

Carbon Free Assessment

Prepared for *Glenbard East High School*

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Acct. Number ending in 3009 • 1014 S Main St, Lombard, IL 60148 • 3/30/2023

EXECUTIVE SUMMARY

Financial Benefit

We estimate your Facility has the potential for:

	Annual Savings	\$89,360
ComEd® Energy Efficiency Program Incentive		\$14,070

Annual Energy Benefit

Before

2,233,200 kWh/yr

Up to 5% Energy Savings

After

2,499,300 kWh/yr

Up to 101,400 kWh Reduced

Annual Environmental Benefit

Can Reduce Your Carbon Footprint by up to...

1,381 Metric Tons of CO₂ Equivalent
or 302 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 Automatic Door Closers	\$460	\$630	\$480	0.3
Install A Vending Machine Occupancy Sensor	\$150	\$180	\$100	0.5
Install Lighting Controls	\$120	\$180	\$90	0.8
Subtotal	\$730	\$990	\$670	0.4

Estimated 2-5 Year Payback Opportunities

Measure	Annual Cost Savings	Project Cost	Incentive	Simple Payback (Years)
DX Tune-Up	\$770	\$3,500	\$1,800	2.2
Replace T8 Lighting	\$5,400	\$26,500	\$9,600	3.1
Subtotal	\$6,170	\$30,000	\$11,400	3.0

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.

Illinois Commercial Food Services Program

Measure	Annual Cost Savings	Project Cost	Incentive	Simple Payback (Years)
Install Kitchen Fume Hood Exhaust Controls	\$4,900	\$25,600	\$2,000	4.8
Subtotal	\$4,900	\$25,600	\$2,000	4.8

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	- \$340	\$6,200	\$0	DNP
Install Ground Source Heat Pump	\$57,500	\$8,700,000	\$0	DNP
Subtotal	\$57,160	\$8,706,200	\$0	152.3

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

Electric Vehicle

Measure	Annual Cost Savings	Project Cost	Incentive	Simple Payback (Years)
Replace Transit and Shuttle Buses	\$11,500	\$440,000	\$0	38.3
Replace Medium Duty Vehicles	\$5,300	\$210,000	\$0	39.6
Replace Light Duty Vehicles	\$3,600	\$290,000	\$0	DNP
Subtotal	\$20,400	\$940,000	\$0	46.1
ASSESSMENT TOTAL	\$89,360	\$9,702,790	\$14,070	108.4

Please see section titled "Electric Vehicle" 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:

- | | |
|--|--|
| ☒ 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 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 the changes would help the newer personnel get more familiar with HVAC controls.

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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WELL CERTIFICATION

The WELL Building Standard™ provides evidence-based applications that could transform healthy learning environments and improve the wellness and well-being of its students, faculties and supporting staff members. promoting physical fitness, providing mental health support and education, reducing air and noise pollution, and engaging teachers and community members. Through these interventions, educational spaces can create an environment that optimizes student well-being and academic performance, allowing them to reach their full potential.

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

Total Estimated Cost to Achieve Certification \$5,000

Air			0
	P	A01 Air Quality	
X	P	A02 Smoke-Free Environment	
	P	A03 Ventilation Design	
	P	A04 Construction Pollution Management	
	O	A05 Enhanced Air Quality	
	O	A06 Enhanced Ventilation Design	
	O	A07 Operable Windows	
	O	A08 Air Quality Monitoring and Awareness	
	O	A09 Pollution Infiltration Management	
	O	A10 Combustion Minimization	
	O	A11 Source Separation	
	O	A12 Air Filtration	
	O	A13 Enhanced Supply Air	
	O	A14 Microbe and Mold Control	

WELL CERTIFICATION

Feature Description

The Air features in WELL provide an improved, comprehensive approach to address problems of indoor air Quality and its effects on student health.

Customer opted for WELL Health and Safety. Shown above is WELL 2.0 and is not descriptive of the WELL Health and Safety. Because of the difference many measures read as 'N' although they were not studied for this report. This should not be reflected on this school.

WELL Health and Safety uses specific measures from WELL 2.0:

A01.5 (not all air pollutants monitored that are required)

A02.1-2

A03.1 (this could not be verified while onsite.)

A13.1 (It appears as if this measure would qualify but, at present, unknown)

Some measures may require additional cost to qualify. It appears the facility qualifies for 10 opportunities. The minimum of 15 measures are needed to certify. WELL Health and Safety cost a minimum of \$3,250 per building to begin certification.

Estimated Cost to Achieve Pre-Requisite \$0

Estimated Cost to Achieve Certification \$0

WELL CERTIFICATION

Water			0
	P	W01	Water Quality Indicators
	P	W02	Drinking Water Quality
	P	W03	Basic Water Management
	O	W04	Enhanced Water Quality
	O	W05	Drinking Water Quality Management
	O	W06	Drinking Water Promotion
	O	W07	Moisture Management
	O	W08	Hygiene Support
	O	W09	β Onsite Non-Potable Water Reuse

Feature Description
<i>The Water features in WELL provide an improved, comprehensive approach to address problems of water quality and its effects on student health.</i>
Customer opted for WELL Health and Safety. Shown above is WELL 2.0 and is not descriptive of the WELL Health and Safety. Because of the difference many measures read as 'N' although they were not studied for this report. This should not be reflected on this school. WELL Health and Safety uses specific measures from WELL 2.0: W03.2 (not applicable) W05.1 (not able to be verified while onsite) W07.3 (unsure) W08.4 (not seen while onsite) Some measures may require additional cost to qualify. It appears the facility qualifies for 10 opportunities. W07.3 and W08.4 are being recommended. As the cost for these policy changes are unclear a \$1000 cost is being used as a estimate. The minimum of 15 measures are needed to certify. WELL Health and Safety cost a minimum of \$3,250 per building to begin certification.

Estimated Cost to Achieve Pre-Requisite \$0

Estimated Cost to Achieve Certification \$2,000

WELL CERTIFICATION

Nourishment			0
	P	N01	Fruits and Vegetables
	P	N02	Nutritional Transparency
	O	N03	Refined Ingredients
	O	N04	Food Advertising
	O	N05	Artificial Ingredients
	O	N06	Portion Sizes
	O	N07	Nutrition Education
	O	N08	Mindful Eating
	O	N09	Special Diets
	O	N10	Food Preparation
	O	N11	Responsible Food Sourcing
	O	N12	Food Production
	O	N13	Local Food Environment
	O	N14	β Red and Processed Meats

Feature Description
<i>The Nourishment features in WELL provide an improved, comprehensive approach to address problems of nutrition quality and its effects on student health.</i>
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Estimated Cost to Achieve Pre-Requisite \$0

Estimated Cost to Achieve Certification \$1,000

WELL CERTIFICATION

Light			0
	P	L01	Light Exposure
	P	L02	Visual Lighting Design
	O	L03	Circadian Lighting Design
	O	L04	Electric Light Glare Control
	O	L05	Daylight Design Strategies
	O	L06	Daylight Simulation
	O	L07	Visual Balance
	O	L08	Electric Light Quality
	O	L09	Occupant Lighting Control

Feature Description
<i>The Light features in WELL provide an improved, comprehensive approach to address problems of light quality and its effects on student health.</i>
<i>Not included for WELL Health and Safety.</i>
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Estimated Cost to Achieve Pre-Requisite \$0

Estimated Cost to Achieve Certification \$0

WELL CERTIFICATION

Movement			0
	P	V01	Active Buildings and Communities
	P	V02	Ergonomic Workstation Design
	O	V03	Circulation Network
	O	V04	Facilities for Active Occupants
	O	V05	Site Planning and Selection
	O	V06	Physical Activity Opportunities
	O	V07	Active Furnishings
	O	V08	Physical Activity Spaces and Equipment
	O	V09	Physical Activity Promotion
	O	V10	Self-Monitoring
	O	V11	β Ergonomics Programming

Feature Description
<i>Movement features promote active living and discourage sedentary behaviors, implemented through environmental design strategies, programs, and policies.</i>
<i>Not included for WELL Health and Safety.</i>
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Estimated Cost to Achieve Pre-Requisite \$0

Estimated Cost to Achieve Certification \$0

WELL CERTIFICATION

Thermal Comfort			0
	P	T01	Thermal Performance
	O	T02	Verified Thermal Comfort
	O	T03	Thermal Zoning
	O	T04	Individual Thermal Control
	O	T05	Radiant Thermal Comfort
	O	T06	Thermal Comfort Monitoring
	O	T07	Humidity Control
	O	T08	β Enhanced Operable Windows
	O	T09	β Outdoor Thermal Comfort

Feature Description
<i>The Thermal Comfort features in WELL provide an improved, comprehensive approach to address problems of thermal comfort and its effects on student health.</i>
<i>Not included for WELL Health and Safety.</i>
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Estimated Cost to Achieve Pre-Requisite \$0

Estimated Cost to Achieve Certification \$0

WELL CERTIFICATION

Sound				0
	P	S01	Sound Mapping	
	O	S02	Maximum Noise Levels	
	O	S03	Sound Barriers	
	O	S04	Reverberation Time	
	O	S05	Sound Reducing Surfaces	
	O	S06	Minimum Background Sound	
	O	S07	β Impact Noise Management	
	O	S08	β Enhanced Audio Devices	
	O	S09	β Hearing Health Conservation	

Feature Description
<i>The Sound feature also addresses noise pollution by ensuring that indoor spaces are equipped with acoustics that support the learning environment and influence the number of days missed at school.</i>
<i>Not included for WELL Health and Safety.</i>
<i>Customer opted for WELL Health and Safety. Shown above is WELL 2.0 and is not descriptive of the WELL Health and Safety. Because of the difference many measures read as 'N' although they were not studied for this report. This should not be reflected on this school.</i>

Estimated Cost to Achieve Pre-Requisite \$0

Estimated Cost to Achieve Certification \$0

WELL CERTIFICATION

Materials			3
	P	X01	Material Restrictions
	P	X02	Interior Hazardous Materials Management
	P	X03	CCA and Lead Management
	O	X04	Site Remediation
	O	X05	Enhanced Material Restrictions
	O	X06	VOC Restrictions
	O	X07	Materials Transparency
	O	X08	Materials Optimization
	O	X09	Waste Management
	O	X10	Pest Management and Pesticide Use
X	O	X11	Cleaning Products and Protocols
X	O	X12	β Contact Reduction

Feature Description
<i>Classrooms or communal spaces that have direct access to sunlight, green walls, natural materials or smart space design may provide better outcomes for students.</i>
<i>Customer opted for WELL Health and Safety. Shown above is WELL 2.0 and is not descriptive of the WELL Health and Safety. Because of the difference many measures read as 'N' although they were not studied for this report. This should not be reflected on this school.</i> <i>WELL Health and Safety uses specific measures from WELL 2.0:</i> <i>X11.1</i> <i>X11.2</i> <i>X12.1</i> <i>X12.2 (not all steps available to comply with measure)</i> <i>Some measures may require additional cost to qualify. It appears the facility qualifies for 10 opportunities. The minimum of 15 measures are needed to certify. WELL Health and Safety cost a minimum of \$3,250 per building to begin certification.</i>

Estimated Cost to Achieve Pre-Requisite \$0

Estimated Cost to Achieve Certification \$0

WELL CERTIFICATION

Mind			0
	P	M01	Mental Health Promotion
	P	M02	Nature and Place
	O	M03	Mental Health Services
	O	M04	Mental Health Education
	O	M05	Stress Management
	O	M06	Restorative Opportunities
	O	M07	Restorative Spaces
	O	M08	Restorative Programming
	O	M09	Enhanced Access to Nature
	O	M10	Tobacco Cessation
	O	M11	Substance Use Services

Feature Description
<i>Schools have the opportunity to positively impact students' mental health, physical health and academic performance through educational materials and by incorporating natural elements into the space.</i>
<i>Customer opted for WELL Health and Safety. Shown above is WELL 2.0 and is not descriptive of the WELL Health and Safety. Because of the difference many measures read as 'N' although they were not studied for this report. This should not be reflected on this school. WELL Health and Safety uses specific measures from WELL 2.0: M03.2</i>
<i>Some measures may require additional cost to qualify. It appears the facility qualifies for 10 opportunities. The minimum of 15 measures are needed to certify. WELL Health and Safety cost a minimum of \$3,250 per building to begin certification.</i>

Estimated Cost to Achieve Pre-Requisite \$0

Estimated Cost to Achieve Certification \$0

WELL CERTIFICATION

Community			7
	P	C01	Health and Well-Being Promotion
	P	C02	Integrative Design
X	P	C03	Emergency Preparedness
	P	C04	Occupant Survey
	O	C05	Enhanced Occupant Survey
X	O	C06	Health Services and Benefits
	O	C07	Enhanced Health and Well-Being Promotion
	O	C08	New Parent Support
	O	C09	New Mother Support
	O	C10	Family Support
	O	C11	Civic Engagement
	O	C12	Diversity and Inclusion
	O	C13	Accessibility and Universal Design
X	O	C14	Emergency Resources
X	O	C15	β Emergency Resilience and Recovery
	O	C16	β Housing Equity
	O	C17	β Responsible Labor Practices
	O	C18	β Support for Victims of Domestic Violence

WELL CERTIFICATION

Feature Description

The Community feature aims to support access to essential healthcare, workplace health promotion and establish inclusive, integrated community through social equity, civic engagement and accessible design.

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WELL Health and Safety uses specific measures from WELL 2.0:

C02.2 (not known)

C03.1

C06.1

C06.3

C06.4 (not discussed)

C14.1

C15.1 (unknown)

C15.2 (not determined)

C15.3 (unknown)

C15.4

Some measures may require additional cost to qualify. It appears the facility qualifies for 10 opportunities. C15.1 and C15.3 are being recommended. As the cost for these policy changes are unclear a \$1000 cost is being used as a estimate. The minimum of 15 measures are needed to certify. WELL Health and Safety cost a minimum of \$3,250 per building to begin certification.

Estimated Cost to Achieve Pre-Requisite \$0

Estimated Cost to Achieve Certification \$2,000

WELL CERTIFICATION

Innovation			0
	I	I01	Innovate WELL
	I	I02	WELL Accredited Professional (WELL AP)
	I	I03	Experience WELL Certification
	I	I04	Gateways to Well-Being
	I	I05	Green Building Rating Systems
	I	I06	β Carbon Disclosure and Reduction

Feature Description
<i>Educational institutions that foster cross-collaboration, innovation and a strong sense of ownership ensure higher retention rates, as well as attracting talent to join the institution. Promoting leadership rankings and motivating employees to work productively and contribute to their professional environment.</i>
<i>Not included for WELL Health and Safety.</i>
<i>Customer opted for WELL Health and Safety. Shown above is WELL 2.0 and is not descriptive of the WELL Health and Safety. Because of the difference many measures read as 'N' although they were not studied for this report. This should not be reflected on this school.</i>
<i>The cost of registering for certification is \$3250 per building. This cost is being added to this section.</i>

Estimated Cost to Achieve Pre-Requisite \$3,250

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)
Building Exterior	15	75W LED Outdoor WP Fixtures (75W)	Install Photocells	1,400	\$120	\$180	\$90	0.8
Install Lighting Controls			Subtotal	1,400	\$120	\$180	\$90	0.8

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)
Cafeteria	50	8-Lamp 4-ft F32 T8 Fixtures (256W)	102W 4-ft LED Strip Fixtures (102W)	38,400	\$3,500	\$7,500	\$6,200	0.4
Classrooms	100	3-Lamp 4-ft F32 T8 with Standard BF Electronic Ballast (88W)	30W LED Troffer Fixtures (30W)	21,500	\$1,900	\$19,000	\$3,400	8.2
Replace T8 Lighting			Subtotal	59,900	\$5,400	\$26,500	\$9,600	3.1
Lighting Solutions Total			Subtotal	61,300	\$5,520	\$26,680	\$9,690	3.1

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 Savings (\$/Yr)	Estimated Cost (\$)	Estimated Incentive (\$) ^B	Payback (Years)
Rooftop	7	10 Ton Rooftop Units	Perform Basic Air Conditioning Tune-Ups	8,500	\$770	\$3,500	\$1,800	2.2
DX Tune-Up Subtotal				8,500	\$770	\$3,500	\$1,800	2.2
HVAC Solutions Total				8,500	\$770	\$3,500	\$1,800	2.2

Energy Efficiency Measure Details

Refrigeration Solutions

Install Automatic Door Closers

Install automatic closers to the main insulated opaque door(s) of a walk-in cooler or freezer

Location	Qty	Existing	Proposed	Estimated Energy Savings (kWh/Yr)	Estimated Savings (\$/Yr)	Estimated Cost (\$)	Estimated Incentive (\$)	Payback (Years)
Kitchen	1	Walk-In Freezers without Automatic Door Closers	Install Automatic Door Closers	2,300	\$210	\$160	\$120	0.2
Kitchen	3	Walk-In Coolers without Automatic Door Closers	Install Automatic Door Closers	2,800	\$250	\$470	\$360	0.4
Install Automatic Door Closers			Subtotal	5,100	\$460	\$630	\$480	0.3
Refrigeration Solutions Total			Subtotal	5,100	\$460	\$630	\$480	0.3

Energy Efficiency Measure Details

Special Purpose Equipment Solutions

Install Kitchen Fume Hood Exhaust Controls

Add control to Kitchen Fans to vary exhaust rate based on cooking load and/or occupancy

Location	Qty	Existing	Proposed	Estimated Energy Savings (kWh/Yr)	Estimated Energy Savings (Therm/Yr)	Estimated Savings (\$/Yr)	Estimated Cost (\$)	Estimated Incentive (\$) ^C	Payback (Years)
Kitchen	1	5 Horsepower Kitchen Fume Hood Exhaust Fan	Install Kitchen Demand Ventilation Controls	24,800	3,900	\$4,900	\$25,600	\$2,000	4.8
Install Kitchen Fume Hood Exhaust Controls			Subtotal	24,800	3,900	\$4,900	\$25,600	\$2,000	4.8

Install A Vending Machine Occupancy Sensor

Install a Sensor to cycle Vending Machine lights and/or compressor based on occupancy

Location	Qty	Existing	Proposed	Estimated Energy Savings (kWh/Yr)	Estimated Energy Savings (Therm/Yr)	Estimated Savings (\$/Yr)	Estimated Cost (\$)	Estimated Incentive (\$)	Payback (Years)
Kitchen	1	Beverage Vending Machine	Install Occupancy Sensor	1,600	0	\$150	\$180	\$100	0.5
Install A Vending Machine Occupancy Sensor			Subtotal	1,600	0	\$150	\$180	\$100	0.5

Special Purpose Equipment Solutions Total	Subtotal	26,400	3,900	\$5,050	\$25,780	\$2,100	4.7
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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 it includes a broad range of environmentally-friendly solutions that enable facilities to achieve their sustainability goals.

Install Ground Source Heat Pump

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)
School	1	800 Ton DX and Screw Chillers and 5030 kBTU/hr Natural Gas Hot Water Boiler	Brine to Air Ground Loop Heat Pump	245,700	113,800	\$57,500	\$8,700,000	DNP
Install Ground Source Heat Pump			Subtotal	245,700	113,800	\$57,500	\$8,700,000	DNP

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)
School ^D	50	800 Ton DX and Screw Chillers and 5030 kBTU/hr Natural Gas Hot Water Boiler	Most Efficient Air Cooled Variable Refrigerant Flow	403,500	113,800	\$43,300	\$4,400,000	DNP
Install Variable Refrigerant Flow (VRF) System			Subtotal	0	0	\$0	\$0	DNP

Energy Efficiency Electrification

Install Electric Boiler

Install an Electric Boiler 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)
School ^D	4	Natural Gas Hot Water Boiler	Electric Resistance Hot Water Boiler	2,242,400	113,800	- \$122,200	\$300,000	DNP

Install Electric Boiler	Subtotal	0	0	\$0	\$0	DNP
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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)
School	2	Natural Gas-Fired Water Heaters	Heat Pump Water Heaters	74,500	9,100	- \$340	\$6,200	DNP

Install Heat Pump Water Heater	Subtotal	74,500	9,100	- \$340	\$6,200	DNP
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Install Electric Instantaneous Water Heater

Install an Electric Instantaneous 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)
School ^E	2	Natural Gas-Fired Storage Tank Water Heaters	Electric Instantaneous Water Heaters	203,900	9,100	- \$12,000	\$13,700	DNP

Install Electric Instantaneous Water Heater	Subtotal	0	0	\$0	\$0	DNP
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Energy Efficiency Electrification Total	Subtotal	320,200	122,900	\$57,160	\$8,706,200	DNP
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Transportation Vehicle Electrification

Transportation Vehicle Electrification (TVE) refers to the process of replacing transportation vehicles powered directly by fossil fuel with all-electric vehicles and corresponding charging infrastructure. TVE is an important step towards decarbonization and it includes a broad range of environmentally-friendly solutions that enable facilities to achieve their sustainability goals. You can Adjust your own EV design and charging plan at ComEd.com/EV.

Replace Light Duty Vehicles

Replace existing gas powered light duty vehicles with electric light duty vehicles and dedicated chargers

Location ^F	Qty	Existing	Proposed	Estimated Electric Energy Usage (kWh/Yr)	Estimated Gasoline Savings (Gal/Yr)	Estimated Savings (\$/Yr)	Estimated Cost (\$)	Payback (Years)
Passenger Vehicle (EV)	3	Gas Model - (30.00 mpg)	2023 Equivalent Electric Model (3.03 mi/kWh)	7,800	720	\$1,700	\$120,000	DNP
Class 2	2	Class 1 - Gas - Pickup Truck 5.0L - (19.00 mpg)	2021 Equivalent Electric Class 2 - EV - Pickup Truck - 135 kWh (2.22 mi/kWh)	7,100	760	\$1,900	\$170,000	DNP
Replace Light Duty Vehicles			Subtotal	14,900	1,480	\$3,600	\$290,000	DNP

Replace Medium Duty Vehicles

Replace existing gas powered medium duty vehicles with electric medium duty vehicles and dedicated chargers

Location ^G	Qty	Existing	Proposed	Estimated Electric Energy Usage (kWh/Yr)	Estimated Diesel Savings (Gal/Yr)	Estimated Savings (\$/Yr)	Estimated Cost (\$)	Payback (Years)
Class 5	1	Class 5 - Diesel - Dump Truck 6.6L - (5.50 mpg)	2020 Equivalent Electric Class 5 - EV - Heavy Truck - 145 kWh (1.07 mi/kWh)	7,400	1,300	\$5,300	\$210,000	39.6
Replace Medium Duty Vehicles			Subtotal	7,400	1,300	\$5,300	\$210,000	39.6

Transportation Vehicle Electrification

Replace Transit and Shuttle Buses

Replace existing gas powered transit & shuttle buses with electric transit & shuttle buses and dedicated chargers.

Location	Qty	Existing	Proposed	Estimated Electric Energy Usage (kWh/Yr)	Estimated Gasoline Savings (Gal/Yr)	Estimated Savings (\$/Yr)	Estimated Cost (\$)	Payback (Years)
Shuttle Bus	4	Paratransit Shuttle - Gas - National Average Fuel Use - (7.10 mpg)	2020 Equivalent Electric Paratransit Shuttle - EV - 118 kWh (1.27 mi/kWh)	24,900	4,100	\$11,500	\$440,000	38.3
Replace Transit and Shuttle Buses			Subtotal	24,900	4,100	\$11,500	\$440,000	38.3
Electric Vehicle Total			Subtotal	47,200	5,580	\$20,400	\$940,000	46.1

Electrification Baseline Conditions

Baseline System Conditions

Facility System: Proposed Electrification

For the way the school's HVAC equipment is setup, considering the efficiencies and net energy savings, we recommend switching to ground source heat pumps as the main source of HVAC. But considering the high project costs, we included VRFs and electric boilers as alternative options as a reference for your comparison.

Facility System: Building description

Glenbard east high school was originally constructed in the 1950's, with additions in the 1960s, 2000's and 2016. The school is conditioned by (7) roof top units with DX cooling and gas heating, and (17) Air Handling Units(AHUs) with chilled and hot water loops. The facility has (4) 3000MBH condensing hot water boilers which provide hot water to heat the facility. There are (2) 350-ton water cooled screw chillers, which provide chilled water to cool the building. The fieldhouse is heated by three AHUs with hot water loops. All HVAC equipment is controlled through the Building Automation System(BAS). Domestic hot water is provided by (2) 999,999 Btu/hr condensing boilers, with a storage tank of 940-gallon capacity. Except for a few classrooms and the cafeteria, all the lighting in the facility has been converted to LEDs. The lighting schedule is controlled through the BAS. Most of the exterior lights have been converted to LEDs and they are scheduled through the BAS.

Facility System: Building Envelope and Mechanical Insulation

The school made upgrades to their envelope and insulations in 2016, and they seem to be in good condition, hence no measures were recommended.

Facility System: Annual Gas Usage

Glenbard east high school used 126,353 therms in 2022. We considered a 15% buffer factor to adjust for different weather conditions in the analysis.

Facility System: Electric Vehicles

The school district has a company that supplies their school buses, and does not own any buses. There are four shuttle buses, three minivans for Driver's Ed classes, a couple of pickup trucks and a dump truck used by the maintenance staff that are stationed at this school, for which we recommend electric options.

Facility System: Solar

The school installed solar panels on the roof in 2020. The solar modules are functioning as intended, with a nominal capacity of 0.93 MW. Hence, we didn't perform a solar analysis.



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: **Electric Vehicles Charging Infrastructure**

We expect there would be an additional cost of \$15,000 per charger to add the capacity for electric vehicles chargers. Note that this cost isn't included in the EV measure cost.

Estimated Cost: **\$150,000**

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

Upgrading your electrical infrastructure may be necessary if increasing the load on the system significantly. With geothermal the increase in overall demand is minimal and may not require an increase in the main electrical entering the building. For other electrification options like electric boilers, it would likely be necessary, and the cost shown is a rough idea of how much this would cost. This cost is separate from the cost of any electrification measures. With the school already having solar and the infrastructure to support it, this cost might vary if the current infrastructure has provisions to add capacity.

Estimated Cost: **\$350,000**

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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:

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

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: \$75,000

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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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.

- A** Product must be listed on DesignLights™ Consortium (DLC) Qualified Products list, available at www.designlights.org.
- B** 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
- C** Discounts are available through participating distributors in the Illinois Commercial Food Services 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 **www.il-foodservicerebates.com**.
- D** Presented as an alternative to the ground source heat pump measure and shown for comparison purposes. Please note this recommendation is not included in the totals.
- E** Presented as an alternative to the line heat pump water heater measure and shown for comparison purposes. Please note this recommendation is not included in the totals.
- F** We used a gas cost of \$3.35 per gallon in our analysis, which is the area average.
- G** We used a diesel cost of \$4.6 per gallon in our analysis, which is the area average.

DNP = Does Not Payback

Electricity Cost = \$0.0900/kWh (provided by the customer)

Natural Gas Cost = \$0.700/therm (average commercial retail price for the State of Illinois in 2021) - 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 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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