Mayor Tracey Furman

Council Member Darin Bartram
Council Member Nate Engle

Council Member Conor Crimmins
Council Member Ann Lichter

Released: July 7, 2023

Monday, July 10, 2023
Organizational Meeting, 5:00 pm

To be held in person at the Kensington Town Hall

CALL TO ORDER

THE MAYOR AND TOWN COUNCIL

1. Mayor Pro Tempore: Motion to name a Mayor Pro Tem from the Town Council.
2. Designate Council Committee assignments for Fiscal Year 2023-2024:
    - **Auditing Committee:** Chair and Co-Chair
    - **Board of Supervisors of Elections:** Council Liaison
    - **Ethics Commission:** Council Liaison
    - **Greenscape Committee:** Chair and Co-Chair
    - **Development Review Board:** Chair and Co-Chair
    - **Mobility and Traffic Committee:** Chair and Co-Chair
    - **Pedestrian and Bicycling Access & Safety Working Group:** Chair
    - **Sustainable Kensington:** Chair and Co-Chair
    - **Business Community Liaison:** Council Liaison
    - **Montgomery County Public Schools Liaison:** Council Liaison
3. Discuss Moving Town Council meetings from the second Monday of each month to the second or third Wednesday of each month.
4. Discuss Council priorities for Fiscal Year 2023-2024.

Monday, July 10, 2023
Town Council Meeting, 7:00 pm

The Town Council Meeting will be held in person at the Kensington Town Hall and through the Zoom Video Conferencing application.

The Council Meeting will begin at 7:00 pm. For those wishing to access the meeting through Zoom, please use the following Zoom Video Conferencing link:

https://us02web.zoom.us/j/88621557429?pwd=dFg3Ymc1TXhIb2tYanNJeHg4YU1LZz09

Town of Kensington 3710 Mitchell Street Kensington, MD 20895
Phone 301.949.2424 Fax 301.949.4925
www.tok.md.gov

Meeting ID: 886 2155 7429
Password: 659304

Or you may join the meeting by calling: +1 301 715 8592 US (Washington D.C) and entering the Meeting ID and Password above.

CALL TO ORDER

PLEDGE OF ALLEGIANCE

MOMENT OF SILENCE

APPROVAL OF MINUTES

Town Council Meeting Minutes of June 12, 2023

THE MAYOR AND TOWN COUNCIL

1. **Auditing Committee:**
   - **a.** Acknowledge the appointments of Jeff Capron, Leslie Olson, and Kerry Thompson to the Auditing Committee for a one-year term.
2. **Council Committee Assignments for Fiscal Year 2023-2024:**
   - **a.** Announce the Town Council's Committee Assignments.
3. **Sustainable Kensington:**
   - **a.** Update on Sustainable Kensington's Application for Bronze Certification with Sustainable Maryland.

THE TOWN MANAGER AND STAFF

1. **Oberon Street Sidewalk Project:**
   - a. The proposed Oberon Street sidewalk project will be tabled until spring 2024 to allow additional review of the project and community input.
2. **Plyers Mill Road and St. Paul Street Intersection Improvement Project**
   - a. Update on the traffic calming and pedestrian safety improvements for the intersection of Plyers Mill Road and St. Paul Street.
3. **Town Hall Energy Audit:**
   - a. Update on the Town Hall's Energy Audit.
4. **Town Drill Hall HVAC System:**
   - a. Discuss options on replacing the HVAC system within the Drill Hall.

ORDINANCES, RESOLUTIONS, AND REGULATIONS

(Ordinances, resolutions, and regulations to be introduced or adopted following appropriate procedures required by the Town Code; or resolutions that may require discussion by the Mayor and Council prior to approval)

1. **Resolution No. R-13-2023** – A Resolution of the Mayor and Town Council of Kensington Approving a Sign Variance to allow a Limited Duration Sign at 10800 Connecticut Avenue to be placed for an Additional 90 Days.

PUBLIC APPEARANCES

(The public is invited to speak on any subject that is not a topic on tonight's agenda)

ADJOURNMENT

(The Mayor and Council may move to close the meeting and may move to reopen the meeting)

THE NEXT SCHEDULED MEETING(S) OF THE MAYOR AND TOWN COUNCIL WILL BE HELD:

The Monday, August 14, 2023, 7:00 pm, Council Meeting will be held entirely on Zoom.

Resolution No. R-13-2023
Adopted:

A Resolution of the Mayor and Town Council of Kensington Approving a Sign Variance to allow a Limited Duration Sign at 10800 Connecticut Avenue to be placed for an Additional 90 Days.

WHEREAS, the Town received a permit application for the placement of a Limited Duration Sign by Amy Hamilton, ("the Applicant"), for certain real property at 10800 Connecticut Avenue, which was approved February 3, 2023; and

WHEREAS, in accordance with Section 6-104 (f), "Limited Duration Signs", of the Town Code, a Limited Duration Sign larger than ten (10) square feet may not be posted for more than sixty (60) days in a Calendar year; and

WHEREAS, the Applicant has requested a Variance to extend the placement of the Limited Duration Sign an additional ninety (90) days in accordance with Section 6-104 (l), "Variance Procedure", of the Town Code; and

WHEREAS, the Town Council may grant a petition for a Sign Variance after a Hearing when the Council finds the following:

(1) strict application of the Town regulations would result in peculiar and unusual practical difficulties to, or exceptional or undue hardship upon, the owner of the property or owner of such sign;
(2) the variance is the minimum reasonably necessary to overcome any exceptional conditions; and
(3) the variance can be granted without substantial impairment of the intent, purpose, and integrity of this Article. A variance decision must be based on consideration of:

    a. (a) one or more of the following elements: size, shape, color, design elements, location or cost of the sign;
    b. (b) the compatibility of the proposed sign with the surrounding property, the proximity of other signs, and the characteristics of the area;
    c. (c) confirmation that the property and all other signs on the property are in conformance with the Article.
    d. (d) recommendation of the HPC if located in the Historic District and if requested by the Council or offered by the HPC.

WHEREAS, the Mayor and Council conducted a Public Hearing on the Sign Variance request at the June 12, 2023, Council meeting, after due notice to the public and to the adjacent neighbors. The Council closed the record following the Public Hearing.

NOW, THEREFORE, BE IT RESOLVED that the Council of the Town of Kensington, based on the testimony presented at the Public Hearing on June 12, 2023, and the evidence submitted, adopts the following findings of fact and conclusions of law:

Findings of Fact:

(1) 10800 Connecticut Avenue, LLC, represented by Amy Hamilton ("the Applicant") is the owner of 10800 Connecticut Avenue in Kensington, Maryland.
(2) The applicant filed and was permitted a Limited Duration Sign to be placed beginning February 3, 2023.
(3) The applicant has requested an extension to the placement for an additional ninety (90) days due to both current economic challenges in selling commercial real estate and the uncertainty of the property's future with regards to acquisition by Montgomery County for the proposed Summit Avenue Extended project.

Conclusions of Law:

(1) The strict application of the Town regulations would result in peculiar and unusual practical difficulties considering the uncertainty of the property and the failure of Montgomery County to adequately and clearly state their intent for the property located at 10800 Connecticut Avenue within the proposed Summit Avenue Extended project.
(2) The requested Sign Variance to extend the placement of the Limited Duration Sign an additional ninety (90) days will allow the Town staff to clarify the storm water management responsibilities of 10800 Connecticut Avenue within the proposed Summit Avenue Extended project.
(3) The Sign Variance can be granted without substantial impairment of the intent, purpose, and integrity of this Article.

BE IT FURTHER RESOLVED that the Sign Variance request to extend the placement of the Limited Duration Sign an additional ninety (90) days on the property located at 10800 Connecticut Avenue be and it is hereby granted.

ADOPTED by the Town Council of Kensington, Maryland at the regular public meeting assembled on the 10th day of July, 2023.

EFFECTIVE the 10th day of July, 2023.

ATTEST: **TOWN OF KENSINGTON, MARYLAND**

By: _____ _____
Susan C. Engels, Clerk – Treasurer Tracey C. Furman, Mayor

9505 Berger RD.
Columbia, MD 21046
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Energy Audit

ASHRAE Level 1

Project:

Town of Kensington, Town Hall

Prepared by:

Spectrum Energy, LLC
9505 Berger Road
Columbia, MD 21046

Submitted for:
Kensington Town Hall

Project Location:
3710 Mitchell Street, Kensington, MD 20895

Engineer:
Tom Polansky

6/21/2023

Project Number: 23-269-001

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EXECUTIVE SUMMARY **3**
BUILDING DESCRIPTION **4**
Overview 4
Purpose **6**
UTILITIES **7**
Electricity 7
Fossil Fuels 8
ElecTrification **9**
Observations **10**
Lighting 10
Auditorium/Drill Hall HVAC 12
Office HVAC 17
Drill Hall Insulation 17
Windows 18
Drill Hall Air Destratification 19
Domestic Hot Water Heater 20
Air Barrier 21
No/Low Cost ECMs 22
OPERATIONS AND MAINTENANCE **23**
CONCLUSION **24**
APPENDICES **25**

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EXECUTIVE SUMMARY

Spectrum Energy has completed a Level 1 energy audit at the Town of Kensington, Town Hall with an energy site walk at 3710 Mitchell Street, Kensington, MD 20895. The purpose of the site walk is to identify energy conservation measures (ECM's) and provide key financial metrics for each identified ECM. An interview and discussions with the owner and operations staff provided details of building conditions.

Spectrum Energy has the following recommendations to conserve energy and move Kensington Town Hall forwards to electrification of the complex. Electrification refers to the process of replacing technologies that use fossil fuels (coal, oil, and natural gas) with technologies that use electricity as a source of energy.

LED Lighting

- Some lighting has been changed from incandescent, compact fluorescent light (CFL), and tubular fluorescent lights to light emitting diode (LED) fixtures and bulbs.
- Replace existing incandescent, compact fluorescent light (CFL), and tubular fluorescent lights to LED fixtures or bulbs
- Replace theatrical lighting to LED

Drill Hall HVAC

- Demolish and remove two 25-ton split system air conditioners with a SEER of 13 and 80% efficient natural gas (NG) furnace, both end of lifespan
- Install new Variable Refrigerant Flow (VRF) units in Drill Hall
- Install a new Dedicated Outside Air System (DOAS) to condition the minimum outside air (OA) needed.
- Install new enVerid air scrubbing systems to reduce the capacity needed during moderate to full occupancy.

Office HVAC

- Demolish and remove existing 7.5-ton rooftop unit (RTU) air conditioner with NG furnace.
- Replace with a new high efficiency 7.5 ton RTU heat pump

Drill Hall Insulation

- Add removeable insulation to the underside of the wood ceiling.

Old and Antiquated Windows

- Demolish and remove the old single pane windows with metal uninsulated frames.
- Replace existing windows with double pane glass and frames with thermal breaks.

Drill Hall Destratification

- Add "air pear" destratification fans to reduce winter heating loads.

Heat Pump Hot Water Heater

- Replace existing natural gas hot water heater with a heat pump hot water heater.

Caulk and Perform Air Barrier Sealing

- Caulk and seal cracks, crevices, and air gaps throughout the facility

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ECM Summary Table

Count	ECM Description	Electric savings (kwh)	Natural Gas Savings (Therms)	Estimated Electric Cost Savings	Electrification Cost Add	Estimated Natural Gas Savings	Estimated Total Cost Savings	Estimated Price	Estimated Payback Duration (Years)
1	LED Lighting	16,200	0	$1,620	$0	$0	$1,620	$65,000	40.1
2	Drill Hall HVAC	5,000	1,600	$500	$1,408	$1,280	$3,188	$500,000	156.8
3	Office HVAC	2,000	700	$200	$616	$560	$1,376	$200,000	145.3
4	Drill Hall Ceiling Insulation	4,000	1,400	$400	$1,232	$1,120	$2,752	$50,000	18.2
5	Replace Windows	2,000	600	$200	$528	$480	$1,208	$254,000	210.3
6	Drill Hall Air Destratification	1,800	900	$180	$792	$720	$1,692	$50,000	29.6
7	Heat Pump Hot Water Heater	(7,000)	600	($700)	$528	$480	$308	$20,000	64.9
8	Caulk and Air Barrier Sealing	1,200	200	$120	$176	$160	$456	$24,000	52.6
	Total	**25,200**	**6,000**	**$2,520**	**$5,280**	**$4,800**	**$12,600.0**	**$1,163,000**	

BUILDING DESCRIPTION

OVERVIEW

General Building

The Town of Kensington, Town Hall Kensington's Town Hall was originally constructed in 1927 as an Armory for the Cannon Company of the Maryland National Guard's 115th Infantry. At one point, it used to house the town fire department.

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Today, the building operates as the Town Hall for the Town of Kensington and includes space for Montgomery Municipal Cable Television. The entire building is approximately 20,000 ft². The front office area of the town hall has three floors and a drill hall with a stage and a ground floor in the rear of the building. The building includes many spaces available for public use as follows:

Ground Floor:

- 1st Floor Conference Room
- Montgomery Municipal Cable Television (MMC-TV)
- Kensington Historical Society
- 1st Floor Classroom
- Kitchenette
- Council Meeting Room
- Restrooms

2nd Floor:

- Map Room
- Drill Hall, approximately 7,250 ft² including the stage
- Restrooms

3rd Floor:

- Town Offices

Hours of Operation:

- 8:00 a.m. – 4:00 p.m., Monday – Friday

The building is of brick construction, with old single pane windows and metal frames with no thermal breaks The roof is made of white rubber roof with minimal insulation. We observed a lot of gaps, cracks, and crevices so the building is not very air-tight.

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PURPOSE

- **Conduct an On-Site Inspection.** Assess systems and their operating conditions in order to compare them to best practices.
- **Utility Bill Analysis:** Compile at least one year of usage, demand, and rate schedules for electricity, heating fuel, and water/ sewer accounts. Conduct an analysis on the usage and rates (done on monthly basis). Include the rate tariffs.
- Characterize building usage and occupancy profiles, facility size, construction features, including an assessment of the building envelope (windows, doors, insulation, etc.), and equipment description and operations.
- **Equipment detail: Assess Building Systems (Electrical and Mechanical) and their Operational Characteristics.** Identify, locate, and analyze building systems. Provide a detailed inventory of equipment, which contains pertinent information for all energy consuming equipment including an estimate of equipment efficiency and remaining useful life. For example, for lighting, for each area of each building, provide existing fixture type, existing lamp type, existing lamp count and existing ballast type, current watts per fixture and current energy cost per room/building. Similar detail should be provided for other equipment.
- **Energy Conservation Measures.** Provide a narrative summary for each energy conservation measure recommended. For example, for lighting recommendations, for each area of each building, provide proposed fixture type, proposed lamp type, proposed lamp count, proposed ballast type, total watts per proposed fixture, projected energy savings per room, projected energy cost savings per room and before and after lighting levels. Similar details should be provided for other measures. Clearly document the key assumptions made in analyzing each measure and describe the method of analysis.
- Provide electrification option analysis.
- Provide the following for each recommended energy conservation measure:
    - Description of energy conservation measure
    - Estimated installation cost and source of cost estimate.
    - Estimated energy savings (kW, kWh, therms, etc.)
    - Estimated annual energy cost savings (including any assumptions regarding future energy costs, life of measure, etc.)
    - Estimate of any rebates/financial incentives available
    - Estimated annual operating cost savings.
    - Estimated lifetime energy cost savings.
    - Simple payback
    - Estimated return on investment.
    - Options for funding the installation of recommended measures.
    - Conduct client meeting to review details for energy audit report
    - Provide a description of and documentation for methods and tools used to perform energy use and energy savings estimates. Clearly identify all assumptions and estimates used in the analysis
    - Identification of available grants and incentives and sources of funding

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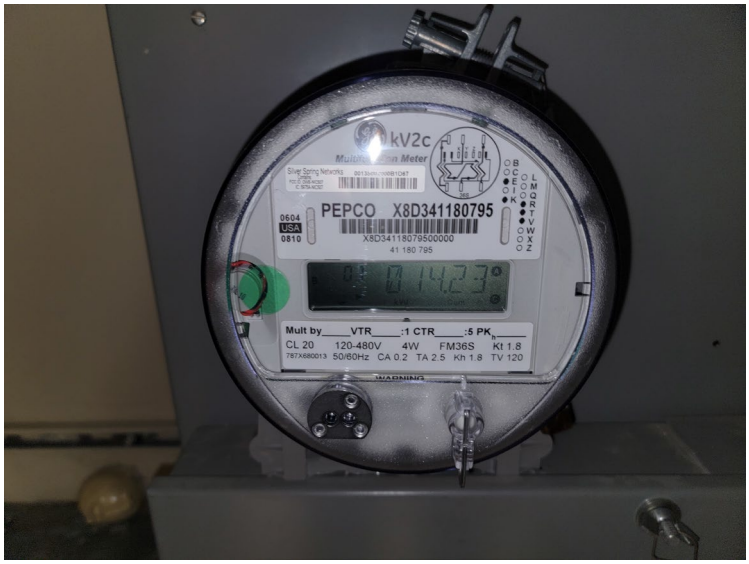
UTILITIES

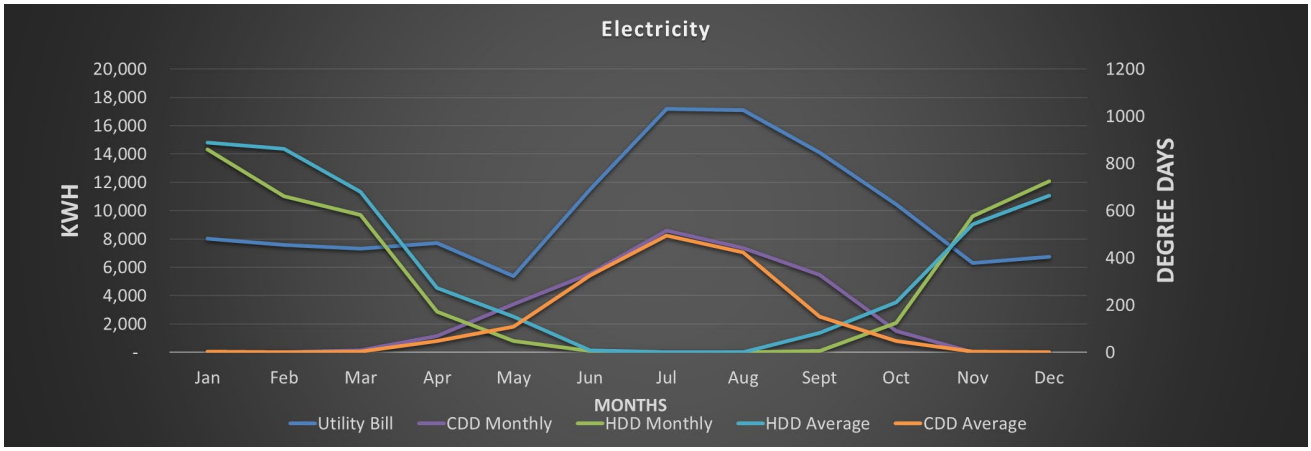
Utility analysis is one of the primary steps in the energy audit process as it can provide insight into current facility operation, energy end uses, performance and anomalies, as well assisting to quantify energy savings relative to current usage patterns.

ELECTRICITY

The building has a single electric meter:



Electricity is supplied and distributed by Pepco. Spectrum Energy received electrical bills for 2019, 2020, 2021, 2022, and part of 2023. The graph below shows the annual electricity usage for the calendar year 2019.



The graph shows the most electricity usage is in the summer months for cooling with the most usage in July and August. The base load is approximately 6,500 kWh per month or 78,000 kWh per year. While this does not include cooling, it does include ventilation as well as lighting, appliances, office equipment/plug loads, etc.

The following table shows the electricity usage for the past four years which has averaged 104,819 kWh:

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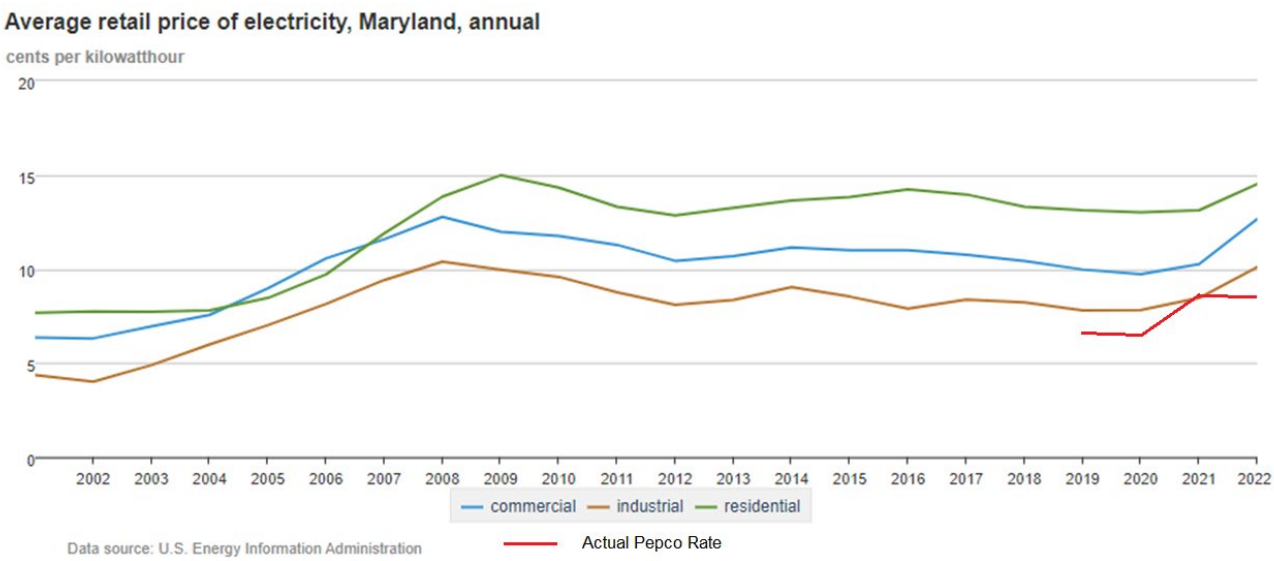
Year	Electricity Usage (kWh)	Electricity Cost ($)	Electricity Rate ($/kWh)
2019	119,446	$7,972.67	$0.0677
2020	91,357	$6,240.15	$0.0647
2021	100,463	$8,527.87	$0.0835
2022	108,008	$8,446.55	$0.0805

The electricity rate the Town of Kensington appears to be lower than typical. Even though the building would be classified as commercial with a designated rate of Non-Residential-MGT-LV 11B, it has an electric rate less than the Maryland industrial r, see graph below:



FOSSIL FUELS

The building has a single natural gas meter:

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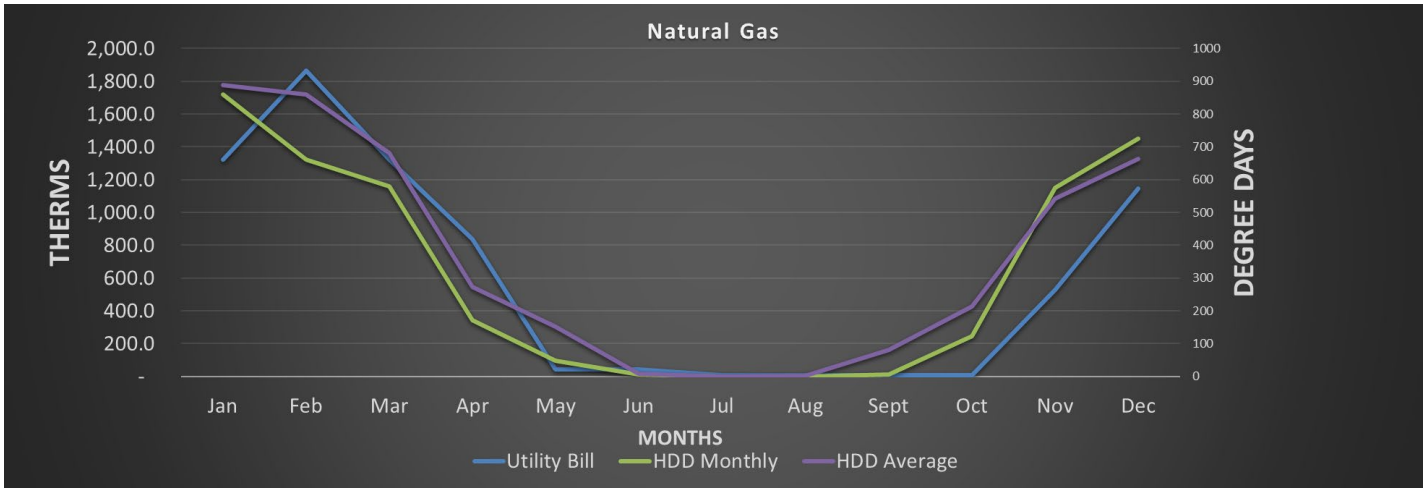
The following graph shows the energy usage in 2019, which is typical for the more recent years. It shows that almost all the natural gas usage is for winter heating:



The building used an average of 5,973 Therms of natural gas with an

Year	Natural Gas Usage (Therms)	Natural Gas Cost ($)	Natural Gas Rate ($/Therm)
2019	7,148	$3,763.34	$0.5265
2020	3,514	$2,465.95	$0.7019
2021	6,393	$4,023.28	$0.6294
2022	5,973	$4,035.08	$0.6756

ELECTRIFICATION

Currently, the building uses approximately 108,000 kWh of electricity and 6,000 Therms of natural gas. Taking the equivalent amount of heat in natural gas and converting it to electricity, where the heat would be provided by heat pumps with a coefficient of performance (COP) of 3, results in additional electricity usage of approximately 52,700 kWh per year. If we just changed over the building to using all electricity with no energy efficiency improvements, the building would consume approximately 160,000 kWh per year. Since electricity costs more per energy unit than natural gas, the total annual utility cost, excluding water and sewer, will increase approximately $1,000 per year from approximately $15,0000 per year to $16,000 per year with an approximate cost of $0.10 per kWh for electricity and $0.80 per Therm of natural gas.

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OBSERVATIONS

LIGHTING

We estimate approximately half of the old incandescent, CFL, and tubular fluorescent lighting in the building has been replaced with energy efficient LED light fixtures and bulbs. The following is a list of lights we recommend replacing:

Existing Fixture	Quantity	Watts	LED watts	Savings watt	kW Convert	Weekly Hours	Annual Hours	kWh saved
Layin 2x4 T8 4 tube	13	50	20	30	0.052	20	1040	405.60
Layin 2x2 T8 2 Bix	53	30	20	10	0.04	20	1040	551.20
Linear Wrap 4ft 3 tube	1	30	20	10	0.034	20	1040	10.40
Linear Wrap 4ft 2 tube	50	36	24	12	0.012	20	1040	624.00
Linear Strip 4ft 1 tube	4	18	10	8	0.008	20	1040	33.28
Recessed 4" with bulb	14	18	9	9	0.009	15	780	98.28
Recessed 6" with bulb	2	18	9	9	0.009	20	1040	18.72
2 Sided Exit sign	3	25	5	20	0.04	168	8736	524.16
Surface Ceiling Mount	5	30	20	10	0.01	24	1248	62.40
High Bay	18	125	75	50	0.175	24	1248	1,123.20
3-bulb Flood	10	54	20	34	0.034	30	1560	530.40
A19	11	10	5	5	0.005	20	1040	57.20
A 21	5	20	15	5	0.005	20	1040	26.00
WallPack - 150w	5	100	75	25	0.025	30	1560	195.00
Door Security Light	1	90	18	72	0.072	30	1560	112.32
Flood Light 150w+	4	75	50	25	0.025	30	1560	156.00
Dual Head Spotlight	40	750	200	550	0.55	10	520	11,440.00
							Total Saved	**15,968.16**

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T8/T12 Fluorescent Retrofits

Until the 1980s, much of the installed base used T8 and T12 lamps with magnetic ballasts. However, this older technology has been displaced by Light Emitting Diode (LED) technology. Lamp and ballast manufacturers continue to improve LED light output, efficacy, operating life, and color quality. Similarly, luminaire manufacturers have made significant advances in efficiency and optical control of LED fixtures.

Existing Condition:
At the time of the audit several common areas of the building, mostly mechanical spaces, were illuminated by T8/T12 lighting.

Recommendation:
Spectrum recommends replacing T8/T12 fixtures with LED fixtures.

Basis for Savings:
T8 and T12 lighting is out of date and inefficient compared to LED lighting technology.

Stage Lighting

To look at updating the stage lighting to LED will require a special audit from a stage lighting specialist. If the stage lighting has a lot of usage hours, we would recommend exploring this.

Compact Fluorescent Retrofits

Screw-in compact fluorescent lamps (CFL) were designed to replace existing incandescent lamps. More recently LEDs have become the standard replacement for incandescent and CFLs. Replacing CFLs can provide significant energy savings as, for example, a 13-watt CFL can be replaced with a 6-watt LED, providing a 54% reduction in energy consumption along with an increased expected useful life.

Existing Condition:
At the time of the audit, several common areas of the building and several tenant apartments were illuminated by compact fluorescent lighting.

Recommendation:
Spectrum recommends replacing compact fluorescent light bulbs with LED light bulbs.

Basis for Savings:
Compact fluorescent lighting is out of date and inefficient compared to LED lighting. An LED bulb will last for ~25,000 hours compared to CFL's at ~8,000 hours., or a 3-to-1 purchase ratio. Technology has advanced to the point where there are LED replacement solutions for both screw-in bulbs and plug-in bulbs. The EmPower Maryland program provides instant, in-store savings when purchasing ENERGY STAR LEDs as well as light fixtures. Buying lighting in Maryland automatically becomes cheaper than in other states. Participating retailers can be found using this URL:

https://homeenergysavings.pepco.com/md/residential/lighting-program/store-locator

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AUDITORIUM/DRILL HALL HVAC






Existing

Heating and Cooling

The auditorium / drill hall is cooled with two Carrier split system air conditioning systems with a cooling capacity of 25 tons each. The air handing unit is in the upper corners on either side of the stage. In line with the air handling units are Reznor natural gas furnaces with an efficiency of 80%. Each has a heating capacity of 400,000 BTU/hr. Both the air conditioning and heating systems are at or beyond their useful lifespan. The current air conditioning equipment has an energy efficiency ratio (EER) of approximately 10 and a seasonal energy efficiency ratio (SEER) of approximately 13 which are not very energy efficient.

The two heating and cooling systems are controlled by two thermostats located near the return air intake. The thermostats are not programmable. We understand from the interview that in the summer, they are turned off or set at a return air temperature of approximately 75°F during periods when the building is unoccupied and then set to between 68°F and 72°F during rehearsals, performances, or other events. In the winter, they are set at 65°F when unoccupied and set to between 68°F and 72°F during rehearsals, performances, or other events.

The systems have what appears to be a face and bypass damper system where when the return air damper closes the outside air damper opens. It does not appear that they are currently operational.

We understand that the air conditioners and heaters are beyond their useful lifespan and need replacement.

Air Distribution

The air is circulated in the auditorium with two large round supply air ducts with supply air grills that direct the air down and towards the middle of the room. The return air grills are in the two upper corners on either side of the stage approximately 14 feet above the floor. When the temperature is satisfied, the supply air blower disengages. We measured the airflow rate for each of the two systems and they were approximately 10,000 CFM each which corresponds with 25 tons of cooling.

In the winter, warm air will migrate to the ceiling causing air stratification.

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Roof and Insulation

The roof is a white rubber roof over wood that appears to be just a few years old. The underside of the roof looks like it has no insulation.

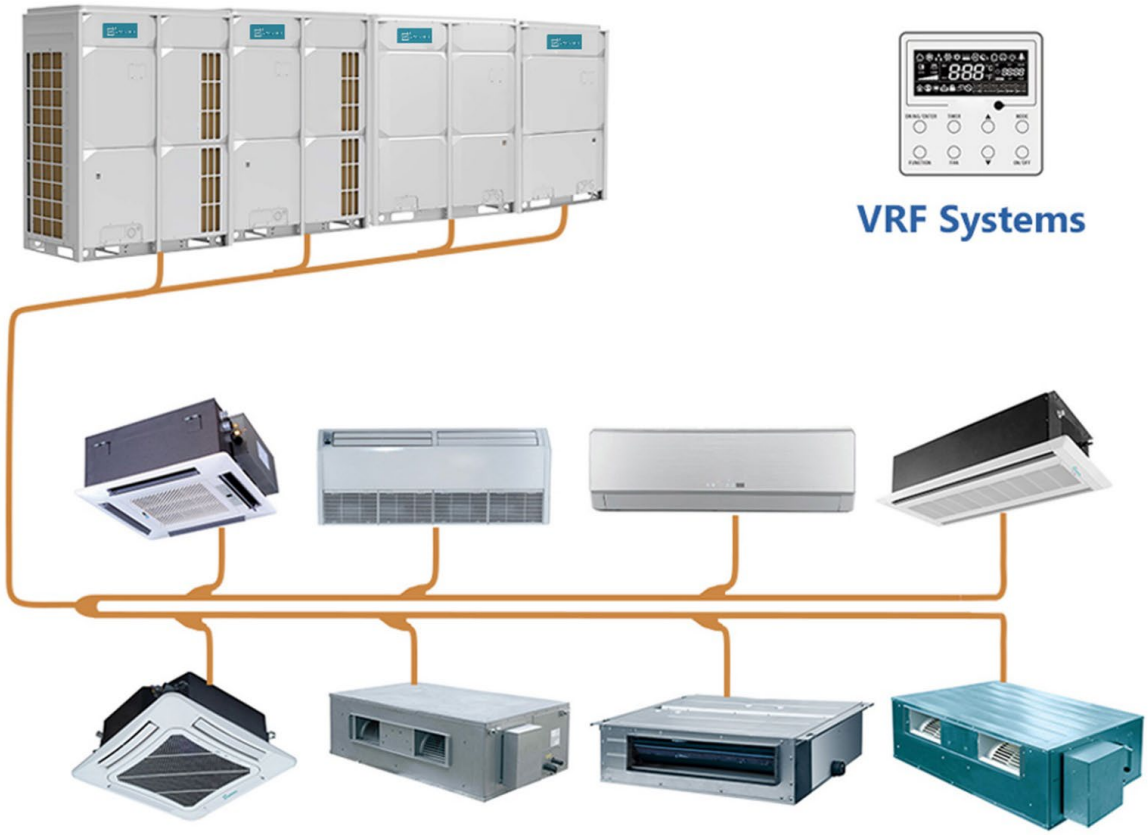
Energy Conservation Measures

Feasibility Study

We are recommending some of the newest technologies available. Therefore, we suggest implementing a feasibility study which is in the Appendix.

Variable Refrigerant Flow (VRF)

We propose to replace the current HVAC system with a system that uses variable refrigerant flow (VRF)/variable refrigerant volume (VRV). VRF/VRV systems have an integrated energy efficiency ratio of more than 20.



VRF systems have the following benefits over other HVAC systems:

- Highly Energy Efficient
- Precise Temperature Control
- Simultaneous Heating and Cooling
- Zoned Comfort
- Flexible & Modular Designs
- Increased Reliability
- Reduced Sound

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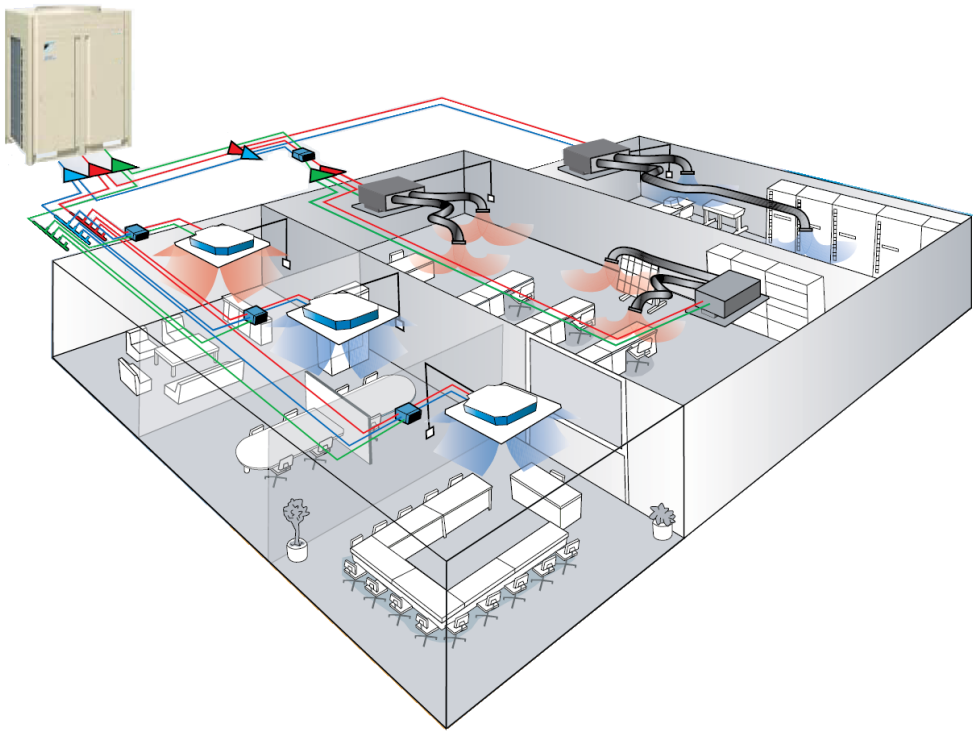
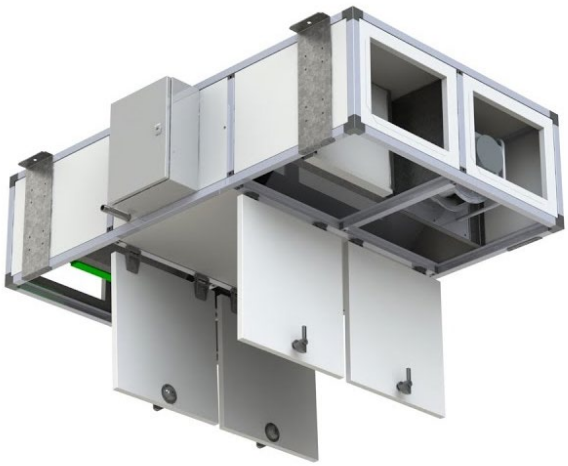
- Lower Cost of Ownership
- Sophisticated, yet Easy to Use Controls



Dedicated Outside Air System (DOAS)

We proposed to have a single DOAS to condition the appropriate amount of outside air needed to maintain healthy indoor air conditions for the occupants. The DOAS will condition either all or a minimum amount of outside air. If an air scrubbing technology called enVerid, described below, is incorporated, the size of the DOAS can be reduced to save more energy.



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Air Scrubbing

enVerid. Air scrubbing equipment, partially replaces outdated, inefficient and costly ventilation methods with a practical, proven, and energy-saving approach. Instead of bringing in large amounts of outside air which essentially dilute the impurities in the air, the enVerid units scrub the air and remove harmful toxins.

enVerid modules clean the air in buildings so that indoor air can be safely recirculated. This allows outside air requirements to be reduced by up to 85% using ASHRAE's Indoor Air Quality Procedure (IAQP). The reduction of required outside air decreases project first costs by allowing for HVAC system downsizing.

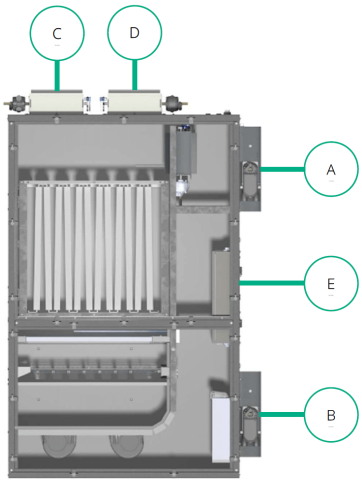

Figure 1.3: Internal view of HLR 200M Module.

Component Legend		
Tag	Component Name	Component Information
A	Return Air Inlet (Adsorption Mode)[1]	10" (25.4 cm) x 14" (35.6 cm)
B	Indoor Air Inlet (Regeneration Mode)[1]	10" (25.4 cm) x 14" (35.6 cm)
C	Clean Air Outlet[1]	10" (25.4 cm) x 14" (35.6 cm)
D	Exhaust Outlet[1]	10" (25.4 cm) x 14" (35.6 cm)
E	Control Cabinet[2] – Power Connection Point	208V/60Hz, 277V/60Hz, 220-240V/50Hz

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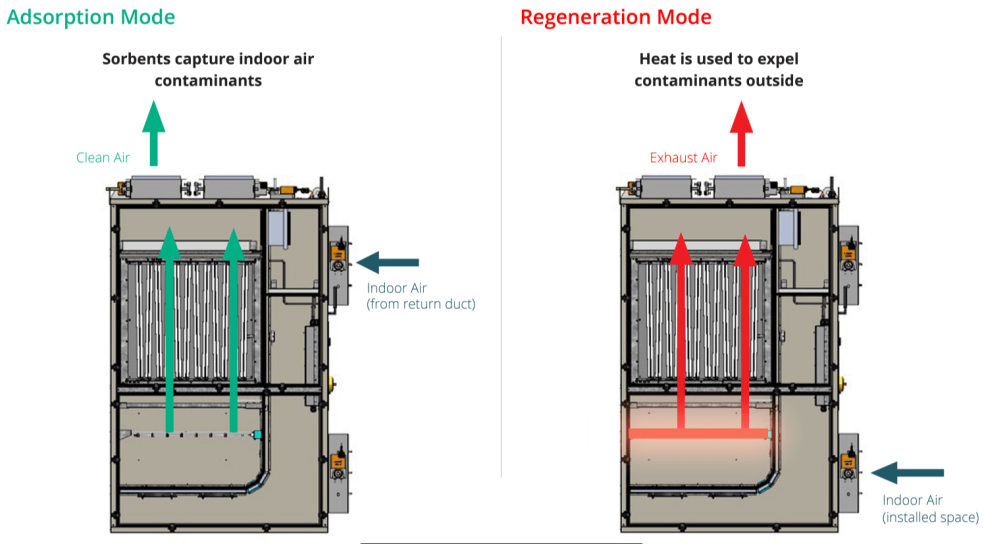
Using traditional HVAC systems, all the air in a building is replaced with air drawn in from outside every one to two hours. This is necessary to remove indoor gas contaminants like carbon dioxide, formaldehyde, and volatile organic compounds (VOCs). However, it takes a lot of energy to heat or cool the air brought in from outside to a comfortable indoor temperature. This is why 44% of all energy consumption in commercial buildings comes from HVAC systems. HLR technology reduces the heating and cooling load of outside air, making it an energy efficient addition to HVAC systems.



enVerid's molecular air cleaning system is the first and only technology that can safely and effectively remove all known molecular contaminants from indoor air. Removing these hard-to-capture contaminants decreases the required volume of outside air ventilation and provides more control over air quality. HLR modules are ASHRAE and IMC compliant and meet LEED and other green building standards.

By reducing the required outside airflow into the building, enVerid technology provides these benefits:

- Immediate payback. Lower cooling and heating loads mean smaller, less expensive HVAC systems.
- Annual 20-30% energy savings and reduced HVAC maintenance.
- 24/7 air quality monitoring, differentiating the building and ensuring employees or students perform at their best.
- Green building certification – typically 10-12 LEED points for HLR technology.

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OFFICE HVAC



Existing

The current rooftop unit (RTU) has a seasonal energy efficiency rating of approximately 13.

Energy Conservation Measure

New RTU heat pumps have SEER or IEER of approximately 20 so we recommend replacing the RTU with a heat pump to reduce energy consumption and promote electrification.

DRILL HALL INSULATION

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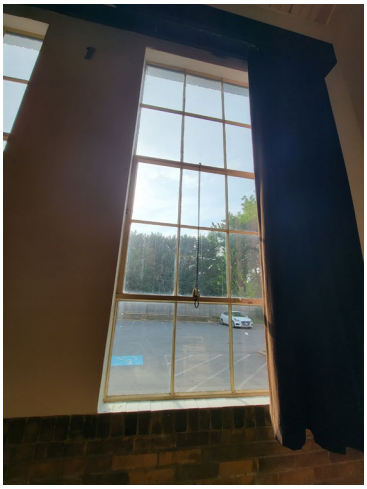
Existing

We believe the amount of insulation on top of the wooden roof is minimal at best. To determine the total extent of insulation, we recommend a core sample be taken. We are proceeding with our observation of minimal insulation.

Energy Conservation Measure

Since the facility is a historic building, we recommend putting insulation on the underside of the wooden ceiling such that it would be removeable using a track system or something similar. If the insulation is foam, covered with fabric, it might provide enough sound absorption where the vertical panels can be removed.

WINDOWS


Existing

We observed that the windows are single panes with metal frames which so their insulation properties are minimal. Typically, we only recommend replacing windows only when they are single pane with no thermal break which is this case.

Energy Conservation Measure

We propose to have the windows replaced with historically correct windows. Please refer to the appendix.

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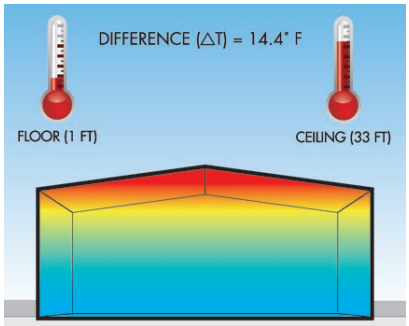
DRILL HALL AIR DESTRATIFICATION

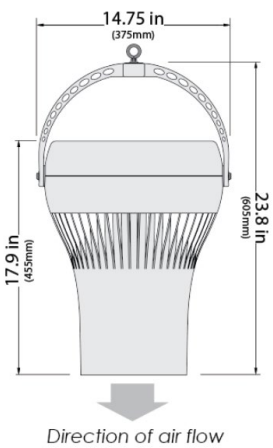
Existing

A large room with high ceilings, like the drill hall, is typically referred to as a "high bay." Ventilation for high bays is typically different from rooms with lower ceilings because the height causes vertical temperature differentials. If the HVAC system was off and the air was stagnant in the room, it would naturally have a temperature gradient from the floor to the ceiling of approximately 0.4°F to 1.0°F per foot due to air buoyancy. Hot air essentially rises because it is less dense than cool air, like with a hot air balloon. If it is 70°F near the floor, it will likely be between 84°F and 106°F at the ceiling.

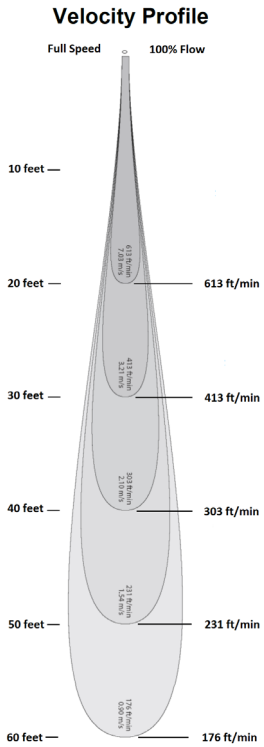


Energy Conservation Measure

We propose to potentially de-stratify the air in the drill hall. We propose to have special fans called "Air Pears" installed. They have this Air Pear nick name because they tend to look like an upside-down pear. They are designed specifically for high bay applications where large ceiling fans are not the preferred.



Airius Air Pear Fans



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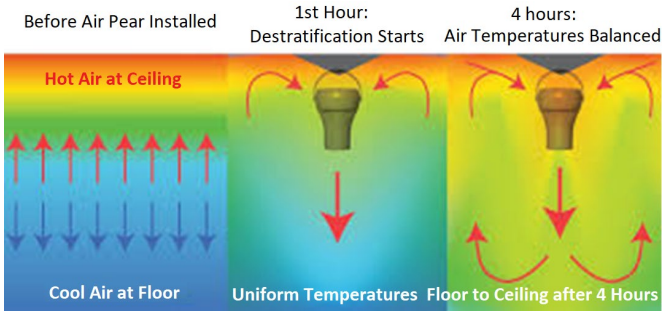
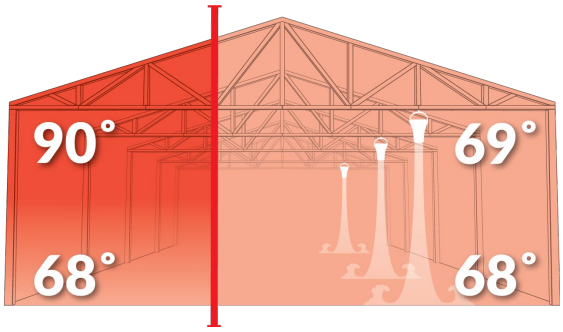
The Air Pear fans have an electronically commutative motor which is one of the most efficient motors available. If used correctly, the Air Pear fans will save energy and keep the occupants more comfortable, primarily in the winter.





DOMESTIC HOT WATER HEATER

Existing

Spectrum Energy observed that the Town of Kensington, Town Hall has a natural gas hot water heater. The domestic hot water heater was installed in 2019 and has an expected serviceable life of 8 to 12 years.

Energy Conservation Measure

As the hot water heater has another 5 to 9 years of life left, Spectrum Energy recommend exploring an electric hot water heat pump heater when the heater needs to be replaced in several years. Since the hot water is only used for hand washing and kitchenette functions, the amount of natural gas used annually is quite low. We recommend setting the temperature of the hot water to 120°

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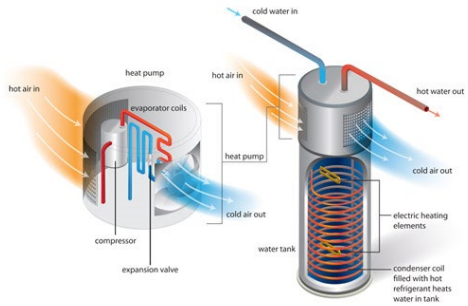

AIR BARRIER

Existing

We observed that the building has a lot of cracks, crevices, and air gaps in the exterior of the building. This is obviously due to the building's age since it was built in 1927.

Energy Conservation Measure

We recommend hiring an air barrier sealing company to caulk and seal the building.

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NO/LOW COST ECMS

This list is provided as a general best-practices guide to assist in the operation of a facility in the most efficient manner possible. Quantification of potential savings is not estimated for these suggestions.

- Administrative/Behavioral
  - Create a tenant awareness and training program.
  - Create and mobilize a green team.
  - Employ/expand recycling program.
  - Publish successes.
  - Reduce parasitic plug loads. Some equipment in the off state will still draw power for quick activation (DVD players, printers, computers, cable and satellite boxes, device chargers, etc.). Parasitic plugs loads can be managed using smart power strips or using normal power strips that can manually turn off multiple parasitic loads. A Study by Lawrence Berkley National Laboratory states that standby (parasitic) power consumption ranges from 5 to 10% of household energy consumption and accounts for about 1% of worldwide carbon dioxide emissions. Additional suggestions can be found at this URL: https://standby.lbl.gov/what-can-i-unplug-now

- HVAC
  - Use setback temperature setpoints or turn off HVAC equipment when the apartment is unoccupied. Typical setback temperature setpoints are 60°F in the winter and 80°F in the summer.
  - Do not neglect routine maintenance. Maintain a clean filter in AC units. If the AC unit air is less than 10°F colder than the room temperature, have a qualified technician service the AC unit. An AC unit that is low on refrigerant will run longer and consume large amounts of energy. For more advice see here: https://learnmetrics.com/how-cold-should-an-air-conditioner-blow-out-of-vents-temperature/
  - Ensure the area around the window AC unit is properly sealed during summer operation. For typical product see the following: https://breezestopusa.com/

- Envelope
  - Check doors for worn seals, weather stripping, and door sweeps.
  - Ensure all window weather stripping is in good condition.

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Vending Machine

The light in the vending machine in the building is illuminated 24/7/365. We recommend installing an occupancy sensor to only turn on the light when someone approaches the vending machine. Also a timer can be added to turn off the refrigeration system during unoccupied times. We have attached a cut sheet in the Appendix.

OPERATIONS AND MAINTENANCE

The quality of the maintenance and operation of the facility's energy systems has a direct effect on its overall energy efficiency. Energy efficiency needs to be a consideration when implementing facility modifications, equipment replacements, and general corrective actions. The following is a list of activities that should be performed as part of the routine maintenance program for the property. These actions, which have been divided into specific and general recommendations, will ensure that the energy conservation measures identified in this report will remain effective. The following general recommendations should be continued or implemented.

Building Envelope

1. Caulking checked two times per year.
2. Damaged caulking and weather-stripping replaced as needed.
3. Cracked windowpanes are repaired as needed.
4. Automatic door closing mechanisms are checked as part of routine maintenance and repaired/adjusted as needed.
5. Vestibule doors are closed during operating hours.
6. Windows to be inspected bi-annually for damaged panes and failed thermal seals.

Lighting

1. Timers and/or photocells operate correctly on exterior lighting.
2. Only energy efficient replacement lamps should be used and in-stock for replacement.

HVAC

1. Heating hot water heater temperature is set to the minimum temperature required.
2. Equipment is inspected for worn or damaged parts as part of a monthly maintenance check.
3. Evaporator coils and condenser coils of window units should be regularly checked and cleaned.
4. Air filters should be cleaned or replaced as needed.

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Domestic Water

1. Domestic hot water heater temperature is set to the minimum temperature required.
2. Tank-type water heaters should be flushed as required by the manufacturer.
3. Hot water piping should be checked routinely for damaged insulation and leaks.

Existing Equipment and Replacements

1. Refrigerator and freezer doors should close and seal correctly.
2. Equipment replacement should be performed assuring that:
    a. All equipment replacements are not over/undersized for the application, and
    b. All equipment replacements should be with energy conserving and/or high efficiency devices.

CONCLUSION

Spectrum Energy recommended several ECMs to save energy and move the Town of Kensington, Town Hall toward electrification. They include:

- Replace Remaining non-LED lighting to LED lighting
- Replace the Drill Hall HVAC with VRF, DOAS, and enVerid HVAC systems
- Replace the office HVAC RTU with a Heat Pump RTU
- Add Drill Hall Insulation
- Replace Old and Antiquated Windows
- Provide Drill Hall Destratification by Installing "air pear" destratification fans to reduce winter heating loads.
- Replace NG Hot Water Heater with a Heat Pump Hot Water Heater
- Caulk and Perform Air Barrier Sealing Cracks, Crevices, and Air gaps throughout the facility

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APPENDICES

PROJECT PROPSAL

KENSINGTON TOWN OFFICE

PREPARED FOR: **KENSINGTON TOWN OFFICE**
ATTN: **SPECTRUM ENERGY**
PREPARED BY: **BILL LITZ**
PROPOSAL #: **ODSS1-05082023**
DATE: **05/08/2023**

HAVTECH – OWNER DIRECT SOLUTION SALES

9505 BERGER RD COLUMBIA, MD 21046

OFFICE: (301) 206-9225

WEBSITE: *WWW.HAVTECH.COM*

EXECTUTIVE SUMMARY

Havtech Solutions was asked to evaluate the HVAC systems for the Kensington Town Office building at 3710 Mitchell St, Kensington, MD. After several site visits, as well as interviewing the building staff, it is observed that there is an opportunity to save energy and bring the building's utilities up to current standards. During our discovery visit, we briefly examined the mechanical equipment. Based on our evaluation, there are several HVAC system design opportunities that will yield energy savings and most likely affect the total load for the building; therefore, decreasing the size of replacement equipment needed.

In this process we will specifically evaluate the potential for the following Energy Conservation Measures:

- Evaluate like in kind replacement of the existing split systems
- Evaluate the installation one package unit or two smaller package units
- Evaluate the installation of DOAS and VRV
- Evaluate electrical loads
- Load Calculations, Heating, Cooling and Ventilation rate

We propose the following Engineering Feasibility Study (EFS) to evaluate the HVAC system for Kensington Town Office as a viable solution for an efficient and effective HVAC system. Included in the deliverable will be an evaluation of the existing HVAC equipment, air flow analysis, review of current system design and functionality, fresh air analysis, building load calculation, recommended solution including a rough budget, potential energy savings and an evaluation of any rebates available. The EFS will provide a road map to get to the optimal energy usage for the building, while providing the appropriate indoor air quality and temperatures. Havtech will present the EFS to Kensington personnel in person to fully explain the solution and discuss next steps. **The cost for the EFS is $26,486.00**.

SOLUTION

The objective of this Engineering Feasibility Study is to analyze the current operation of the building at 3710 Mitchell St. and determine a path forward to provide proper HVAC to the building, at optimal energy usage. The study will be focused on the current state of the HVAC systems, Outdoor Air (OA) requirements and proper load calculations for the current space usage. The intention is to offer a solution to maximize system efficiency while providing proper Indoor Air Quality (IAQ). As a result of the analysis, Havtech will provide the following deliverables.

- **Hold kick off meeting with Havtech, Kensington personnel and Mechanical Engineer to refine scope prior to analyzing the building.**
- **Presentation to relevant stakeholders summarizing existing operation, proposed operation, and economic analysis.** Discuss current state, future state, and provide schematic drawings and budget pricing.
- **Written summary report of presentation with supporting documentation**.
- **Provide an engineering design scope of work** required to provide the desired IAQ, humidity control and efficiency.

Havtech will

- Determine approximate annual energy consumption cost of the current HVAC systems.
- **Spend time on site** surveying operations, equipment and conducting interviews.
- Interview facilities personnel to determine building requirements and learn of current HVAC deficiencies.
- Analyze corrective designed options and system useability.
- **Model "What if" scenarios** to determine HVAC system(s) optimal effectiveness with maximum efficiency.
- Determine if utility rebates are available for each design.
- Budget turnkey pricing for the selected concept.

I. Scope of Services

A. Basic service: In general, engineering services include preparing an engineering study for the HVAC systems that serve the building located at 3710 Mitchell St, Kensington, MD. The engineering study will include information about the existing HVAC equipment, operational status, load calculations, equipment capabilities, recommended changes, preliminary scope, schematic drawings, and implementation budgets. Capacities, as referenced, shall include supply airflow readings. The information will be obtained from existing documentation and system air flow measurements. Cooling and heating load calculations are recommended and included as part of the base fee. However, completion of calculations will be predicated upon receiving all necessary information from the facility, i.e. wall and window building construction information, if available, occupants in each space, equipment in each space, and function of each space. Based on the determined existing unit capacities, new unit selections will be performed to confirm adequate space and clearance availability. Field surveys will be conducted to measure existing spaces where any new equipment is to be located, as well as connecting duct and pipe sizes. Adequate duct sizing related to air flow connections at the unit will also be confirmed as well as adequate power. Structural services potentially required as part of any proposed work are not included as part of these fees.

HAVTECH

SCOPE OF WORK:

Scope of Work
3710 Mitchell St, Kensington, MD

Phase I

- Kickoff meeting and site inspection
- HVAC Equipment Survey
    - Location
    - Manufacture
    - model and serial number
    - operational status.

Phase II

- Take air flow readings in the building listed above.
- Review flow readings with Mechanical Engineer

Phase III

- Perform building load calculations.
- Evaluate existing system design.
    - Engineering design
    - Review with Mechanical Engineer
- Identify and develop recommended solutions.
    - Develop a concept schematic design including sizing and equipment selection.
    - Review with Mechanical Engineer
    - Identify space for new equipment.
- Develop rough cost estimates for proposed solution
- Evaluate potential energy savings and rebates.
- Deliver and review final concept design with Kensington.
    - Incorporate any minor changes following Kensington's input.

Deliverables:

- Summary of findings including the following:
    - Executive Summary
    - Equipment List
    - Engineering review statement
    - Detailed description of concept design
        - Equipment
        - Strategy
        - Controls
        - Behavior modifications
        - Building envelope improvements
- Estimated rough budgets to implement potential solutions.
    - Concept schematic drawings

- Potential energy savings and rebates
    - Spectrum Energy will evaluate the availability of Utility incentives, grants, and tax deductions.
    - Spectrum Energy will retain a percentage of any grants and/or tax deductions obtained for this project, based on the dollar amount of the grant/tax deduction.
- Indoor air quality standards
- Potential ROI

EXCEPTIONS AND EXCLUSIONS

- The scope of work provided above takes precedent over all other documents or verbal communication of scope.
- Labor, materials, and contracted services which are not outlined in the scope of work
- Hours have been estimated at regular time, all work requiring premium time charges will require an approved and signed change order.
- Kensington will provide as-built drawings including architectural floor plans, mechanical and plumbing system drawings, controls drawings, electrical drawings, etc.
- No evaluation or design of campus wide and/or county wide control and monitoring systems are included.
- Drawings of existing and/or proposed.
- Bid documents
- Final design
- Detailed construction cost estimation
- Life cycle cost analysis
- Architectural services
- Structural Engineering services
- Civil Engineering services
- Work related to fire protection or fire alarm systems
- Work related to electrical systems and their capacities
- Tracing of existing electrical systems and their capacities
- Investigation, testing or design for abatement of hazardous materials
- Destructive demolition or patching of building components (walls, ceilings, floors) to obtain access to mechanical, plumbing, and electrical systems.
- HAVTECH is not responsible for additional costs due to limited worksite access.
- HAVTECH will only provide supervision for its employees and subcontractors.
- Code remediation as directed by JHA or code officials
- Final comment incorporations include minor comments/clean up only. Major changes at this point in the process would require contract modification.

CONFIDENTIALITY

HAVTECH and client (each “Party” and collectively the “Parties”) name above herby agree that any information, discussion, negotiations, contractual relationships and/or business arrangements with respect to the above named project as Confidential information, safeguard the Confidential information as if it were your own and not to reveal or disclose, and to take all reasonable and necessary precautions to prevent the discloser of any Confidential Information to any third party. The Parties agree that Confidential information also includes tangible information, including all reproductions thereof, supplied in any form (whatever print, hardcopy, electronic, or otherwise) that has been disclosed by the disclosing Party to the recipient and marked as “Confidential”. “Restricted”, “Secret”, or other similar term; including information that is observed by the recipient during a visit to the disclosing Party’s facility and that is identified or designated as being confidential and confirmed in writing as “Confidential”, “Restricted”, “Secret”, or similar term. Each Party further agrees not to use for it’s own benefit the Confidential Information provided by the other Party, except as expressly authorized in writing by the other Party.

ACCEPTANCE

The pricing and acceptance of this proposal are based on the terms and conditions attached at the end of this document. This proposal is being submitted by HAVTECH Owner Direct Solutions Sales. Pricing is valid for 30 days from the date of this proposal.

PRICE $26,486.00

Customer Date: Purchase order #

HAVTECH Date:

Bill Litz

OWNER DIRECT SYSTEMS SALES ENGINEER
HAVTECH l OWNER DIRECT SYSTEMS

9505 Berger Road • Columbia, MD 21046

Direct: (443) 518-6050
Email: BLITZ@havtech.com

HAVTECH

TERMS AND CONDITIONS

"Company" shall mean Havtech Service LLC.

1. ***Acceptance.*** These Terms and Conditions are an integral part of Company's proposal (the "Proposal"), shall form the basis of the parties' agreement (the "Parties' Agreement"), and may be modified only by a written document signed by an officer of the Company. The party to whom the Proposal is made (the "Customer") may accept it by signing a copy and returning it to the Company, by otherwise notifying the Company that it has been accepted, and/or by notifying the Company to proceed with performing any of the services listed in the Proposal (the "Services"). In doing so, Customer agrees to be bound by all the Terms and Conditions set forth herein. This Agreement is subject to credit approval by Company. Upon disapproval of credit, Company may delay or suspend performance or, at its option, renegotiate prices and/or terms and conditions with Customer. If Company and Customer are unable to agree on such revisions, this Agreement shall be cancelled without any liability, other than Customer's obligation to pay for Services rendered by Company to the date of cancellation.

2. *Services Fees and Taxes*. Fees for the Services (the "Service Fee(s)") shall be as set forth in the Proposal and are based on performance during regular business hours. Fees for outside Company's normal business hours and any after-hours services shall be billed separately according to then prevailing overtime or emergency labor rates. In addition to the stated Service Fee, Customer shall pay all taxes not legally required to be paid by Company or, alternatively, shall provide Company with acceptable tax exemption certificates. Customer shall pay all costs (including attorneys' fees) incurred by Company in attempting to collect amounts due.

3. ***Payment***. Payment is due upon receipt of Company's invoice. Company reserves the right to add to any account outstanding for more than 30 days a service charge equal to the lesser of the maximum allowable legal interest rate or 1.5% of the principal amount due at the end of each month. Customer shall pay all costs (including attorneys' fees) incurred by Company in attempting to collect amounts due or otherwise enforcing these terms and conditions. Invoices for $3,000 or more paid with a credit card are subject to a 3% surcharge.

4. ***Customer Breach***. Each of the following events or conditions shall constitute a breach by Customer and shall give Company the right, without an election of remedies, to terminate this Agreement or suspend performance by delivery of written notice declaring termination, upon which event Customer shall be liable to the Company for all Services furnished to date and all damages sustained by Company (including lost profit and overhead): (1) Any failure by Customer to pay amounts when; or (2) any general assignment by Customer for the benefit of its creditors, or if Customer becomes bankrupt or insolvent or takes the benefit of any statute for bankrupt or insolvent debtors, or makes or proposes to make any proposal or arrangement with creditors, or if any steps are taken for the winding up or other termination of Customer or the liquidation of its assets, or if a trustee, receiver, or similar person is appointed over any of the assets or interests of Customer; (3) Any representation or warranty furnished by Customer in connection with this Agreement is false or misleading in any material respect when made; or (4) Any failure by Customer to perform or comply with any material provision of this Agreement.

5. *Performance*. Company shall perform the Services in accordance with industry standards generally applicable in the area under similar circumstances as of the time Company performs the Services. Company is not liable for any claims, damages, losses, or expenses, arising from or related to work done by or services provided by individuals or entities that are not employed by or hired by Company. Company may refuse to perform any Services or work where working conditions could endanger property or put at risk the safety of people. Unless otherwise agreed to by Customer and Company, at Customer's expense and before the Services begin, Customer will provide any necessary access platforms, catwalks to safely perform the Services in compliance with OSHA or state industrial safety regulations.

6. ***Exclusions***. Unless expressly included in the Proposal, the Services do not include, and Company shall not be liable for, any of the following: (a) Any guarantee of room conditions or system performance;(b) Inspection, operation, maintenance, repair, replacement or performance of work or services outside the Services; (c) Repairs or replacement of parts made necessary as a result of negligent acts or omission of Customer or others; (d) Any claims, damages, losses, or expenses, arising from or related to conditions that existed in, on, or upon the premises before the effective date of this Agreement ("Pre-Existing Conditions") including, without limitation, damages, losses, or expenses involving a Pre-Existing Condition of building envelope issues, mechanical issues, plumbing issues, and/or indoor air quality issues involving mold/mildew and/or fungi; and (e) Replacement of refrigerant is excluded, unless replacement of refrigerant is expressly stated as included with the Proposal.

7. Disclaimer of Warranty on Equipment. IT IS UNDERSTOOD AND AGREED THAT: (A) COMPANY IS NOT THE MANUFACTURER OF ANY EQUIPMENT FURNISHED; (B) THE ONLY WARRANTIES FOR THE EQUIPMENT ARE THOSE OF THE MANUFACTURERS OF THE EQUIPMENT, WHICH COMPANY AGREES TO ASSIGN TO CUSTOMER; AND (C) COMPANY HAS NO INDEPENDENT OBLIGATION OR LIABILITY ARISING FROM THE MANUFACTURERS' WARRANTIES. COMPANY HAS NOT MADE AND HEREBY DISCLAIMS ANY REPRESENTATIONS OR WARRANTIES, DIRECT OR INDIRECT, EXPRESS, OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY AND ALL WARRANTIES CONCERNING OR RELATED TO THE DESIGN OR CONDITION OF ANY EQUIPMENT, ITS MERCHANTABILITY, AND/OR ITS FITNESS FOR ANY PARTICULAR PURPOSE.

8. ***Labor Warranty***. Company warrants that the labor portion of the Services is warranted to have been properly performed for a period of 90 days from date of completion (the "Warranty"). Defects must be reported to Company within the Warranty period. Company's obligation under the Warranty is limited to repairing or replacing the defective part at its option and to correcting any improperly performed labor. No liability whatsoever shall attach to Company until the Services have been paid for in full. Exclusions from this Warranty include damage or failure arising from: wear and tear; corrosion, erosion, deterioration; Customer's failure to follow the Company-provided maintenance plan; and modifications made by others to Company's equipment. Company shall not be obligated to pay for the cost of lost refrigerant or lost product.

9. Mold/Microbial Growth. COMPANY MAKES NO REPRESENTATION OR WARRANTY EXPRESS OR IMPLIED REGARDING PREVENTION BY THE SCOPE OF SERVICES, OR ANY COMPONENT THEREOF, OF MOLD, FUNGUS, BACTERIA, MICROBIAL GROWTH, OR ANY OTHER CONTAMINATES. COMPANY SPECIFICALLY DISCLAIMS ANY LIABILITY IF THE SCOPE OF SERVICES OR ANY COMPONENT THEREOF IS USED

TO PREVENT OR INHIBIT THE GROWTH OF SUCH MATERIALS. THE WARRANTY AND LIABILITY SET FORTH IN THIS AGREEMENT ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES, WHETHER IN CONTRACT OR IN NEGLIGENCE, EXPRESS OR IMPLIED, IN LAW OR IN FACT, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

10. ***Cost and Cost Savings Disclaimer.*** There are no guaranties or warranties with regard to actual energy savings or cost savings including but not limited to MEA grants and utility energy incentives.

11. ***Indemnity.*** Company and Customer shall indemnify, defend and hold harmless each other from any and all claims, actions, costs, expenses, damages and liabilities, including reasonable attorneys' fees, resulting from death or bodily injury or damage to real or personal property, to the extent caused by the negligence or misconduct of the indemnifying party Company, and/or its respective employees or authorized agents in connection with their activities within the scope of this Agreement. Neither party shall indemnify the other against claims, damages, expenses, or liabilities to the extent attributable to the acts or omissions of the other party. If the parties are both at fault, the obligation to indemnify shall be proportional to their relative fault. The duty to indemnify will continue in full force and effect, notwithstanding the expiration or early termination hereof, with respect to any claims based on facts or conditions that occurred prior to expiration or termination. The Company's obligations under this clause shall arise only if Company is negligent, shall be only to the extent that Company's negligence causes bodily injury, sickness, disease, death, or injury to or destruction of property (other than the work itself), and shall be limited to the extent of Company's insurance coverage.

12. Limitation of Liability. NOTWITHSTANDING ANYTHING TO THE CONTRARY, NEITHER PARTY SHALL BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY NATURE (INCLUDING WITHOUT LIMITATION REFRIGERANT LOSS, PRODUCT LOSS, LOST REVENUE, COST SAVINGS OR PROFITS), OR PUNITIVE DAMAGES WHETHER CLAIMED UNDER CONTRACT, WARRANTY, NEGLIGENCE, STRICT LIABILITY OR ANY OTHER LEGAL THEORY OR FACTS. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY DAMAGES RESULTING FROM MOLD, FUNGUS, BACTERIA, MICROBIAL GROWTH, OR OTHER CONTAMINATES OR AIRBORNE BIOLOGICAL AGENTS. CUSTOMER AGREES THAT IN CONNECTION WITH ANY MATTER ARISING OUT OF AND/OR RELATED TO THE CONTRACT, COMPANY'S LIABILITY, WHETHER IN CONTRACT, TORT, WARRANTY OR OTHERWISE, SHALL NOT EXCEED THE CONTRACT PRICE. THIS LIMIATION SHALL NOT APPLY TO DAMAGES THAT ARE PAID BY INSURANCE.

13. Asbestos and Hazardous Materials. Company's services expressly exclude any identification, abatement, cleanup, control, disposal, removal or other work connected with asbestos or other hazardous materials (collectively, "Hazardous Materials"). Should Company become aware of or suspect the presence of Hazardous Materials, Company may immediately stop work in the affected area and shall notify Customer. Customer will be responsible for taking any and all action necessary to correct the condition in accordance with all applicable laws and regulations. Customer shall be exclusively responsible for any claims, liability, fees and penalties, and the payment thereof, arising out of or relating to any Hazardous Materials on or about the premises, not brought onto the premises by Company. Company shall be required to resume performance of the services only when the affected area has been rendered harmless.

14. ***Insurance.*** Company agrees to maintain the following insurance during the term of the contract with limits not less than shown below and will, upon request from Customer, provide a Certificate of evidencing the following coverage: Commercial General Liability $1,000,000 per occurrence; Automobile Liability $1,000,000 CSL Workers Compensation Statutory Limits In the event Company agrees to name Customer or others as an additional insured, Company will do so but only under its primary Commercial General Liability policies to the extent of the indemnity obligation assumed herein. In no event does Company waive its right of subrogation.

15. ***Force Majeure***. If Company is unable to carry out an obligation under this Agreement due to an Event of Force Majeure, this Agreement shall at Company's election (i) remain in effect, but Company's obligations shall be suspended until the uncontrollable event terminates or (ii) be terminated upon notice to Customer, in which event Customer shall pay Company for all parts of the Services furnished to the date of termination. An "Event of Force Majeure" shall mean any cause or event beyond the control of Company. Without limiting the foregoing, "Event of Force Majeure" includes acts of God; acts of terrorism, war or the public enemy; flood; earthquake; tornado; storm; fire; civil disobedience; pandemic; insurrection; riot; labor disputes; labor or material shortages; sabotage; restraint by government authority (whether valid or invalid).

16. ***General.*** The Parties' Agreement shall be governed, enforced, performed, and construed in accordance with the laws of the State of Maryland (excepting those conflicts of laws provisions which would serve to defeat application of Maryland substantive law). Any dispute arising out of or relating to the Parties' Agreement shall be decided by litigation in a court of competent jurisdiction located in the state of Maryland. The Company's Proposal contains all of the agreements, representations and understandings of the parties and supersedes any other understandings, commitments, or agreements, oral or written, related to the subject matter hereof. Customer may not assign, transfer, or convey this Agreement, or any part hereof, without the written consent of Company.

CAFFES-STEELE
Windows and Doors

CAFFES-STEELE, INC

6623 Mid Cities Avenue
Beltsville, MD 20705
Office: (301) 937-5750
Fax: (301) 937-6446

June 19, 2023

Spectrum Energy, LLC.
9505 Berger Road
Columbia, Maryland 21046
Attn.: Tom Polansky

Project: Kensington Town Hall Renovation
3710 Mitchell Street
Kensington, Maryland

Re: Proposal for QUAKER Aluminum Historic Window Replacement

Quoted By: Ken Jarvis (717-634-6661)

Terms: 10% Deposit day of Contract Signing – Remainder Invoiced Monthly due Net 30 Days.

Caffes-Steele, Inc. proposes to furnish and install the material described below which includes all necessary materials, labor and equipment to complete the scope of work as requested.
IMPORTANT: This proposal is valid for a period of 30 days from the date above.

Wage Scale Rates and PERMITS: "Not" INCLUDED

Total Supply and Installed Proposal Cost with Tax is: $ 254,000.00 (Add 2.5% for Bond)
- **Deduct $ 7,900.00 for 2604 10 Year Finish in lieu of 2605 15 Year Finish Warranty.**

We propose to furnish and install the following Products:

A) QUAKER Series # H450 Aluminum Framed **Awning / Casement / Fixed** Units as follows:
- **Exterior Flanged Main Frame (Unequal Leg).**
- Main Window Frame Depth of 3 1/4".
- Push Out 4-Bar Vent Cam Handle Hardware w/4" Limit.
- SDL Exterior Raised Grid Muntin / GBG / Interior Flat Grid.
- Interior 1 1/2" x 2 1/2" Snap Trim (Head, Jamb & Sill).
- AAMA 2605 Std. Dk. Bronze Finish.
- 1" Cardinal 272 with Argon Gas and DSB Glass Lites.
- Aluminum Mesh Screens.

General Qualifications:
- Warranty on our installation is for a period of One Year from the Date of Substantial Completion.
- Exterior and Interior perimeter sealants are to be of One Line of One Standard Color.
- Warranties will be supplied on Manufacturers' Letterhead, inclusive of their standard language and limitations, and will exclude labor costs.

CAFFES-STEELE
Windows and Doors

CAFFES-STEELE, INC

6623 Mid Cities Avenue
Beltsville, MD 20705
Office: (301) 937-5750
Fax: (301) 937-6446

- **Price Quoted based on ordering the COMPLETE Project at one time with a Continuous Delivery Schedule.**

Specific Jobsite Qualifications:

- Removal and disposal of existing steel window units leaving "main perimeter frame" intact, otherwise damage to existing interior walls will occur.
- All new Windows will then be installed setting square and plumb into the openings while utilizing an exterior 1 1/2" extruded flange to conceal the existing steel window frame that we are leaving intact.
- 1 1/2" x 2 1/2" aluminum snap trim will then be installed around the INTERIOR window perimeter to also conceal the existing steel window frame.
- Then we will Caulk all Exterior and Interior Perimeter Joints with our Sealant (3 Lines Total).
- We will need to supply and use our 40ft Man-Boom Lifts in order to caulk all exterior window perimeters. Any ground repairs to be By Others although this will be kept to a minimum as we will try to keep the Man Boom Lift on the parking lot or street pavements.
- We will need to store our New Windows in our supplied 50ft Storage Trailer in a secure area on the parking lot along with our supplied 30yd. dumpster.
- Daily cleanup to be done by our men.

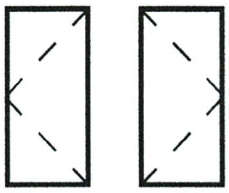
Exclusions:

- **Lead Paint / Asbestos "Full Abatement" EPA-LBP practices are "Not Included" in removal of existing window units.**
- Any repair or painting of Interior conditions and/or Exterior Masonry to be BY OTHERS.
- **Any repainting of existing Steel Lintels.**
- Warranties beyond Manufacturers' Standards.
- Any permits that may be required.
- Cleaning of Glass and Window Frames.
- Any new interior Stool Sill and Wood Trim-out casing of opening surround.
- Louvers / Vents are Not Included thru any of our Sash Openings.
- **Ground repairs due to our use of Man-Boom Lifts.**

Let me know if you have any questions.

Ken Jarvis
Estimator / Project Manager
Caffes-Steele, Inc.
Email: kjarvis@caffes-steele.com
Website: www.caffes-steele.com

QUAKER
COMMERCIAL



H450 Series
3 ¼" Frame Depth
Casement (Project-Out)

H450 SERIES CASEMENT

FEATURES

◊ Commercial Framing System
- 3 ¼" main frame
- Historically-correct bevel frame exterior
- Minimum of 0.080" wall thickness
- Dual Euro Groove System
- Available with or without integral nailing fin

◊ Thermally Enhanced Design
- Thermally-broken main frame and vent rails
- Azon pour and debridge thermal break technology

◊ Glazing
- 1" insulating glass

◊ Hardware
- Maxim LP Locking System, Chic Hinge and Roto Hardware on crankout model
- Maxim LP Locking System, 4-Bar Hinge and Push/Pull Cup Hardware on push-out model

◊ Screen
- Easily removable FlexScreen

BENEFITS

◊ Historically accurate profiles to help your project meet Historic Preservation codes

◊ The capacity to match exterior colors for unique project facades

◊ The ability to facilitate large sizes for taller and wider window openings

OPTIONS

◊ Available Configurations
- Project-out casement
- Push-out or Crank-out (Left or Right)
- Continuous frame capabilities
- Fixed

◊ Muntin Choices
- Internal or simulated divided lites available

◊ Hardware
- Limit Travel Accessories

◊ Screen
- Wicket Screen (Push-out model only)

◊ Glazing
- Multiple Low-E and argon glazing choices
- Glazing pocket can accept 1 3/8" insulating glass for sound attenuation purposes
- Capillary tubes
- Wide variety of glazing, tinting and thickness options

◊ Panning & Trim Choices
- Wide variety of panning, receptor and trim available

◊ Mulling
- Wide variety of structural mulls

PERFORMANCE

◊ Structural & Thermal (test reports or thermal simulations available upon request)

Model	Casement (Project-Out)
Test Size:	36" x 60"
NAFS Rating	CW-PG90-C
Air Infiltration (cfm/ft²)	<0.10
Water (No Penetration) P.S.F.	12
U-Value (ranges based on multiple Low-E/Argon combinations)	0.39-0.44
SHGC (ranges based on multiple Low-E/Argon combinations)	0.14-0.48

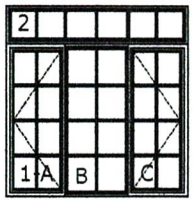
Our products are tested to the standards of and certified by some of the foremost organizations in the fenestration industry.

PROUD MEMBER FGIA AAMA • IGMA

NFRC National Fenestration Rating Council

WINDOW & DOOR MANUFACTURERS ASSOCIATION WDMA MEMBER

Line	Label	Quantity	UOM	Part Number	Unit	Extended
1	A	2	EA	Quaker Unit		



** Viewed From Exterior **

Series: 3 1/4" - Historic (H450)

Exact Size: 58 X 60
Model : 1 Wide Top Stack,Factory Mull - **Horizontal Mull-1:**C Mull, **Mull Rating: DP-**50, **Mull Cut:** Straight
Color: Dark Bronze,**Paint Type:**2605,
Glass: EnergyBasic (Dual Silver),Argon Filled,
Muntin: Custom SDL,
Exterior:538352 7/8" Raised ,Between Gls:5/8X3/8" Internal (Standard),Interior:10847 1" Flat ,
Muntin Color: Exterior:Dark Bronze,Between Gls:Black,Interior:Dark Bronze,
Hardware: Satin/Brushed Nickel,**Vent:**4 Bar Push Out,**Casement/Vent Limit Stop:**STD - Vent Limit Travel**Casement/Vent Limitstop Dim:**4",
Screen: Wicket Screen,**Material:**Aluminum Wire,**Ship:**Ship Screen Separate,
Install Acc No Nailing Fin,
Frame Depth:3 1/4",
Int. Frame24568_1984 1 5/8" x 2 1/2" Trim,**Factory Apply:** No - Precut and Ship Loose**Add:** 4", **Cut Angle:** Straight,
Perimeter Acc Color: Dark Bronze,

Unit:1-3 - Cont Frame - 3 Wide

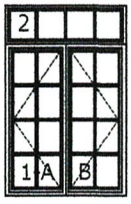
1A-Vent - Left Push Out - Cam Handle,**1B-**Fixed,**1C-**Vent - Right Push Out - Cam Handle,

Exact Size: 58 X 48,**Section A Width:**19,**Section B Width:**20,SecA**: Not Egress,**
Clear Opening: 8 7/16 X 42 9/16
Clear Opening Sqft: 2 1/2
Clear Opening: 8 7/16 X 42 9/16
Clear Opening Sqft: 2 1/2SecC**: Not Egress,**
Clear Opening: 8 7/16 X 42 9/16
Clear Opening Sqft: 2 1/2
NFRC - U-Factor:0.43**SHGC:**0.29**VT:**0.48**AL:**≤0.3**CR:**48
Rating: DP-50
Left Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass
Center Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass
Right Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Unit:2-Direct Set **Exact Size:** 58 X 12,
NFRC - U-Factor:0.31**SHGC:**0.33**VT:**0.57**AL:**≤0.3**CR:**62
Rating: DP-50
Fixed Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Overall Rating: DP-50
Total Weight 157 lbs.

2	B	8	EA	Quaker Unit		



** Viewed From Exterior **

Series: 3 1/4" - Historic (H450)

Exact Size: 38 X 60
Model : 1 Wide Top Stack,Factory Mull - **Horizontal Mull-1:**C Mull, **Mull Rating: DP-**50, **Mull Cut:** Straight
Color: Dark Bronze,**Paint Type:**2605,
Glass: EnergyBasic (Dual Silver),Argon Filled,
Muntin: Custom SDL,
Exterior:538352 7/8" Raised ,Between Gls:5/8X3/8" Internal (Standard),Interior:10847 1" Flat ,
Muntin Color: Exterior:Dark Bronze,Between Gls:Black,Interior:Dark Bronze,
Hardware: Satin/Brushed Nickel,**Vent:**4 Bar Push Out,**Casement/Vent Limit Stop:**STD - Vent Limit Travel**Casement/Vent Limitstop Dim:**4",
Screen: Wicket Screen,**Material:**Aluminum Wire,**Ship:**Ship Screen Separate,

Install Acc No Nailing Fin,
Frame Depth:3 1/4",
Int. Frame24568_1984 1 5/8" x 2 1/2" Trim,**Factory Apply:** No - Precut and Ship Loose**Add:** 4", **Cut Angle:** Straight,
Perimeter Acc Color: Dark Bronze,

Unit:1-2 - Cont Frame - 2 Wide

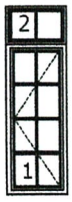
1A-Vent - Left Push Out - Cam Handle,**1B-**Vent - Right Push Out - Cam Handle,

Exact Size: 38 X 48,**Section A Width:**19,SecA**: Not Egress,**
Clear Opening: 8 1/4 X 42 9/16
Clear Opening Sqft: 2 1/2SecB**: Not Egress,**
Clear Opening: 8 1/4 X 42 9/16
Clear Opening Sqft: 2 1/2
NFRC - U-Factor:0.43**SHGC:**0.29**VT:**0.48**AL:**≤0.3**CR:**48
Rating: CW-80
Left Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass
Right Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Unit:2-Direct Set **Exact Size:** 38 X 12,
NFRC - U-Factor:0.31**SHGC:**0.33**VT:**0.57**AL:**≤0.3**CR:**62
Rating: DP-50
Fixed Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Overall Rating: DP-50
Total Weight 113 lbs.

3	C	2	EA	Quaker Unit



** Viewed From Exterior **

Series: 3 1/4" - Historic (H450)

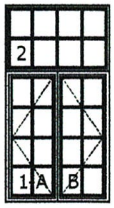
Exact Size: 19 X 60
Model : 1 Wide Top Stack,Factory Mull - **Horizontal Mull-1:**C Mull, **Mull Rating: DP-**50, **Mull Cut:** Straight
Color: Dark Bronze,**Paint Type:**2605,
Glass: EnergyBasic (Dual Silver),Argon Filled,
Muntin: Custom SDL,
Exterior:538352 7/8" Raised ,Between Gls:5/8X3/8" Internal (Standard),Interior:10847 1" Flat ,
Muntin Color: Exterior:Dark Bronze,Between Gls:Black,Interior:Dark Bronze,
Hardware: Satin/Brushed Nickel,**Vent:**4 Bar Push Out,**Casement/Vent Limit Stop:**STD - Vent Limit Travel**Casement/Vent Limitstop Dim:**4",
Screen: Wicket Screen,**Material:**Aluminum Wire,**Ship:**Ship Screen Separate,
Install Acc No Nailing Fin,
Frame Depth:3 1/4",
Int. Frame24568_1984 1 5/8" x 2 1/2" Trim,**Factory Apply:** No - Precut and Ship Loose**Add:** 4", **Cut Angle:** Straight,
Perimeter Acc Color: Dark Bronze,

Unit:1-Casement Hinge Left Push Out - Cam Handle **Exact Size:** 19 X 48,**NOT Egress,**
Clear Opening: 9 X 42 9/16
Clear Opening Sqft: 2 11/16
NFRC - U-Factor:0.43**SHGC:**0.29**VT:**0.48**AL:**≤0.3**CR:**48
Rating: CW-80
Left Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Unit:2-Direct Set **Exact Size:** 19 X 12,
NFRC - U-Factor:0.31**SHGC:**0.33**VT:**0.57**AL:**≤0.3**CR:**62
Rating: DP-50
Fixed Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Overall Rating: DP-50
Total Weight 62 lbs.

4	D	6	EA	Quaker Unit



** Viewed From Exterior **

Series: 3 1/4" - Historic (H450)

Exact Size: 38 X 72
Model : 1 Wide Top Stack,Factory Mull - **Horizontal Mull-1:**C Mull, **Mull Rating: DP-**50, **Mull Cut:** Straight
Color: Dark Bronze,**Paint Type:**2605,
Glass: EnergyBasic (Dual Silver),Argon Filled,
Muntin: Custom SDL,
Exterior:538352 7/8" Raised ,Between Gls:5/8X3/8" Internal (Standard),Interior:10847 1" Flat ,
Muntin Color: Exterior:Dark Bronze,Between Gls:Black,Interior:Dark Bronze,
Hardware: Satin/Brushed Nickel,**Vent:**4 Bar Push Out,**Casement/Vent Limit Stop:**STD - Vent Limit Travel**Casement/Vent Limitstop Dim:**4",
Screen: Wicket Screen,**Material:**Aluminum Wire,**Ship:**Ship Screen Separate,
Install Acc No Nailing Fin,
Frame Depth:3 1/4",
Int. Frame24568_1984 1 5/8" x 2 1/2" Trim,**Factory Apply:** No - Precut and Ship Loose**Add:** 4", **Cut Angle:** Straight,
Perimeter Acc Color: Dark Bronze,

Unit:1-2 - Cont Frame - 2 Wide

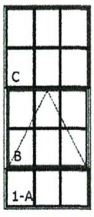
1A-Vent - Left Push Out - Cam Handle,**1B-**Vent - Right Push Out - Cam Handle,

Exact Size: 38 X 48,**Section A Width:**19,SecA**: Not Egress,**
Clear Opening: 8 1/4 X 42 9/16
Clear Opening Sqft: 2 1/2SecB**: Not Egress,**
Clear Opening: 8 1/4 X 42 9/16
Clear Opening Sqft: 2 1/2
NFRC - U-Factor:0.43**SHGC:**0.29**VT:**0.48**AL:**≤0.3**CR:**48
Rating: CW-80
Left Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass
Right Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Unit:2-Direct Set **Exact Size:** 38 X 24,
NFRC - U-Factor:0.31**SHGC:**0.33**VT:**0.57**AL:**≤0.3**CR:**62
Rating: DP-50
Fixed Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Overall Rating: DP-50
Total Weight 127 lbs.

5	E	24	EA	Quaker Unit



** Viewed From Exterior **

Series: 3 1/4" - Historic (H450)

Exact Size: 44 X 104
Color: Dark Bronze,**Paint Type:**2605,
Glass: EnergyBasic (Dual Silver),Argon Filled,
Muntin: Custom SDL,
Exterior:538352 7/8" Raised ,Between Gls:5/8X3/8" Internal (Standard),Interior:10847 1" Flat ,
Muntin Color: Exterior:Dark Bronze,Between Gls:Black,Interior:Dark Bronze,
Hardware: Satin/Brushed Nickel,**Vent:**4 Bar Push Out,
Screen: Flex Screen,**Material:**Flex Screen,**Ship:**Ship Screen Separate,
Install Acc No Nailing Fin,

Frame Depth:3 1/4",
Int. Frame24568_1984 1 5/8" x 2 1/2" Trim,**Factory Apply:** No - Precut and Ship Loose**Add:** 4", **Cut Angle:** Straight,
Perimeter Acc Color: Dark Bronze,

Unit:1-3 - Cont Frame - 3 Tall

1A-Fixed,**1B-**Vent - Awning Push Out - Cam Handle,**1C-**Fixed,

Exact Size: 44 X 104,**Row 1 Height:**20.5,**Row 2 Height:**41.75,
Clear Opening: 31 1/8 X 38 1/16
Clear Opening Sqft: 8 1/4SecB: **Meets Egress**
Clear Opening: 31 1/8 X 38 1/16
Clear Opening Sqft: 8 1/4
Clear Opening: 31 1/8 X 38 1/16
Clear Opening Sqft: 8 1/4
NFRC - U-Factor:0.43**SHGC:**0.29**VT:**0.48**AL:**≤0.3**CR:**49
Rating: DP-50 *
Bottom Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass
Middle Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass
Top Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Overall Rating: DP-50
Total Weight 175 lbs.

6	F	6	EA	Quaker Unit

** Viewed From Exterior **

Series: 3 1/4" - Historic (H450)

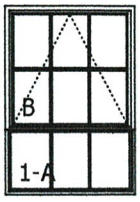
Exact Size: 19 X 72
Model : 1 Wide Top Stack,Factory Mull - **Horizontal Mull-1:**C Mull, **Mull Rating: DP-**50, **Mull Cut:** Straight
Color: Dark Bronze,**Paint Type:**2605,
Glass: EnergyBasic (Dual Silver),Argon Filled,
Muntin: Custom SDL,
Exterior:538352 7/8" Raised ,Between Gls:5/8X3/8" Internal (Standard),Interior:10847 1" Flat ,
Muntin Color: Exterior:Dark Bronze,Between Gls:Black,Interior:Dark Bronze,
Hardware: Satin/Brushed Nickel,**Vent:**4 Bar Push Out,**Casement/Vent Limit Stop:**STD - Vent Limit Travel**Casement/Vent Limitstop Dim:**4",
Screen: Wicket Screen,**Material:**Aluminum Wire,**Ship:**Ship Screen Separate,
Install Acc No Nailing Fin,
Frame Depth:3 1/4",
Int. Frame24568_1984 1 5/8" x 2 1/2" Trim,**Factory Apply:** No - Precut and Ship Loose**Add:** 4", **Cut Angle:** Straight,
Perimeter Acc Color: Dark Bronze,

Unit:1-Casement Hinge Left Push Out - Cam Handle **Exact Size:** 19 X 48,**NOT Egress,**
Clear Opening: 9 X 42 9/16
Clear Opening Sqft: 2 11/16
NFRC - U-Factor:0.43**SHGC:**0.29**VT:**0.48**AL:**≤0.3**CR:**48
Rating: CW-80
Left Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Unit:2-Direct Set **Exact Size:** 19 X 24,
NFRC - U-Factor:0.31**SHGC:**0.33**VT:**0.57**AL:**≤0.3**CR:**62
Rating: DP-50
Fixed Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Overall Rating: DP-50
Total Weight 70 lbs.

7	G	4	EA	Quaker Unit



** Viewed From Exterior **

Series: 3 1/4" - Historic (H450)

Exact Size: 38 X 55
Color: Dark Bronze,**Paint Type:**2605,
Glass: EnergyBasic (Dual Silver),Argon Filled,
Muntin: Custom SDL,
Exterior:538352 7/8" Raised ,Between Gls:5/8X3/8" Internal (Standard),Interior:10847 1" Flat ,
Muntin Color: Exterior:Dark Bronze,Between Gls:Black,Interior:Dark Bronze,
Hardware: Satin/Brushed Nickel,**Vent:**4 Bar Push Out,
Screen: Flex Screen,**Material:**Flex Screen,**Ship:**Ship Screen Separate,
Install Acc No Nailing Fin,
Frame Depth:3 1/4",
Int. Frame24568_1984 1 5/8" x 2 1/2" Trim,**Factory Apply:** No - Precut and Ship Loose**Add:** 4", **Cut Angle:** Straight,
Perimeter Acc Color: Dark Bronze,

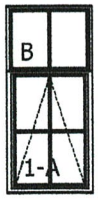
Unit:1-2 - Cont Frame - 2 Tall

1A-Fixed,**1B**-Vent - Awning Push Out - Cam Handle,

Exact Size: 38 X 55,**Row 1 Height:**19,
Clear Opening: 25 1/2 X 31 7/16
Clear Opening Sqft: 5 5/8SecB**: Not Egress,**
Clear Opening: 25 1/2 X 31 7/16
Clear Opening Sqft: 5 5/8
NFRC - U-Factor:0.43**SHGC:**0.29**VT:**0.48**AL:**≤0.3**CR:**49
Rating: DP-50
Bottom Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass
Top Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Overall Rating: DP-50
Total Weight 91 lbs.

8	H	2	EA	Quaker Unit



** Viewed From Exterior **

Series: 3 1/4" - Historic (H450)

Exact Size: 25 X 55
Color: Dark Bronze,**Paint Type:**2605,
Glass: EnergyBasic (Dual Silver),Argon Filled,
Muntin: Custom SDL,
Exterior:538352 7/8" Raised ,Between Gls:5/8X3/8" Internal (Standard),Interior:10847 1" Flat ,
Muntin Color: Exterior:Dark Bronze,Between Gls:Black,Interior:Dark Bronze,
Hardware: Satin/Brushed Nickel,**Vent:**4 Bar Push Out,
Screen: Flex Screen,**Material:**Flex Screen,**Ship:**Ship Screen Separate,
Install Acc No Nailing Fin,
Frame Depth:3 1/4",
Int. Frame24568_1984 1 5/8" x 2 1/2" Trim,**Factory Apply:** No - Precut and Ship Loose**Add:** 4", **Cut Angle:** Straight,
Perimeter Acc Color: Dark Bronze,

Unit:1-2 - Cont Frame - 2 Tall

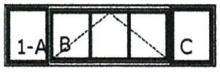
1A-Vent - Awning Push Out - Cam Handle,**1B**-Fixed,

Exact Size: 25 X 55,**Row 1 Height:**36,SecA**: Not Egress,**
Clear Opening: 13 1/4 X 31 7/16
Clear Opening Sqft: 2 15/16
Clear Opening: 13 1/4 X 31 7/16

Clear Opening Sqft: 2 15/16
NFRC - U-Factor:0.43**SHGC:**0.29**VT:**0.48**AL:**≤0.3**CR:**49
Rating: DP-50
Bottom Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass
Top Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Overall Rating: DP-50
Total Weight 67 lbs.

9	J	2	EA	Quaker Unit



** Viewed From Exterior **

Series: 3 1/4" - Historic (H450)

Exact Size: 72 X 21
Color: Dark Bronze,**Paint Type:**2605,
Glass: EnergyBasic (Dual Silver),Argon Filled,
Muntin: Custom SDL,
Exterior:538352 7/8" Raised ,Between Gls:5/8X3/8" Internal (Standard),Interior:10847 1" Flat ,
Muntin Color: Exterior:Dark Bronze,Between Gls:Black,Interior:Dark Bronze,
Hardware: Satin/Brushed Nickel,**Vent:**4 Bar Push Out,
Screen: Flex Screen,**Material:**Flex Screen,**Ship:**Ship Screen Separate,
Install Acc No Nailing Fin,
Frame Depth:3 1/4",
Int. Frame24568_1984 1 5/8" x 2 1/2" Trim,**Factory Apply:** No - Precut and Ship Loose**Add:** 4", **Cut Angle:** Straight,
Perimeter Acc Color: Dark Bronze,

Unit:1-3 - Cont Frame - 3 Wide

1A-Fixed,**1B**-Vent - Awning Push Out - Cam Handle,**1C**-Fixed,

Exact Size: 72 X 21,**Section A Width:**15,**Section B Width:**42,
Clear Opening: 30 7/8 X 15 9/16
Clear Opening Sqft: 3 3/8SecB**: Not Egress,**
Clear Opening: 30 7/8 X 15 9/16
Clear Opening Sqft: 3 3/8
Clear Opening: 30 7/8 X 15 9/16
Clear Opening Sqft: 3 3/8
NFRC - U-Factor:0.43**SHGC:**0.29**VT:**0.48**AL:**≤0.3**CR:**49
Rating: DP-50 *
Left Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass
Center Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass
Right Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Overall Rating: DP-50
Total Weight 76 lbs.

10	K	1	EA	Quaker Unit

** Viewed From Exterior **

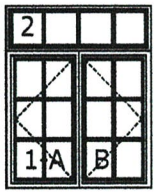
Series: 3 1/4" - Historic (H450)

Exact Size: 66 X 48
Color: Dark Bronze,**Paint Type:**2605,
Glass: EnergyBasic (Dual Silver),Argon Filled,
Install Acc No Nailing Fin,
Frame Depth:3 1/4",
Int. Frame24568_1984 1 5/8" x 2 1/2" Trim,**Factory Apply:** No - Precut and Ship Loose**Add:** 4", **Cut Angle:** Straight,
Perimeter Acc Color: Dark Bronze,

Unit:1-Direct Set **Exact Size:** 66 X 48,
NFRC - U-Factor:0.3**SHGC:**0.36**VT:**0.62**AL:**≤0.3**CR:**61
Rating: DP-50 *
Fixed Glass: Cardinal LowE 272 - 5/32 / Clear - 5/32,**Strength:**Annealed Glass

Overall Rating: DP-50
Total Weight 120 lbs.

11	L	2	EA	Quaker Unit



** Viewed From Exterior **

Series: 3 1/4" - Historic (H450)

Exact Size: 38 X 48
Model : 1 Wide Top Stack,Factory Mull - **Horizontal Mull-1:**C Mull, **Mull Rating: DP-**50, **Mull Cut:** Straight
Color: Dark Bronze,**Paint Type:**2605,
Glass: EnergyBasic (Dual Silver),Argon Filled,
Muntin: Custom SDL,
Exterior:538352 7/8" Raised ,Between Gls:5/8X3/8" Internal (Standard),Interior:10847 1" Flat ,
Muntin Color: Exterior:Dark Bronze,Between Gls:Black,Interior:Dark Bronze,
Hardware: Satin/Brushed Nickel,**Vent:**4 Bar Push Out,**Casement/Vent Limit Stop:**STD - Vent Limit Travel**Casement/Vent Limitstop Dim:**4",
Screen: Wicket Screen,**Material:**Aluminum Wire,**Ship:**Ship Screen Separate,
Install Acc No Nailing Fin,
Frame Depth:3 1/4",
Int. Frame24568_1984 1 5/8" x 2 1/2" Trim,**Factory Apply:** No - Precut and Ship Loose**Add:** 4", **Cut Angle:** Straight,
Perimeter Acc Color: Dark Bronze,

Unit:1-2 - Cont Frame - 2 Wide

1A-Vent - Left Push Out - Cam Handle,**1B-**Vent - Right Push Out - Cam Handle,

Exact Size: 38 X 36,**Section A Width:**19,SecA**: Not Egress,**
Clear Opening: 8 1/4 X 30 9/16
Clear Opening Sqft: 1 13/16SecB**: Not Egress,**
Clear Opening: 8 1/4 X 30 9/16
Clear Opening Sqft: 1 13/16
NFRC - U-Factor:0.43**SHGC:**0.29**VT:**0.48**AL:**≤0.3**CR:**48
Rating: CW-80
Left Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass
Right Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Unit:2-Direct Set **Exact Size:** 38 X 12,
NFRC - U-Factor:0.31**SHGC:**0.33**VT:**0.57**AL:**≤0.3**CR:**62
Rating: DP-50
Fixed Glass: Cardinal LowE 272 - DSB / Clear - DSB,**Strength:**Annealed Glass

Overall Rating: DP-50
Total Weight 95 lbs.

12	1	EA	Order Items

Weighted Average Rating
U-Factor:0.42
SHGC:0.29
VT:0.49
DP:50

QUAKER COMMERCIAL

H450

HISTORICAL ALUMINUM SERIES

Casement | Project-Out | Fixed

Product Material
Aluminum

Frame Depth
3 ¼”

Rating
Casement: CW90
Project-Out: CW70
Fixed: Up to AW110

Gold Medal Lofts
(formerly Gold Medal Furniture)
Racine, WI
Developers: J. Jeffers & Co.
Architect: Engberg, Anderson Architects
Contractor: Greenfire Mgmt. Services
Dealer: Gordon Solutions

Design Pressure **Casement: Up to 105** **Project-Out: Up to 105** **Fixed: Up to 110**	U-Value* **Casement: .39 - .44** **Project-Out: .40 - .60** **Fixed: .25 - .31**
Air Infiltration **Casement: <.30** **Project-Out: <.30** **Fixed: <.10**	SHGC* **Casement: .14 - .48** **Project-Out: .14 - .48** **Fixed: .16 - .57**
Water Resistance **Casement: Up to 10** **Project-Out: Up to 10** **Fixed: Up to 15**	CR* **Casement: 45 - 48** **Project-Out: 40 - 49** **Fixed: 49 - 62**
OITC[X] **Casement: 29 - 32** **Other models: Contact Quaker**	STC[X] **Casement: 34 - 37** **Other models: Contact Quaker**

*-Ranges based on multiple Low-E/Argon I.G. combinations
[X]-Ranges based on multiple I.G. combinations

FEATURES:

- Historically-correct bevel frame
- Architectural grade aluminum frame
- Thermally-broken frame and sash with pour-and-debridge technology
- 2 7/16” narrow sitelines
- With or without Integral Nailing Fin
- 1” insulating glass
- Standard High-Performance 2604 Powder Paint Finish (an FGIA Specification)
- Optional upgrade to 2605 Powder Paint Finish (an FGIA Specification)
- Casement and Project-out operating models
- 30+ “Quick-Pick” colors, with unlimited custom colors available.
- Optional Upgrade to 2605 Powder Paint Finish (an FGIA Specification)
- Impact rated versions (H470 Series) of Project-Out model w/cam handle and Fixed model

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May, 2022 V6

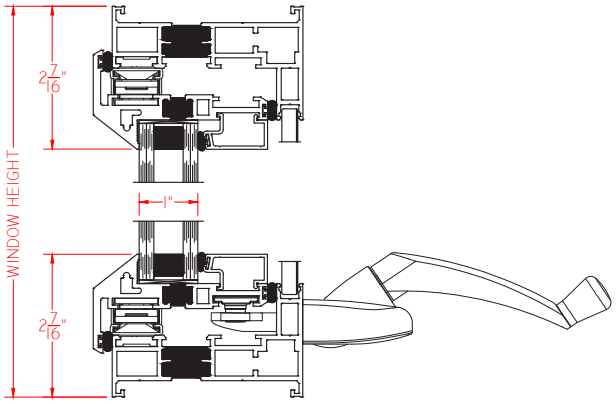
QUAKER
COMMERCIAL

H450

HISTORICAL ALUMINUM SERIES

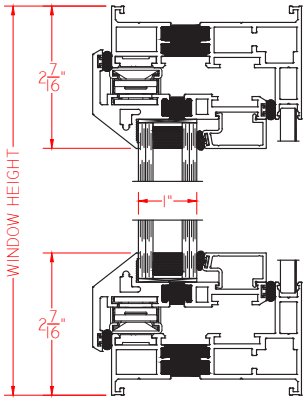
Casement Roto (CW90)

Test size = 36” x 60”



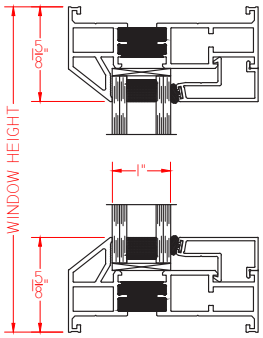
Casement Push/Pull Cup (CW90)

Test size = 36” x 60”



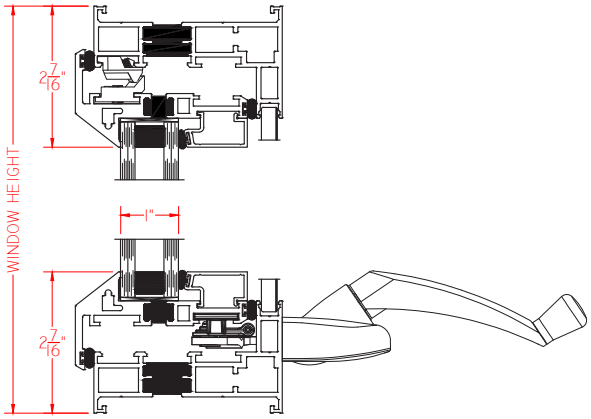
Fixed (AW110/AW60)

AW110 Test size = 72” x 110”
AW60 Test Size = 60” x 99”



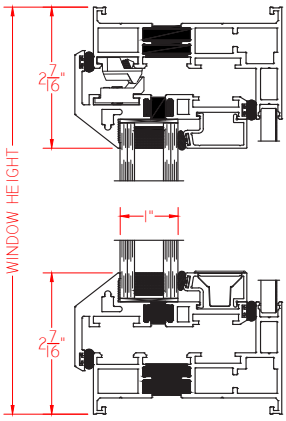
Project-Out Roto (CW70)

Test size = 60” x 36”



Project-Out Push/Pull Cup (CW70)

Test size = 60” x 36”



All ratings listed are NAFS certified.

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QuakerCommercialWindows.com
1-800-347-0438
Commercial@quakerwindows.com

Made in America: All Quaker products are designed and manufactured in the United States at our state-of-the-art facilities in Freeburg, MO and Eldon, MO.

VendingMiser®

VM150 / VM151 Installation Instructions

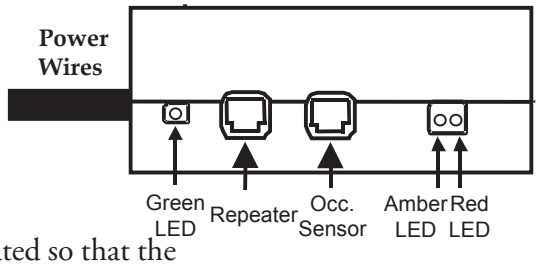
VendingMiser® is designed to operate as an intelligent power controller for cold product vending machines. Note that VendingMiser may not be used on any vending machine which contains perishable products.

General Theory of Operation

Using a Passive Infrared (PIR) occupancy sensor, VendingMiser will automatically shut down the controlled vending machine when the area around it has been vacant for 15 minutes. However, VendingMiser will periodically re-power the machine automatically to ensure that the vended product stays cold. In addition, VendingMiser contains a current sensor which determines if the vending machine's compressor is operating, and will delay power-down of the vending machine until the compressor has completed its cooling cycle.

To install the VendingMiser, follow these simple steps:

Locating and Mounting the VendingMiser



1. Unplug the vending machine's power cord from the outlet. If it is necessary to move the machine, be careful as it can be heavy. Note- Each vending machine should remain on the same outlet/circuit breaker at the end of installation.
2. Identify a suitable mounting location for VendingMiser, most likely on the wall behind the vending machine. VendingMiser must be located so that the machine's power cord can reach VendingMiser, and VendingMiser's power cord can reach the power outlet.
3. VendingMiser should be oriented so that the operational lights are viewable by maintenance personnel.
4. Using screws appropriate for the wall material, attach VendingMiser's steel mounting bracket to the identified location with the UP arrow facing towards the ceiling. "Snap" the VendingMiser DOWNWARDS onto the mounting bracket. (To remove VendingMiser later, "Snap" the unit UPWARDS.)
5. Plug the vending machine's power cord into the VendingMiser. Do not yet plug the VendingMiser into the wall outlet at this stage of the installation.

Occupancy Sensor or Sensor Repeater Installation

6. If the controlled vending machine is a single unit, or the first in a bank of machines, a PIR sensor must be installed as described below to create a Primary VendingMiser. If this VendingMiser is not the first bank unit, skip to Step 10 to install a Secondary VendingMiser.
7. The PIR sensor must be located so it can "See" anyone approaching the vending machine. Ideally, the sensor should be mounted on the wall behind the vending machine, about two feet above the machine. Note the picture on reverse side of this document - ensure that the TOP of the sensor is facing the ceiling. If low ceiling height above the vending machine does not allow wall mounting, mount on the ceiling in front of the vending machine. This requires that the "TOP" of the sensor points towards the vending machine to ensure proper operation. Always avoid sensor placement near air ducts which can falsely trigger the sensor.

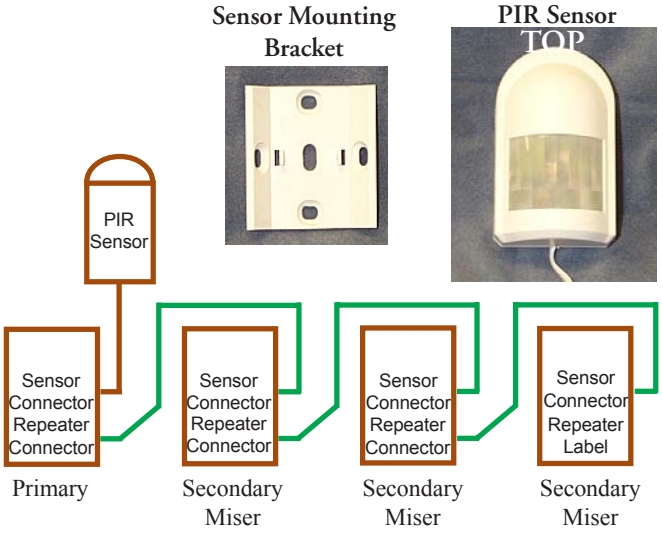
Revision 12-2008
Part #23020
Printed in the U.S.A.

1.800.561.8187 www.itm.com information@itm.com

VendingMiser®

VM150 / VM151 Installation Instructions (cont'd.)

8. To mount the sensor, use the supplied plastic mounting bracket shown below. Use appropriate fasteners to secure it to the selected surface. Then snap the sensor over the bracket. To remove the sensor at a later date, snap the sensor off the bracket by pulling the sensor straight out.
9. The occupancy sensor cable has a telephone style connector at its end. Plug this connector into the center socket on the VendingMiser. The sensor cable should be secured to the wall or ceiling by covering it with plastic low voltage wire raceway.
10. If a Secondary VendingMiser is being installed, use the supplied 3 Meter (10 feet) phone style cable to connect the OCCUPANCY SENSOR connector on this VendingMiser to the REPEATER connector on the Primary VendingMiser. Only remove the yellow label coving the REPEATER connector on the previous unit in the chain. Additional Secondary VendingMisers can be daisy-chained using the same techniques shown in the diagram to the right. A maximum of four Misers can be daisy-chained in this fashion. It is acceptable to mix VendingMisers with SnackMisers, PlugMisers, and/or CoolerMisers provided the sensor coverage is acceptable for all devices sharing the sensor.



Power-Up Testing and Install Validation

Plug the VendingMiser into the wall outlet. The following should occur:

- The vending machine should power up immediately.
- The Green LED should flash twice to indicate that the temperature sensor is functional.
- The Amber LED should then come on as the VendingMiser attempts to synchronize with the compressor's operation. This typically will require that the compressor cycle on and off.
- The Red LED should come on, indicating occupancy detection.

The PIR sensor must be allowed to stabilize for several minutes before its placement can be verified. Once the sensor is warmed up, it will flash at the slightest movement within its field of view. Validate that the sensor can "See" an occupant at, or approaching, the vending machine. If necessary, relocate the sensor and repeat the coverage test. The Red LED on the VendingMiser will mirror the state of the PIR sensor, with an additional 3 second delay. This verifies that VendingMiser is communicating with the PIR sensor.

As a final functional test, the VendingMiser will power-down the first time only after installation approximately two minutes after the area around the machine is vacant and the compressor is determined to be not running. Covering the PIR sensor or temporarily setting it to face the wall will allow validation of the power-down operation if so desired. Following this initial power-down, the VendingMiser will operate with standard time-outs.

NOTE: The VendingMiser will flash all three LEDs simultaneously and light a RED LED in the PIR sensor if the vending machine has failed and will not shut down its compressor after several hours of use. Since this prohibits the VendingMiser from shutting down the machine, please call the machine owner service line for machine service.

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