LGEA Presentation

Vernon Township School District

February 6, 2025

New Jersey's
Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future

INTRODUCTIONS

- *Vernon Township School District*
  - Joseph Van Kirk

- *NJ Clean Energy Program*
  - Sarah Walters – LGEA Project Manager
  - Moussa Traore – LGEA Technical Manager
  - Ryan Knippenberg – LGEA Project Auditor
  - Amanda Muench – LGEA Account Manager
  - Michelle Rossi – ESIP Coordinator

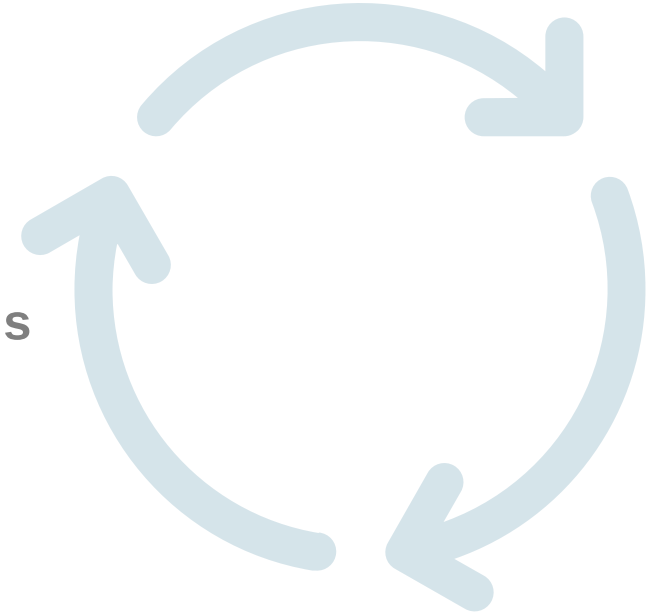
- *Utility Energy Efficiency Programs*
  - Tiffany Lewis – JCP&L

AGENDA

- The audit process overview
- Energy use & existing conditions
- Review of **E**nergy **C**onservation **M**easures (ECMs) identified & other recommendations
- Energy Savings Improvement Program (ESIP)
- Energy Efficiency Incentive Programs
- Questions regarding the draft audit report
- Next steps for Vernon Township School District

LGEA Process

- Application Approval
- Initial Call
- Facility Interviews
- Audit
- Benchmarking & Analysis
- Draft Reports
- LGEA Presentation
- Final Reports



Site Visit & Utility Analysis

Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems
- Plug Load Equipment
- Building Automation System (BAS)

Utility Consumption:

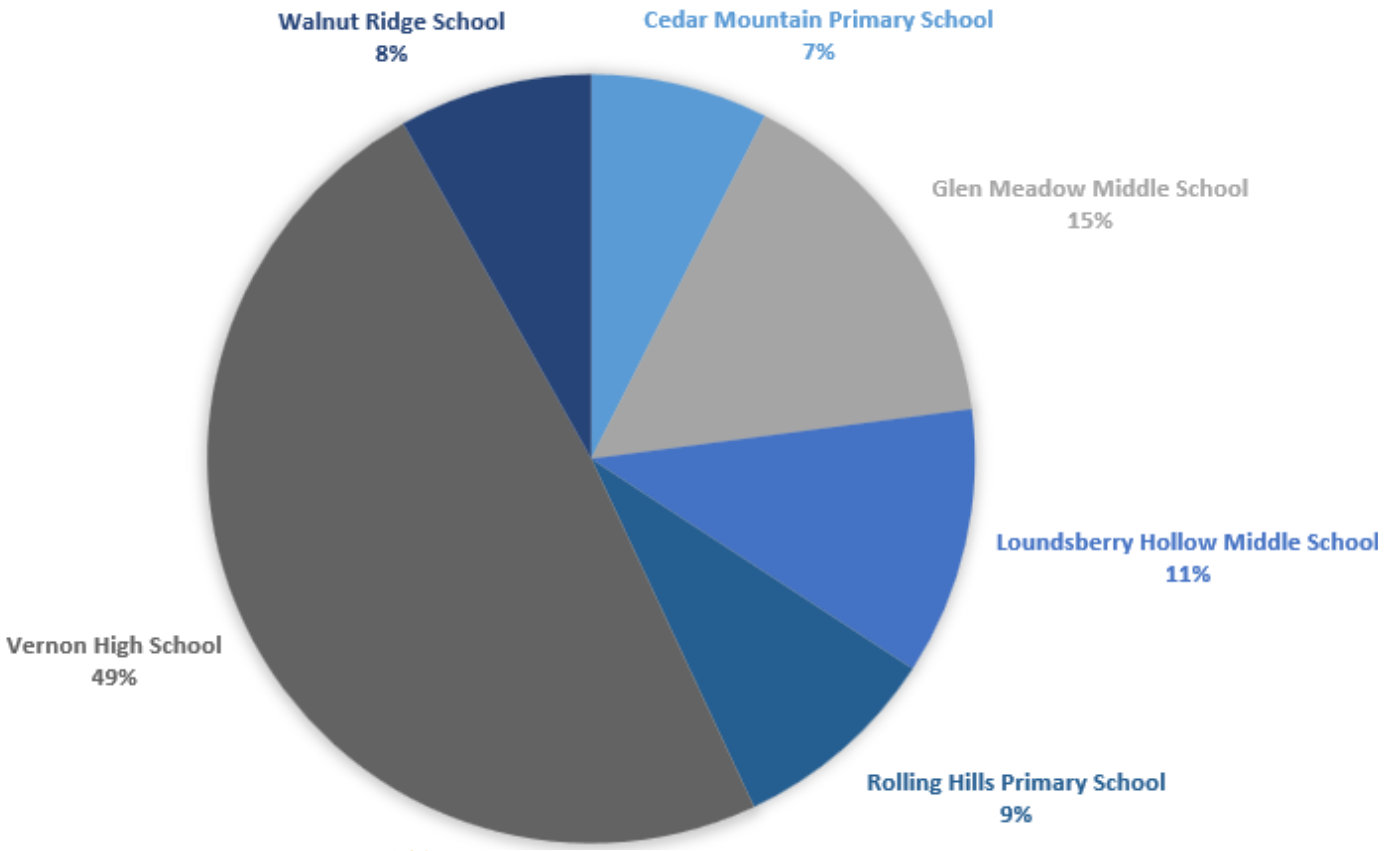
- Electric Consumption and Costs
- Solar Consumption and Costs
- Fuel Oil Consumption and Costs
- Propane Consumption and Costs

Sites Visited/Analyzed

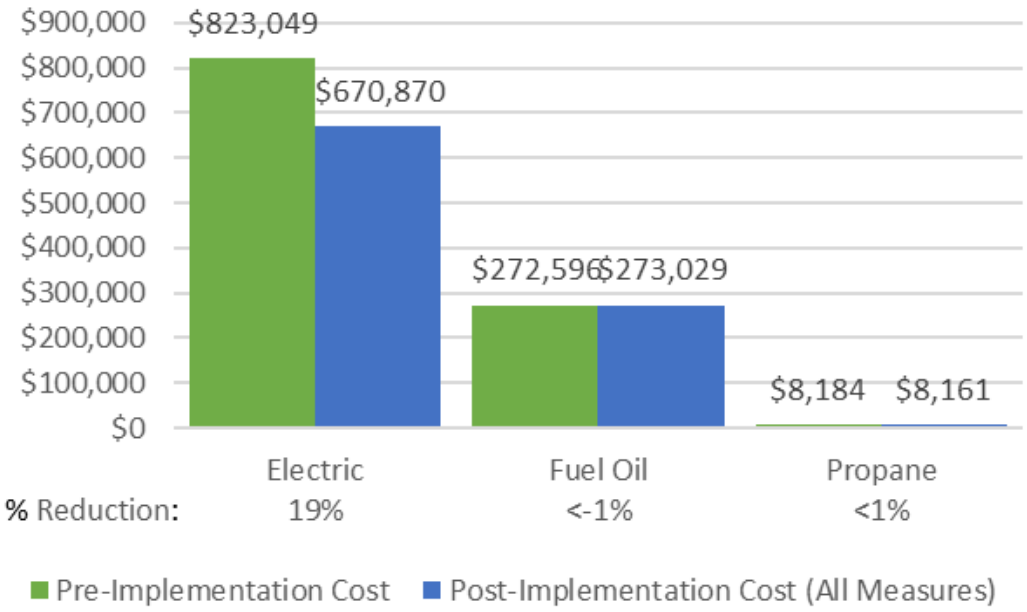
- Vernon High School
- Maintenance
- Press Box
- Sewer Plant
- Glen Meadow Middle School
- Loundsberry Hollow School & Maintenance
- Rolling Hills Primary School
- Cedar Mountain Primary School/Pump House
- Walnut Ridge School

Utility Breakout

Percent of Total Annual Energy Costs

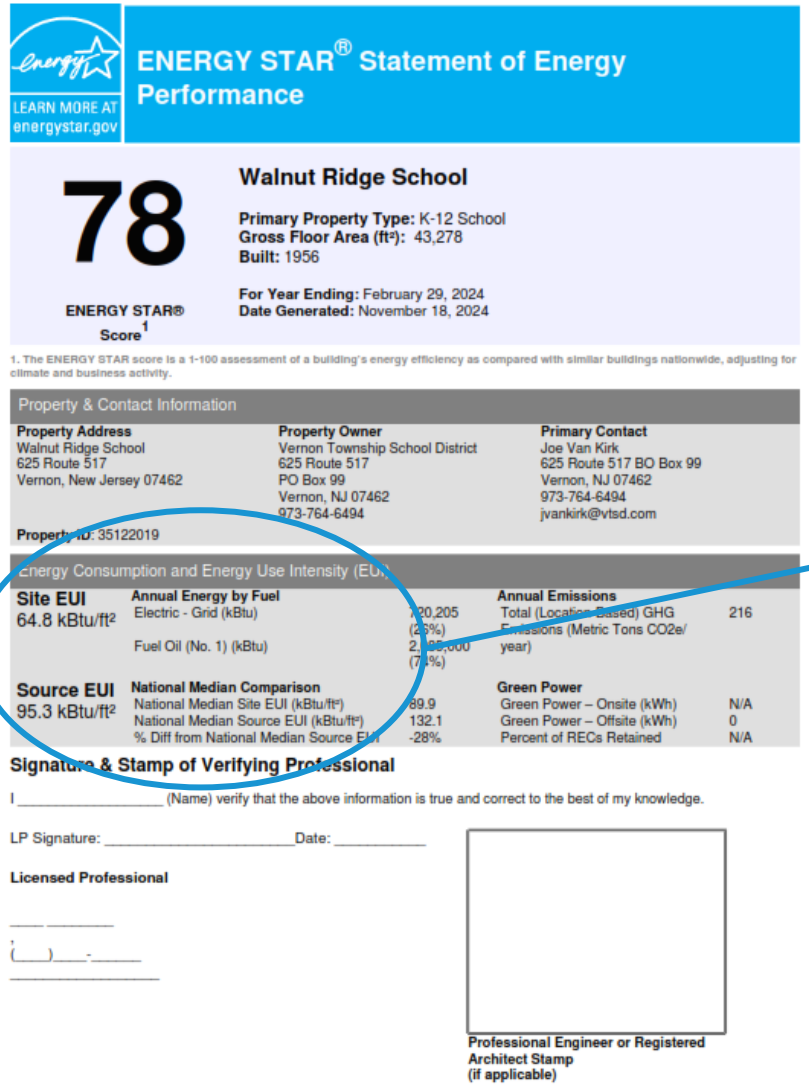


Pre & Post Implementation Cost



New Jersey's cleanenergy program™

BENCHMARKING



ENERGY STAR® Statement of Energy Performance

LEARN MORE AT energystar.gov

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ENERGY STAR® Score[1]

Walnut Ridge School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 43,278
Built: 1956

For Year Ending: February 29, 2024
Date Generated: November 18, 2024

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
Walnut Ridge School 625 Route 517 Vernon, New Jersey 07462	Vernon Township School District 625 Route 517 PO Box 99 Vernon, NJ 07462 973-764-6494	Joe Van Kirk 625 Route 517 BO Box 99 Vernon, NJ 07462 973-764-6494 jvankirk@vtsd.com

Property ID: 35122019

Energy Consumption and Energy Use Intensity (EUI)

Site EUI 64.8 kBtu/ft²	**Annual Energy by Fuel**		**Annual Emissions**	
	Electric - Grid (kBtu)	720,205 (26%)	Total (Location-Based) GHG Emissions (Metric Tons CO2e/ year)	216
	Fuel Oil (No. 1) (kBtu)	2,085,000 (74%)		
Source EUI 95.3 kBtu/ft²	**National Median Comparison**		**Green Power**	
	National Median Site EUI (kBtu/ft²)	89.9	Green Power – Onsite (kWh)	N/A
	National Median Source EUI (kBtu/ft²)	132.1	Green Power – Offsite (kWh)	0
	% Diff from National Median Source EUI	-28%	Percent of RECs Retained	N/A

Signature & Stamp of Verifying Professional

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

LP Signature: _____ Date: _____

Licensed Professional

___ _____
(___)___-____
_____

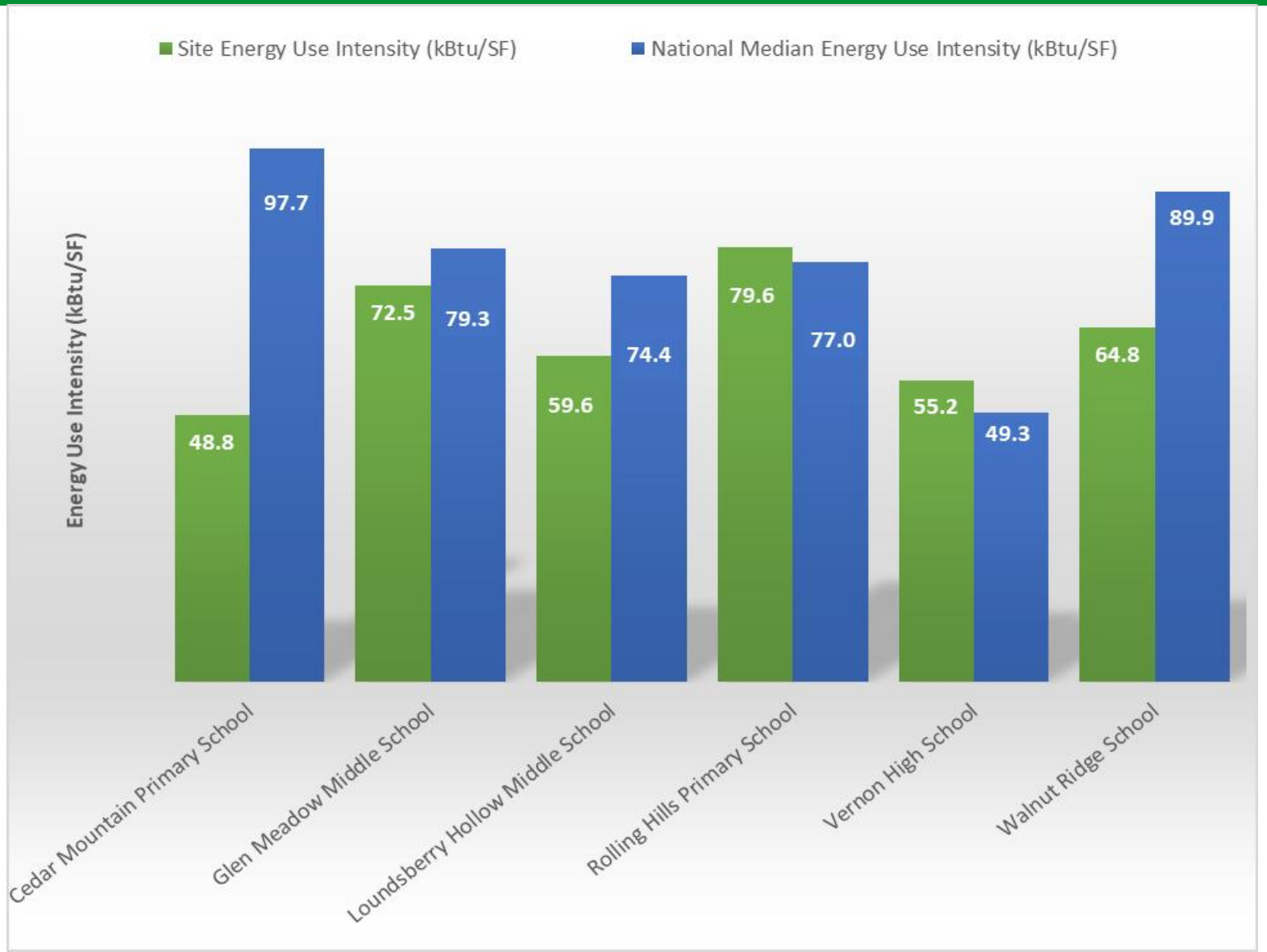
Professional Engineer or Registered Architect Stamp (if applicable)

Site EUI 64.8 kBtu/ft²	**Annual Energy by Fuel**	
	Electric - Grid (kBtu)	720,205 (26%)
	Fuel Oil (No. 1) (kBtu)	2,085,000 (74%)
Source EUI 95.3 kBtu/ft²	**National Median Comparison**	
	National Median Site EUI (kBtu/ft²)	89.9
	National Median Source EUI (kBtu/ft²)	132.1
	% Diff from National Median Source EUI	-28%

Site Name	Energy Star Score
Cedar Mountain Primary School	94
Glen Meadow Middle School	58
Loundsberry Hollow Middle School	N/A
Rolling Hills Primary School	N/A
Vernon High School	38
Walnut Ridge School	78

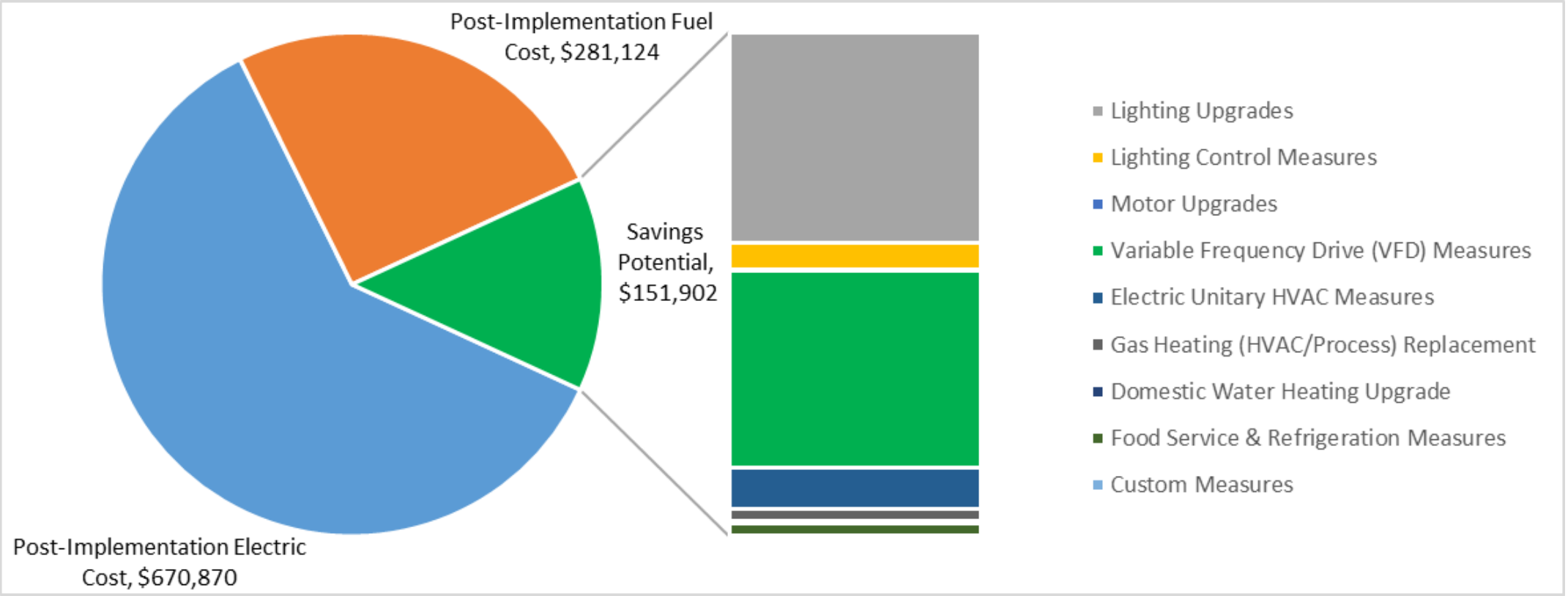
ENERGY STAR® scores are percentile ranking from 1 (least efficient) to 100 (most efficient). It compares your building's energy performance to similar buildings nationwide.

BENCHMARKING



ALL OPPORTUNITIES

Savings Potential



ALL OPPORTUNITIES (1 OF 2)

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**511,374**	**120.5**	**-188.9**	**$63,504**	**$285,290**	**$53,070**	**$232,220**	**3.7**	**484,042**
ECM 1	Install LED Fixtures	56,617	0.2	0.0	$8,209	$33,640	$4,620	$29,020	3.5	57,013
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	1,576	0.5	-0.4	$193	$1,210	$140	$1,070	5.5	1,527
ECM 3	Retrofit Fixtures with LED Lamps	453,181	119.9	-188.5	$55,103	$250,440	$48,310	$202,130	3.7	425,502
Lighting Control Measures		**60,779**	**13.6**	**-17.6**	**$7,962**	**$79,860**	**$20,730**	**$59,130**	**7.4**	**58,333**
ECM 4	Install Occupancy Sensor Lighting Controls	47,728	11.4	-12.1	$6,367	$58,760	$6,790	$51,970	8.2	46,083
ECM 5	Install High/Low Lighting Controls	13,051	2.2	-5.5	$1,595	$21,100	$13,940	$7,160	4.5	12,249
Motor Upgrades		**1,961**	**0.5**	**0.0**	**$251**	**$8,000**	**$0**	**$8,000**	**31.8**	**1,974**
ECM 6	Premium Efficiency Motors	1,961	0.5	0.0	$251	$8,000	$0	$8,000	31.8	1,974
Variable Frequency Drive (VFD) Measures		**413,989**	**96.4**	**0.0**	**$59,647**	**$306,900**	**$36,800**	**$270,100**	**4.5**	**416,883**
ECM 7	Install VFD on Variable Air Volume (VAV) Fans	193,183	49.1	0.0	$28,324	$104,900	$12,400	$92,500	3.3	194,534
ECM 8	Install VFDs on Constant Volume (CV) Fans	137,722	37.6	0.0	$19,520	$129,700	$14,200	$115,500	5.9	138,685
ECM 9	Install VFDs on Chilled Water Pumps	8,580	1.9	0.0	$1,220	$11,300	$1,800	$9,500	7.8	8,640
ECM 10	Install VFDs on Heating Water Pumps	21,170	2.9	0.0	$2,763	$30,300	$4,700	$25,600	9.3	21,318
ECM 11	Install VFDs on Water Supply Pump	53,333	4.9	0.0	$7,820	$30,700	$3,700	$27,000	3.5	53,706
Unitary HVAC Measures		**86,690**	**75.9**	**0.0**	**$12,241**	**$746,600**	**$35,700**	**$710,900**	**58.1**	**87,297**
ECM 12	Install High Efficiency Air Conditioning Units	73,688	65.0	0.0	$10,541	$680,900	$35,300	$645,600	61.2	74,203
ECM 13	Install High Efficiency Heat Pumps	13,002	10.8	0.0	$1,700	$65,700	$400	$65,300	38.4	13,093

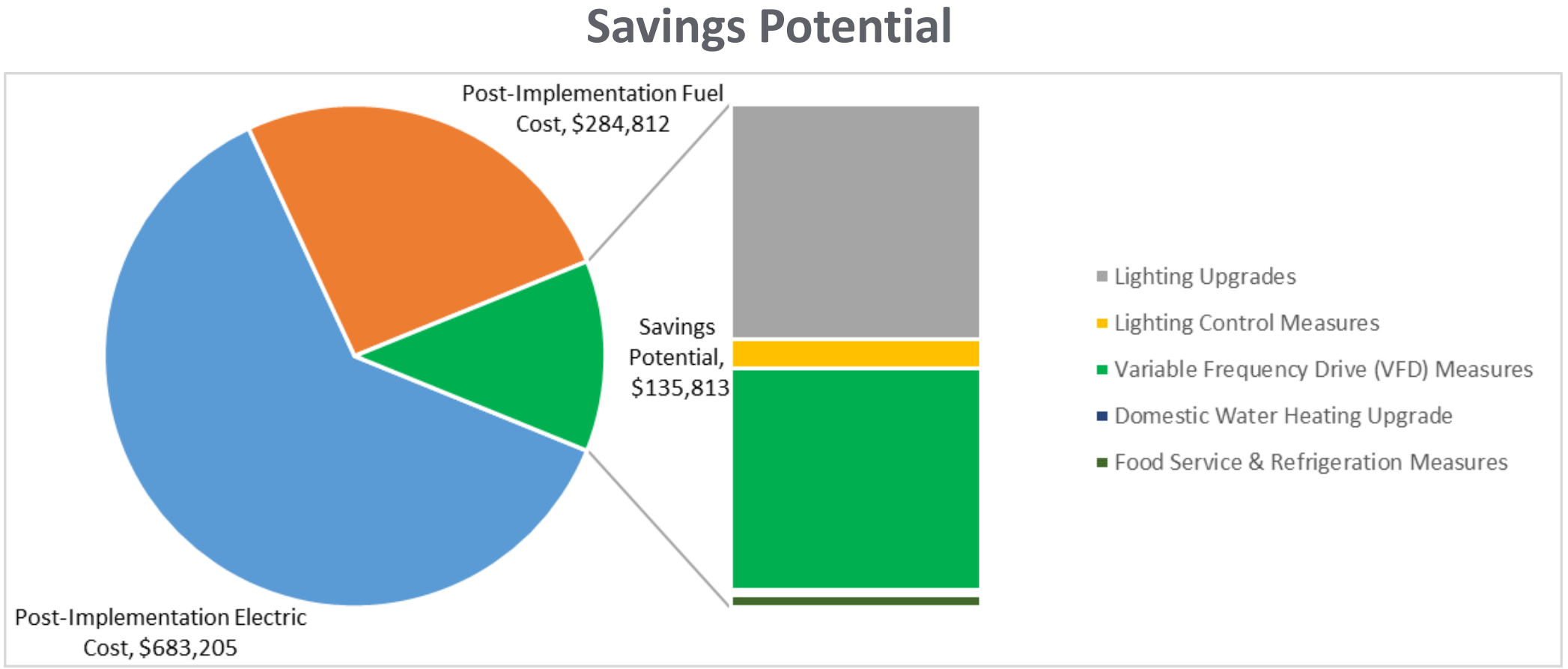
ALL OPPORTUNITIES (2 OF 2)

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**175.4**	**$3,689**	**$152,700**	**$7,600**	**$145,100**	**39.3**	**28,701**
ECM 14	Install High Efficiency Hot Water Boilers	0	0.0	175.4	$3,689	$152,700	$7,600	$145,100	39.3	28,701
Domestic Water Heating Upgrade		**5,218**	**0.0**	**10.9**	**$988**	**$1,050**	**$380**	**$670**	**0.7**	**7,016**
ECM 15	Install Low-Flow DHW Devices	5,218	0.0	10.9	$988	$1,050	$380	$670	0.7	7,016
Food Service & Refrigeration Measures		**25,971**	**2.3**	**0.0**	**$3,586**	**$28,100**	**$1,900**	**$26,200**	**7.3**	**26,153**
ECM 16	Dishwasher Replacement	9,072	1.0	0.0	$1,330	$10,800	$700	$10,100	7.6	9,136
ECM 17	Refrigerator/Freezer Case Electrically Commutated Motors	3,572	0.4	0.0	$483	$3,740	$400	$3,340	6.9	3,597
ECM 18	Refrigeration Controls	6,476	0.1	0.0	$830	$12,220	$550	$11,670	14.1	6,521
ECM 19	Vending Machine Control	6,850	0.8	0.0	$942	$1,340	$250	$1,090	1.2	6,898
Custom Measures		**-657**	**0.0**	**7.0**	**-$33**	**$2,500**	**$0**	**$2,500**	**-75.8**	**158**
ECM 20	Replace Gas Fired Water Heater with Heat Pump Water Heater	-657	0.0	7.0	-$33	$2,500	$0	$2,500	-75.8	158
TOTALS (ALL MEASURES)		**1,105,325**	**309.3**	**-13.2**	**$151,836**	**$1,611,000**	**$156,180**	**$1,454,820**	**9.6**	**1,110,556**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

Cost Effective Opportunities



Cost Effective Opportunities

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**511,374**	**120.5**	**-188.9**	**$63,504**	**$285,290**	**$53,070**	**$232,220**	**3.7**	**484,042**
ECM 1	Install LED Fixtures	56,617	0.2	0.0	$8,209	$33,640	$4,620	$29,020	3.5	57,013
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	1,576	0.5	-0.4	$193	$1,210	$140	$1,070	5.5	1,527
ECM 3	Retrofit Fixtures with LED Lamps	453,181	119.9	-188.5	$55,103	$250,440	$48,310	$202,130	3.7	425,502
Lighting Control Measures		**60,779**	**13.6**	**-17.6**	**$7,962**	**$79,860**	**$20,730**	**$59,130**	**7.4**	**58,333**
ECM 4	Install Occupancy Sensor Lighting Controls	47,728	11.4	-12.1	$6,367	$58,760	$6,790	$51,970	8.2	46,083
ECM 5	Install High/Low Lighting Controls	13,051	2.2	-5.5	$1,595	$21,100	$13,940	$7,160	4.5	12,249
Variable Frequency Drive (VFD) Measures		**413,989**	**96.4**	**0.0**	**$59,647**	**$306,900**	**$36,800**	**$270,100**	**4.5**	**416,883**
ECM 7	Install VFD on Variable Air Volume (VAV) Fans	193,183	49.1	0.0	$28,324	$104,900	$12,400	$92,500	3.3	194,534
ECM 8	Install VFDs on Constant Volume (CV) Fans	137,722	37.6	0.0	$19,520	$129,700	$14,200	$115,500	5.9	138,685
ECM 9	Install VFDs on Chilled Water Pumps	8,580	1.9	0.0	$1,220	$11,300	$1,800	$9,500	7.8	8,640
ECM 10	Install VFDs on Heating Water Pumps	21,170	2.9	0.0	$2,763	$30,300	$4,700	$25,600	9.3	21,318
ECM 11	Install VFDs on Water Supply Pump	53,333	4.9	0.0	$7,820	$30,700	$3,700	$27,000	3.5	53,706
Unitary HVAC Measures		**3,544**	**2.5**	**0.0**	**$397**	**$20,200**	**$0**	**$20,200**	**50.9**	**3,569**
ECM 13	Install High Efficiency Heat Pumps	3,544	2.5	0.0	$397	$20,200	$0	$20,200	50.9	3,569
Domestic Water Heating Upgrade		**5,218**	**0.0**	**10.9**	**$988**	**$1,050**	**$380**	**$670**	**0.7**	**7,016**
ECM 15	Install Low-Flow DHW Devices	5,218	0.0	10.9	$988	$1,050	$380	$670	0.7	7,016
Food Service & Refrigeration Measures		**24,056**	**2.3**	**0.0**	**$3,315**	**$23,340**	**$1,690**	**$21,650**	**6.5**	**24,224**
ECM 16	Dishwasher Replacement	9,072	1.0	0.0	$1,330	$10,800	$700	$10,100	7.6	9,136
ECM 17	Refrigerator/Freezer Case Electrically Commutated Motors	3,572	0.4	0.0	$483	$3,740	$400	$3,340	6.9	3,597
ECM 18	Refrigeration Controls	4,561	0.1	0.0	$559	$7,460	$340	$7,120	12.7	4,592
ECM 19	Vending Machine Control	6,850	0.8	0.0	$942	$1,340	$250	$1,090	1.2	6,898
TOTALS		**1,018,959**	**235.3**	**-195.6**	**$135,813**	**$716,640**	**$112,670**	**$603,970**	**4.4**	**994,066**

* - All incentives presented in this table are included as placesholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

HIGH SCHOOL CAMPUS

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**56,905**	**1.0**	**0**	**$8,343**	**$34,600**	**$4,870**	**$29,730**	**3.6**	**57,303**
ECM 1	Install LED Fixtures	Yes	53,902	0.2	0	$7,903	$32,380	$4,520	$27,860	3.5	54,279
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	700	0.2	0	$103	$530	$60	$470	4.6	705
ECM 3	Retrofit Fixtures with LED Lamps	Yes	2,304	0.6	0	$338	$1,690	$290	$1,400	4.1	2,320
Lighting Control Measures			**18,807**	**5.9**	**0**	**$2,757**	**$23,710**	**$2,630**	**$21,080**	**7.6**	**18,939**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	18,807	5.9	0	$2,757	$23,710	$2,630	$21,080	7.6	18,939
Motor Upgrades			**907**	**0.2**	**0**	**$133**	**$3,700**	**$0**	**$3,700**	**27.8**	**913**
ECM 5	Premium Efficiency Motors	No	907	0.2	0	$133	$3,700	$0	$3,700	27.8	913
Variable Frequency Drive (VFD) Measures			**299,333**	**68.9**	**0**	**$43,888**	**$171,200**	**$20,600**	**$150,600**	**3.4**	**301,426**
ECM 6	Install VFD on Variable Air Volume (VAV) Fans	Yes	193,183	49.1	0	$28,324	$104,900	$12,400	$92,500	3.3	194,534
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	52,817	14.8	0	$7,744	$35,600	$4,500	$31,100	4.0	53,187
ECM 8	Install VFDs on Water Supply Pump	Yes	53,333	4.9	0	$7,820	$30,700	$3,700	$27,000	3.5	53,706
Unitary HVAC Measures			**55,390**	**50.2**	**0**	**$8,121**	**$542,900**	**$27,400**	**$515,500**	**63.5**	**55,777**
ECM 9	Install High Efficiency Air Conditioning Units	No	50,923	46.5	0	$7,466	$519,800	$27,400	$492,400	65.9	51,279
ECM 10	Install High Efficiency Heat Pumps	No	4,467	3.6	0	$655	$23,100	$0	$23,100	35.3	4,498
Domestic Water Heating Upgrade			**5,136**	**0.0**	**0**	**$753**	**$740**	**$250**	**$490**	**0.7**	**5,172**
ECM 11	Install Low-Flow DHW Devices	Yes	5,136	0.0	0	$753	$740	$250	$490	0.7	5,172
Food Service & Refrigeration Measures			**13,519**	**1.5**	**0**	**$1,982**	**$12,350**	**$930**	**$11,420**	**5.8**	**13,614**
ECM 12	Dishwasher Replacement	Yes	9,072	1.0	0	$1,330	$10,800	$700	$10,100	7.6	9,136
ECM 13	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	820	0.1	0	$120	$750	$80	$670	5.6	826
ECM 14	Vending Machine Control	Yes	3,627	0.4	0	$532	$800	$150	$650	1.2	3,652
TOTALS (COST EFFECTIVE MEASURES)			**393,700**	**77.4**	**0**	**$57,724**	**$242,600**	**$29,280**	**$213,320**	**3.7**	**396,453**
TOTALS (ALL MEASURES)			**449,996**	**127.8**	**0**	**$65,978**	**$789,200**	**$56,680**	**$732,520**	**11.1**	**453,143**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

GLEN MIDDLE SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**149,338**	**28.3**	**-62**	**$20,044**	**$56,440**	**$11,480**	**$44,960**	**2.2**	**140,165**
ECM 1	Retrofit Fixtures with LED Lamps	Yes	149,338	28.3	-62	$20,044	$56,440	$11,480	$44,960	2.2	140,165
Lighting Control Measures			**17,180**	**2.6**	**-7**	**$2,306**	**$14,870**	**$4,770**	**$10,100**	**4.4**	**16,125**
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	12,920	2.0	-5	$1,734	$9,510	$1,090	$8,420	4.9	12,127
ECM 3	Install High/Low Lighting Controls	Yes	4,260	0.6	-2	$572	$5,360	$3,680	$1,680	2.9	3,998
Variable Frequency Drive (VFD) Measures			**77,886**	**18.0**	**0**	**$11,071**	**$88,800**	**$10,900**	**$77,900**	**7.0**	**78,430**
ECM 4	Install VFDs on Constant Volume (CV) Fans	Yes	56,435	14.7	0	$8,022	$60,600	$6,400	$54,200	6.8	56,830
ECM 5	Install VFDs on Chilled Water Pumps	Yes	8,580	1.9	0	$1,220	$11,300	$1,800	$9,500	7.8	8,640
ECM 6	Install VFDs on Heating Water Pumps	Yes	12,870	1.4	0	$1,829	$16,900	$2,700	$14,200	7.8	12,960
Unitary HVAC Measures			**2,917**	**1.5**	**0**	**$415**	**$10,800**	**$500**	**$10,300**	**24.8**	**2,937**
ECM 7	Install High Efficiency Air Conditioning Units	No	2,917	1.5	0	$415	$10,800	$500	$10,300	24.8	2,937
Domestic Water Heating Upgrade			**0**	**0.0**	**6**	**$116**	**$180**	**$90**	**$90**	**0.8**	**1,005**
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	6	$116	$180	$90	$90	0.8	1,005
Food Service & Refrigeration Measures			**3,751**	**0.3**	**0**	**$533**	**$3,720**	**$260**	**$3,460**	**6.5**	**3,777**
ECM 9	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	524	0.1	0	$75	$750	$80	$670	9.0	528
ECM 10	Refrigeration Controls	Yes	1,615	0.0	0	$230	$2,700	$130	$2,570	11.2	1,626
ECM 11	Vending Machine Control	Yes	1,612	0.2	0	$229	$270	$50	$220	1.0	1,623
TOTALS (COST EFFECTIVE MEASURES)			**248,155**	**49.2**	**-63**	**$34,070**	**$164,010**	**$27,500**	**$136,510**	**4.0**	**239,502**
TOTALS (ALL MEASURES)			**251,071**	**50.6**	**-63**	**$34,484**	**$174,810**	**$28,000**	**$146,810**	**4.3**	**242,439**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

LOUNDSBERRY HOLLOW

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**127,359**	**41.9**	**-53**	**$13,143**	**$86,720**	**$16,730**	**$69,990**	**5.3**	**119,536**
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	710	0.2	0	$73	$590	$70	$520	7.1	666
ECM 2	Retrofit Fixtures with LED Lamps	Yes	126,650	41.7	-53	$13,069	$86,130	$16,660	$69,470	5.3	118,870
Lighting Control Measures			**12,008**	**2.5**	**-5**	**$1,239**	**$20,590**	**$4,920**	**$15,670**	**12.6**	**11,270**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	8,402	1.9	-4	$867	$15,240	$1,850	$13,390	15.4	7,886
ECM 4	Install High/Low Lighting Controls	Yes	3,605	0.6	-2	$372	$5,350	$3,070	$2,280	6.1	3,384
Motor Upgrades			**319**	**0.1**	**0**	**$36**	**$2,100**	**$0**	**$2,100**	**58.7**	**322**
ECM 5	Premium Efficiency Motors	No	319	0.1	0	$36	$2,100	$0	$2,100	58.7	322
Variable Frequency Drive (VFD) Measures			**6,294**	**2.1**	**0**	**$705**	**$6,700**	**$1,000**	**$5,700**	**8.1**	**6,338**
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	6,294	2.1	0	$705	$6,700	$1,000	$5,700	8.1	6,338
Unitary HVAC Measures			**5,626**	**4.5**	**0**	**$630**	**$33,500**	**$0**	**$33,500**	**53.2**	**5,665**
ECM 7	Install High Efficiency Air Conditioning Units	No	2,082	2.0	0	$233	$13,300	$0	$13,300	57.0	2,097
ECM 8	Install High Efficiency Heat Pumps	Yes	3,544	2.5	0	$397	$20,200	$0	$20,200	50.9	3,569
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**175**	**$3,689**	**$152,700**	**$7,600**	**$145,100**	**39.3**	**28,701**
ECM 9	Install High Efficiency Hot Water Boilers	No	0	0.0	175	$3,689	$152,700	$7,600	$145,100	39.3	28,701
Domestic Water Heating Upgrade			**82**	**0.0**	**2**	**$59**	**$60**	**$20**	**$40**	**0.7**	**470**
ECM 10	Install Low-Flow DHW Devices	Yes	82	0.0	2	$59	$60	$20	$40	0.7	470
Food Service & Refrigeration Measures			**3,863**	**0.2**	**0**	**$433**	**$6,260**	**$370**	**$5,890**	**13.6**	**3,890**
ECM 11	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	917	0.1	0	$103	$1,500	$160	$1,340	13.0	924
ECM 12	Refrigeration Controls	Yes	2,946	0.0	0	$330	$4,760	$210	$4,550	13.8	2,966
TOTALS (COST EFFECTIVE MEASURES)			**153,150**	**49.2**	**-56**	**$15,975**	**$140,530**	**$23,040**	**$117,490**	**7.4**	**145,074**
TOTALS (ALL MEASURES)			**155,552**	**51.4**	**120**	**$19,933**	**$308,630**	**$30,640**	**$277,990**	**13.9**	**176,193**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

ROLLING HILLS PRIMARY SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**69,902**	**21.4**	**-28**	**$7,221**	**$47,850**	**$8,920**	**$38,930**	**5.4**	**65,794**
ECM 1	Install LED Fixtures	Yes	2,716	0.0	0	$306	$1,260	$100	$1,160	3.8	2,735
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	166	0.0	0	$17	$90	$10	$80	4.7	156
ECM 3	Retrofit Fixtures with LED Lamps	Yes	67,020	21.3	-28	$6,899	$46,500	$8,810	$37,690	5.5	62,904
Lighting Control Measures			**2,892**	**0.7**	**-1**	**$298**	**$8,320**	**$4,610**	**$3,710**	**12.5**	**2,714**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	656	0.2	0	$68	$1,290	$160	$1,130	16.7	616
ECM 5	Install High/Low Lighting Controls	Yes	2,236	0.5	-1	$230	$7,030	$4,450	$2,580	11.2	2,099
Motor Upgrades			**735**	**0.2**	**0**	**$83**	**$2,200**	**$0**	**$2,200**	**26.6**	**740**
ECM 6	Premium Efficiency Motors	No	735	0.2	0	$83	$2,200	$0	$2,200	26.6	740
Variable Frequency Drive (VFD) Measures			**11,346**	**2.4**	**0**	**$1,277**	**$18,500**	**$2,200**	**$16,300**	**12.8**	**11,426**
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	3,046	0.9	0	$343	$5,100	$200	$4,900	14.3	3,067
ECM 8	Install VFDs on Heating Water Pumps	Yes	8,300	1.4	0	$934	$13,400	$2,000	$11,400	12.2	8,358
Unitary HVAC Measures			**6,394**	**6.1**	**0**	**$720**	**$43,700**	**$1,700**	**$42,000**	**58.4**	**6,439**
ECM 9	Install High Efficiency Air Conditioning Units	No	3,630	3.6	0	$408	$33,900	$1,500	$32,400	79.3	3,655
ECM 10	Install High Efficiency Heat Pumps	No	2,765	2.5	0	$311	$9,800	$200	$9,600	30.9	2,784
Domestic Water Heating Upgrade			**0**	**0.0**	**1**	**$24**	**$20**	**$0**	**$20**	**0.8**	**95**
ECM 11	Install Low-Flow DHW Devices	Yes	0	0.0	1	$24	$20	$0	$20	0.8	95
Food Service & Refrigeration Measures			**1,612**	**0.2**	**0**	**$181**	**$270**	**$50**	**$220**	**1.2**	**1,623**
ECM 12	Vending Machine Control	Yes	1,612	0.2	0	$181	$270	$50	$220	1.2	1,623
TOTALS (COST EFFECTIVE MEASURES)			**85,752**	**24.6**	**-29**	**$9,001**	**$74,960**	**$15,780**	**$59,180**	**6.6**	**81,652**
TOTALS (ALL MEASURES)			**92,881**	**30.9**	**-29**	**$9,804**	**$120,860**	**$17,480**	**$103,380**	**10.5**	**88,831**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

CEDAR MOUNTAIN SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**63,739**	**15.1**	**-27**	**$8,461**	**$34,220**	**$6,140**	**$28,080**	**3.3**	**59,824**
ECM 1	Retrofit Fixtures with LED Lamps	Yes	63,739	15.1	-27	$8,461	$34,220	$6,140	$28,080	3.3	59,824
Lighting Control Measures			**4,974**	**0.9**	**-2**	**$660**	**$5,590**	**$640**	**$4,950**	**7.5**	**4,669**
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	4,974	0.9	-2	$660	$5,590	$640	$4,950	7.5	4,669
Variable Frequency Drive (VFD) Measures			**19,129**	**5.0**	**0**	**$2,707**	**$21,700**	**$2,100**	**$19,600**	**7.2**	**19,263**
ECM 3	Install VFDs on Constant Volume (CV) Fans	Yes	19,129	5.0	0	$2,707	$21,700	$2,100	$19,600	7.2	19,263
Unitary HVAC Measures			**12,263**	**9.6**	**0**	**$1,735**	**$88,600**	**$5,100**	**$83,500**	**48.1**	**12,349**
ECM 4	Install High Efficiency Air Conditioning Units	No	12,263	9.6	0	$1,735	$88,600	$5,100	$83,500	48.1	12,349
Domestic Water Heating Upgrade			**0**	**0.0**	**2**	**$35**	**$50**	**$20**	**$30**	**0.9**	**274**
ECM 5	Install Low-Flow DHW Devices	Yes	0	0.0	2	$35	$50	$20	$30	0.9	274
Food Service & Refrigeration Measures			**3,226**	**0.2**	**0**	**$456**	**$5,500**	**$290**	**$5,210**	**11.4**	**3,249**
ECM 6	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	1,311	0.2	0	$185	$740	$80	$660	3.6	1,320
ECM 7	Refrigeration Controls	No	1,915	0.1	0	$271	$4,760	$210	$4,550	16.8	1,929
TOTALS (COST EFFECTIVE MEASURES)			**89,153**	**21.2**	**-27**	**$12,048**	**$62,300**	**$8,980**	**$53,320**	**4.4**	**85,349**
TOTALS (ALL MEASURES)			**103,331**	**30.8**	**-27**	**$14,054**	**$155,660**	**$14,290**	**$141,370**	**10.1**	**99,626**

WALNUT RIDGE SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**44,131**	**12.8**	**-18**	**$6,293**	**$25,460**	**$4,930**	**$20,530**	**3.3**	**41,420**
ECM 1	Retrofit Fixtures with LED Lamps	Yes	44,131	12.8	-18	$6,293	$25,460	$4,930	$20,530	3.3	41,420
Lighting Control Measures			**4,918**	**1.0**	**-2**	**$701**	**$6,780**	**$3,160**	**$3,620**	**5.2**	**4,616**
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	1,968	0.5	-1	$281	$3,420	$420	$3,000	10.7	1,847
ECM 3	Install High/Low Lighting Controls	Yes	2,950	0.4	-1	$421	$3,360	$2,740	$620	1.5	2,769
Unitary HVAC Measures			**4,101**	**4.0**	**0**	**$621**	**$27,100**	**$1,000**	**$26,100**	**42.1**	**4,130**
ECM 4	Install High Efficiency Air Conditioning Units	No	1,874	1.8	0	$284	$14,500	$800	$13,700	48.3	1,887
ECM 5	Install High Efficiency Heat Pumps	No	2,227	2.2	0	$337	$12,600	$200	$12,400	36.8	2,243
Custom Measures* **			**-657**	**0.0**	**7**	**-$33**	**$2,500**	**$0**	**$2,500**	**-75.8**	**158**
ECM 6	Replace Gas Fired Water Heater with Heat Pump Water Heater***	No	-657	0.0	7	-$33	$2,500	$0	$2,500	-75.8	158
TOTALS (COST EFFECTIVE MEASURES)			**49,049**	**13.8**	**-21**	**$6,994**	**$32,240**	**$8,090**	**$24,150**	**3.5**	**46,036**
TOTALS (ALL MEASURES)			**52,493**	**17.8**	**-14**	**$7,582**	**$61,840**	**$9,090**	**$52,750**	**7.0**	**50,324**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

*** - Negative payback explained in section 4.4

Energy Efficient Best Practices

- Reduce Air Leakage
- Close Doors and Windows
- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Use Fans to Reduce Cooling Load
- Use Window Treatments/Coverings
- Clean and/or Replace HVAC filters
- Check and Seal Duct Leakage
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Plug Load Controls
- Water Conservation

See individual reports for specific EE Best Practices by building

BPU New Jersey's cleanenergy program™

WATER BEST PRACTICES

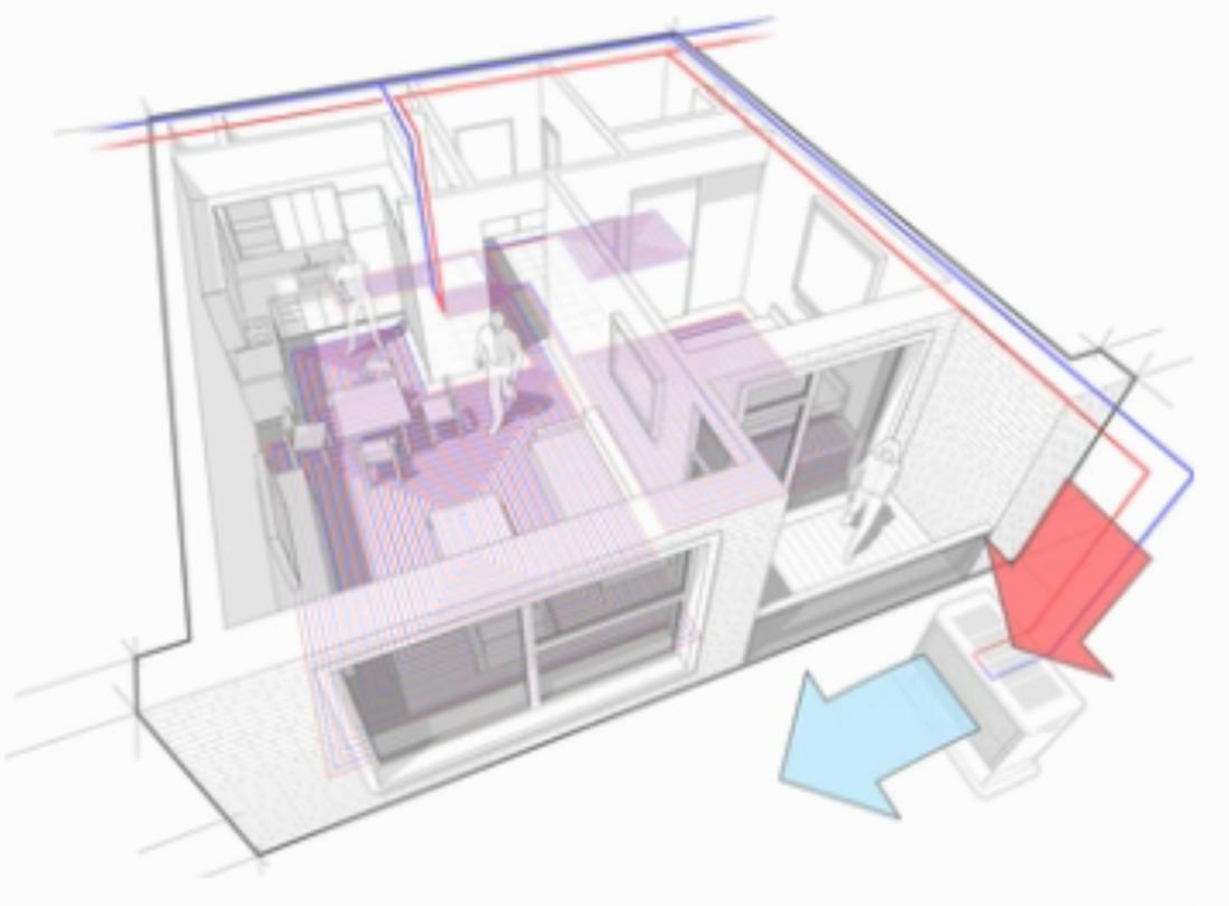
- Leak Detection and Repair
- Toilets and Urinals
- Faucets and Showerheads
- Commercial Kitchen Equipment
- Laundry Equipment
- Cooling Towners
- Steam Boiler System
- Pools and Spas
- Laboratory and Medical Equipment
- Water Metering and Submetering
- Vehicle Washing
- Single Pass Cooling System
- Landscaping and Irrigation
- On-Site Alternative Water Sources

See individual reports for specific Water Best Practices by building

BPU New Jersey's cleanenergy program™

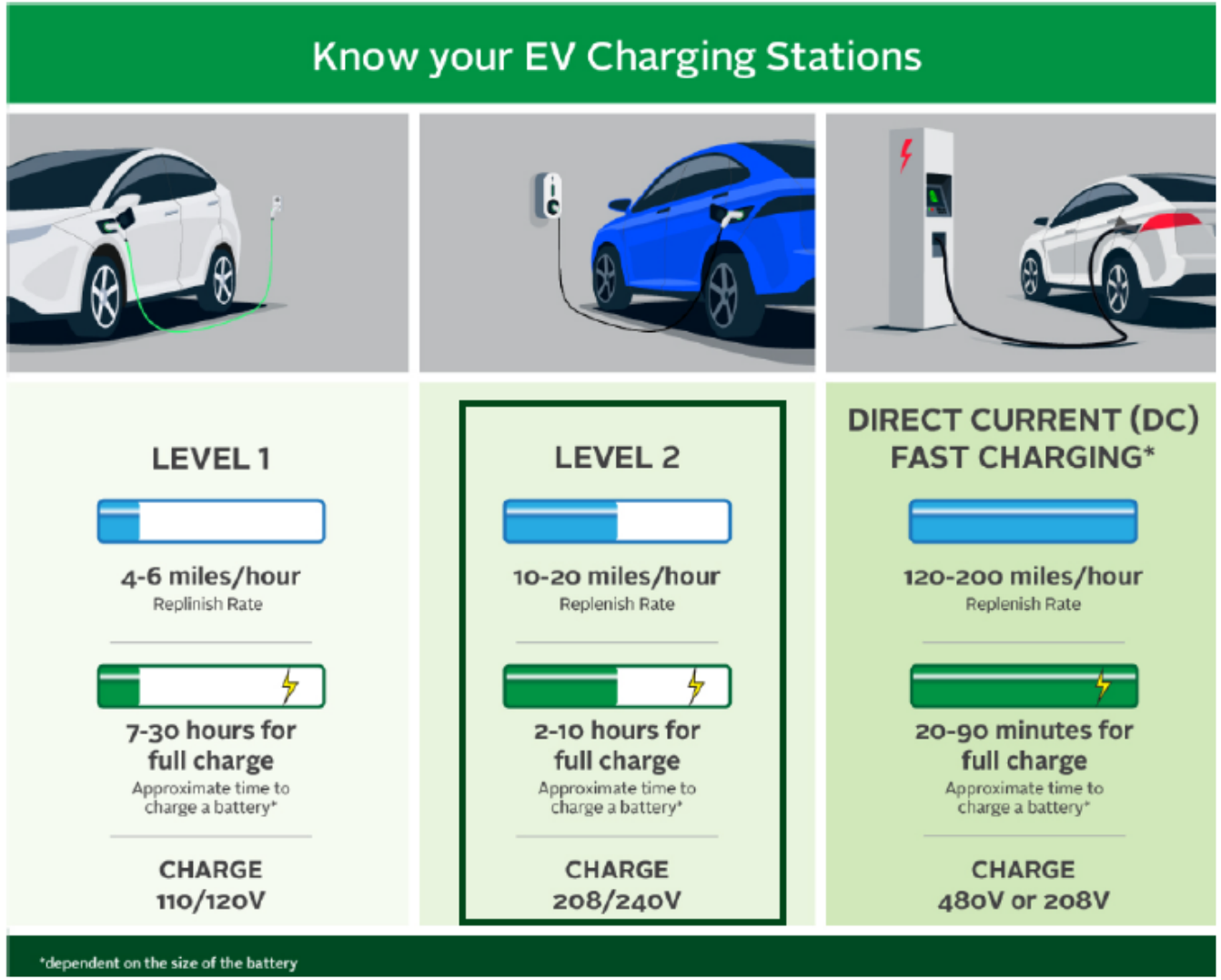
Measures for Future Consideration

- VRF System
- Upgrade to a Heat Pump System
- Replace Smooth V-Belts with Notched or Synchronous Belts



EV Charging Station Potential

NJCleanEnergy.com/EV



	Vernon Township SD
Potential:	HIGH

Solar Energy Generation Potential

NJCleanEnergy.com/renewable-energy

High School Campus

1.25 MW Carport Solar PV System:

The carport solar panels are strategically positioned to make the most efficient use of the open parking spaces for maximizing coverage of the solar energy generation. The projected solar PV system is expected to generate a total energy output of 1,510,874 kWh, accounting for 42% of the site's total electricity consumption for the year 2023-2024.

23,670
tons of CO2 Offset

355,056
Trees Planted

Equipment	Estimated Max Demand Savings (kW)	Estimated Annual Energy Generation (kWh)	Estimated Annual GHG Reduction ($MT\text{-}CO_2e$)	Estimated Annual Cost Savings ($)	Estimated Gross Project Cost ($)	Total Incentives ($)	Net Project Cost ($)	Simple Payback Period[12] (yr.)
1.25 MW Solar PV	271	1,510,874	301	$137,015	$7,937,000	$4,365,350	$3,571,650	26.1

Project Summary Table

Glen Meadow Middle School

345 kW Carport Solar PV System:

The carport solar panels are strategically positioned to make the most efficient use of the open parking spaces for maximizing coverage of the solar energy generation. The projected solar PV system is expected to generate a total energy output of 454,333 kWh, accounting for 62% of the site's total electricity consumption for the year 2023-2024

7,118
tons of CO2 Offset

106,768
Trees Planted

Equipment	Estimated Annual Energy Generation (kWh)	Estimated Annual GHG Reduction ($MT\text{-}CO_2e$)	Estimated Annual Cost Savings ($)	Estimated Gross Project Cost ($)	Total Incentives ($)	Net Project Cost ($)	Simple Payback Period[11] (yr.)
345 kW Solar PV	454,333	90	$53,512	$2,165,000	$1,190,750	$974,250	18.2

Project Summary Table

Solar Energy Generation Potential

NJCleanEnergy.com/renewable-energy

Cedar Mountain Primary School

305 kW Carport Solar PV System:
The carport solar panels are strategically positioned to make the most efficient use of the open parking spaces for maximizing coverage of the solar energy generation. The projected solar PV system is expected to generate a total energy output of 380,570 kWh, accounting for 100% of the site's total electricity consumption for the year 2023-2024.

5,962
tons of CO2 Offset

89,434
Trees Planted

Equipment	Estimated Annual Energy Generation (kWh)	Estimated Annual GHG Reduction ($MT\text{-}CO_2e$)	Estimated Annual Cost Savings ($)	Estimated Gross Project Cost ($)	Total Incentives ($)	Net Project Cost ($)	Simple Payback Period[10] (yr.)
305 kW Solar PV	380,570	76	$44,122	$1,926,000	$1,059,300	$866,700	19.6

Project Summary Table

Walnut Ridge School

182 kW Carport Solar PV System:
The carport solar panels are strategically positioned to make the most efficient use of the open parking spaces for maximizing coverage of the solar energy generation. The projected solar PV system is expected to generate a total energy output of 226,485 kWh, accounting for 107% of the site's total electricity consumption for the year 2023-2024.

3,548
tons of CO2 Offset

53,224
Trees Planted

Equipment	Estimated Annual Energy Generation (kWh)	Estimated Annual GHG Reduction ($MT\text{-}CO_2e$)	Estimated Annual Cost Savings ($)	Estimated Gross Project Cost ($)	Total Incentives ($)	Net Project Cost ($)	Simple Payback Period[13] (yr.)
182 kW Solar PV	226,485	45	$26,841	$1,141,000	$627,550	$513,450	19.1

Project Summary Table

FINANCING MECHANISM: ESIP

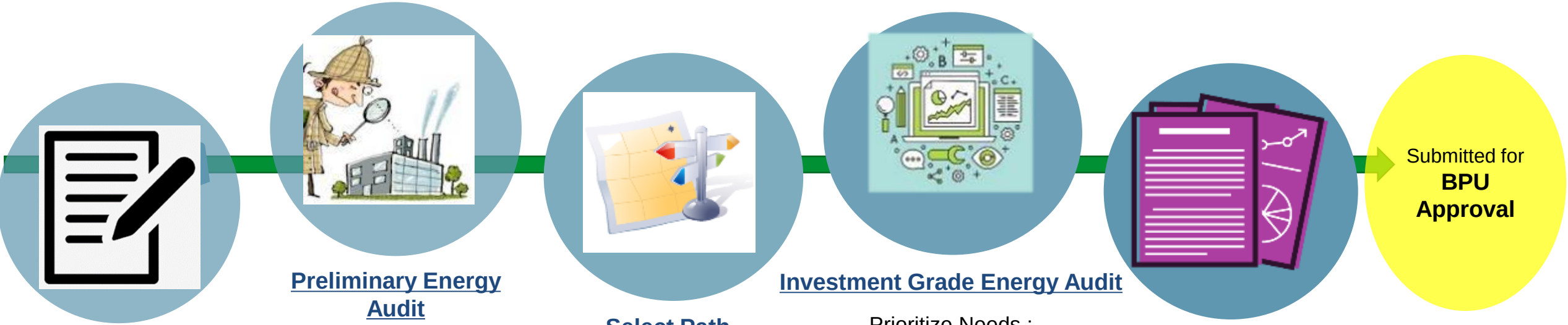
NJCleanEnergy.com/ESIP

ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- Energy Performance Contracting = NJ ESIP Program
- A creative tool and financing mechanism that allows public entities to make energy efficiency improvements without impacting their budgets
- Administered by the NJBPU
- Project is paid for with the value of its own energy savings
- 2 Options: Lease Purchase Loan or Bond
- 15 or 20 year pay back term
- NJBPU Approved Incentive Programs
    - Utility or NJCEP
- Can be combined with Federal/State Grants
- No upfront capital expenses
- No referendum or impact to tax payers

Energy Savings Improvement Program

NJCleanEnergy.com/ESIP



ESIP Intake Form

Get informed;
Begin the process

Preliminary Energy Audit

Free LGEA
or
other ASHRAE Level II Audit

Select Path

ESCO, Hybrid or DIY Model;
Local Public Contract Law
Public School Contract Law
Compliance

Investment Grade Energy Audit

Prioritize Needs ;
Select Project's ECM's

Energy Savings Plan

Must be Cash Flow Positive;
Purchase Savings Guarantee?
Third Party Verification

Submitted for **BPU Approval**

New Jersey's cleanenergy program™

Energy Savings Improvement Program

NJCleanEnergy.com/ESIP

FOR MORE INFORMATION

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SUSTAINABLE JERSEY – DIRECT PAY

Combining NJBPU Incentives with Direct Pay

Direct Pay (Elective Pay), part of Inflation Reduction Act (IRA), allows tax-exempt entities, including municipalities and school districts, to receive tax credits for clean energy projects.

About Direct Pay

- All eligible projects receive tax credits (not competitive)
- Currently authorized for 10 years
- Projects completed in 2023 are eligible for tax credits until Nov 15
  For local governments filing on a calendar year, fiscal year deadline is May 15

Eligible Projects Include

- Renewables – solar, geothermal, wind, etc.
- Electric vehicles
- Electric vehicle charging infrastructure *(limited)*
- Combined heat and power; Electric storage

Direct Pay can be used in combination with other funding sources like NJBPU incentives.

Example

Lightweight EV	$24,000
NJBPU Clean Fleet Grant	-$4,000
Direct Pay Tax Credit	-$7,500
Total cost to entity	**$12,500**

Note: Total incentive can not exceed total project cost.

Full list of Direct Pay eligible tax credits at https://www.irs.gov/pub/irs-pdf/p5817a.pdf

For more information, visit Sustainable Jersey's Direct Pay Tax Credits page.

C&I Energy Efficiency Programs

NJCleanEnergy.com

LOCAL GOVERNMENT CUSTOMERS

COMMERCIAL & INSTITUTIONAL CUSTOMERS

LARGE ENERGY CUSTOMERS

EXISTING BUILDINGS

MEASUREMENT & AUDITS

FREE Energy Audits

RETROFITS

Prescriptive & Custom Rebates

Direct Install

Engineered Solutions

And more from your local utility!

Incentives up to $4 million for eligible projects

NEW CONSTRUCTION

Prescriptive & Custom Rebates for New Construction and Gut Rehabs

Pay for Performance incentives for buildings over 50,000 sq. ft.

DISTRIBUTED ENERGY RESOURCES

Combined Heat & Power and Fuel Cell Installation Incentives

Microgrid Development

Battery Storage

Muni EV Fleets

Key:

Programs run by investor-owned utility companies

Programs run by NJCEP

UTILITY RUN ENERGY EFFICIENCY PROGRAMS*

NJCleanEnergy.com/Transition

PRESCRIPTIVE & CUSTOM REBATES:

- Individual high efficiency equipment rebates for renovation, remodeling, and equipment replacement
- Flexibility to do a little or a lot
- No size requirement

DIRECT INSTALL:

- Turn-key retrofit program to replace outdated and inefficient equipment including, lighting, HVAC, refrigeration, etc.
- The facility must have an average electric peak demand <200kW in the previous year to qualify

ENERGY MANAGEMENT :

- Includes the Building Tune-up (BT), Retro-commissioning (RCx), and Strategic Energy Management (SEM) subprograms. These subprograms offer a comprehensive mix of custom energy-savings measures such as basic HVAC tune-ups, building systems tune-ups, controls' calibration, diagnostic testing, and installation of measures to enhance your building's energy performance and savings.

ENGINEERED SOLUTIONS:

- Comprehensive, whole-building approach to saving energy
- The facility must have an average electric peak demand >200kW in the previous year to qualify

Other programs may be available to you. Check with your Utility Provider to see a full list of offering and what you may be qualified for.

UTILITY RUN ENERGY EFFICIENCY PROGRAMS

JCP&L

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THANK YOU