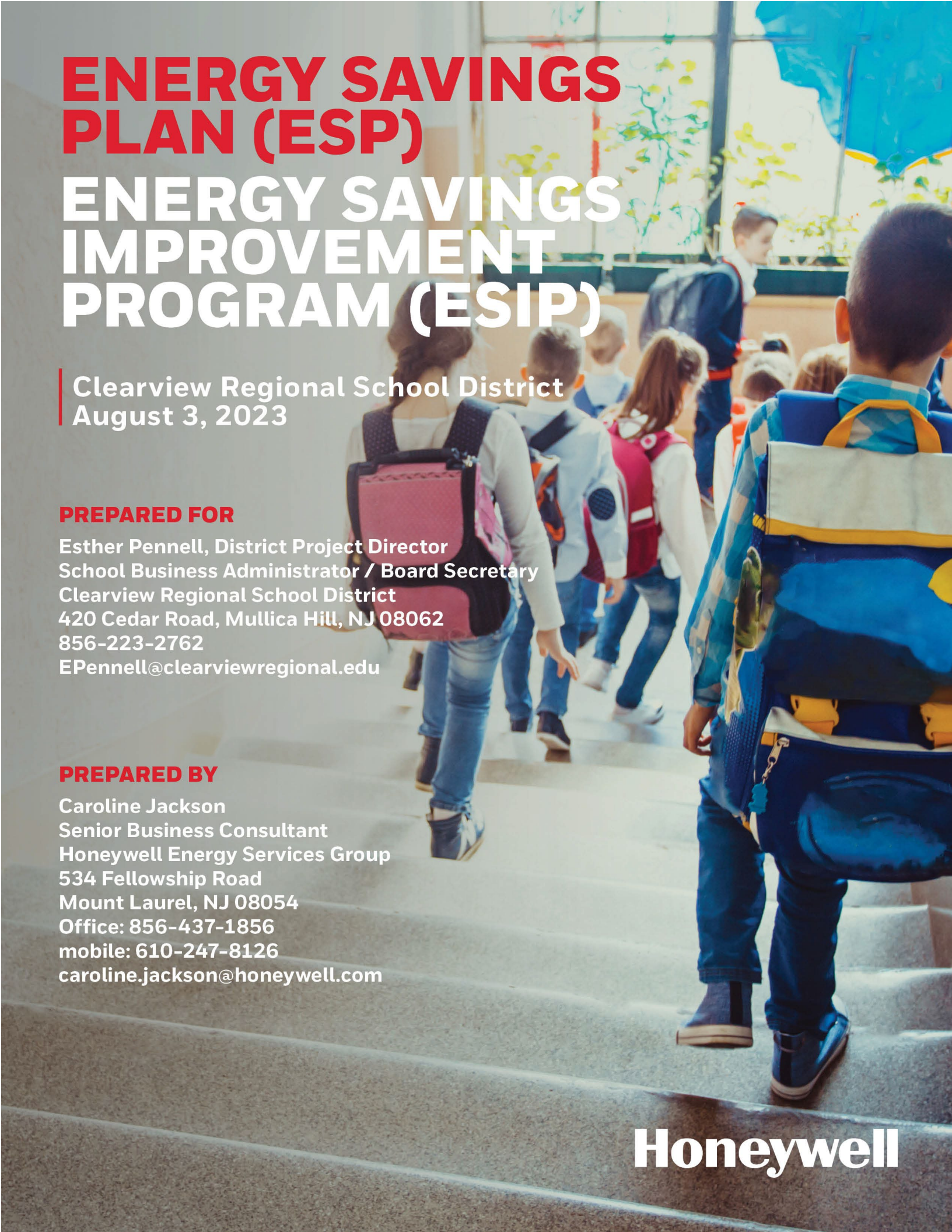
ENERGY SAVINGS PLAN (ESP)

ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

Clearview Regional School District
August 3, 2023



PREPARED FOR

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Honeywell

HONEYWELL PROPRIETARY

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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.

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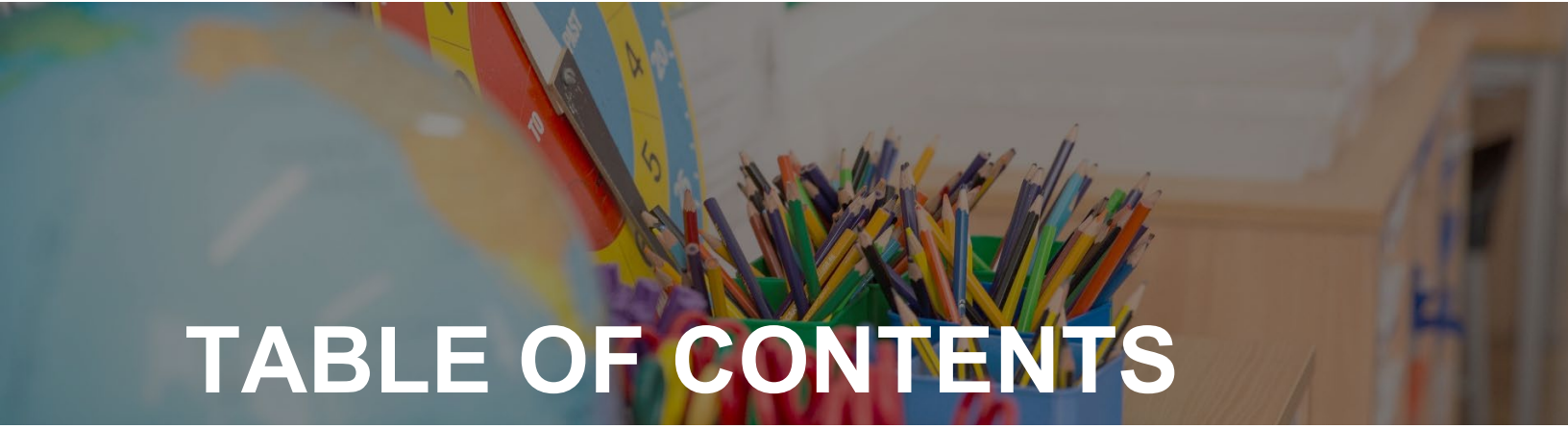

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SECTION A
EXECUTIVE SUMMARY

Section A. Executive Summary

Honeywell is pleased to submit this Energy Savings Plan (ESP) for the Clearview Regional School District (the District). During the development of the Energy Savings Plan, Honeywell has completed a thorough investment grade energy audit of the Clearview Regional School District buildings and grounds. Based on the audit findings and Honeywell's extensive experience in working with schools, we can confidently state that we can deliver a financially viable, comprehensive solution to address the District's facility concerns and goals. Our 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:

- The results of the energy audit.
- 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
- If developed by an ESCO, a description of, and cost estimates of a proposed energy savings guarantee.

ESIP Project Specifics

- Model type: Hybrid ESIP
- Architect/Engineer of Record: FVHD Architects Planners, George Duthie & Daniel Schittone
- Engineer of Record: Gillan and Hartman, Inc, Steven Gillan
- Financial Advisor: Phoenix Advisors, LLC, Sherry Tracy
- Independent Auditor of the ESP: DLB Associates, Scott Gowers

The purpose of this document is to provide all the information required for the Clearview Regional School District to determine the best path forward in the implementation of a New Jersey Energy Savings Improvement Program (ESIP). It is important to note that the Energy Savings Plan provides a comprehensive evaluation of ALL potential ECMs within the Clearview Regional 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.

Our 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 Clearview Regional 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 Clearview Regional School District utility consumption to that of others 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 selected and identified for your School. 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 Clearview Regional School District are identified for the purposes of potential inclusion in the program. Final selected ECMs are to be determined by the Clearview Regional School District in conjunction with Honeywell during the project development phase of the NJ ESIP process.

D. **Technical and Financial Summary** – This section includes an accounting of all technical and financial outcomes associated with the ECMs as presented on the New Jersey Board of Public Utilities Forms II through V. 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 or 20-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.

F. **Design Approach** – This section includes a summary of Honeywell’s best practices for the successful implementation of a NJ ESIP project. It includes a project specific Safety Management Plan and provides an overview of our project management procedure, construction management and a sample schedule for the overall completion of the project. Within the schedule, we clearly define the tasks directed towards compliance with architectural, engineering and bidding procedures in accordance with New Jersey Public Contracts Law.

G. **Appendices 1 to 4** – Please refer to the Teams room for the following documents:

- Honeywell – Appendix 1 — LOCAL GOVERNMENT ENERGY AUDITS
- Honeywell – Appendix 2 — ECM CALCULATIONS
- Honeywell – Appendix 3 — EQUIPMENT CUT SHEETS
- Honeywell – Appendix 4 — LIGHTING LINE BY LINES

Benefits

The measures investigated in this Energy Savings Plan could result in an annual utility savings of 1,654,295 kWh of electricity and save 48,559 therms of natural gas. Additionally, these energy savings will result in a net reduction of greenhouse gases and will reduce the district's carbon footprint by 750 MTE of CO2 annually. This is equivalent to removing 158 cars from the road annually and /or 710 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.

In accordance with the NJ ESIP process, the next step in the project development phase is for Honeywell to provide our recommendations and for the Clearview Regional School District to select the desired content of the project based upon the Clearview Regional School District unique goals and objectives. The selections will consider the projected costs, projected energy and operational savings, available financing options at the time of the agreement, interest rates, length of term and Clearview Regional School District priorities, which will all play a part in the final selection and cash flow of ECMs. The definitive requirement under NJ PL2012, c.55 is that the project is self-funding within the 15 or 20-year term as outlined in the legislation.

Overall, it is evident that the Clearview Regional 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 welcome this opportunity to partner with the Clearview Regional School District to improve the comfort and efficiency of your facilities through the successful implementation of this Energy Savings Plan.

Sincerely,

Caroline Jackson,

Senior Business Consultant

SECTION B

PRELIMINARY UTILITY DASHBOARD & ANALYSIS

Section B. Building Overview, Preliminary Utility Dashboard & Analysis

Building Overview

Clearview Middle School

Clearview Middle School is a 130,715 square foot two-story facility includes classrooms, offices, storage spaces, mechanical spaces, a gymnasium, a library, a multipurpose room, a cafeteria, and a commercial kitchen. The building was originally constructed in 1968 and renovated in 2003.The facility is typically occupied by approximately 100 staff and 800 students. The typical schedule is presented in the table below.

Building Name	Weekday/Weekend	Operating Schedule
Clearview Regional Middle School	Weekday	5:00 AM to 8:00 PM
Clearview Regional Middle School	Weekend	5:00 AM to 6:30 PM

The facility is served by a 400-ton water cooled chiller which supplies chilled water to the rooftop air handlers and to classroom unit ventilators. The library is conditioned by two 3-ton Sanyo cooling only mini-split systems. The hot water system consists of five Patterson Kelly 1,750 kBtu/hr non-condensing boilers which provide hot water to air handlers, classroom unit ventilators, and a few unit heaters.

Clearview Regional High School

Clearview High School is a 250,947 square foot two-story facility includes classrooms, offices, theater, media center, two gymnasiums, a commercial kitchen, storage spaces, and mechanical space. There is also a small garage on the property that is included in the square footage. The building was constructed in 1960 and renovate in 2003. The facility is occupied by approximately 200 staff and 1,600 students. The typical schedule is presented in the table below.

Building Name	Weekday/Weekend	Operating Schedule
Clearview Regional High School	Weekday	5:00 AM to 9:00 PM
Clearview Regional High School	Weekend	As Needed

The facility is served by three chilled water plants which supplies chilled water to rooftop air handlers and to classroom unit ventilators. Some spaces are served by a mixture of direct-expansion packaged units, cooling only split systems, and ductless mini-split heat pumps. The heating hot water system consists of three H.B. Smith 5,862 MBH non-condensing boilers which provide hot water to rooftop air handlers, the classroom unit ventilators, and some unit heaters with hot water coils located in various mechanical and storage spaces.

Preliminary Utility Dashboard & Analysis

Clearview Regional SD Utility Baseline - Summary

School

Clearview Middle School

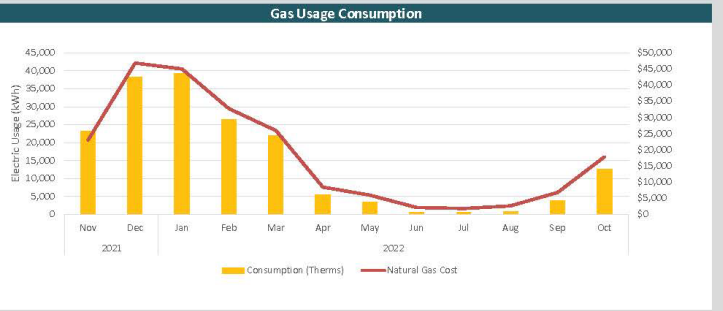
Clearview Regional High School

Year

FY 21/22

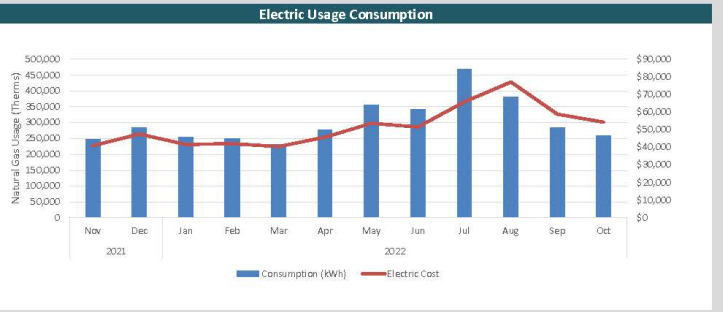
Gas Usage Consumption

Billing Month	Consumption (Therms)	Natural Gas Cost
2021		
Nov	23,160	$22,977
Dec	38,262	$46,862
2022		
Jan	39,323	$45,051
Feb	26,408	$32,730
Mar	21,962	$25,991
Apr	5,547	$8,415
May	3,523	$5,918
Jun	679	$2,129
Jul	618	$1,838
Aug	742	$2,617
Sep	3,780	$6,800
Oct	12,729	$17,822
Total	**176,733**	**$219,151**

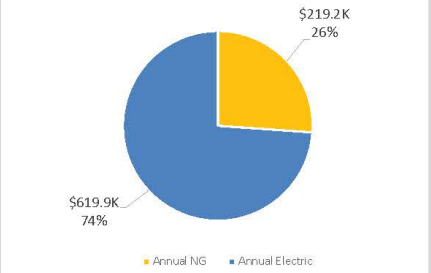


Electric Usage Consumption

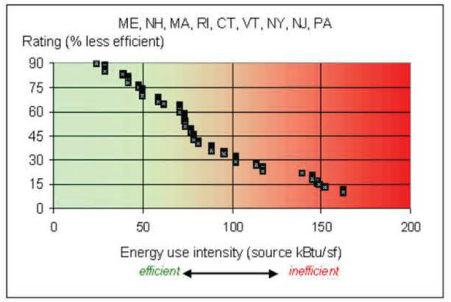
Billing Month	Consumption (kWh)	Electric Cost
2021		
Nov	246,605	$40,923
Dec	283,785	$47,542
2022		
Jan	254,795	$41,710
Feb	248,904	$42,165
Mar	231,374	$40,445
Apr	276,937	$45,817
May	356,250	$53,713
Jun	341,281	$51,516
Jul	467,799	$65,844
Aug	381,853	$77,114
Sep	283,907	$58,818
Oct	259,180	$54,320
Total	**3,632,670**	**$619,925**



Utility Cost Breakdown



School Facilities EUI Rating



Source EUI	$ / Sq. ft.
140	2.1

Annual NG Usage (Therms)	Annual NG Cost
176.7K	$219.2K

Annual Electric Usage (kWh)	Annual Electric Cost
3,632.7K	$619.9K

Clearview Regional SD Utility Baseline - Clearview Middle School

Honeywell

School

Clearview Middle School

Clearview Regional High School

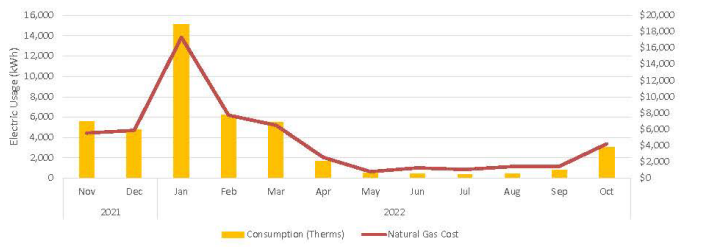
Year

FY 21/22

Gas Usage Consumption

Billing Month	Consumption (Therms)	Natural Gas Cost
2021		
Nov	5,599	$5,555
Dec	4,793	$5,870
2022		
Jan	15,117	$17,319
Feb	6,235	$7,728
Mar	5,496	$6,504
Apr	1,681	$2,549
May	474	$796
Jun	401	$1,258
Jul	350	$1,041
Aug	402	$1,418
Sep	814	$1,464
Oct	3,005	$4,207
Total	**44,366**	**$55,709**

Gas Usage Consumption

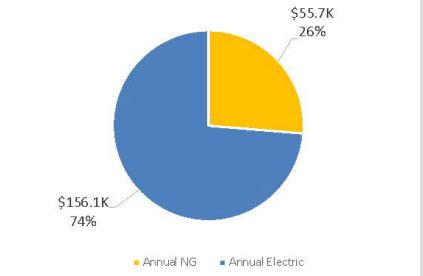


Electric Usage Consumption

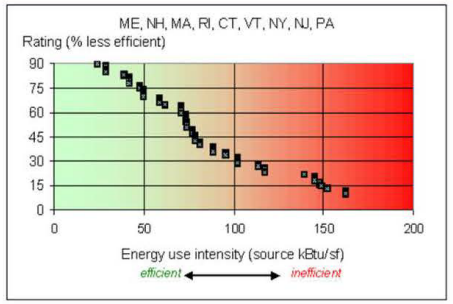
Billing Month	Consumption (kWh)	Electric Cost
2021		
Nov	58,200	$11,270
Dec	68,600	$13,457
2022		
Jan	63,600	$11,513
Feb	52,400	$10,312
Mar	57,200	$11,498
Apr	45,000	$9,399
May	88,200	$15,121
Jun	52,400	$11,525
Jul	109,000	$16,122
Aug	97,400	$17,861
Sep	88,400	$15,078
Oct	68,800	$12,920
Total	**849,200**	**$156,077**

Electric Usage Consumption

Utility Cost Breakdown



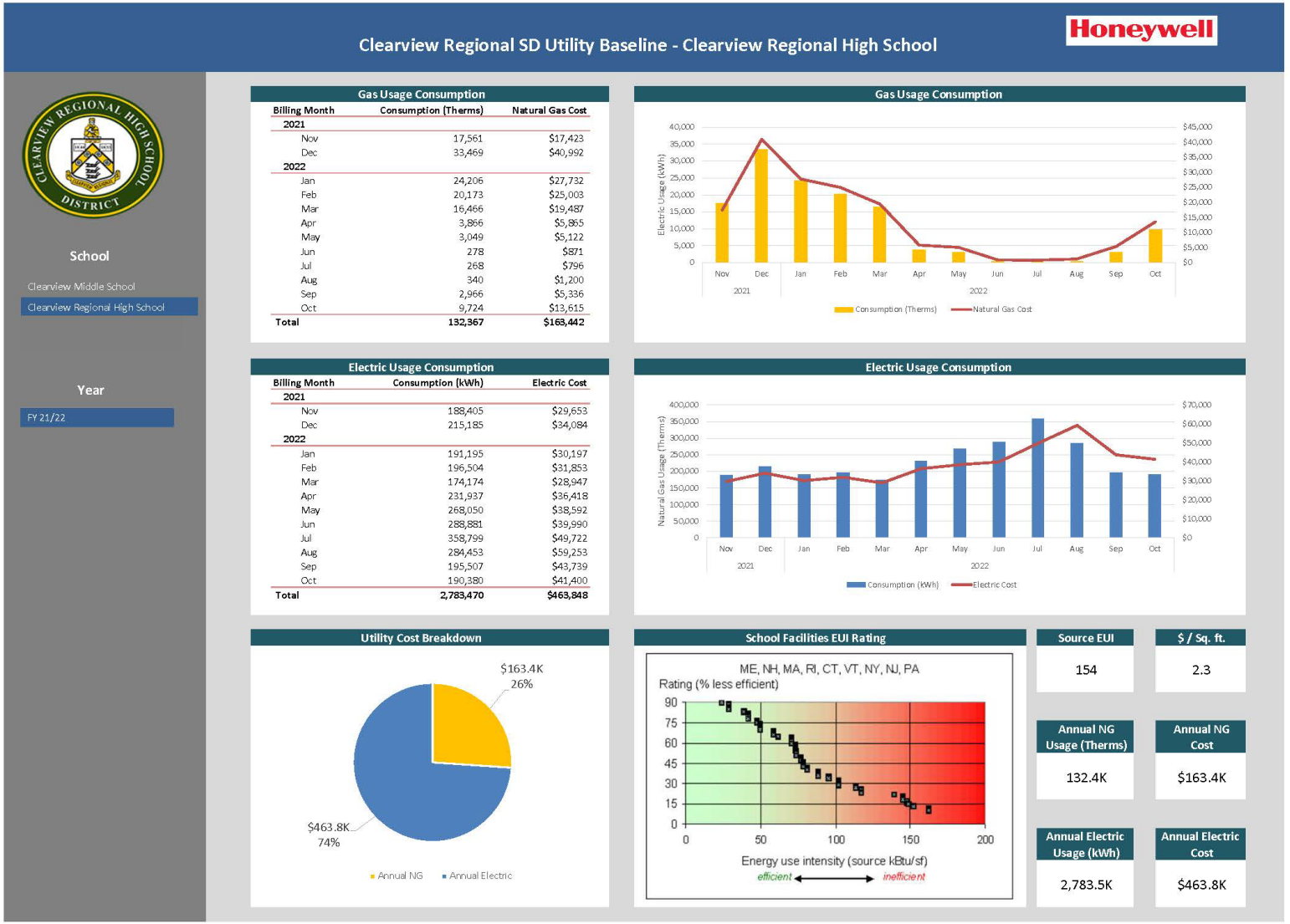
School Facilities EUI Rating



Source EUI	$ / Sq. ft.
108	1.7

Annual NG Usage (Therms)	Annual NG Cost
44.4K	$55.7K

Annual Electric Usage (kWh)	Annual Electric Cost
849.2K	$156.1K



Honeywell

Preliminary Utility Analysis

Clearview Regional SD
Mullica Hill, NJ

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

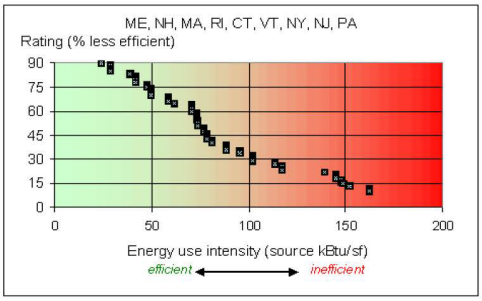
The calculation of EUI (Energy Use Intensity) is shown below. EUI, expressed in kBtu/sf, is normalized for floor area, the most dominant influence on energy use in most buildings. Its use usually provides a good approximation of how your building's energy performance compares to others. Site EUI indicates 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.)

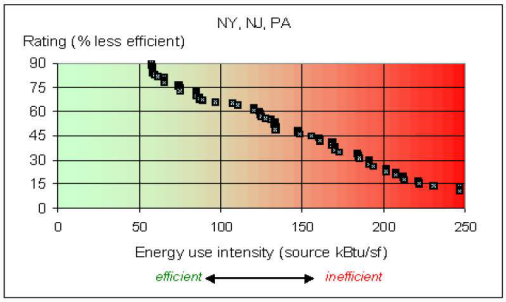
Source EUI Rating for your Building	Energy use and cost reduction potential (%)	Walk-thru energy assessment recommended?
above 60%	below 25%	No
40 to 60%	20 to 35%	Maybe
20 to 40%	35 to 50%	Yes
Below 20%	above 50%	Definitely

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	Clearview Regional High School	2,783,470	132,367	273,400	83	154	15%
2	Clearview Middle School	849,200	44,366	122,300	60	108	30%
		3,632,670					

School Facilities



Offices



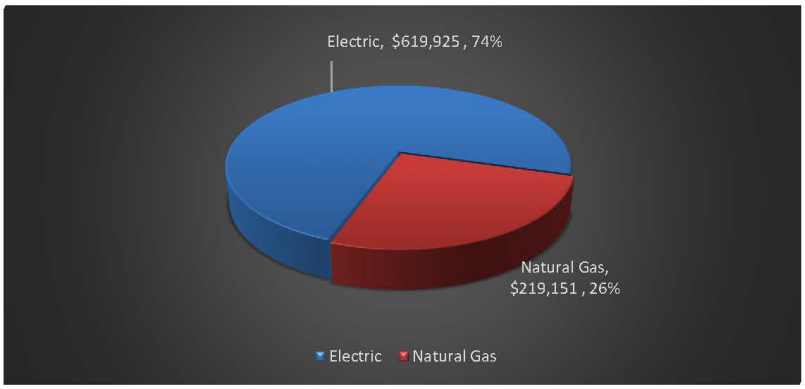
Historical Summary

Utility Analysis Period:
Nov 2021 - Oct 2022

	Electric	Natural Gas
Utility Costs*	$619,925	$219,151
Utility Usage (kWh, Therms)	3,632,670	176,733
$ Cost/Unit (kWh, Therms)	$0.17065	$1.240
Annual Electric Demand (kW)	14,487	

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

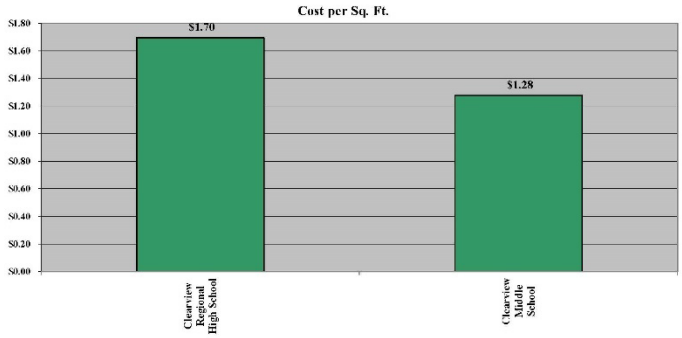
Actual Cost by Utility
Nov 2021 - Oct 2022

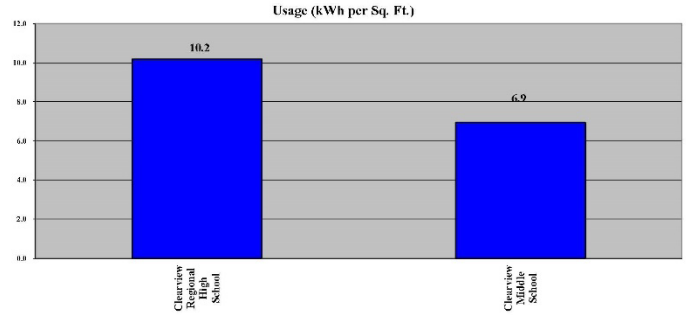


Total Cost
$839,076

Utility Analysis
Electric

Square Footage Analysis

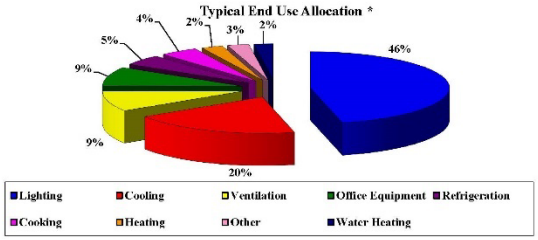




Note: Average kWh/SF for School buildings in this climate zone is 9.0

Electric

Sources of Electric Consumption

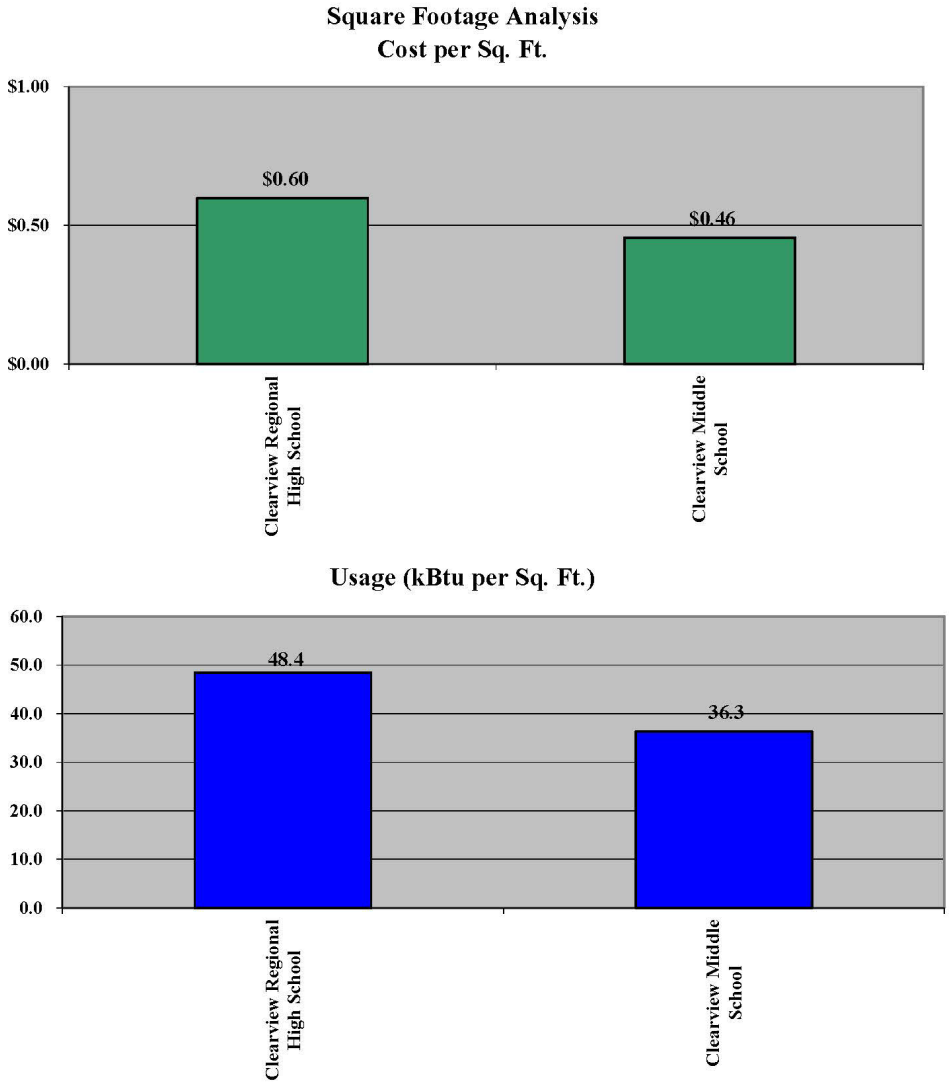


**This allocation is generic and is not a representation of the actual end use in your buildings included in this report.

Typical Allocation Applied to Your Electric Cost**

Lighting	$287,025
Cooling	$121,505
Ventilation	$57,033
Office Equipment	$53,314
Refrigeration	$29,136
Cooking	$27,277
Heating	$15,498
Other	$15,498
Water Heating	$13,638
Your Total Cost Nov 2021 - Oct 2022	**$619,925**

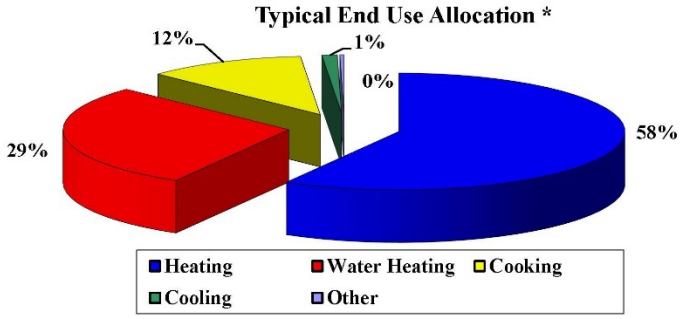
Utility Analysis
Natural Gas



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	$127,765
Water Heating	$63,335
Cooking	$24,983
Cooling	$2,411
Other	$657
Your Total Cost Nov 2021 - Oct 2022	**$219,151**

Annual Emissions & Environmental Impact

Clearview Regional SD

Nov 2021 - Oct 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	3,632,670	kWh
Annual Natural Gas usage	176,733	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)	2,570	MT
eCO2 (Gas)	935	MT
Total eCO2	3,504.957	MT

This is equivalent to one of the following:	
754	No. of passenger vehicles - annual greenhouse gas emissions
4579	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. Preliminary Energy Savings Plan: Energy Conservation Measures

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	Clearview Regional High School	Clearview Middle School
1A LED Lighting Upgrades	●	●
1B De-Stratification Fans w/ UV Disinfection	●	●
1C Vending Misers	●	
2A Boiler Replacements	●	●
2B Domestic Water Heater Replacements	●	●
2C Rooftop Unit Replacements	●	●
2D Replace Split Systems	●	
2E Chiller Replacements	●	●

ECM Description	Clearview Regional High School	Clearview Middle School
2F Kitchen Hood Efficiency Improvements	●	●
2G Premium Efficiency Motors and VFDs	●	●
2H Walk In Compressor Controls	●	●
3A Building Management System Upgrades	●	●
3B BMS Dashboard - Energy Optimization	●	●
4A Building Envelope Improvements	●	●
4B Roofing Upgrades	●	●
5A Transformer Replacements	●	●
6A Cogeneration CHP	●	
7A Solar PPA RFP and Removal	●	●
7B Solar PV - IRA	●	●
7C Replace Solar Inverters	●	●
7D Solar PPA RFP Hybrid	●	●
8A Energy Education	●	●
9A Plumbing System Upgrades	●	●
9B Pump Skid Upgrade	●	
10A Electric Vehicle Charging Stations	●	●
11A Power Factor Correction	●	●

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 25 incandescent light bulbs. A big step towards a greener future!

ECM Description	Clearview Regional High School	Clearview Middle School
1A LED Lighting Upgrades	●	●

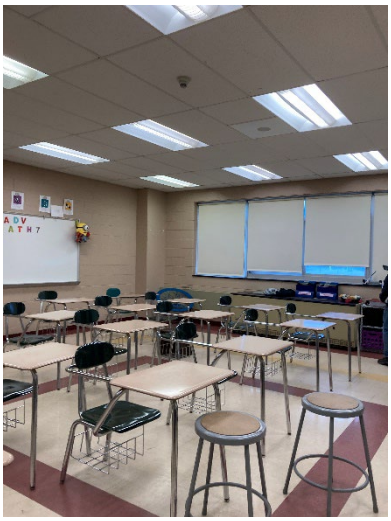
EXISTING CONDITIONS

Indoor lighting predominantly consists of T-8 lamps, with a small quantity of T-12 and compact fluorescent lamps (CFLs) along with incandescent bulbs. In general, lighting is operated on switches.

SCOPE OF WORK

The proposed lighting system is based on the most recent lighting system audit where existing lighting systems were analyzed and inventoried. Honeywell proposes to retrofit all existing T-8 and T-12 fixtures with high efficiency Light Emitting Diode (LED) lamps. The District will receive many benefits from the lighting system upgrade.

Lighting at Clearview Regional HS



Lighting at Clearview MS

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 De-Stratification Fans w/ UV Disinfection

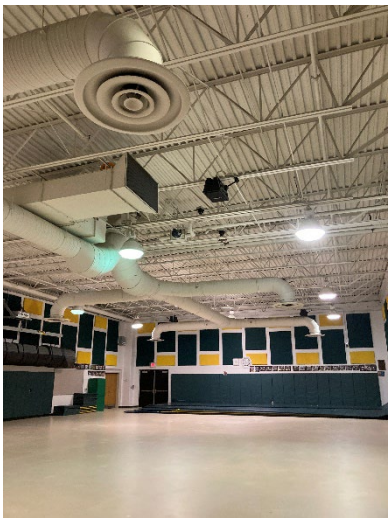
The key benefits of this ECM include:

- **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.

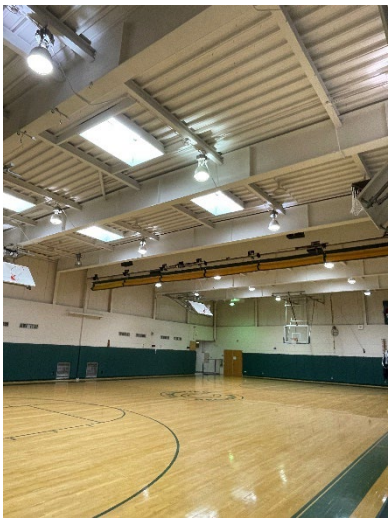
ECM Description	Clearview Regional High School	Clearview Middle School
1B De-Stratification Fans w/ UV Disinfection	●	●

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.



Clearview Regional Hs - Gym



Clearview MS - Gym

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 1B.1 Proposed De-Stratification Fans

Building	Location	Airius Model	Qty PureAir	Qty AirPear
Clearview Regional High School	New Wing Gym 313	(4) A-25-SP-STD-120-W (4) A-25-SP-STD-120-W-PHI	4	4
Clearview Regional High School	Old Wing Gym 308	(3) A-25-SP-STD-120-W (4) A-25-SP-STD-120-W-PHI	3	4
Clearview Regional High School	Aux Gym	(2) A-25-SP-STD-120-W (2) A-25-SP-STD-120-W-PHI	2	2
Clearview Middle School	Gym	(3) A-25-SP-STD-120-W (3) A-25-SP-STD-120-W-PHI	3	3
Clearview Middle School	MPR	(3) S-15-SP-SH-120-W (2) S-15-SP-SH-120-W-PHI	3	2
Total			**15**	**15**

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 1C Vending Misers & Plug Loads

The key benefits of this ECM include:

Energy savings by better managing the power consumption of electrical equipment.

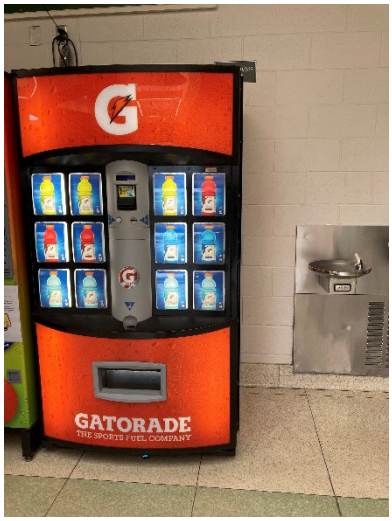
Longer equipment life thanks to reduced usage.

ECM Description	Clearview Regional High School	Clearview Middle School
1C Vending Misers	●	

EXISTING CONDITIONS

Multiple vending machines were observed in various buildings. As such, Honeywell has investigated the use of vending machine misers for these areas. Vending machines are located throughout multiple buildings offering soft drinks to the occupants. A typical cold drink machine consumes over 5,000 kWh annually.

Typical Vending Machines



Vending Machines at Clearview Regional HS

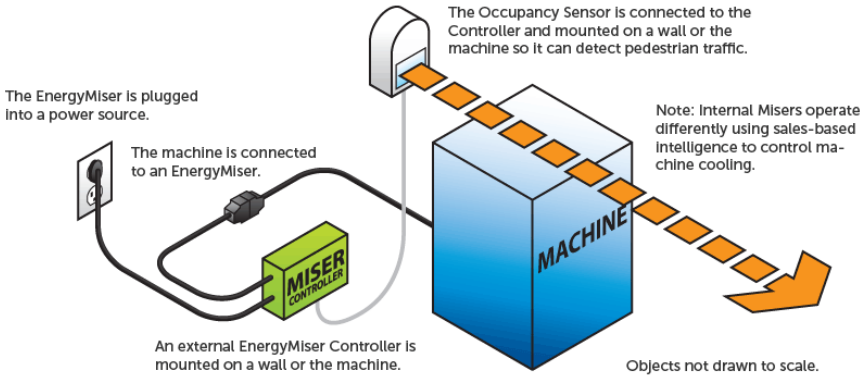
PROPOSED SOLUTION

During the site visit, Honeywell noted vending machines providing an opportunity for energy savings by shutting off non-critical loads during the non-occupied periods.

The Vending Miser Occupancy Control (VMOC) also monitors electrical current used by the vending machine. This ensures that the unit will never power down a vending machine while the compressor is running, so a high head pressure start never occurs. In addition, the current sensor ensures that every

time the vending machine is powered up, the cooling cycle is run to completion before again powering down the vending machine. The Coca Cola Company and Pepsi Corporation approve the proposed controller for use on their machines.

Vending Miser Controller



Vending Miser Operation

Table 1D.1 Proposed Vending Machines for Vending Miser Controls

Building	Location	Type	Qty.
Clearview Regional High School	Teacher Plan Center	Cold Beverage	1
Clearview Regional High School	Hallway H12	Snack	1
Clearview Regional High School	Hallway H12	Cold Beverage	1
Clearview Regional High School	Kitchen Kit1	Cold Beverage	1
Clearview Regional High School	New Cafeteria 503	Cold Beverage	1
Clearview Regional High School	Old Cafeteria 501	Cold Beverage	1
Total			**6**

SCOPE OF WORK

Interface with Existing Equipment. All the VMOC devices are easily installed. The vending machine controllers are installed separately from the machine, and implementation will occur during working hours. A period of three (3) weeks will be required to verify proper calibration of the sensors. With respect to the vending machines in the various buildings, Honeywell has estimated the number and types of vending machines based on our site tour. During the implementation phase, Honeywell will check with the vendor about the type and specification of the vending machines as it relates to any internal time clocks which may exist inside the machine. Should this be the case, the savings and cost will be adjusted accordingly.

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 vending machine controls will be installed as part of this ECM

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 reduced electric energy usage.
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	Clearview Regional High School	Clearview Middle School
2A Boiler Replacements	●	●

EXISTING CONDITIONS

Some boilers within the 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.

Clearview Regional HS - Boiler

Clearview MS - Boiler

EXISTING BOILERS TO BE REPLACED

Table 2A.1 Existing Boilers

Building	Type	Manufacturer	Model	Output (MBH)	Fuel	Qty
Clearview Regional High School	Hot Water	HB Smith	28A-W-18	4,025	NG	3
Clearview Middle School	Hot Water	Patterson Kelly	SN-2000-2	1,700	NG	5

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	Qty	Capacity (MBH)	Fuel
Clearview Regional High School	Hot Water	Aerco	BMK-5000	5,000	NG	3
Clearview Middle School	Hot Water	Aerco	BMK-3000	3,000	NG	3

SCOPE OF WORK

The following outlines the boiler replacement:

Disconnect gas back to shutoff valve and electric back to source panelboard.

- Remove existing boilers.
- Install new boilers.
- Connect gas and heating hot water appurtenances to new boilers.
- Terminate and power new boiler electric circuiting.
- 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.

CHANGES IN INFRASTRUCTURE

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

O&M IMPACT

The new boilers will decrease the O&M cost for maintaining the boilers.

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	Annual savings will result from greater combustion efficiency, reduced maintenance costs, and better control and setback.
Waste Production	Existing boilers 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 2B Domestic Hot 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	Clearview Regional High School	Clearview Middle School
2B Domestic Water Heater Replacements	●	●

EXISTING CONDITIONS

Existing Domestic Hot Water (DHW) heaters are near or past the end of their useful life.

Clearview MS – Water Heater

Clearview Regional HS – Water Heater

EXISTING HOT WATER HEATER TO BE REPLACED

Table 2B.1 Existing Hot Water Heaters

Building	Manufacturer	Model	Output (MBH)	Storage	Fuel	Qty
Clearview Regional High School	Aerco	KC1000	930	100	NG	4
Clearview Middle School	Aerco	KC1000	930	100	NG	2

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 Hot Water Heaters

Building	Manufacturer	Model	Output (MBH)	Storage	Fuel	Qty
Clearview Regional High School	Aerco	INN-1060	1060	22	NG	4
Clearview Middle School	Aerco	INN-1060	1060	22	NG	2

*Additional boilers may be included during the IGA.

SCOPE OF WORK

The following outlines the boiler replacement:

- Demolish and remove old water heaters.
- Furnish and install condensing gas fired domestic hot water heaters as specified in the table above.
- Install all required piping, controls, and breeching as needed.
- Install mixing valve.
- Install circulators where needed for building use and kitchen supply.
- 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 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	Clearview Regional High School	Clearview Middle School
2C Rooftop Unit Replacements	●	●

EXISTING CONDITIONS

Some Rooftop Units (RTUs) serving the locations photographed 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.

Clearview Regional HS - RTU

Clearview Regional HS - RTU

EXISTING ROOFTOP UNITS TO BE REPLACED

Table 2C.1 Existing Rooftop Units

Building	Location Served	Manufacturer	Model	Tons	Qty
Clearview Regional High School	RM 507	Trane	TCD086C300	7.0	1
Clearview Regional High School	Nurse	Trane	TCD0910D300BC	7.0	1
Clearview Middle School	Graphic Arts Rooms 303A/303B	AAON	RM-AO5-8-0EB09-EHJ	5.0	1

Building	Location Served	Manufacturer	Model	Tons	Qty
Clearview Regional High School	500 Café	Carrier	48PGMC12EAJ50 15576	10.0	1
Clearview Regional High School	New Café 503	Carrier	48PGMC12EAJ50 15576	10.0	1
Clearview Regional High School	Main Office/Guidance	Carrier	TZCAC-120CLBB	10.0	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.

Table 2C.2 Proposed Rooftop Units

Building	Location Served	Manufacturer	Model	Tons	Qty
Clearview Regional High School	RM 507	Trane	THJ090A3S00	7.0	1
Clearview Regional High School	Nurse	Trane	THJ090A3S00	7.0	1
Clearview Middle School	Graphic Arts Rooms 303A/303B	AAON	THJ072A3S00	5.0	1
Clearview Regional High School	500 Café	Carrier	THJ120A3S00	10.0	1
Clearview Regional High School	New Café 503	Carrier	THJ120A3S00	10.0	1
Clearview Regional High School	Main Office/Guidance	Carrier	THJ120A3S00	10.0	1

SCOPE OF WORK

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

- Disconnect existing RTU electric connections.
- Disconnect piping and air ducts from the unit.
- Remove unit from the base.
- Modify base for new unit if necessary.
- Rig and set new unit at the base.
- Inspect piping and air ducts before reconnecting them to the unit.
- Reconnect piping and air ducts.
- Repair duct and 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. 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 2D Replace Split Units

The key benefits of this ECM include:

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

ECM Description	Clearview Regional High School	Clearview Middle School
2D Replace Split Systems	●	

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.

Clearview Regional HS – Split System

Clearview Regional HS – Split System

EXISTING CONDENSING UNITS TO BE REPLACED

Table 2D.1 Existing Condensing Units

Building	Area Served	Manufacturer	Model	Tons	Qty
Clearview Regional High School	Health Room 802	Trane	TTA048C400A0	4.0	1
Clearview Regional High School	Instrumental Music Room 803	Trane	TTA180B400BA	15.00	1
Clearview Regional High School	Ensemble Room	Trane	TTA030C400A0	2.5	1

Building	Area Served	Manufacturer	Model	Tons	Qty
Clearview Regional High School	Choral Music Rm 805	Trane	TTA090C400A0	7.5	1
Clearview Regional High School	Weight Room	Trane	TTA120C400A0	10.0	1
Clearview Regional High School	Main Lobby	Trane	TTA120C400A0	10.0	1
Clearview Regional High School	Health Room 800	Trane	TTA048C400A0	4.0	1

PROPOSED SOLUTION

Honeywell proposes replacing the existing condensing units in the table above with new units. 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 2D.2 Proposed Condensing Units

Building	Area Served	Manufacturer	Model	Tons	Qty
Clearview Regional High School	Health Room 802	Trane	4TTA048	4.0	1
Clearview Regional High School	Instrumental Music Room 803	Trane	TTA18043DBA	15.0	1
Clearview Regional High School	Ensemble Room	Trane	4TTA036	3.0	1
Clearview Regional High School	Choral Music Rm 805	Trane	TTA09043DBA	7.5	1
Clearview Regional High School	Weight Room	Trane	TTA12043DBA	10.0	1
Clearview Regional High School	Main Lobby	Trane	TTA12043DBA	10.0	1
Clearview Regional High School	Health Room 800	Trane	4TTA048	4.0	1

SCOPE OF WORK

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

- Disconnect existing electric connections.
- Collect and recycle existing refrigerant.
- Disconnect piping from the unit.
- Remove unit from the base.
- Modify base for new unit if necessary.
- Rig and set new unit at the base.
- Inspect piping and air ducts before reconnecting them to the unit.
- Reconnect piping and air ducts.

- Repair duct and 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. 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 2E Chiller Replacement

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	Clearview Regional High School	Clearview Middle School
2E Chiller Replacements	●	●

EXISTING CONDITIONS

Chiller units serving the buildings are near the end of its useful life and are costly to maintain. Replacing 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.

Clearview Regional HS - Chiller

Clearview Regional HS - Chiller

EXISTING CHILLER UNITS:

Table 2E.1 - Existing Chillers

Building	Location Served	Manufacturer	Model	Tons	Qty
Clearview Regional High School	Auditorium	Carrier	30GXR160-A-661XQ	151.5	1
Clearview Regional High School	Main Building	Carrier	30GXR264-A-661XQ	245.1	1
Clearview Regional High School	200 Wing	Trane	CGAM130	124.0	1
Clearview Middle School	Main Building	Carrier	19XRV4142343CLH64	400.0	1

PROPOSED SOLUTION

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

Table 2E.2 - Proposed Chillers

Building	Location Served	Manufacturer	Model	Tons	Qty	Storage Ice Tank Qty
Clearview Regional High School	Auditorium	Trane	ACRC1655EU	160.0	1	/
Clearview Regional High School	Main Building	Trane	ACRC2505EU	250.0	1	/
Clearview Regional High School	200 Wing	Trane	CGAM 130F2**2EX	130.0	1	/
Clearview Middle School	Main Building	Trane	ACRC3754EU	375.0	1	/
Clearview Middle School*	Main Building	Trane	ACRC200	200.0	1	8

* The 200 Ton Partial Thermal Storage system is an alternative to the 375 Ton Chiller system

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 2F Kitchen Hood Efficiency Improvements

The key benefits of this ECM include:

- **Reduced energy usage** from improved equipment control and reduced exhaust of conditioned air.
- **Lower operational costs** through less frequent maintenance and operational issues.

ECM Description	Clearview Regional High School	Clearview Middle School
2F Kitchen Hood Efficiency Improvements	●	●

EXISTING CONDITIONS

Honeywell observed that the kitchens utilize a constant volume kitchen exhaust hood system. This system operates at full load, even when there is no activity in the kitchen. It also requires operating the exhaust fan at full load. This wastes both fan energy and heating energy. When the hood is not utilized, an opportunity exists to reduce airflow and conserve energy.

Clearview Regional HS - Kitchen Hood

Clearview MS - Kitchen Hood

PROPOSED SOLUTION

Honeywell recommends installing a microprocessor-based controls system whose sensors automatically regulate fan speed based on cooking load, time of day and hood temperature while minimizing energy usage. The system includes a temperature sensor installed in the hood exhaust collar, IP sensors on the ends of the hood that detect the presence of smoke or cooking effluent and VFD that control the speed of the fans. This will result in energy and cost savings, noise reduction, longer equipment life and reduction in cleaning costs.

Table 2F.1 Existing Kitchen Hoods to Receive Controls

Building	Kitchen Hood (sq. ft.)
Clearview Regional High School	112
Clearview Middle School	128
Total	**240**

SCOPE OF WORK

- Install a temperature sensor in the hood to monitor temperature of the exhaust gas.
- Install a set of two photo sensors on the sides to monitor smoke density across the hood.
- Install a control panel with a small point controller and a set of relays in the kitchen close to the hood.
- Provide electric wiring from the new panel to the sensors, exhaust fan motor as well as to the closest electric panel for power supply.
- Provide connection to the BMS system for remote monitoring, control, and alarming. This system could also be stand-alone to save on cost.
- Commission control components and sequences and calibrate control loops.

Sequence of operation will enable the exhaust fans when either temperature or smoke density in the range hoods is above a pre-set value. Time delays between start and stop will be programmed to prevent motor short cycling. Schedule programming could be implemented as well.

ENERGY SAVINGS METHODOLOGY AND RESULTS

The savings approach is based upon reducing the amount of conditioned air that is being exhausted when there is no cooking taking place.

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

There will be improvements in HVAC equipment and controls for not operating fans continuously.

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 2G Premium Efficiency Motors, Pumps 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	Clearview Regional High School	Clearview Middle School
2G 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.

Clearview Regional HS – Motor

Clearview MS – Motor

EXISTING MOTORS TO BE REPLACED

Table 2G.1 Existing Motors

Building	Label	Qty	Motor HP	Size	Type	VFD
Clearview Regional High School	CHS-CHW P-1	1	40	1510 BF 13.25 GB		N
Clearview Regional High School	CHS-CHW-P-2	1	40	1510 BF 13.25 GB		N
Clearview Regional High School	CHS-HHW-P-5	1	50	5x6x12	344A BF	N
Clearview Regional High School	CHS-HHW-P-6	1	50	5x6x12	344A BF	N
Clearview Regional High School	CHS-HHW-P-7	1	15	4x5x8A	344A BF	N
Clearview Regional High School	CHS-HHW-P-8	1	15	4x5x8A	344A BF	N
Clearview Regional High School	CHS-HHW-P-B1	1	2		Cent. In-Line	N
Clearview Regional High School	CHS-HHW-P-B2	1	2		Cent. In-Line	N
Clearview Regional High School	CHS-HHW-P-B3	1	2		Cent. In-Line	N
Clearview Middle School	MS-CHW-P-3	1	30	MOD#6x6x9-3/4 L	Cent. Dbl. Suct.	Y
Clearview Middle School	MS-CHW-P-4	1	30	MOD#6x6x9-3/4 L	Cent. Dbl. Suct.	Y
Clearview Middle School	MS-CHW-P-1	1	15	MOD#6x8x9-3/4 HL	Cent. Dbl. Suct.	N
Clearview Middle School	MS-CHW-P-2	1	15	MOD#6x8x9-3/4 HL	Cent. Dbl. Suct.	N
Clearview Middle School	MS-HHW-P -7	1	25	MOD#4E 4x5x10 - 7/8	Cent. End Suction	N
Clearview Middle School	MS-HHW-P -8	1	25	MOD#4E 4x5x10 - 7/8	Cent. End Suction	N
Clearview Middle School	MS-HHW-P -9	1	2	Series 60 2x7x6 - 1/4	Cent. In-Line	N
Clearview Middle School	MS-HHW-P -10	1	2	Series 60 2x7x6 - 1/4	Cent. In-Line	N
Clearview Middle School	MS-HHW-P -11	1	2	Series 60 2x7x6 - 1/4	Cent. In-Line	N
Clearview Middle School	MS-HHW-P -12	1	2	Series 60 2x7x6 - 1/4	Cent. In-Line	N
Clearview Middle School	MS-HHW-P -13	1	2	Series 60 2x7x6 - 1/4	Cent. In-Line	N

PROPOSED SOLUTION

Honeywell observed that several motors and pumps that are sized to meet peak heating or cooling conditions. However, we've 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 2H Walk-In Compressor Controls

The key benefits of this ECM include:

- **Energy savings** from reducing equipment runtime.
- **Equipment longevity** due to more efficient and less wasteful equipment utilization.
- **Operational savings** from less frequent need to repair or replace equipment thanks to less frequent equipment use.

ECM Description	Clearview Regional High School	Clearview Middle School
2H Walk In Compressor Controls	▪	▪

EXISTING CONDITIONS

In many refrigeration, walk-in freezers and coolers, the compressor is oversized and cycles on/off frequently. This compressor cycling results in higher energy consumption and may reduce the life of the compressor.

Clearview MS – Walk-In Ref./Frz.

Clearview Regional HS – Walk-In Ref./Frz.

EXISTING WALK-IN REFRIGERATOR/FREEZERS TO RECEIVE CONTROLS

Table 2H.1 Existing Walk-In Refrigerator/Freezers

Building	Location	Walk-In Refrigerators	Walk-In Freezers
Clearview Regional High School	Kitchen	-	1
Clearview Regional High School	Kitchen	1	-
Clearview Middle School	Kitchen	-	1
Clearview Middle School	Kitchen	1	-
Clearview Middle School	Outside	-	1
Total		**2**	**3**

PROPOSED SOLUTION

Honeywell will install a controller manufactured by Intellidyne at the above-mentioned buildings to reduce the compressor cycles of the kitchen walk-in coolers and freezers. The installation of this ECM will have no negative impact on system operation or freezing of food products. By reducing the cycling, the sensor will improve operating efficiency and reduce the electric consumption by 10% to 20%.

This control enhancement will save energy through the reduced compressor cycling in the kitchen walk-in coolers and freezers and will extend the operating life of the compressor. Consequently, the compressor will not have to be replaced as often.

Intellidyne Sensor Features

- Automatic restart on power failure.
- Surge protection incorporated into circuitry.
- Fully compatible with all energy management systems.
- UL listed.
- Maintenance free.

Intellidyne Sensor Benefits

- Patented process reduces air conditioning electric consumption typically 10% to 20%.
- Increased savings without replacing or upgrading costly system components.
- “State-of-the-art” microcomputer controller – LED indicators show operating modes.
- Protects compressor against momentary power outages and short cycling.
- Simple 15-minute installation by qualified installer.
- No programming or follow-up visits required.
- Maximum year-round efficiency.
- Reduces maintenance and extends compressor life.
- Fail-safe operation.
- Guaranteed to save energy.
- UL listed, “Energy Management Equipment”.

Intellidyne's patented process determines the cooling demand and thermal characteristics of the entire air conditioning system by analyzing the compressor's cycle pattern, and dynamically modifies that cycle pattern to provide the required amount of cooling in the most efficient manner. This is accomplished in real-time by delaying the start of the next compressor "on" cycle, by an amount determined by the cooling demand analysis. These new patterns also result in less frequent and more efficient compressor cycles.

ENERGY SAVINGS METHODOLOGY AND RESULTS

The energy savings for this ECM is realized by the reduction in run time of the compressors and fan motors in the freezers/refrigerators.

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 the reduced electrical consumption of the compressor.
Waste Production	Any removed parts will be disposed of properly
Environmental Regulations	No environmental impact is expected.

ECM 3A Building Management System Upgrades

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.

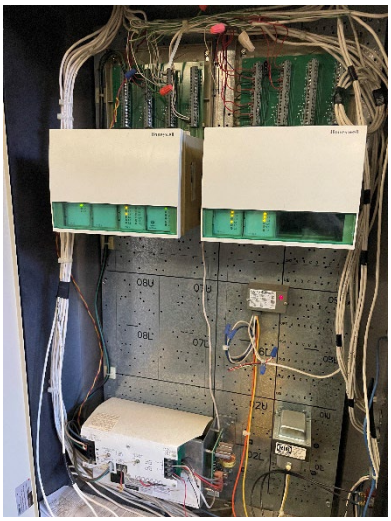
ECM Description	Clearview Regional High School	Clearview Middle School
3A Building Management System Upgrades	●	●

ECM OVERVIEW

Honeywell has performed a survey of the existing temperature controls throughout the Clearview School District. Upon inspection, it was noted that the level of controls technology varies widely throughout the District. However, regardless of the systems in place, all building control systems can benefit from upgrades and implementing energy conservation enhancements.

Table 3A.1 Existing Controls

Building	Existing Controls
Clearview Regional High School	Honeywell WEBs N4 / Honeywell XL500 / Standalone
Clearview Middle School	Honeywell WEBs N4 / Honeywell XL500 / Standalone



Clearview Regional High School - Existing Controls

Clearview Middle School – Existing Control

EXISTING CONDITION

The temperature control systems at the High School and Middle School are primarily based on a legacy Honeywell XL5000 systems installed approximately 15-20 years ago. This system is comprised of digital controllers that communicate to the front-end using Lon and C-bus protocols. The following equipment is equipped with Honeywell XL5000 controls:

Table 3A.2 Honeywell XL5000 Systems

High School		Middle School
Hot Water Plant	Domestic Hot Water System – Qty: 1	Hot Water Plant
Chilled Water Plant	Energy Recovery Ventilators – Qty: 2	Chilled Water Plant
Rooftop Units – Qty: 9	Exhaust Fans – Qty: 49	Rooftop Units – Qty: 5
VAV Boxes – Qty: 4	Relief Dampers – Qty: 17	Unit Ventilators – Qty: 64
Unit Ventilators – Qty: 54	AC Unit Temperatures – Qty: 5	Exhaust Fans – Qty: 34
Fan Coil Units – Qty: 53		

These legacy controllers have recently been upgraded with a Honeywell WEBs overlay. This Niagara 4 platform was installed by Peterson Service Company. As a limited number of the legacy XL5000 controllers have failed, they have been replaced with new Honeywell Spyder controllers. The graphical user interface was not accessible at the time of our survey and system operation could not be assessed. Upon selection, a thorough review of the existing system operation will be conducted.

A limited number of the remaining HVAC equipment, such as the Middle School HV-1 and HV-2 are equipped with standalone pneumatic/electric controls that do not provide remote monitoring or control. The pneumatic control components appeared to be in poor condition and are unlikely able to provide night setback or advanced energy-saving sequences of operation.

The Clearview School District is currently in the process of designing a referendum project that would replace the majority of the HVAC units in both schools. The new units will be supplied with manufacturer controls that will have BACnet communication capability. The proposed BACnet devices are compatible with the existing Honeywell WEBs N4 front-end.

PROPOSED SOLUTION

Honeywell proposes a scope of work that primarily focuses on upgrading the legacy Honeywell field controllers that are passed their useful life. Through this infrastructure upgrade, modern energy-saving sequences of operation will be applied to all HVAC equipment to maximize savings while maintaining occupant comfort and air quality.

HVAC Replacement and Integration of New Controls

Honeywell will coordinate with the District to ensure that all mechanical equipment installed as part of the referendum or the ESIP are properly integrated into the existing Honeywell WEBs N4 front end. This includes license upgrades, BACnet discovery, and graphics to provide a fully functional building management system.

Boiler and Chiller Plant Control Upgrades

Honeywell shall furnish and install new Direct Digital Controls (DDC) for the boiler and chiller plants at both schools. This includes the integration of any new boilers or chillers that are installed as part of this project. Existing wiring, panels, sensors, and control devices will be reused wherever possible to provide maximum value to the District.

1. **Niagara BMS Upgrades**
    a. Furnish and install one new Niagara N4 JACE building network controller to replace the existing AX JACE located in the Middle School.
    b. Provide new databases, graphics, trends, schedules, alarms, and licensing.
    c. 1-year Software Maintenance Agreement
    d. Implement schedules and setpoints per the contract values.

2. **High School Boiler / Chiller Controls**
    a. Provide new DDC controller, BACnet network, and add the following points:
        i. Hot Supply and Return Temperature
        ii. Hot Water Supply & Return Temperature
        iii. Chilled Water Supply Temperature (qty 3)
        iv. Chilled Water Return Temperature (qty 3)
        v. Primary HW Pump Status (qty 3)
        vi. Boiler Status (qty 3)
        vii. Primary CHW Pump Status (qty 6)
        viii. Chiller Status (qty 3)
        ix. Chiller Setpoint Command (qty 3)
        x. Primary HW Pump Start/Stop (qty 3)
        xi. Boiler Enable (qty 3)
        xii. Primary CHW Pump Start/Stop (qty 6)

b. Test and replace control devices as need to provide a fully functional system.
   i. Implement hot water reset sequence.
   ii. Provide commissioning.
   iii. Provide BACnet interface with new condensing boiler control panel and integrate points to the BMS.
   iv. Provide BACnet interface with new chiller (qty 3) control panel and integrate points to the BMS.
   v. Furnish and install new VFDs on four secondary loop HW pumps and provide variable flow control.

3. **High School Main Office RTU Controls**
   a. Provide new BACnet thermostat controller, BACnet network, and add the following points:
      i. Discharge Air Temperature
      ii. Fan Status
      iii. Freeze Stat
      iv. Outside Air Damper Actuator
      v. HW Valve (Replace with New)
      vi. CHW Valve (Replace with New)
      vii. Fan Start/Stop

4. **High School Music Trane VariTrac Integration**
   a. Extend Comm3 / Comm4 network to the VariTrac panel
   b. Add required driver to the N4 JACE building controller
   c. Add associated Trane units to the BMS and include on the graphics
      i. 1 AHU
      ii. 5 Zone VAV Boxes

5. **Middle School Boiler / Chiller Controls**
   a. Provide new DDC controller, BACnet network, and add the following points:
      i. Boiler Status (qty 5)
      ii. Chiller Status
   b. Test and replace control devices as need to provide a fully functional system.
   c. Provide commissioning.
   d. Provide BACnet interface with new condensing boiler control panel and integrate points to the BMS.
   e. Provide BACnet interface with new chiller (qty 3) control panel and integrate points to the BMS.

6. **Middle Gym H&V Unit Controls (Typical of 2)**
   a. Replace pneumatic controls with new DDC controller, BACnet network, and add the following points:
      i. Space Temperature/CO2
      ii. Discharge Air Temperature
      iii. Mixed Air Temperature
      iv. Fan Status
      v. Freeze Stat
      vi. Outside Air Damper Actuator
      vii. Return Air Damper Actuator
      viii. Hot Water Control Valve (2-way, Replace with New)
      ix. Fan Start/Stop
   b. Implement demand control ventilation sequence.

7. **Middle Tech Room H&V Unit Controls (Typical of 1)**
   a. Replace pneumatic controls with new DDC controller, BACnet network, and add the following points:
      i. Space Temperature/CO2
      ii. Discharge Air Temperature
      iii. Mixed Air Temperature
      iv. Fan Status
      v. Freeze Stat
      vi. Outside Air Damper Actuator
      vii. Return Air Damper Actuator
      viii. Hot Water Control Valve (2-way, Replace with New)
      ix. Fan Start/Stop
   b. Implement demand control ventilation sequence.

ENERGY SAVINGS METHODOLOGY AND RESULTS

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

Existing Heating BTU and 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 3B BMS Dashboard - Energy Optimization

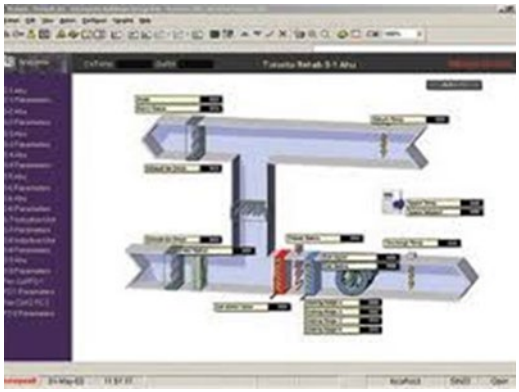
The key benefits of this ECM include:

- **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	Clearview Regional High School	Clearview Middle School
3B BMS Dashboard - Energy Optimization	●	●

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 can't account for the complexity of a building's dynamic occupancy and weather conditions – while maintaining comfort levels.



HVAC Equipment Control

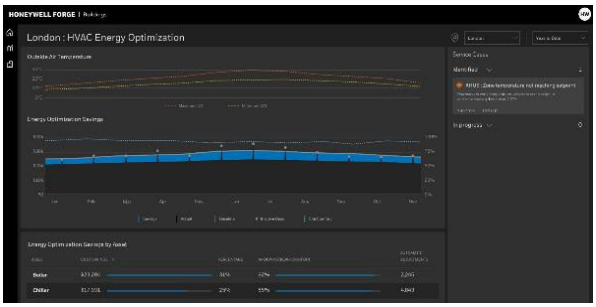
HVAC Equipment Control

PROPOSED SOLUTION

We propose to deploy Honeywell Forge Predictive Maintenance, an application that automates the detection of faults and anomalies in the operation of building heating, ventilation, and air conditioning (HVAC) systems which impact building comfort, energy consumption or the life cycle of the assets. Faults are raised in the way of service cases containing actionable recommendations about how to address the fault and are presented to the building operator via the enterprise dashboards. By adopting a Predictive Maintenance program, building operators can transition from costly preventative and reactive maintenance programs to a pro-active or just-in-time maintenance program. The benefits of a Predictive Maintenance program include:

- Reduced labor/subcontract cost associated with performing preventative maintenance activities
- Reduced labor/subcontract cost by identification of Service Case root cause with recommended actions to resolve the fault
- Reduced energy cost by immediately identifying and addressing anomalies which impact energy consumption
- Increased occupant productivity by immediately identifying and addressing anomalies which impact occupant comfort
- Reduced capital and operational expenses by identifying and addressing anomalies which impact the life cycle of equipment and components
- Boost operational continuity by reducing equipment failures and reactive activity

Healthy Buildings Technologies provide a set of tools to help building operators optimize the health of their building environments, operate more cleanly and safely, comply with social distancing policies, and reassure occupants as part of a return-to-business strategy. Honeywell Forge integrates building controls, air quality sensors, video feeds and secure access points then applies advanced analytics to calculate a simple, real-time Healthy Building Score. Site-level performance scores are aggregated for comparison and benchmarking across your portfolio to inform your strategic plan. The package provides insights and analytics to improve indoor environment, highlight proactive actions and automate incident response standards to manage and respond to alerts, anytime, anywhere.



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 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	Clearview Regional High School	Clearview Middle School
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.

Clearview MS - Building Envelope

Clearview Regional HS - 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	Caulking (LF)	Door - Install Jamb Spacer (Units)	Door Weather Striping - Doubles (Units)	Door Weather Stripping - Singles (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)	Roof-Wall Intersection Air Sealing (SF)
Clearview Regional High School		28	36	18	534	36	3	1	845	1,600
Clearview Middle School	40	23	16	12	11	192			1,917	
Total Quantity	40	51	52	30	545	228	3	1	2,762	1,600

Roof-Wall Joints

- Existing – Buildings throughout the School District 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.

Doors

- Existing – Doors in the district need 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 4B Roofing Upgrades

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** thanks to a tighter and more efficient building envelope.

ECM Description	Clearview Regional High School	Clearview Middle School
4B Roofing Upgrades	▪	▪

EXISTING CONDITIONS

The existing roof warranties are due to expire in the near future. The heat loss and heat gains occurring due to low R-value of the existing roof insulation can be improved through sealing. Additionally, roofs in poor condition can lead to water migration and future building envelope problems. Potential problematic leakage areas can be around perimeters and equipment curbing. The following building roofs will be upgraded to the extent needed to meet the maximum permissible solar installation.

Clearview Regional High School – Existing Roof

Clearview Middle School – Existing Roof

PROPOSED SOLUTION

Honeywell proposes applying a new silicone coating on existing High School roofs and installing a new roofing system at the Middle School in order to extend the roof warranty, provide resistance to water intrusion, UV exposure and natural weathering. The roof upgrade will allow for less infiltration through the roof and air conditioning units to work less.

Table 4B.1 - Existing Roof Area to Upgrade

Building	Building
Clearview Regional High School	56,375
Clearview Regional High School	112,470

ENERGY SAVINGS METHODOLOGY AND RESULTS

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

Following approach is used to determine savings for this specific measure:

Existing Roof Efficiency	*= Existing U + Existing Infiltration Rate*
Proposed Roof Efficiency	*= Proposed U + Proposed Infiltration Rate*
Energy Savings $	*= UAdTproposed – UAdTexisting*
Winter Savings (Therms)	*= Energy Savings/Boiler Eff./100,000*
Summer Savings (Tons Cooling)	*= Energy Savings/12,000 Btu/Ton*

INTERFACE WITH BUILDING

The new roof sealing will be constructed to match existing, maintaining contours of the existing building.

CHANGES IN INFRASTRUCTURE

The existing roofing will be sealed at the above referenced roof locations.

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 HVAC energy usage and better occupant comfort.
Waste Production	Existing roof material will be removed and disposed of properly.
Environmental Regulations	No environmental impact is expected.

ECM 5A 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	Clearview Regional High School	Clearview Middle School
5A Transformer Replacements	●	●

EXISTING CONDITIONS

The transformers in locations within the electrical distribution systems 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.

Clearview Regional HS - Transformer

Clearview Regional HS - 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 5A.1 Existing Transformer to replace

Building	Location	kVA	Qty
Clearview Regional High School	200 Wing Storage	225.0	1
Clearview Regional High School	Electric Rm next to 710	112.5	1
Clearview Regional High School	Mechanical Room 800 Zone	15.0	1
Clearview Regional High School	Electric Rm by 308	30.0	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.

ECM 6A Cogeneration CHP

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	Clearview Regional High School	Clearview Middle School
6A Cogeneration CHP	●	

EXISTING CONDITIONS

No Combined Heat and Power (i.e. cogeneration) units are currently located within the School District.

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 micro-CHP 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 6A.1 Proposed Cogeneration Units

Building	Manufacturer	Model	kW	Qty.
Clearview Regional 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	$3,542
2	$3,620
3	$3,700
4	$3,781
5	$3,864
6	$3,949
7	$4,036
8	$4,125
9	$4,216
10	$4,309
11	$4,403
12	$4,500
13	$4,599
14	$4,701
15	$4,804
16	$4,910
17	$5,018
18	$5,128
19	$5,241
Totals	**$82,447**

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 7A Solar PPA

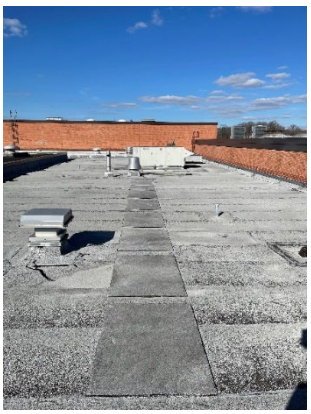
The key benefits of this ECM include:

- **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 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	Clearview Regional High School	Clearview Middle School
7A Solar PPA RFP and Removal	●	●

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

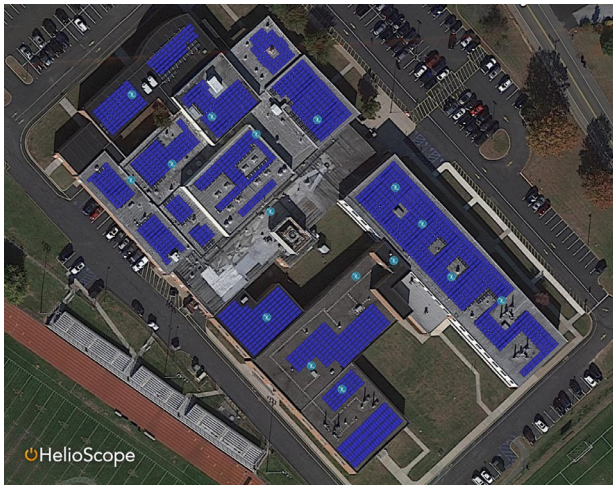


Clearview Regional HS – Potential Roof for Solar

Clearview MS – Existing Solar

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



Potential Rooftop Solar PPA at Clearview MS

Potential Rooftop Solar PPA at Clearview HS

Honeywell proposes to remove and dispose of the existing solar PV system and install a new solar PPA system at the potential buildings listed in the chart below.

Table 7A.1 Existing Solar PPA System to be Removed

Building	Type	kW DC	kWh AC Generated
Clearview Middle School	Solar PPA	220	Remove
Total		**220**	

Table 7A.2 Proposed Solar PPA System

Building	Type	kW DC	kWh AC Generated
Clearview Regional High School	Solar PPA	350.0	486,420
Clearview Middle School	Solar PPA	400.0	555,909
Total		**750.0**	**1,042,329**

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 7B Solar PV - IRA

The key benefits of this ECM include:

- **Reduced utility costs.**
- **Additional savings** from solar can provide the District 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.

ECM Description	Clearview Regional High School	Clearview Middle School
7B Solar PV - IRA	●	●

ECM OVERVIEW

Similar to Solar PPA, another option is a self-owned solar project. Energy storage projects were previously ineligible for tax credits unless they were connected directly to solar power projects.

The Inflation Reduction Act removes these requirements and allows energy storage projects to receive the same 30% tax credit, even if they are stand-alone facilities. Batteries connected to a solar power project will continue to qualify for the credit, even if they are no longer being charged by solar power. Solar power projects eligible for the full 30% tax credit can increase their tax credit by an additional 10% – to 40% in total – by purchasing domestically produced hardware. Per the document, 100% of steel and iron must be US manufactured in the United States. For manufactured goods – like solar panels, inverters, and electrical gear – the goods must initially be 40% US manufactured, though this percentage will increase in the future.

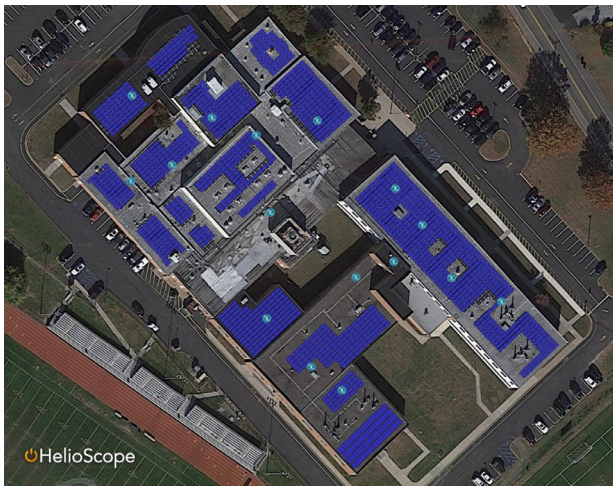
Historically, the federal solar tax credit has only been available to for-profit businesses that pay taxes. Because of this, solar ownership has been less viable for tax-exempt organizations, and power purchase agreements have been the only real option.

Thanks to the Inflation Reduction Act, tax-exempt organizations can now receive a direct payment worth 30% of their solar installation costs, making solar installation and ownership a more viable option for public schools, government buildings, and non-profit organizations.

Honeywell will evaluate the two methods of Solar Procurement for the District to further assess the feasibility of a solar photovoltaic system on District owned roofs to generate on-site renewable electricity.

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



Potential Rooftop Solar Array at Clearview MS

Potential Rooftop Solar Array at Clearview HS

Honeywell proposes to remove and dispose of the existing solar PV system and install a new solar PV system at the potential buildings listed in the chart below.

Table 7B.1 Existing Solar PPA System to be Removed

Building	Type	kW DC	kWh AC Generated
Clearview Middle School	Solar PPA	220	N/A
Total		**220**	

Table 7B.2 Potential Solar PV System

Building	kW DC	kWh AC Generated
Clearview Regional High School	350.0	486,420
Clearview Middle School	400.0	555,909
Total	**750.0**	**1,042,329**

ENERGY SAVINGS METHODOLOGY AND RESULTS

Savings are based on kWh generated by the solar systems.

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 7C Replace Solar Inverters

The key benefits of this ECM include:

- **Reduced utility costs.**
- **Educational asset** to provide additional tools for teachers to engage students on sustainability and the environment.
- **Lower upfront costs** than replacing the whole solar system.

ECM Description	Clearview Regional High School	Clearview Middle School
7C Replace Solar Inverters	●	●

ECM OVERVIEW

To ensure a solar system is working properly, both the solar panels and the inverters must be working at optimum condition. Solar panels are usually more reliable and long-lasting as they are made to expose to the outside and sustain inclement weather. They could last for 25 years or more. On the other hand, inverters are more complex electronic machines and have a shorter lifespan of about 10-15 years. As a result, inverters will need to be replaced at some point during the productive period of solar power system. A drop in electricity production could be a sign for inverter failure.

Clearview MS - Solar Inverter

Clearview MS - Existing Solar Arrays

EXISTING CONDITIONS

There is a 220-kW roof-mount solar system at Clearview Middle School installed in 2010. The system is not working properly and not producing electricity as expected.

Table 7C.1 Existing Solar PV System

Building	kW DC	Potential kWh AC Generated with Inverter Replacements
Clearview Middle School	220	305,750

PROPOSED SOLUTION

Honeywell proposes to replace the old solar inverters at Clearview Middle School. This will allow the current solar system to function and produce electricity properly.

ENERGY SAVINGS METHODOLOGY AND RESULTS

Savings are based on kWh generated by the solar systems.

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 7D Solar PPA RFP Hybrid

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 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.

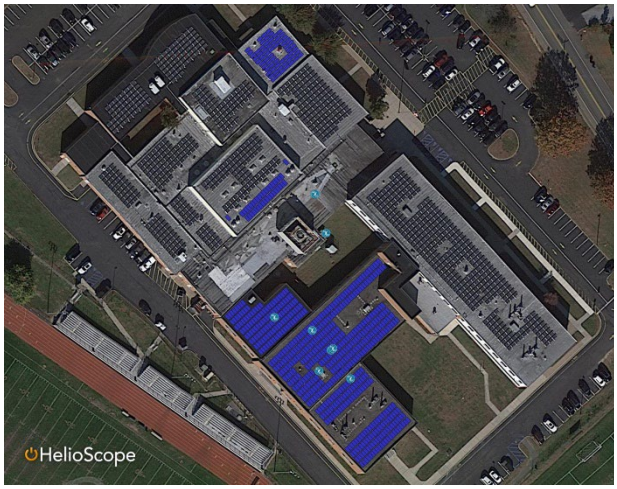
ECM Description	Clearview Regional High School	Clearview Middle School
7D Solar PPA RFP Hybrid	●	●

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.

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



Potential Rooftop Solar PPA at Clearview MS

Potential Rooftop Solar PPA at Clearview HS

Honeywell proposes to replace the old solar inverters at Clearview Middle School. This will allow the existing solar system to function and produce electricity properly. Honeywell also proposes to expand the renewable power capacity through solar PPA.

Table 7D.1 Existing Solar PV System for Inverter Replacements

Building	kW DC	Potential kWh AC Generated with Inverter Replacements
Clearview Middle School	220	305,750

Table 7D.2 Proposed Solar PPA System

Building	Type	kW DC	kWh AC Generated
Clearview Regional High School	Solar PPA	350.0	486,420
Clearview Middle School	Solar PPA	400.0	555,909
Total		**750.0**	**1,042,329**

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 Energy Education

The key benefits of this ECM include:

Energy education through instructional opportunities during the Energy Savings Plan development and after ESIP project implementation.

Energy conservation by encouraging energy efficiency among teachers, students, and staff.

ECM Description	Clearview Regional High School	Clearview Middle School
8A Energy Education	●	●

ECM OVERVIEW

Putting Energy into Education and the Community

Honeywell offers to enhance the District's capability to provide comprehensive energy education to a select portion of its students. The goal of this ECM is to enable a realistic student understanding of the scientific, economic and environmental impacts of energy through the National Energy Education Development (NEED) Project, a 501(c)(3) nonprofit education association.

The NEED Project includes innovative educational materials, teacher and resident training programs, evaluation, and recognition. NEED materials and training conferences are designed to provide objective comprehensive information about energy sources, production, and consumption in addition to their impact on the environment, economy, and society. The program emphasizes the development of critical thinking and problem-solving skills using inquiry activities that encourage students to consider the trade-offs inherent in energy decisions.

Existing NEED curriculum materials are reviewed annually by energy advisors and teachers alike. NEED's Teacher Advisory Board and state NEED Teacher Advisory Boards review the materials for objectivity, applicability and content. NEED materials are currently divided into four levels: Primary K-2, Elementary 3-5, Intermediate 6-8, and Secondary 9-12. NEED encourages teachers to review the materials to be certain the materials they request are at the appropriate reading level for their residents. All materials are easily reproducible and carry waivers for reproduction for classroom use. All materials are updated for data each year – always providing educators the most recently available data collected by the Energy Information Administration.

NEED has over 130 teacher and resident guides for teaching the science of energy, sources of energy, electricity and transportation, and efficiency and conservation. The proposed program will include NEED's hands-on kits including:

Curriculum

Curriculum Packet – Each workshop attended will receive a NEED curriculum packet, estimated forty (40) workshop attendees. The NEED basic curriculum packet is provided to educators attending one day training events. This packet contains a planning guide, copies of the Energy Info books and select curriculum pieces for teachers to implement in their classroom. For the 2021-2022 school year, the packet includes new lessons on energy storage and energy careers as well as a sampling of creative arts connections. Feedback from workshop attendees consistently identifies this packet as their "go to" for energy lessons when returning to the classroom.

Energy Efficiency & Conservation Kits (Elementary, Intermediate, Secondary) – Energy Efficiency & Conservation twenty (20) kits will be provided to each teacher/school that attends the workshop. After reviewing the materials, teachers will be able to choose the level of kit that best suits their residents' needs. These kits include tools for measuring school energy use at the appropriate grade levels – residents perform school energy audits and monitoring activities to assist in the reduction of school energy use and preparation of a school energy management plan. The kits come with one (1) Teacher Guide and a class-set of thirty (30) Resident Guides and the materials necessary to conduct the activities with multiple classes.

Science of Energy – One (1) Science of Energy kits will be provided to each District school that participates in the workshop. This curriculum assists teachers to teach specific energy standards in the science education standards and make the connection between those standards and the energy we use today. The unit provides background information and hands-on experiments to explore the different forms of energy and how energy is transformed from one form to another. The Science of Energy kit includes teacher guides written at three levels – Elementary, Intermediate, and Secondary as well as the materials necessary to conduct the activities.

Training

All training programs will include certification of professional development hours for teachers to use for professional development requirements where allowed by the state. It should be noted that each of the training programs include evaluation.

Energy Efficiency Teacher Workshops – This one-day workshop for forty (40) District educators provides background information and the opportunity to walk-through classroom activities with an experienced facilitator. The workshop will cover curriculum materials and resources focused on energy efficiency and electricity. NEED recommends scheduling training on previously planned professional development days to minimize training costs. Workshops will be held at District facilities. If space/time is unavailable during professional development days, workshops can also be held on Saturdays, providing stipends to attending teachers. Continental breakfast and lunch are included as well.

NEED will fully implement the workshops. NEED staff will work with the District and Honeywell to establish a workshop date, engage with District personnel on workshop location and logistics, secure catering, run online registration, and provide recruitment materials. A NEED trainer will facilitate the workshops and NEED will provide Honeywell with evaluation data.

ECM 9A Plumbing System Upgrades

The key benefits of this ECM include:

- **Reduction in water consumption** from replacing the existing plumbing fixtures to lower water flow rates.
- **Improved performance** of existing systems by optimizing equipment.
- **Reduction in maintenance costs** from new low flow aerators.

ECM Description	Clearview Regional High School	Clearview Middle School
9A Plumbing System Upgrades	●	●

ECM OVERVIEW

Honeywell will seek to increase the operational performance of the district's water systems with the minimal water required to provide optimal performance.

EXISTING CONDITIONS

Clearview Regional High School

Bathroom fixtures are generally in good condition and perform well. Fixtures seem to have low to adequate pressure based on visual observation of the flush performance. There is a mix of new and late model plumbing fixtures of various brands. There is a mix of manually operated, battery operated and hard-wired sensor operated flush valves on both toilets and urinals.

Existing plumbing fixtures include:

- Toilets – Eighty-one (81) toilets are located throughout the school. Forty-eight (48) toilets have sensor activated flush valves. These are a mix of hard-wired and valve body mount battery operated sensors. Nineteen (19) toilets require ADA height retrofits with a street 90 installed to raise the valve height to meet vacuum breaker code requirements. Six (6) non-ADA stalls will require a street 90 for code compliant valve installation. Four (4) ADA stall toilets are wall mounted and will require a 4" lift seat installed to accommodate 16 1/8" minimum rim height for ADA toilet bowl. The toilets have an average flow rate of 2.42 gpf.
- Urinals – Twenty-eight (28) urinals are located throughout the school. Seventeen (17) urinals have sensor activated flush valves. These are a mix of hard-wired and valve body mount battery operated sensors. One (1) urinal will require a street 90 installed to raise valve height to meet vacuum breaker code requirements. Twenty-seven (27) urinals are washout wall hung type with ¾" spud connections. One (1) urinal is washout wall hung type with 1-1/4" spud connection. The urinals have an average flow rate of 1.09 gpf.
- Faucets – Two hundred forty-four (244) faucets are located throughout the school. Seventy-seven (77) faucets are low flow, slop sinks or labs sinks with barbed hose adaptors. Twenty-two (22) common area bathroom faucets, two (2) kitchen faucets, five (5) classroom faucets and one-hundred thirty-seven (137) science lab and exam room faucets can be retrofitted with end use flow adaptors. One (1) kitchen pre-rinse sprayer has a 4.5gpm spray nozzle attachment with stainless steel braided hose.

Clearview Regional Middle School

Bathroom fixtures are generally in good condition and perform well. Fixtures seem to have low to adequate pressure based on visual observation of the flush performance. There is a mix of new and late model plumbing fixtures of various brands. There is a mix of manually operated, battery operated and hard-wired sensor operated flush valves on both toilets and urinals.

Existing plumbing fixtures include:

- Toilets – Forty-six (46) toilets are located throughout the school. Thirty-six (36) toilets have sensor activated flush valves. These are a mix of hard-wired and valve body mount battery operated sensors. Ten (10) toilets require ADA height retrofit with a street 90 installed to raise the valve height to meet vacuum breaker code requirements. Two (2) non-ADA stalls will require a street 90 for code compliant valve installation. Two (2) toilets will require extension of 1" supply line for plumb valve installation. The toilets have an average flow rate of 2.5 gpf.
- Urinals – Nineteen (19) urinals are located throughout the school. Seventeen (17) urinals have sensor activated flush valves. These are a mix of hard-wired and valve body mount battery operated sensors. Seventeen (17) urinals are washout wall hung type with ¾" spud connections. The urinals have an average flow rate of 1.11 gpf.
- Faucets – One hundred and three (103) faucets are located throughout the school. Forty-three (43) faucets are low flow, slop sinks or labs sinks with barbed hose adaptors. Fifteen (15) common area bathroom faucets, seven (7) kitchen faucets, four (4) classroom faucets and thirty-three (33) science lab and exam room faucets can be retrofitted with end use flow adaptors. Three (3) kitchen common area faucets will be replaced with new single stem faucets and below deck mixing valves. One (1) kitchen pre-rinse sprayer has a 4.5gpm spray nozzle attachment with stainless steel braided hose.

Existing Water Faucet

Existing Toilet

PROPOSED SOLUTION

Honeywell proposes to upgrade existing faucets, toilets and urinals at both schools with low-flow devices to reduce water consumption.

Commercial Faucet Retrofits

Faucets shall be retrofitted with new Neoperl (or equivalent) tamper-resistant end-use faucet restrictors.

Faucets that cannot be retrofit with end-use adaptors will be replaced with new American Standard (or equivalent) single stem faucet with above deck mixing valve and external 10-year battery pack.

Pre-rinse sprayers will be retrofitted with new high-efficiency spray nozzles with new 36” stainless steel braided hose.

Commercial Toilet Retrofits w/ Sensor Flush Valve

Commercial flush valve toilets will be retrofitted with new American Standard (or equivalent) commercial toilets and battery-operated piston activated sensor flush valves. Toilets shall be installed with new Bemis (or equivalent) commercial open front plastic seats (white color), less cover.

Commercial Urinal Retrofits w/ Sensor Flush Valve

Commercial flush valve urinals shall be retrofitted with new American Standard (or equivalent) battery-operated piston activated sensor flush valves. Urinal china shall remain intact.

Toilet Senosr Flush Valve

Faucet Actuator

Table 9A.1 Plumbing Systems Upgrades

Retrofit Quantity by Building	Toilets Battery Sensor Flush Valve	Urinals Battery Sensor Flush Valve	Faucet
Clearview regional high school	81	28	167
Clearview regional middle school	46	19	60
Total	**127**	**47**	**227**

CHANGES IN INFRASTRUCTURE

New low-flow water fixture components will be installed as part of this ECM.

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	Water savings will result from lower water flows through new fixtures.
Waste Production	Any discarded components will be disposed of properly.
Environmental Regulations	No environmental impact is expected.

ECM 9B Pump Skid Upgrade

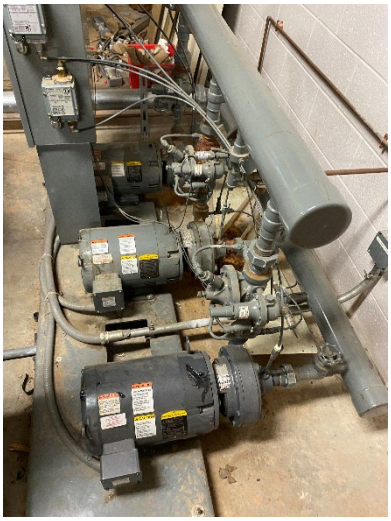
The key benefits of this ECM include:

- **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	Clearview Regional High School	Clearview Middle School
9B Pump Skid Upgrade	●	

EXISTING CONDITIONS

Domestic water is pumped via a set of water booster pumps. The pump skids are old, and the pump motors are standard efficiency motors. Modern water booster pump systems utilize variable frequency drives and advanced controls in order to vary flow based on the facility water demand.



Clearview Regional HS – Domestic Water Pump Skid

Clearview Regional HS – Domestic Water Pump Skid

EXISTING WATER PUMP SKID TO BE UPGRADE

Table 9B.1 Existing Water Booster Pump Skid

Building	Manufacturer	Model	Pump Qty	GPM	Motor HP
Clearview Regional HS	Technologic	/	3	100	10

PROPOSED SOLUTION

Table 9B.2 New Water Booster Pump Skid

Building	Manufacturer	Model	Pump Qty	GPM	Motor HP
Clearview Regional HS	Quantumflo	PRODIGYE2-5HP	3	140	5

Water Booster Pump Skid Variable frequency drives (VFDs) allow motors to run at specified speeds rather than just on or off while allowing systems to more accurately move water as required as dictated by demand. Honeywell recommends this ECM due to the significant savings potential given the relationship between water treatment demand and motor speed.

This ECM replaces the existing Water Booster Pump Skid set with a new variable flow pump set. The new pump set includes new pumps, premium efficiency motors, variable frequency drives and controls.

ENERGY SAVINGS METHODOLOGY AND RESULTS

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

CHANGES IN INFRASTRUCTURE

New pump skids with high efficiency motors and variable frequency drives will be installed in place of the old pumping skids. No expansion of the facilities will be necessary.

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 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 byproducts. Old motors shall be disposed of in accordance with all federal, state and local codes.
Environmental Regulations	No environmental impact is expected.

ECM 10A Electric Vehicle Charging Stations

The key benefits of this ECM include:

- **Increased Sustainability** from encouraging the use of pollution-free transportation.
- **Tangible Learning Experience** by integrating educational materials with on-site student experience

ECM Description	Clearview Regional High School	Clearview Middle School
10A Electric Vehicle Charging Stations	●	●

ECM OVERVIEW

Honeywell will seek to increase the availability of eco-friendly transportation options for staff and parents by providing Electric Vehicle charging stations at each of your schools.

EXISTING CONDITIONS

There are currently no EV Charging Stations located at the District facilities.

Sample Level 2 EV Chargers

Sample Level 2 EV Chargers

PROPOSED SOLUTION

Honeywell proposes to install multiple Level 2 EV Chargers at the locations outlined below. These chargers are capable of increasing the battery charge of electric vehicles by up to 25 miles (of range) per hour. With new state-wide incentives available towards the installation of up to 6 chargers per site, this can be a cost-effective way to integrate the future of transportation into your District's buildings. Honeywell will work with the District to determine the desired quantity and location of chargers at each facility.

Table 10A.1 Proposed EV Charging Stations

Location	Make	Model	Qty
Clearview Regional High School	ChargePointe	CT4021	2
Clearview Middle School	ChargePointe	CT4021	2
Total			**4**

CHANGES IN INFRASTRUCTURE

New EV Chargers will be installed as part of this measure.

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	An increase in electrical use may occur due to this ECM, offset by revenue generated from charging stations.
Waste Production	Any discarded components will be disposed of properly.
Environmental Regulations	Reduced pollution from staff and parent vehicles is expected.

ECM 11A Power Factor Correction

The key benefits of this ECM include:

- **Reduced utility costs** by improving Power factor.
- **Increase in efficiency** of system and devices.

ECM Description	Clearview Regional High School	Clearview Middle School
11A Power Factor Correction	▪	▪

ECM OVERVIEW

Low power factor is expensive and inefficient. Many utility companies charge an additional fee if the power factor is less than 0.95. Low power factor also reduces the electrical system's distribution capacity by increasing current flow and causing voltage drops.

Power Factor is defined as Working (real) power divided by Apparent Power. Low power factor is caused by inductive loads (such as transformers, electric motors, and high-intensity discharge lighting), which are a major portion of the power consumed in commercial complexes such as schools. Unlike resistive loads that create heat by consuming kilowatts, inductive loads require the current to create a magnetic field, and the magnetic field produces the desired work. The total or apparent power required by an inductive device is a composite of the following:

- Real power (measured in kilowatts, kW)
- Reactive power, the nonworking power caused by the magnetizing current, required to operate the device (Measured in kilovars, kVAR)

Reactive power required by inductive loads increases the amount of apparent power (measured in kilovoltamps, kVA) in your distribution system. The increase in reactive and apparent power causes the power factor to decrease.

Benefits of improving your power factor include decreasing the districts utility bill. Low power factor requires an increase in the electric utility's generation and transmission capacity to handle the reactive power component caused by inductive loads. Utilities may charge a penalty fee to customers with power factors less than 0.9.

EXISTING CONDITIONS

Clearview Regional High School is currently under penalty of additional utility fee for a low power factor of about 0.83. The Middle School has a lower power factor of about 0.8 and also high Total harmonic distortion (THD) readings.

Switchgear at Clearview Regional HS

Switchgear at Clearview MS

PROPOSED SOLUTION

AUTOVAR Automatic Power Factor Correction Capacitor Systems

Clearview Middle School

1. A 200 Autovar Powerhouse system is proposed to install at the Middle School. The Autovar system conditions 50 kVAr at a time, ramping up or down as the chiller starts shutting down in shoulder seasons. This will protect all other equipment operating under load, and we won't have leading PF under load which could have a negative impact.

2. Eaton Harmonic Filters are specified into the Autovar solution.

Clearview Regional High School

1. A 300 Autovar Powerhouse system is proposed to install at the High School because of higher loads and electrical use.

ENERGY SAVINGS METHODOLOGY AND RESULTS

The savings approach is based upon reducing the increase in power factor or decrease in reactive power. The savings are generally calculated as:

Power Factor	*= Real Power (kW) /Apparent power (kVA)*
Apparent Power	*= SQRT(Real Power^2 + Reactive Power^2)*
Reactive Power	*= kVAR (non-working power caused by magnetizing current*

CHANGES IN INFRASTRUCTURE

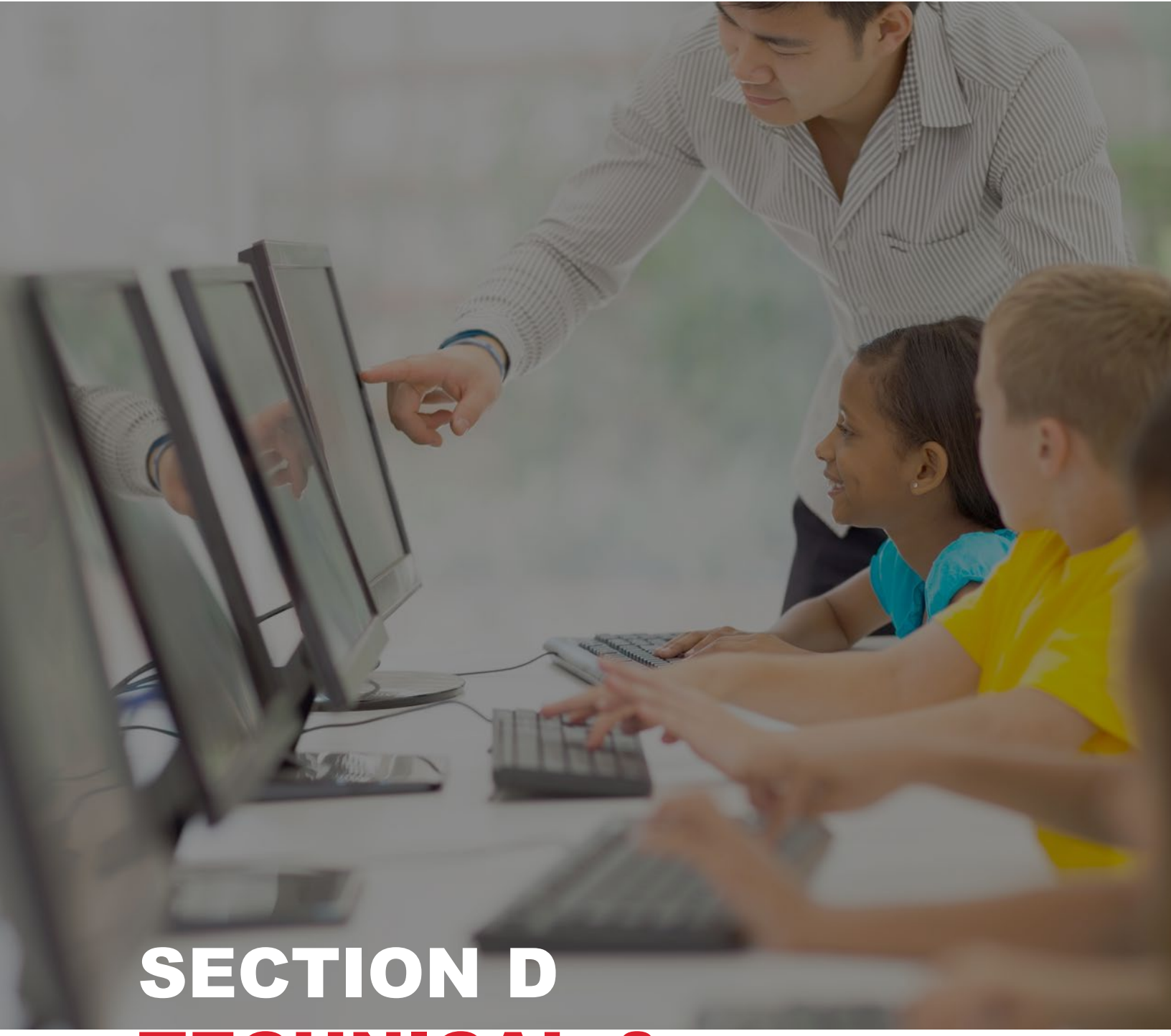
KEC Units will be added to the main power distribution panels.

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	None.
Environmental Regulations	No environmental impact is expected.



SECTION D
TECHNICAL & FINANCIAL SUMMARY

Section D. Technical & Financial Summary

1. Sample ESIP Project

Sample ESIP Project	
Value of Project	$4,724,594
Term of Repayment	19
Projected Savings Over Term	$7,471,286
Projected NJ Rebates & Incentives	$145,486
Projected Interest Rate	4.00%

2. Sample Project Technical and Financial Summary Documents

Form II: Energy Conservation Measures (ECMs) Summary Form

FORM II
ESCO's ENERGY SAVINGS PLAN (ESP):
ENERGY CONSERVATION MEASURES (ECMs) SUMMARY FORM
CLEARVIEW REGIONAL SCHOOL DISTRICT
ENERGY SAVING IMPROVEMENT PROGRAM

ESCO Name: **Honeywell International**

Proposed Preliminary Energy Savings Plan: ECMs (Base Project)	Estimated Installed Hard Costs (1) $	Estimated Annual Savings $	Estimated Simple Payback (years)
1A LED Lighting Upgrades	$ 1,040,814	$ 158,125	6.58
1C Vending Misers	$ 6,782	$ 603	11.24
2A Boiler Replacements	$ 1,133,211	$ 42,142	26.89
2E Chiller Replacements	$ 724,617	$ 13,312	54.43
3A Building Management System Upgrades	$ 268,285	$ 64,015	4.19
4A Building Envelope Improvements	$ 186,757	$ 17,083	10.93
6A Cogeneration CHP	$ 124,357	$ 2,988	41.61
7A Solar PPA RFP	$ 24,780	$ 31,926	0.78
8A Energy Education	$ -	$ -	-
11A Power Factor Correction	$ 398,250	$ 38,468	10.35
Add additional lines as needed* **Project Summary:**	$ 3,907,853	$ 368,663	10.60

Optional ECMs Considered, but not included with base project at this time	Estimated Installed Hard Costs (1) $	Estimated Annual Savings $	Estimated Simple Payback (years)
1B De-Stratification Fans w/ UV Disinfection	$ 176,964	$ 4,714	37.54
2B Domestic Water Heater Replacements	$ 742,203	$ 1,729	429.16
2C Rooftop Unit Replacements	$ 179,492	$ 3,974	45.16
2D Replace Split Systems	$ 1,371,481	$ 24,120	56.86
2F Kitchen Hood Efficiency Improvements	$ 74,568	$ 3,414	21.84
2G Premium Efficiency Motors, Pumps and VFDs	$ 213,978	$ 4,053	52.80
2H Walk In Compressor Controls	$ 14,750	$ 738	19.99
3B BMS Dashboard - Energy Optimization	$ 23,600	$ 8,253	2.86
4B Roof Upgrade	$ 1,729,585	$ 8,040	215.12
5A Transformer Replacements	$ 112,944	$ 3,492	32.34
7B Solar PV - IRA	$ 4,042,377	$ 426,915	9.47
7C Replace Solar Inverters	$ 46,672	$ 31,318	1.49
7D Solar PPA RFP Hybrid	$ 301,027	$ 126,098	2.39
9A Plumbing System Upgrades	$ 351,993	$ 11,104	31.70
9B Pump Skid Upgrades	$ 82,600	$ 8,892	9.29
10A Electric Vehicle Charging Stations	$ 70,800	$ (3,650)	(19.40)

Proposed Energy Related Capital Improvements	Supporting ECM	Estimated Cost $	Percentage of Total Project Cost (Not to exceed 15%)

Add additional lines as needed*

(1) The total value of Hard Costs is defined in accordance with standard AIA definitions that include: Labor Costs, Subcontractor Costs, Cost of Materials & Equipment, Temporary Facilities and Related Items, and Miscellaneous Costs such as Permits, Bonds Taxes, Insurance, Mark-ups, Overhead, Profit, etc.

Form III: Projected Annual Energy Savings Data Form

FORM III
ESCO's ENERGY SAVINGS PLAN (ESP)
PROJECTED ANNUAL ENERGY SAVINGS DATA FORM
CLEARVIEW REGIONAL SCHOOL DISTRICT
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)	14,487	$202,612	5,744	$80,244
Electric Energy (KWH)	3,632,670	$619,925	1,654,295	$182,923
Natural Gas (therms)	176,733	$219,151	48,559	$55,121
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	1,820			
SO2	1,108			
CO2	1,652,840			

(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: Projected Annual Energy Savings Data Form in MMBTUs

FORM IV

ESCO's ENERGY SAVINGS PLAN (ESP):
PROJECTED ANNUAL ENERGY SAVINGS DATA FORM IN MMBTUs
CLEARVIEW REGIONAL SCHOOL DISTRICT
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)	12,395	5,644	
Natural Gas (MMBTUs)	17,673	4,856	
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 V: ESCOs Proposed Final Project Cost Form

FORM V

ESCO's ENERGY SAVINGS PLAN (ESP):
ESCOs PROPOSED FINAL PROJECT COST FORM FOR BASE CASE PROJECT
CLEARVIEW REGIONAL SCHOOL DISTRICT
ENERGY SAVING IMPROVEMENT PROGRAM

ESCO Name: **HONEYWELL INTERNATIONAL**

PROPOSED CONSTRUCTION FEES

Fee Category	Fees [1] Dollar ($) Value	Percentage of Hard Costs
Estimated Value of Hard Costs [2]:	$3,907,853	
Project Service Fees		
Investment Grade Energy Audit	$152,406	3.90%
Design Engineering Fees	$0	0.00%
Construction Management & Project Administration	$234,471	6.00%
System Commissioning	$78,157	2.00%
Equipment Initial Training Fees	$19,539	0.50%
ESCO Overhead	$234,471	6.00%
ESCO Profit	$97,696	2.50%
Project Service Fees Sub Total	$484,574	12.40%
TOTAL FINANCED PROJECT COSTS:	$4,724,594	20.90%
ESCO Termination Fee (To be paid only if the Board decides not to proceed beyond the ESP)	$0.00	0.00%

PROPOSED ANNUAL SERVICE FEES

First Year Annual Service Fees	Fees [1] Dollar ($) Value	Percentage of Hard Costs
SAVINGS GUARANTEE (OPTION)	$0	0.00%
Measurement and Verification (Associated w/ Savings Guarantee Option)	$25,000	Flat Fee
ENERGY STAR™ Services (optional)	Included	0.00%
Post Construction Services (If applicable)	N/A	-
Performance Monitoring	Included	-
On-going Training Services	N/A	-
Verification Reports	Included	-
TOTAL FIRST YEAR ANNUAL SERVICES	$25,000	Flat Fee

NOTES:
(1) Fees should include all mark-ups, overhead, and profit. Figures stated as a range will NOT be accepted.
(2) The total value of Hard Costs is defined in accordance with standard AIA definitions that include:

Labor Costs, Subcontractor Costs, Cost of Materials and Equipment, Temporary Facilities and Related Items, and Miscellaneous Costs such as Permits, Bonds Taxes, Insurance, Mark-ups, Overhead and Profit, etc.
ESCO's proposed interest rate at the time of submission: 5% TO BE USED BY ALLRESPONDING ESCOs FOR

*Annual Service only applies if customer accepts energy guarantee.

Honeywell

Form VI: ESCOs Preliminary Annual Cash Flow Analysis Form

FORM VI

ESCO's PRELIMINARY ENERGY SAVINGS PLAN (ESP):
ESCO's PRELIMINARY ANNUAL CASH FLOW ANALYSIS FORM
CLEARVIEW REGIONAL SCHOOL DISTRICT
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 to inflate at: **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 V Project Cost [3]:	$	4,724,594
Arhitect /Engineer:	$	273,550
Commissioning:	$	117,236
Lease Issuance Fees:	$	35,000
Total Financed Amount [1]:	**$**	**5,150,379**

Interest Rate to Be Used for Proposal Purpos **4.00%**

Year	Annual Energy Savings	Solar Savings	Annual Operational Savings	Energy Rebates/Incentives [5]		Total Annual Savings	Annual Project Costs	Board Costs	Annual Service Costs [4]	Net Cash-Flow to Client	Cumulative Cash Flow
				Value	Utility						
Installation						$ -	$ -	$ -	$ -	$ -	$ -
1 [6]	$ 372,271	$ 31,926	$ 50,375	$ 145,486	ACE / SJGas	$ 600,058	$ (591,258)	$ (616,258)	$ (25,000)	$ 8,800	$ 8,800
2	$ 292,773	$ 32,465	$ 50,375	$ -		$ 375,613	$ (366,813)	$ (366,813)	$ -	$ 8,800	$ 17,600
3	$ 299,326	$ 33,013	$ 18,375	$ -		$ 350,715	$ (341,915)	$ (341,915)	$ -	$ 8,800	$ 26,400
4	$ 306,027	$ 33,571	$ 18,375	$ -		$ 357,973	$ (349,173)	$ (349,173)	$ -	$ 8,800	$ 35,200
5	$ 312,878	$ 34,138	$ 18,375			$ 365,391	$ (356,591)	$ (356,591)	$ -	$ 8,800	$ 44,000
6	$ 319,883	$ 34,715				$ 354,597	$ (345,797)	$ (345,797)	$ -	$ 8,800	$ 52,800
7	$ 327,044	$ 35,301				$ 362,345	$ (353,545)	$ (353,545)	$ -	$ 8,800	$ 61,600
8	$ 334,366	$ 35,897				$ 370,264	$ (361,464)	$ (361,464)	$ -	$ 8,800	$ 70,400
9	$ 341,852	$ 36,504				$ 378,356	$ (369,556)	$ (369,556)	$ -	$ 8,800	$ 79,200
10	$ 349,507	$ 37,120				$ 386,627	$ (377,827)	$ (377,827)	$ -	$ 8,800	$ 88,000
11	$ 357,332	$ 37,747				$ 395,079	$ (386,279)	$ (386,279)	$ -	$ 8,800	$ 96,800
12	$ 365,333	$ 38,385				$ 403,718	$ (394,918)	$ (394,918)	$ -	$ 8,800	$ 105,600
13	$ 373,514	$ 39,033				$ 412,547	$ (403,747)	$ (403,747)	$ -	$ 8,800	$ 114,400
14	$ 381,877	$ 39,692				$ 421,570	$ (412,770)	$ (412,770)	$ -	$ 8,800	$ 123,200
15	$ 390,429	$ 40,363				$ 430,791	$ (421,991)	$ (421,991)	$ -	$ 8,800	$ 132,000
16	$ 399,172					$ 399,172	$ (390,372)	$ (390,372)	$ -	$ 8,800	$ 140,800
17	$ 408,111					$ 408,111	$ (399,311)	$ (399,311)	$ -	$ 8,800	$ 149,600
18	$ 417,251					$ 417,251	$ (408,451)	$ (408,451)	$ -	$ 8,800	$ 158,400
19	$ 426,595					$ 426,595	$ (418,094)	$ (418,094)	$ -	$ 8,501	$ 166,901
Totals	$ 6,775,541	$ 539,870	$ 155,875	$ 145,486		$ 7,616,772	$ (7,449,871)	$ (7,474,871)	$ (25,000)	$ 166,901	$ 166,901

NOTES:

(1) Includes: Hard costs and project service fees defined in ESCO's PROPOSED "FORM V"

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

(3) This figure should equal the value indicated on the ESCO's PROPOSED "FORM V". DO NOT include in the Financed Project Costs.

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

(5) As of July 1, 2021, all of former NJ Clean Energy Program incentive programs transitioned over to the investor-owned gas and electric utility companies. Subsequently, the BPU is requiring that all ESIP projects consult with the DCA and follow all DCA guidance regarding the procurement of all subcontractors.

(6) Installation savings are included in year 1 as per BPU guideline.

Building-by-Building Simple Payback Summary (Hard Costs Only)

A simple payback summary broken down by building by ECM has been provided for the Clearview Regional School District use in reviewing available scope combinations and options.

Building & ECM	kWh Savings ($)	kW Savings ($)	Natural Gas Savings ($)	Water Savings ($)	Annual Energy Cost Savings ($)	Annual Operational Savings ($)	Net Cost ($)	Simple Payback
Clearview Middle School	**$ 69,340**	**$ 36,453**	**$ 5,875**	**$ -**	**$ 136,245**	**$ 24,577**	**$ 1,431,515**	**10.5**
1A LED Lighting Upgrades	$ 29,398	$ 14,485	$ (1,897)	$ -	$ 49,063	$ 7,077	$ 355,373	7.2
3A Building Management System Upgrades	$ 1,145	$ -	$ 2,476	$ -	$ 13,621	$ 10,000	$ 140,326	10.3
4A Building Envelope Improvements	$ 1,058	$ -	$ 5,296	$ -	$ 6,355	$ -	$ 66,649	10.5
2E Chiller Replacements	$ 5,812	$ -	$ -	$ -	$ 13,312	$ 7,500	$ 724,617	54.4
7A Solar PPA RFP	$ 31,926	$ -	$ -	$ -	$ 31,926	$ -	$ 11,800	0.4
11A Power Factor Correction	$ -	$ 21,968	$ -	$ -	$ 21,968	$ -	$ 132,750	6.0
Clearview Regional High School	**$ 113,583**	**$ 43,791**	**$ 49,246**	**$ -**	**$ 232,418**	**$ 25,798**	**$ 2,476,338**	**10.7**
1A LED Lighting Upgrades	$ 76,176	$ 26,602	$ (5,013)	$ -	$ 109,062	$ 11,298	$ 685,441	6.3
2A Boiler Replacements	$ -	$ -	$ 37,642	$ -	$ 42,142	$ 4,500	$ 1,133,211	26.9
3A Building Management System Upgrades	$ 31,996	$ -	$ 8,398	$ -	$ 50,394	$ 10,000	$ 127,959	2.5
4A Building Envelope Improvements	$ 1,955	$ -	$ 8,773	$ -	$ 10,728	$ -	$ 120,109	11.2
1C Vending Misers	$ 603	$ -	$ -	$ -	$ 603	$ -	$ 6,782	11.2
6A Cogeneration CHP	$ 2,853	$ 689	$ (554)	$ -	$ 2,988	$ -	$ 124,357	41.6
7A Solar PPA RFP	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,980	-
11A Power Factor Correction	$ -	$ 16,500	$ -	$ -	$ 16,500	$ -	$ 265,500	16.1
Project Total	**$ 182,923**	**$ 80,244**	**$ 55,121**	**$ -**	**$ 368,663**	**$ 50,375**	**$ 3,907,853**	**10.6**

3. Utility and Other Rebates & Incentives

New Jersey Department of Clean Energy

In 2018, Governor Murphy signed into law the landmark legislation known as the Clean Energy Act. The law called for a significant overhaul of New Jersey's clean energy systems by building sustainable infrastructure in order to fight climate change and reduce carbon emissions, which will in turn create well-paying local jobs, grow the state's economy, and improve public health while ensuring a cleaner environment for current and future residents.

As part of this statewide undertaking, the Clean Energy Act required New Jersey's investor-owned gas and electric utility companies to reduce their customers' use of gas and electricity by set percentages over time. To help reach these targets, the New Jersey Board of Public Utilities approved a comprehensive suite of efficiency programs that would transition the state to some of the highest energy savings in the country.

These "next generation" energy efficiency programs feature new ways of managing and delivering programs historically administered by New Jersey's Clean Energy Program™ (NJCEP). While NJCEP will continue to offer some energy efficiency programs, all of the investor-owned gas and electric utility companies will now also offer complementary energy efficiency programs directly to their customers.

Incentives, Rebates and Grants Summary

Honeywell has a great deal of experience in applying for, and successfully securing, all available incentives, rebates and grants for our clients. We have been approved and allocated for over $9M of incentives on behalf of our New Jersey customers alone since the introduction of the Energy Savings Improvement Program legislation in 2009. The New Jersey programs employed included primarily the Office of Clean Energy's Direct Install, Prescriptive Rebate Program and Cogeneration Incentives as applicable. All of these programs are available through your local utility company. Through this ESIP program, Honeywell will coordinate all activities with achieving the highest rebate amount available to support the financials of the overall project

ENERGY STAR Portfolio Manager

Honeywell will also utilize the ENERGY STAR Program with Portfolio Manager, EPA's interactive tool that allows facility managers to track and evaluate energy and water consumption across all their buildings. The tool provides the opportunity to load in the characteristics and energy usage of your buildings and determine an energy performance benchmark score. You can then assess energy management goals over time, identify strategic opportunities for savings, and receive EPA recognition for superior energy performance.

Atlantic Electric Prescriptive and Custom Programs

The Atlantic Electric Prescriptive and Custom Incentive Program provides comprehensive energy efficiency services to municipalities, universities, schools, hospitals and other healthcare facilities, non-profit entities, and multi-family facilities.

By participating in the Programs, your organization can enjoy:

- Reduced energy and maintenance costs
- Project planning assistance
- Increased comfort

- Extended equipment life

Honeywell has determined that the Clearview Regional School District is eligible for $145,486 in estimated total incentives for the projects included in the Prescriptive Lighting, Prescriptive and Custom Measures (Chillers, Boilers and Building Envelope). Please refer to the tables on below for a breakdown of Clearview Regional School District incentive levels on a building-by-building basis for each type of incentive.

Rebates and Incentives

Location	Prescriptive Lighting	Prescriptive Measures	Custom Measures	Total Incentives
Clearview Regional High School	$39,488		$67,992	$107,480
Clearview Middle School	$19,691	$9,079	$9,235	$38,005
Totals	**$59,180**	**$9,079**	**$77,227**	**$145,486**

Total Rebates and Incentives

Year	Prescriptive Lighting	Prescriptive Rebates	Custom Measures	Total Incentives
Installation				
Year 1	$59,180	$9,079	$77,227	$145,486
Year 2				
Year 3				
Year 4				
Totals	**$59,180**	**$9,079**	**$77,227**	**$145,486**

4. Operational Savings

Summary of Total Operational Savings

Year	Lighting Operation Savings	Mechanical & Controls Maintenance Cost Savings	Total Operational Savings
Installation			
Year 1	$18,375	$32,000	**$50,375**
Year 2	$18,375	$32,000	**$50,375**
Year 3	$18,375		**$18,375**
Year 4	$18,375		**$18,375**
Year 5	$18,375		**$18,375**

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.

High School and Middle School Counts and Costs	Count	Avg. Unit Costs	Total	Average Failure Rate	Annual Operational Cost savings
Linear Tubes	12542	$1.00	$12,542.00	47.4%	$5,946.26
Linear Fixture Ballasts	4607	$4.00	$18,428.00	47.4%	$8,736.71
Metal Halide - Mercury Vapor	330	$5.00	$1,650.00	47.4%	$782.27
Metal Halide - Mercury Vapor Ballasts	330	$15.00	$4,950.00	47.4%	$2,346.80
Compact Fluorescent	211	$5.00	$1,055.00	47.4%	$500.18
Incandescent	132	$1.00	$132.00	47.6%	$62.79
				Total	**$18,375.00**

Mechanical & Controls Maintenance Cost Savings (2 Years)

Electrical, controls and mechanical equipment in the schools are old and are continuing to fail more and more often. The cost of emergency maintenance replacement is high. The total cost for a full replacement is budgeted from to be significant for the school's systems that need attention. For this ESIP Sample Project, we have assigned $32,000 for both schools as an operational maintenance cost savings.

The following schools have been included in this sample project:

School	Annual Maintenance Savings Allocation
Clearview Regional High School	$14,500
Clearview Middle School	$17,500
Total:	**$32,000**

The district agrees this is a conservative amount and could be much higher based on the budgets to update the electrical, controls and mechanical systems so they could return to a maintenance program vs a full replacement program each time an obsolete controller or system fails.

As an example, the district has been facing many power issues which have over the years caused electrical problems resulting in filed equipment. The district recently had a power failure which resulted in a large expense to fix and reset the chiller, this happens often to the district.

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 Clearview Regional 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 Clearview Regional 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 Clearview Regional School District. Payments are typically scheduled to commence after the construction is complete and acceptance of the project has been received by the District. Typically, payment terms are structured so there is no up-front capital expense to the Clearview Regional 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 doesn't 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

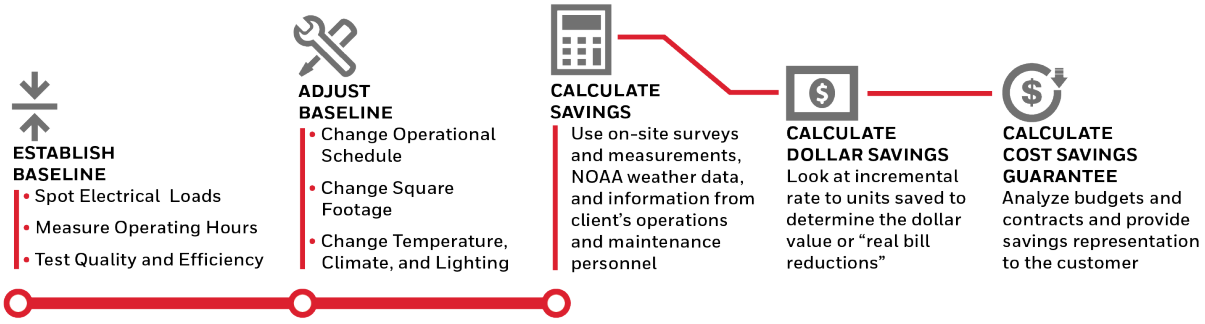
Section E. Measurement & Verification and Maintenance Plan

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 will calculate the baseline based on the systems and operating conditions as they currently exist. Honeywell finds baseline development 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 will be 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, Honeywell's auditors use the following equipment for their onsite measurements:

- Recording and instantaneous power and harmonic analyzers.
- Data loggers for pressures, temperatures, flow rates, humidity and CO2.
- Lighting level and recording profile/run-hour and occupancy meters.
- Multimeters, handheld kW meters.
- Combustion analyzers.
- Ultrasonic flow meters.
- 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 the Honeywell finds 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. Honeywell always reviews each and every project, in detail, for the anticipated savings and never hesitates to reduce the anticipated energy calculations where experience dictates necessary. The final result is a coupled project where the final savings are equal to or greater than anticipated.

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 and the Clearview Regional School District will establish the base rates that will act as "floor" rates in calculating the savings as agreed to by both parties.

2. Adjustment to Baseline Methodology

Honeywell's methodology0F 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 Clearview Regional School District requires and the needs of the Clearview Regional School 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 Honeywell installed ECMs. This creates the ability over the life of the contract to continue measuring only savings achieved by Honeywell and leaves the Clearview Regional 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:

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, Honeywell will 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.

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 and the Clearview Regional School District will establish 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.

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 and the Clearview Regional School District will establish 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.

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

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 District or “real bill reductions”. As noted in the RFP energy escalation rates will be established in accordance with New Jersey Board of Public Utility guidelines.

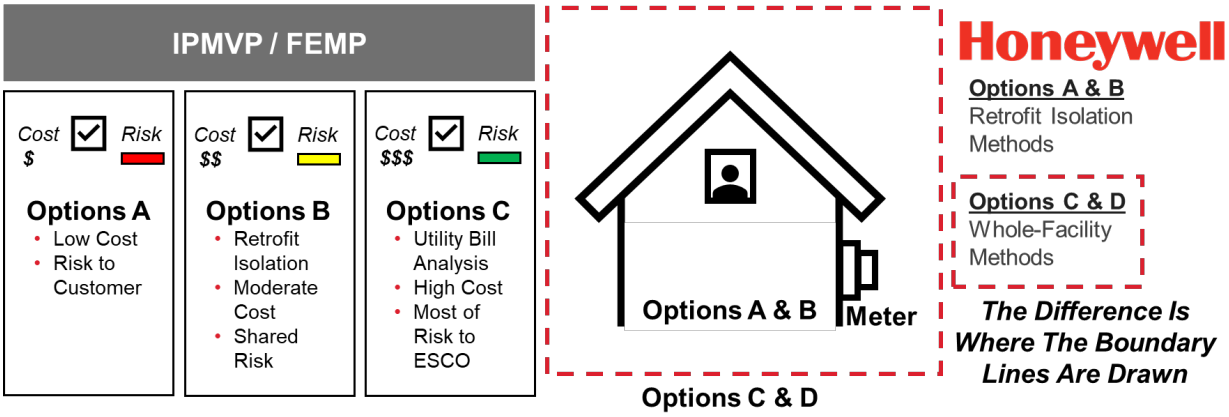
Based on this, Honeywell will review all utility bills (hourly data), tariffs, special contracts and commodity contracts to develop the incremental value (costs) of each utility.

The O&M savings is typically a function of existing the District’s budgets (labor & direct costs), maintenance contracts and operations (supplier) contracts. Honeywell will analyze the information to provide a conservative savings representation for the Clearview Regional School District 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 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

[1] www.ipmvp.org.

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 Clearview Regional 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 District to adapt to the demands of future campus growth and changes without the need for Clearview Regional School District and Honeywell to negotiate energy baseline adjustments.

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

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.

General Approach to M&V

Energy and water savings are determined by comparing the energy and water use associated with a facility or certain systems within a facility before and after the installation of an ECM or other measure. The “before” case is the baseline. The “after” case is the post-installation or performance period. Baseline and post-installation energy use measurements or estimates can be constructed using the methods associated with M&V options A, B, C, and D, as described in the IPMVP. The challenge of M&V is to balance M&V costs, accuracy, and repeatability with the value of the ECM(s) or systems being evaluated, and to increase the potential for greater savings by careful monitoring and reporting.

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.

M&V Option	Performance Verification Techniques
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:

- 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.
- 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 Clearview Regional 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:

> kWSaved = (kWBase – kWSpot Measured)
>
> kWhSaved = Estimated operating hours during the interim period * kWSaved
>
> The total kWh savings is the sum of the kWhSaved for all the installed VFDs.

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 Upgrades	• 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 De-Stratification Fans w/ UV 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

ECM # and Name	Summary of ECM	M&V Methodology / Recommendation	Description of M&V – Pre- and Post-Process
1C Vending Misers	• Install Vending machine energy management devices	**Option A** • Pre and Post measurements • Line by Line scope and engineering calculations	• Pre M&V: Measurement of kW for 5% sample machines 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 machines in each category • Usage Hours to remain same • Energy Savings scope with measured kW and usage hours and compare to pre-retrofit calculated savings
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 Hot Water Heater Replacement	• 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

ECM # and Name	Summary of ECM	M&V Methodology / Recommendation	Description of M&V – Pre- and Post-Process
2C Rooftop Unit Replacement	• 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	• 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
2D Replace Split Units	• 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
2E Chiller Replacement	• Replace antiquated Chillers with new efficient 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 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
2F Kitchen Hood Efficiency Improvements	• Install control devices on the Kitchen hoods to control exhaust air in response to the cooking load. Replace fan motors with new premium efficiency motors and VFD drives	**Option A** • Energy savings - Engineering calculations based on programmed parameters.	• 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

ECM # and Name	Summary of ECM	M&V Methodology / Recommendation	Description of M&V – Pre- and Post-Process
2G 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
2H Walk-In Compressor Controls	• Install control device on walk-in freezer and refrigerator evaporators to shut down the fan motor when the compressor is off on duty cycle	**Option A** • Stipulated Engineering calculations based on case studies for the Intellidyne control	• Pre-M&V: None • Post M&V: Savings stipulated based on engineering calculations for the term of contract
3A Building Management System Upgrades	• 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

ECM # and Name	Summary of ECM	M&V Methodology / Recommendation	Description of M&V – Pre- and Post-Process
3B BMS Dashboard - Energy Optimization	• 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
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
4B Roofing Upgrades	• Apply coating on existing roofs of select areas/ buildings	**Option A** • Engineering calculations based on nameplate and manufacturer supplied data **Option C** • Utility Bill Comparison for fuel related measures	• Pre-M&V: Verify existing conditions • Post M&V: Visual inspection per scope of work
5A Transformer Replacement	• 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
6A 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

ECM # and Name	Summary of ECM	M&V Methodology / Recommendation	Description of M&V – Pre- and Post-Process
7A Solar PPA	Install Solar Power using Power Purchase Agreement	• N/A	• Pre-M&V: N/A • Post M&V: N/A
7B Solar PV - IRA	• Install photovoltaic array	• N/A	• Pre-M&V: N/A • Post M&V: N/A
7C Replace Solar Inverters	• Replace old Solar Inverters for existing solar system	• N/A	• Pre-M&V: N/A • Post M&V: N/A
7D Solar PPA RFP Hybrid	• Replace old Solar Inverters for existing solar system and install new Solar Power using Power Purchase Agreement	• N/A	• Pre-M&V: N/A • Post M&V: N/A
8A Energy Education	• Institute an Energy Awareness and Saving program to Educate Students, Faculty and Staff	• N/A	• Pre-M&V: N/A • Post M&V: N/A

ECM # and Name	Summary of ECM	M&V Methodology / Recommendation	Description of M&V – Pre- and Post-Process
9A Plumbing System Upgrade	• Install low-flow devices to reduce hot water consumption	**Option A** • Engineering calculations based on nameplate and manufacturer supplied data for the existing and replacement water fixtures **Option C** • Fuel Savings Utility Bill Comparison for all fuel related measures	• 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 • Fuel: Compare post installation M&V fuel cost based on fuel billing data and Metrix tuned to normalize to heating degree days
9B Pump Skid Upgrade	• Replace existing Booster Pump Skid with new VFD Pump Skid	**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
10A Electric Vehicle Charging Stations	• Install EV charging stations on select areas/buildings	**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
11A Power Factor Correction	• Install Automatic Power Factor Correction Capacitor Systems	**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

SECTION F
DESIGN APPROACH

Section F. Design Approach

In accordance with the ESIP PL 2012, c.55 as part of the implementation process, an agreement between the Clearview Regional School District and Honeywell will determine the energy conservation measures (ECM's) to be implemented. The services of a NJ Licensed Engineering firm and / or Architectural firm shall then be secured to properly comply with local building codes, compliance issues and NJ Public contracts law. Specifications will be designed and developed to exact standards as recommended by Honeywell to achieve all savings outlined in this Energy Savings Plan (ESP). Once specifications are completed, Honeywell will publicly solicit contractors capable of meeting the requirements of the specification for each trade. However, even before the completion of the bidding process, Honeywell project management will be engaged to maintain the overall project schedule and ensure the District's expectations are met. An overview of these activities and functions are detailed below.

1. Safety Management Plan

All of Honeywell's Project Management Plans begin with safety. By integrating health, safety and environmental considerations into all aspects of our business, we protect our customers, our people and the environment, achieve sustainable growth and accelerated productivity, drive compliance with all applicable regulations and develop the technologies that expand the sustainable capacity of our world. Our health, safety and environment management systems reflect our values and help us meet our customer's needs and our business objectives.

Honeywell's Safety Management Plan will be provided at the start of construction.

2. Project Management Process

Honeywell approaches any ESIP project with a systematic, tested and proven delivery process based upon industry best practices including strong project management, open and collaborative communication, superior technical design and state of the art technologies. We go above and beyond, with multiple NJ delivery teams to ensure sufficient resources, meticulous and thorough training and commissioning, and robust maintenance planning that goes the extra mile for the long term. Honeywell excels at project delivery because of our experience in New Jersey delivering ESIP projects with results that meet or exceed expectations.

Honeywell will demonstrate our partnership-based commitment to Clearview Regional School District throughout the development and delivery of your ESIP project, as we have done for dozens of other public entities throughout New Jersey under the ESIP Law. Our approach is backed by our references and track record and highly experienced engineering resources, which will be fully utilized to help you achieve your unique project goals and requirements.

Honeywell prescribes four phases in the ESIP Process that constitutes your project, including:

- **Phase 1**: Investment Grade Energy Audit (IGEA)
- **Phase 2**: Project Implementation
- **Phase 3**: Commissioning and Training
- **Phase 4**: Energy Savings Guarantee Period

The IGEA will commence with a kickoff meeting between key project stakeholders of the Clearview Regional School District and Honeywell to review the ESIP Process, including the expectations of both parties during the IGEA, audit parameters, reporting methods, building access protocols, availability of utility and building data, et cetera. Phase 2 will commence after our kickoff meeting has concluded with agreed upon next steps.

Honeywell takes a holistic approach in development of a comprehensive solution that is customized to meet your operational and facility needs and project goals. Our integrated project delivery approach supports continuous and collaborative communication between key stakeholders throughout the process. Our IGEA development process includes the following steps:

IGA Development Process

Step 1 - Discovery

- Ascertain your goals and expectations to define project requirements
- Involve key decision makers to prioritize
- Aggregate utility and building data to benchmark energy consumption
- Ensure site access for energy audits and site measurements to complete survey work
- Inventory of equipment

Step 2 – Identify and Develop Project

- Complete ECM list focused on your requirements
- Coordinated development effort to refine project scope
- Conceptual scopes of work to further define project
- Determine modeling approach and M&V methodology

Step 3 – Cost and Savings Forecasting

- Calculate energy and cost savings
- Identify utility rebates
- Detailed scopes of work
- Operating strategies and equipment performance data

Step 4 – Deliver Solution

- Deliver final IGA Report and contract
- Finalize scope of work
- Secure financing
- Deliver positive cash flow
- Finalize savings guarantee
- Commissioning, M&V and training program

A. Honeywell Performance Contracting

Honeywell is the undisputed performance contracting market leader in the Northeast. Honeywell's Guaranteed Performance Contracting, which we pioneered in the early 1980's, has surpassed the $2 billion mark in cumulative sales. Our performance contracting business features specialized and dedicated resources, including people with expertise specifically to address the needs of our customers. Our portfolio of business experience in the region is over 400 projects and over $500 million in project investment.

B. Honeywell's Commitment to Health, Safety, the Environment and School

All of Honeywell's Project Management Plans begin with safety. By integrating health, safety and environmental considerations into all aspects of our business, we protect our customers, our people and the environment, achieve sustainable growth and accelerated productivity, drive compliance with all applicable regulations and develop the technologies that expand the sustainable capacity of our world. Our health, safety and environment management systems reflect our values and help us meet our customer's needs and our business objectives.

OUR SAFETY COMMITMENT TO THE CLEARVIEW REGIONAL SCHOOL DISTRICT

In today's world, nothing is more important than safeguarding our families at home, at work and at school. Through Honeywell's safety awareness process, we commit to our customers to protect and safeguard our construction sites, our employees, sub-contractors, and your staff.

Our projects all begin with the following steps:

- Safety Training for Employee's and Sub-contractors
- Detailed Work Schedules around the day
- Detailed Background Checks of Personnel
- Detail Logs of Sub Contractor Personnel
- On-Site Logs of Time Sheets, Contact Information for All Personnel
- Clearly Displayed Identification Badges of All Construction Personnel
- On-Site Daily Supervision of All Sub-contractors
- Detailed and Weekly Reviews of Accident Reports and Remediation Strategy

We protect the safety and health of our customers and employees through prevention of illness, injury and pollution.

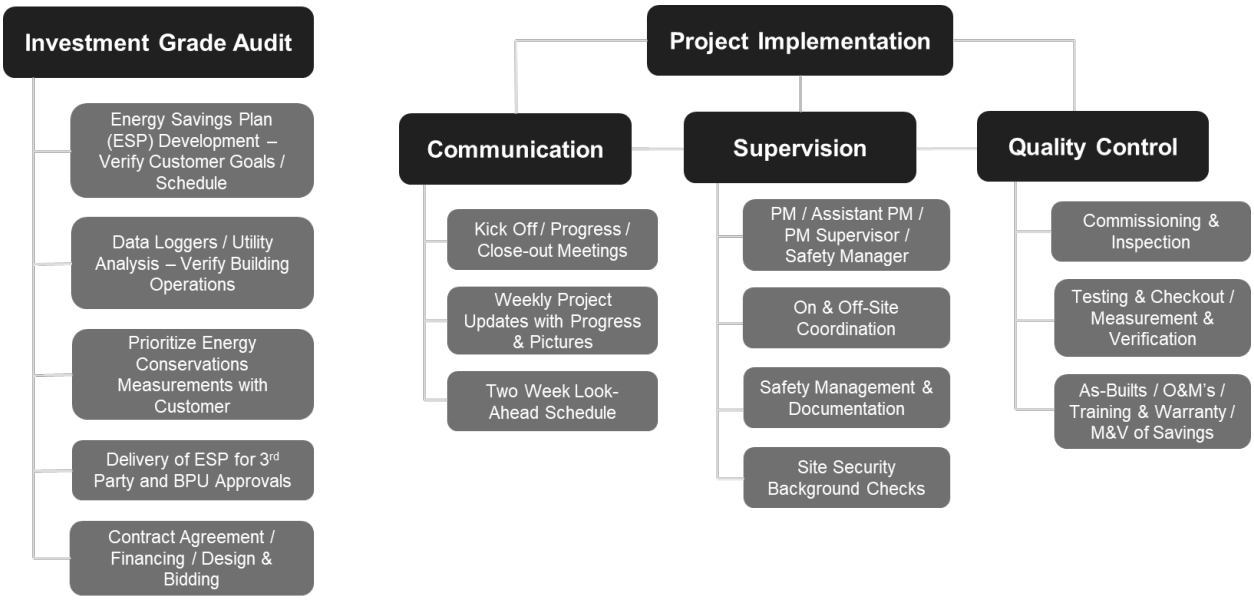
- We actively promote and develop opportunities for expanding sustainable capacity by increasing fuel efficiency, improving security and safety, and reducing emissions of harmful pollutants.
- We are committed to compliance with all of our health, safety, environmental and legal requirements everywhere we operate
- Our commitment to health, safety and the environment is an integral aspect of our design of products, processes and services, and of the lifecycle management of our products.
- Our management systems apply a global standard that provides protection of both human health and the environment during normal and emergency situations
- We identify, control and endeavor to reduce emissions, waste and inefficient use of resources and energy.
- We abide by the company's own strict standards in cases where local laws are less stringent.
- Our senior leadership and individual employees are accountable for their role in meeting our commitments.
- We measure and periodically review our progress and strive for continuous improvement.
- These are our commitments to health, safety, and the environment, and to creating a safe, clean environment everywhere we operate.

C. Project Management Process

The project management process applies technical knowledge, people and communication skills, and management talent in an on-site, pro-active manner to ensure that our contract commitments are met on time, within budget, and at the quality you expect.

A Honeywell Project Management Plan defines plans and controls the tasks that must be completed for your project. But more than task administration, our project management process oversees the efficient allocation of resources to complete those tasks.

Each project and each customer's requirements are unique. At Honeywell, we address customer needs through a formal communication process. This begins by designating one of our project managers to be responsible for keeping the customer abreast of the status of the project.



As the facilities improvements portion of the partnership begins, the Project Manager serves as a single focal point of responsibility for all aspects of the partnership. The Project Manager monitors labor, material, and project modifications related to the Clearview Regional School District/Honeywell partnership and makes changes to ensure achievement of performance requirements in the facilities modernization component. The Project Manager regularly reviews the on-going process of the project with the customers.

The Project Manager will develop and maintain effective on-going contact with the District and all other project participants to resolve issues and update project status.

There are several challenges in this position. The Project Manager must staff the project and create a work force capable of handling the technologies associated with the project (pneumatic or electric/electronic controls, mechanical systems, etc.), and plan for and use these personnel to achieve optimum results focused on occupant comfort and guarantee requirements.

3. Construction Management

Prior to any work in the buildings, our Project Manager will sit down with your administrative and building staff to outline the energy conservation upgrades that we will be installing in their building. We will discuss proper contractor protocol of checking in and out of the buildings on a daily basis, wearing identifiable shirts, identification badges, and checking in with your facilities staff. We will coordinate certain projects for different times of the day, so we do not interrupt the building and learning environments. Our staff will work a combination of first and second shifts to accomplish the pre-set implementation schedule.

Communication is the key success factor in any construction management plan, and our project manager will be the key focal point during the installation process.

Our team will prevent schedule slippages by continuously tracking the location of all equipment and components required for the project. We make sure all equipment and components will be delivered on time prior to the scheduled date of delivery. Our thorough survey, evaluation and analysis of existing conditions, performed prior to the commencement of construction, will also prevent schedule slippages.

Honeywell is required to subcontract various portions of our projects to contractors. Within the Clearview Regional School District project, all subcontractors will be selected in accordance with New Jersey public contracts law. Typical areas that are subcontracted are as follows:

- Electrical Installation
- Lighting Retrofits
- HVAC Installation (depends upon the project size and scope)
- Associated General Contracting specialty items to support the project etc., (ceilings, windows, concrete, structural steel, roofing, demolition and removal of equipment, painting and rigging)
- Where possible under New Jersey public contracts law, Honeywell uses the following guidelines in hiring subcontractors to perform work on our projects.
- Local Presence in the Community (Customer Recommendations)
- Firm's Qualifications and WBE/MBE Status
- Firm's Financial Stability
- Ability to perform the work within the project timeline
- Price
- Ability to provide service on the equipment or materials installed over a long period of time.

Approval of subcontractors that Honeywell proposes to use lies with the Clearview Regional School District.

4. Commissioning

Honeywell provides full commissioning of energy conservation measures (ECM's) as part of our responsibility on this project. We will customize this process based on the complexity of ECMs. Specifically, Honeywell will be responsible for start-up and commissioning of the new equipment and systems to be installed during the project. This will include verifying that the installed equipment meets specifications, is installed and started up in accordance with manufacturer's recommendations and operates as intended. A commissioning plan will be prepared that describes the functional tests to be performed on the equipment and the acceptance criteria.

Prior to customer acceptance of the project, Honeywell submits the final commissioning report containing signed acceptance sheets for each ECM. Signed acceptance sheets are obtained upon demonstrating the functionality of each ECM to Clearview Regional School District appointed representative.

Additionally, Honeywell provides training for facility operators and personnel as needed when each ECM is completed and placed into service. All training is documented in the final commissioning report.

After the completion of the Honeywell commissioning effort, in accordance with New Jersey ESIP legislation, the District will be required to secure the services of a 3rd party independent firm to verify that the new equipment and systems meet the standards set forth in the Energy Savings Plan. To maintain the independence of this review, these costs must be born directly by the Clearview Regional School District. However, at the option of the Clearview Regional School District, these services can be financed as a portion of the total project cost.

5. Installation Standards

When Honeywell designs a solution, we consider current and future operations. For any upgrades, we install, we follow building codes/standards, which dictate certain standards for energy or building improvements. Listed in tables following this section are standards for building design. During the life of the agreement, there is a partnership approach to maintaining these standards for reasons of comfort and reliability. For lighting our standard is to meet or exceed Illuminating Engineering Society (IES) light level requirements, achieving the relevant standards wherever possible.

In the case of fluorescent lighting upgrades, we recommend that a group re-lamping of lamps be done approximately five years after the initial installation depending upon run times. Your building facility staff, on an as needed basis, can complete normal routine maintenance of lamps and ballasts. This maintains the quality of the lighting levels, and color rendering qualities of the lamps.

Space temperatures will be set by the energy management system and local building controls and will be maintained on an annual basis. Flexibility will be maintained to regulate space temperatures as required to accommodate building occupant needs.

Your facility staff and building personnel will operate the energy management system with ongoing training and support from Honeywell. Therefore, the District and Honeywell will maintain the standards of comfort. The comfort standards will be maintained throughout the life of the agreement through sound maintenance planning and services recommended as part of this ESP.

Regarding ventilation, Honeywell will upgrade ventilation to meet current standards in those areas where our scope of work involves upgrades to or replacement of systems providing building ventilation. We generally will not upgrade ventilation in those areas where our work doesn't involve the upgrade or replacement of systems or equipment providing ventilation to a building or facility.

Heating and Cooling Standards

Heating Temperatures	Cooling Temperatures	Unoccupied Heating Temperatures	Unoccupied Cooling Temperatures
70-72° F	72-74° F	58-62° F	80-85° F

Honeywell uses a variety of in-house labor as well as subcontractors to install the energy conservation measures. We have on staff trained professionals in fire, security, energy management systems, all temperature control systems, and HVAC. However, per the ESIP law, all trades will be publicly bid except for specific controls applications. Listed below is a sampling of some of the disciplines that would apply to the Clearview Regional School District:

Improvements	Honeywell	Subcontractor
Engineering Design/Analysis*		■
Technical Audit	■	
Construction Administration/Management	■	
On-Site Construction Supervision	■	
Installation of Energy Management System	■	■
Manufacturer of Energy Management Equipment	■	■
Installation of HVAC/Mechanical Equipment		■
Installation of Renewable Technology		■
Installation of Building Envelope		■
Energy Supply Management Analysis/Implementation	■	
Installation of Boilers		■
Maintenance of Energy Management Equipment	■	■
Manufacturer/Installation of Temperature Controls	■	■
Monitoring/Verification Guarantee	■	
Training of Owner Staff	■	
Financial Responsibility for Energy Guarantees	■	

*Engineering design analysis provided directly to Client from architect/ engineer of record.

Hazardous Waste Disposal or Recycling

Honeywell disposes of all PCB ballasts or mercury containing materials removed as part of the project per EPA guidelines. Honeywell will complete all the required paperwork on behalf of the Clearview Regional School District. Honeywell will work with the District to review your hazardous material reports and will identify the areas where work will be completed so that the District can contract to have any necessary material abatement completed.

Honeywell can help schedule or coordinate waste removal, but does not contract for, or assume responsibility for, the abatement work. Honeywell also has the capabilities to assist the Clearview Regional School District in working with the EPA under compliance management issues. We also develop and manufacture automated systems to track and report a wide variety of environmental factors.

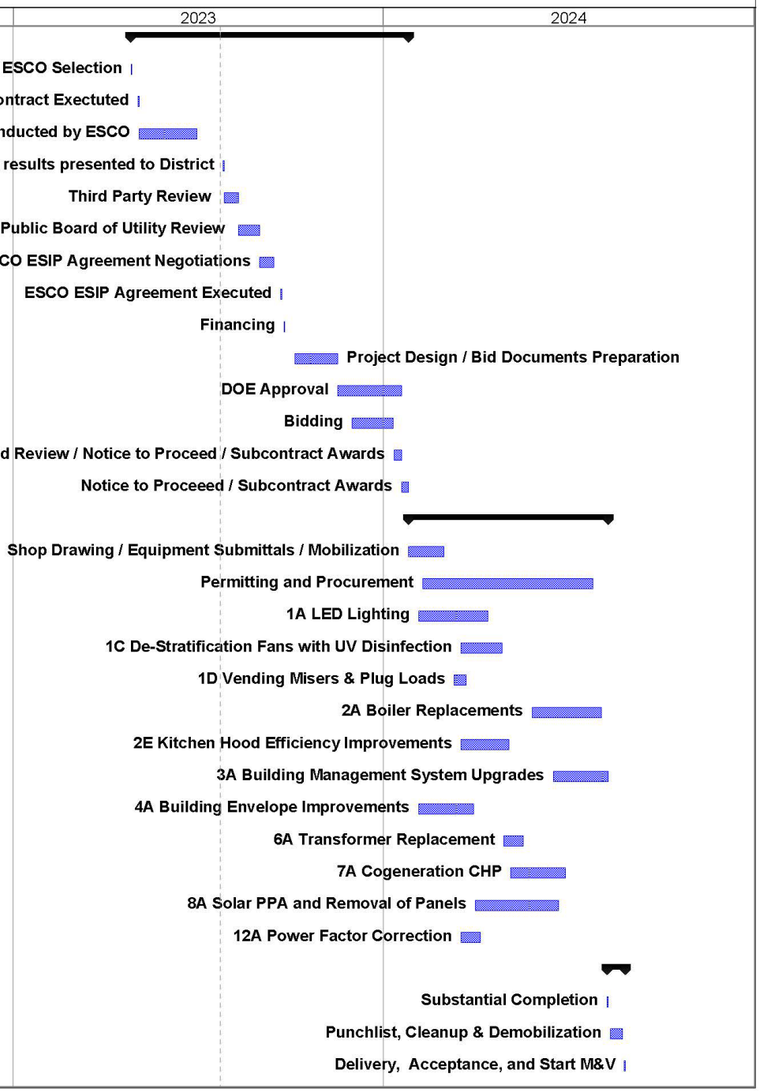
6. Implementation Schedule

Below is a sample schedule for construction and completion of the Project.

Clearview Regional Schools
Honeywell Energy Savings Improvement Program
Preliminary Installation Schedule

Honeywell

ID	Task Name	Start	Finish
1	**Stage 1 - IGEA**	**Thu 4/27/23**	**Thu 1/25/24**
2	RFP Review and ESCO Selection	Thu 4/27/23	Thu 4/27/23
3	IGEA Contract Exectuted	Thu 5/4/23	Thu 5/4/23
4	IGEA Conducted by ESCO	Fri 5/5/23	Fri 6/30/23
5	IGEA results presented to District	Thu 7/27/23	Thu 7/27/23
6	Third Party Review	Fri 7/28/23	Thu 8/10/23
7	Public Board of Utility Review	Fri 8/11/23	Thu 8/31/23
8	ESCO ESIP Agreement Negotiations	Fri 9/1/23	Thu 9/14/23
9	ESCO ESIP Agreement Executed	Fri 9/22/23	Fri 9/22/23
10	Financing	Mon 9/25/23	Mon 9/25/23
11	Project Design / Bid Documents Preparation	Fri 10/6/23	Thu 11/16/23
12	DOE Approval	Fri 11/17/23	Thu 1/18/24
13	Bidding	Fri 12/1/23	Wed 1/10/24
14	Bid Review / Notice to Proceed / Subcontract Awards	Fri 1/12/24	Thu 1/18/24
15	Notice to Proceeed / Subcontract Awards	Fri 1/19/24	Thu 1/25/24
16	**Stage 2 - Construction [High School and Middle School]**	**Fri 1/26/24**	**Fri 8/9/24**
17	Shop Drawing / Equipment Submittals / Mobilization	Fri 1/26/24	Thu 2/29/24
18	Permitting and Procurement	Fri 2/9/24	Thu 7/25/24
19	1A LED Lighting	Mon 2/5/24	Fri 4/12/24
20	1C De-Stratification Fans with UV Disinfection	Mon 3/18/24	Fri 4/26/24
21	1D Vending Misers & Plug Loads	Mon 3/11/24	Fri 3/22/24
22	2A Boiler Replacements	Mon 5/27/24	Fri 8/2/24
23	2E Kitchen Hood Efficiency Improvements	Mon 3/18/24	Fri 5/3/24
24	3A Building Management System Upgrades	Mon 6/17/24	Fri 8/9/24
25	4A Building Envelope Improvements	Mon 2/5/24	Fri 3/29/24
26	6A Transformer Replacement	Mon 4/29/24	Fri 5/17/24
27	7A Cogeneration CHP	Mon 5/6/24	Fri 6/28/24
28	8A Solar PPA and Removal of Panels	Mon 4/1/24	Fri 6/21/24
29	12A Power Factor Correction	Mon 3/18/24	Fri 4/5/24
30	**Stage 3 - Punchlist | Acceptance | M&V**	**Fri 8/9/24**	**Mon 8/26/24**
31	Substantial Completion	Fri 8/9/24	Fri 8/9/24
32	Punchlist, Cleanup & Demobilization	Mon 8/12/24	Fri 8/23/24
33	Delivery, Acceptance, and Start M&V	Mon 8/26/24	Mon 8/26/24



APPENDICES

FINANCIAL ASPECTS OF THE PROPOSALS

Section G. Appendices

Please see appropriate folders in Teams room provided as follows:

- Honeywell – Appendix 1 — LOCAL GOVERNMENT ENERGY AUDITS
- Honeywell – Appendix 2 — ECM CALCULATIONS
- Honeywell – Appendix 3 — EQUIPMENT CUT SHEETS
- Honeywell – Appendix 4 — LIGHTING LINE BY LINES

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