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Carbon Free Assessment

Prepared for

Kaneland McDole Elementary School

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Acct. Number ending in 7026 • 2901 Simpson Pkwy, Montgomery, IL 60538 • 8/1/2023

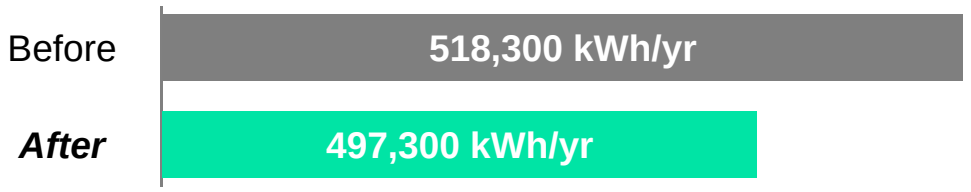
EXECUTIVE SUMMARY

Financial Benefit

We estimate your Facility has the potential for:

Annual Savings	**$41,050**
ComEd® Energy Efficiency Program Incentive	**$65,950**

Annual Energy Benefit



Up to 4% Energy Savings

Up to 20,900 kWh Reduced

Annual Environmental Benefit

Can Reduce Your Carbon Footprint by up to…

736 Metric Tons of CO_2 Equivalent

or **169 Cars off the Road Annually**

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Public School Assessment

Financial Benefit by Simple Payback

Estimated <2 Year Payback Opportunities

Measure	Annual Cost Savings	Project Cost	Incentive	Simple Payback (Years)
Install Lighting Controls	$130	$670	$600	0.5
Replace Metal Halide Lighting	$1,500	$5,400	$2,700	1.8
Subtotal	**$1,630**	**$6,070**	**$3,300**	**1.7**

Estimated 2-5 Year Payback Opportunities

Measure	Annual Cost Savings	Project Cost	Incentive	Simple Payback (Years)
DX Tune-Up	$40	$160	$50	2.8
Subtotal	**$40**	**$160**	**$50**	**2.8**

Estimated >5 Year Payback Opportunities

Measure	Annual Cost Savings	Project Cost	Incentive	Simple Payback (Years)
Retrofit HVAC Pump	$1,980	$17,100	$6,000	5.6
Install Building Energy Management System	$7,700	$76,800	$24,600	6.8
Replace T8 Lighting	$7,700	$117,500	$32,000	11.1
Subtotal	**$17,380**	**$211,400**	**$62,600**	**8.6**

For the Standard Incentives program, the total incentive paid cannot exceed 100 percent of the incremental measure cost and 100 percent of the total project cost.

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

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Energy Efficiency Electrification

Measure	Annual Cost Savings	Project Cost	Incentive	Simple Payback (Years)
Install Heat Pump Water Heater	- $890	$3,100	$0	
Install Ground Source Heat Pump	$21,400	$2,100,000	$0	
Subtotal	**$20,510**	**$2,103,100**	**$0**	**102.5**
ASSESSMENT TOTAL	***$39,560***	***$2,320,730***	***$65,950***	***57.0***

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

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OPERATIONAL OPPORTUNITIES

Operational Opportunities offer simple, effective ways to reduce energy costs at your facility. The following recommendations are based on meter data and engineer observations during the site visit. While the following opportunities identified do not offer ComEd incentives, they have no cost and can provide immediate energy savings when implemented.

Turn Off Equipment

Turn Off Lighting

During the site visit, it was observed that the lighting in the stairways was being operated even when the spaces were getting adequate daylighting. Shutting off these light fixtures would result in energy savings with no hinderance to operation. For our analysis, we assumed about (15) interior three-lamp fluorescent T8 fixtures can be turned off for 960 hours annually.

Estimated Electric Savings (kWh/yr): 1,600 **Estimated Cost Savings ($/yr): $190**

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OPERATIONAL OPPORTUNITIES

Optimization Opportunities

Reduce Domestic Water Heater Temperature Setpoint

The facility has (1) 199,000 btu/hr natural gas storage water heater with a 125-gallon capacity for domestic hot water. The water heater is being operated at a temperature setpoint of 140°F. Turning down this setpoint to 120°F would result in savings, with no impacts on the current operation. The Illinois Administrative Code 890.210 states that all lavatory faucets shall be adjusted to provide hot water at a maximum temperature of 110°F, and a 120°F setpoint is expected to be sufficient to provide the water at the recommended temperature.

Estimated Natural Gas Savings (therms/yr): 1,700 **Estimated Cost Savings ($/yr): $1,300**

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ADDITIONAL PROGRAM OFFERINGS

Available Offerings

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

- ☑ **Strategic Energy Management**
- ☑ **Retro-Commissioning**
- ☑ **Building Operator Certification**
- ☐ **Industrial Systems**
- ☐ **New Construction**
- ☐ **Multi-Family Assessment**

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:

By efficiently managing your facility's energy use and implementing simple, low-cost changes, Strategic Energy Management can lower your energy consumption and operating costs while boosting your bottom line.

At no cost to you, ComEd will assign an energy coach and a support team, who will perform an energy assessment of your site, model and monitor your energy consumption over the course of a year, identify operational changes and behaviors that can help reduce your energy bill, provide materials and training to help your employees save energy while on the job.

This year-long engagement includes a series of workshops and monthly coaching sessions focused on identifying and implementing changes. For participating, 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 $2000 in additional savings.

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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: Virtual Commissioning

Participants receive a fully funded VCx study that uses their ComEd smart meter to identify energy conservation measures. Showing onsite personnel these changes would help the newer personnel get familiar with HVAC controls. Typically energy savings of 5-15% of annual usage can be achieved from this program, and on average, this program lasts for 3 months.

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:

Building Operator Certification(BOC) is a training and certification for commercial building operators. The curriculum teaches participants how to improve building comfort and efficiency by optimizing their building's systems.

ComEd's BOC Pilot offers partial participant tuition-reimbursement for ComEd customers who complete the curriculum. The goal is to implement energy-saving practices at this location. BOC training has two curricula: BOC level-I and BOC level-II. Both curricula require a time commitment for class training and assigned projects spread over several months.

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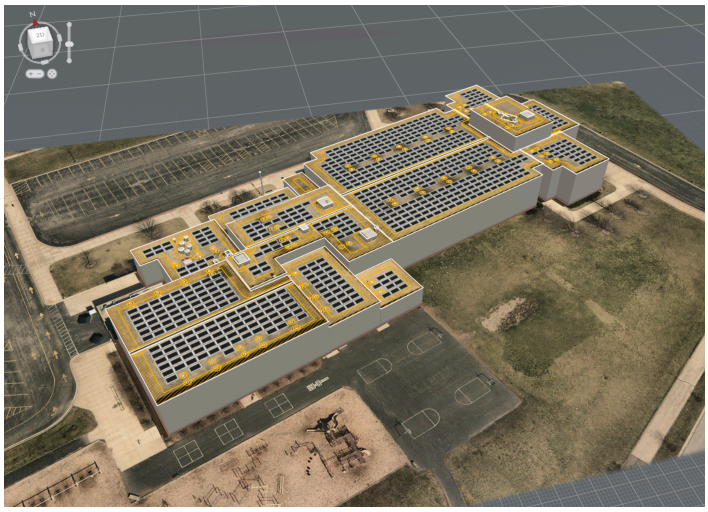
SOLAR OPPORTUNITIES

The facilities' 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.



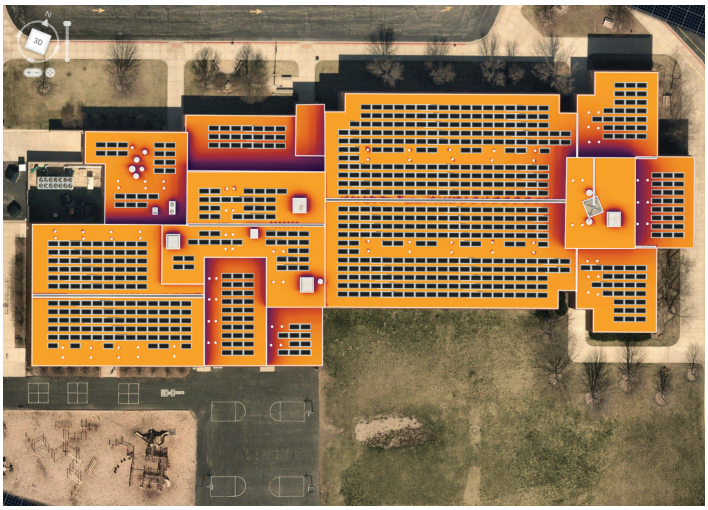
Project Details

Estimated Solar Capacity: ***350 kW***

Estimated Annual Generation: ***448,700 kWh***

Estimated # of Solar Panels: ***710***

Annual Energy Use Offset: ***80%***



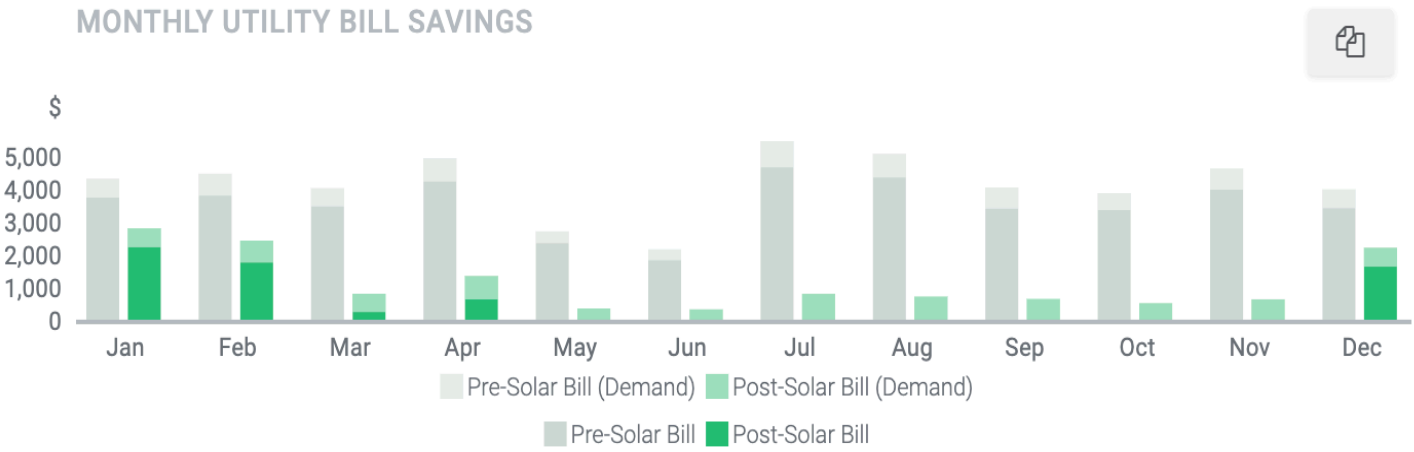
Financial Details

Estimated Project Cost: ***$920,600***

Estimated Incentive: ***$876,700***

Estimated Simple Payback: ***9.1 Years***

Lifetime Savings: ***$1,312,500***



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 ***$4,000***

Cleaning And Sanitization Procedures				2
	O	SC1	Support Handwashing	
	O	SC2	Reduce Surface Contact	
X	O	SC3	Improve Cleaning Practices	
X	O	SC4	Select Preferred Cleaning Products	
	O	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 assesses 27 opportunities. Of those 27 opportunities, 15 opportunities are required to be met for certification. This facility meets 11 opportunities, including 2 opportunities in the Cleaning and Sanitization Procedures section.

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.

Recommendations:
We recommend you implement all three measures above. The cost is difficult to determine for policy related measures 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***

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WELL CERTIFICATION

Emergency Preparedness Programs				4
X	O	SE1	Develop Emergency Preparedness Plan	
X	O	SE2	Create Business Continuity Plan	
	O	SE3	Plan for Healthy Re-Entry	
X	O	SE4	Provide Emergency Resources	
X	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.

This facility meets 4 opportunities in the Emergency Preparedness Programs section.

The following opportunities were not met:
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.
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:
Implementing SE3 would involve working on your policies and implementing SE6 would be a physical measure in a sense as to performing body temperature checks, distributing masks & gloves etc. We expect that either of these measures should take relatively similar effort. The school just needs to make a decision based on which department can work on achieving this. 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***

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WELL CERTIFICATION

Health Service Resources				4
x	O	SH1	Provide Sick Leave	
x	O	SH2	Provide Health Benefits	
	O	SH3	Support Mental Health Recovery	
x	O	SH4	Promote Vaccines	
x	O	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.

This facility meets 4 opportunities in the Health Service Resources section.

The following opportunity was not met:
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.

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

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

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Air And Water Quality Management				1
	O	SA1	Assess Ventilation	
	O	SA2	Assess and Maintain Air Treatment Systems	
	O	SA3	Develop Legionella Management Plan	
	O	SA4	Monitor Air and Water Quality	
X	O	SA5	Manage Mold and Moisture	

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.

This facility meets 1 opportunity in the Air and Water Quality Management section.

Note that SA1, SA2, and SA3 were not assessed as part of this report.

The following opportunity was not met:
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.

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

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

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WELL CERTIFICATION

Stakeholder Engagement And Communication			0
	O	SS1	Promote Health and Well-Being
	O	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

We expect the facility doesn't qualify for any opportunities in this section. Please refer to the following descriptions for more details.

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***

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Innovation				0
	O	SI1	Innovation I	
	O	SI2	Innovation II	
	O	SI3	Innovation III	
	O	SI4	Gateways to Health-Safety	

Feature Description
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.
Because Innovation opportunities require comparatively more time and effort to achieve, at this stage we recommend focusing on the other opportunities above to get the minimum pre-requisites and achieve the WELL Health and Safety Rating.

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

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

Energy Efficiency Measure Details

Lighting Solutions

Install Lighting Controls

Install sensors which turn lights on/off based on space occupancy and/or ambient light levels

Location	Qty	Existing	Proposed	Estimated Energy Savings (kWh/Yr)	Estimated Savings ($/Yr)	Estimated Cost ($)	Estimated Incentive ($)	Payback (Years)
Gym and Library	30	80W LED High Bay Fixtures (80W)	Install Occupancy Sensors	1,200	$130	$670	$600	0.5
Install Lighting Controls			**Subtotal**	**1,200**	**$130**	**$670**	**$600**	**0.5**

Replace Metal Halide Lighting

Replace Metal Halide Fixtures with LED Fixtures, which are more efficient and provide comparable lighting levels

Location	Qty	Existing	Proposed[A]	Estimated Energy Savings (kWh/Yr)	Estimated Savings ($/Yr)	Estimated Cost ($)	Estimated Incentive ($)	Payback (Years)
Parking Lot	10	400W Metal Halide Pole Fixtures (455W)	120W LED Pole Fixtures (120W)	12,700	$1,500	$5,400	$2,700	1.8
Replace Metal Halide Lighting			**Subtotal**	**12,700**	**$1,500**	**$5,400**	**$2,700**	**1.8**

Energy Efficiency Measure Details

Lighting Solutions

Replace T8 Lighting

Replace T8 Fluorescent Fixtures with LED Fixtures, which are more efficient and provide comparable lighting levels

Location	Qty	Existing	Proposed[A]	Estimated Energy Savings (kWh/Yr)	Estimated Savings ($/Yr)	Estimated Cost ($)	Estimated Incentive ($)	Payback (Years)
Classrooms	600	3-Lamp 4-ft F32 T8 with Standard BF Electronic Ballast (88W)	45W LED Troffer Fixtures with Integrated Occupancy Sensors (45W)	54,600	$6,400	$94,000	$27,400	10.4
Hallways	150	2-Lamp 4-ft F32 T8 with Standard BF Electronic Ballast (59W)	30W LED Troffer Fixtures with Integrated Occupancy Sensors (30W)	10,900	$1,300	$23,500	$4,600	14.5
Replace T8 Lighting			**Subtotal**	**65,500**	**$7,700**	**$117,500**	**$32,000**	**11.1**
Lighting Solutions Total			***Subtotal***	***79,400***	***$9,330***	***$123,570***	***$35,300***	***9.5***

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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 Energy Savings (Therm/Yr)	Estimated Savings ($/Yr)	Estimated Cost ($)[B]	Estimated Incentive ($)	Payback (Years)
Ground[C]	1	New 250 Ton Air-Cooled Chiller with Minimum Efficiency as Required by Code (IPLV = 0.75 kW/ton)	High Efficiency Air-Cooled Chiller (IPLV ≤ 0.65 kW/ton)	20,900	0	$2,400	$18,000	$15,000	1.3
Replace Chiller			**Subtotal**	**0**	**0**	**$0**	**$0**	**$0**	**0.0**

Install Building Energy Management System

Install a Building Energy Management System, which controls building temperature more efficiently

Location	Size (sqft)	Existing	Proposed[D]	Estimated Energy Savings (kWh/Yr)	Estimated Energy Savings (Therm/Yr)	Estimated Savings ($/Yr)	Estimated Cost ($)[E]	Estimated Incentive ($)	Payback (Years)
Classrooms and Gym	60,000	Digital Building Automation System (>15 years old)	Install a Modern Building Energy Management System with at least 6 Enhanced Control Strategies	35,000	4,800	$7,700	$76,800	$24,600	6.8
Install Building Energy Management System			**Subtotal**	**35,000**	**4,800**	**$7,700**	**$76,800**	**$24,600**	**6.8**

Energy Efficiency Measure Details

HVAC Solutions

DX Tune-Up

Improve the efficiency and performance of the existing packaged and/or split direct expansion (DX) systems

Location	Qty	Existing	Proposed	Estimated Energy Savings (kWh/Yr)	Estimated Energy Savings (Therm/Yr)	Estimated Savings ($/Yr)	Estimated Cost ($)	Estimated Incentive ($)[F]	Payback (Years)
Rooftop	1	5 Ton Split System	Install Notched V-belt	310	0	$40	$160	$50	2.8
DX Tune-Up			**Subtotal**	**310**	**0**	**$40**	**$160**	**$50**	**2.8**
HVAC Solutions Total			***Subtotal***	***35,310***	***4,800***	***$7,740***	***$76,960***	***$24,650***	***6.8***

Energy Efficiency Measure Details

VSD Solutions

Retrofit HVAC Pump

Install a Variable Speed Drive on the pump motor, which controls the motor speed to meet demand, reducing the energy consumed by the motor

Location	Qty	Existing	Proposed	Estimated Energy Savings (kWh/Yr)	Estimated Savings ($/Yr)	Estimated Cost ($)[G]	Estimated Incentive ($)	Payback (Years)
Mechanical Room	1	20 HP Chilled Water Pump without Variable Speed Controls	Add Variable Speed Drive Controls to the Pump	5,800	$680	$5,700	$3,000	4.0
Boiler Room	2	20 HP Hot Water Circulation Pump without Variable Speed Controls	Add Variable Speed Drive Controls to the Pump	11,400	$1,300	$11,400	$3,000	6.5
Retrofit HVAC Pump			**Subtotal**	**17,200**	**$1,980**	**$17,100**	**$6,000**	**5.6**
VSD Solutions Total			***Subtotal***	***17,200***	***$1,980***	***$17,100***	***$6,000***	***5.6***

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 it includes a broad range of environmentally-friendly solutions that enable facilities to achieve their sustainability goals.

Install Ground Source Heat Pump

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

Location	Qty	Existing	Proposed	Estimated Electric Energy Usage (kWh/Yr)	Estimated Energy Savings (Therm/Yr)	Estimated Savings ($/Yr)	Estimated Cost ($)	Payback (Years)
Entire Facility	1	Air Handling Units with hot water heating and chilled water cooling	Brine to Air Ground Loop Heat Pump	86,300	42,100	$21,400	$2,100,000[H]	
Install Ground Source Heat Pump			**Subtotal**	**86,300**	**42,100**	**$21,400**	**$2,100,000**	

Install Heat Pump Water Heater

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

Location	Qty	Existing	Proposed	Estimated Electric Energy Usage (kWh/Yr)	Estimated Energy Savings (Therm/Yr)	Estimated Savings ($/Yr)	Estimated Cost ($)	Payback (Years)
Mechanical Room	1	Natural Gas-Fired Water Heaters	Heat Pump Water Heaters	26,200	2,900	- $890	$3,100	
Install Heat Pump Water Heater			**Subtotal**	**26,200**	**2,900**	**- $890**	**$3,100**	

Energy Efficiency Electrification

Install Variable Refrigerant Flow (VRF) System

Install Variable Refrigerant Flow system to improve system efficiency and reduce your building's overall carbon emissions

Location	Qty	Existing	Proposed	Estimated Electric Energy Usage (kWh/Yr)	Estimated Energy Savings (Therm/Yr)	Estimated Savings ($/Yr)	Estimated Cost ($)	Payback (Years)
Rooftop(Entire Facility)[I]	1	Air Handling Units with hot water heating and chilled water cooling	Most Efficient Air Cooled Variable Refrigerant Flow	109,200	42,100	$18,800	$1,500,000	
Install Variable Refrigerant Flow (VRF) System			**Subtotal**	**0**	**0**	**$0**	**$0**	

Install Electric Storage Water Heater

Install an Electric Storage Water heater to improve system efficiency and reduce your building's overall carbon emissions

Location	Qty	Existing	Proposed	Estimated Electric Energy Usage (kWh/Yr)	Estimated Energy Savings (Therm/Yr)	Estimated Savings ($/Yr)	Estimated Cost ($)	Payback (Years)
Mechanical Room[J]	1	Natural Gas-Fired Storage Tank Water Heaters	Electric Storage Tank Water Heaters	72,200	2,900	- $6,300	$2,400	
Install Electric Storage Water Heater			**Subtotal**	**0**	**0**	**$0**	**$0**	
Energy Efficiency Electrification Total			***Subtotal***	***112,500***	***45,000***	***$20,510***	***$2,103,100***	***102.5***

Electrification Baseline Conditions

Baseline System Conditions

Facility System: **Building Description**

Kaneland McDole Elementary School was constructed in the 2000's. The facility has a total area of about 82,136 sq.ft.

HVAC: The facility is conditioned by about (6) air handling units with hot water heating and chilled water cooling. The hot water is provided by (2) 5250 MBH boilers and the chilled water is provided (1) 160-ton chiller. The cooling for the offices is provided by a 20-ton condensing DX unit. There are a couple of unit heaters with hot water heating in the mechanical rooms. All HVAC equipment is controlled through the Building Automation System (BAS).

DHW: Domestic hot water for the facility is provided by (1) 199,000 Btu/hr natural gas storage water heater with a 125-gallon capacity.

Lighting: The classrooms and hallways in the facility are mostly illuminated by fluorescent T8 lamps with on/off switches. A few areas, including the gym and library, have been upgraded to LEDs. The exterior wallpack lights have been converted to LEDs and the pole lights are still metal halide. All exterior lighting is operated on photocells.

Facility System: **Proposed Electrification**

For electrification, we recommend that you replace the existing HVAC equipment with Ground Source Heat Pumps (GSHPs). We also included a Variable Refrigerant Flow system as an alternative for your reference.

Facility System: **Electric Vehicles**

All vehicles in the district are currently parked overnight at the high school, so we included all electric vehicles in the high school report.

Facility System: **Annual Natural Gas Usage**

From the natural gas bills provided, we estimate that the facility uses about 39,000 therms of natural gas annually. We considered a buffer factor in our analysis to accommodate year-to-year weather variation.

Facility System: **Building Envelope and Mechanical Insulation**

The school's envelope and insulation seems to be in good condition. So, no measures were recommended.

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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**

Upgrading your electrical infrastructure may be necessary if increasing the load on the system significantly. With electrification, the electric load is expected to increase and it would likely be necessary to upgrade your current electric infrastructure to accommodate this. The cost shown is a rough idea of how much this would cost. This cost is separate from the cost of any electrification measures.

Estimated Cost: ***$328,000***

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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:

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

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: ***$88,500***

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: ***$512,014***

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ADDITIONAL FUNDING OFFERINGS

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: ***$276,169***

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: ***$900,000***

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***

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ADDITIONAL FUNDING OFFERINGS

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: ***$100,000***

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Footnotes

Values rounded for simplicity.

For the Standard Incentives program, the total incentives paid cannot exceed 100% of the incremental measure cost or 100% of the total project cost.

Programmed Start ballasts are recommended for all lighting sensor applications. (i.e. Occupancy Sensors, Daylighting Controls, etc.)

A Product must be listed on DesignLightsTM Consortium (DLC) Qualified Products list, available at **www.designlights.org**.

B 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.

C Presented as an alternative to show the savings and incentives available as the current chiller is in working condition.

D For a list of applicable Enhanced Building Control Strategies, please consult the **ComEd Energy Efficiency Program Energy Management System Incentives Worksheet.**

E Building Energy Management System Prices vary widely depending on facility type and equipment. The cost value listed is an average of many different building types, to get a more specific cost value, please consult a vendor.

F No pre-application is needed for DX Tune-Up measures. Once work is complete, please submit a final application for approval. For further DX Tune-Up requirements, please see the Standard Program DX Tune-Up worksheet found at: ComEd.com/WaysToSave/ForYourBusiness/Documents/DXTuneUpWorksheet.pdf

G To realize savings with VSDs, any three-way valve systems must be replaced with two-way valves to allow the flow to modulate at part load. The estimated project cost is for the Variable Speed Drives only and does not account for valve replacements or piping modifications. It is recommended to work with an Energy Efficiency Service Provider or other design consultant to further develop this measure before implementation.

H Please note that this measure can receive a federal tax credit, and we have removed that from the total estimated cost of $3,000,000

I Presented as an alternative to the GSHP measure above and shown for comparison purposes. Please note this recommendation is not included in the totals.

J Presented as an alternative to the HPWH measure above and shown for comparison purposes. Please note this recommendation is not included in the totals.

= Project will only result in carbon emission savings. Utilities may increase as a result of the project

= Does Not Payback

Electricity Cost = $0.1170/kWh (provided by the customer)

Natural Gas Cost = $0.749/therm (provided by the customer)

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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** or call ComEd at 1-877-426-6331. 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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