

New Jersey's Clean Energy Program

LGEA Exit Meeting for:
Village Charter School

TRC Energy Services

October 16, 2018

Introductions



- *Village Charter School*
 - Paul DeWitt – Business Administrator
 - Judy Brown – Head of School
 - Stephen Kitts – Board Chair
 - Neil Davis – Facilities Manager

- *NJ Clean Energy Program*
 - Alex Klieverik – TRC Auditor
 - Sarah Walters – TRC Account Manager

Agenda



- The audit process overview
- Energy use & existing conditions
- Review of **E**nergy **C**onservation **M**easures (ECMs) identified
- Questions or concerns regarding the draft audit report
- Overview of NJCEP equipment incentives
- Next steps for Village Charter School

LGEA Process



- Application Approval
- Scheduling Call
- Audit
- Benchmarking & Analysis
- Draft Report
- Exit Meeting Presentation
- Final Report

Site Visit and Utility Analysis

Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems

Sites Visited/Analyzed

- Village Charter School
- Administrative Building
- Cottage Art Barn

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Benchmarking



Village Charter School

ENERGY STAR® Statement of Energy Performance

69

ENERGY STAR® Score¹

Village Charter School

Primary Property Type: K-12 School
 Gross Floor Area (ft²): 47,000
 Built: 1999

For Year Ending: December 31, 2017
 Date Generated: August 21, 2018

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 Village Charter School 101 SULLIVAN WAY TRENTON, New Jersey 08628	Property Owner Village Charter School 101 SULLIVAN WAY TRENTON, NJ 08628 () -	Primary Contact PAUL DEWITT MERCER 101 SULLIVAN WAY TRENTON, NJ 08628 609-995-0110 EXT 116 pdewitt@villagecharter.org

Property ID: 6403567

Energy Consumption and Energy Use Intensity (EUI)			
Site EUI 56.9 kBtu/ft ²	Annual Energy by Fuel		National Median Comparison
	Natural Gas (kBtu)	1,214,723 (45%)	
	Electric - Grid (kBtu)	1,457,937 (55%)	National Median Source EUI (kBtu/ft ²) 148.7
			% Diff from National Median Source EUI -16%
Source EUI 124.5 kBtu/ft ²			Annual Emissions
			Greenhouse Gas Emissions (Metric Tons CO2e/year) 226

Signature & Stamp of Verifying Professional

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

Signature: _____ Date: _____

Licensed Professional

 () -

Professional Engineer Stamp
(if applicable)

Building Name	ENERGY STAR Score
Village Charter School	69
Administrative Building	N/A
Cottage Art Barn	N/A

ENERGY STAR Scores are percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide.

All Opportunities



Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades	79,768	16.7	0.0	\$11,954.25	\$46,179.83	\$7,115.00	\$39,064.83	3.3	80,325
Install LED Fixtures	4,595	0.9	0.0	\$694.69	\$14,579.00	\$400.00	\$14,179.00	20.4	4,627
Retrofit Fluorescent Fixtures with LED Lamps and Drivers	257	0.1	0.0	\$41.08	\$194.32	\$30.00	\$164.32	4.0	259
Retrofit Fixtures with LED Lamps	74,915	15.7	0.0	\$11,218.48	\$31,406.51	\$6,685.00	\$24,721.51	2.2	75,439
Lighting Control Measures	16,091	3.3	0.0	\$2,399.98	\$19,754.00	\$2,165.00	\$17,589.00	7.3	16,203
Install Occupancy Sensor Lighting Controls	13,040	2.7	0.0	\$1,945.87	\$13,154.00	\$2,165.00	\$10,989.00	5.6	13,131
Install High/Low Lighting Controls	3,051	0.6	0.0	\$454.11	\$6,600.00	\$0.00	\$6,600.00	14.5	3,072
Variable Frequency Drive (VFD) Measures	5,972	0.8	0.0	\$888.81	\$6,015.30	\$0.00	\$6,015.30	6.8	6,013
Install VFDs on Hot Water Pumps	5,972	0.8	0.0	\$888.81	\$6,015.30	\$0.00	\$6,015.30	6.8	6,013
Electric Unitary HVAC Measures	22,278	13.2	0.0	\$3,320.70	\$118,209.00	\$7,218.50	\$110,990.50	33.4	22,434
Install High Efficiency Electric AC	22,003	13.0	0.0	\$3,279.80	\$114,379.38	\$7,088.50	\$107,290.88	32.7	22,157
Install High Efficiency Packaged Terminal AC/HP	275	0.2	0.0	\$40.90	\$3,829.62	\$130.00	\$3,699.62	90.5	277
Gas Heating (HVAC/Process) Replacement	0	0.0	36.7	\$346.97	\$47,615.99	\$4,490.00	\$43,125.99	124.3	4,298
Install High Efficiency Hot Water Boilers	0	0.0	35.2	\$332.21	\$42,178.23	\$3,290.00	\$38,888.23	117.1	4,123
Install High Efficiency Furnaces	0	0.0	1.5	\$14.76	\$5,437.76	\$1,200.00	\$4,237.76	287.1	175
Domestic Water Heating Upgrade	0	0.0	1.5	\$15.00	\$5,625.60	\$100.00	\$5,525.60	368.4	178
Install High Efficiency Gas Water Heater	0	0.0	1.5	\$15.00	\$5,625.60	\$100.00	\$5,525.60	368.4	178
TOTALS	124,108	34.0	38.2	\$18,925.71	\$243,399.72	\$21,088.50	\$222,311.22	11.7	129,452

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

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

Cost Effective Opportunities*



*Opportunities considered cost effective have a payback period less than the expedited life of the measure

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		79,768	16.7	0.0	\$11,954.25	\$46,179.83	\$7,115.00	\$39,064.83	3.3	80,325
ECM 1	Install LED Fixtures	4,595	0.9	0.0	\$694.69	\$14,579.00	\$400.00	\$14,179.00	20.4	4,627
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	257	0.1	0.0	\$41.08	\$194.32	\$30.00	\$164.32	4.0	259
ECM 3	Retrofit Fixtures with LED Lamps	74,915	15.7	0.0	\$11,218.48	\$31,406.51	\$6,685.00	\$24,721.51	2.2	75,439
Lighting Control Measures		16,091	3.3	0.0	\$2,399.98	\$19,754.00	\$2,165.00	\$17,589.00	7.3	16,203
ECM 4	Install Occupancy Sensor Lighting Controls	13,040	2.7	0.0	\$1,945.87	\$13,154.00	\$2,165.00	\$10,989.00	5.6	13,131
ECM 5	Install High/Low Lighting Controls	3,051	0.6	0.0	\$454.11	\$6,600.00	\$0.00	\$6,600.00	14.5	3,072
Variable Frequency Drive (VFD) Measures		5,972	0.8	0.0	\$888.81	\$6,015.30	\$0.00	\$6,015.30	6.8	6,013
ECM 6	Install VFDs on Hot Water Pumps	5,972	0.8	0.0	\$888.81	\$6,015.30	\$0.00	\$6,015.30	6.8	6,013
TOTALS		101,830	20.8	0.0	\$15,243.04	\$71,949.13	\$9,280.00	\$62,669.13	4.1	102,542

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

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

Village Charter School



Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			72,160	14.8	0.0	\$10,740.03	\$41,546.59	\$6,465.00	\$35,081.59	3.3	72,664
ECM 1	Install LED Fixtures	Yes	3,590	0.7	0.0	\$534.29	\$12,682.47	\$200.00	\$12,482.47	23.4	3,615
ECM 2	Retrofit Fixtures with LED Lamps	Yes	68,570	14.1	0.0	\$10,205.74	\$28,864.12	\$6,265.00	\$22,599.12	2.2	69,049
Lighting Control Measures			15,617	3.2	0.0	\$2,324.40	\$18,866.00	\$2,035.00	\$16,831.00	7.2	15,726
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	12,566	2.6	0.0	\$1,870.30	\$12,266.00	\$2,035.00	\$10,231.00	5.5	12,654
ECM 4	Install High/Low Lighting Controls	Yes	3,051	0.6	0.0	\$454.11	\$6,600.00	\$0.00	\$6,600.00	14.5	3,072
Variable Frequency Drive (VFD) Measures			5,972	0.8	0.0	\$888.81	\$6,015.30	\$0.00	\$6,015.30	6.8	6,013
ECM 5	Install VFDs on Hot Water Pumps	Yes	5,972	0.8	0.0	\$888.81	\$6,015.30	\$0.00	\$6,015.30	6.8	6,013
Electric Unitary HVAC Measures			21,822	12.7	0.0	\$3,247.92	\$113,720.34	\$6,942.50	\$106,777.84	32.9	21,975
	Install High Efficiency Electric AC	No	21,547	12.5	0.0	\$3,207.02	\$109,890.72	\$6,812.50	\$103,078.22	32.1	21,698
	Install High Efficiency Packaged Terminal AC/HP	No	275	0.2	0.0	\$40.90	\$3,829.62	\$130.00	\$3,699.62	90.4	277
Gas Heating (HVAC/Process) Replacement			0	0.0	35.2	\$332.21	\$42,178.23	\$3,290.00	\$38,888.23	117.1	4,123
	Install High Efficiency Hot Water Boilers	No	0	0.0	35.2	\$332.21	\$42,178.23	\$3,290.00	\$38,888.23	117.1	4,123
TOTALS FOR HIGH PRIORITY MEASURES			93,749	18.8	0.0	\$13,953.24	\$66,427.89	\$8,500.00	\$57,927.89	4.2	94,404
TOTALS FOR ALL EVALUATED MEASURES			115,571	31.5	35.2	\$17,533.38	\$222,326.46	\$18,732.50	\$203,593.96	11.6	120,501

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

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

Administrative Building & Cottage Art Barn



Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			7,608	1.8	0.0	\$1,214.22	\$4,633.23	\$650.00	\$3,983.23	3.3	7,661
ECM 1	Install LED Fixtures	Yes	1,005	0.2	0.0	\$160.40	\$1,896.53	\$200.00	\$1,696.53	10.6	1,012
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	257	0.1	0.0	\$41.08	\$194.32	\$30.00	\$164.32	4.0	259
ECM 3	Retrofit Fixtures with LED Lamps	Yes	6,345	1.6	0.0	\$1,012.74	\$2,542.39	\$420.00	\$2,122.39	2.1	6,390
Lighting Control Measures			473	0.1	0.0	\$75.56	\$888.00	\$130.00	\$758.00	10.0	477
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	473	0.1	0.0	\$75.56	\$888.00	\$130.00	\$758.00	10.0	477
Electric Unitary HVAC Measures			456	0.5	0.0	\$72.78	\$4,488.66	\$276.00	\$4,212.66	57.9	459
	Install High Efficiency Electric AC	No	456	0.5	0.0	\$72.78	\$4,488.66	\$276.00	\$4,212.66	57.9	459
Gas Heating (HVAC/Process) Replacement			0	0.0	1.5	\$14.76	\$5,437.76	\$1,200.00	\$4,237.76	287.1	175
	Install High Efficiency Furnaces	No	0	0.0	1.5	\$14.76	\$5,437.76	\$1,200.00	\$4,237.76	287.1	175
Domestic Water Heating Upgrade			0	0.0	1.5	\$15.00	\$5,625.60	\$100.00	\$5,525.60	368.5	178
	Install High Efficiency Gas Water Heater	No	0	0.0	1.5	\$15.00	\$5,625.60	\$100.00	\$5,525.60	368.5	178
TOTALS FOR HIGH PRIORITY MEASURES			8,081	2.0	0.0	\$1,289.78	\$5,521.23	\$780.00	\$4,741.23	3.7	8,138
TOTALS FOR ALL EVALUATED MEASURES			8,537	2.5	3.0	\$1,392.32	\$21,073.25	\$2,356.00	\$18,717.25	13.4	8,950

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

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Solar Energy Generation Potential



<i>Potential:</i>	HIGH
<i>System Potential:</i>	129
<i>Electric Generation:</i>	153,687
<i>Displaced Cost:</i>	\$13,370

For more information on the SREC Registration Program (SRP) please visit:

<http://www.njcleanenergy.com/renewable-energy/programs/solar-renewable-energy-certificates-srec/new-jersey-solar-renewable-energy>

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 practices by building

Clean Energy Program Portfolio



ELIGIBLE SECTORS

Commercial, Industrial, Government, Non-Profit, Institutional and Multifamily

Equipment Rebates:

- SmartStart Retrofit
- SmartStart New Construction
- Direct Install
- Large Energy Users

INCENTIVE PROGRAMS

Whole Buildings:

- Pay for Performance Existing Buildings
- Pay for Performance New Construction

Energy Generation:

- Combined Heat and Power (CHP)

OTHER PROGRAMS

Renewable Energy Generation:

- SREC Registration Program (SRP)

* eligible programs are highlighted in yellow

SmartStart: Overview



- Two types of incentives for high efficiency equipment installation:
 - Prescriptive
 - Custom
- Project Categories:
 - New Construction
 - Renovation
 - Remodeling
 - Equipment Replacement
- Project pre-approval required for lighting and custom measures
- Incentives up to \$500,000 per electric account & \$500,000 per natural gas account
- Specific incentives and individual applications for Lighting, HVAC, VFDs, Refrigeration, Controls and more!

www.NJCleanEnergy/SSB

Direct Install: Overview



- Turn-key retrofit program to replace outdated and inefficient equipment, including lighting, HVAC, refrigeration, etc.
- Open to Small to Mid-Sized Commercial and Industrial facilities with an average electric demand ≤ 200 kW
- Provides incentives of up to 70% of the installed cost
- Incentives are paid directly to the contractor
 - Customer only pays remaining 30% of installed cost
 - \$125,000 project/building cap
 - \$250,000 per entity cap (up to \$500,000 if using ESIP)
- Participating contractors provide support and process all paperwork
- Fast turnaround time: Average length of time for job completion (4-6 months)

Direct Install:



Participating Contractor

Tri-State Light & Energy, Inc.

Alan Rhode

610-789-1900 x226

asr@tsle.com

Pay for Performance: Overview



- Comprehensive, whole-building approach to saving energy in existing or new facilities
- Qualification based on energy consumption, energy savings and measure types
- Customer chooses from network of pre-approved ***Participating Partners***
- Incentives paid in three installments at milestones
 - Incentives up to \$2 million per project (\$4 entity cap/year)
 - \$1 million for electric measures
 - \$1 million for gas measures
 - Incentives up to 50% of total project cost

Pay for Performance: Process



Submittal and Approval of Application

Development and Approval of Energy Reduction Plan (ERP)

Installation of Recommended Measures

Submittal and Approval of As-Built ERP and Cx Report

Post Construction Verification of Savings

Incentive #1
fixed between \$3,750-\$25,000

Incentive #2
up to 25% project cost

Incentive #3
up to 25% project cost

1 year

Pay for Performance: Details



Incentive #1: Energy Reduction Plan			
Incentive Amount:		\$0.15	per sq ft
Minimum Incentive:		\$3,750	
Maximum Incentive:		\$25,000	or 50% of facility annual energy cost
Incentive #2: Installation of Recommended Measures			
Minimum Performance Target:		15%	
Electric Incentives	Base Incentive based on 15% savings:	\$0.09	per projected kWh saved
	For each % over 15% add:	\$0.005	
	Maximum Incentive:	\$0.11	
Gas Incentives	Base Incentive based on 15 % savings:	\$0.90	per projected Therm saved
	For each % over 15% add:	\$0.05	
	Maximum Incentive:	\$1.25	
Incentive Cap:		25%	of total project cost
Incentive #3: Post-Construction Benchmarking Report			
Minimum Performance Target:		15%	
Electric Incentives	Base Incentive based on 15% savings:	\$0.09	per projected kWh saved
	For each % over 15% add:	\$0.005	
	Maximum Incentive:	\$0.11	
Gas Incentives	Base Incentive based on 15% savings:	\$0.90	per projected Therm saved
	For each % over 15% add:	\$0.05	
	Maximum Incentive:	\$1.25	
Incentive Cap:		25%	of total project cost

Recommended NJCEP Incentives per Building



Village Charter School	SmartStart	Direct Install	Pay For Performance
Village Charter School	X	X	X
Administrative Building	X	X	
Cottage Art Barn	X	X	

** Site is eligible as of July 1, 2018 for Direct Install due to FY 19 updates. Draft Report does not indicate this eligibility because delivered prior in FY18.

Energy Savings Improvement Program (ESIP)

- Provides alternative financing for energy savings projects at public institutions. Value of energy savings leveraged to pay for cost of EE projects over a 15 year contract. Does not count as debt/require voter approval.
- Requires an audit as 1st step (LGEA satisfies requirement)
- ESIP participation question on LGEA application
- Program administered directly by BPU

ESIP Process

New Jersey's Clean Energy Program Interaction

Initial Energy Audit completed
for entity building(s)

Local Government Energy Audit
(LGEA) may be used to meet
this requirement

Entity issues ESIP RFP (previously
approved by BPU) and selects ESCO
or DIY approach

Investment Grade Energy Audit completed
and Energy Savings Plan (ESP)
developed

P4P Energy Reduction Plan (ERP),
Direct Install, or SmartStart application
recommended submittal time frame

Third party review of ESP

Review and approval of ESP
by Board of Public Utilities (BPU)

Entity adopts ESP,
determines guarantee



FOR MORE INFORMATION

ESIP

Mike Thulen

ESIP Coordinator

Office: 609-777-3338

Cell: 732-330-2419

ESIP@bpu.nj.gov

Questions



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FOR MORE INFORMATION

Visit NJCleanEnergy.com

Call (866) NJSMART

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Outreach Manager

732-855-6543

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