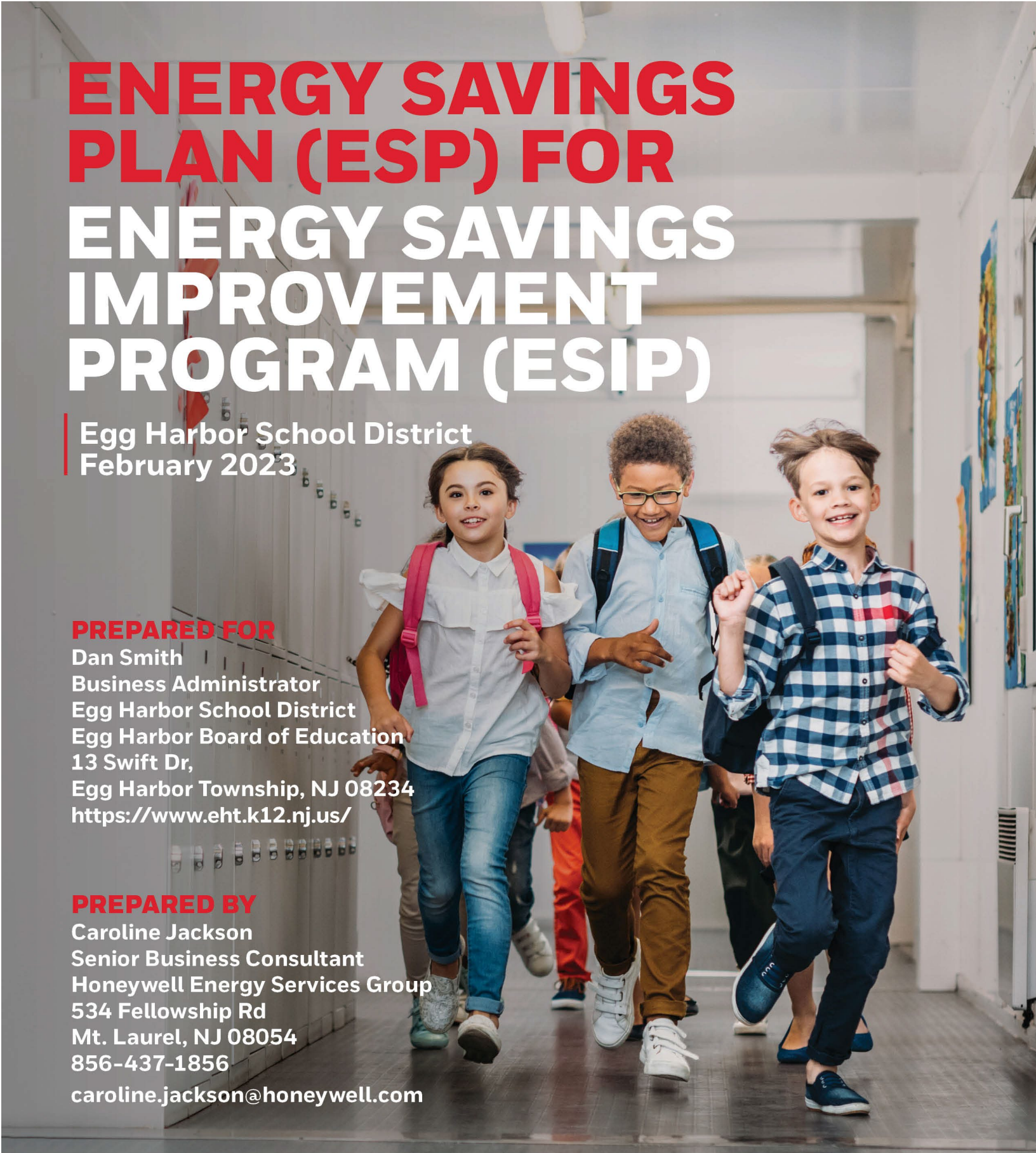
ENERGY SAVINGS PLAN (ESP) FOR ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

Egg Harbor School District
February 2023



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Honeywell

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Right to Negotiate

Honeywell has reviewed the Request for Proposals and, if selected, reserves the right to negotiate mutually acceptable terms and conditions of any resulting contract.

Budgetary Proposal

Notwithstanding any other provision of this document, this budgetary proposal is provided for information and planning purposes only, is non-binding, and does not constitute an offer capable of acceptance. Honeywell will be pleased to provide a firm price proposal upon request, subject to its internal approval requirements.

Honeywell reserves the right, in its discretion, to increase the price(s) set forth in this Proposal in the event that tariffs (or similar governmental charges) imposed by the United States or other countries result in any increase in the costs that Honeywell used to determine such price(s).

Equitable Extension of Time

Notwithstanding anything to the contrary, in light of the COVID-19 pandemic, the effects of which cannot be foreseen, the parties agree that Honeywell shall be entitled to an equitable extension of time to deliver or perform its work and appropriate additional compensation to the extent Honeywell's delivery or performance, or the delivery or performance of its suppliers and/or subcontractors, is in any way delayed, hindered or otherwise affected by the COVID-19 pandemic.

General Disclaimer about Pre-Contract Information

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Municipal Advisor Disclaimer

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SECTION A
EXECUTIVE SUMMARY

Section A – Executive Summary

Thank you for choosing to engage Honeywell to develop an Energy Savings Plan for the Egg Harbor School District (District).via you Omnia Co-op Membership.

It is understood that in order to remain compliant with the services of the COOP for the Egg Harbor School District; that ALL public works in conjunction with the School District and in accordance with NJ Public Contract Law (NJSA 18A:18A-1 et seq.) will be procured according to State requirements. To clarify further, this applies to a public works projects including and not limited to installing electrical, lighting, plumbing, HVAC, BMS systems etc.

During the development of the Energy Savings Plan, Honeywell has completed a thorough investment grade energy audit of the Egg Harbor School District buildings and grounds. Based on the audit findings and Honeywell's extensive experience in working with school districts, we can confidently state this plan can identify a project that is financially viable in a comprehensive manner to address the District's facility concerns and goals.

This Energy Savings Plan includes projects that achieve energy and operational efficiencies, create a more comfortable and productive environment and are actionable via the New Jersey Energy Savings Improvement Program (NJ ESIP) in accordance with NJ PL2012, c.55.

The Energy Savings Plan is the core of the NJ ESIP process. It describes the energy conservation measures that are planned and the cost calculations that support how the plan will pay for itself through the resulting energy savings. Under the law, the Energy Savings Plan must address the following elements:

- A description of the energy conservation measures (ECMs) that will comprise the program.
- An estimate of greenhouse gas reductions resulting from those energy savings.
- Identification of all design and compliance issues and identification of who will provide these services.
- An assessment of risks involved in the successful implementation of the plan.
- Identify the eligibility for, and costs and revenues associated with, the PJM Independent System Operator for demand response and curtail-able service activities.
- Schedules showing calculations of all costs of implementing the proposed energy conservation measures and the projected energy savings.
- Maintenance requirements necessary to ensure continued energy savings, and describe how they will be provided; and

Additionally, the use of Omnia Cooperative in the selection of Honeywell is allowed under NJ Public Contracts law as outlined in LFN 2012-10 and consists of the following elements and authorized by DLGS/DCA as well as the following elements:

- An organization (profit or not-for-profit) that coordinates and aggregates contracts from different state and local governments and promotes their use."
- In the context of the LPCL and PSCL, the provisions of this notice apply when the aggregate value of the goods or services (see N.J.A.C. 5:34-8.2) exceeds the contracting unit's bid threshold."
- The national cooperative contract must have been advertised as a national or regional cooperative and awarded pursuant to a competitive bidding process that complies with the laws applicable.

- The LFN requires that if a national cooperative contract is chosen, the calculation of cost savings from using this approach must be documented: The Law requires that a contracting unit can use national cooperatives only when the contracting unit determines "that the use of the cooperative purchasing agreement shall result in cost savings after all factors, including charges for service, material, and delivery, have been considered."
- The LFN states that if using an online ordering system, local officials must put "appropriate internal controls" in place to ensure that purchases are documented and that an audit trail exists
- Per the LFN, the Egg Harbor BOE must verify that the selected vendor complies with applicable New Jersey procurement documentation requirements. The following required and other forms can be found in Appendix 5 of this document:
  - New Jersey Business Registration Certificate for the contractor and any subcontractors (i.e., copy of certificate)
  - Statement of Corporate Ownership (an original form prepared for the contracting agency awarding the contract)
  - Public Contract EEO Compliance (Employee Information Report form or proof of participation in a federally approved affirmative action program)
  - Non-collusion Affidavit

The purpose of this document is to provide all the information required for the Egg Harbor School District to determine the best path forward in the implementation of a District-Wide NJ ESIP Project. It is important to note that the Energy Savings Plan provides a comprehensive evaluation of ALL potential ECMs within the Egg Harbor School District. This is not meant to infer that all the ECMs identified can be implemented. However, if the ECM is part of this plan, it may be implemented later as additional funding becomes available or technology changes to provide for an improved financial return.
This Energy Savings Plan is structured to clearly demonstrate compliance with the NJ ESIP law, while also presenting the information in an organized manner which allows for informed decisions to be made. The information is divided into the following sections:

A. **Executive Summary** (This Section)

B. **Preliminary Utility Analysis** – The Preliminary Utility Analysis (PUA) defines the utility baseline for the Egg Harbor School District buildings included in the Energy Savings Plan. It provides an overview of the current usage and a cost per square foot by building of utility expenses.

The report also compares the Egg Harbor School District's utility consumption to that of other districts in the same region on a per square foot basis.

C. **Energy Conservation Measures** – This section includes a detailed description of the ECMs we have identified for your School District. It is specific to your facilities in scope, savings methodology and environmental impact. It is intended to provide a basis of design for each measure in narrative form. It is not intended to be a detailed specification for construction. ALL potential ECMs for the Egg Harbor School District are identified for the purposes of potential inclusion in the program. Final selected ECMs are to be determined solely by the Egg Harbor School District and the financial goals outlined within the ESIP program to be self-funding within existing budget guidelines. The sample ECM selections and preliminary financials are based on the selections noted in Form II in the Technical and financial summary.

D. **Technical and Financial Summary** – This section includes an accounting of all technical and financial outcomes associated with the ECMs as presented. The information detailed on the forms includes projected implementation hard costs, projected energy savings, projected operational savings and projected environmental impact. Form VI: Annual Cash Flow Analysis provides a "rolled-up" view of the overall project financials, inclusive of financing costs, on an annual basis as well as over the entire 15-year term of the agreement.

E. **Measurement & Verification and Maintenance Plan** – This section identifies the intended methods of verification and measurement for calculating energy savings. These methods are compliant with the International Measurement and Verification Protocols (IMVP), as well as other protocols previously approved by the Board of Public Utilities (BPU) in New Jersey. This section also includes the recommended maintenance requirements for each type of equipment. Consistent maintenance is essential to achieving the energy savings projected in this plan.

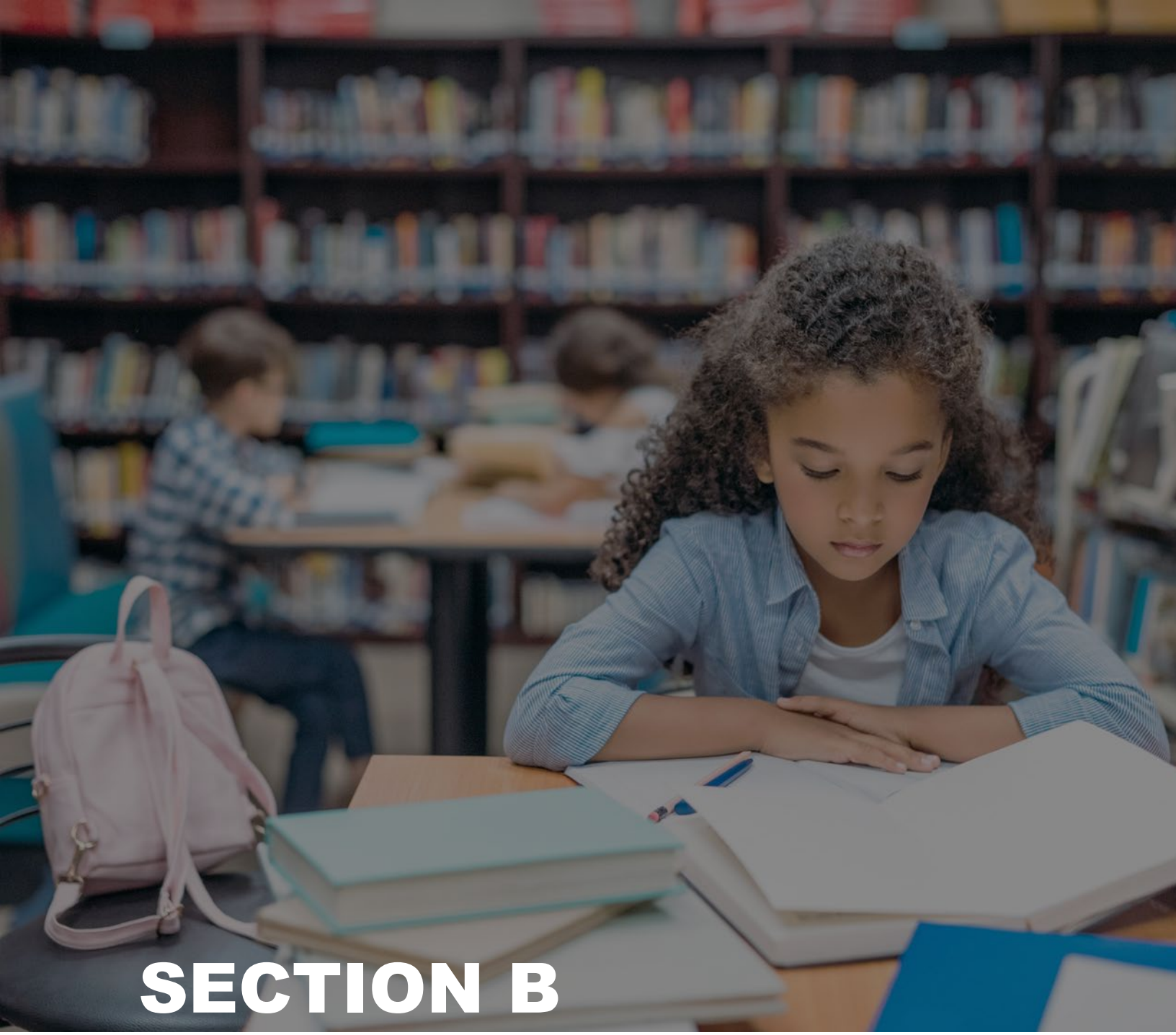
Appendices 1-6 – The following files have been uploaded to a Teams Folder once reviewed will be provided on a USB drive to be included with our final submission:

- **Appendix 1** — Local Government Energy Audits
- **Appendix 2**— ECM Calculations
- **Appendix 3**— Equipment Cut Sheets
- **Appendix 4**— Lighting Line By Line
- **Appendix 5**— Required Forms & Omnia Cooperative / NJ Procurement Documentation

Benefits

The measures investigated in this Energy Savings Plan could result in an annual utility savings of 3,720,629 kWh of electricity and 36,434 therms. Additionally, these energy savings will result in a net reduction of greenhouse gases and will reduce the school district's carbon footprint by 1,300 MTE of CO2 annually. This is equivalent to removing 274 cars from the road annually and /or 1,231 forested acres per year. All these savings are achieved while improving the classroom environment and renewing many items that have been in service beyond useful life expectancy.

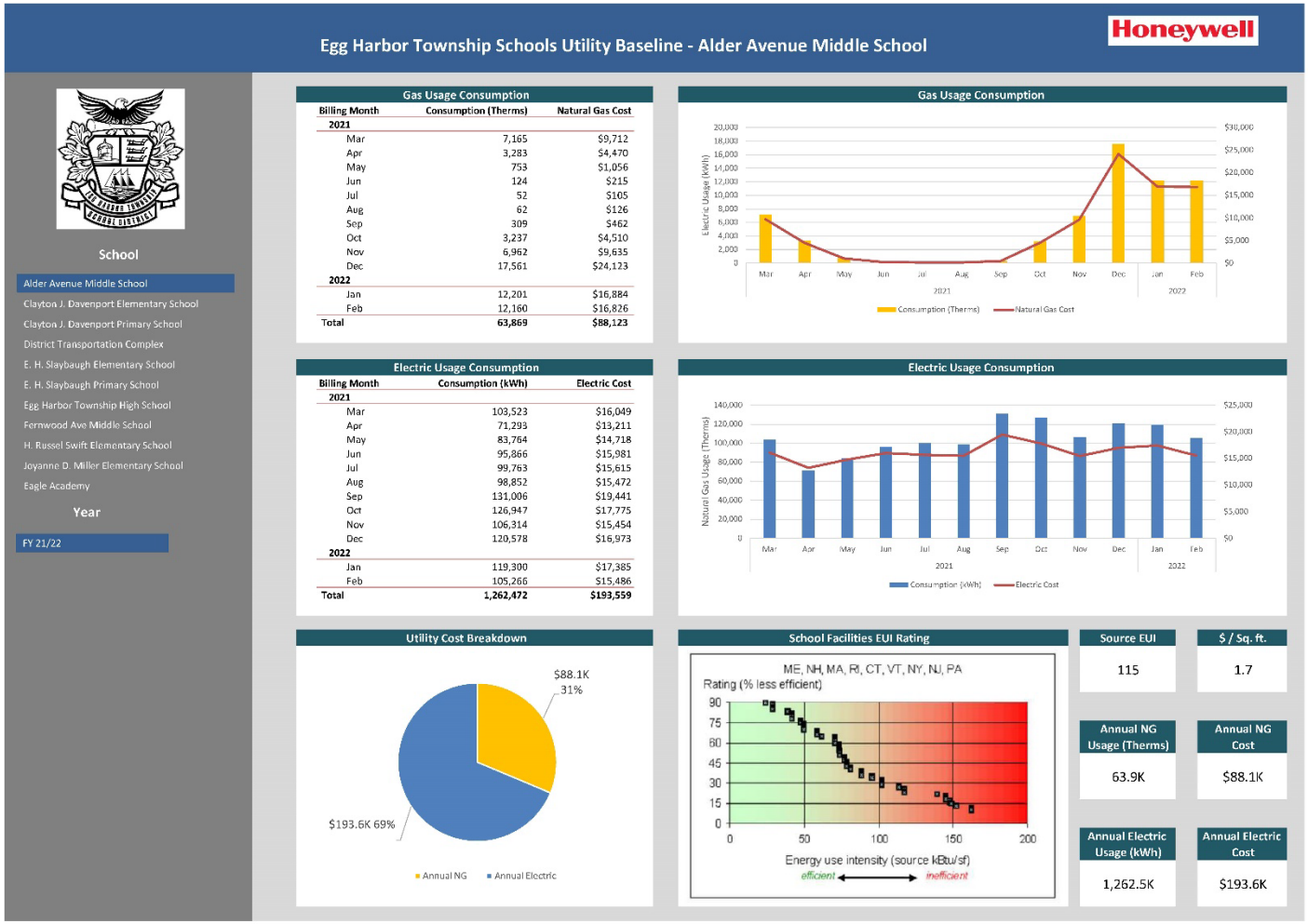
Overall, it is evident that the Egg Harbor School District is well positioned to implement a program that will upgrade your facilities, while funding itself within the requirements of the law and with zero impact on your taxpayer base. We appreciate the opportunity to provide the District with this guideline to improve the comfort and efficiency of your facilities through the successful implementation of this Energy Savings Plan should the district decide to move forward with a project.

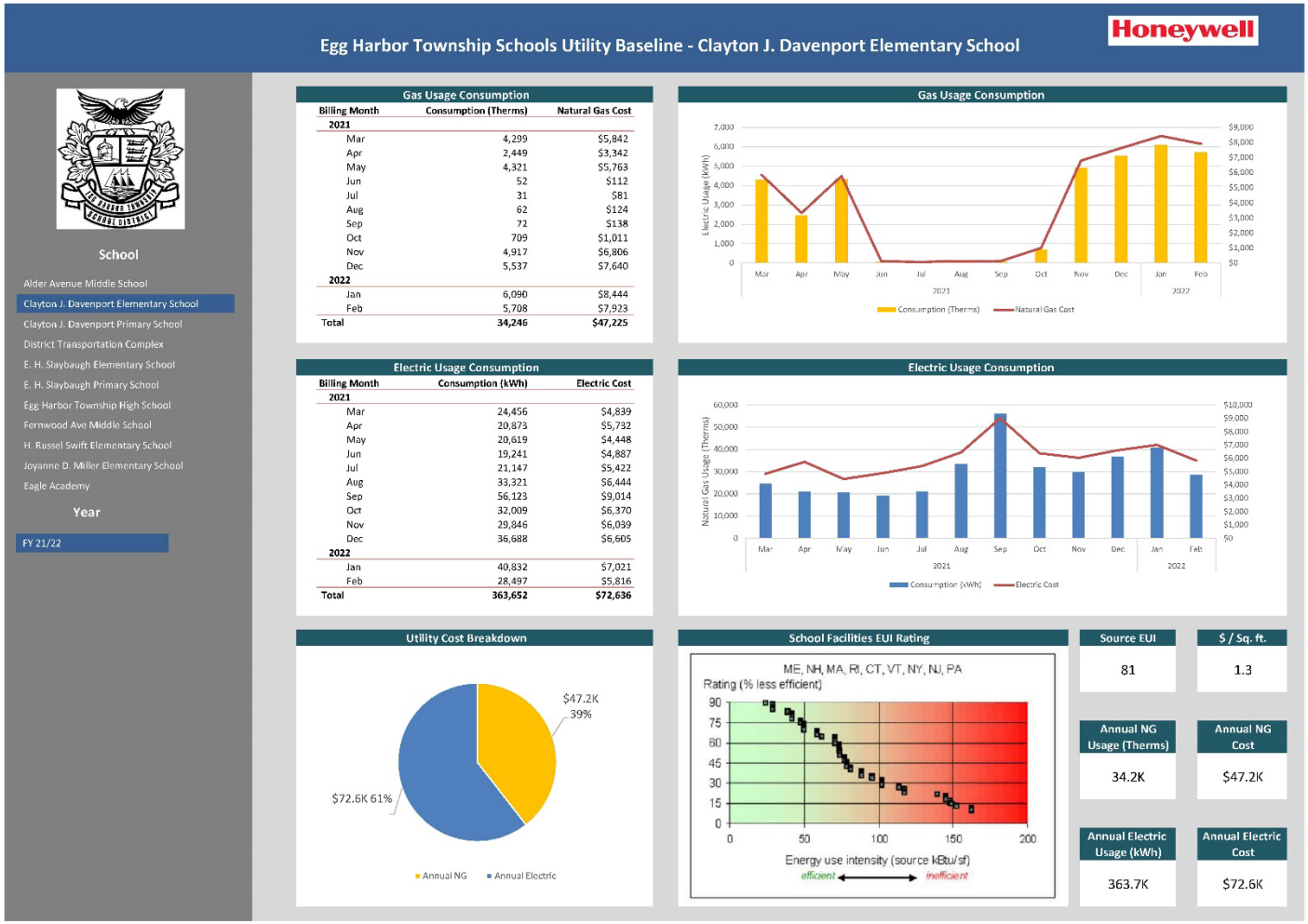


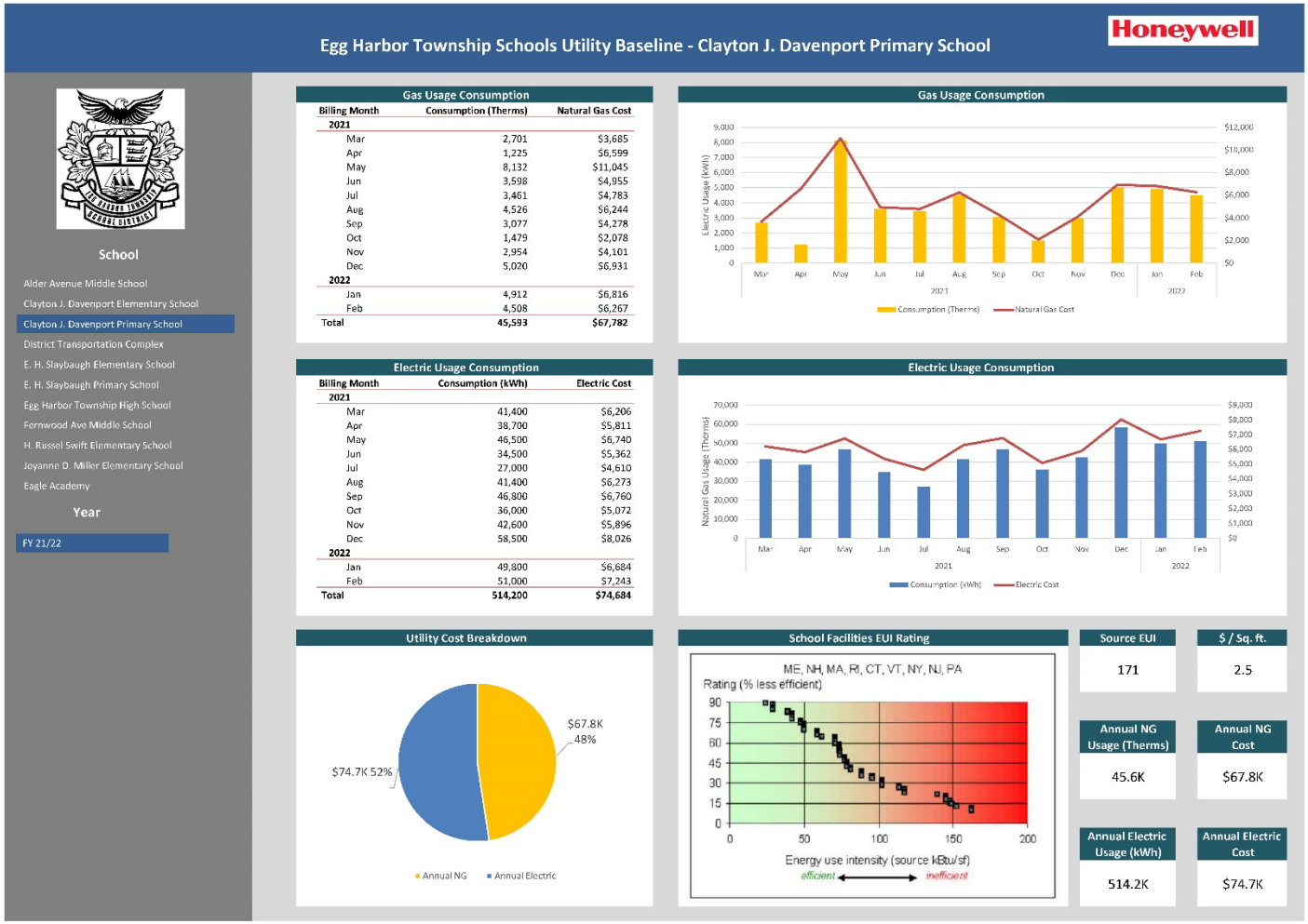
SECTION B
PRELIMINARY UTILITY ANALYSIS (PUA)

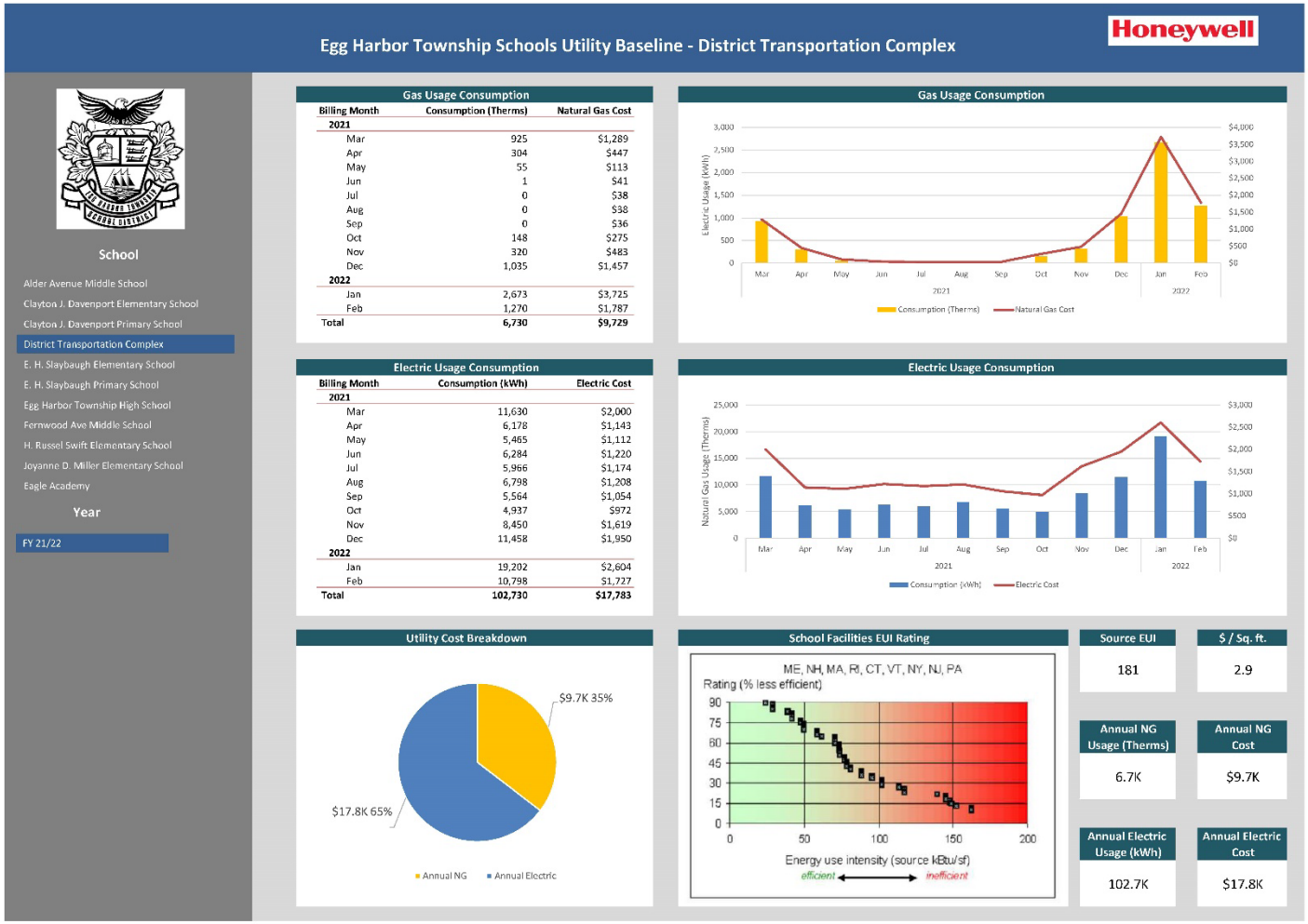
Section B — Utility Dashboards by School Building & Preliminary Utility Analysis (PUA)

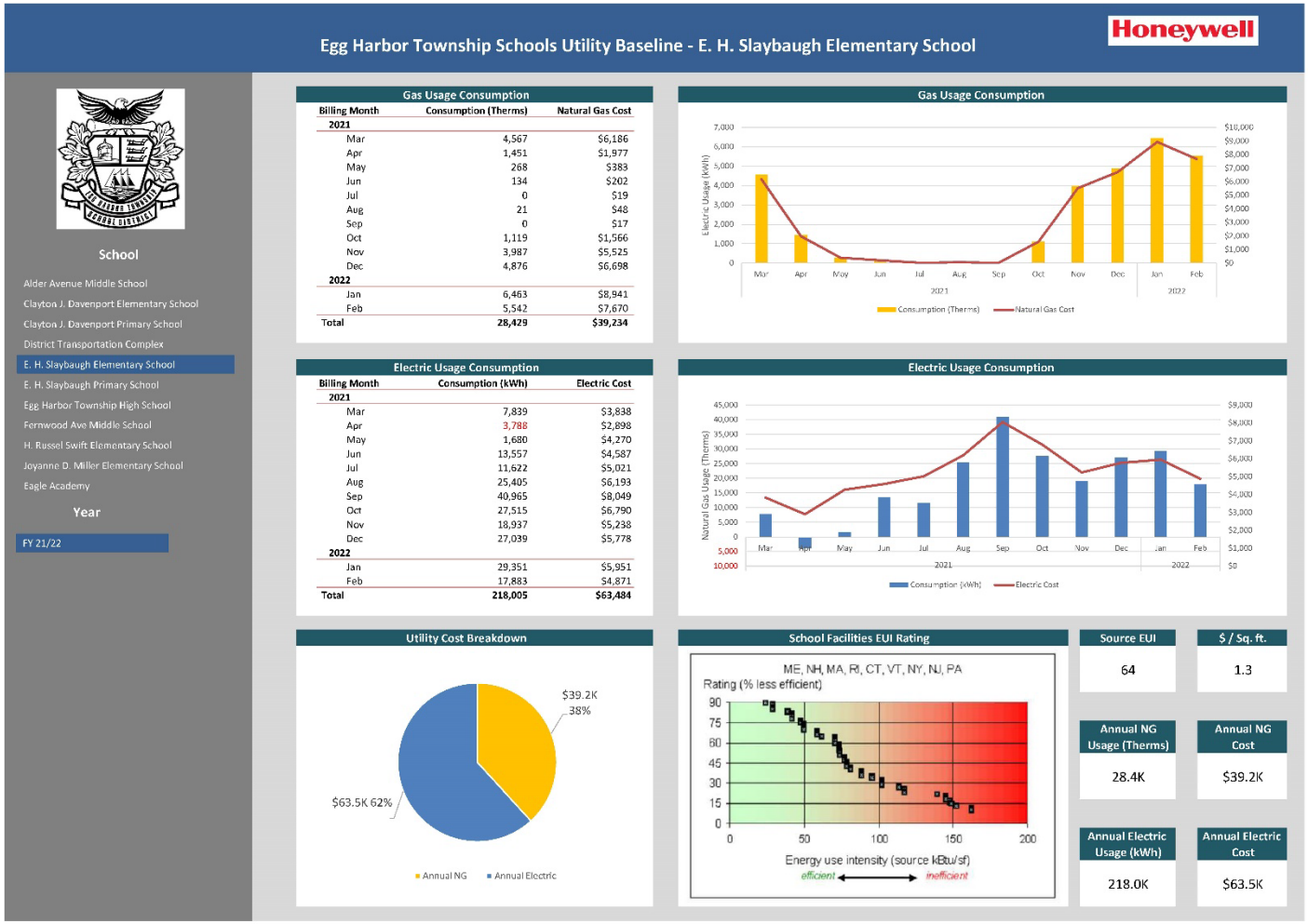
Utility Dashboards

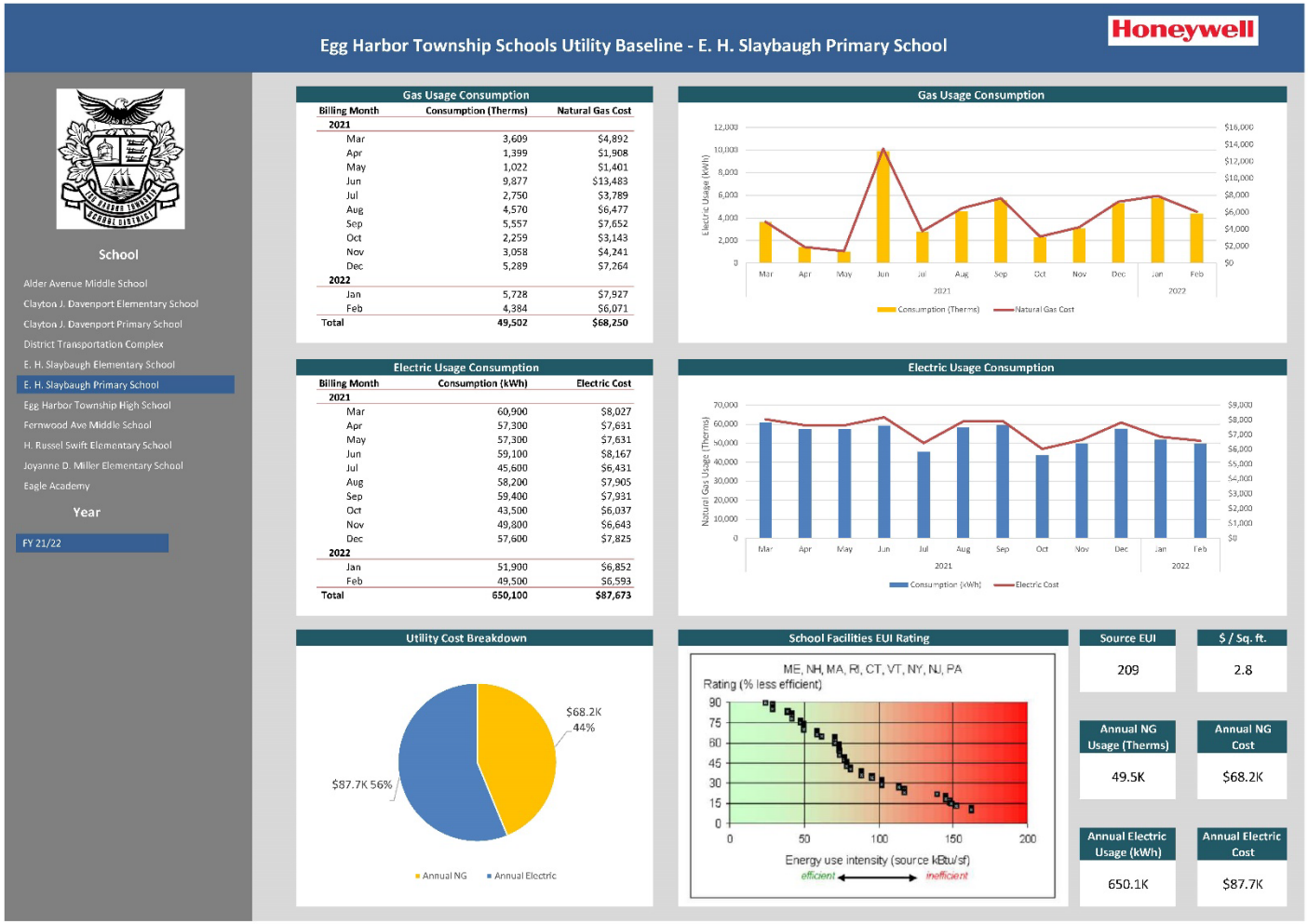


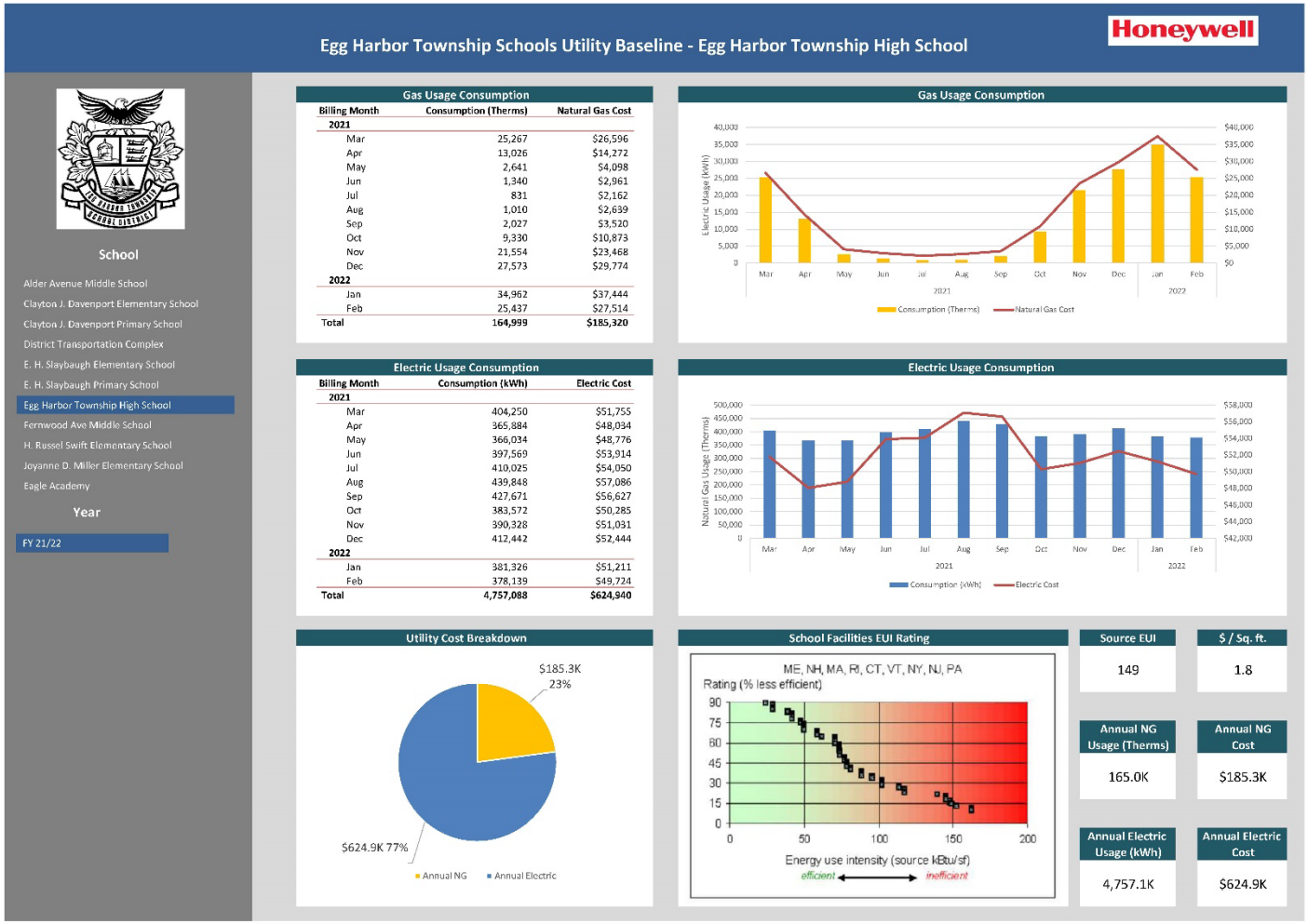












Egg Harbor Township Schools Utility Baseline - Egg Harbor Township High School

School

- Alder Avenue Middle School
- Clayton J. Davenport Elementary School
- Clayton J. Davenport Primary School
- District Transportation Complex
- E. H. Slaybaugh Elementary School
- E. H. Slaybaugh Primary School
- Egg Harbor Township High School
- Fernwood Ave Middle School
- H. Russel Swift Elementary School
- Joyanne D. Miller Elementary School
- Eagle Academy

Year

FY 21/22

Gas Usage Consumption

Billing Month	Consumption (Therms)	Natural Gas Cost
2021		
Mar	25,267	$26,596
Apr	13,026	$14,272
May	2,641	$4,098
Jun	1,340	$2,961
Jul	831	$2,162
Aug	1,010	$2,639
Sep	2,027	$3,520
Oct	9,330	$10,873
Nov	21,554	$23,468
Dec	27,573	$29,774
2022		
Jan	34,962	$37,444
Feb	25,437	$27,514
Total	164,999	$185,320

Gas Usage Consumption

Electric Usage Consumption

Billing Month	Consumption (kWh)	Electric Cost
2021		
Mar	404,250	$51,755
Apr	365,884	$48,034
May	366,034	$48,776
Jun	397,569	$53,914
Jul	410,025	$54,050
Aug	439,848	$57,086
Sep	427,671	$56,627
Oct	383,572	$50,285
Nov	390,328	$51,031
Dec	412,442	$52,444
2022		
Jan	381,326	$51,211
Feb	378,139	$49,724
Total	4,757,088	$624,940

Electric Usage Consumption

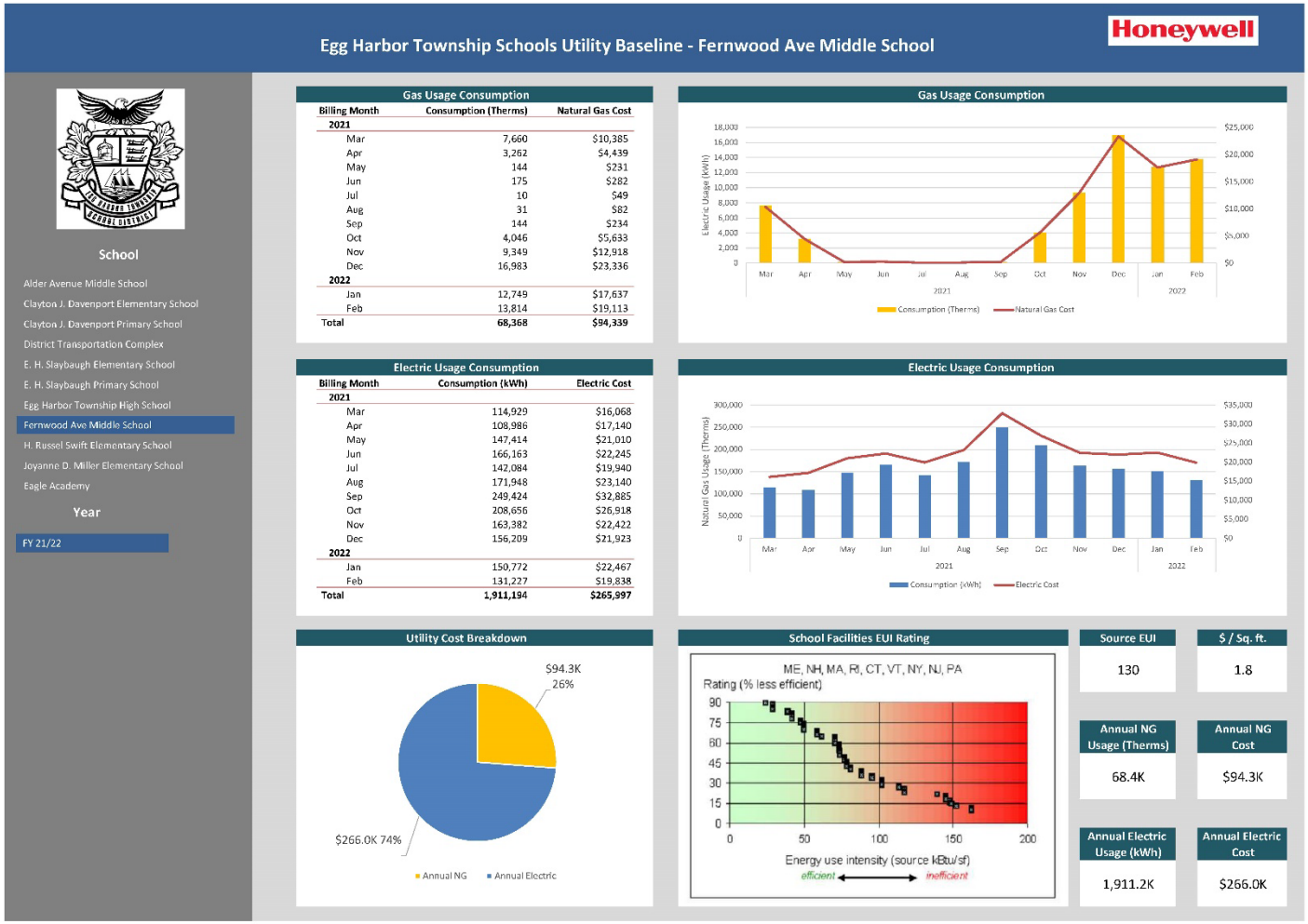
Utility Cost Breakdown

School Facilities EUI Rating

Source EUI	$ / Sq. ft.
149	1.8

Annual NG Usage (Therms)	Annual NG Cost
165.0K	$185.3K

Annual Electric Usage (kWh)	Annual Electric Cost
4,757.1K	$624.9K



Egg Harbor Township Schools Utility Baseline - Fernwood Ave Middle School

School

- Alder Avenue Middle School
- Clayton J. Davenport Elementary School
- Clayton J. Davenport Primary School
- District Transportation Complex
- E. H. Slaybaugh Elementary School
- E. H. Slaybaugh Primary School
- Egg Harbor Township High School
- Fernwood Ave Middle School
- H. Russel Swift Elementary School
- Joyanne D. Miller Elementary School
- Eagle Academy

Year

FY 21/22

Gas Usage Consumption

Billing Month	Consumption (Therms)	Natural Gas Cost
2021		
Mar	7,660	$10,385
Apr	3,262	$4,439
May	144	$231
Jun	175	$282
Jul	10	$49
Aug	31	$82
Sep	144	$234
Oct	4,046	$5,633
Nov	9,349	$12,918
Dec	16,983	$23,336
2022		
Jan	12,749	$17,637
Feb	13,814	$19,113
Total	68,368	$94,339

Gas Usage Consumption

Electric Usage Consumption

Billing Month	Consumption (kWh)	Electric Cost
2021		
Mar	114,929	$16,068
Apr	108,986	$17,140
May	147,414	$21,010
Jun	166,163	$22,245
Jul	142,084	$19,940
Aug	171,948	$23,140
Sep	249,424	$32,885
Oct	208,656	$26,918
Nov	163,382	$22,422
Dec	156,209	$21,923
2022		
Jan	150,772	$22,467
Feb	131,227	$19,838
Total	1,911,194	$265,997

Electric Usage Consumption

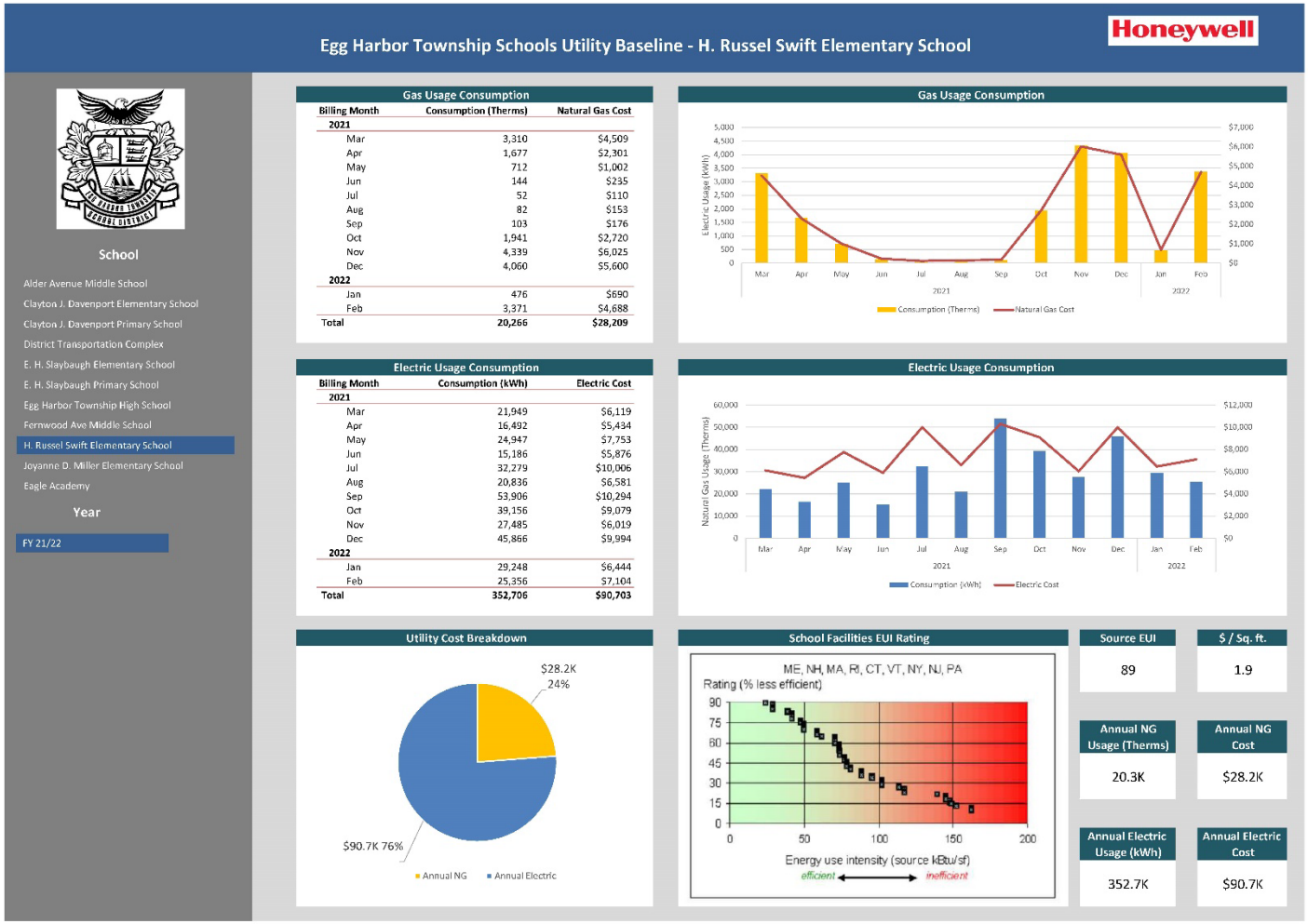
Utility Cost Breakdown

School Facilities EUI Rating

Source EUI	$ / Sq. ft.
130	1.8

Annual NG Usage (Therms)	Annual NG Cost
68.4K	$94.3K

Annual Electric Usage (kWh)	Annual Electric Cost
1,911.2K	$266.0K



Egg Harbor Township Schools Utility Baseline - H. Russel Swift Elementary School

School

- Alder Avenue Middle School
- Clayton J. Davenport Elementary School
- Clayton J. Davenport Primary School
- District Transportation Complex
- E. H. Slaybaugh Elementary School
- E. H. Slaybaugh Primary School
- Egg Harbor Township High School
- Fernwood Ave Middle School
- H. Russel Swift Elementary School
- Joyanne D. Miller Elementary School
- Eagle Academy

Year

FY 21/22

Gas Usage Consumption

Billing Month	Consumption (Therms)	Natural Gas Cost
2021		
Mar	3,310	$4,509
Apr	1,677	$2,301
May	712	$1,002
Jun	144	$235
Jul	52	$110
Aug	82	$153
Sep	103	$176
Oct	1,941	$2,720
Nov	4,339	$6,025
Dec	4,060	$5,600
2022		
Jan	476	$690
Feb	3,371	$4,688
Total	20,266	$28,209

Gas Usage Consumption

Electric Usage Consumption

Billing Month	Consumption (kWh)	Electric Cost
2021		
Mar	21,949	$6,119
Apr	16,492	$5,434
May	24,947	$7,753
Jun	15,186	$5,876
Jul	32,279	$10,006
Aug	20,836	$6,581
Sep	53,906	$10,294
Oct	39,156	$9,079
Nov	27,485	$6,019
Dec	45,866	$9,994
2022		
Jan	29,248	$6,444
Feb	25,356	$7,104
Total	352,706	$90,703

Electric Usage Consumption

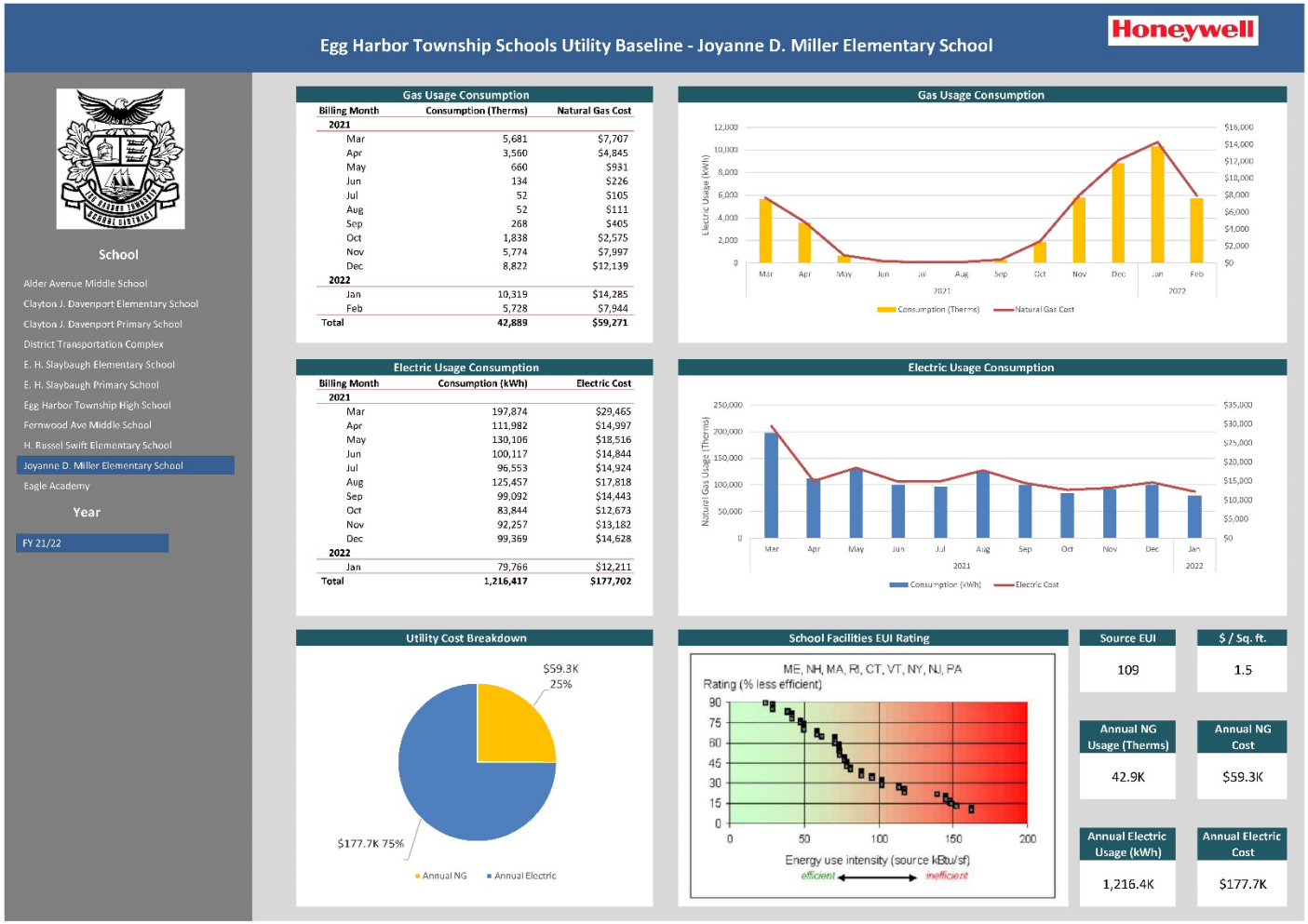
Utility Cost Breakdown

School Facilities EUI Rating

Source EUI	$ / Sq. ft.
89	1.9

Annual NG Usage (Therms)	Annual NG Cost
20.3K	$28.2K

Annual Electric Usage (kWh)	Annual Electric Cost
352.7K	$90.7K



Egg Harbor Township Schools Utility Baseline - Joyanne D. Miller Elementary School

School

- Alder Avenue Middle School
- Clayton J. Davenport Elementary School
- Clayton J. Davenport Primary School
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- E. H. Slaybaugh Primary School
- Egg Harbor Township High School
- Fernwood Ave Middle School
- H. Russel Swift Elementary School
- Joyanne D. Miller Elementary School
- Eagle Academy

Year

FY 21/22

Gas Usage Consumption

Billing Month	Consumption (Therms)	Natural Gas Cost
2021		
Mar	5,681	$7,707
Apr	3,560	$4,845
May	660	$931
Jun	134	$226
Jul	52	$105
Aug	52	$111
Sep	268	$405
Oct	1,838	$2,575
Nov	5,774	$7,997
Dec	8,822	$12,139
2022		
Jan	10,319	$14,285
Feb	5,728	$7,944
Total	42,889	$59,271

Gas Usage Consumption

Electric Usage Consumption

Billing Month	Consumption (kWh)	Electric Cost
2021		
Mar	197,874	$29,465
Apr	111,982	$14,997
May	130,106	$18,516
Jun	100,117	$14,844
Jul	96,553	$14,924
Aug	125,457	$17,818
Sep	99,092	$14,443
Oct	83,844	$12,673
Nov	92,257	$13,182
Dec	99,369	$14,628
2022		
Jan	79,766	$12,211
Total	1,216,417	$177,702

Electric Usage Consumption

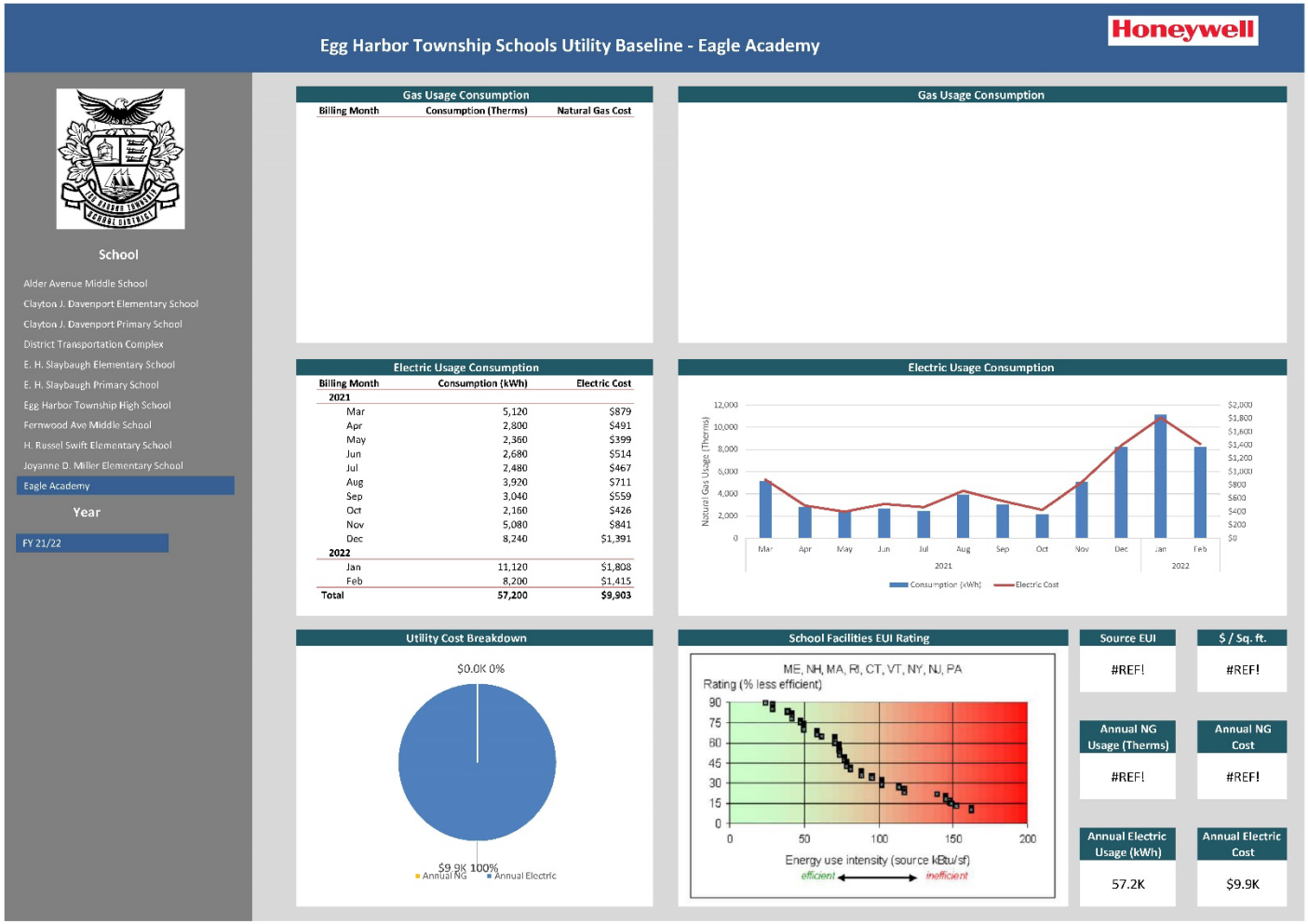
Utility Cost Breakdown

School Facilities EUI Rating

Source EUI	$ / Sq. ft.
109	1.5

Annual NG Usage (Therms)	Annual NG Cost
42.9K	$59.3K

Annual Electric Usage (kWh)	Annual Electric Cost
1,216.4K	$177.7K



Preliminary Utility Analysis (PUA)

Honeywell

Preliminary Utility Analysis

Egg Harbor Township Schools
Egg Harbor

Helping customers manage energy resources to improve financial performance

Executive Summary

Honeywell would like to thank you for the opportunity of providing you with this Preliminary Utility Analysis. A one year detailed billing analysis was completed for all utility data provided by your staff. The facility's electric and gas consumption were compared to a benchmark of typical facilities of similar use and location. It should be noted however, that some of Buildings which make up the benchmarking standards are not equipped with mechanical cooling (air conditioning). Therefore, these buildings may unjustly appear to be less efficient in comparison.

Through our Energy Services offerings, Honeywell's goal is to form a long term partnership for the purpose of meeting your current infrastructure needs by focusing to:

- Improve Operational Cost Structures
- Ensure Satisfaction
- Upgrade Infrastructure While Reducing Costs
- Meet Strategic Initiatives
- Leverage Teamwork
- Pursue Mutual Interests
- Provide Financing Options

How does it work?

Under an energy retrofit solution, Honeywell installs new, energy efficient equipment and optimizes your facility, as part of a multi-year service contract. Most of these improvements are cost-justified by energy and operational savings. Some of the energy conservation measures provide for a quick payback, and as such, would help offset other capital intensive energy conservation measures such as, boilers, package rooftop units, domestic hot water heaters, etc. The objective is to provide you with reduced operating costs, increased equipment reliability, optimized equipment use, and improved occupant comfort.

After review of the utility analysis, you can authorize Honeywell to proceed with the development of a detailed engineering report. The report development phase allows Honeywell to prepare an acceptable list of proposed energy conservation measures, which are specific to the selected facility. Some examples of typical Energy Conservation Measures include:

- Lighting
- Control Systems
- Boilers
- AC Units/Condensers
- Building Enevelope
- Package Rooftop Units
- Domestic Hot Water Heaters
- Plug Load Management

Why Honeywell?

- Honeywell is one of the world leaders in providing infrastructure improvements
- With Honeywell as your building partner, you gain the advantage of more than 115 years of leadership in building services
- Honeywell has the infrastructure and manpower in place to manage and successfully implement your project
- Honeywell has over 30 years experience in the energy retrofit marketplace with over $5 Billion in customer energy savings
- Honeywell provides you with "Single Source Responsibility" - from Engineering to Implementation, Servicing and Financing (if desired)

Energy Benchmarking

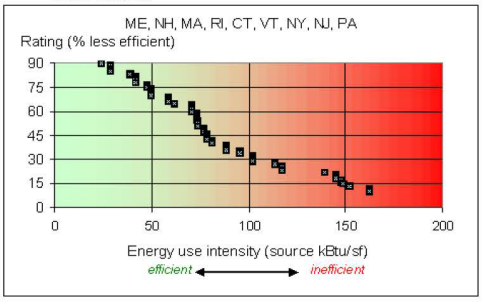
The calculation of EUI (Energy Use Intensity) is shown below. EUI, expressed in kBtu/sf, is normalized for floor area, the most dominant influence on energy use in most buildings. Its use usually provides a good approximation of how your building's energy performance compares to others. Site EUI indicates the rate at which energy is used at your building (the point of use). Source EUI indicates the rate at which energy is used at the generation sources serving your building (the point of source) and indicates the societal energy penalty due to your building The lower the EUI, the higher the rating, indicating that the building is more efficient than other buildings. The greater the EUI, the lower the rating, indicating that there is an opportunity for higher potential benefits from operational improvements.

The Source EUI below has been applied to a Department of Energy statistical model from the Oak Ridge National Laboratory. The Department of Energy has estimated energy use and cost reductions for building source EUI ratings (percentiles) in the table below. Please see the DOE Regional Source EUI Comparison graph below to rate your building in relation to the regional distribution of similar type buildings. (Note: The Source EUI includes the inefficiencies of electrical generation and transmission. A reduction in 'electrical' source EUI includes a benefit in terms of reduction of air pollution emissions and green house gases, and is thus an indicator of societal benefit.)

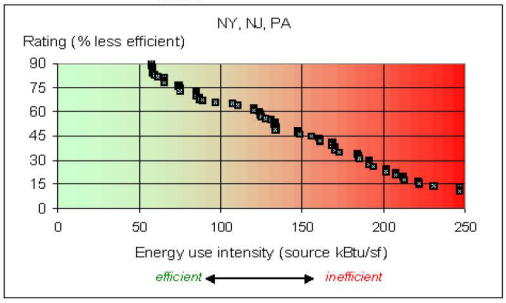
Source EUI Rating for your Building	Energy use and cost reduction potential (%)	Walk-thru energy assessment recommended?
above 60%	below 25%	No
40 to 60%	20 to 35%	Maybe
20 to 40%	35 to 50%	Yes
Below 20%	above 50%	Definitely

Site EUI Rank		Annual Total Electrical Use (kWh)	Annual Total Non-Electrical Fuel Use (Therms)	Building Gross Floor Area (sq-ft)	Site EUI Rating	Source EUI: Annual Total Source Energy Use per Sq-Ft (kBtu/sf)	Rating (Regional Source EUI Comparison)
1	Egg Harbor Township High School	4,757,088	164,999	440,900	74	149	15%
2	Fernwood Ave Middle School	1,911,194	68,368	204,000	65	130	20%
3	Alder Avenue Middle School	1,262,472	63,869	169,200	63	115	25%
4	Joyanne D. Miller Elementary School	1,216,417	42,889	154,700	55	109	30%
5	Clayton J. Davenport Elementary School	363,652	34,246	89,100	52	81	35%
6	E. H. Slaybaugh Elementary School	218,005	28,429	79,850	45	64	60%
7	H. Russel Swift Elementary School	352,706	20,266	63,490	51	89	30%
8	Clayton J. Davenport Primary School	514,200	45,593	57,650	110	171	5%
9	E. H. Slaybaugh Primary School	650,100	49,502	55,800	128	209	5%
10	Eagle Academy	57,200	0	6,950	28	85	35%
11	District Transportation Complex	102,730	6,730	9,600	107	181	5%
		11,405,764					

School Facilities



Offices



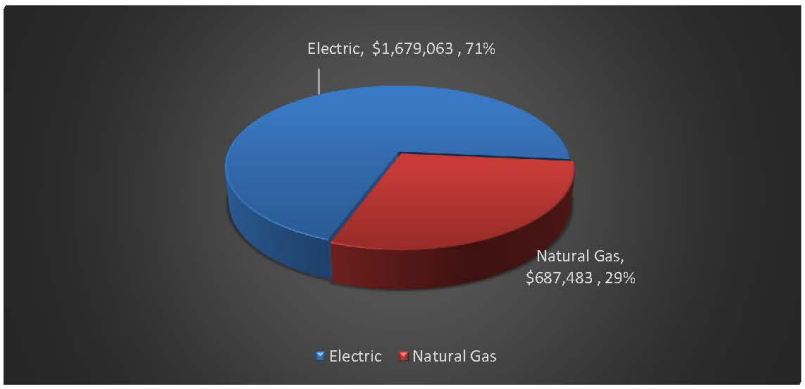
Historical Summary

Utility Analysis Period:
March 2021 through February 2022

	Electric	Natural Gas
Utility Costs*	$1,679,063	$687,483
Utility Usage (kWh, Therms)	11,405,764	524,890
$ Cost/Unit (kWh, Therms)	$0.14721	$1.310
Annual Electric Demand (kW)	45,480	

* Costs include energy and demand components, as well as taxes, surcharges, etc.

Actual Cost by Utility
March 2021 through February 2022

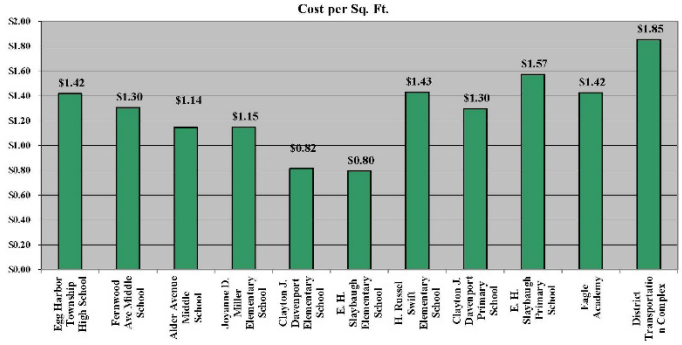


Total Cost
$2,366,545

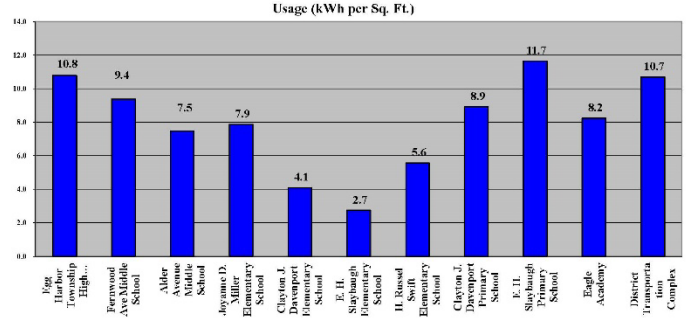
Utility Analysis
Electric

Square Footage Analysis

Cost per Sq. Ft.



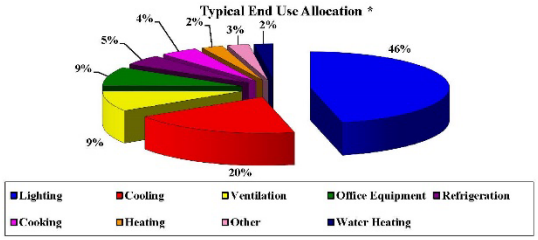
Usage (kWh per Sq. Ft.)



Note: Average kWh/SF for School buildings in this climate zone is 9.0

Electric

Sources of Electric Consumption

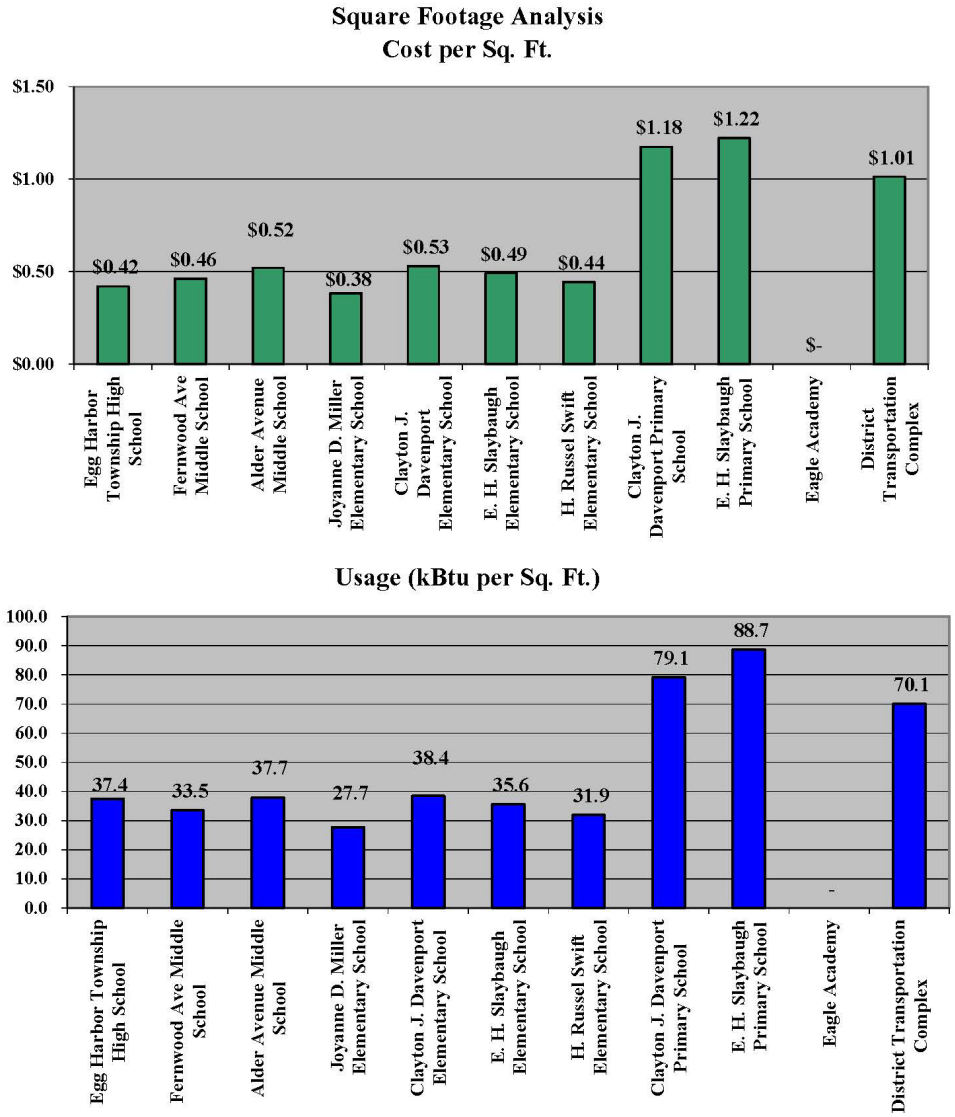


**This allocation is generic and is not a representation of the actual end use in your buildings included in this report.

Typical Allocation Applied to Your Electric Cost**

Lighting	$777,406
Cooling	$329,096
Ventilation	$154,474
Office Equipment	$144,399
Refrigeration	$78,916
Cooking	$73,879
Heating	$41,977
Other	$41,977
Water Heating	$36,939
Your Total Cost March 2021 through February 2	**$1,679,063**

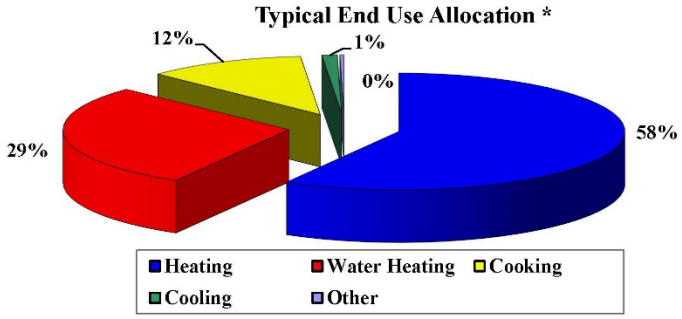
Utility Analysis
Natural Gas



Note: Average kBTU/SF for School buildings in this climate zone is 46.1

Utility Analysis
Natural Gas

Sources of Usage
Natural Gas



**This allocation is generic and is not a representation of the actual end use in your buildings included in this repor

Typical Allocation Applied to Your Cost**
Natural Gas

Heating	$400,802
Water Heating	$198,682
Cooking	$78,373
Cooling	$7,562
Other	$2,062
Your Total Cost March 2021 through February 2(	**$687,483**

Annual Emissions & Environmental Impact

Egg Harbor Township Schools

March 2021 through February 2022

Based on the US Environmental Protection Agency -
Greenhouse Gas Equivalencies Calculator
http://www.epa.gov/cleanenergy/energy-resources/calculator.html

The following energy usage, cost and pollution have been quantified:

Total Annual Electric usage	11,405,764	kWh
Annual Natural Gas usage	524,890	Therms

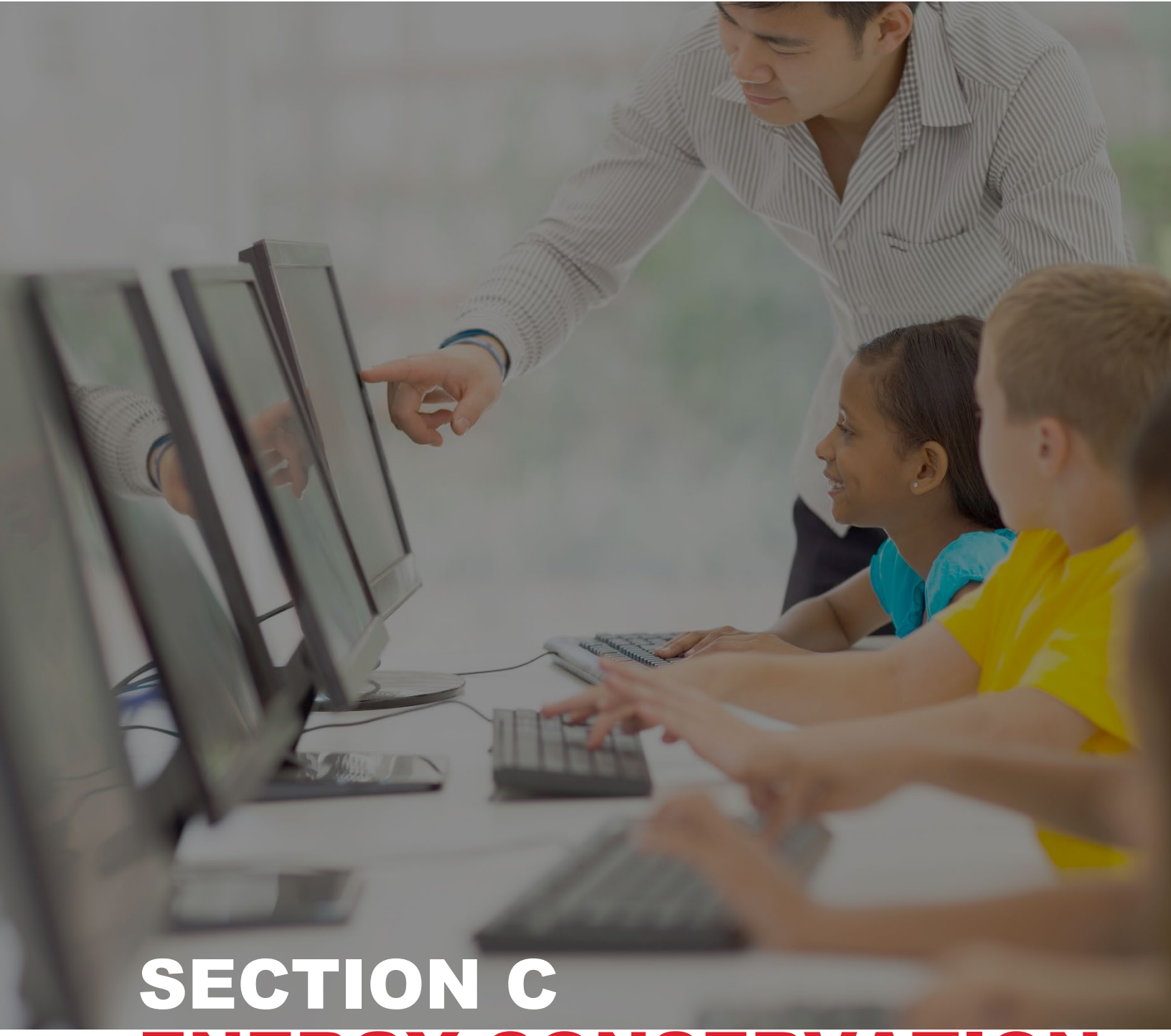
Electric Emissions	
0.00070742	$MTeCO_2$ per kWh saved
Natural Gas Emissions	
0.05302541	$MTeCO_2$ per MMBtu saved
Equillivent Cars	
0.214132762	Cars/ 1MTeCO2
Forrested Acres	
1.3063142	Forested Acres Factor/ 1MTeCO2

Annual Greenhouse Gas Emissions (Metric tons of equivalent of CO2)		
eCO2 (Electric)	8,069	MT
eCO2 (Gas)	2,781	MT
Total eCO2	10,849.914	MT

This is equivalent to one of the following:	
2326	No. of passenger vehicles - annual greenhouse gas emissions
14173	No. of acres of U.S. forests - carbon sequestered annually

Potential Retrofits

Retrofit Description	Utility/Fuel Type	Common Recommendations for Action
Lighting Retrofit and Motion Sensors	Electric/Natural Gas	Upgrade lighting and lighting controls
De-Stratification Fans	Electric/Natural Gas	Redistribution of Conditioned Air
Boiler Replacement	Natural Gas	Install high efficient, modular, condensing boilers
DHW Boiler/Tank Replacements	Electric/Natural Gas	Higher Efficiency Units
RTU Replacements	Electric/Natural Gas	Higher Efficiency Units
Building Management System Upgrades	Electric/Natural Gas	Reduce equipment run-time and provide better comfort
Building Envelope Improvements	Electric/Natural Gas	Reduce building leakage
Roof Replacements	Electric/Natural Gas	Reduce building leakage
Computer Controllers	Electric	Put computers to sleep when building is unoccupied
Install Premium Efficient Motors/Variable Frequency Drives	Electric	Provide more efficient motors and variable frequency drives
Transformer Replacements	Electric	Provide more efficient transformers with reduced amounts of excess heat to the spaces
Water Thermal Conservation	Natural Gas	Lower water thermal consumption



SECTION C
ENERGY CONSERVATION MEASURES

Section C — Energy Conservation Measures (ECMs)

Introduction

The information used to develop this section was obtained through the independent energy audit building surveys to collect equipment information, interviews with operators and end users, and an understanding of the components to the systems at the sites. The information obtained includes nameplate data, equipment age, condition, the system's design and actual load, operational practices and schedules, and operations and maintenance history.

Honeywell has done a review of the Energy Conservation Measures (ECMs) which would provide energy and cost savings the District. This report aims to be an assessment of the feasibility and cost effectiveness of such measures, and an indication of the potential for their implementation. The ECMs listed below have been reviewed throughout your facilities for consideration within a complete Energy Savings Plan. What follows is a general description of the energy auditing process and the detailed descriptions of the ECMs for your facilities.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
1A LED Lighting	■	■	■	■	■	■	■	■	■		■
1B Lighting Control	■	■	■	■	■	■	■	■	■	■	■
1C De-Stratification Fans w/ Air Purification	■	■	■	■	■	■	■	■	■		
2A Boiler Replacements		■	■	■			■	■	■		
2B Domestic Water Heater Replacements	■		■	■	■	■			■		
2C Burner Replacement and Controls	■			■			■				
2D Roof Top Unit Upgrades				■	■	■	■				
2E Split System Upgrades					■	■	■				
2F Premium Efficiency Motors and VFDs		■		■	■	■	■				
2G Chiller Replacements		■	■					■	■		

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
2H Cooling Tower Replacements								■	■		
3A Building Controls/Retro-Commissioning		■	■	■	■	■	■	■	■		
3B Energy Optimization/Forge	■	■	■	■	■	■	■	■	■		
3C Demand Control Ventilation		■				■		■	■		
4A Building Envelope Improvements	■	■	■	■	■	■	■	■	■	■	■
5A Cogeneration CHP	■										
6A Permanent Load Reduction	■	■	■	■	■	■	■	■	■		■
7A Solar PPA	■	■		■	■	■	■	■	■		
8A Transformers	■		■					■	■		

ECM 1A LED Lighting Upgrades

The key benefits of this ECM include:

- **Energy savings** from reducing total energy consumption with more efficient, state of the art technology. Today's most efficient way of illumination and lighting has an estimated energy efficiency of 80%-90% when compared to traditional lighting and conventional light bulbs. Lighting controls reduce or eliminate reliance on occupants or staff to turn lights off when spaces are unoccupied by automatically turning lighting fixtures off thereby reducing electrical energy consumption.
- **Improved teacher and student performance** from enhanced lighting quality that translates to an enhanced learning working environment.
- **Improved equipment longevity** by reducing amount of light usage and extending the useful life of your lighting system. LED bulbs and diodes have an outstanding operational lifetime expectation of up to 100,000 hours. This is 11 years of continuous operation, or 22 years of 50% operation. Operational savings in terms of bulb and ballast replacement are significant based on this technology.
- **Reduced maintenance and operational costs** by modernizing your lighting system, reducing the runtime of lighting system and components, and providing for longer lasting and technologically advanced lights, without the need to address deficient or bad ballasts.
- **Ecologically friendly LED lights** are free of toxic chemicals. Most conventional fluorescent lighting bulbs contain a multitude of materials like mercury that are dangerous for the environment. LED lights contain no toxic materials and are 100% recyclable and will help to reduce carbon footprint by up to a third. The long operational lifetime span mentioned above means also that one LED light bulb can save material and production of twenty-five (25) incandescent light bulbs. A big step towards a greener future!

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
1A LED Lighting	■	■	■	■	■	■	■	■	■		■

EXISTING CONDITIONS

Indoor lighting predominantly consists of fluorescent T-8 lamps, with a smaller quantity of other fixtures such as compact fluorescent lamps (CFLs), incandescent bulbs, and high-intensity discharge (HID) lighting.

SCOPE OF WORK

The proposed lighting system is based on the recent investment grade lighting system audit where existing lighting systems were analyzed and inventoried. Honeywell proposes to retrofit all existing **fluorescent** fixtures with high efficiency Light Emitting Diode (LED) lamps.

The district will receive many benefits from the lighting system upgrade.

Existing Lighting at Fernwood Ave MS

Existing Lighting at E. H. Slaybaugh ES

LED OUTDOOR LIGHTING UPGRADES

EXISTING CONDITIONS

The District has various types of High Intensity Discharge (HID) light fixtures and older LED fixtures, which are not as efficient as modern LED types. Parking lot and building exterior lights consist of pole mounted shoe-box type and wall pack HID fixtures.

SCOPE OF WORK

The exterior wall-packs and pole-mounted shoebox fixtures are currently high wattage HID lamps. These will be replaced with lower wattage LED fixtures. The LED technologies offer significant advantages such as extended lamp life, minimal lumen depreciation, “instant on” and very high energy conversion efficiency. These fixtures will provide substantial maintenance savings via the new 100,000-hour LED lamp life versus the 20,000 hours of the existing metal halide lamps.

CHANGES IN INFRASTRUCTURE

New LED lamps and fixtures will be installed as part of this ECM. Existing poles and shoe box fixtures will be utilized where possible.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Coordination efforts will be needed to reduce or limit impact to building occupants.

ENVIRONMENTAL ISSUES

Resource Use	Energy savings will result from reduced electric energy usage. A slight increase in heating energy is resultant from the reduced heat output of more efficient lamps.
Waste Production	All lamps and ballasts that are removed will be properly disposed.
Environmental Regulations	No environmental impact is expected.

ECM 1B Lighting Controls

The key benefits of this ECM include:

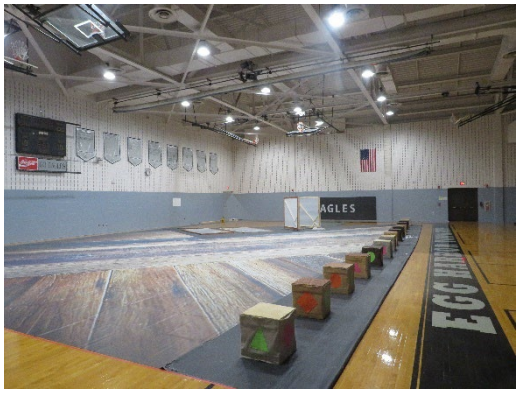
- **Reduced energy usage** from improved boiler efficiency resulting from replacement of older equipment, and in certain instances, oversized boilers.
- **Lower operational costs** through less frequent maintenance and operational issues.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
1B Lighting Control	■	■	■	■	■	■	■	■	■	■	■

EXISTING CONDITIONS

Educational institutions, such as K-12 districts, are focused on providing classrooms and campuses for their students and teachers that are safe, healthy, energy-efficient, by providing the best environment for learning, while also chartered with reducing the costs of building operations.

Lighting Control Space at Egg Harbor Township HS



Lighting Control Space at Fernwood Ave MS

Example of interior lighting sensor

Example of Exterior lighting sensor

SOLUTION

Honeywell proposes the installation of occupancy-based lighting controls for interior spaces, and photo-controls for exterior lighting fixtures where none are currently installed. These controls will automatically control lighting systems based on either occupancy or outdoor light levels.

SCOPE OF WORK

Lighting controls lower cost by adjusting light levels by occupancy, turning lights off when not needed.

CHANGES IN INFRASTRUCTURE

New lighting control devices will be installed as part of this ECM.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Coordination efforts will be needed to reduce or limit impact to building occupants.

ENVIRONMENTAL ISSUES

Resource Use	Energy savings will result from reduced electric energy usage. A slight increase in heating energy is resultant from the reduced heat output from lighting that is turned off.
Waste Production	Proper disposal of any waste generated.
Environmental Regulations	No environmental impact is expected.

ECM 1C De-Stratification Fans w/ UV Disinfection

The key benefits of this ECM include:

- **Improved efficiency and energy savings** through more equal distribution of conditioned air space.
- Equipment longevity due to lower utilization of equipment to condition air.
- **Increased comfort** of students and teachers.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
1C De-Stratification Fans w/ Air Purification	■	■	■	■	■	■	■	■	■		

EXISTING CONDITIONS

Warm air stratifies close to the ceiling in high ceiling areas such as in a gymnasium or auditorium. Elevated levels of heat transfer through the high walls and roof causes elevated heat loss.

Egg Harbor Township HS - Aux Gym

Clayton J. Davenport ES - Multi-purpose Room

PROPOSED SOLUTION

In areas with 20+ foot ceiling heights, there is approximately a 15°F+ temperature difference between the floor and the ceiling. With higher ceilings, it is even greater. That means to generate the heat necessary to maintain a comfortable 70°F temperature at the floor level, where student activities occur, the ceiling could be 85°F or higher.

De-stratification fans even out the air temperature to a zero to 3°F differential from floor to ceiling and wall to wall. This will allow HVAC systems to run for a shorter duration because of the absence of extreme temperatures to heat or cool, thus allowing the local thermostats to be satisfied for longer periods of time.

SYSTEMS EVALUATION AND SELECTION

An energy-efficient motor drives a near-silent fan that forces a column of hotter air from the ceiling to the cooler floor below. As this column of warm air nears the floor, it begins to flare out in a circular pattern and rise again creating a torus. While doing so, it warms the cooler air and mixes with air near the floor, increasing the temperature and comfort of occupants. Through a natural law of physics, this torus will continue to re-circulate air, mixing warmer air from the ceiling with cooler air near the floor until the ceiling and air temperatures are nearly equal. As this happens, it will require less and less energy to comfortably heat the work area, allowing thermostats to be lowered and energy savings to be realized. Once started, the entire process of “thermal equalization” will take on average less than 24 hours.

Airius PureAir Series is an air purification and airflow circulation fan system, incorporating the latest in PHI (Photohydroionization) Cell technology to efficiently and effectively neutralize up to 99% of all harmful germs, bacteria, viruses, mold and other contaminants in any internal environment. The PHI Cell emits ‘Ionized Hydroperoxides’, a naturally occurring cleaning agent, which are circulated throughout spaces via the fan. As the fans continue to circulate internal atmosphere, the PHI circulates its neutralizing Ionized Hydroperoxides, providing 24/7 continuous Air Purification. The PureAir also provides all the features and benefits of the world’s most popular destratification and airflow circulation fan, balancing temperatures, improving comfort, reducing heating, and cooling costs and reducing carbon emissions.

Based on preliminary site investigation conducted by our staff, we propose to install the de-stratification fans as indicated in the table below.

Table 1D.1 - Proposed De-Stratification Fans

Building	Location	Airius Model	Qty Pure Air	Qty Air Pear
Alder Avenue Middle School	Gym	(3) A-45-P4-STD-120-W (3) A-45-P4-STD-120-W-PHI	3	3
Clayton J. Davenport Elementary School	Gym	(3) A-25-SP-STD-120-W (3) A-25-SP-STD-120-W-PHI	3	3
Clayton J. Davenport Elementary School	MPR	(2) S-15-SP-STD-120-W (2) S-15-SP-STD-120-W-PHI	2	2

Building	Location	Airius Model	Qty Pure Air	Qty Air Pear
Clayton J. Davenport Primary School	MPR	(3) A-45-P4-STD-120-W (3) A-45-P4-STD-120-W-PHI	3	3
H. Russel Swift Elementary School	Gym	(2) A-25-SP-STD-120-W (1) A-25-SP-STD-120-W-PHI	1	2
E. H. Slaybaugh Elementary School	Cafetorium	(2) A-25-SP-STD-120-W (2) A-25-SP-STD-120-W-PHI	2	2
E. H. Slaybaugh Elementary School	Gym	(3) A-25-SP-STD-120-W (3) A-25-SP-STD-120-W-PHI	3	3
E. H. Slaybaugh Primary School	All-purpose Room	(3) A-45-P4-STD-120-W (3) A-45-P4-STD-120-W-PHI	3	3
Egg Harbor Township High School	MPR	(10) A-25-SP-STD-120-W (10) A-25-SP-STD-120-W-PHI	10	10
Egg Harbor Township High School	Aux Gym	(2) A-25-SP-STD-120-W (1) A-25-SP-STD-120-W-PHI	1	2
Joyanne D. Miller Elementary School	MPR	(2) A-25-SP-STD-120-W (2) A-25-SP-STD-120-W-PHI	2	2
Joyanne D. Miller Elementary School	Gym	(3) A-25-SP-STD-120-W (3) A-25-SP-STD-120-W-PHI	3	3
Egg Harbor Township High School	Weight Room	(2) S-15-SP-STD-120-W (2) S-15-SP-STD-120-W-PHI	2	2
Fernwood Ave Middle School	Gym	(7) A-45-P4-STD-120-W (7) A-45-P4-STD-120-W-PHI	7	7
Total			**45**	**47**

SCOPE OF WORK

Per De-Stratification Fan:

- Shut off the main electric power to the area in which the unit(s) will be installed.
- Install new de-stratification fan and wiring.
- Re-energize.
- Inspect unit operation by performing electrical and harmonics testing.

EQUIPMENT INFORMATION

Manufacturer and Type	Several quality and cost-effective manufacturers are available. The District and Honeywell will determine final selections.
Equipment Identification	As part of the ECM design and approval process, specific product selection will be provided for your review and approval.

CHANGES IN INFRASTRUCTURE

New de-stratification fans will be installed as part of this ECM.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Coordination efforts will be needed to reduce or limit impact to building occupants.

ENVIRONMENTAL ISSUES

Resource Use	Energy savings will result from reduced thermal energy usage. A slight increase in electrical energy is resultant from the operation of the fan motors.
Waste Production	Proper disposal of any waste generated.
Environmental Regulations	No environmental impact is expected.

ECM 2A Boiler Replacements

The key benefits of this ECM include:

- **Reduced energy usage** from improved boiler efficiency resulting from replacement of older equipment, and in certain instances, oversized boilers.
- **Lower operational costs** through less frequent maintenance and operational issues.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
2A Boiler Replacements		■	■	■			■	■	■		

EXISTING CONDITIONS

Some boilers within the Egg Harbor Township School District are near or past the end of their useful life and are less efficient compared to new boilers. Some existing boilers can be replaced with high efficiency condensing boilers or high efficiency steam boilers.

Joyanne D. Miller ES - Boiler

Alder Avenue MS - Boiler

EXISTING BOILERS TO BE REPLACED

Table 2A.1 Existing Boilers

Building	Type	Manufacturer	Model	Output (MBH)	Fuel	Qty
H. Russel Swift Elementary School	Hot Water	Unilux	ZF350W	2,800	NG	2
Joyanne D. Miller Elementary School	Hot Water	Unilux	ZF350W	2,800	NG	2
Clayton J. Davenport Primary School	Hot Water	Broad	BZ65IXD	2,187	NG	1
E. H. Slaybaugh Primary School	Hot Water	Broad	BZ65IXD	2,187	NG	1
Alder Avenue Middle School	Hot Water	Camus	DFNH-4514	3,960	NG	3
Fernwood Ave Middle School	Hot Water	Camus	DFNH-5014	4,400	NG	4

PROPOSED SOLUTION

It is recommended that the boilers listed in the table above be replaced with boilers operating at higher efficiency as provided in table below. New condensing hot water boilers have thermal efficiencies that range from 88% – 95% depending on the return hot water temperature from the heating loop. With proper design, it is typical to see thermal efficiencies of around 92%. Thermal efficiency is only one part of the equation that makes up the seasonal efficiency of a boiler.

New boiler sizes and quantities will be based on the heat load of the building with redundancy, considering the existing system sizing and level of redundancy.

Table 2A.2 Proposed Boilers

Building	Type	Manufacturer	Model	Capacity (MBH)	Fuel	Qty
H. Russel Swift Elementary School	Hot Water	Aerco	BMK-1500	1,500	NG	3
Joyanne D. Miller Elementary School	Hot Water	Aerco	BMK-3000	3,000	NG	3
Clayton J. Davenport Primary School	Hot Water	Aerco	BMK-1500	1,500	NG	3
E. H. Slaybaugh Primary School	Hot Water	Aerco	BMK-1500	1,500	NG	3
Alder Avenue Middle School	Hot Water	Aerco	BMK-4000	4,000	NG	3
Fernwood Ave Middle School	Hot Water	Aerco	BMK-5000	5,000	NG	3

SCOPE OF WORK

The following outlines the boiler replacement:

1. Disconnect gas back to shutoff valve and electric back to source panelboard.
2. Remove existing boilers.
3. Install new boilers.
4. Connect gas and heating hot water appurtenances to new boilers.
5. Terminate and power new boiler electric circuiting.
6. Start up, commissioning, and operator training.

ENERGY SAVINGS METHODOLOGY AND RESULTS

In general, Honeywell uses the following approach to determine savings for this specific measure:

Existing Boiler Efficiency	*= Existing Heat Production/ Existing Fuel Input*
Proposed Boiler Efficiency	*= Proposed Heat Production/ Proposed Fuel Input*
Energy Savings $	*= Heating Production (Proposed Efficiency – Existing Efficiency)*

EQUIPMENT INFORMATION

Manufacturer and Type	Several quality and cost-effective manufacturers are available. The District and Honeywell will determine final selections.
Equipment Identification	As part of the ECM design and approval process, specific product selection will be provided for your review and approval.

ECM 2B Domestic Water Heater Replacement

The key benefits of this ECM include:

- **Reduced energy usage** from improved efficiency resulting from replacement of older equipment.
- **Lower operational costs** through less frequent maintenance and operational issues.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
2B Domestic Water Heater Replacements	■		■	■	■	■			■		

EXISTING CONDITIONS

Some of the existing Domestic Hot Water (DHW) heaters are in poor condition and are not high-efficiency units.

Egg Harbor Township HS – Water Heater

Alder Avenue MS – Water Heater

EXISTING WATER HEATERS TO BE REPLACED

Table 2B.1 Existing Water Heaters

Building	Manufacturer	Model	Capacity (MBH)	Storage	Fuel	Qty
Egg Harbor Township High School	Aerco	KC-1000	1,000	-	NG	3
Joyanne D. Miller Elementary School	PVI	750 P 400A-TP	480	400	NG	1
Alder Avenue Middle School	PVI	750P250ATP	600	250	NG	1
Clayton J. Davenport Elementary School	Aerco	KC-1000	930	-	NG	1
E. H. Slaybaugh Primary School	Lochinvar	KBN800	746	-	NG	1
E. H. Slaybaugh Elementary School	Raypak	W3-0962	789	-	NG	1

PROPOSED SOLUTION

Honeywell proposes replacing the existing DHW heaters at the above locations with highly efficient condensing DHW heaters. New condensing DHW heaters have efficiencies between 97% - 98%. They provide better control with capabilities as night setback, temperature adjustments and demand control hot water.

Table 2B.2 Proposed Water Heaters

Building	Manufacturer	Model	Capacity (MBH)	Storage	Fuel	Qty
Egg Harbor Township High School	Aerco	AM1000W	1,000		NG	3
Joyanne D. Miller Elementary School	Aerco	AM500W	500		NG	1
Alder Avenue Middle School	Aerco	AM1000W	1,000		NG	1
Clayton J. Davenport Elementary School	Aerco	AM1000W	1,000		NG	1
E. H. Slaybaugh Primary School	Aerco	AM750W	750		NG	1
E. H. Slaybaugh Elementary School	Aerco	AM750W	750		NG	1

SCOPE OF WORK

The following outlines the boiler replacement:

1. Demolish and remove old water heaters.
2. Furnish and install condensing gas fired domestic hot water heaters as specified in the table above.
3. Install all required piping, controls, and breeching as needed.
4. Install mixing valve.
5. Install circulators where needed for building use and kitchen supply.
6. Test and commission.

ENERGY SAVINGS METHODOLOGY AND RESULTS

The savings are calculated from the domestic hot water heater efficiency differences.

Existing Boiler Efficiency	*= Existing Boiler Efficiency + Existing Heat Exchanger Efficiency*
Proposed Boiler Efficiency	*= Efficiency of the New Domestic Hot Water Heater*
Energy Savings $	*= DHW Load x (Existing Equipment Efficiency – New Equipment Efficiency)*

EQUIPMENT INFORMATION

Manufacturer and Type	Several quality and cost-effective manufacturers are available.
Equipment Identification	As part of the measure design and approval process, specific product selection will be provided for your review and approval.

CHANGES IN INFRASTRUCTURE

A new controller for each DHW heater will be installed and programmed. In addition to the controllers, training for maintenance personnel will be required.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Minor support will be required for the interruption of utilities for brief tie-in periods.

ENVIRONMENTAL ISSUES

Resource Use	Energy savings will result from improved thermal efficiency.
Waste Production	Proper disposal of any waste generated.
Environmental Regulations	No environmental impact is expected.

ECM 2C Burner Replacements and Controls

The key benefits of this ECM include:

- **Reduced energy usage** from improved boiler efficiency resulting from replacement of older equipment, and in certain instances, oversized boilers.
- **Lower operational costs** through less frequent maintenance and operational issues.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
2C Burner Replacement and Controls	■			■			■				

EXISTING CONDITIONS

During our walkthroughs and conversations with District personnel, Honeywell has identified the boiler burners at Egg Harbor Township High School, Joyanne D. Miller Elementary School, and H. Russel Swift Elementary School as the best candidates for burner replacements and controls.

Egg Harbor Township HS – Burners

Joyanne D. Miller ES – Burners

EXISTING BURNERS TO BE REPLACED

Table 2C.1 Existing Burners

Building	Make	Model	MBH	Qty
H. Russel Swift Elementary School	Power Flame Burner	CR3-G-25	2,800	2
Joyanne D. Miller Elementary School	Power Flame Burner	CR3-G-25	2,800	2
Egg Harbor Township High School	Burnham	S14-G-50	6,695	3

PROPOSED SOLUTION

Typically, boilers are sized to accommodate the coldest days (approximately 5% of the year). During these periods of maximum demand, the burner is constantly on and operating at maximum capacity. The burner cycles on and off, maintaining temperature or pressure in the boiler. It is during these periods of lesser demand, that the controller will monitor the boiler make up rate, and efficiently manage the firing of the boiler.

The length of the burner's off-cycle is the best measure of total heating demand or load. In other words, the load is directly related to the time it takes for water (or steam) in the boiler to drop from its high-limit temperature (or pressure) to its low-limit or "call" setting. When demand is high, these off-cycles are short, and the on-cycles are longer. When demand is lower, off-cycles are longer, and on-cycles are reduced.

The device, which is a microprocessor-based computer, constantly monitors the demand on the boiler by assimilating all factors affecting a building's heating requirements, including occupancy, climate, wind chill, solar gain, type of building, and many others.

PROPOSED SYSTEMS AND SCOPE OF WORK

Honeywell will replace the burners on the boilers listed above with new, natural gas-fired burners, utilizing advanced controls.

HONEYWELL SLATE™

SLATE™ from Honeywell brings together configurable safety and programmable logic for the first time ever. It is one platform from one vendor that can easily be customized for almost any application – in less time with less complexity.

This upgrade will provide a combustion curve and light-off points including minimum/maximum firing rate points resulting in a precise firing rate control over the entire firing rate of the burner. Combustion efficiency will be maximized throughout the combustion curve and will provide a fuel curve to achieve maximum efficiency.

MODULATING BURNER CONTROL

The Modulating Burner integrates flame safeguard control, fuel-air ratio control, O2 Trim, VFD control, and proportional integral derivative (PID) control into a single, integrated, user-friendly system.

The features integrated into the burner provide energy savings, reduced emissions, reduced installation costs and enhanced safety.

FUEL METERING

- Reduced fuel use.
- Increased burner efficiency.
- Greenhouse gas emissions reduction.

EASY ACCESS PANELS

- Total access to components.
- Easy maintenance.

GRAPHIC BURNER MANAGEMENT SYSTEM

- Graphic annunciation of critical burner functions.

SCOPE OF WORK

The following outlines the boiler burner controls:

1. Disconnect electrical and gas from existing boiler burner.
2. Install new burner controls on existing burner (where applicable).
3. Start up, commissioning and operator training.

ENERGY SAVINGS METHODOLOGY AND RESULTS

In general, Honeywell uses the following approach to determine savings for this specific measure:

Existing Boiler Efficiency	*= Existing Heat Production/ Existing Fuel Input*
Proposed Boiler Efficiency	*= Proposed Heat Production/ Proposed Fuel Input*
Energy Savings $	*= Heating Production (Proposed Efficiency – Existing Efficiency)*

CHANGES IN INFRASTRUCTURE

New combustion controls will be installed and programmed in the locations listed above; in addition, training for maintenance personnel will be required as well as on-going, annual preventive maintenance.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Minor support will be required for the interruption of utilities for brief tie-in periods. Continuity of service must be maintained for the customer.

ENVIRONMENTAL ISSUES

Resource Use	Energy savings will result from greater boiler load control, reduced maintenance costs control and setback.
Waste Production	Existing equipment scheduled for removal will be disposed of properly.
Environmental Regulations	No environmental impact is expected; all regulations will be adhered to in accordance with EPA and local code requirements.

ECM 2D Roof Top Unit Replacements

The key benefits of this ECM include:

- **Reduced energy usage** from improved efficiency resulting from replacement of older equipment.
- **Lower operational costs** through less frequent maintenance and operational issues.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
2D Roof Top Unit Upgrades				■	■	■	■				

EXISTING CONDITIONS

Some Rooftop Units (RTUs) serving the locations in the table below are inefficient or past their useful lives. Replacing these units with new, high efficiency units will save energy costs over the long term while reducing repair costs that would otherwise have been necessary to keep the old RTUs in operation.

Joyanne D. Miller ES - RTU

Joyanne D. Miller ES - RTU

EXISTING ROOFTOP UNITS TO BE REPLACED

Table 2D.1 Existing Rooftop Units

Building	Location Served	Manufacturer	Model	Tons	Qty
Clayton J. Davenport Elementary School	Health Office	AAON	RK-08-3-E0-000	8.0	1
Clayton J. Davenport Elementary School	Main Office	AAON	RK-05-3-E0-000	5.0	1
Clayton J. Davenport Elementary School	CST	AAON	RK-02-3-E0-000	2.0	1
E. H. Slaybaugh Elementary School	Library	AAON	RK-08-2-40-750	8.0	1
E. H. Slaybaugh Elementary School	Girl's Locker	AAON	RK-04-2-40-750	4.0	1
E. H. Slaybaugh Elementary School	Boy's Locker	AAON	RK-04-2-40-750	4.0	1
E. H. Slaybaugh Elementary School	Guidance	AAON	RK-08-2-E0-000	7.5	1
H. Russel Swift Elementary School	Admin Office	AAON	RK-07-2-E0-000	7.0	1
H. Russel Swift Elementary School	Gym Office	AAON	RK-03-2-40-750	3.0	1
H. Russel Swift Elementary School	Nurse Office	AAON	RK-05-2-FO-000	5.0	1
Joyanne D. Miller Elementary School	A Wing 1st Fl	AAON	RK-25-3-E1-000	25.0	1
Joyanne D. Miller Elementary School	A Wing 2nd Fl	AAON	RK-40-3-F1-000	40.0	1
Joyanne D. Miller Elementary School	B Wing 1st Fl	AAON	RK-40-3-F1-000	40.0	1
Joyanne D. Miller Elementary School	B Wing 2nd Fl	AAON	RK-30-3-F1-000	30.0	1
Joyanne D. Miller Elementary School	C Wing 1st Fl	AAON	RK-25-3-E1-000	25.0	1
Joyanne D. Miller Elementary School	C Wing 2nd Fl	AAON	RK-40-3-F1-000	40.0	1
Joyanne D. Miller Elementary School	D Wing 1st Fl	AAON	RK-40-3-F1-000	40.0	1
Joyanne D. Miller Elementary School	D Wing 2nd Fl	AAON	RK-30-3-F1-000	30.0	1
Joyanne D. Miller Elementary School	Admin Office	AAON	RK-30-3-F1-000	30.0	1
Joyanne D. Miller Elementary School	Service Media Center	AAON	RK-40-3-F1-000	40.0	1
Joyanne D. Miller Elementary School	Gymnasium	AAON	RK-30-3-F1-000	30.0	1
Joyanne D. Miller Elementary School	Music	AAON	RK-15-3-F1-100	15.0	1
Joyanne D. Miller Elementary School	Cafeteria North	AAON	RK-30-3-F1-000	30.0	1

Building	Location Served	Manufacturer	Model	Tons	Qty
Joyanne D. Miller Elementary School	Cafeteria South	AAON	RK-30-3-F1-000	30.0	1
Joyanne D. Miller Elementary School	Kitchen	AAON	RK-30-3-F1-000	30.0	1

PROPOSED SOLUTION

Honeywell proposes replacing the existing rooftop units in the above table. The new units will be installed in the same location as the existing units. Existing electrical power supply will be reconnected to the new units. The new units will be equipped with factory-installed microprocessor controls that improve unit efficiency. The units will also communicate with the building management system.

Table2D.2 Proposed Rooftop Units

Building	Location Served	Manufacturer	Model	Tons	Qty
Clayton J. Davenport Elementary School	Health Office	Trane	THC102	8.5	1
Clayton J. Davenport Elementary School	Main Office	Trane	THC060	5.0	1
Clayton J. Davenport Elementary School	CST	Trane	THC036	3.0	1
E. H. Slaybaugh Elementary School	Library	Trane	THC102	8.5	1
E. H. Slaybaugh Elementary School	Girl's Locker	Trane	THC048	4.0	1
E. H. Slaybaugh Elementary School	Boy's Locker	Trane	THC048	4.0	1
E. H. Slaybaugh Elementary School	Guidance	Trane	THC090	7.5	1
H. Russel Swift Elementary School	Admin Office	Trane	THC090	7.5	1
H. Russel Swift Elementary School	Gym Office	Trane	THC036	3.0	1
H. Russel Swift Elementary School	Nurse Office	Trane	THC060	5.0	1
Joyanne D. Miller Elementary School	A Wing 1st Fl	Trane	TCD-300	25.0	1
Joyanne D. Miller Elementary School	A Wing 2nd Fl	Trane	THD-480	40.0	1
Joyanne D. Miller Elementary School	B Wing 1st Fl	Trane	TCD-480	40.0	1
Joyanne D. Miller Elementary School	B Wing 2nd Fl	Trane	TCD-360	30.0	1
Joyanne D. Miller Elementary School	C Wing 1st Fl	Trane	TCD-360	25.0	1
Joyanne D. Miller Elementary School	C Wing 2nd Fl	Trane	TCD-480	40.0	1
Joyanne D. Miller Elementary School	D Wing 1st Fl	Trane	TCD-480	40.0	1

Building	Location Served	Manufacturer	Model	Tons	Qty
Joyanne D. Miller Elementary School	D Wing 2nd Fl	Trane	TCD-360	30.0	1
Joyanne D. Miller Elementary School	Admin Office	Trane	THD180	30.0	1
Joyanne D. Miller Elementary School	Service Media Center	Trane	TCD-480	40.0	1
Joyanne D. Miller Elementary School	Gymnasium	Trane	TCD-360	30.0	1
Joyanne D. Miller Elementary School	Music	Trane	TCD-180	15.0	1
Joyanne D. Miller Elementary School	Cafeteria North	Trane	TCD-360	30.0	1
Joyanne D. Miller Elementary School	Cafeteria South	Trane	TCD-360	30.0	1
Joyanne D. Miller Elementary School	Kitchen	Trane	TCD-360	30.0	1

SCOPE OF WORK

The following outlines the scope of work to install the rooftop units stated in the above table:

1. Disconnect existing RTU electric connections.
2. Disconnect piping and air ducts from the unit.
3. Remove unit from the base.
4. Modify base for new unit if necessary.
5. Rig and set new unit at the base.
6. Inspect piping and air ducts before reconnecting them to the unit.
7. Reconnect piping and air ducts.
8. Repair duct and piping insulation.
9. Connect electric power.
10. Start up and commissioning of new unit.
11. Maintenance operator(s) training.

ENERGY SAVINGS METHODOLOGY AND RESULTS

The savings approach is based on the energy efficiency between the existing and new units. The savings are generally calculated as:

Electric Energy savings	*= Existing unit energy consumption (kWh) – replacement unit energy consumption (kWh)*

EQUIPMENT INFORMATION

Manufacturer and Type	Several quality and cost-effective manufacturers are available. Honeywell and the customer will determine final selections.
Equipment Identification	As part of the ECM design and approval process, specific product selection will be provided for your review and approval.

CHANGES IN INFRASTRUCTURE

New rooftop units will be installed in itemized locations; in addition, training for maintenance personnel will be required, as well as on-going, annual preventive maintenance.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Coordination of the electrical tie-in will be required.

ENVIRONMENTAL ISSUES

Resource Use	Energy savings will result from higher efficiency units.
Waste Production	Existing unit scheduled for removal will be disposed of properly.
Environmental Regulations	No environmental impact is expected.

ECM 2E Split System Replacements

The key benefits of this ECM include:

- **Reduced energy usage** from improved efficiency resulting from replacement of older equipment.
- **Lower operational co**sts through less frequent maintenance and operational issues.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
2E Split System Upgrades					■	■	■				

EXISTING CONDITIONS

Honeywell identified some condensing units as being inefficient and having exceeded their useful service life. Replacing these units with new, high efficiency units will save energy costs over the long term, while reducing repair costs that would otherwise have been necessary to keep the old units in operation.

Clayton J. Davenport ES – Split System

E. H. Slaybaugh ES – Split System

EXISTING CONDENSING UNITS TO BE REPLACED

Table 2E.1 Existing Condensing Units

Building	Area Served	Manufacturer	Model	Tons	Qty
Clayton J. Davenport Elementary School	IDF Room	EMI	SCC24	2.0	1
E. H. Slaybaugh Elementary School	Server Room	EMI	SCC12	1.0	1
E. H. Slaybaugh Elementary School	Server Room	EMI	SCC24DF	2.0	1
H. Russel Swift Elementary School	B wing IDF	EMI	SCC24	2.0	1
H. Russel Swift Elementary School	D wing IDF	EMI	SCC12DM	1.0	1

PROPOSED SOLUTION

Honeywell proposes replacing the existing condensing units in the table above. The new units will be installed in the same location as the existing units. Existing electrical power supply will be reconnected to the new motors. The new units will be equipped with factory-installed microprocessor controls that improve unit efficiency. The units will also communicate with the existing or enhanced BMS.

Table 2E2 Proposed Condensing Units

Building	Area Served	Manufacturer	Model	Tons	Qty
Clayton J. Davenport Elementary School	IDF Room	Mitsubishi	PUZ-A24/PKA24	2.0	1
E. H. Slaybaugh Elementary School	Server Room	Mitsubishi	PUZ-A12/PKA12	1.0	1
E. H. Slaybaugh Elementary School	Server Room	Mitsubishi	PUZ-A24/PKA24	2.0	1
H. Russel Swift Elementary School	B wing IDF	Mitsubishi	PUZ-A24/PKA24	2.0	1
H. Russel Swift Elementary School	D wing IDF	Mitsubishi	PUZ-A12/PKA12	1.0	1

SCOPE OF WORK

The following outlines the scope of work to install the condensing units listed in the Proposed Split Systems table above.

1. Disconnect existing electric connections.
2. Collect and recycle existing refrigerant.
3. Disconnect piping from the unit.
4. Remove unit from the base.
5. Modify base for new unit if necessary.
6. Rig and set new unit at the base.
7. Inspect piping and air ducts before reconnecting them to the unit.
8. Reconnect piping and air ducts.
9. Repair duct and piping insulation.
10. Connect electric power.
11. Start up and commissioning of new unit.

12. Maintenance operator(s) training.

ENERGY SAVINGS METHODOLOGY AND RESULTS

The savings approach is based on the energy efficiency between the existing and new units. The savings are generally calculated as:

Electric Energy savings	*= Existing unit energy consumption (kWh) – replacement unit energy consumption (kWh)*

EQUIPMENT INFORMATION

Manufacturer and Type	Several quality and cost-effective manufacturers are available. The District and Honeywell will determine final selections.
Equipment Identification	As part of the ECM design and approval process, specific product selection will be provided for your review and approval.

CHANGES IN INFRASTRUCTURE

New split systems will be installed in itemized locations; in addition, training for maintenance personnel will be required, as well as on-going, annual preventive maintenance.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Coordination of the electrical tie-in will be required.

ENVIRONMENTAL ISSUES

Resource Use	Energy savings will result from higher efficiency units.
Waste Production	Existing condensing units scheduled for removal will be disposed of properly.
Environmental Regulations	No environmental impact is expected.

ECM 2F Premium Efficiency Motors and VFDs

The key benefits of this ECM include:

- **Energy savings** from reduced run hours and reduced motor speeds.
- **Equipment longevity** due to more efficient and less wasteful equipment utilization and reduced startup wear.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
2F Premium Efficiency Motors and VFDs		■		■	■	■	■				

EXISTING CONDITIONS

Honeywell has identified standard efficiency electric motors on several pumps. Energy savings can be obtained by replacing the standard efficiency motors with premium efficiency motors as well as by installing VFDs on systems that have two-way control valves.

Joyanne D. Miller ES – Motor

Egg Harbor Township HS – Motor

EXISTING MOTORS TO BE REPLACED

Table 2F.1 - Existing Motors

Building	Equipment Description	Qty.	Motor HP	Existing Efficiency	Replace Motor	Add VFD
H. Russel Swift Elementary School	Primary Chilled Water Pump	2	7.5	88.5%	Y	Y
E. H. Slaybaugh Elementary School	Heating Hot Water Pump	2	25.0	88.5%	Y	Y
Clayton J. Davenport Elementary School	Heating Hot Water Pump	2	20.0	91.0%	Y	Y
Clayton J. Davenport Elementary School	Primary Chilled Water Pump	2	15.0	91.0%	Y	Y
Fernwood Ave Middle School	Chilled Water	2	15.0	91.0%	Y	Y
H. Russel Swift Elementary School	Heating Hot Water Pump	2	15.0	91.0%	Y	Y
Joyanne D. Miller Elementary School	Heating Hot Water Pump	1	15.0	91.0%	Y	Y
Joyanne D. Miller Elementary School	Heating Hot Water Pump	1	15.0	91.0%	Y	Y
E. H. Slaybaugh Elementary School	Primary Chilled Water Pump	2	10.0	89.5%	Y	Y

PROPOSED SOLUTION

Honeywell observed that several motors and pumps that are sized to meet peak heating or cooling conditions. However, we have learned that most operating hours occur during conditions that require less than peak loads.

Honeywell proposes replacement of all above-mentioned single speed standard efficiency motors (that do not have VFDs) with new premium efficiency motors and installing new couplings where applicable. In addition, Honeywell recommends installing VFDs on these pumps. Energy used by the motor can be reduced by varying the flow in response to varying loads in the space. Motor speed may be controlled either based on the pressure in the distribution system or based on time of day.

Honeywell recommends fitting unit ventilators with two-way valves (provided that unit ventilators located at end of piping branches are fitted with three-way valves to keep hot water moving through the distribution piping at all times).

Honeywell also recommends installing VFDs on the heating hot water pumps and chilled water pumps to better match pumping output to system requirements and reduce energy waste. Each motor will be equipped with new selector relays that will allow one drive to operate per pump with the VFD drive. Honeywell also recommends installation of new differential pressure sensors and tying them to the control system to allow you to regulate the speed of the pump per load requirements. Lastly, we recommend installation of VFDs on the cooling system pump motors that have higher horsepower. VFDs will maintain temperatures in the unit by adjusting the speed of both the motor and the pump and can be connected to your BMS.

ENERGY SAVINGS METHODOLOGY AND RESULTS

The energy consumed by electric motors varies inversely with the cube of the motor speed. Variable frequency drives reduce motor speed (in response to load) thus reducing energy consumption exponentially.

CHANGES IN INFRASTRUCTURE

New motors will be installed in place of the old motors. No expansion of the facilities will be necessary.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Coordination of the electrical tie-in will also be required.

ENVIRONMENTAL ISSUES

Resource Use	Energy savings will result from reducing electrical usage by operating higher efficiency motors for the same horsepower output. The equipment uses no other resources.
Waste Production	This measure will produce waste by-products. Old motors shall be disposed of in accordance with all federal, state, and local codes.
Environmental Regulations	No environmental impact is expected.

ECM 2G Chiller Replacements

The key benefits of this ECM include:

- **Reduced energy usage** from improved efficiency due to replacement of older equipment.
- **Lower operational costs** through less frequent maintenance and operational issues.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
2G Chiller Replacements		■	■					■	■		

EXISTING CONDITIONS

Chiller units serving the building has gone beyond its useful life and is inefficient, have exceeded their expected useful service lives, and are costly to maintain. Replacing this with new, high efficiency unit will save energy costs over the long term while reducing repair costs that would otherwise have been necessary to keep the old units in operation.

Chiller – Fernwood Ave MS

Chiller - Alder Avenue Middle School

EXISTING CHILLER UNITS:

Table 2G.1 - Existing Chillers

Building	Manufacturer	Model	Tons	Qty
Fernwood Ave Middle School	Trane	RTHA300	300.0	2
Alder Avenue Middle School	Carrier	30XAA2606L	250.0	2
Clayton J. Davenport Primary School	Broad	BZ65IXD	215.0	1
E. H. Slaybaugh Primary School	Broad	BZ65IXD	215.0	1

PROPOSED SOLUTION

Honeywell proposes replacing the existing chiller unit in the table above. The new unit will be installed in the same location as the existing units. Existing electrical power supply will be reconnected to the new motors. The units will communicate with the existing or enhanced BMS.

Table 2G.2 - Proposed Chillers

Building	Manufacturer	Model	Tons	Qty
Fernwood Ave Middle School	Trane	RTHA300	300.0	2
Alder Avenue Middle School	Trane	RTAC250	250.0	2
Clayton J. Davenport Primary School	Trane	RTAC225	225.0	1
E. H. Slaybaugh Primary School	Trane	RTAC225	225.0	1

SCOPE OF WORK

The following outlines the scope of work to install the chiller unit listed in the table above.

- Disconnect existing electric connections.
- Disconnect piping from the unit.
- Remove existing unit.
- Rig and set new unit.
- Inspect piping before reconnecting them to the unit.
- Reconnect piping.
- Repair piping insulation.
- Connect electric power.
- Start up and commissioning of new unit.
- Maintenance operator(s) training.

ENERGY SAVINGS METHODOLOGY AND RESULTS

The savings approach is based on the energy efficiency between the existing and new units. The savings are generally calculated as:

Electric Energy savings	*= Existing unit energy consumption (kWh) – replacement unit energy consumption (kWh)*

EQUIPMENT INFORMATION

Manufacturer and Type	Several quality and cost-effective manufacturers are available.
Equipment Identification	As part of the ECM design and approval process, specific product selection will be provided for your review and approval.

CHANGES IN INFRASTRUCTURE

New chillers will be installed in itemized locations; in addition, training for maintenance personnel will be required, as well as on-going, annual preventive maintenance.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Coordination of the electrical tie-in will be required.

ENVIRONMENTAL ISSUES

Resource Use	Energy savings will result from higher efficiency units.
Waste Production	Existing units scheduled for removal will be disposed of properly.
Environmental Regulations	No environmental impact is expected.

ECM 2H Cooling Tower Replacements

The key benefits of this ECM include:

- **Reduced energy usage** from improved efficiency due to replacement of older equipment.
- **Lower operational costs** through less frequent maintenance and operational issues.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
2H Cooling Tower Replacements								■	■		

EXISTING CONDITIONS

Cooling tower units serving the building has gone beyond its useful life and is inefficient, have exceeded their expected useful service lives, and are costly to maintain. Replacing this with new, high efficiency unit will save energy costs over the long term while reducing repair costs that would otherwise have been necessary to keep the old units in operation.

E. H. Slaybaugh PS – Cooling Tower

Clayton J. Davenport PS – Cooling Tower

Table 2H.1 Existing Cooling Towers

Building	Make	Model	Qty.	Tons
Clayton J. Davenport Primary School	Reymsa	GHRFG	1	291
E. H. Slaybaugh Primary School	Reymsa	GHRFG	1	291

PROPOSED SOLUTION

Honeywell proposes replacing the existing cooling tower unit in the table above. The new unit will be installed in the same location as the existing units. Existing electrical power supply will be reconnected to the new motors. The units will communicate with the existing or enhanced BMS.

Table 2H.2 Proposed Cooling Towers

Building	Make	Model	Qty.	Tons
Clayton J. Davenport Primary School	Reymsa	GHRFG	1	291
E. H. Slaybaugh Primary School	Reymsa	GHRFG	1	291

SCOPE OF WORK

The following outlines the scope of work to install the cooling tower units listed in the table above.

1. Disconnect existing electric connections.
2. Disconnect piping from the unit.
3. Remove existing unit.
4. Rig and set new unit.
5. Inspect piping before reconnecting them to the unit.
6. Reconnect piping.
7. Repair piping insulation.
8. Connect electric power.
9. Start up and commissioning of new unit.
10. Maintenance operator(s) training.

ENERGY SAVINGS METHODOLOGY AND RESULTS

The savings approach is based on the energy efficiency between the existing and new units. The savings are generally calculated as:

Electric Energy Savings	*Existing unit energy consumption (kW/ton) – replacement unit energy consumption (kW/ton*

EQUIPMENT INFORMATION

Manufacturer and Type	Honeywell and the customer will determine final selections.
Equipment Identification	Product cut sheets and specifications are available upon request. As part of the measure, design, and approval process, specific product selection will be provided for your review and approval.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Coordination of the electrical tie-in will be required.

ENVIRONMENTAL ISSUES

Resource Use	Energy savings will result from higher efficiency units.
Waste Production	Existing units scheduled for removal will be disposed of properly.
Environmental Regulations	No environmental impact is expected.

ECM 3A Building Controls/Retro-Commissioning

The key benefits of this ECM include:

- **Improve Air Quality** by more precise control of air filtration, air composition and ultra-violet cleaning to create a healthier school building environment.
- **Operational efficiency** resulting from better control and system wide visibility.
- **Remote operation of HVAC systems** via mobile phone or off-site computer.
- Energy savings from reducing total energy consumption with more efficient, state of the art technology.
- **Occupancy comfort and productivity** resulting from enhanced temperature and humidity control throughout your buildings.
- **Deliver a comprehensive open protocol** Building Management System. Verify design is customized for each building yet uniform throughout the district. Assure longevity of control system with proper commissioning and training.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
3A Building Controls/Retro-Commissioning		■	■	■	■	■	■	■	■		

EGG HARBOR SCHOOL DISTRICT BUILDING MANAGEMENT SYSTEM OVERVIEW

Honeywell has performed a survey of the existing temperature controls throughout the School District. Upon inspection, it was noted that the level of controls technology applied differs significantly in each of the District school. It is apparent that although limited controls upgrades have been performed where possible, the level of technology employed within each District building is different. However, regardless of the systems in place, all of the building controls can benefit from energy conservation enhancements.

Refer to Energy Conservation Measure Matrix for buildings included in this measure.

EXISTING CONDITIONS

Table 3A.1 – Existing Building Management Controls

Building	Existing Building Management System
Egg Harbor Township High School	Siemens Apogee
Fernwood Ave Middle School	Siemens

Building	Existing Building Management System
Alder Avenue Middle School	CM3
Joyanne D. Miller Elementary School	Siemens
Clayton J. Davenport Elementary School	Siemens
E. H. Slaybaugh Elementary School	CM3
H. Russel Swift Elementary School	Siemens
Clayton J. Davenport Primary School	Siemens Insight
E. H. Slaybaugh Primary School	Siemens Insight
Eagle Academy	Room Thermostats
District Transportation Complex	Wall Thermostats

PROPOSED CONDITIONS

We propose an upgrade solution that includes several options from which to choose for the various District schools.

Option #1 – BAS Controller Retrofit:

1. All existing field controllers will be replaced with new BACnet controllers which serve the school's HVAC equipment. Below is a controller count for each school:

Table 3A.2 – Existing Controllers Qty.

Building	Existing Controllers Qty.
Fernwood Ave Middle School	185
Clayton J. Davenport Primary School	67
E. H. Slaybaugh Primary School	73
Alder Avenue Middle School	164
E. H. Slaybaugh Elementary School	76
H. Russel Swift Elementary School	TBD
Joyanne D. Miller Elementary School	TBD
Clayton J. Davenport Elementary School	TBD

2. All the existing control devices currently serving the unit will be reused in this option. This includes temperature sensors, damper actuators, switches, relays, freezestats, transducers, etc. required for a complete control system. Existing temperature sensors will be replaced only if they are not compatible with the new controllers.
3. All new BACnet controllers will be networked to an open protocol Tridium JACE Network Controller. Enough JACE controllers will be furnished to handle each school's controller count.
4. All new network communication wiring will be installed from the JACE(s) to a District network designated for each school.
5. All new network communication wiring will be installed from the JACE to the controllers and control wiring for space temp sensors.

6. Once the new control devices are installed & programmed, the existing graphical screens will be updated for each HVAC system at the existing CM3 front end.

Option #2- Complete BAS Controller & Field Controls Retrofit:

1. Option #2 includes the same scope as Option #1, with one change. For Option #2, all new control devices for each unit will be furnished, installed. and wired. This includes temperature sensors, damper actuators, switches, relays, freezestats, transducers, etc. required for a complete control system.
2. For this option, the existing devices and sequences of operation will be matched.
3. This option includes installing new control valves. (Note: Draining & refilling of water systems is not included).

Option #3- Alder Ave Pneumatic Actuation Retrofit Add:

1. Option #3 includes an Add Alternate price to replace the existing pneumatic actuators for the valves & dampers with electric actuators of similar capacity.
2. This does not include replacing any valve bodies.

Option #4- Fernwood Ave MS Siemens BAS Tridium Integration:

1. A Tridium JACE Network Controller will be furnished, installed, and programed to allow communication between the existing Siemens BACnet controllers and the Tridium JACE controller via BACnet. Enough JACE controllers will be furnished to handle each school's controller count.
2. Fifteen (15) PXCM & PXC controllers will be replaced with new BACnet controllers that have their own processor and time clock. This will remove the issue of several AHUs relying on one central controller for its programming.
3. For these fifteen (15) controllers, all the existing control devices currently serving them will be reused. This includes temperature sensors, damper actuators, switches, relays, freezestats, transducers, etc. required for a complete control system. Existing temperature sensors will be replaced if they are not compatible with the new controllers.
4. All new network communication wiring from the JACE(s) to a District network designated for each school will be installed.
5. Once the new control devices are installed & programmed, the existing graphical screens will be updated for each HVAC system at the existing CM3 front end.

ENERGY SAVINGS METHODOLOGY AND RESULT

The savings approach is based upon reducing the amount of energy that needs to pre-heat or cool the outside air. The savings are generally calculated based on temperature and operating hours.

Existing Heating BTU & Cost per BTU	*= Metered data from existing meter readings*
Cost of Existing Heating	*= Average site data $/CCF or $/Gallon*
Reduction in Heating/Cooling BTU	*= Reduction in outside air CFM x 1.08 x Delta T x Operating Hours*
Cost of Proposed Heating/Cooling	*= Reduced BTU x Cost per BTU*
Energy Savings $	*= Existing Costs – Proposed Costs*

The baseline adjustment calculations are included with the energy calculations.

CHANGES IN INFRASTRUCTURE

None.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Minor support will be required for the interruption of utilities for brief tie-in periods.

ENVIRONMENTAL ISSUES

Resource Use	Energy savings will result from reduced energy.
Waste Production	Any removed parts will be disposed of properly.
Environmental Regulations	No environmental impact is expected.

ECM 3B Energy Optimization/Forge

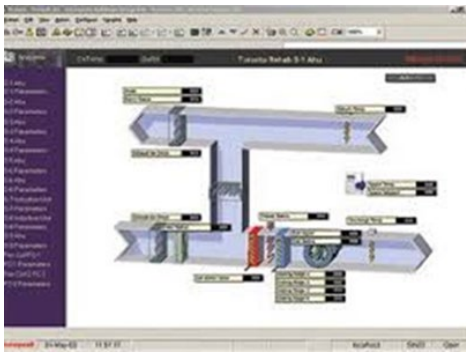
The key benefits of this ECM include:

- **Energy savings** from reducing total energy consumption with more efficient, state of the art technology.
- **Cloud-Based Solution** that connects to a building's existing systems - without the need for capital investment - and optimizes energy consumption to drive up savings.
- **Monitor Energy Consumption** savings and zone comfort levels for any duration of time.
- **Reduced maintenance and operational costs** by reducing the runtime of HVAC systems.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
3B Energy Optimization/Forge	■	■	■	■	■	■	■	■	■		

EXISTING CONDITIONS

HVAC Systems are the biggest consumer of energy in commercial facilities, and most rely on conservative and inefficient control strategies. Manual or scheduled set-point adjustment strategies simply cannot account for the complexity of a building's dynamic occupancy and weather conditions – while maintaining comfort levels.



HVAC Equipment Control

HVAC Equipment Control

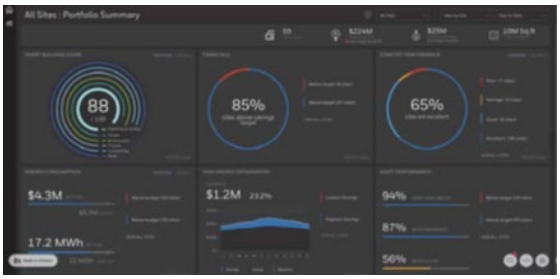
PROPOSED SOLUTION

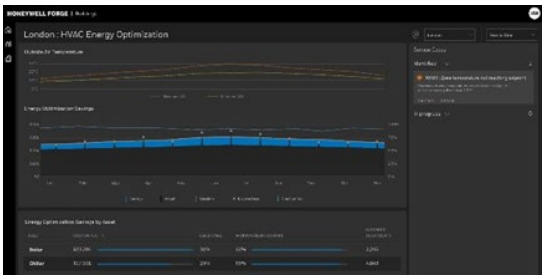
BUILDING ANALYTICS

closed-loop solution operates without the need for customer intervention by regularly analyzing real-time conditions data – weather and occupancy - with predictive, machine learning models that compute and adjust set points automatically over a facility's entire HVAC distribution system. These machine learning

models work best with hot water, chilled water, and variable air volume HVAC systems, constantly performing adjustments that District staff already completes on a manual basis.

The solution performs these calculations and adjustments in continuous, 15-minute intervals to ensure peak efficiency around the clock, and customers are able to monitor energy consumption, energy savings and zone comfort levels for any duration of time.





SCOPE OF WORK

SYSTEM AGNOSTIC

Works with the existing BMS system using the open integration power of Niagara ®.

SAFE & SECURED

Built-in safety features ensure HVAC systems are always controlled – even during unexpected disturbances.

AUTONOMOUS CONTROL

No need for customer intervention or expertise through this closed loop, continuously monitored solution.

REAL-TIME INTELLIGENCE

Advanced machine learning calculates occupancy and weather data to optimize set-points every 15-minutes.

DOMAIN EXPERTISE

A solution built on over one-hundred years of experience in building technologies.

SMART VISUALIZATION

Solution identifies pre-existing faults and delivers real-time energy, savings, and comfort metrics.

Energy needs fluctuate based on seasons, weather, occupancy, and usage. With Energy Optimization we have demonstrated that we can use the latest self-learning algorithms to optimize building operation.

CHANGES IN INFRASTRUCTURE None.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES None.

ENVIRONMENTAL ISSUES

Resource Use	Energy savings will result from optimized building operation.
Waste Production	No waste will be generated as a result of this ECM.
Environmental Regulations	No environmental impact is expected.

ECM 3C Demand Control Ventilation

The key benefits of this ECM include:

- **Improve Air Quality** by more precise control of air ventilation to create a healthier school building environment.
- **Operational efficiency** resulting from better control and system wide visibility.
- **Energy savings** from reducing total energy consumption with more efficient control technology.
- **Occupancy comfort and productivity** resulting from enhanced control throughout your buildings.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
3C Demand Control Ventilation		■				■		■	■		

EXISTING CONDITIONS

The roof top and air handling units serving large one zone spaces such as auditoriums, gymnasiums and cafeterias are often designed for peak occupancy conditions to supply outside air to the space with return air from space being exhausted. Most of the time these spaces are not fully occupied, which increase energy demand for heating and cooling of excessive amount of outside air.

E. H. Slaybaugh PS - Multipurpose Room

Fernwood Ave Middle School - Auditorium

PROPOSED SOLUTION

Honeywell proposes installing CO2 Sensors in District gymnasiums, auditoriums, and cafeterias (see table below for the locations). The CO2 sensor will provide the control signal for the air handlers to optimize the quantity of fresh air that is required. This control strategy will reduce the space energy use. Based on this fact, there is a reduced requirement for outside air to this space. The installation of a CO2 sensor will read the levels of CO2 in the space and ensure that only the required outside air is supplied and heated to meet the minimum outdoor air requirements.

Table 3A.1 Proposed Demand Control Ventilation

Building	Areas Served	No. of AHU / RTU
Clayton J. Davenport Primary School	Library	1
Clayton J. Davenport Primary School	Stage Storage	1
Clayton J. Davenport Primary School	MPR Lobby	1
E. H. Slaybaugh Elementary School	Gym	2
E. H. Slaybaugh Elementary School	Cafetorium	2
E. H. Slaybaugh Primary School	Library/ A107A	1
E. H. Slaybaugh Primary School	Stage	1
E. H. Slaybaugh Primary School	Multipurpose Room South	1
E. H. Slaybaugh Primary School	Multipurpose Room North	1
Fernwood Ave Middle School	Auditorium	1
Fernwood Ave Middle School	Auditorium	1
Fernwood Ave Middle School	Auditorium	1
Fernwood Ave Middle School	Gym	1
Fernwood Ave Middle School	Gym	1
Fernwood Ave Middle School	Gym	1
Fernwood Ave Middle School	Gym	1
Fernwood Ave Middle School	Gym	1
E. H. Slaybaugh Elementary School	Library	1
Total		**20**

ENERGY SAVINGS METHODOLOGY AND RESULTS

In general, Honeywell uses the following approach to determine savings for this specific measure:

Existing Heating BTU & Cost per BTU	*= Metered data from existing meter readings*
Cost of Existing Heating	*= Average site data $/CCF or $/Gallon*
Reduction in Heating/Cooling BTU	*= Reduction in outside air CFM x 1.08 x Delta T x Operating Hours*
Cost of Proposed Heating/Cooling	*= Reduced BTU x Cost per BTU*
Energy Savings $	*= Existing Costs – Proposed Costs*

CHANGES IN INFRASTRUCTURE

None.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Minor support will be required for the interruption of utilities for brief tie-in periods.

ENVIRONMENTAL ISSUES

Resource Use	Energy savings will result from reduced energy.
Waste Production	Any removed parts will be disposed of properly.
Environmental Regulations	No environmental impact is expected.

ECM 4A Building Envelope Improvements

The key benefits of this ECM include:

- **Energy savings** from reducing unwanted outside air infiltration.
- **Equipment longevity** due to more efficient and less wasteful equipment utilization.
- **Occupancy comfort and productivity** by way of enhanced temperature and humidity control throughout your buildings.
- **Improved building envelope** from addressing building gaps that allow unconditioned air penetration.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
4A Building Envelope Improvements	■	■	■	■	■	■	■	■	■	■	■

EXISTING CONDITIONS

Heat loss due to infiltration is a common problem, particularly in places with long and cold winter seasons such as NJ. This problem has been shown to represent the single largest source of heat loss or gain through the building envelopes of nearly all types of buildings. Our work has found 30% to 50% of heat loss attributable to air leaks in buildings.

Honeywell uncovered several leaks that allow for heat loss to occur during the winter season and unwanted heat gains during the summer season. These problems include door gaps, exhaust fans in poor condition, open windows or windows in poor condition, lack of air sealing, and insulation.

Typical Building Envelope

Typical Building Envelope

Honeywell has helped customers like you to address these problems with a comprehensive and thorough building envelope solution that seals up your buildings to improve occupancy comfort and help eliminate unwanted energy waste. We propose to conduct a comprehensive weatherization job to weatherproof doors and windows, caulk, and seal leaks, and install spray foam and rigid foam boards to stop unwanted air movement and provide a thermal barrier between spaces. Part of this process may include decoupling floor-to-floor and compartmentalizing of components of the building to equalize pressure differences.

PROPOSED SOLUTION

Building	Buck Frame Air Sealing (LF)	Door - Install Jamb Spacer (Units)	Door Weather Striping - Doubles (Units)	Door Weather Stripping - Singles (Units)	Double Hung Window Weatherization (Units)	Install New Attic Hatch (Units)	Overhang Air Sealing (LF)	Overhang Air Sealing (SF)	Overhead Door Weather Stripping (Units)	Roll-Up Door Weather Stripping (Units)	Roof-Wall Intersection Air Sealing (LF)	Wall Air Sealing (LF)	Wall Air Sealing (SF)
Egg Harbor Township High School		18	21	3									
Fernwood Ave Middle School	233	6	14	15			153				1064		2062
Alder Avenue Middle School			10	5									
Joyanne D. Miller Elementary School			1	6	34	1							
Clayton J. Davenport Elementary School		8	67	14			65			3	1664	422	30
E. H. Slaybaugh Elementary School		62	20	19			85			2			
H. Russel Swift Elementary School			18	2									
Clayton J. Davenport Primary School			1	27				72			1538		
E. H. Slaybaugh Primary School			10	4									
Eagle Academy	19	4	9	38			10	171			135	489	
District Transportation Complex			1	8					14				
Total Quantity	252	98	172	141	34	1	313	243	14	5	4401	911	2092

Roof-Wall Joints

- Existing – Buildings throughout Egg Harbor Township Schools were found to require roof-wall joint air sealing.
- Proposed – Honeywell recommends using a high-performance sealant. In some buildings, two-component foam will be used. Any cantilevers off the buildings will be sealed with backer rod and sealant. Finally, the inside vestibule corners should be sealed with backer rod and sealant.

Roof Penetrations

- Existing - There are many roof top exhaust fans that require damper cleaning, lubrication, and inspection for proper operation and to seal the roof deck to prevent penetration. Some units may be deemed to be too oversized for this service. Some buildings have roof-top AHUs with ducts that may show air leak during an IGA.
- Proposed – Honeywell recommends if there is leak, these duct penetrations will be sealed with two-component polyurethane foam. Skylights will also be sealed. Sealant will be injected behind the drip cap to eliminate airflow.

Roof Overhangs

- Existing – We found that roof overhangs at exterior doors are open to the drop ceilings, providing a pathway allowing heated and cooled air to escape between the interior and exterior of the building.
- Proposed – Honeywell proposes to install rigid foam boards and seal the perimeter and any penetrations with spray foam to prevent air leak and provide a sufficient thermal barrier between the spaces.

Windows

- Existing - The operable windows in most of your buildings could present air leak issues that require weather stripping with fuzz or gasket type materials.
- Proposed – Honeywell recommends installing weather stripping and door sweeps to prevent air leak.

Doors

- Existing – Doors in this facility need full weather-stripping replacement and/or door sweeps.
- Proposed – Honeywell recommends new weather stripping and door sweeps to be installed where needed.

BENEFITS

This work will allow for more efficient operation of your buildings by reducing heating and cooling losses throughout the year. In addition, the draftiness of the buildings and hot and cold spots will be significantly reduced. A reduction in air infiltration will also minimize potential concerns for dirt infiltration or indoor air quality concerns including allergies.

ENERGY SAVINGS METHODOLOGY AND RESULTS

The energy savings for this ECM are realized at the buildings' HVAC equipment. The improved building envelope will limit conditioned air infiltration through openings in the building air barrier. Less infiltration means less heating required by the heating system.

EQUIPMENT INFORMATION

Manufacturer and Type	Several quality and cost-effective manufacturers are available. The District and Honeywell will determine final selections.
Equipment Identification	As part of the ECM design and approval process, specific product selection will be provided for your review and approval.

CHANGES IN INFRASTRUCTURE

Building envelope will be improved with little or no noticeable changes.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Minimal coordination efforts will be needed to reduce or limit impact to building occupants.

ENVIRONMENTAL ISSUES

Resource Use	Energy savings will result from reduced HVAC energy usage and better occupant comfort.
Waste Production	Some existing caulking and weather-stripping will be removed and disposed of properly.
Environmental Regulations	No environmental impact is expected.

ECM 5A CHP (Cogeneration)

The key benefits of this ECM include:

- **Energy savings** from utilizing a Combined Heat and Power (CHP) system to supplement the existing heating system.
- **Operational savings** resulting from improved operational efficiencies unique to CHP technology.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
5A Cogeneration CHP	■										

EXISTING CONDITIONS

No Combined Heat and Power (i.e., cogeneration) units are currently located within the Egg Harbor Township Public Schools.

Cogeneration Configuration

Ecopower CHP

PROPOSED SOLUTION

Honeywell recommends the installation of the ecopower micro-cogeneration system provides heat and electrical power in a cost effective and environmentally friendly manner. Using a natural gas or propane fueled Marathon Engine, the system captures thermal energy for space heating or domestic hot water. The mCHP uses heat generated by an internal combustion engine to produce between 13,000 - 47,000 BTU of heat per hour while simultaneously co-generating 1.2 - 4.4kW of electricity per hour. The system is thermally driven. The ecopower will anticipate the heat demand from sensors located in the house, buffer tank or outside and varies its output to satisfy the demand. It will modulate (slow down or speed up) to run at a level to maintain a constant heat requirement in order to keep the engine running as long as possible, ensuring maximum electrical generation.

SCOPE OF WORK

Table 7A.1 Proposed Cogeneration Units

Building	Type	Manufacturer	KW	Model
Egg Harbor Township High School	Axiom	Ecopower	4.4	1

ENERGY SAVINGS METHODOLOGY AND RESULTS

Savings are based on energy conversion of natural gas to thermal and electrical energy.

Year	Distributed Generation
Installation	
1	$1,440.76
2	$1,472.45
3	$1,504.85
4	$1,537.95
5	$1,571.79
6	$1,606.37
7	$1,641.71
8	$1,677.83
9	$1,714.74
10	$1,752.46
11	$1,791.02
12	$1,830.42
13	$1,870.69
14	$1,911.84
15	$1,953.90
16	$1,996.89
17	$2,040.82
18	$2,085.72
19	$2,131.60
Totals	$33,533.81

EQUIPMENT INFORMATION

Manufacturer and Type	Axiom Ecopower, Electrical Output 1.2-4.4 kW, Thermal Output 13,000 - 47,000 Btu/hr., Overall efficiency 93%
Equipment Identification	Product cut sheets and specifications for generally used are available upon request. As part of the measure design and approval process, specific product selection will be provided for your review and approval.

CHANGES IN INFRASTRUCTURE

The proposed micro-generator unit would reside in or near the boiler room.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Minor support will be required for the interruption of utilities for brief tie-in periods. The customer and Honeywell will decide upon the exact location of the CHP installation.

ENVIRONMENTAL ISSUES

Resource Use	Energy will be generated to supplement energy purchased from the electrical utility.
Waste Production	Any removed parts will be disposed of properly.
Environmental Regulations	Aside from the environmental benefits from on-site energy generation, no other environmental impact is expected.

ECM 6A Permanent Load Reduction

The key benefits of this ECM include:

- **Reduced utility costs.**
- **Reduced energy usage** from improved efficiency resulting from replacement of older equipment**.**
- **Lower Operational Costs** through less frequent maintenance and operational issues.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
6A Permanent Load Reduction	■	■	■	■	■	■	■	■	■		■

ECM OVERVIEW

This measure evaluates the savings from the decrease in power (KW) usage and the rebates associated with that reduction through the PJM Permanent Reduction Program. Honeywell proposes to continue to utilize a registered Demand Response Curtailment Service Provider (CSP) to provide energy response services to the School District. Through the CSP, the School District will participate in the PJM Capacity Market Program and PJM Energy Efficiency Program. These programs are offered through the PJM Regional Transmission Organization (RTO), and Independent System Operator (ISO). The Capacity Market Program allows PJM customers the ability to respond to capacity emergencies when called upon by PJM, and the energy efficiency program pays PJM customers for implementing Energy Conservation measures (ECMs) that result in permanent load reductions during defined hours.

Fernwood Ave MS – Switchboard

E. H. Slaybaugh ES – Switchboard

PJM CAPACITY MARKET PROGRAM

Capacity represents the need to have adequate resources to ensure that the demand for electricity can be met at all times. For PJM, that means that a utility or other electricity supplier, load serving entity, is required to have the resources to meet its consumers' demand plus a reserve amount. Electricity suppliers, load serving entities, can meet that requirement by owning and operating generation capacity, by purchasing capacity from others or by obtaining capacity through PJM's capacity market auctions.

Table 6A.1 Permanent Load Reduction KW per Building

Building	Permanent Load Reduction (KW)
Egg Harbor Township High School	179
Fernwood Ave Middle School	46
Alder Avenue Middle School	48
Joyanne D. Miller Elementary School	56
Clayton J. Davenport Elementary School	19
E. H. Slaybaugh Elementary School	9
H. Russel Swift Elementary School	19
Clayton J. Davenport Primary School	48
E. H. Slaybaugh Primary School	27
Eagle Academy	-
District Transportation Complex	5
Total	**457**

PJM operates a capacity market, called the Reliability Pricing Model (RPM). It is designed to ensure that adequate resources are available to meet the demand for electricity at all times. In the RPM, those resources include not only generating stations, but also demand response actions and energy efficiency measures by consumers to reduce their demand for electricity.

PJM must keep the electric grid operating in balance by ensuring there is adequate generation of electricity to satisfy the demand for electricity at every location in the region both now and in the future. PJM's markets for energy and ancillary services help maintain the balance now while the PJM market for capacity aims to keep the system in balance in the future. Resources, even if they operate infrequently, must receive enough revenue to cover their costs. Payments for capacity provide a revenue stream to maintain and keep current resources operating and to develop new resources. Investors need sufficient long-term price signals to encourage the maintenance and development of generation, transmission, and demand-side resources. The RPM, based on making capacity commitments in advance of the energy need, creates a long-term price signal to attract needed investments for reliability in the PJM region.

PROPOSED SOLUTION

Honeywell proposes to work with a PJM Regional Transmission Organization (RTO), CSR to implement a Demand Response energy curtailment program which will generate revenue streams for the School District. Honeywell's Demand Response agent acting as the CSP will notify the district prior to potential events in order to advise and coordinate load curtailment participation in accordance with RTO program requirements and will work with the School District to benefit from energy efficiency improvements.

The PJM Markets are further described below.

THE PJM ENERGY EFFICIENCY PROGRAM

Energy efficiency measures consist of installing more efficient devices or implementing more efficient processes/systems that exceed then-current building codes or other relevant standards. An energy efficiency resource must achieve a permanent, continuous reduction in demand for electricity. Energy efficiency measures are fully implemented throughout the delivery year without any requirement of notice, dispatch, or operator intervention. A demand response resource can reduce its demand for electricity when instructed; this means PJM considers it a "dispatchable resource." A demand response resource can participate in the RPM market for as long as its ability to reduce its demand continues. A demand response resource must be willing to reduce demand for electricity up to 10 times each year when called for a reduction. In a year without any reduction calls, the demand response resource is required to demonstrate the ability to reduce demand for electricity during a test of reduction capability. Data will be submitted by the demand response resource to prove compliance with reductions from actual calls or reductions from capability tests. An energy efficiency resource is one that reduced their demand for electricity through an energy efficiency measure that does not require any additional action by the consumer.

ENERGY SAVINGS METHODOLOGY AND RESULTS

Revenue is generated through participation in the PJM DR program.

CHANGES IN INFRASTRUCTURE

None

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Initiation of demand response curtailment will be required.

ENVIRONMENTAL ISSUES

Resource Use	None.
Waste Production	This measure will produce no waste by-products.
Environmental Regulations	None.

ECM 7A Solar PPA

The key benefits of this ECM include:

- **Reduced utility costs.**
- **Guaranteed utility rates** for 15 years to provide a valuable hedge against future price volatility and deliver greater budgetary certainty utilizing clean electricity.
- **Additional savings from solar** can provide the Egg Harbor Township Public Schools with more potential ESIP funding to expand the overall project scope and include additional projects.
- **Educational asset to provide additional tools for teachers** to engage students on sustainability and the environment.
- **Low risk** given that maintenance is provided by the 3rd party system owner.
- **No upfront costs.**

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
7A Solar PPA	■	■		■	■	■	■	■	■		

ECM OVERVIEW

Honeywell recommends that the District further assess the feasibility of a solar photovoltaic system on District owned roofs to generate on-site renewable electricity. This could be provided at no upfront cost via a Power Purchase Agreement (PPA). A PPA is a public-private partnership financial arrangement in which a third-party solar company owns, operates, and maintains your photovoltaic system, while the host customer agrees to provide the site for the system on its property. The solar system's power production is purchased by you for a predetermined price ($/kWh) and for a predetermined period. This stable price for electricity will be lower than the utilities and third-party suppliers, thereby allowing you to benefit from lower electricity t prices, on-site renewable energy generation, a reduction in greenhouse gas emissions and a powerful educational tool for your teachers and students. Meanwhile, the system will not add any additional maintenance costs since it is owned by the third-party solar company. One of the more significant benefits of this potential ECM is that it will provide for a rate change, helping to deliver greater savings within your ESIP project to help fund other measures

Typical Rooftop Solar Array

Typical Parking Lot Solar Array

Honeywell will oversee the design and construction of the system. We will assist in the feasibility study during your IGA, in conjunction with your technical consultant and legal team, to provide RFP development, solicitation, and oversight of the installation of a solar photovoltaic system.

PROPOSED SOLUTION

Honeywell proposes to install the solar PPA system at the potential buildings listed in the chart below.

Table 7A.1 Proposed Solar PPA System

Building	Type	KW DC	kWh AC Generated
Egg Harbor Township High School	PPA	250.0	356,209
Fernwood Ave Middle School	PPA	250.0	356,209
Alder Avenue Middle School	PPA	0.0	0
Joyanne D. Miller Elementary School	PPA	250.0	356,209
Clayton J. Davenport Elementary School	PPA	250.0	356,209
E. H. Slaybaugh Elementary School	PPA	214.1	305,057
H. Russel Swift Elementary School	PPA	212.5	302,778
Clayton J. Davenport Primary School	PPA	250.0	356,209
E. H. Slaybaugh Primary School	PPA	250.0	356,209
Eagle Academy	PPA	0.0	0
District Transportation Complex	PPA	0.0	0
Total		**1,926.6**	**2,745,089**

ENERGY SAVINGS METHODOLOGY AND RESULTS

Savings are based on the difference in kWh price between the PPA and the District's current electrical supplier.

CHANGES IN INFRASTRUCTURE

The proposed solar array would be roof-mounted only.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Minor support will be required for the interruption of utilities for brief tie-in periods.

ENVIRONMENTAL ISSUES

Resource Use	None.
Waste Production	None.
Environmental Regulations	Aside from the environmental benefits of increasing energy awareness no other environmental impact is expected.

ECM 8A Transformer Replacements

The key benefits of this ECM include:

- **Guaranteed energy savings** from reducing total energy consumption with more efficient, state of the art technology.
- **Equipment longevity** due to more efficient and less wasteful equipment utilization.

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
8A Transformers	■		■					■	■		

EXISTING CONDITIONS

The transformers in locations within the electrical distribution systems in the City consist of 480 Volts. Distribution transformers are installed in the boiler rooms and in various electrical and utility closets to step down the voltage to 120-208 Volts. Typically, an electrical distribution system has some losses associated with the electrical system and a considerable portion of these losses are associated with distribution transformers.

Egg Harbor Township HS - Transformer

Alder Avenue MS - Transformer

SYSTEMS EVALUATION AND SELECTION

Typical transformers are not designed to handle harmonic loads of today's modern facilities, and suffer significant losses, even if the transformer is relatively new. Typically, conventional transformer losses, which are non-linear, increase by 2.7 times when feeding computer loads. The nonlinear load loss multiplier reflects this increase in heat loss, which decreases the net transformer efficiency. Also, unlike most substation transformers that are vented to the exterior, building transformers are ventilated within the building they are located, and their heat losses therefore add to the cooling load.

Based on site investigation conducted by our staff, we identified the following transformers that we propose to replace with energy efficient replacements at a size matching the existing loads as indicated in the table below.

EXISTING TRANSFORMERS TO BE REPLACED

Table 8A.1 Existing Transformers to replace

Building	Location	kVA	Qty
Alder Avenue Middle School	Boiler Room	45	1
Clayton J. Davenport Primary School	Boiler Room	75	1
Clayton J. Davenport Primary School	Boiler Room	75	1
E. H. Slaybaugh Primary School	Boiler Room	75	1
E. H. Slaybaugh Primary School	Boiler Room	75	1
Egg Harbor Township High School	Boiler Room	45	1

PROPOSED SOLUTION

The proposed transformers will be Power Smiths High Efficiency K-Star Harmonic Mitigating units. They are Energy-Star rated and meet the new TP1 Law requiring replacement of transformers of 600 volts or under.

SCOPE OF WORK

Remove and install new E-saver transformers.

Per Transformer Unit:

- Shut off the main electric power to the transformer to be replaced.
- Disconnect the existing transformer and install replacement unit.
- Turn power back on.
- Inspect unit operation by performing electrical and harmonics testing.
- Dispose of old transformers properly.

ENERGY SAVINGS METHODOLOGY AND RESULTS

The energy savings for this ECM are realized by reduction in electric energy lost in the existing transformers as a result of the higher efficiency of the new transformers.

CHANGES IN INFRASTRUCTURE

New transformers where indicated.

CUSTOMER SUPPORT AND COORDINATION WITH UTILITIES

Minor support will be required for the interruption of services for the affected areas.

ENVIRONMENTAL ISSUES

Resource Use	Energy savings will result from increased voltage conversion efficiency.
Waste Production	Any removed parts will be disposed of properly.
Environmental Regulations	No environmental impact is expected.

Section D — Technical & Financial Summary

1. Recommended ESIP Project

Recommended ESIP Project	
Value of Project	$8,345,782
Term of Repayment	19 Years
Projected Savings Over Term	$12,585,214
Projected NJ Rebates & Incentives	$179,917
Projected Interest Rate	4.0%

Form II: Recommended Project — Energy Conservation Measures (ECMs) Summary Form

FORM II

ESCO's PRELIMINARY ENERGY SAVINGS PLAN (ESP):
ENERGY CONSERVATION MEASURES (ECMs) SUMMARY FORM
EGG HARBOR TOWNSHIP SCHOOLS
ENERGY SAVING IMPROVEMENT PROGRAM

ESCO Name: **Honeywell International**

Proposed Preliminary Energy Savings Plan: ECMs (Base Project)	Estimated Costs $	Estimated Annual Savings $	Estimated Simple Payback (years)
1A LED Lighting	$ 4,714,984	$ 444,867	10.60
2A Cogeneration CHP	$ 161,326	$ 998	161.59
3A Building Controls/Retro-Commissioning	$ 2,923,130	$ 196,499	14.88
3B Demand Control Ventilation	$ -	$ 10,183	-
4A Building Envelope Improvements	$ 412,461	$ 34,184	12.07
6A Permanent Load Reduction	$ -	$ -	-
Add additional lines as needed* **Project Summary:**	$ 8,211,900	$ 686,731	11.96

Optional ECMs Considered, but not included with base project at this time	Estimated Costs $	Estimated Annual Savings $	Estimated Simple Payback (years)
1B De-Stratification Fans w/ Air Purification	$ 867,129	$ 15,292	56.70
2B Boiler Replacements	$ 4,173,645	$ 22,456	185.86
2C Domestic Water Heater Replacements	$ 458,766	$ 759	604.08
2D Burner Replacement and Controls	$ 121,361	$ 4,765	25.47
2E Roof Top Unit Upgrades	$ 592,420	$ 36,616	16.18
2F Split System Upgrades	$ 144,651	$ 356	406.36
2G Premium Efficiency Motors and VFDs	$ 218,112	$ 6,913	31.55
2H Chiller Replacements	$ 2,680,482	$ 7,505	357.15
2I Cooling Tower Replacements	$ 740,698	$ 583	1,269.98
3C Energy Optimization/Forge	$ 91,021	$ 13,494	6.75
7A Solar PPA	$ 0	$ 87,056	0.00
8A Transformers	$ 555,410	$ 37,494	14.81

Add additional lines as needed*

Form III: Recommended Project — Projected Annual Energy Savings Data Form

FORM III
ESCO's PRELIMINARY ENERGY SAVINGS PLAN (ESP)
PROJECTED ANNUAL ENERGY SAVINGS DATA FORM
EGG HARBOR TOWNSHIP SCHOOLS
ENERGY SAVING IMPROVEMENT PROGRAM

ESCO Name: **Honeywell International**

The projected annual savings for each fuel type MUST be completed using the following format. Data should be given in the form of fuel units that appear in the utility bills.

Energy/Water	ESCO Developed Baseline (Units)	ESCO Developed Baseline (Costs $)	Proposed Annual Savings (Units)	Proposed Annual Savings (Costs $)
Electric Demand (KW)	45,480	$484,631	10,176	$108,557
Electric Energy (KWH)	11,405,764	$1,679,064	3,720,629	$372,503
Natural Gas (therms)	524,890	$687,483	36,434	$51,797
Fuel Oil (Gal)	0	$0	0	$0
Steam (Pounds)				
Water (gallons)				
Other (Specify Units)				
Other (Specify Units)				
Avoided Emissions (1)	Provide in Pounds (Lbs)			
NOX	3,423			
SO2	2,493			
CO2	2,865,137			

(1) ESCOs are to use the rates provided as part of this RFP to calculate Avoided Emissions. Calculation for all project energy savings and greenhouse gas reductions will be conducted in accordance with adopted NJBPU protocols

(2) "ESCOs Developed Baseline": Board's current annual usages and costs as determined by the proposing ESCO; based off Board's utility information as provided to proposing ESCO.

(3) "Proposed Annual Savings": ESCOs proposed annual savings resulting from the Board's implementation of the proposed ESP, as based upon "ESCOs Developed Baseline".

Form IV: Recommended Project — Projected Annual Energy Savings Data Form in MMBTUs

FORM IV

ESCO's PRELIMINARY ENERGY SAVINGS PLAN (ESP):
PROJECTED ANNUAL ENERGY SAVINGS DATA FORM IN MMBTUs
EGG HARBOR TOWNSHIP SCHOOLS
ENERGY SAVING IMPROVEMENT PROGRAM

ESCO Name: **Honeywell International**

The projected annual energy savings for each fuel type MUST be completed using the following format. Data should be given in equivalent MMBTUs.

ENERGY	ESCO Developed Baseline	ESCO Proposed Savings Annual	Comments
Electric Energy (MMBTUs)	38,916	12,695	
Natural Gas (MMBTUs)	52,489	3,643	
Fuel Oil (MMBTUs)	0	0	
Steam (MMBTUs)			
Other (Specify) (MMBTUs)			
Other (Specify)			

NOTE: MMBTU Defined: A standard unit of measurement used to denote both the amount of heat energy in fuels and the ability of appliances and air conditioning systems to produce heating or cooling.

Form VI: Recommended Project — District Preliminary Annual Cash Flow Analysis Forms

FORM VI

ESCO's PRELIMINARY ENERGY SAVINGS PLAN (ESP):
ESCO's PRELIMINARY ANNUAL CASH FLOW ANALYSIS FORM
EGG HARBOR TOWNSHIP SCHOOLS
ENERGY SAVING IMPROVEMENT PROGRAM

ESCO Name: **Honeywell International**

Note: Proposers must use the following assumptions in all financial calculations:

(a) The cost of all types of energy should be assumed **2.4%** gas, **2.2%** electric per year

1. Term of Agreement: **19** (Years) (Months)
2. Construction Period [2] (months): **12**
3. Cash Flow Analysis Format:

Form II Costs	$	8,211,900
Technical Energy Audit	$	133,882
Project Costs [1]	$	8,345,782
Bond Counsel Muni Advisor	$	35,000
Contingency/Rounding	$	19,218
Financed Value:	**$**	**8,400,000**

Interest Rate to Be Used for Proposal Purposes: **4.0%**

Year	Annual Energy Savings	Annual Operational Savings	Energy Rebates/Incentives		Total Annual Savings	Annual Project Costs	Board Costs	Annual Service Costs [1]	Net Cash-Flow to Client	Cumulative Cash Flow
			Value	Utility						
Installation	$ 159,857				$ 159,857	$ -	$ -	$ -	$ 159,857	$ 159,857
1	$ 532,857	$ 153,874	$ 158,734	ACE	$ 845,465	$ (815,565)	$ (899,565)	$ (84,000)	$ 29,900	$ 189,757
2	$ 544,684	$ 153,874	$ -		$ 698,557	$ (668,657)	$ (668,657)	$ -	$ 29,900	$ 219,657
3	$ 556,773	$ 33,874	$ -		$ 590,646	$ (560,746)	$ (560,746)	$ -	$ 29,900	$ 249,557
4	$ 569,130	$ 33,874	$ -		$ 603,004	$ (573,104)	$ (573,104)	$ -	$ 29,900	$ 279,457
5	$ 581,762	$ 33,874			$ 615,636	$ (585,736)	$ (585,736)	$ -	$ 29,900	$ 309,357
6	$ 594,675				$ 594,675	$ (564,775)	$ (564,775)	$ -	$ 29,900	$ 339,257
7	$ 607,875				$ 607,875	$ (577,975)	$ (577,975)	$ -	$ 29,900	$ 369,157
8	$ 621,367				$ 621,367	$ (591,467)	$ (591,467)	$ -	$ 29,900	$ 399,057
9	$ 635,160				$ 635,160	$ (605,260)	$ (605,260)	$ -	$ 29,900	$ 428,957
10	$ 649,258				$ 649,258	$ (619,358)	$ (619,358)	$ -	$ 29,900	$ 458,857
11	$ 663,670				$ 663,670	$ (633,770)	$ (633,770)	$ -	$ 29,900	$ 488,757
12	$ 678,402				$ 678,402	$ (648,502)	$ (648,502)	$ -	$ 29,900	$ 518,657
13	$ 693,462				$ 693,462	$ (663,562)	$ (663,562)	$ -	$ 29,900	$ 548,557
14	$ 708,856				$ 708,856	$ (678,956)	$ (678,956)	$ -	$ 29,900	$ 578,457
15	$ 724,591				$ 724,591	$ (694,691)	$ (694,691)	$ -	$ 29,900	$ 608,357
16	$ 740,677				$ 740,677	$ (710,777)	$ (710,777)	$ -	$ 29,900	$ 638,257
17	$ 757,120				$ 757,120	$ (727,220)	$ (727,220)	$ -	$ 29,900	$ 668,157
18	$ 773,928				$ 773,928	$ (744,028)	$ (744,028)	$ -	$ 29,900	$ 698,057
19	$ 791,109				$ 791,109	$ (770,830)	$ (770,830)	$ -	$ 20,279	$ 718,336
Totals	$ 12,585,214	$ 409,369	$ 158,734		$ 13,153,316	$ (12,434,980)	$ (12,518,980)	$ (84,000)	$ 718,336	$ 718,336

NOTES:

(1) Annual Service only applies if customer accepts energy guarantee.

(2) No payments are made by Board during the construction period.

(3) As of 7/1/21, Board approved utility EE programs replaced certain NJ CEP offerings.
Subsequently, the BPU is requiring that all ESIP projects consult with the DCA and follow all DCA guidance regarding the procurement of all subcontractors.

HONEYWELL IS NOT ACTING AS A MUNICIPAL ADVISOR OR FIDUCIARY ON YOUR BEHALF. ANY MUNICIPAL SECURITIES OR FINANCIAL PRODUCTS INFORMATION PROVIDED IS FOR GENERAL INFORMATIONAL AND EDUCATIONAL PURPOSES ONLY AND YOU SHOULD OBTAIN THE ADVICE OF A LICENSED AND QUALIFIED FINANCIAL ADVISOR REGARDING SUCH INFORMATION.

Building-by-Building Simple Payback Summary

Building & ECM	kWh Savings ($)	kW Savings ($)	Natural Gas Savings ($)	Annual Energy Cost Savings ($)	Annual Operational Savings ($)	Estimated Costs ($)	Payback (yr)
Alder Avenue Middle School	**$ 29,934**	**$ 12,554**	**$ (1,250)**	**$ 44,291**	**$ 3,052**	**$ 448,576**	**10.1**
1A LED Lighting	$ 29,771	$ 12,554	$ (2,447)	$ 42,930	$ 3,052	$ 430,076	10.0
4A Building Envelope Improvements	$ 163	$ -	$ 1,197	$ 1,360	$ -	$ 18,500	13.6
Clayton J. Davenport Elementary School	**$ 12,223**	**$ 4,848**	**$ 7,423**	**$ 25,546**	**$ 1,052**	**$ 289,935**	**11.3**
1A LED Lighting	$ 11,015	$ 4,848	$ (794)	$ 16,121	$ 1,052	$ 183,659	11.4
4A Building Envelope Improvements	$ 1,208	$ -	$ 8,217	$ 9,425	$ -	$ 106,277	11.3
Clayton J. Davenport Primary School	**$ 34,479**	**$ 12,538**	**$ 12,606**	**$ 91,673**	**$ 32,050**	**$ 1,046,001**	**11.4**
1A LED Lighting	$ 28,855	$ 12,538	$ (2,756)	$ 40,687	$ 2,050	$ 311,394	7.7
3A Building Controls/Retro-Commissioning	$ 5,094	$ -	$ 13,671	$ 48,765	$ 30,000	$ 726,649	14.9
3C Demand Control Ventilation	$ 438	$ -	$ 988	$ 1,427	$ -	$ -	0.0
4A Building Envelope Improvements	$ 91	$ -	$ 703	$ 794	$ -	$ 7,959	10.0
District Transportation Complex	**$ 5,065**	**$ 1,188**	**$ 390**	**$ 7,149**	**$ 507**	**$ 66,136**	**9.3**
1A LED Lighting	$ 5,065	$ 1,188	$ (468)	$ 6,291	$ 507	$ 52,919	8.4
4A Building Envelope Improvements	$ -	$ -	$ 858	$ 858	$ -	$ 13,217	15.4
E. H. Slaybaugh Elementary School	**$ 13,726**	**$ 2,439**	**$ 6,436**	**$ 53,494**	**$ 30,893**	**$ 1,013,831**	**19.0**
1A LED Lighting	$ 9,281	$ 2,439	$ (506)	$ 12,107	$ 893	$ 214,816	17.7
3A Building Controls/Retro-Commissioning	$ 2,381	$ -	$ 383	$ 32,765	$ 30,000	$ 746,370	22.8
3C Demand Control Ventilation	$ 1,024	$ -	$ 1,143	$ 2,167	$ -	$ -	0.0
4A Building Envelope Improvements	$ 1,040	$ -	$ 5,415	$ 6,455	$ -	$ 52,645	8.2
E. H. Slaybaugh Primary School	**$ 24,621**	**$ 7,129**	**$ 6,111**	**$ 69,610**	**$ 31,749**	**$ 1,037,491**	**14.9**
1A LED Lighting	$ 18,979	$ 7,129	$ (1,658)	$ 26,199	$ 1,749	$ 280,454	10.7
3A Building Controls/Retro-Commissioning	$ 4,674	$ -	$ 5,422	$ 40,096	$ 30,000	$ 749,404	18.7
3C Demand Control Ventilation	$ 881	$ -	$ 1,728	$ 2,609	$ -	$ -	0.0
4A Building Envelope Improvements	$ 87	$ -	$ 619	$ 705	$ -	$ 7,634	10.8
Eagle Academy	**$ 196**	**$ -**	**$ -**	**$ 196**	**$ -**	**$ 13,726**	**70.1**
4A Building Envelope Improvements	$ 196	$ -	$ -	$ 196	$ -	$ 13,726	70.1
Egg Harbor Township High School	**$ 136,167**	**$ 37,171**	**$ (2,581)**	**$ 181,859**	**$ 11,102**	**$ 1,954,843**	**10.7**
1A LED Lighting	$ 133,705	$ 36,943	$ (8,740)	$ 173,010	$ 11,102	$ 1,525,068	8.8
3A Building Controls/Retro-Commissioning	$ -	$ -	$ -	$ -	$ -	$ 156,404	0.0
4A Building Envelope Improvements	$ 1,249	$ -	$ 6,602	$ 7,851	$ -	$ 112,045	14.3
5A Cogeneration CHP	$ 1,213	$ 228	$ (442)	$ 998	$ -	$ 161,326	161.6
Fernwood Ave Middle School	**$ 64,095**	**$ 11,968**	**$ 23,706**	**$ 136,919**	**$ 37,150**	**$ 1,538,778**	**11.2**
1A LED Lighting	$ 39,486	$ 11,968	$ (3,193)	$ 55,411	$ 7,150	$ 954,367	17.2
3A Building Controls/Retro-Commissioning	$ 22,706	$ -	$ 22,167	$ 74,873	$ 30,000	$ 544,304	7.3
3C Demand Control Ventilation	$ 1,583	$ -	$ 2,396	$ 3,979	$ -	$ -	0.0
4A Building Envelope Improvements	$ 320	$ -	$ 2,336	$ 2,656	$ -	$ 40,107	15.1
H. Russel Swift Elementary School	**$ 12,786**	**$ 3,995**	**$ 1,439**	**$ 19,523**	**$ 1,303**	**$ 194,914**	**10.0**
1A LED Lighting	$ 12,363	$ 3,995	$ (814)	$ 16,847	$ 1,303	$ 166,448	9.9
4A Building Envelope Improvements	$ 423	$ -	$ 2,253	$ 2,676	$ -	$ 28,465	10.6
Joyanne D. Miller Elementary School	**$ 39,212**	**$ 14,727**	**$ (2,483)**	**$ 56,472**	**$ 5,016**	**$ 607,669**	**10.8**
1A LED Lighting	$ 39,067	$ 14,727	$ (3,545)	$ 55,265	$ 5,016	$ 595,783	10.8
4A Building Envelope Improvements	$ 145	$ -	$ 1,062	$ 1,207	$ -	$ 11,886	9.8
Project Total	**$ 372,503**	**$ 108,557**	**$ 51,797**	**$ 686,731**	**$ 153,874**	**$ 8,211,900**	**12.0**

2. Utility and Other Rebates & Incentives

Summary of Total Rebates and Incentives

Year	Prescriptive Lighting	Total Incentives
Installation		
Year 1	$158,734	$158,734
Year 2		
Year 3		
Year 4		
Year 5		
Totals	**$158,734**	**$158,734**

Incentives, Rebates and Grants

Honeywell has determined that the Egg Harbor School District is eligible for **$158,734** in estimated total incentives for the projects included in the Prescriptive Lighting Programs. Please refer to the tables on below for a breakdown of Egg Harbor School District incentive levels on a building-by-building basis for the incentive.

REBATES AND INCENTIVES

Location	Prescriptive Lighting (Initial Installation)
Egg Harbor Township High School	$73,000
***Fernwood Ave Middle School**	$0
Alder Avenue Middle School	$24,225
Joyanne D. Miller Elementary School	$27,206
Clayton J. Davenport Elementary School	$10,997
***E. H. Slaybaugh Elementary School**	$0
H. Russel Swift Elementary School	$7,686
Clayton J. Davenport Primary School	$13,004
***E. H. Slaybaugh Primary School**	$0
Eagle Academy	$0
District Transportation Complex	$2,617
Totals	**$158,734**

*These schools are estimated at $0 until we confirm eligibility based on past project

3. Operational Savings

Summary of Total Operational Savings

Year	Lighting Operation Savings	Controls Maintenance Cost Savings	Total Operational Savings
Installation			
Year 1	$33, 874	$120,000	$153,874
Year 2	$33, 874	$120,000	$153,874
Year 3	$33, 874		$33, 874
Year 4	$33, 874		$33, 874
Year 5	$33, 874		$33, 874

Lighting Energy Savings (5 Years)

This Lighting Operational Savings category calculates the existing material costs for lamps and ballasts considering failure rate and average costs and compares to the reduced maintenance costs with all new LEDs to establish the operational savings.

School	Total Existing Maintenance	Total Proposed Maintenance	Net Maintenance Savings	Average Annual Maintenance Savings
	10 Year Total	10 Year Total	10 Year Total	
Alder Avenue Middle School	$ 33,003	$ 2,480	$ 30,523	$ 3,052
Clayton J. Davenport Elementary	$ 10,853	$ 333	$ 10,520	$ 1,052
Clayton J. Davenport Primary School	$ 22,591	$ 2,089	$ 20,503	$ 2,050
District Transportation	$ 5,594	$ 525	$ 5,069	$ 507
Egg Harbor Township High School	$ 121,690	$ 10,672	$ 111,019	$ 11,102
H. Russell Swift Elementary	$ 14,335	$ 1,308	$ 13,027	$ 1,303
Joyanne D. Miller Elementary	$ 56,602	$ 6,444	$ 50,158	$ 5,016
Fernwood Avenue Middle School	$ 53,612	$ 2,392	$ 51,221	$ 5,122
Slaybaugh Elementary School	$ 2,768	$ 400	$ 2,368	$ 237
Slaybaugh Primary School	$ 19,023	$ 4,212	$ 14,810	$ 1,481
Fernwood Avenue Middle School- correction areas	$ 24,686	$ 4,409	$ 20,277	$ 2,028
Slaybaugh Elementary School-correction areas	$ 8,267	$ 1,704	$ 6,563	$ 656
Slaybaugh Primary School-correction areas	$ 3,184	$ 503	$ 2,681	$ 268
Total:				**$ 33,874**

Controls Maintenance Cost Savings (2 Years)

The controls in many of the schools are obsolete and are continuing to fail more and more often. Due to the obsolescence the cost of emergency maintenance replacement is high. The total cost for a full replacement is budgeted from to be over $5M for all the schools that need attention. For this ESIP Sample Project, we have assigned $30,000 per school as an operational maintenance cost savings. The district agrees this is a conservative amount and could be much higher based on the budgets to update the controls so they could return to a maintenance program vs a full replacement program each time an obsolete controller or system fails.

The following schools have been included in this sample project:

School	Annual Maintenance Savings Allocation
Clayton J. Davenport Primary School	$ 30,000
Slaybaugh Elementary School	$ 30,000
Slaybaugh Primary School	$ 30,000
Fernwood Avenue Middle School	$ 30,000
Total:	**$120,000**

4. Technical Energy Audit & Project Development – See Form VI

The key benefits of this work include:

- **Identify potential improvement and energy conservation measures**
- **Identify baseline energy use**
- **Identify preliminary costs and savings**

ECM Description	Egg Harbor Township High School	Fernwood Ave Middle School	Alder Avenue Middle School	Joyanne D. Miller Elementary School	Clayton J. Davenport Elementary School	E. H. Slaybaugh Elementary School	H. Russel Swift Elementary School	Clayton J. Davenport Primary School	E. H. Slaybaugh Primary School	Eagle Academy	District Transportation Complex
9B Technical Energy Audit & Project Development	■	■	■	■	■	■	■	■	■	■	■

EXISTING CONDITIONS

The District has completed a Local Government Energy Audit and needs to complete an Energy Savings Plan to move forward with an Energy Savings Improvement Program.

PROPOSED SOLUTION

The Technical Energy Audit, or Energy Savings Plan (ESP) is the cornerstone of the ESIP program. It lays out what measures will be implemented to save energy, the expected payback period, and how it fits into the overall plan to reduce consumption. The ESP gives a snapshot of the project financial structure. Furthermore, the ESP must be approved by the Board and remain cash flow positive throughout the term of the project. These plans have a lifespan of 15 to 20 years depending on the ECMs being installed.

PROCESS

Honeywell's approach to the engineering portion of an ESPC is detailed below and will be led by identified engineering team member. A technically sound solution that addresses the District's current needs and future goals is the cornerstone to a successful Energy Savings Improvement Program.

PRELIMINARY AND INVESTMENT GRADE AUDIT

Preliminary Energy Audit Procedure

- This phase begins the process of identifying possible energy saving measures and infrastructure improvements at the facilities. All possible opportunities will be explored at this stage. These will be evaluated both technically and financially. We also begin to examine the current maintenance procedures taking place at the facility during this audit. The preliminary audit follows the steps below to get to the 30% review with the district.

- Conduct an initial walk-through inspection to become familiar with the buildings, systems equipment, maintenance, operation status, etc.
- Study the plans and specifications and become familiar with the buildings, systems, capacities, equipment, etc.
- Talk with the key decision makers within the District, building operating personnel, occupants, etc. about energy efficiency
- goals, sustainability goals, HVAC systems, comfort, problems, etc.
- Examine the overall building energy consumption history from the District. Compile a complete energy consumption history on gas, oil, electrical, etc., from utility companies and fuel suppliers. Compare the BTU consumption per square foot per year with other similar buildings and determine degree of variance. 8, 2017 49
- Evaluate current maintenance procedures. Examine future maintenance associated with additional equipment that may be
- installed.
- Develop a list of existing energy savings opportunities.
- Further develop the most promising energy improvements, based on success criteria.
- Perform preliminary energy savings calculations for the various energy improvements, estimate retrofit costs and calculate
- estimated paybacks.
- Complete energy baseline analysis for all utilities using the past year of utility data.
- Jointly select with the District at the 30% review which improvements to proceed with and assign priorities. Properly engineer retrofit work and proceed.

Upon completion of this phase of the audit process (equivalent to an ASHRAE Level 1 audit), we will review our findings with the District personnel. Candidate measures will be reviewed on the basis of energy, financial and operational impact. Together with your personnel, we will prioritize facility improvements and energy conservation measures. This is the 30% review identified in the diagram above. Based on the 30% review, a final list of energy conservation measures will then be developed for the in-depth energy audit. Typical financial payback periods are used in this step for the process and are refined as the audit progresses.

Investment Grade Audit Procedures to Final Design

During the investment grade audit phase, we conduct a thorough evaluation of the finalized list of improvements and energy conservation measures that have been mutually agreed upon between Honeywell and Region 4 ESC. This is done to verify project goal requirements along with savings figures, project costs, and maintenance requirements (equivalent to an ASHRAE Level 3 audit). This process comprises five major categories of activity, shown below.

Field Surveys

1. Make a thorough inspection of building systems and equipment and become thoroughly familiar with them. Check out operations, performance, maintenance, malfunctions, comfort, problems, etc.
2. Check nameplate data on equipment.

3. Conduct in-depth interviews with building personnel. Review maintenance, scheduling, performance, comfort, and problems of building, equipment, and systems.
4. Become familiar with actual hours of operation of systems and equipment, and the hours of occupancy of the personnel.

Energy History

1. Field Tests
2. Take test readings of actual flows, temperatures, pressures, rpm's, amps, volts, etc. at HVAC equipment.
3. Monitor readings over a period of time with test and recording equipment (data loggers) where appropriate.
4. Check lighting levels.

Evaluation of Improvements

1. List all project opportunities within the buildings, systems, and equipment.
2. Investigate/apply any applicable grants, incentives, rebates.
3. Develop potential improvements and develop those with most potential in full cooperation with the District write out list of improvements.
4. Calculate the potential energy savings in terms of BTU's and kWh and in cost, using current utility rate structures.
5. Calculate paybacks and return on investments using +/- 10% costs of work data and estimates.

Evaluation of Ongoing Service Needs

1. Review existing maintenance being performed at the facilities.
2. Discuss any gaps in existing equipment maintenance.

Review and Decisions

1. Review with the District. This is the 60% review indicated in the above diagram.
2. Costs of improvements/Improvement Options
3. Energy improvement options
4. Reaffirm Financial Payback Criteria
5. Return on investment
6. Potential savings
7. Select, with the District approval, improvements to proceed with and assign priorities. These final selections will be the outcome of the 90% review described in the diagram above. At the 90% review, final estimated costs will be developed.

After all the technical and financial parameters of the program are identified and the responsibilities of Honeywell and the District are clearly delineated, the contract would be offered to the District. It is structured such that the annual energy cost reductions will, at a minimum, equal or as in most cases, exceed the amortized implementation costs.

SECTION D
TECHNICAL & FINANCIAL SUMMARY

5. Financing the ESIP

In accordance with P.L.2012, c.55 an ESIP can be financed through energy savings obligations. The term refers to the two primary financing tools, debt, and lease-purchase instruments. Each of these options is discussed below.

Energy savings obligations shall not be used to finance maintenance, guarantees, or the required third-party verification of energy conservation measures guarantees. Energy saving obligations, however, may include the costs of an energy audit and the cost of verification of energy savings as part of adopting an energy savings plan or upon commissioning. While the audit and verification costs may be financed, they are not to be considered in the energy savings plan as a cost to be offset with savings.

In all cases, maturity schedules of lease-purchase agreements or energy savings obligations shall not exceed the estimated average useful life of the energy conservation measures.

An ESIP can also include installation of renewable energy facilities, such as solar panels. Under an energy savings plan, solar panels can be installed, and the reduced cost of energy reflected as savings.

The law also provides that the cost of energy saving obligations may be treated as an element of the local unit's utility budget, as it replaces energy costs.

Debt Issuance

The law specifically authorizes municipalities, school districts, cities, counties, and fire districts to issue refunding bonds as a general obligation, backed with full faith and credit of the local unit to finance the ESIP. Because an ESIP does not effectively authorize new costs or taxpayer obligations, the refunding bond is appropriate, as it does not affect debt limits, or in the case of a board of education, require voter approval. The routine procedures for refunding bonds found in the Local Bond Law and Public-School Bond Law would be followed for issuance of debt, along with any required Bond Anticipation Notes as authorized pursuant to law.

Regarding bonds for public schools, the Department of Education (DOE) has concluded that debt financed ESIP projects are not covered by State aid for debt service or a "Section 15 EFFCA Grant" as there is no new local debt being authorized.

Tax-Exempt Lease Purchase Financing

The tax-exempt lease is a common form of financing for ESIP projects. Tax-exempt leasing is a tool that meets the basic objectives of debt, spreading the cost of financing over the life of an asset, while avoiding constitutional or statutory limitations on issuing public debt. If structured properly, by including non-appropriation language in the financing documents, the tax-exempt lease will not be considered debt for state law purposes but will be considered debt for federal income tax purposes. Thus, for federal purposes, the interest component of the lease payment is tax-exempt.

Under the New Jersey Energy Savings Improvement Program (ESIP), the Egg Harbor School District may authorize a lease purchase agreement between the District and a financier. Ownership of the equipment or improved facilities will pass to the Egg Harbor School District when all the lease payments have been made. There are legal expenses and other minimal closing costs associated with this type of structure. The lease purchase agreement may not exceed 15 years (commencing upon completion of the construction work), or 20 years where a combined heat and power or cogeneration plant is included in the

project. The primary benefits of a lease are lower rates and the acquisition of essential use property without creating debt.

Under a lease there is typically a single investor. The lease may have non-appropriation language that allows the District to access low tax-exempt rates. Some previous customers have chosen to remove the non-appropriation language which has resulted in lower competitive rates.

Repayment of the lease payments is tailored to meet the requirements of the District. Payments are typically scheduled to commence after the construction is complete and acceptance of the project has been received by the Egg Harbor School District. Typically, payment terms are structured so there is no up-front capital expense to the Egg Harbor School District and payments are aligned within your cash flow and fiscal limits.

Certificates of Participation (COP's)

Certificates of Participation are another form of a lease purchase agreement with the differentiating factor being that there are multiple investors participating in the purchase of the lease. COP's require financial disclosure and are typically utilized on higher value projects where one investor does not have the capacity to hold a high value lease for a single customer.

Energy Savings Obligations

Energy Savings Obligations can be issued as refunding bonds in accordance with the requirements of N.J.S.A 40A:11-4.6(c)(3). These bonds may be funded through appropriation for the utility services in the annual budget of the contract unit and may be issued as refunding bonds pursuant to N.J.S.40A:2-52 et seq., including the issuance of bond anticipation notes as may be necessary, provided that all such bonds and notes mature within the periods authorized for such energy savings obligations. Energy savings obligations may be issued either through the contracting unit or another public agency authorized to undertake financing on behalf of the unit but does not require bond referendum.

SECTION E
MEASUREMENT & VERIFICATION AND MAINTENANCE PLAN

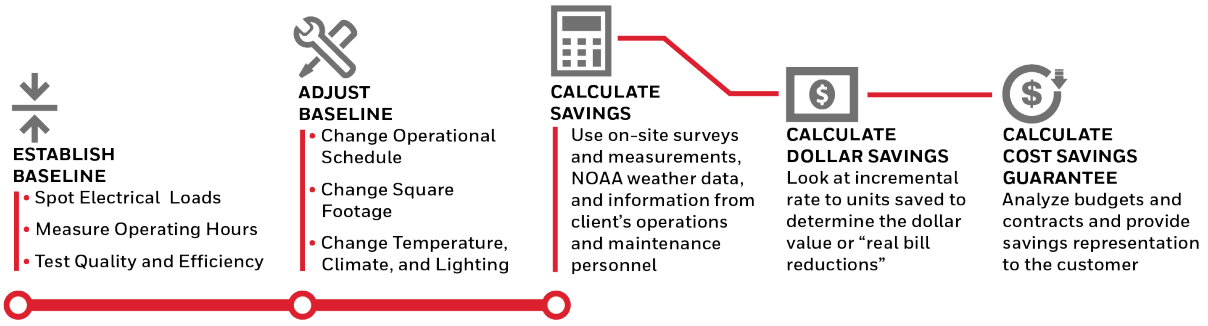
Section E — Measurement & Verification and Maintenance Plan

1. Baseline

The purpose for establishing a baseline for an energy performance project is to accurately predict what the energy consumption and costs would have been as if the energy project was never completed. The baseline can then be used to measure the improvement in efficiency and determine the overall energy savings of the project. Since the energy consumption of all facilities is somewhat affected by variable weather conditions, a baseline for heating and cooling systems is typically dependent on degree-days or outside temperature. A baseline also needs to incorporate changes in facility use, such as a change in hours of operation or increased levels of outside air. Once again, if these changes would have occurred in the absence of the energy project, they should be incorporated into the project's baseline.

Honeywell calculated the baseline based on the systems and operating conditions as they currently exist prior to the pandemic. The baseline was established from 3/2021-2/2022 in accordance with BPU guidelines as being considered a pre-pandemic baseline. Baseline development is most accurate if specific measurements are taken on equipment over a period of time (early in the audit phase) to determine actual kW, kWh, oil and gas consumption, cfm, gpm, hours of use, etc. A summary of some of the methods, which was used by Honeywell to establish baselines and support, calculated savings are listed below.

1. Spot measurements of electrical loads such as lighting, fan and pump motors, chillers, electric heat, etc.
2. Measurement of equipment operating hours using electric data recorders.
3. Measurement of existing operating conditions using data recorders for space temperature and humidity, air handler temperatures (mixed, return, cooling, and heating coil discharges), and space occupancy using lighting loggers.



4. Spot measurement for boiler efficiencies, water use.
5. Running measurements of chiller operation, including simultaneous measurement of input kWh or steam flow, and chilled water supply and return temperatures and flow (gpm).
6. Records of operating conditions from building management systems and utility-grade meters.

The data from the above is used to calculate existing energy use, which is then reconciled with current facility utility bills, and adjusted as required to provide a mutually agreed baseline.

To provide valid savings evaluations, Honeywell's maintains a significant inventory of metering equipment utilized by its auditors and Energy Engineers to ascertain critical data about the operation of the facility.

Typically, auditors use the following equipment for their onsite measurements:

1. Recording and instantaneous power and harmonic analyzers.
2. Data loggers for pressures, temperatures, flow rates, humidity, and CO2.
3. Lighting level and recording profile/run-hour and occupancy meters.
4. Multimeters, handheld kW meters.
5. Combustion analyzers.
6. Ultrasonic flow meters.
7. Infrared thermometers

The ECMs installed in many projects allow for energy savings to be identified by direct metering or a combination of metering and calculations with accepted assumptions. In the case of lighting, for example, it is relatively easy to meter representative samples of unique fixture types, both before and after a retrofit, to determine the power consumption difference in Watts. When multiplied by the quantity of each fixture type, the total connected load reduction can be derived. In combination with run time assumptions, or meters, the electrical reduction can be accurately determined. Where possible, direct measurement of ECMs during construction (before and after the retrofit) coupled with energy savings calculations is a method considered to be very accurate and cost-effective.

Due to the nature of some ECMs, or when a combination of ECMs is installed, individual (discrete) metering may not be either possible or able to fully document a baseline and calculate savings. Many of these situations can be handled by combining results from metering along with either engineering-based calculations or output from nationally recognized building simulation programs such as DOE II, ASEAM, TRACE or HAP. This method would be used for ECMs such as night setback, and where no other ECMs have significant interaction with the setback measure.

Formulas exercised in energy savings calculations follow the laws of physics, and many are included in the ASHRAE Handbook of Fundamentals. However, such calculations (i.e., equipment operation profiles) must be tempered by experience, past retrofit practice, and expectations of future operating conditions to arrive at achievable values in practice. The result is a coupled project where the final savings are equal to or greater than anticipated.

2. Adjustment to Baseline Methodology

The methodology for establishing and adjusting the baseline is determined by the characteristics of the facility, the conservation technology being installed, the technology being replaced, the type of measurement and verification the Egg Harbor School District requires and the needs of the District for future changes in facility use.

The purpose of this flexible approach is to make the most accurate possible measurement of the changes in energy uses that are specifically attributable to the installed ECMs. This creates the ability over the life of the contract to continue measuring only savings achieved by the ECM and leaves the Egg Harbor School District free to make future changes to the building or systems without affecting the savings agreement. It also necessitates fewer provisions for making adjustments to the baseline.

Modifications to the energy baseline or savings will be made for any of the following:

3. Energy Savings Calculations

In calculating energy savings, Honeywell's highly experienced audit staff uses onsite surveys and measurements, National Oceanic and Atmospheric Administration weather data, detailed discussions with the client's operations and maintenance personnel and engineers, utility records, and other sources to ensure accurate energy, water, and O&M savings.

Typically, the following data is gathered:

- Local weather data.
- Utility bills and sub-metered consumption trends.
- Utility rate structure.
- Facility use and occupancy data.
- Internal equipment loads.
- Interviews of operations and maintenance staff and management.
- Building construction, age, use and layout.
- Schematics of energy and water distribution systems.
- Identification and inventory of HVAC equipment.
- Identification and inventory of process equipment.
- Design, configuration, and operating characteristics of HVAC systems.
- Design, configuration, and operating characteristics of process systems.
- Control strategies and sequences of operation for HVAC and other process equipment.
- Identification and count of all lighting fixtures and determination of power consumption for each type.
- Identification and inventory of lighting control methods.
- Measurement of foot-candle levels at sample locations.
- Power quality and harmonics, power factor.
- Indoor air quality issues.

Calculating the units of energy saved is a critical measure of energy efficiency improvements, but it does not indicate the actual dollars saved. To do this, Honeywell has established the base rates that will act as "floor" rates in calculating the savings. These are usually the rates that are in effect at the time of the start of the contract or rates used for audit estimated savings.

The equation below will be used to calculate the annual savings in dollars.

$$\text{Annual Savings (\$)} = \sum_{m=1}^{12} \{(Rate_{kWH,Base} \times kWH_{saved,m}) + (Rate_{fuel\ oil,\ Base} \times Fuel\ Oil_{saved,\ gal,\ m}) + (Rate_{Steam,\ Base} \times Steam_{Saved,\ klbs,\ m}) + (Rate_{NG} \times NG_{Saved,\ MCF,\ m})\} + (Agreed\ (\$))$$

Where

Rate$_{kWH,Base}$= defined base rate for kWh consumption
kWh$_{saved,m}$= calculated kWh savings for month *m*

Rate$_{Fuel\ Oil\ Base}$= defined base rate for fuel Oil Savings (XX/gal.)
Fuel Oil$_{saved,m}$= calculated chilled water savings in gal. for month *m*

Rate$_{Steam,\ Base}$= defined base rate for steam consumption ($XX/MMBtu.)
Steam$_{saved,m}$= calculated steam savings in MMBtu. for month *m*

Rate$_{NG,\ Base}$= defined base rate for natural gas consumption ($XX/Therm)
NG$_{saved,m}$= calculated natural gas savings in Therms for month *m*

Agreed($)= Annual savings in dollars (water, sewer, maintenance, etc.)

Honeywell assigns dollar values to the true incremental value of savings for energy and water. In other words, we do not combine for example, demand and consumptions numbers so that there is an average value to savings. Honeywell looks at each incremental rate to units saved to properly determine the value (dollar) to the Egg Harbor School District or “real bill reductions.” As noted in the cash flow, energy escalation rates will be established in accordance with New Jersey Board of Public Utility guidelines.

Based on this, Honeywell has reviewed all utility bills (hourly data), tariffs, special contracts, and commodity contracts to develop the incremental value (costs) of each utility.

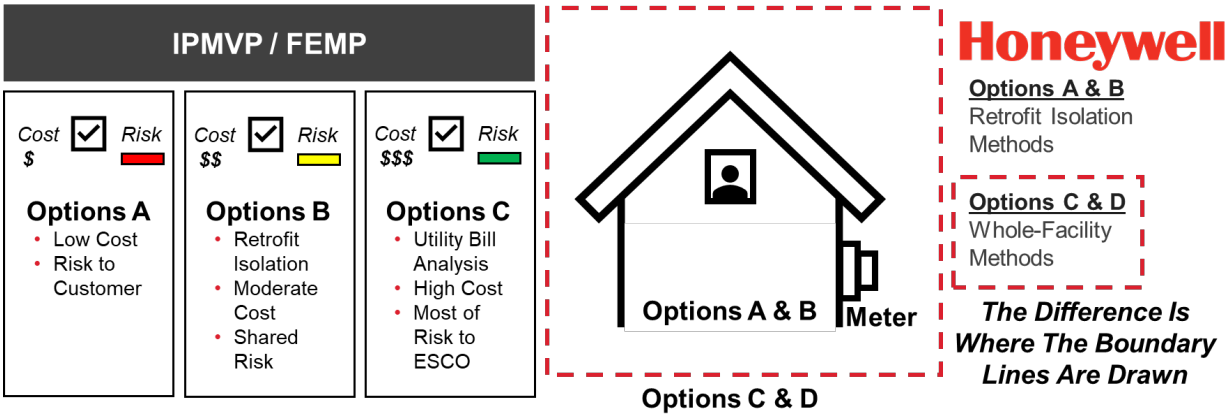
The O&M savings is typically a function of existing the District’s budgets (labor & direct costs), maintenance contracts and operations (supplier) contracts. Honeywell has analyzed the information to provide a conservative savings representation for the District’s review and acceptance. The information will include all calculations and assumptions.

4. Measurement & Verification

The purpose of performing any monitoring and verification is to establish an agreed upon process that provides the customer both a level of satisfaction that the improvements have been delivered and ongoing information as to their operation and performance. Additionally, this effort will be used to assess the actual dollars of savings versus the guarantee level.

It is essential for the success of this program that Honeywell and the Egg Harbor School District agree on a mutually acceptable methodology for measuring and verifying energy savings that are attributable to the energy conservation measures (ECMs) Honeywell installs. This M&V plan provides the procedures to document the energy and cost savings of each of the proposed ECMs.

The plan for monitoring and verifying energy savings for the proposed ECMs is based on the methods described in the ***International Performance Measurement and Verification Protocol (IPMVP)***[1]. Our approach to M&V is directly consistent with, and in compliance with, the IPMVP. This protocol provides a framework for the most widely accepted and used M&V methods by the industry.



Engineering calculations of energy and cost savings for the project are based on operating parameters (such as weather, temperature settings, run hours, occupancy patterns, and space usage) and equipment performance characteristics. The M&V plan uses the operating parameters established in the baseline for all savings calculations during the term of the project. The intent of the M&V plan is to verify that the ECMs installed by Honeywell will provide the expected energy savings. Therefore, Honeywell will collect data and relative information during the post-retrofit period to demonstrate that the installed equipment is performing at expected levels. It is assumed that the Egg Harbor School District will continue to be a dynamic institution adding or renovating buildings and desiring to retain the right to set comfort and operating characteristics. To accommodate this, Honeywell will develop its M&V plan in a way that allows the Egg Harbor School District to adapt to the demands of future campus growth and changes without the need for the District and Honeywell to negotiate energy baseline adjustments.

Our typical M&V plan will utilize broadband Internet access to the appropriate the District's control interfaces to both confirm operating status and to download trend data to verify proper equipment maintenance.

[1] www.ipmvp.org.

One year after the commencement date of the ECMs, Honeywell will submit a report verifying and calculating the energy and cost savings for the first year. This report will be submitted for facility review and approval. For the remaining contract term, Honeywell will provide annual reports. These reports will include results of inspections of the installed equipment/systems, energy and cost savings, and recommendations to provide optimum energy performance.

All permanent measurement equipment will be purchased new with a calibration certificate from the manufacturer. The power multi-meter and the TSI multi-meter will be calibrated annually before using them in the annual inspection.

M&V Options

The IPMVP guidelines classify the M&V procedures into four categories, Options A, B, C and D. As shown in the table below, these options differ in their approach to the level of complexity of the M&V procedures.

M&V Option	Performance Verification Techniques
Option A Verifying that the measure has the potential to perform and to generate savings.	**Option A** is appropriate for ECMs that have energy use that can be readily quantified, such as the use of high efficiency lighting fixtures, high efficiency constant speed motors, and other standard engineering calculations. Engineering calculations before and after installation spot measurements and use of EMS data points with stipulated values.
Option B Verifying that the measure has the potential to perform and verifying actual performance by end use.	**Option B** is appropriate for ECMs that require periodic or on-going measurements to quantify energy use, such as the use of variable frequency drives on pump or fan motors. Engineering calculations with metering and monitoring strategy throughout term of the contract.
Option C Verifying that the measure has the potential to perform and verifying actual performance (whole building analysis.)	**Option C** is used for ECMs for which the energy use or energy savings cannot be measured directly, such as building envelope modifications. Option C is based on the use of utility meters to quantify building energy use. Utility meter billing analysis-using techniques from simple comparison to multivariable regression analysis.
Option D Verifying actual performance and savings through simulation of facility components and/or the whole facility	**Option D** is used for ECMs for which the energy use or energy savings cannot be measured directly, or savings for individual ECMs are heavily interdependent. Calibrated building simulation is used to separate the energy savings attributable to each ECM. Calibrated energy simulation/modeling; calibrated with hourly or monthly utility billing data and/or end-use metering.

In general,

> *ECM Energy Savings = Baseline Energy Use - Post-Installation Energy Use*
>
> and
>
> *Energy Cost savings ($) = Total Energy Savings x Contractual Energy Rates*

Exceptions to this simple equation are as follows:

Projects where an on/off M&V method is used. For example, after a new energy management system is installed, control features are turned off for a set period of time to recreate baseline conditions. Thus, savings are determined after installation by comparing energy use with and without the control features activated.

Since energy use at a facility is rarely, if ever, constant, another way to define M&V is as a comparison of a facility's post-installation energy use with its usage if the ECM or system had not been installed. This takes into account situations in which baseline energy use must be adjusted to account for changing conditions, such as changes in facility operation, occupancy, or use or external factors such as weather.

Post-Retrofit M&V Activities

There are two components associated with M&V of performance contract projects:

1. Verifying the potential of the ECM to generate savings also stated as confirming that the proper equipment/systems were installed, are performing to specification and have the potential to generate the predicted savings.
2. Determining/verify energy savings achieved by the installed ECM(s).

Verifying The Potential To Generate Savings

Verifying baseline and post-installation conditions involves inspections (or observations), spot measurements, and/or commissioning activities. Commissioning includes the following activities:

- Documentation of ECM or system design assumptions
- Documentation of the ECM or system design intent for use by contractors, agencies, and operators
- Functional performance testing and documentation necessary for evaluating the ECM or system for acceptance
- Adjusting the ECM or system to meet actual needs within the capability of the system

Post-Installation Verification

Post-installation M&V verification will be conducted by both Honeywell and the Client to ensure that the proper equipment/systems that were installed are operating correctly and have the potential to generate the predicted savings. Verification methods may include surveys, inspections, and/or spot or short-term metering.

Regular Interval Post-Installation Verification

At least annually, Honeywell will verify that the installed equipment/systems have been properly maintained, continue to operate correctly, and continue to have the potential to generate the predicted savings. Savings report for all the installed ECMs will be submitted each year after the acceptance date of the work performed by Honeywell.

Computation Of Energy Savings

After the ECMs are installed, energy and cost savings will be determined annually by Honeywell in accordance with an agreed-upon M&V approach, as defined in a project-specific M&V plan.

Construction/Interim Savings

Construction or Interim savings are usually measured by using the same methodology as described in the detail M&V plan for each ECM. The start and the completion time for each ECM must be agreed to between Honeywell and the Egg Harbor School District.

Electricity and thermal savings from the ECMs where no detailed long-term data is required to be collected will be stipulated and will be based on the starting and the final completion dates and verification of the operation of the ECMs. For other ECMs where long-term data collection is required by the M&V plan, data will be used to calculate the savings using the same equations as described in the detail plan. For example, to calculate electricity savings for the installation of a VFD, the kW is spot measured at a set speed for selected motors through a sampling plan. The measured kW is subtracted from the baseline kW to calculating the savings. Thermal savings are tied to the electrical savings in the manner described in the detail M&V plan. The results are extrapolated to cover all the VFDs installed by Honeywell.

The savings for each of the monitored VFD is calculated on an interval basis as follows:

> $kW_{Saved} = (kW_{Base} – kW_{Spot\ Measured})$
>
> kWh_{Saved} = Estimated operating hours during the interim period * kW_{Saved}
>
> The total kWh savings is the sum of the kWh_{Saved} for all the installed VFDs.

1. Changes in the number of days in the annual review cycle.
2. Changes in the square footage of the facilities.
3. Changes in the operational schedules of the facilities.
4. Changes in facility indoor temperatures.
5. Significant changes in climate.
6. Significant changes in the amount of equipment or lighting utilized in the facility.

Examples of situations where the baseline needs to be adjusted are: i) changes in the amount of space being air conditioned, ii) changes in auxiliary systems (towers, pumps, etc.) and iii) changes in occupancy or schedule. If the baseline conditions for these factors are not well documented it becomes difficult, if not impossible, to properly adjust them when they change and require changes to payment calculations. To compensate for any addition and deletion of buildings and impact on the baseline model, An M&V report should use sound technical methodologies to adjust the baseline. An example would be to add or delete building energy impact via the calculated cooling load in tons as a percentage of the existing campus tonnage baseline or use indices like W/ft2 and Btu/ft2 to calculate the energy consumption of the building and then add or subtract the energy usage to or from the baseline energy consumption.

5. Site Specific M&V Plan

ECM # and Name	Summary of ECM	M&V Methodology / Recommendation	Description of M&V – Pre- and Post-Process
1A LED Lighting	▪ Upgrade Lighting systems: – Re-lamp/Re-ballast T8/T12 to LED, – Incandescent to LED – Metal Halide and Sodium Vapor to LED High Bays	**Option A** ▪ Pre and Post measurements ▪ Line by Line scope and engineering calculations	▪ Pre-M&V: Measurement of kW for 5% sample fixtures in each category ▪ Data log usage hours ▪ Data Log occupancy schedules ▪ Update Line by Line scope with measured kW and usage hours ▪ Post M&V: Measurement of kW for 5% sample fixtures in each category ▪ Usage Hours to remain same ▪ Occupancy schedules to remain same ▪ Energy Savings: Update Line by Line scope with measured kW and usage hours and compare to pre-retrofit calculated savings
1B Lighting Controls	▪ Upgrade Lighting Control systems: Install Occupancy Sensors Install Lighting Controls	Option A ▪ Pre and Post measurements ▪ Line by Line scope and engineering calculations	▪ Pre-M&V: Measurement of kW for 5% sample fixtures in each category ▪ Data log usage hours ▪ Data Log occupancy schedules ▪ Update Line by Line scope with measured kW and usage hours ▪ Post M&V: Measurement of kW for 5% sample fixtures in each category ▪ Usage Hours to remain same ▪ Occupancy schedules to remain same ▪ Energy Savings: Update Line by Line scope with measured kW and usage hours and compare to pre-retrofit calculated savings

ECM # and Name	Summary of ECM	M&V Methodology / Recommendation	Description of M&V – Pre- and Post-Process
1C De-Stratification Fans & Disinfection	▪ Install De-Stratification fans in Gymnasiums to minimize stratification of hot air and maintain hot air flow below the fan level	**Option A** ▪ Electric energy savings - Engineering calculations based on programmed parameters. **Option C** ▪ Fuel Savings ▪ Utility Bill Comparison for all fuel related measures	▪ Pre-M&V: Verify existing operating parameters match the baseline calculation assumptions ▪ Post M&V: Verify that systems are installed as specified and controls are programmed to match the savings assumptions ▪ Electric Energy: Verify savings based on programmed parameters and engineering calculations ▪ Fuel: Compare post installation M&V fuel cost based on fuel billing data and Metrix tuned to normalize to heating degree days
2A Boiler Replacements	▪ Replace boilers in select locations to handle base load	**Option C** ▪ Utility Bill Comparison for all fuel related measures	▪ Pre-M&V: Baseline annual fuel cost based on fuel billing data and Metrix tuned to normalize to heating degree days ▪ Perform combustion efficiency test on boilers ▪ Post M&V: Compare post installation M&V fuel cost based on fuel billing data and Metrix tuned to normalize to heating degree days ▪ Perform efficiency test on replaced boilers to ensure operating conditions are maintained
2B Domestic Water Heater Replacements	▪ Replace heater in select locations to handle base load	**Option C** ▪ Utility Bill Comparison for all fuel related measures	▪ Pre-M&V: Baseline annual fuel cost based on fuel billing data and Metrix tuned to normalize to heating degree days ▪ Perform combustion efficiency test on boilers ▪ Post M&V: Compare post installation M&V fuel cost based on fuel billing data and Metrix tuned to normalize to heating degree days ▪ Perform efficiency test on replaced boilers to ensure operating conditions are maintained
2C Burner Replacements and Controls	▪ Replace boiler burners and install advanced combustion controls, on new burners.	**Option C** ▪ Utility Bill Comparison for all fuel related measures	▪ Pre-M&V: Baseline annual fuel cost based on fuel billing data and Metrix tuned to normalize to heating degree days ▪ Perform combustion efficiency test on boilers ▪ Post M&V: Compare post installation M&V fuel cost based on fuel billing data and Metrix tuned to normalize to heating degree days ▪ Perform efficiency test on replaced boilers to ensure operating conditions are maintained

ECM # and Name	Summary of ECM	M&V Methodology / Recommendation	Description of M&V – Pre- and Post-Process
2D Roof Top Unit Upgrades	▪ Replace antiquated Roof Top Units with new high efficiency Rooftop Units.	**Option A** ▪ Engineering calculations based on nameplate and manufacturer supplied data for the existing and replacement units **Option C** ▪ Utility Bill Comparison for all fuel related measures	▪ Pre-M&V: Verify manufacturer provided data for existing unit efficiency (EER) ▪ Post M&V: Verify manufacturer provided data for new rooftop unit (EER) – verify the new equipment and controls are installed and commissioned as recommended by manufacturer
2E Split System Replacements	▪ Replace select split systems with new high efficiency units.	**Option A** ▪ Engineering calculations based on nameplate and manufacturer supplied data for the existing and replacement Units	▪ Pre-M&V: Verify manufacturer provided data for existing unit efficiency (EER) ▪ Post M&V: Verify manufacturer provided data for new split system unit (EER) – verify the new equipment and controls are installed and commissioned as recommended by manufacturer
2F Premium Efficiency Motors and VFDs	▪ Install VFDs on select pumps to operate the pump motors in response to the system load. Replace motors with new premium efficiency motors.	**Option A** ▪ Engineering calculations for VFDs following pump affinity laws. ▪ Engineering calculations based on nameplate and manufacturer supplied data for the existing and replacement motors	▪ Pre-M&V: Verify manufacturer provided data for the pump performance data and motor efficiencies. ▪ Post M&V: Obtain trend data for VFD operation from the BMS system to verify baseline calculation assumptions on system loads ▪ Verify efficiency of new motors ▪ Verify manufacturer provided data for new VFDs – verify the new equipment and controls are installed and commissioned as recommended by manufacturer
2G Chiller Replacements	▪ Install new High Efficiency Chillers	**Option A** ▪ Electric energy savings - Engineering calculations based on material specifications.	▪ Pre-M&V: Verify manufacturer provided data for existing unit efficiency (EER) ▪ Post M&V: Verify manufacturer provided data for new rooftop unit (EER) – verify the new equipment and controls are installed and commissioned as recommended by manufacturer
2H Cooling Tower Replacement	▪ Replace existing Cooling Towers with new higher efficiency units	**Option A** ▪ Electric energy savings - Engineering calculations based on material specifications.	▪ Pre-M&V: Verify manufacturer provided data for existing unit efficiency (kW/ton) ▪ Post M&V: Verify manufacturer provided data for new unit (kW/ton) – verify the new equipment and controls are installed and commissioned as recommended by manufacturer

ECM # and Name	Summary of ECM	M&V Methodology / Recommendation	Description of M&V – Pre- and Post-Process
3A Building Controls/Retro-Commissioning	▪ Upgrade Building Management Systems to DDC and integrate all systems to a central platform	**Option A** ▪ Electric energy savings - Engineering calculations based on programmed parameters. **Option C** ▪ Fuel Savings Utility Bill Comparison for all fuel related measures	▪ Pre-M&V: Verify existing operating parameters match the baseline calculation assumptions ▪ Post M&V: Verify that systems are installed as specified and controls are programmed to match the savings assumptions ▪ Electric Energy: Verify savings based on programmed parameters and engineering calculations ▪ Fuel: Compare post installation M&V fuel cost based on fuel billing data and Metrix tuned to normalize to heating degree days
3B Energy Optimization/Forge	▪ Install Forge Energy Optimization system	**Option A** ▪ Electric energy savings - Engineering calculations based on programmed parameters. Option C ▪ Fuel Savings Utility Bill Comparison for all fuel related measures	▪ Pre-M&V: Verify existing operating parameters match the baseline calculation assumptions ▪ Post M&V: Verify that systems are installed as specified and controls are programmed to match the savings assumptions ▪ Electric Energy: Verify savings based on programmed parameters and engineering calculations ▪ Fuel: Compare post installation M&V fuel cost based on fuel billing data and Metrix tuned to normalize to heating degree days
3C Demand Control Ventilation	▪ Install CO2 sensors in large areas to control fresh air intake	**Option A** ▪ Electric energy savings - Engineering calculations based on programmed parameters. **Option C** ▪ Fuel Savings Utility Bill Comparison for all fuel related measures	▪ Pre-M&V: Verify existing operating parameters match the baseline calculation assumptions ▪ Post M&V: Verify that systems are installed as specified and controls are programmed to match the savings assumptions ▪ Electric Energy: Verify savings based on programmed parameters and engineering calculations ▪ Fuel: Compare post installation M&V fuel cost based on fuel billing data and Metrix tuned to normalize to heating degree days
4A Building Envelope Improvements	▪ Install weather stripping on doors, seal roof wall joints and roof penetrations	**Option A** ▪ Engineering calculations based on nameplate and manufacturer supplied data	▪ Pre-M&V: Verify existing conditions ▪ Post M&V: Visual inspection per scope of work

ECM # and Name	Summary of ECM	M&V Methodology / Recommendation	Description of M&V – Pre- and Post-Process
5A Cogeneration CHP	▪ Install Cogeneration units	**Option A** ▪ Engineering calculations based on nameplate and manufacturer supplied data for the new unit.	▪ Pre-M&V: Verify manufacturer provided data for existing units efficiency ▪ Post M&V: Verify manufacturer provided data for new units verify the new equipment and controls are installed and commissioned as recommended by manufacturer
6A Permanent Load Reduction	▪ Rebates for Load Reduction (KW)	▪ N/A	▪ N/A
7A Solar PPA	▪ Install Solar Power using Power Purchase Agreement	▪ N/A	▪ Pre-M&V: N/A ▪ Post M&V: N/A
8A Transformers	▪ Replace existing secondary transformers with high efficiency equivalents.	**Option A** ▪ Engineering calculations based on increase in transformer efficiency	▪ Pre-M&V: Measure typical existing transformer (typical one for each size) input and output kW to establish transformer losses ▪ Post M&V: Measure input and output kW for new transformer (typical one for each size) ▪ Verify savings with engineering calculations

6. Recommended Preventive Maintenance Services

Per the NJ ESIP program, all services are required to be bid by the Egg Harbor School District for services as desired. Based on Honeywell's vast service organization, we are uniquely qualified to develop design specification for the public bidding per NJ Law.

Honeywell strongly believes that the long-term success of any conservation program is equally dependent upon the appropriate application of energy savings technologies, as well as solid fundamental maintenance and support. One of the primary contributors to energy waste and premature physical plant deterioration is the lack of operations, personnel training, and equipment maintenance.

Honeywell recommends routine maintenance on the following systems throughout the Egg Harbor School District for the duration of an energy guarantee of savings.

Maintenance, Repair and Retrofit Services

- Mechanical Systems
- Building Automation Systems
- Temperature Control Systems
- Air Filtration

Honeywell will work with the Egg Harbor School District to evaluate current maintenance practices and procedures. This information will be the basis of a preventive maintenance and performance management plan designed to maximize building operating efficiencies, extend the useful life of your equipment, and support the designed Energy Savings Plan.

At a minimum, we recommend the following tasks be performed on a quarterly basis with the District Wide Building Management System.

SYSTEM SUPPORT SERVICES

1. Review recent mechanical system operation and issues with customer primary contact, on a monthly basis.
2. Review online automation system operation and event history logs and provide summary status to the customer primary contact. Identify systemic or commonly re-occurring events.
3. Check with customer primary contact and logbook to verify that all software programs are operating correctly.
4. Identify issues and prioritize maintenance requests as required.
5. Provide technical support services for trouble shooting and problem solving as required during scheduled visits.
6. Provide ongoing system review and operations training support; including two semi-annual lunches and learn sessions.
7. Establish dedicated, site-specific emergency stock of spare parts to ensure prompt replacement of critical components. These will be stored in a secure location with controlled access.

CONFIGURATION MANAGEMENT

1. Update documentation and software archives with any minor changes to software made during maintenance work.
2. Verify and record operating systems and databases.
3. Record system software revisions and update levels.

4. Archive software in designated offsite Honeywell storage facility, on an annual basis.
5. Provide offline software imaging for disaster recovery procedures, updated on a regular basis.

FRONT END / PC SERVICE

1. Verify operation of personal computer and software:
2. Check for PC errors on boot up
3. Check for Windows errors on boot up
4. Check for software operations and performance, responsiveness of system, speed of software
5. Routinely backup system files, on an annual basis:
6. Trend data, alarm information and operator activity data
7. Custom graphics and other information
8. Ensure disaster recovery procedures are updated with current files
9. Clean drives and PC housing, on an annual basis:
10. Open PC and remove dust and dirt from fans and surfaces
11. Open PC interface assemblies and remove dust and dirt
12. Clean and verify operation of monitors.
13. Verify printer operation, check ribbon or ink.
14. Initiate and check log printing functions.
15. Verify modem operation (if applicable).
16. Review IVR schedule for alarms and review (if applicable).

TEMPERATURE CONTROLS

Unit Vents

Services Performed

Annual Inspection

1. Inspect motor and lubricate.
2. Lubricate fan bearings.
3. Inspect coil(s) for leaks.
4. Vacuum interior.
5. Test operation of unit controls.

Pumps

Services Performed

Preseason Inspection

1. Tighten loose nuts and bolts.
2. Check motor mounts and vibration pads.
3. Inspect electrical connections and contactors.

Seasonal Start-up

1. Lubricate pump and motor bearings per manufacturer’s recommendations.
2. Visually check pump alignment and coupling.
3. Check motor operating conditions.
4. Inspect mechanical seals or pump packing.
5. Check hand valves.

Mid-season Inspection

1. Lubricate pump and motor bearings as required.
2. Inspect mechanical seals or pump packing.
3. Ascertain proper functioning.

Seasonal Shut-down

1. Switch off pump.
2. Verify position of hand valves.
3. Note repairs required during shutdown.

Packaged Air-Conditioning Systems

Services Performed

Preseason Inspection

1. Energize crankcase heater.
2. Lubricate fan and motor bearings per manufacturer's recommendations.
3. Check belts and sheaves. Adjust as required.
4. Lubricate and adjust dampers and linkages.
5. Check condensate pan.

Seasonal Start-up

1. Check crankcase heater operation.
2. Check compressor oil level.
3. Inspect electrical connections, contactors, relays, operating and safety controls.
4. Start compressor and check operating conditions. Adjust as required.
5. Check refrigerant charge.
6. Check motor operating conditions.
7. Inspect and calibrate temperature, safety, and operational controls, as required.
8. Secure unit panels.
9. Pressure-wash all evaporator and condenser coils (if applicable).
10. Log all operating data.

Mid-season Inspection

1. Lubricate fan and motor bearings per manufacturer's recommendations.
2. Check belts and sheaves. Adjust as required.
3. Check condensate pan and drain.
4. Check operating conditions. Adjust as required.
5. Log all operating data.

Seasonal Shut-down *

1. Shut down per manufacturer's recommendations.

   * If no Shut-down is required then (2) Mid-season Inspections are performed

Boilers

Services Performed

Preseason Inspection

1. Inspect fireside of boiler and record condition.
2. Brush and vacuum soot and dirt from flues (not chimneys) and combustion chamber.
3. Inspect firebrick and refractory for defects.
4. Visually inspect boiler pressure vessel for possible leaks and record condition.
5. Disassemble, inspect, and clean low-water cutoff.
6. Check hand valves and automatic feed equipment. Repack and adjust as required.
7. Inspect, clean, and lubricate the burner and combustion control equipment.
8. Reassemble boiler.
9. Check burner sequence of operation and combustion air equipment.
10. Check fuel piping for leaks and proper support.
11. Review manufacturer's recommendations for boiler and burner start-up.
12. Check fuel supply.
13. Check auxiliary equipment operation.

Seasonal Start-up

1. Inspect burner, boiler, and controls prior to start-up.
2. Start burner and check operating controls.
3. Test safety controls and pressure relief valve.
4. Perform combustion analysis.
5. Make required control adjustments.
6. Log all operating conditions.
7. Review operating procedures and owner's log with boiler operator.

Mid-season Inspection

1. Review operator's log.
2. Check system operation.
3. Perform combustion analysis.
4. Make required control adjustments.
5. Log all operating conditions.
6. Review operating procedures and log with boiler operator.

Seasonal Shut-down

1. Review operator's log.
2. Note repairs required.

APPENDICES

Appendices

Appendix 1: Local Government Energy Audits

Please see Appendix 1 provided as a separate accompaniment to this document entitled:
Appendix 1: Local Government Energy Audits

Appendix 2: ECM Calculations

Please see Appendix 2 provided as a separate accompaniment to this document entitled:
Appendix 2- ECM Calculations

Appendix 3: Equipment Cutsheets

Please see Appendix 3 provided as a separate accompaniment to this document entitled:
Appendix 3 - Equipment Cutsheets

Appendix 4: Lighting Line by Line

Please see Appendix 4 provided as a separate accompaniment to this document entitled:
Appendix 4 -Lighting Line by Line

Appendix 5: Required Forms & Omnia Cooperative / NJ Procurement Documentation

Per the LFN, the Egg Harbor Township School District must verify the selected vendor complies with applicable New Jersey procurement documentation requirements by submitting the following required forms.

The following forms are included:

- **New Jersey Business Registration Certificate** for the contractor and any subcontractors (i.e., copy of certificate)
- **Statement of Corporate Ownership** (an original form prepared for the contracting agency awarding the contract)
- **Public Contract EEO Compliance** (Employee Information Report form or proof of participation in a federally approved affirmative action program)
- **Non-Collusion Affidavit**

New Jersey Business Registration Certificate

Certification 137

CERTIFICATE OF EMPLOYEE INFORMATION REPORT

RENEWAL

This is to certify that the contractor listed below has submitted an Employee Information Report pursuant to N.J.A.C. 17:27-1.1 et. seq. and the State Treasurer has approved said report. This approval will remain in effect for the period of 15-MAY-2021 to 15-MAY-2024

HONEYWELL INTERNATIONAL, INC.
115 TABOR ROAD
MORRISPLAINS NJ 07950

ELIZABETH MAHER MUOIO
State Treasurer

STATE OF NEW JERSEY
BUSINESS REGISTRATION CERTIFICATE

Taxpayer Name:	HONEYWELL INTERNATIONAL INC.
Trade Name:	ADI GLOBAL DISTRIBUTION
Address:	101 COLUMBIA RD MORRISTOWN, NJ 07960-4640
Certificate Number:	0073401
Effective Date:	August 19, 1985
Date of Issuance:	August 25, 2021

For Office Use Only:

20210825150427681

NJ Notice of Classification

HONEYWELL INTERNATIONAL INC
115 TABOR ROAD
MORRIS PLAINS, NJ 07950

State of New Jersey

DEPARTMENT OF THE TREASURY
DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION
33 WEST STATE STREET - P.O. BOX 034
TRENTON, NEW JERSEY 08625-0034

NOTICE OF CLASSIFICATION

In accordance with N.J.S.A. 18A:18A-27 et seq (Department of Education) and N.J.S.A. 52:35-1 (Department of the Treasury) and any rules and regulations issued pursuant hereto, you are hereby notified of your classification to do State work for the Department (s) as previously noted.

Aggregate Amount	Trade(s) & License(s)	Effective Date	Expiration Date
Unlimited	C043 -CONTROL SYSTEMS	04/01/2021	03/31/2023
	C098 -ENERGY MANAGEMENT SYSTEMS	04/01/2021	
	C036 -ENERGY SERVICES/ESCO	04/01/2021	
	C049 -FIRE ALARM/SIGNAL SYSTEMS	04/01/2021	
	license #: P00968		
	C032 -HVACR	04/01/2021	
	license #: 19HC00404900		
	C050 -SECURITY/INTRUSION ALARMS	04/01/2021	

Statement of Corporate Ownership

OWNERSHIP DISCLOSURE CERTIFICATION TO BE SUBMITTED WITH PROPOSAL

In order to conform with N.J.S.A.52:25-24.2, all corporations or partnerships shall provide the following information:

1. Name of Firm: Honeywell International Inc.
2. Type of Business Organization (Check appropriate type)

Partnership ___ X Corporation ___ Sole Proprietorship ___
Limited Partnership ___ Limited Liability Corporation ___ Limited Liability Partnership ___
Subchapter S Corporation ___

3. Name of State in which Incorporated: Delaware

The following individuals own ten percent (10%) or more of any class stock in the corporation or are ten percent (10%) or more Partners in the Firm:

NAME	ADDRESS	TITLE	PERCENTAGE
Honeywell in an international public orporation and no one individual owns more than 10%			

Or, I certify that no one stockholder or partner owns 10% or more of the issued and outstanding stock or interest in the business entity.

IF ANY OF THE AFOREMENTIONED STOCKHOLDERS ARE A CORPORATION, WHEREBY THEY HOLD 10% (TEN PERCENT) OR MORE OF ANY CLASS STOCK IN BIDDING CORPORATION, THEY SHALL ALSO PROVIDE THE INFORMATION REQUESTED ABOVE.

The above information is true and correct to the best of my knowledge.

(Signature) Caroline Jackson

(Name) Caroline Jackson

(Title) Senior Business Consultant

(Address) 534 Fellowship Road, Mt. Laurel, NJ 08054

Subscribed and sworn to before me
This 20 day of Feb , 20 23
(Seal) Notary Public of New Jersey/
Specify Other State
My commission Expires 12-22 , 20 25.
Cathleen A Foote

CATHLEEN A. FOOTE
NOTARY PUBLIC OF NEW JERSEY
Commission # 2269845
My Commission Expires 12/22/2025

NJ ESIP RFP Template: Public School Districts

Affirmative Action

MANDATORY EQUAL EMPLOYMENT OPPORTUNITY LANGUAGE
N.J.S.A 10:5-31 *et seq.*, N.J.A.C. 17:27
CONSTRUCTION CONTRACTS

During the performance of this contract, the contractor agrees as follows:

The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Except with respect to affectional or sexual orientation and gender identity or expression, the contractor will ensure that equal employment opportunity is afforded to such applicants in recruitment and employment, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Such equal employment opportunity shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, Available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause.

The contractor or subcontractor, where applicable will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex..

The contractor or subcontractor, where applicable, will send to each labor union or representative of workers will) which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer advising the labor union or workers' representative of (the contractor's commitments under this act and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The contractor or subcontractor where applicable, agrees to comply with any regulations promulgated by the Treasurer pursuant to N.J.S.A. 10:5-31 *et seq.*, as amended and supplemented from time to time and the Americans with Disabilities Act.

When hiring or scheduling workers in each construction trade, the contractor or subcontractor agrees to make good faith efforts to employ minority and women workers in each construction trade consistent with the targeted employment goal prescribed by N.J.A.C. 17:27-7.2; provided, however, that the Division may, in its discretion, exempt a contractor or subcontractor from compliance with the good faith procedures prescribed by the following provisions, A, B and C, as long as the Division is satisfied that the contractor or subcontractor is employing workers provided by a union which provides evidence, in accordance with standards prescribed by the Division , that its percentage of active "card carrying" members who are minority and women workers is equal to or greater than the targeted employment goal established in accordance with N.J.A.C. 17:27-7.2.

The contractor or subcontractor agrees that, a good faith effort shall include compliance with the following procedures:

(A). If the contractor or subcontractor has a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor shall, within three business days of the contract award, seek assurances from the union that it will cooperate with the contractor or subcontractor as it fulfills its affirmative action obligations under this contract and in accordance with the rules promulgated by the Treasurer pursuant to N.J.S.A, 10:5-31 *et. seq*., as supplemented and amended from time to time and the Americans with Disabilities Act. If the contractor or subcontractor is unable to obtain said assurances from the construction trade union at least five business days prior to the commencement of construction work, the contractor or subcontractor agrees to afford equal employment opportunities to minority and women workers directly, consistent with this chapter. If the contractor's or subcontractor's prior experience with a construction trade union, regardless of whether the union has provided said assurances, indicates a significant possibility that the trade union will not refer sufficient minority and women workers consistent with affording equal employment opportunities as specified in this chapter, the contractor or subcontractor agrees to be prepared to provide such opportunities to minority and women workers directly, consistent with this chapter, by complying with the procedures prescribed under (B) below; and the contractor or subcontractor further agrees to take said action immediately if it determines or is so notified by the Division that the union is not referring minority and women workers consistent with the equal employment opportunity goals set forth in this chapter.

(B). If good faith efforts to meet targeted employment goals have not or cannot be met for each construction grade by adhering to the procedures of (A) above, or if the contractor does not have a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor agrees to take the following actions:

1. To notify the public agency compliance officer, the Division, and minority and women referral organizations listed by the Division pursuant to N.J.A.C. 17:27-5.3, of its workforce needs, and request referral of minority and women workers;
2. To notify any minority and women workers who have been listed with it as awaiting available vacancies;
3. Prior to commencement of work, to request that the local construction trade union refer minority and , women workers to fill job openings, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade;
4. To leave standing requests for additional referral to minority and women workers with the local construction trade union, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade, the State Training and Employment Service and other approved referral sources in the area;
5. If it is necessary to lay off some of the workers in a given trade on the construction site, layoffs shall be conducted in compliance with the equal employment opportunity and non-discrimination standards set forth in this regulation, as well as with applicable Federal and State court decisions;

6. To adhere to the following procedure when minority and women workers apply or are referred to the contractor or subcontractor:

    a. If said individuals have never previously received any document or certification signifying a level of qualification lower than that required in order to perform the work: of the construction trade, the contractor or subcontractor shall in good faith determine the qualifications of such individuals. The contractor or subcontractor shall hire or schedule those individuals who satisfy appropriate qualification standards in conformity with the equal employment opportunity and non-discrimination principles set forth in this chapter. However, a contractor or subcontractor shall determine that die individual at least possesses the requisite skills, and experience recognized by a union, apprentice program or a referral agency, provided the referral agency is acceptable to the Division, [if necessary, the contractor or subcontractor shall hire *or* schedule minority and women workers who qualify as trainees pursuant to these rules. All of the requirements, however, are limited by the provisions of (C) below,
    b. The name of any interested women or minority individual shall be maintained on a waiting list, and shall be considered for employment as described in paragraph (i) above, whenever vacancies occur. At the request of the Division, the contractor or subcontractor shall provide evidence of its good faith efforts to employ women and minorities from the list to fill vacancies.
    c. If, for any reason, said contractor or subcontractor determines that a minority individual or a woman is not qualified or if the individual qualifies as an advanced trainee or apprentice, the contractor or subcontractor shall inform the individual in writing of the reasons for the determination, maintain a copy of the determination in its tiles, and send a copy to the public agency compliance officer and to the Division.

7. To keep a complete and accurate record of all requests made for the referral of workers in any trade covered by the contract, on forms made available by the Division and submitted promptly to the Division upon request.

(C). The contractor or subcontractor agrees that nothing contained in (B) above shall preclude the contractor or subcontractor from complying with the union hiring hall or apprenticeship policies in any applicable collective bargaining agreement or union hiring hail arrangement, and, where required by custom or agreement, it shall send journeymen and trainees to the union for referral, or to the apprenticeship program for admission, pursuant to such agreement or arrangement. However, where the practices of a union or apprenticeship program will result in the exclusion of minorities and women or the failure to refer minorities and women consistent with the targeted county employment goal, the contractor or subcontractor shall consider for employment persons referred pursuant to (B) above without regard to such agreement or arrangement; provided further, however, that the contractor or subcontractor shall not be required to employ women and minority advanced trainees and trainees in numbers which result in the employment of advanced trainees and trainees as a percentage of the total workforce for the construction total, which percentage significantly exceeds the apprentice to journey worker ratio specified in the applicable collective bargaining agreement, or in the absence of a collective bargaining agreement, exceeds the ratio established by practice in the area for said construction trade. Also, the contractor or subcontractor agrees that,

in implementing the procedures of (B) above it shall, where applicable, employ minority and women workers residing within the geographical jurisdiction of the union.

After notification of award, but prior to signing a construction contract, the contractor shall submit to the public agency compliance officer and the Division an initial project workforce report (Form A 201) provided to the public agency by the Division for distribution to and completion by the contractor, in accordance with N.J.A.C. 17:27-7. The contractor also agrees to submit a copy of the Monthly project Workforce Report once a month thereafter for the duration of this contract to the Division and public agency compliance officer

The contractor agrees to cooperate with the public agency in the payment of budgeted funds, as is necessary, for on-the-job and/or off-the-job programs for outreach and training of minorities and women.

(D). The contractor and its subcontractors shall furnish such reports or other documents to the Division of Public Contracts Equal Employment Opportunity Compliance as may be requested by the Division from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the Division of Public Contracts Equal Employment Opportunity Compliance for conducting a compliance investigation pursuant to Subchapter 10 of New Jersey Administrative Code at N.J.A.C. 17:27.

Honeywell acknowledges the Mandatory Equal Opportunity Language requirements.

Caroline Jackson

Caroline Jackson
Senior Business Consultant

Non-Collusion Affidavit

NON-COLLUSION AFFIDAVIT

TO: **Egg Harbor Township School District Board of Education**
DATE: 2/20/2023
FROM: Honeywell International Inc.
TELEPHONE: 856-437-1856
E-MAIL: caroline.jackson@honeywell.com
FACSIMILE: 908-292-1061

In signing this proposal, we certify that we have not, either directly or indirectly, entered into any agreement or otherwise colluded in any manner with any other person, or otherwise taken any action that would restrain or impede open and free competition and competitive bidding for this project; that no attempt has been made to induce any other person or firm to submit or not to submit a proposal; that this proposal has been independently arrived at without agreement or collusion with any other Proposer, competitor, potential competitor or other person; and that this proposal has not been knowingly disclosed prior to the opening of proposals to any other Proposer, competitor or person not affiliated with Proposer.

We further certify that no requirement or commitment, direct or indirect, was made to any person, or elected official and that no undisclosed benefit of any kind was promised to anyone connected with this project.

We further certify that no person or selling agent has been employed or retained to solicit or secure the contract that is the subject of this RFP upon an agreement or understanding for a commission, percentage, brokerage or contingent fee.

We certify that the foregoing statements are true and accurate under penalty of perjury.

The undersigned, by submitting this proposal, hereby agrees with all the terms, conditions, and specifications required by the New Jersey School District Board of Education in this Request for Proposal, and declares that the attached proposal and pricing are in conformity therewith.

SIGNATURE: Caroline Jackson

DATE: 2/20/2003

TYPE OR PRINT NAME: Caroline Jackson

TITLE: Senior Business Consultant

FEIN or TAX ID NUMBER: 22-2640650

NJ Co-Op Purchasing Required Information

Since the Egg Harbor Township Board of Education is a member in good standing with the Omnia Cooperative, use of Omnia Cooperative in the selection of Honeywell under contract # 171201 is allowed under NJ Public Contracts law as outlined in LFN 2012-10 and consists of the following elements and authorized by DLGS/DCA as well as the following elements:

- "an organization (profit or not-for-profit) that coordinates and aggregates contracts from different state and local governments and promotes their use."
- "in the context of the LPCL and PSCL, the provisions of this notice apply when the aggregate value of the goods or services (see N.J.A.C. 5:34-8.2) exceeds the contracting unit's bid threshold."
- the national cooperative contract must have been advertised as a national or regional cooperative and awarded pursuant to a competitive bidding process that complies with the laws applicable.
- The LFN requires if a national cooperative contract is chosen, the calculation of cost savings from using this approach must be documented: The Law requires a contracting unit can use national cooperatives only when the contracting unit determines " the use of the cooperative purchasing agreement shall result in cost savings after all factors, including charges for service, material, and delivery, have been considered."
- The LFN states if using an online ordering system, local officials must put "appropriate internal controls" in place to ensure purchases are documented and that an audit trail exists

This document will certify Honeywell and the use of this cooperative purchasing agreement will remain compliant with the services of the COOP for the Egg Harbor Township School District; that ALL public works in conjunction with the School District and in accordance with NJ Public Contract Law (NJSA 18A:18A-1 et seq.) will be procured according to State requirements. To clarify further, this applies to a public works projects including and not limited to installing electrical, lighting, plumbing, HVAC, BMS systems etc. Additionally, that no on-line ordering system will be used as part of this process.

It is estimated the cost savings to the Egg Harbor Township School District by using the Cooperative Agreement will save approximately $5000 in legal fees, 100-man hours as well as significant lost energy savings per month for every month waiting to administer the RFP process on their own. Because Omnia has undertaken the competitive process on the district's behalf, the savings can be achieved as outlined in this plan approximately 10 months sooner than via a local competitive contracting approach.

Resolution to Select ESCO

EGG HARBOR TOWNSHIP BOARD OF EDUCATION
OFFICE OF THE BOARD SECRETARY
13 SWIFT DRIVE
EGG HARBOR TOWNSHIP, NEW JERSEY 08234

SELECTION OF ESCO FOR THE IMPLEMENTATION OF AN ENERGY SAVINGS IMPROVEMEMT PROJECT (ESIP)

WHEREAS; N.J.S.A. P.L. 2011, c.139 (LFN 2012-10) enables local contracting units to utilize national cooperative contracts as a method of procurement, the Egg Harbor Township Board of Education (BOE) being a member of the Omnia Partners Public Sector National Cooperative (Omnia) and;

WHEREAS; Energy Savings Performance Contract Services are available via contract No. 171201 within the Omnia portfolio;

WHEREAS; Omnia utilized a competitive bidding process in the selection of contractors capable of implementing an Energy Savings Performance Contract and,

WHERAS; Honeywell International under contract # 171201 has competed and has been selected as a provider of Energy Savings Performance Contracts under Omnia and:

WHEREAS; Honeywell International is also designated under the Department of Management and Construction (DPMC) in the State of New Jersey under a CO36 classification as a qualified Energy Services Company (ESCO) and;

WHEREAS; Honeywell International has implemented multiple Energy Savings Performance Contracts within New Jersey as titled the Energy Savings Improvement Program (ESIP)

WHEREAS; the BOE has selected Honeywell International, 534 Fellowship Rd, Mt Laurel Township, NJ 08054 the qualified Energy Service Company (ESCO) to detail, design and implement an Energy Saving Plan and ESIP project for the BOE in accordance with P.L 2012, c.55 (P.L.2009, c.4); and

WHEREAS, Honeywell will provide an Energy Savings Plan, including engineering, construction, project management as part of their proposal and that the total cost of services will be a predetermined amount and paid for out of the energy savings as calculated in accordance with P.L. 2012, c.55,

WHEREAS, there is no cost for the Energy Savings Plan and the BOE will have an option to continue the process to full implementation of the ESIP project once the ESP has been reviewed and approved by an independent 3rd party in accordance with P.L.2012, c.55, and adopted by the BOE.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Education authorizes the School Business Administrator / Board Secretary to execute a Project Development Agreement with Honeywell upon review and approval from the Board Attorney.

This is to certify the above is a true copy of motion adopted by the Board of Education of the Egg Harbor Township, in the County of Atlantic, New Jersey, at a Regular Meeting, January 25, 2022, held in the Egg Harbor Township Alder Avenue Middle School/Board Room.

Chandra D Anaya

Chandra D. Anaya, CPA
Registered School Business Administrator/Board Secretary

Thank you for considering our proposal. We look forward to working with you in the future.