

Carbon Free Assessment

Prepared for ***D155 Cary-Grove High School***

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EXECUTIVE SUMMARY

Financial Benefit

We estimate your Facility has the potential for:

	Annual Savings	\$245,654
ComEd® Energy Efficiency Program Incentive		\$18,950

Annual Energy Benefit

Up to 880,000 kWh Reduced

Annual Environmental Benefit

Can Reduce Your Carbon Footprint by up to...

1,918 Metric Tons of CO₂ Equivalent
or **526 Cars off the Road Annually**

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Public School Assessment

Financial Benefit by Simple Payback

Estimated 2-5 Year Payback Opportunities

Measure	Annual Cost Savings	Project Cost	Incentive	Simple Payback (Years)
Replace Evaporator Fan Motors and Install Controls	\$170	\$470	\$130	2.0
Replace Chiller	\$3,400	\$30,200 ^A	\$18,800	3.4
Install Demand Defrost Controls in Walk-in Freezers and Coolers	\$30	\$130	\$20	3.7
Subtotal	\$3,600	\$30,800	\$18,950	3.3

For the Standard Incentives program, the total incentives paid cannot exceed 90% of the incremental measure cost or 90% of the total project cost.

Please see section titled "Energy Efficiency Measure Details" later on in this report for further information on listed Opportunities

Energy Efficiency Electrification

Measure	Annual Cost Savings	Project Cost	Incentive	Simple Payback (Years)
Install ENERGY STAR Convection Ovens	\$810	\$1,900	\$0	2.3
Install Ground Source Heat Pumps	\$42,600	\$7,385,800	\$0	
Install Heat Pump Water Heaters	\$190	\$294,600 ^A	\$0	
Subtotal	\$43,600	\$7,682,300	\$0	176.2
ASSESSMENT TOTAL	\$47,200	\$7,713,100	\$18,950	163.0

Please see section titled "Energy Efficiency Electrification" later on in this report for further information on listed Opportunities

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ADDITIONAL PROGRAM OFFERINGS

Available Offerings

In addition to Standard Incentives, your facility may also be eligible for the following:

☒ Building Operator Certification

- | | |
|---|---|
| ☒ Retro-Commissioning | ☒ Strategic Energy Management |
| ☐ Industrial Systems | ☐ New Construction |
| ☐ Small Business | ☐ Multi-Family Assessment |

Building Operator Certification

Offering Description:

Building Operator Certification® (BOC) is a nationally recognized training and certification program focusing on energy-efficient building O&M procedures. Facilities with BOC graduates are proven to save energy, have lower energy bills, and offer improved comfort for occupants. Facility staff with at least one year work experience plus an additional year of work and/or training are eligible. Go to BOCCentral.org/ComEd for information on Illinois tuition and training schedules. ComEd customers are eligible for a full tuition rebate upon completion of training.

Opportunity at Your Facility:

ComEd customers in Illinois can benefit from discounted rates for BOC training, with tuition set at \$1400, nearly \$300 lower than standard fees. Furthermore, in addition to full tuition reimbursement upon successful completion of the training, ComEd customers are also eligible for an additional incentive of up to \$6,850 (dependent upon facility area and building operator pay scale). Eligible participants must meet course requirements, including attending classes, passing assessments, completing homework assignments, and submitting a signed Training Certificate of Completion Application. Various BOC training sessions are available, including in-person and online options, with detailed schedules provided for registration. For further inquiries or to join the mailing list, individuals can contact boc@mwalliance.org.

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ADDITIONAL PROGRAM OFFERINGS

Retro-Commissioning

Offering Description:

Retro-Commissioning is a building efficiency tune-up process that is designed to help your commercial or industrial building perform optimally. Through a systematic evaluation of mechanical and electrical systems, retro-commissioning helps you identify low-cost and no-cost energy saving operational improvements that will pay for themselves in 18 months or less.

Opportunity at Your Facility: Retro-Commissioning Flex

ComEd's Retro-Commissioning (RCx) Flex Program is a fully funded study that the school is eligible for. It involves a time commitment of 3-6 hours per month for 6-15 months and a financial commitment of at least \$1,000 to implement any energy savings measures. The RCx program identifies low cost energy savings measures and can be expected to save 5-10% of the school's annual energy usage.

Estimated Electricity Energy Savings: 130,000 kWh/yr

Estimated Annual Savings: \$15,700

Strategic Energy Management

Offering Description:

Strategic Energy Management (SEM) is a holistic program identifying opportunities to save energy through operational and behavioral projects. SEM provides coaching and other resources so customers can develop their own energy management capabilities in a peer learning environment.

Opportunity at Your Facility:

ComEd's Strategic Energy Management (SEM) Program is a good next step for the school to take in improving energy efficiency. SEM offers a long-term partnership with the school through workshops and coaching sessions. At no cost, ComEd will assign the school an energy coach and a support team. They will perform an energy assessment of the site, model and monitor the school's energy consumption over the course of a year, identify operational and behavioral changes that can help reduce energy usage, as well as provide materials and training to help school employees save energy while on the job. In addition to the direct cost savings from reduced energy use, ComEd offers \$0.02/kWh saved from implementing behavioral and/or operational changes, along with an opportunity to earn up to \$2,000 in additional savings.

Estimated Electricity Energy Savings: 56,800 kWh/yr

Estimated Annual Savings: \$6,800

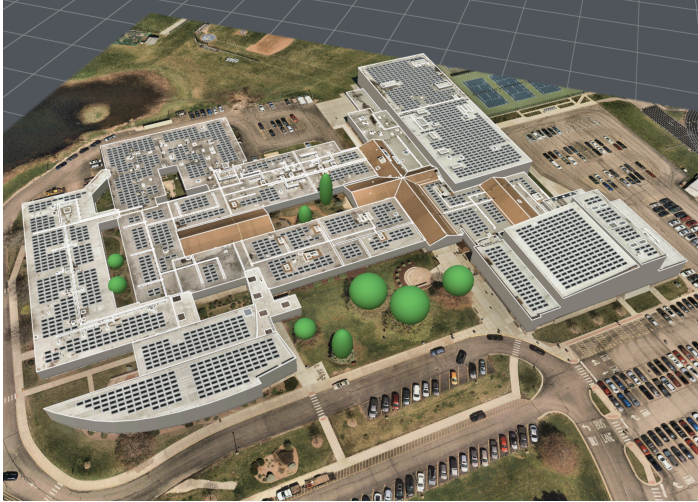
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SOLAR OPPORTUNITIES

The facility's solar potential has been evaluated and determined there is enough area with adequate sunlight to be a good candidate for solar deployment. Below is an aerial view of the facility and surrounding property, highlighting where solar panels would be most productive along with the project economics.



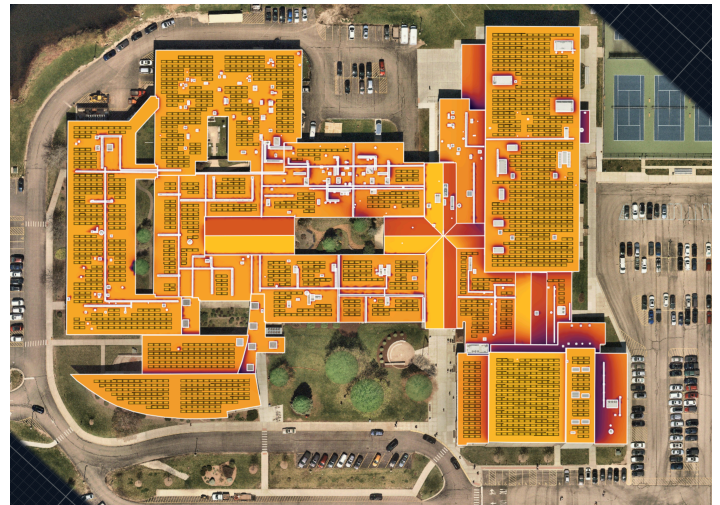
Project Details

Estimated Solar Capacity: **1,200 kW**

Estimated Annual Generation: **1,460,200 kWh**

Estimated # of Solar Panels: **2,100**

Annual Energy Use Offset: **69%**



Financial Details

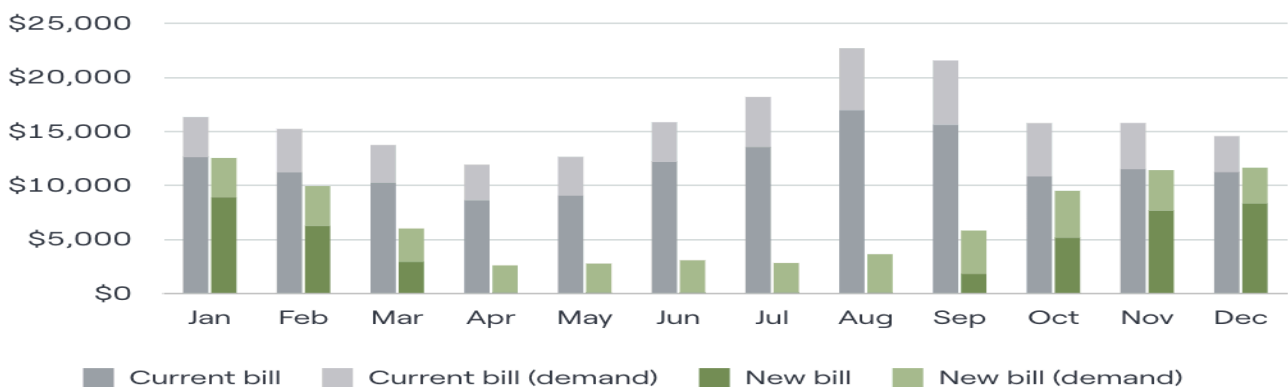
Estimated Project Cost: **\$2,663,500**

Estimated Incentive: **\$2,723,900**

Simple Payback with Grants: **7.4 Years**

Lifetime Savings: **\$2,920,000**

Monthly utility bill savings



The calculation above is based on a satellite overview of the facilities' property, as well as on-site observations made by the assessment Engineer. Total incentives are based on available local, state, federal and tax incentives, further broken out in the "Additional Funding Sources" section of this report.

Learn more about the benefits of solar energy and adjust your own design at ComEd.com/Solar.

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WELL CERTIFICATION

The WELL Health-Safety Rating for Facility Operations and Management is an evidence-based, third-party verified pathway for addressing the health, safety and well-being of building occupants. A visible indication of confidence and trust, the WELL Health-Safety seal communicates to everyone entering a space that evidence-based measures have been adopted and third-party verified. This report identifies any existing practices that meet the WELL Health-Safety standard, suggests additional practices to achieve minimum rating required for certification and identifies costs to do so."

Total Estimated Cost to Achieve Pre-Requisites \$3,250

Total Estimated Cost to Achieve Certification \$8,000

Cleaning And Sanitization Procedures				2
	☐	SC1	Support Handwashing	
	☐	SC2	Reduce Surface Contact	
X	☐	SC3	Improve Cleaning Practices	
X	☐	SC4	Select Preferred Cleaning Products	
	☐	SC5	Reduce Respiratory Particle Exposure	

WELL CERTIFICATION

Feature Description

COVID-19 and many other infectious diseases are spread primarily through close contact with an infected person via respiratory droplets. However, it is known that coronaviruses and noroviruses, among other pathogens, can survive on surfaces infected by droplets. Maintaining good cleaning protocols can support organizational resilience by helping reduce the risk of infection. Similarly, hand washing promotion is an effective way to reduce the spread of infectious diseases and to confer individual resilience. While sanitization is critical, especially during an infectious disease crisis, commercial cleaning products may contain ingredients suspected to be hazardous to human health and the environment. Low-hazard cleaning products and cleaning practices reduce impacts in indoor air quality and in the health of those performing these duties, while protecting occupants, as well.

The WELL Health and Safety Rating has a registration cost of \$3,250. It assesses 27 opportunities. Of those 27 opportunities, 15 opportunities are required to achieve the rating. Overall, this facility is currently expected to meet 7 opportunities.

In the 'Cleaning and Sanitization Procedures' section, this facility is expected to meet 2 opportunities with the current operation.

The following opportunities were not met:

SC1. This feature aims to support of hygienic hand washing practices for all occupants. To achieve this feature, a building may need to supply the following at all handwashing stations: (1) fragrance-free liquid soap in sealed dispensers at all handwashing stations; (2) hand drying methods such as paper towels or HEPA-equipped hand dryers; (3) signage displaying steps for proper hand washing.

SC2. This feature aims to reduce the amount of hand contact on high-touch surfaces. To achieve this feature, a building may need to implement the following strategies: (1) installing touchless entry systems, touchless faucets, touchless soap dispensers, or other similar technologies; (2) using materials with antimicrobial properties or coatings to reduce the growth of bacteria and other microorganisms on surfaces; (3) developing enhanced cleaning and disinfection protocols for high-touch surfaces; (4) reconfiguring shared spaces to minimize surface contact, such as removing communal items and furniture or adding barriers between workstations.

SC5. This feature aims to reduce human contact with respiratory particles. To achieve this feature, a building may need to implement the following strategies: (1) ensuring adequate ventilation in the building to increase the flow of outdoor air and reduce the concentration of respiratory particles in the indoor environment; (2) installing air filters, such as HEPA filters, that capture respiratory particles; (3) implementing measures to reduce the release of respiratory particles, such as requiring occupants to wear masks or adding barriers between workstations; (4) implementing enhanced cleaning and disinfection protocols for high-touch surfaces.

Recommendation(s): SC1, SC2, SC5

The cost is difficult to determine and can vary greatly from school to school, so a cost of \$1,000 per recommendation is used as a general estimate.

Estimated Cost to Achieve Pre-Requisite \$0

Estimated Cost to Achieve Certification \$3,000

WELL CERTIFICATION

Emergency Preparedness Programs				2
X	O	SE1	Develop Emergency Preparedness Plan	
	O	SE2	Create Business Continuity Plan	
	O	SE3	Plan for Healthy Re-Entry	
X	O	SE4	Provide Emergency Resources	
	O	SE5	Bolster Emergency Resilience	
	O	SE6	Establish Health Entry Requirements	

Feature Description

Emergency preparedness and resilience plans are critical to ensuring that organizations are equipped to immediately confront a crisis, as well as to recover successfully from it. Natural disaster emergencies kill around 90,000 people and affect close to 160 million people worldwide every year, with both an immediate and long-term impact on human lives and built spaces. Emergency management plans can help organizations be better prepared to handle unforeseen events, minimize occupant confusion and improve coordination and safety during emergency situations. Creating plans to support business continuity, remote work readiness and project re-entry after extended remote periods helps maintain business resilience and individual well-being during and after longer-lasting emergencies. Finally, providing access to mental health services, such as psychological first aid, crisis counseling and bereavement counseling, is critical to supporting employee short-term recovery and long-term productivity, functioning and well-being.

WELL CERTIFICATION

In the 'Emergency Preparedness Programs' section, this facility is expected to meet 2 opportunities with the current operation.

The following opportunities were not met:

SE2. This feature aims to ensure that critical business operations can continue in the event of an emergency or disruption. To achieve this feature, a building may need to develop a business continuity plan that includes the following: (1) a risk assessment to identify potential hazards and risks that may impact critical business operations; (2) identification of essential services and functions that must continue during an emergency or disruption, such as IT systems, communication systems, and building systems; (3) procedures and protocols for backing up and recovering critical data and systems in the event of an emergency or disruption; (4) identification of alternate locations or workspaces where critical business operations can be conducted if the primary location is unavailable; (5) a communication plan to ensure that stakeholders are informed and updated in the event of an emergency.

SE3. This feature aims to create a plan for safely re-entering the building after a prolonged absence. To achieve this feature, a building may need to develop a healthy re-entry plan that includes the following: (1) enhanced cleaning and disinfection protocols to ensure that the building is thoroughly cleaned before occupants return; (2) ensuring that the building's ventilation and filtration systems are working properly to provide clean indoor air; (3) health screening measures, such as temperature checks and symptom assessments, to ensure that occupants are healthy before entering the building; (4) physical distancing measures, such as reconfiguring workstations and common areas; (5) a communication plan to ensure that occupants are informed and updated on the re-entry process and any new procedures or protocols.

SE5. This feature aims to strengthen an organization's ability to withstand and recover from emergencies and disruptions. To achieve this feature, a building may need to develop an emergency resilience plan that includes the following: (1) a risk assessment to identify potential hazards and risks that may impact the building and its occupants; (2) an emergency response plan that outlines procedures and protocols for responding to emergency situations; (3) a business continuity plan that outlines procedures and protocols for maintaining critical business operations during and after an emergency or disruption; (4) training and education to occupants and staff on emergency preparedness and response, including evacuation procedures, first aid, and other safety protocols; (5) procedures for testing and evaluating emergency response systems.

SE6. This feature aims to establish entry requirements that promote the health and safety of occupants. To achieve this feature, a building may need to implement the following: (1) health screening measures, such as temperature checks and symptom assessments, to ensure that occupants are healthy before entering the building; (2) the use of PPE, such as face masks or gloves, to reduce the transmission of infectious diseases; (3) clear and visible signage to inform occupants of entry requirements and procedures.

Recommendation(s): SE2, SE3, SE5, SE6

The cost is difficult to determine and can vary greatly from school to school, so a cost of \$1,000 per recommendation is used as a general estimate.

Estimated Cost to Achieve Pre-Requisite \$0

Estimated Cost to Achieve Certification \$4,000

WELL CERTIFICATION

Health Service Resources

3

	☐	SH1	Provide Sick Leave
X	☐	SH2	Provide Health Benefits
	☐	SH3	Support Mental Health Recovery
X	☐	SH4	Promote Vaccines
X	☐	SH5	Promote a Smoke-Free Environment

Feature Description

The strategies encompassed within this section focus on ways to foster individual actions that support health and safety for all in a space. Unvaccinated individuals pose a risk to public health, and seasonal flu causes severe illness and death in high-risk populations. Providing free on-site flu vaccines with education on good health habits can increase vaccination rates and reduces flu cases. Studies estimate 20 million Americans go to work sick because they lack sick leave or have only one-day sick leave, respectively, infecting colleagues as a result. Additionally, studies show implementing paid sick leave reduces contagion in the workplace, improves employee productivity and reduces employee turnover. Overall, enhancing access to essential healthcare and paid sick leave can help improve the physical, social and mental health of individuals and communities. Finally, exposure to tobacco smoke persists to detrimentally affect the health of both smokers and those exposed to secondhand smoke.

'In the 'Health Service Resources' section, this facility is expected to meet 3 opportunities with the current operation. The following opportunities were not met: SH1. This feature aims to improve recovery from and reduce transmission of diseases by enabling and encouraging employees to stay home when sick. To achieve this feature, an organization may need to implement the following: (1) developing a sick leave policy that provides employees with paid time off to recover from illness or take care of a sick family member; (2) providing an adequate number of sick leave days that allows employees to take time off without fear of losing pay or job security; (3) offering flexible sick leave that allows employees to take time off intermittently; (4) communicating sick leave policies and benefits to employees clearly and regularly. SH3. This feature aims to support mental health recovery for individuals who may be experiencing mental health challenges. To achieve this feature, a building may need to implement the following: (1) providing access to mental health services, such as counseling or therapy; (2) offering flexible work arrangements, such as telecommuting or flexible scheduling; (3) offering mental health support programs, such as stress reduction or resilience training; (4) fostering a sense of community through activities such as team building, social events, and volunteer opportunities; (5) addressing mental health stigma through education and awareness-raising activities. Recommendation(s): The cost is difficult to determine and can vary greatly from school to school, so a cost of \$1,000 per recommendation is used as a general estimate.'

Estimated Cost to Achieve Pre-Requisite \$0

Estimated Cost to Achieve Certification \$0

WELL CERTIFICATION

Air And Water Quality Management				0
	☐	SA1	Assess Ventilation	
	☐	SA2	Assess and Maintain Air Treatment Systems	
	☐	SA3	Develop Legionella Management Plan	
	☐	SA4	Monitor Air and Water Quality	
	☐	SA5	Manage Mold and Moisture	

WELL CERTIFICATION

Feature Description

Research has shown that increased ventilation in a building can reduce the chance of influenza. Some pathogens can also attach themselves onto smaller particles in the air such as dust, which stay in the air longer and travel farther distances than droplets, potentially affecting people within a wider spatial range. Without proper maintenance and filtration, heating, ventilation and air conditioning systems can build up mold and particulates that can propagate respiratory diseases, especially after periods of inactivity. Inhalation exposure to indoor air pollutants can lead to a variety of negative short- and long-term health and well-being outcomes that can range in severity. Less severe symptoms of exposure can include headaches, dry throat, eye irritation or runny nose, while more severe health effects can include asthma attacks and carbon monoxide poisoning. Mold developed on cooling coils may shed particles into the building's indoor air and trigger asthma, headaches, allergies and other respiratory system disorders. In the U.S. alone, indoor pollution contributes to thousands of cancer deaths and hundreds of thousands of respiratory health issues annually. Water is typically treated with chlorine to keep it free of pathogens. However, if left stagnant after a period of vacancy, chlorine is likely to lose its disinfection power, creating opportunity for pathogens to contaminate the water. Additionally, Legionella bacteria is naturally present in waters at low concentrations, but it may colonize recirculated water systems such as hot water loops and cooling towers.

In the 'Air and Water Quality Management' section, this facility is expected to meet no opportunities with the current operation. SA1 and SA2 were not assessed because they require additional engineering testing and analysis on air and water quality that is outside the scope of this report.

The following opportunities were not met:

SA3. This feature aims to reduce risk of Legionella colonization. To achieve this feature, a building may need to develop Legionella management plan that includes the following: (1) a hazard analysis of water assets within the building; (2) a water system inventory and process flow diagrams of water systems within the building; (3) a list of monitoring actions for relevant variables such as temperature or residual chloring, performance limits associated with these variables, and corrective actions when variables exceed such limits; (4) protocols for documenting results of monitoring activities and corrective actions.

SA4. This feature aims to assess indoor air quality and water quality, which contribute to the health and well-being of occupants. To achieve this feature, a building may need to develop an air and water quality monitoring plan that includes the following: (1) measuring indoor air quality; (2) testing water quality; (3) identifying areas for improvement and implementing improvements.

SA5. This feature aims to limit the potential for bacteria and mold growth within buildings from water infiltration, condensation, and internal leaks. To achieve this feature, a building may need to develop a mold and moisture management plan that includes the following: (1) identifying potential sources of moisture; (2) implementing moisture control measures; (3) conducting mold inspections; (4) implementing mold remediation procedures; (5) training for occupants on how to prevent the growth of mold, such as by reporting any leaks or water damage promptly.

Recommendation(s): SA1

The cost is difficult to determine and can vary greatly from school to school, so a cost of \$1,000 per recommendation is used as a general estimate.

Estimated Cost to Achieve Pre-Requisite \$0

Estimated Cost to Achieve Certification \$1,000

WELL CERTIFICATION

Stakeholder Engagement And Communication			0
	☐	SS1	Promote Health and Well-Being
	☐	SS2	Share Food Inspection Information

Feature Description

During emergencies, stakeholder engagement and communication is critical to instilling confidence, improving coordination and supporting actions that can help protect safety. Regular, clear communication about the emergency preparedness and response strategies being utilized by an owner or operator of a space to support people's health and safety, as well as how stakeholders can build awareness of what to do during an emergency event, provides critical information that supports the health and well-being of all occupants. Through providing such communication, organizations can support occupant health literacy, which refers to a person's cognitive and social ability to access, interpret and understand basic health information, as well as the ability to act on that understanding to maintain health. Low health literacy is linked to lower use of preventive care (e.g., flu shots), poor management of chronic conditions (e.g., high blood pressure) and lower self-reported mental and physical health. By supporting awareness of health and wellness programs and policies, projects can promote health literacy and encourage engagement with health resources, leading to both individual benefits - like increased participation in healthy behaviors and use of health services - and also employer benefits, providing an estimated 4:1 return on investment

In the 'Stakeholder Engagement and Communication' section, this facility is expected to meet no opportunities with the current operation.

The following opportunities were not met:

SS1. This feature aims to promote adherence to collective well-being and sustainability goals and a deeper occupant understanding of the features pursued by the project and of how building operations and policies impact health and well-being. To achieve this feature, an organization may need to develop the following: (1) a health-oriented mission; (2) regular communication plans regarding health resources, programs, amenities, and policies available to occupants.

SS2. This feature aims to mitigate foodborne illness and increase consumer knowledge of food inspection results. To achieve this feature, all food service establishments within the building must have at least one of the following prominently displayed: (1) publicly available food hygiene or sanitary inspection report by the local health department or other third-party inspection agency; (2) scoring or letter grading system issued by the local health department or other third-party inspection agency.

Estimated Cost to Achieve Pre-Requisite \$0

Estimated Cost to Achieve Certification \$0

WELL CERTIFICATION

Innovation				0
	☐	S11	Innovation I	
	☐	S12	Innovation II	
	☐	S13	Innovation III	
	☐	S14	Gateways to Health-Safety	

Feature Description
<i>Innovation features address a novel concept or strategy aimed at addressing acute health and safety issues that are not already included within the WELL Health-Safety features. Many of these will not be include in this Audit as it would take more investigation into these types of measures to verify they would qualify.</i>
Because Innovation opportunities require comparatively more time and effort to achieve, at this stage we recommend focusing on the other opportunities above to achieve the WELL Health and Safety Rating.

Estimated Cost to Achieve Pre-Requisite **\$0**

Estimated Cost to Achieve Certification **\$0**

Energy Efficiency Measure Details

HVAC Solutions

Replace Chiller

Replace an existing Chiller with a higher efficiency model. It is recommended that this change be made near the end of an existing chiller's life

Location	Qty	Baseline	Proposed	Estimated Energy Savings (kWh/Yr)	Estimated Savings (\$/Yr)	Estimated Cost (\$) ^A	Estimated Incentive (\$)	Payback (Years)
Outside	1	Older Air-Cooled Chiller with Minimum Efficiency as Required by Code (IPLV = 0.76 kW/ton)	High Efficiency Air-Cooled Chiller (IPLV ≤ 0.51 kW/ton)	27,900	\$3,400	\$30,200	\$18,800	3.4
Replace Chiller			Subtotal	27,900	\$3,400	\$30,200	\$18,800	3.4
HVAC Solutions Total			Subtotal	27,900	\$3,400	\$30,200	\$18,800	3.4

Energy Efficiency Measure Details

Refrigeration Solutions

Replace Evaporator Fan Motors and Install Controls

Install more efficient motors and controls that reduce fan air-flow when there is no refrigerant flow

Location	Qty	Existing ^B	Proposed	Estimated Energy Savings (kWh/Yr)	Estimated Savings (\$/Yr)	Estimated Cost (\$)	Estimated Incentive (\$)	Payback (Years)	
Kitchen	1	1/15 Horsepower Shaded Pole Motor with No Control	1/15 Horsepower Electronically Commutated Motor with Evaporator Fan Control	1,400	\$170	\$470	\$130	2.0	
Replace Evaporator Fan Motors and Install Controls				Subtotal	1,400	\$170	\$470	\$130	2.0

Install Demand Defrost Controls in Walk-in Freezers and Coolers

Install Demand Defrost Controls to monitor the refrigeration system and delay the defrost cycle as necessary

Location	Qty	Existing	Proposed	Estimated Energy Savings (kWh/Yr)	Estimated Savings (\$/Yr)	Estimated Cost (\$)	Estimated Incentive (\$)	Payback (Years)	
Kitchen	1	Evaporator Fans without Demand Defrost Controls	Install Demand Defrost Controls	220	\$30	\$130	\$20	3.7	
Install Demand Defrost Controls in Walk-in Freezers and Coolers				Subtotal	220	\$30	\$130	\$20	3.7

Refrigeration Solutions Total	Subtotal	1,620	\$200	\$600	\$150	2.3
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Energy Efficiency Electrification

Energy Efficiency Electrification (EEE) refers to the process of replacing equipment powered directly by fossil fuel with all-electric equipment. EEE is an important step towards decarbonization and includes a broad range of environmentally-friendly solutions that enable facilities to achieve sustainability goals.

Install Heat Pump Water Heaters

Install Heat Pump Water Heaters to improve system efficiency and reduce your building's overall carbon emissions

Location	Qty	Existing	Proposed ^C	Estimated Electric Energy Usage (kWh/Yr)	Estimated Energy Savings (Therm/Yr)	Estimated Savings (\$/Yr)	Estimated Cost (\$) ^A	Payback (Years)
Mechanical Room	2	Natural Gas-Fired Water Heaters	Heat Pump Water Heaters (660 MBH each)	31,700	3,500	\$170	\$269,100	
Mechanical Room	1	Natural Gas-Fired Water Heater	Heat Pump Water Heater (125 MBH)	4,000	440	\$20	\$25,500	
Install Heat Pump Water Heaters			Subtotal	35,700	3,940	\$190	\$294,600	

Install ENERGY STAR Convection Ovens

Install ENERGY STAR Electric Convection Ovens to improve system efficiency and reduce your building's overall carbon emissions

Location	Qty	Existing	Proposed ^C	Estimated Electric Energy Usage (kWh/Yr)	Estimated Energy Savings (Therm/Yr)	Estimated Savings (\$/Yr)	Estimated Cost (\$)	Payback (Years)
Kitchen	2	Full Size (5 Pans) Natural Gas Convection Ovens	ENERGY STAR Electric Convection Ovens	7,100	1,500	\$810	\$1,900	2.3
Install ENERGY STAR Convection Ovens			Subtotal	7,100	1,500	\$810	\$1,900	2.3

Install Ground Source Heat Pumps

Install Ground Source Heat Pumps to improve HVAC system efficiency and reduce your building's overall carbon emissions

Location ^D	Qty	Existing	Proposed	Estimated Electric Energy Usage (kWh/Yr)	Estimated Energy Savings (Therm/Yr)	Estimated Savings (\$/Yr)	Estimated Cost (\$)	Payback (Years)
Whole Building	1	Chillers, DX Units and Natural Gas Hot Water Boiler, RTUs	Brine to Water Ground Loop Heat Pump	753,700	117,000	\$42,600	\$7,385,800	
Install Ground Source Heat Pumps			Subtotal	753,700	117,000	\$42,600	\$7,385,800	

Energy Efficiency Electrification

Install Air Source Heat Pumps

Install Air Source Heat Pumps to improve system efficiency and reduce your building's overall carbon emissions

Location	Qty	Baseline	Proposed	Estimated Electric Energy Usage (kWh/Yr)	Estimated Energy Savings (Therm/Yr)	Estimated Savings (\$/Yr)	Estimated Cost (\$)	Payback (Years)
Entire Facility ^F	1	100 Ton Split Air Conditioner and 23600 kBTU/hr Natural Gas HW Boiler	Electric Air Cooled (Electric Backup) Cold Climate Air Source Heat Pump	1,068,000	117,500	\$5,300	\$5,943,700	
Install Air Source Heat Pumps			Subtotal	0	0	\$0	\$0	
Energy Efficiency Electrification Total			Subtotal	796,511	122,440	\$43,600	\$7,682,300	176.2

Electrification Baseline Conditions

Baseline System Conditions

Facility System: Building Description

Cary Grove high school was originally constructed in 1961, with multiple additions throughout the years. The latest addition was the East Hallway in 2000. The facility has an estimated total area of 250,000 square feet. The exterior is constructed out of brick, with membrane roofing.

HVAC: The building is mainly heated by (7) hot water boilers that are original to the school. (3) boilers have an input capacity of 6,300MBH, (2) boilers have a capacity of 1,500 MBH and (2) have a capacity of 850 MBH. The building receives most of the cooling from (2) air-cooled chillers, with cooling capacities of 125 and 211 tons. The newer chiller cools the original building and Hall C, and the old chiller cools Hallways E, EE and the newest addition. The areas that are not cooled by the chillers are cooled by RTUs and split systems. Demand control ventilation is used throughout the school.

DHW: Domestic hot water for the building is supplied by (3) natural gas water heaters with a combined capacity of about 1,500,000 btu/h that feed two storage tanks of about 200 gallons each.

Lighting: All lighting in the school is LED, including exterior lights, stadium lights, and theater lights. The bathrooms and classrooms are equipped with occupancy sensors. Administrative offices were not accessible during the site visits, so occupancy sensors in this area were not verified.

Facility System: Building Envelope and Mechanical Insulation (BEMI)

The facility's walls, roof insulation, piping insulation, windows, and doors were all investigated visually, identifying the following:

1. The walls of the facility were solid brick walls, making them difficult to insulate. No recommendations are suggested.
2. The roof is currently in the process of being replaced. No additional insulation or replacement recommended.
3. The piping in the building was photo-inspected and appeared to be adequately insulated. No additional insulation recommended.
4. The seams and glass of the windows in the building were inspected, and no recommendations were made.
5. The doors leading to the exterior of the building were inspected for the loss of conditioned air. All doors appear to have a proper seal, and no door sweeps are recommended.

Facility System: Natural Gas Usage

From the natural gas bills provided, the facility is estimated to use about 101,932 therms of natural gas per year. To account for year-to-year weather variation, a safety factor of 15% is used throughout our analysis.

Facility System: Vehicles

The facility doesn't own any school buses or any other passenger vehicles. Therefore, we did not perform an EV analysis.

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Electrification Baseline Conditions

Facility System: Proposed Electrification

One potential way to electrify the building would include a ground-source heat pump (GSHP) system and a dedicated outside air system (DOAS), which can replace all of the existing HVAC equipment. Lastly, for domestic hot water, heat pump water heaters are recommended as the replacement for the gas-fired water heaters.

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Electrification Infrastructure

Electrification Infrastructure Upgrades

The following opportunities were identified for electrical infrastructure upgrades to your facility needed to support added load of suggested building and transportation electrification measures. While ComEd suggests these upgrades to the following system, it is strongly recommended you work with an electrical designer to investigate the required changes further.

Opportunity at Your Facility: **Upgrade Electric Infrastructure**

The electrical service and distribution cost estimate details the cost of potential electric infrastructure upgrades that may be necessary in supporting the electrification opportunities at the school. This could include new electrical panels or an upgraded transformer if the increased load on the system is significant.

Estimated Cost: **\$418,000**

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ADDITIONAL FUNDING OFFERINGS

Available Funding Offerings

In addition to Energy Efficiency Incentives Incentives, your facility may also be eligible for the following third party funding offerings:

- | | |
|--|---|
| ☒ School Construction Grant | ☒ School Maintenance Grant |
| ☐ Charging Incentive Program | ☒ Illinois Shines Renewable Energy Credits |
| ☐ K-12 Solar Schools Grant | ☐ Cook County Solar Schools Grant |
| ☐ Clean School Bus Program | ☒ Distributed Generation Rebate |
| ☒ The Investment Tax Credit | ☒ The Investment Tax Credit - GSHP |

School Construction Grant

Offering Description:

The School Construction Grant Program (<https://www.isbe.net/Pages/School-Construction.aspx>) contributes to the cost of building or renovating public school buildings, based on enrollment and needs of the district. The program historically has covered between 35% and 75% of the cost to build or renovate buildings. School districts that apply for a grant on or after 6/1/23 must submit a copy of their PSCFA Report.

Funding Opportunity: \$150,000

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ADDITIONAL FUNDING OFFERINGS

School Maintenance Grant

Offering Description:

The School Maintenance Grant Program (<https://www.isbe.net/Pages/School-Maintenance-Project-Grant.aspx>) is a dollar-for-dollar state matching grant open to school districts, cooperative high schools, vocational centers, and special education cooperatives. Eligible applicants can receive up to \$50,000 to put toward completing proposed maintenance projects. This grant is awarded by school district not individual school and the district must provide matching funds for the project, equal to the awarded grant.

Funding Opportunity: \$50,000

The Investment Tax Credit

Offering Description:

The Investment Tax Credit (ITC) is a federal incentive equal to 30% of eligible expenses for qualifying installations and entities. It is included in the rebate total shown on the "Solar Opportunities" page. Through provisions established in the Inflation Reduction Act, tax exempt organizations can take advantage of the tax credits through either direct pay or a transfer of credit. For more information, please visit the [Office of Energy Efficiency & Renewable Energy](#) page.

Funding Opportunity: \$1,065,410

Illinois Shines Renewable Energy Credits

Offering Description:

Illinois Shines (<https://illinoisshines.com/illinois-shines-accepting-new-applications/>) is the brand name of the Adjustable Block Program, a state-administered program for new solar photovoltaic systems. The program provides payments in exchange for 20 years of Renewable Energy Credits (RECs) generated by new PV systems on site. Payments vary depending on the system's size and where it is located.

Funding Opportunity: \$1,360,290

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ADDITIONAL FUNDING OFFERINGS

Distributed Generation Rebate

Offering Description:

The Distributed Generation Rebate is an optional ComEd incentive. It is included in the rebate total shown on the "Solar Opportunities" page. You can qualify for this by installing a smart inverter and allowing ComEd to control it for purposes of grid reliability. For more information visit the [Distributed Generation Rebates](#) page

Funding Opportunity: \$289,163

The Investment Tax Credit - GSHP

Offering Description:

The Investment Tax Credit (ITC) is a federal tax credit available up to 49% of eligible expenses for qualifying installations and entities. To be conservative, we considered a 30% credit in our analysis, and it is shown as the incentive on the "EEE" page under Ground Source Heat Pump measure. Through provisions established in the Inflation Reduction Act, tax exempt organizations can take advantage of the tax credits through either direct pay or a transfer of credit. For more information, please visit the White House website([Inflation-Reduction-Act-Guidebook.pdf \(whitehouse.gov\)](#))-Page 14.

Funding Opportunity: \$2,663,203

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Footnotes

Values rounded for simplicity.

For the Standard Incentives program, the total incentives paid cannot exceed 90% of the incremental measure cost or 90% of the total project cost.

- A** Indicates that the estimated cost of this solution is equal to the incremental cost difference between the energy-efficient equipment and the standard efficiency option.
- B** Evaporator Fan Motors are concealed and assumed to be Shaded-Pole type. If motors are Electronically Commutated, there is still an incentive to retrofit with fan controls.
- C** Incentives for these types of fuel-switching measures are not currently available but may be available in the future. Please consult with your Outreach Professional to determine eligibility.
- D** The cost included in this report is the incremental cost. The initial capital cost for this system is estimated to be \$7,409,417.
- E** Discounts are available through participating distributors in the Instant Discounts Program. Incentive is in the form of a discounted product cost provided at the time of purchase. Learn more and find a list of participating distributors at [ComEd.com/InstantDiscounts](https://www.comed.com/instantdiscounts).
- F** Presented as an alternative to the line item above and shown for comparison purposes. Please note this recommendation is not included in the totals.



= Does Not Payback

Electricity Cost = \$0.1205/kWh (provided by the customer)

Natural Gas Cost = \$1.140/therm (average commercial retail price for the State of Illinois in 2023) - Energy Information Administration

APPLICATION PROCESS

1**CHECK PROJECT AND EQUIPMENT ELIGIBILITY**

- Project must be a new improvement at an existing facility that results in a permanent reduction in electrical usage (kWh).
- All installed equipment must meet or exceed the ComEd Energy Efficiency Program incentive specifications and be installed in facilities served by ComEd. Customers must have a valid ComEd account number on a ComEd non-residential rate.

2**SUBMIT A PRE-APPLICATION (IF REQUIRED)**

- A pre-application is required for certain projects, including all Custom projects. A pre-application is not required for a Standard project when requesting incentives of less than \$1,000 or DX tune-up incentives.
- If your Standard project requires a pre-application, complete and submit the ComEd Energy Efficiency Program Standard Application and applicable Incentive Worksheets. If your project requires pre-application, you'll need to wait to start your project until you receive a reservation letter.
- If you are applying for custom incentives, complete and submit a Custom Application. Wait to start your project until you receive a reservation letter.
- Once you receive your reservation letter, incentive funds for your project will be set aside for 90 days or until the end of the program year, whichever comes first.
- A pre-installation inspection may be required. If so, we will contact you to schedule the inspection.

3**INSTALL EQUIPMENT OR PERFORM PROJECT WORK**

- The incentive reservation allows you 90 days to complete your project. Contact the ComEd Energy Efficiency Program team if you think your project will require more than 90 days.
- Verify that the equipment to be installed meets or exceeds the specifications found on the ComEd Energy Efficiency Program Incentive Worksheet.

4**SUBMIT A FINAL APPLICATION**

- Submit a Final Application as soon as your project is completed, but no more than 60 days after completion. Final Applications received more than 60 days after completion will be rejected.
- The ComEd Energy Efficiency Program team will review your Final Application. You may be contacted during the final review to schedule a post-installation inspection.

5**RECEIVE INCENTIVE PAYMENT**

- The incentive check will be sent four to six weeks after your complete Final Application is submitted.

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ENERGY MANAGEMENT RESOURCES

Business Energy Analyzer

The ComEd Business Energy Analyzer is a free tool that allows non-residential customers to analyze their facility's energy usage, learn how the facility's energy-use patterns compare with similar facilities, and track energy usage savings before and after implementing energy efficiency project. To sign up, please visit www.ComEd.com/BEA and register using the facility's ComEd account number and zip code.

Voluntary Load Reduction

The ComEd Voluntary Load Reduction (VLR) program offers all non-residential customers financial rewards for reducing electricity use during peak periods on the grid. This program is strictly voluntary and there are never any penalties. Incentive levels and the frequency of VLR events will vary depending upon market and/or system conditions. To sign up, please email VLR@ComEd.com. For more information, please visit www.ComEd.com/VLR.

Energy Usage Data System

Building owners, property managers, and benchmarking representatives can use the Energy Usage Data System (EUDS) tool to help retrieve the aggregate energy usage data of their single-tenant and multi-tenant (4 tenants or more) commercial, residential and industrial buildings. EUDS enables users to view whole building energy usage data per month, send usage data to ENERGY STAR® Portfolio Manager® and retrieve building performance metrics from ENERGY STAR Portfolio Manager. Please note that this tool can be used to meet local benchmarking ordinances. Learn more at www.ComEd.com/EnergyUsageData.

Electric Vehicles

Driving an electric vehicle can be three to five times cheaper than gasoline and diesel-powered cars, depending on your local gasoline and electric rates. If your facility is considering adding an electric vehicle infrastructure, ComEd has tools to help you determine the savings, benefits & incentives associated with electric vehicles. To learn more, please visit www.ComEd.com/EV.

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DISCLAIMER

All values shown in this report are estimates, including potential incentive amounts. Further development and cost analysis of the opportunities are recommended prior to investment. The incentive amounts and application approvals are subject to the terms and conditions of the ComEd Energy Efficiency Program. This letter in no way implies approval of incentive amounts or applications or serves as a pre-approval.

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