with a load on or in such vehicle unless the load on or in such vehicle is adequately secured to prevent dropping or shifting or such load onto the roadway.
40	8	4	All	Slow moving Vehicles	Vehicles/equipment generally operated at speeds less than 25 miles an hour, including all road construction or maintenance equipment shall have the proper emblem (ASAE S276.1)

AUGUSTA GEORGIA 1736

OFFICE OF THE ADMINISTRATOR

CHARLES R. OLIVER, PE CPA
ADMINISTRATOR

WALTER S. HORNSBY, III
ASST. ADMINISTRATOR

ROOM 801 - MUNICIPAL BUILDING
530 GREENE STREET - AUGUSTA, GA 30911
(706) 821-2400 - FAX (706) 821-2819

September 2, 1998

1998 Replacement Policy

Mr. Harry L. Siddall
Fleet Manager
Room 901, Municipal Building
530 Greene Street
Augusta, Georgia 30911

Dear Harry,

The Augusta Commission, at its Regular Meeting held Tuesday, September 1, 1998, aproved the Augusta-Richmond County vehicle and equipment replacement criteria. (Funded by Account #21-4511-00-0449.)

Should you have any questions in this regard, please do not hesitate to call.

Sincerely,

Charles R. Oliver
Administrator

CRO/shw

cc: Mr. David Collins
Mrs. Donna Williams
Mrs. Geri Sams

9-1-98-#4

AGENDA ITEM _____
(To be completed by Clerk of Commission)

1998 Replacement Policy

TO: Finance Committee/Commissioners
Charles "Randy" Oliver, County Administrator

FROM: Harry L. Siddall, Fleet Manager

DATE: August 17,1998

SUBJECT: Motion to approve the Augusta-Richmond County vehicle and equipment replacement criteria.

CAPTION: Motion to approve the Augusta-Richmond County vehicle and equipment replacement criteria.

BACKGROUND: In performance of the duties of the Fleet Management Department, the section requires the need to determine when equipment should be replaced. To effectively determine this, a replacement limitation criteria has to be established as a point of reference for the determination. The current Fleet Maintenance Contract, Section 5.2 - Limitations, contains language stipulating that the replacement guidelines will be established and that all repair cost for equipment that has exceeded it's life will be charged non-contract cost.

ANALYSIS: Common fleet practices require a vehicle replacement criteria be established, in order to determine if maintenance funds should be spent to repair a unit, or if the unit should be salvaged.

FINANCIAL IMPACT: Funding currently established for contracted services would be reduced as equipment becomes overage and the funds would then be transferred to non-contract funds. Approved repairs, as authorized by the Fleet Manager, would be funded with the non-contract revenues.

ALTERNATIVES:

1. Approve the replacement criteria for Augusta-Richmond.

2. Do not approve the request and hamper the effectiveness of all of the City/County Departments.

RECOMMENDATION: Approve the replacement criteria.

DEPARTMENT DIRECTOR: _____

FUNDS ARE AVAILABLE IN THE FOLLOWING ACCOUNTS:

21-4511-00-0449

COUNTY ADMINISTRATOR: _____

FINANCE: _____

COMMITTEE ACTION:

AUGUSTA-RICHMOND COUNTY EQUIPMENT REPLACEMENT CRITERIA

The following is the Replacement Criteria's for Augusta-Richmond County vehicles and equipment:

1998 Replacement Policy

EQUIPMENT TYPE	YEARS	OR MILEAGE
Automobiles, Administrative	5	125,000
Automobiles, Emergency (Fire/CID)	4	125,000
Automobiles, Pursuit	4	110,000
Buses	15	n/a
Motorcycles	5	50,000
Trailers, Cargo	10	n/a
Trailers, Equipment Hauler	15	n/a
Trailers, Tanker	8	n/a
Trucks, Animal Control	7	150,000
Trucks, Bucket, under 45 foot	7	110,000
Trucks, Bucket, over 45 foot	10	110,000
Trucks, Crane	10	175,000
Trucks, Dump, under 15 ton	8	175,000
Trucks, Dump, over 15 ton	10	175,000
Trucks, Fire, Pumper	15	n/a
Trucks, Fire, Ladder	15	n/a
Trucks, Flatbed/Stakebody	8	150,000
Trucks, Pole Digger	12	150,000
Trucks, Pickup, below 1 ton	6	150,000
Trucks, Pickup, 1 ton and above	7	150,000
Trucks, Tractor, 5th wheel	10	250,000
Trucks, Sewer Cleaner	7	150,000
Trucks, Sewer Rodder	7	150,000
Trucks, Utility Body	7	150,000
Vans, Cargo and Passenger	6	150,000
Vans, Law Enforcement	5	125,000
Compressor, Air	8	n/a
Boat	10	n/a
Boat Motor	7	n/a
Bulldozer	12	n/a
Chipper	7	n/a
Excavator	12	n/a
Forklift	12	n/a
Generator	10	n/a

EQUIPMENT TYPE	YEARS	OR MILEAGE
Grader, Road	12	n/a
Landfill Bulldozer	3	n/a
Landfill Compactor	3	n/a
Landfill Excavator	4	n/a
Landfill Loader	4	n/a
Landfill Scraper	3	n/a
Loader, Backhoe	10	n/a
Loader, Front End	10	n/a
Mower, Riding	7	n/a
Mower, Self-Propelled, Commercial	4	n/a
Mower, Towed, Rotary	7	n/a
Mower, Towed, Flail	7	n/a
Pumps	5	n/a
Roller, below 8 ton	6	n/a
Roller, above 8 ton	8	n/a
Roller, Sheepfoot	10	n/a
Saw, Rescue	4	n/a
Scraper	12	n/a
Sweeper, Floor	6	n/a
Sweeper, Street	7	n/a
Tractor, Agricultural	10	n/a
Tractor, Side Arm Mower	10	n/a
Tractor, Flail Mower	10	n/a
Trencher	7	n/a
Utility Cart	6	n/a

1998 Replacement Policy

The Fleet Maintenance Contractor will make replace versus repair recommendations when equipment requires repairs estimated to exceed established repair limits or when the Contractor believes the equipment is uneconomical to repair.

Replace versus repair analysis should include, but not limited to:

Equipment repair estimates
Equipment replacement cycles
Equipment condition
Equipment life cycle cost

The Fleet Manager will determine, based on the analysis, if the equipment should be removed the fleet.

Fleet Management will prepare the appropriate documentation to request approval from the Augusta-Richmond City/County Commission to excess the equipment and prepare for auction.

2021

FLEET MANAGEMENT OPERATIONS, MAINTENANCE, AND REPLACEMENT POLICY

CENTRAL SERVICES DEPARTMENT

Item # 12

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The proponent agency for this policy is the Central Services Department (Attention: Fleet Management Division). Any comments, questions or recommendations should be referred to: Fleet Management.

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FLEET MANAGEMENT, OPERATONS AND MAINTENANCE POLICY

POLICY STATEMENT: Vehicles and equipment, belonging to Augusta, Georgia will be maintained and operated in a legal, safe and prudent manner, consistent with all federal, state and local laws and ordinances. The proper management, accountability and use of government assets is the responsibility of all users. Every effort will be made to eliminate misuse, misappropriation, and abuse of vehicles and equipment belonging to this government. Employees responsible for driving vehicles or operating equipment will ensure the asset is turned in for maintenance consistent with the appropriate maintenance schedules or at the time the operator detects a shortcoming. It is the responsibility of all employees, regardless of position, to support a cost-effective operation. In order to ensure proper adherence to use of Augusta, Georgia vehicles and equipment, employees should also review Risk Management Vehicle Usage guidelines and other policies of the Augusta, Georgia Personnel Policy and Procedures Manual. The information included in this policy does not supersede the policies of the Augusta, Georgia Personnel Policy and Procedures Manual.

SECTION I
ADMINISTRATIVE OVERVIEW

1.01 PURPOSE: The purpose of this policy is to establish uniform and comprehensive criteria for the purchase, assignment, use, administrative control, and disposal of assets owned, leased, titled, or under the control of Augusta, Georgia.

1. Provides for necessary information to ensure adequate, safe, and legal transportation for the performance of official business in the most cost effective and service efficient manner possible.
2. Provides a standard policy which will be enforced in all functional areas.

1.02 APPLICABILITY: This policy is applicable to all employees that are subordinate to the Augusta Commission. It encompasses the operation of fleet assets owned, leased by, under the control of and/or titled to Augusta, Georgia, unless otherwise specified in this policy.

1.03 ORGANIZATION: Effective June of 2016, the Fleet Management Division became a subordinate division of the Central Services Department of Augusta, Georgia. It operates as an internal service fund and is headed by a Fleet Manager, who reports to the Director of Central Services. The mission is to provide support to all departments, agencies and Constitutional Officers/Elected Officials in matters relating to the administration, acquisition, operation, maintenance, management, fueling and disposal of assets, which are owned, leased, titled to or otherwise controlled by Augusta, Georgia.

1.04 RESPONSIBILITES:

1. Responsible for developing and recommending uniform policies for vehicle acquisition, use, maintenance, fueling, and disposal consistent with federal, state, and local laws and ordinances.
2. Develops and reviews all fleet asset specifications, prior to the bidding process by the Procurement Department, for practicality, economy, standards, and need.
3. Responsible for coordinating maintenance, establishing priorities, and accounting for expenses relating to fleet management functions.
4. Maintains an active fleet list and records associated with the proper management of assets.

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5. Conducts asset assessments to ensure cost effectiveness and has the authority to designate assets as uneconomically repairable.
6. Monitors contracts and subcontracts relating to the maintenance and fueling of fleet assets to ensure efficient and effective operations.
7. Recommends policy and procedures on fleet maintenance, operations, and management.
8. Provide status reports as appropriate.
9. Provides administrative support, as directed by the Central Services Director, to the Administrator on processing of vehicles requested to be driven home by employees and Department Heads.
10. Responsible for the managed fuel program.
11. Responsible for administration associated with obtaining vehicle license tags, titles and registrations.
12. Responsible for the proper disposal of excess, surplus assets and property (excluding real estate) as required by policy or as directed by the Administrator, Commission or Elected Official having authority over said property.

SECTION II
OPERATIONS

2.01 USE OF GOVERNMENT ASSETS:

1. Government assets will be used **"For Official Use Only"** and are to be operated in a safe, legal and prudent manner. The use of assets will be for the convenience of the government, not the employee.
2. Augusta, Georgia vehicles may be used when on official travel status between the place of departure, in Augusta, Georgia to a place of business and the place of temporary lodging. The vehicle may be used to transport the employee(s) to eating establishments or to obtain medical assistance (including drug store) while in a travel or training status.
3. Employees working at job sites away from their normal work place ("headquarters") may use their assigned government vehicle for transportation during eating periods when on duty if:
    a. It is more advantageous to Augusta, GA that the vehicle not to return to the headquarters.
    b. When the driver's duties are such that returning to the primary job site would result in more miles being put on the vehicle.
    c. If the employee is authorized to drive the vehicle home.
4. Smoking of tobacco products in government vehicles is prohibited.
5. Seat belts will be worn at all times inside of Augusta, GA vehicles.
6. Family members may not be transported in government vehicles. Family members who are employees of this government may not be given rides to and from work, on a daily/routine basis, unless the employee driver and the employee rider are required at the same location.
7. No employee is authorized to modify, uninstall, or install any electronic device that requires connecting to any existing wiring within the vehicle (wiring harness, battery, or fuse box). The use of electrical outlets, as provided by the manufacturer, is authorized.

2.02 UNATHORIZED VEHICLE USE:

1. Any use for personal purposes other than commuting/travel which has been authorized.

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2. Transport of hitchhikers, family member or anyone that is not an employee of Augusta.
3. Transport of cargo that is not related to the performance of official Augusta, Georgia business.
4. Transport of any hazardous materials such as acids, explosives, weapons, ammunition or highly flammable material, except by specific authorization or in an emergency.
5. Transporting any political campaign literature or matter to engage in soliciting votes or to transport any person or persons soliciting votes in any election or primary.
6. Transporting alcoholic beverages or contraband (unlawful drugs, weapons or other restricted items.

2.03 DISCLAIMER OF LIABILITY: Employees who are in violation of this policy by transporting family members, persons not employed by this government, or any unauthorized passengers or using Augusta, GA assets for any purpose other than "Official Business" which results in physical damage and/or bodily injury may:

1. be personally responsible for any and all damages to property or person(s) resulting from the accident and/or;
2. be personally responsible for any and all medical related costs resulting from the accident and/or;
3. be subject to disciplinary action up to and including termination of employment as determined by the Augusta, GA Personnel Policy and Procedures Manual

2.04 DRIVING VEHICLES HOME:

1. Authorization to drive an assigned vehicle home must be approved, in writing, by the Administrator. Requests will be reviewed each year.
2. Approvals will be granted only when allowing the employee to drive the vehicle home is for the convenience of Augusta, Georgia.
3. Department heads must enclose a full justification on the request for "Authorization to Drive a Government Vehicle Home" form. The completed form will be sent to Fleet Management for additional information and forwarded to Risk Management for comment.
4. For an employee to drive a vehicle home:
    a. a real need must exist and the need is for the convenience of the government
    b. the employee is on 24 hour on-call
    c. the employee is frequently required to work outside of normal business hours
    d. the employee responds to after-hours emergencies at locations other than their normal business location
5. IRS Publication 15-B establishes that some drive home vehicles are considered as a Fringe Benefit. This publication requires a value to be established for this benefit and the employee will pay taxes on that value.

2.05 OUT OF COUNTY USE:

1. Drivers of government vehicles may drive out of the County boundaries, to adjacent counties, when the department mission requires. This would be in the course of routine requirement of the respective department. ~~The "Out of County Travel Notification" form is not required if traveling to adjacent counties for short periods of time, less than 8 hours.~~
2. ~~Government vehicles planning to go beyond the boundaries of Richmond County are required to provide an approved "Out of County Travel Notification Form" from Risk Management prior to travel.~~ Refer to the Risk Management Vehicle Usage Section of the

Augusta, Georgia Personnel Policy and Procedure Manual for possible applicable requirements for Out of County Use.

2.06 POOL CARS: Fleet Management maintains a limited amount of vehicles for use by employees. Priority of use is for employees going out of town for training events, seminars, workshops and coordination with other agencies. If available, vehicles may be reserved for local travel for job related requirements, for short periods. Reservations can be made by contacting Fleet Management. Employees that take a pool vehicle outside the boundaries of Richmond County are required to have completed the "Out of County Travel Notification" form through Risk Management.

2.07 DECALING OF AUGUSTA, GA VEHICLES: (O.C.G.A. § 36-80-20)

1. Fleet Management follows the Official Code of Georgia Annotated (O.C.G.A. § 36-80-20) Local Government provisions regarding decals or seals required on vehicles owned or leased by Augusta, Georgia.
2. All vehicles, other than public safety vehicles and others exempt by law, will have the asset number affixed to the front and rear of the vehicle.

2.08 VEHICLE COLORING: Augusta, Georgia vehicles will bear the following colors.

1. Augusta, Georgia vehicles including: automobiles, pickup trucks, vans, utility body (service) and dump trucks (cab and hood) will be white in color; construction assets excluded.
2. Fire Department: As prescribed by the Fire Department Chief but will be only a single color.
3. Elected Officials are authorized to dictate the vehicle colors for their agency/department.
4. Vehicles transferred from one agency/department to another, for continued use, will be painted the approved color of the receiving agency prior to putting the vehicle in service at the gaining department.

2.09 TAGS, TITLES, AND REGISTRATION:

1. All assets will display the proper state government tag in the proper manner.
2. Tags will be removed from vehicles only by Risk Management, Shop 1 or Shop 2 personnel and processed/coordinated with Central Services.
3. The Fleet Management Division of the Central Services Department is responsible for acquiring tags, titles and registrations for each vehicle.
4. No tag will be transferred from one vehicle to another, including public safety vehicles.
5. Registration will remain in each vehicle belonging to Augusta, Georgia. If the registration is lost or illegible, a copy can be obtained from the Fleet Management Division of the Central Services Department
6. Lost or stolen tags must be reported to Fleet Management immediately. Fleet Management will apply for a replacement tag.

2.10 MANAGED FUEL PROGRAM: Fuel cards are accountable items and should be periodically checked/inspected by supervisors. Fuel cards are issued, as appropriate, by Fleet Management for all new assets. Fuel dispensed using the fuel card system is the property of Augusta, GA and any use of the fuel card for personal use or gain will be considered as misappropriation and/or theft of property and could lead to disciplinary action or termination.

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1. Any lost card should be immediately reported as missing. Replacement or missing cards may be ordered by Fleet Management.
2. Departments should report any discrepancy or perceived violation of the card.
3. Per Department Director or Assistant Director request, supervisor cards can be issued to Supervisors for fueling small containers (5 or gallons or less) or equipment not assigned a fuel card and for correcting employee or attendant errors at fueling stations.
4. If an employee or supervisor believes an employee PIN may have been compromised they should immediately contact Fleet Management to have a new PIN issued.
5. Departments should review the monthly fuel report and investigate any noted irregularities

SECTION III
ADMINISTRATION

3.01 MAINTENANCE BUDGET: Fleet Management will provide a recommendation for the proposed fleet maintenance budget for all departments, with the exception of Augusta Public Transit, Environmental Services, Fire Department and Augusta Regional Airport. The budget will consider past maintenance history/charges and the total number of assets. The budget is currently broken up into Contract Cost (55.12110) and Non-Contract cost (55.12110).

3.02 ANNUAL FLEET ASSESSMENT:

1. In February of each year, or as directed by the Director of the Central Services Department, Fleet Management will calculate the number of miles or hours of use for the previous year along with lifetime mileage or hours for assets.
    a. In consideration of underutilized assets (5k or less miles for vehicles), departments will need to provide written justification to Fleet Management for retention requests.
    b. In regards to potential replacements (175k or more miles for vehicles, 125k for patrol vehicles), departments will need to provide a written request to Fleet Management for further evaluation utilizing the 'Evaluation Matrix'.
2. The Director of Central Services will coordinate a meeting with each department Director to go over the list of vehicles prior to meeting with the Administrator for final decision.

3.03 REPLACEMENT CRITERIA: Replacement criteria is established utilizing a point system which considers; miles/hours of use, maintenance/repair costs compared to purchase price, reliability and overall condition of the asset. The included 'Evaluation Matrix' is a guide to assist in evaluating and establishing recommendations for vehicles that qualify (could be considered) for replacement.

3.04 NEW VEHICLES:

1. Under normal circumstances, Augusta, GA assets will be replaced on a basis of need or economic reasons. Prior to the annual published budget calendar, Fleet Management will provide a report to Departments of assets that should be reviewed for replacement; replacement consideration will be based on mileage, repair history, use, and overall condition. Vehicles classified as totaled will have priority in the replacement process in the next fiscal year. Once a department has identified vehicles for replacement, the appropriate budget form, along with the supporting documents, must be submitted to Finance with their budget request and a copy forwarded to Fleet Management.

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2. New vehicles will be delivered by the vendor to the appropriate repair shop for distribution to the respective departments. Departments will be notified that the vehicle is ready for issue by the Fleet Manager. Prior to being issued, the following will be completed:
    a. An asset number has been applied
    b. The vehicle is properly stenciled
    c. Special equipment (other than bid specification items) mounted and operational
    d. A vehicle safety inspection is performed
    e. The vehicle has been added to the Fleet List
    f. A vehicle fuel card ordered.
3. The gaining department must turn in the old vehicle before the time of pickup (if the vehicle was purchased as a replacement), unless a turn in has already been made.
4. Any vehicle which is non-operational and non-repairable will be turned in to the appropriate shop for disposal. Vehicles in the above mechanical status will NOT be stored at the respective department pending the arrival of a new/replacement vehicle. A completed Fixed Asset Tracking Form serves as a valid turn in document. The tracking form will be sent to the Fleet Manager for processing.

3.05 ASSET TRANSFERS:

1. Vehicles transferred from one department to another department must have approval from the Administrator. Fleet Management will assist with the necessary administration to submit the request for review by Administration. Any repairs needed to the asset should be done prior to the transfer.
2. Assets that are transferred from one division to another within a department will be reported to Finance and Fleet Management on the "Fixed Asset Transaction Document".
3. Assets cannot be transferred between "funds"; e.g., a vehicle from an enterprise fund to a general fund, unless the asset is purchased by the receiving "fund"/department.
4. Vehicle transfers will be made to replace vehicles NOT add to a department's inventory of vehicles.
5. If approved the Fleet Manager will notify the gaining department and provide copies of the approved request to:
    a. Finance: Attention Fixed Assets
    b. Central Services
    c. General Manager of the Contract Maintenance provider
    d. Department Head of the loosing vehicle
6. The gaining department will be responsible for:
    a. Repainting, if necessary
    b. Maintenance
    c. Re-stenciling
    d. Ensuring the vehicle meets the criteria for department operations as set forth in this policy
    e. Coordination with Central Services for tag transfer
    f. Coordination with Finance for Asset transfer

3.06 DISPOSAL OF ASSETS:

Accountable assets owned by Augusta, Georgia will be disposed of by public auction, unless otherwise directed by the approving authority. The exception is for vehicles involved in vehicle accidents and classified as totaled by Risk Management. In cases of totaled vehicles, every effort

will be made to make use of usable parts before taking the vehicle to a recycling center for scrap metal. Departments turning in vehicles or equipment for auction will be responsible for removing any items or trash. Fleet Management will be responsible for disposing of assets though Public Auction.

1. Vehicles which are excess to the department needs, uneconomically repairable, or damaged beyond repair, will be turned in to the appropriate Shop for auction or salvage sales. Fleet Management will ensure a 'Fixed Asset Transaction Document' is submitted to the Finance Department for every auctioned or salvaged asset.
    a. The Fleet Manager will prepare a list of vehicles by asset number, year, make, model, and vehicle identification number.
    b. The list will be coordinated with those departments, which the vehicles came from to ensure all vehicles are no longer needed.
    c. The list will be sent to the Administrator to declare the vehicles excess/surplus.
2. Confiscated vehicles, awarded by the court to the Sherriff's Office, may be turned over to Augusta, GA for disposal through Fleet Management.
3. Revenue from the sale of Fleet vehicles will be deposited in the appropriate account, as designated by the Finance Department.
    a. Proceeds from the sale of vehicles, originally purchased from enterprise funds will be deposited in enterprise fund accounts.
    b. Proceeds from the sale of vehicles, originally purchased for grant funds will be deposited in grant fund accounts.
    c. Revenue from the sale of confiscated vehicles will be distributed as directed by law.

3.07 VEHICLE and/or EQUIPMENT ABUSE:

Employees driving or using Augusta, Georgia assets are responsible for the overall upkeep of their assets. Failure to perform daily checks, keep their assets clean and serviced, make the vehicle available for servicing, or use their asset for anything other than its intended official use constitutes asset abuse (beyond normal wear and tear). Employees are subject to having their privileges revoked for Augusta, Georgia assets. If damage is associated with the misuse of assets, a damage assessment may be directed by the Safety Review Committee.

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APPENDIX I
REPLACEMENT EVALUATION MATRIX

Factor	Point Descriptions
Miles/Hours **Vehicles** **Equipment**	One point for each: 10,000 miles driven 1,000 hours (large) or 500 hours (small) of use
Type of Service	1 Point - Administrative or Passenger Transport 3 Points - Public Service Work 5 Points - Severe Duty Service
M&R Costs	Points based on total life M&R costs (excluding accident damage repair) compared to assets original purchase price. 1 Point - Less than 23% of Purchase Price 2 Points - Between 24-48% of Purchase Price 3 Points - Between 49-73% of Purchase Price 4 Points - Between 74-99% of Purchase Price 5 Points - Equal to or greater than purchase price
Reliability	Points based on the frequency that an asset is in the shop for repair over a year, if the repair is not considered preventative maintenance, a 'quick fix' or 'return' service. 1 Point - Average of once a quarter 3 Points - Average of once a month 5 Points - Average of two times a month
Condition	Points based on overall body and interior condition, accident history, anticipated repairs, etc. Scale of 1 (Excellent) through 5 (Poor).
Ranges	
<18	Excellent
18-22	Good
23-27	Qualifies for Replacement
28>	Needs Immediate Consideration

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APPENDIX II
REPLACEMENT EVALUATION FORM

Asset Information	
Department Name: _____	Date: _____
Org Key: _____	
Vehicle Description: _____	Asset Number: _____
Assigned Use:	
Signature of Director/Elected Official: _____	
Purchase Date: _____	
Purchase Price: _____	
Current Mileage: _____	

Replacement Criteria Scoring		
	Score	**Details**
Miles/Hours		
Type of Service		
M&R Cost		
Reliability		
Condition		
Total Score		

Fleet Manager Recommendation:
Planned Replacement Year: _____
Funding Source: _____

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Fleet Manager Approval: _____

Central Services Director Approval: _____

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