Carbon Free Assessment

Prepared for

Elizabeth Ide Elementary School

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Acct. Number ending in 4003 • 2000 Manning Rd, Darien, IL 60561 • 2/13/2023

EXECUTIVE SUMMARY

Financial Benefit

We estimate your Facility has the potential for:

Annual Savings \$5,714

ComEd® Energy Efficiency Program Incentive \$1,450

Annual Energy Benefit							
Before	501,300 kWh/yr	Up to 2% Energy Savings					
After	354,200 kWh/yr	Up to 12,400 kWh Reduced					

Annual Environmental Benefit

Can Reduce Your Carbon Footprint by up to...

195 Metric Tons of CO₂ Equivalent or 46 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	\$0	\$20	\$20	0.0	
Subtotal	\$0	\$20	\$20		

Estimated 2-5 Year Payback Opportunities

Measure	Annual Cost Savings	Project Cost	Incentive	Simple Payback (Years)	
DX Tune-Up	\$440	\$2,470	\$1,040	3.3	
Subtotal	\$440	\$2,470	\$1,040	3.2	

Estimated >5 Year Payback Opportunities

Measure	Annual Cost Savings	Project Cost	Incentive	Simple Payback (Years)
Install Restroom Exhaust Fan Occupancy Sensors	\$470	\$4,100	\$90	8.5
Subtotal	\$470	\$4,100	\$90	8.5

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.

Instant Discount Incentives

Measure	Annual Cost Savings	Project Cost	Incentive	Simple Payback (Years)	
Relamp T8 Lighting	\$180	\$1,150	\$300	4.7	
Subtotal	\$180	\$1,150	\$300	4.7	

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

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Public School Assessment

Energy Efficiency Electrification

	<u> </u>			
Measure	Annual Cost Savings	Project Cost	Incentive	Simple Payback (Years)
Install Air-Source Heat Pump	\$3,800	\$252,800	\$0	DNP
Install Heat Pump Water Heater	\$60	\$6,200	\$0	DNP
Subtotal	\$3,860	\$259,000	\$0	67.1
ASSESSMENT TOTAL	\$4,950	\$266,740	\$1,450	53.6

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.

Optimization Opportunities

Enable Unoccupied Setback

All five roof top units were found to have minimal unoccupied heating and cooling setbacks. Setbacks can help save energy by reducing heating and cooling demand when no one is occupying the building. During the site visit, implementing the setbacks in the BAS was briefly attempted with no luck. Reaching out to the service contractor for more information, seeking guidance from manufacturer instructions, or participating in the retro-commissioning program might be helpful.

Estimated Electric Savings (kWh/yr): 4,400 Estimated Cost Savings (\$/yr): \$430

Estimated Natural Gas Savings (therms/yr): 40

Adjust Hot Water Temperature

The school uses two 150 kbtu/h, 100 gallon hot water heaters. It was found that one unit had a setpoint of 140°F. When hot water heaters are set at temperatures above 120°F, the excess heat creates wasted energy. By setting a lower temperature of 120°F, there is a reduction on usage without any additional cost to the consumer.

Estimated Natural Gas Savings (therms/yr): 410 Estimated Cost Savings (\$/yr): \$360

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ADDITIONAL PROGRAM OFFERINGS

Available Offerings						
In addition to Standard Incentives, your facility Strategic Energy Management	y may also be eligible for the following: Retro-Commissioning					
☑ Building Operator Certification	☐ Industrial Systems					
■ New Construction	☐ Multi-Family Assessment					

Strategic Energy Management

Offering Description:

Strategic Energy Management is a holistic program that systematically identifies opportunities to save energy helping customers to 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. It focuses on finding, planning, and implementing low-cost behavioral and operational changes that can lead to energy savings. The program also measures and monitors energy savings, and ComEd offers various incentives for participants.

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ADDITIONAL PROGRAM OFFERINGS

Retro-Commissioning

Offering Description:

Retro-Commissioning is a full-building tune-up 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 \$1,000 to implement any energy savings measures. During the site visit, it was found that the HVAC system was likely not optimally controlled. Several fan coil units were found to be unresponsive to space temperature (i.e. calling for cooling despite space temperature being lower than setpoint), roof top units had no or minimal unoccupied setbacks, dedicated outside air units were not operating during occupied hours, etc. The RCx study may help in improving understanding of controlling the school's heat pump system, identifying energy savings opportunities, and can be expected to reduce energy use by 5-10%.

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 partial tuition rebate upon completion of training.

Opportunity at Your Facility:

Building Operator Certification is an eight-day training program that provides building operators with training on design, preventative maintenance, equipment troubleshooting, and diagnostic strategies for energy systems and equipment. Trained personnel will be able to implement cost-saving improvements to the school's energy systems, improving student and staff comfort and equipment durability.

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ADDITIONAL OPPORTUNITIES

Natural Gas Savings Opportunity

The following opportunities were identified for natural gas savings at your facility. While ComEd does not provide incentives for these opportunities, it is recommended that you contact your natural gas provider for possible support and incentives through their programs.

Opportunity at Your Facility: Demand Controlled Ventilation in Gym

The two gym rooftop units were found to have carbon dioxide monitoring capabilities, although no carbon dioxide sensors were installed. Since occupancy tends to vary greatly throughout the day, a gym typically serves as a good opportunity to perform demand controlled ventilation. By installing carbon dioxide sensors and enabling their operation in the building automation system, outdoor air intake would be modulated by space carbon dioxide levels. A reduction in heating demand of 374 therms/year can be expected.

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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.



Financial Details

Estimated Project Cost: \$409,800 Estimated Incentive: \$408,700

Estimated Simple Payback: 8.9 Years

Lifetime Savings: \$432,500

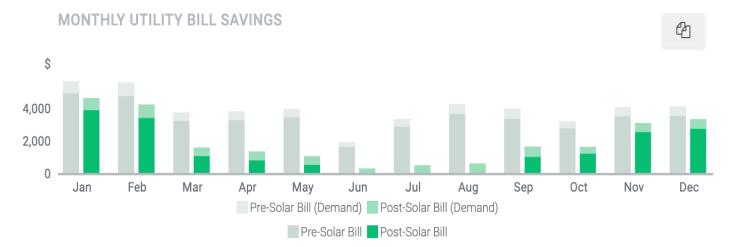
Project Details

Estimated Solar Capacity: 160 kW

Estimated Annual Generation: 193,900 kWh

Estimated # of Solar Panels: 320
Annual Energy Use Offset: 40%





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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Energy Efficiency Measure Details

Lighting Solutions

Relamp T8 Lighting

Relamp T8 Fluorescent Fixtures with Tubular LED (TLED) lamps, which are more efficient than Standard Fluorescent T8 Lamps and provide comparable light levels

Location	Qty	Existing	Proposed ^A	Estimated Energy Savings (kWh/Yr)	Estimated Savings (\$/Yr)	Estimated Cost (\$)	Estimated Incentive (\$) ^B	Payback (Years)
Gym	18	3-Lamp 4-ft F32 T8 with Standard BF Electronic Ballast (88W)	3-Lamp 4-ft Tubular LED (TLED) Lamps (42W)	1,800	\$160	\$940	\$270	4.2
Gym Storage	5	1-Lamp 4-ft F32 T8 with Standard BF Electronic Ballast (32W)	1-Lamp 4-ft Tubular LED (TLED) Lamps (14W)	190	\$20	\$210	\$30	9.0
Relamp T8 Lighting			Subtotal	1,990	\$180	\$1,150	\$300	4.7

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 Storage	5	1-Lamp 4-ft Tubular LED (TLED) Lamps (14W)	Install Occupancy Sensors	40	\$0	\$20	\$20	0.0
Install Lighting Controls		Subtotal	40	\$0	\$20	\$20	0.0	
Lighting Sol	utions 1	Total	Subtotal	2,030	\$180	\$1,170	\$320	4.7

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 (\$) ^C	Payback (Years)
RTU1-2	2	15 Ton Rooftop Units	Perform Basic Air Conditioning Tune-Ups	2,100	0	\$190	\$1,100	\$450	3.4
RTU3	1	25 Ton Rooftop Unit	Perform Basic Air Conditioning Tune-Up	1,800	0	\$160	\$880	\$380	3.1
RTU4-5	2	7 Ton Rooftop Units	Perform Basic Air Conditioning Tune-Ups	990	0	\$90	\$490	\$210	3.1
DX Tune-Up			Subtota	l 4,890	0	\$440	\$2,470	\$1,040	3.3

Install Restroom Exhaust Fan Occupancy Sensors

Install occupancy sensors on stand-alone restroom exhaust fans

				Estimated Energy	Estimated Energy	Estimated	Estimated	Estimated	Раураск
Location	Qty	Existing	Proposed	Savings (kWh/Yr)	Savings (Therm/Yr)	Savings (\$/Yr)	Cost (\$)	Incentive (\$)	(Years)
Restrooms	9	Uncontrolled Restroom Exhaust Fans	Install Restroom Exhaust Fan Occupancy Sensors	1,100	420	\$470	\$4,100	\$90	8.5
Install Restroo Sensors	m Exhaus	st Fan Occupancy	Subtotal	1,100	420	\$470	\$4,100	\$90	8.5
HVAC Solu	itions 7		Subtotal	5,990	420	\$910	\$6,570	\$1,130	6.0

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 Heat Pump Water Heater

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

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				Electric Energy	Estimated Energy	Estimated	Estimated	Payback
Location	Qty	Existing	Proposed	Usage (kWh/Yr)	Savings (Therm/Yr)	Savings (\$/Yr)	Cost (\$)	(Years)
Mechanical Room	2	Natural Gas-Fired Water Heaters	Heat Pump Water Heaters	7,900	880	\$60	\$6,200	DNP
Install Heat Pump V	Vater H	eater	Subtot	al 7,900	880	\$60	\$6,200	DNP

Install Air-Source Heat Pump

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

Estimated

Location	Qty	Existing	Proposed	Electric Energy Usage (kWh/Yr)	Estimated Energy Savings (Therm/Yr)	Estimated Savings (\$/Yr)	Estimated Cost (\$)	Payback (Years)
Rooftop	5	RTU 1-5	Electric Air Cooled (Electric Backup) Cold Climate Air Source Heat Pump	51,400	9,600	\$3,800	\$252,800	DNP
Install Air-Sour	rce Heat Pump		Subtotal	51,400	9,600	\$3,800	\$252,800	DNP
Energy Effi	iciency Elect	trification Total	Subtotal	59,300	10,480	\$3,860	\$259,000	DNP

Electrification Baseline Conditions

Baseline System Conditions

Facility System: Lighting

Interior lighting is all LED lighting on occupancy sensor controls. Exterior lighting is all LED lighting on timers and photocells.

Facility System: HVAC

The school's classrooms and office areas are primarily heated and cooled with an air-source VRF system with fan coil units. Ventilation is provided by four dedicated outside air units. The remaining spaces including the gym, hallways, and IMC area are served by five direct expansion, natural gas fired roof top units. All systems are controlled via the building automation system.

Facility System: Electric Vehicles

See Prairieview Elementary School PSCFA report.

Facility System: Building Construction

Elizabeth Ide Elementary School is a 54,000 square foot facility constructed in the 1970s. It received a new addition and large scale HVAC renovation in 2017. As such, the roof, mechanical insulation, and windows are all in good condition. The walls of the original building, however, are masonry and original to the building.

Facility System: Gas Usage

Annual gas usage at the schools is approximately 10,500 therms/year.



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

K-12 Solar Schools Grant

Offering Description:

The K-12 Solar Schools Grant program

(https://www.illinoiscleanenergy.org/energy-program/k-12-solar-schools/) supports the installation of a 1 kW photovoltaic (PV) system. Public K-12 schools may apply for up to \$6,400 or 90% of solar system and installation costs, whichever is less.

Funding Opportunity: \$6,400

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.

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: \$150,000

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 <u>Distributed Generation Rebates</u> page

Funding Opportunity: \$39,500

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: \$246,287

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: \$122,939

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APPLICATION PROCESS



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.

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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.

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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.

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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 Smart Returns 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 **SmartReturns@exeloncorp.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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