

VERONA SCHOOL DISTRICT FINAL LGEA REPORT

Prepared Under the Guidelines of the State of New Jersey Local Government Energy Audit Program



AUGUST 2013

Dome-Tech, Inc.

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VERONA SCHOOL DISTRICT ENERGY AUDIT REPORT

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August 22, 2013

Mr. Paul McDevitt Director of Facilities Verona Board of Education 121 Fairview Avenue Verona, NJ 07044

Re: EXECUTIVE SUMMARY FOR VERONA BOARD OF EDUCATION

STATE OF NEW JERSEY LOCAL GOVERNMENT ENERGY AUDIT - DRAFT REPORT

OUR PROJECT NUMBER D13110

Dear Mr. McDevitt:

Dome-Tech was retained by the Verona Board of Education, as a pre-qualified participant in the Local Government Energy Audit Program, to perform an energy audit. The objectives of the energy audit were to evaluate the District's energy consumption, establish baselines for energy efficiency, and identify opportunities to reduce the amount of energy used and/or its cost.

The scope of the audit is standardized under the Program, and consisted of the following:

- Benchmarking historic energy consumption utilizing EPA Energy Star's Portfolio Manager
- Characterizing building use, occupancy, size, and construction
- Providing a detailed equipment list including estimated service life and efficiency
- Identifying and quantifying Energy Conservation Measures (ECMs)
- Evaluating the economic viability of various renewable/distributed energy technologies
- Performing a utility tariff analysis and assessing savings potential from energy procurement strategies
- Providing the method of analyses

Based upon data received for the twelve (12) month period September 2011 – August 2012, for the facilities included in this study, the District had an annual expenditure of:

Electricity: approximately 2,095,000 kWh at a total cost of approximately \$339,000
 Natural Gas: approximately 170,500 therms at a total cost of approximately \$174,000

The following buildings were evaluated under this study:

Facility Name	Total Floor Area
Laning Avenue Elementary School	46,477
Brookdale Avenue Elementary School	37,972
F.N. Brown Elementary School	38,985
Forest Avenue Elementary School	27,750
H.B. Whitehorne Middle School	118,224
Verona High School	120,245

Please refer to Section 2 of this report for a detailed list of identified Energy Conservation Measures (ECMs), along with a summary of their preliminary economics (estimated project cost, estimated annual energy savings, applicable rebate(s), etc.). In this report, all identified ECMs are ranked and presented according to their simple payback; however, please note that the Master ECM Table can also be sorted by building, by measure type, etc.

If all identified ECMs were to be implemented, they would provide the following estimated benefits to the Verona's Schools:

• Total annual electrical savings: approximately 615,000 kilowatt-hours of electric

consumption; 29% of baseline

Total annual natural gas savings: approximately 15,100 therms of natural gas consumption;

9% of baseline

Total annual cost savings: approximately \$115,000 of utility cost; 22% of baseline

• Total annual CO₂ emissions reduction: 292 tons

Total net estimated implementation cost: approximately \$1,109,000

Total net simple payback: 9.6 years

A summary of the projects that are recommended for implementation includes the following: piping insulation, weather stripping, replacing electric water heaters with gas, installing a computer power management system, replacing CRT screens with flat screens, lighting upgrades, and various building envelope improvements.

Distributed/Renewable Energy Systems were also reviewed with the following conclusions:

- Dome-Tech considered three (3) different types of wind turbine technologies that consisted of both building-mounted and traditional ground-mounted variety. Should the District decide to pursue a wind turbine project, Dome-Tech recommends commissioning a more detailed study.
- Roof-mounted photovoltaic systems ranging in size from 39 kW dc at F.N. Brown Elementary School to 309 kW dc at the Verona High School (681 kW dc total) could provide approximately 13% to 99% of each building's annual energy usage (36% of total energy usage for the entire district). Should the District decide to pursue a solar project, Dome-Tech recommends commissioning a more detailed study.
- CHP (Combined Heat and Power), Fuel Cells, and Micro-turbines were also considered and not recommended for any of the buildings due to a lack of significant year-round thermal loads.

The District's data was entered into the US EPA ENERGY STAR's Portfolio Manager Database program. Buildings with scores of 75 or higher may qualify for the ENERGY STAR Building Label.

Regarding the procurement of utilities, Dome-Tech understands that the District's facilities in this study are served by seven (7) electric accounts behind Public Service Electric and Gas and six (6) natural gas accounts behind Public Service Electric and Gas. All electricity and natural gas accounts are served by a third-party, retail energy supplier.

During the development of this audit, Dome-Tech was assisted by facility personnel, who were both knowledgeable and very helpful to our efforts. We would like to acknowledge and thank those individuals including Paul McDevitt, Jim Lewis, and Vincent Mafucci.

Sincerely,

John Bohadel, CEM, LEED AP Senior Energy Engineer





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ECM LIST

VERONA SCHOOL DISTRICT ECM Sorted by Payback

													Gross Implementation Costs			Net Ir	nplementati	on Costs	
ECM #	Energy Conservation Measures (ECM)	Buildings	Energy S	Savings Therms	Gross Installation Costs*	Rebates/ Incentive	Avoided Cost	Net Implementation Costs	Annual Energy Cost Savings	Annual Oper. Cost Savings	Total Annual Cost Savings	Measure Life Yrs	Pay Back (Gross) Yrs	Internal Rate of Return (IRR) (Gross)	Lifecycle Savings (NPV) (Gross)	Pay Back (Net) Yrs	Rate of Return (IRR) (Net)	Lifecycle Savings (NPV) (Net)	CO2 Savings Tons
			KWII	THEITIS								113	113			113			10113
1	PC Power Management	Brookdale Elementary School	12,000	0	\$810	\$0	\$0	\$810	\$1,860	\$0	\$1,860	10	0.4	230%	\$15,056	0.4	230%	\$15,056	4
1	PC Power Management	FN Brown	16,500	0	\$1,080	\$0	\$0	\$1,080	\$2,840	\$0	\$2,840	10	0.4	263%	\$23,146	0.4	263%	\$23,146	5
1	PC Power Management	Forest Elementary School	18,000	0	\$1,170	\$0	\$0	\$1,170	\$2,730	\$0	\$2,730	10	0.4	233%	\$22,117	0.4	233%	\$22,117	6
1	PC Power Management	HB Whitehorne Middle School	49,700	0	\$3,320	\$0	\$0	\$3,320	\$7,500	\$0	\$7,500	10	0.4	226%	\$60,657	0.4	226%	\$60,657	16
1	PC Power Management	Laning Avenue School	18,000	0	\$1,170	\$0	\$0	\$1,170	\$2,780	\$0	\$2,780	10	0.4	238%	\$22,544	0.4	238%	\$22,544	6
1	PC Power Management	Verona High School	69,300	0	\$4,660	\$0	\$0	\$4,660	\$11,800	\$0	\$11,800	10	0.4	253%	\$95,996	0.4	253%	\$95,996	23
2	Insulate Piping	FN Brown	0	170	\$230	\$0	\$0	\$230	\$180	\$0	\$180	15	1.3	78%	\$1,919	1.3	78%	\$1,919	1
2	Insulate Piping	Verona High School	0	420	\$870	\$0	\$0	\$870	\$400	\$0	\$400	15	2.2	46%	\$3,905	2.2	46%	\$3,905	2
3	Vending Machine Controls	HB Whitehorne Middle School	1,960	0	\$680	\$0	\$0	\$680	\$300	\$0	\$300	10	2.3	43%	\$1,879	2.3	43%	\$1,879	0.6
3	Vending Machine Controls	Verona High School	9,810	0	\$3,400	\$0	\$0	\$3,400	\$1,670	\$0	\$1,670	10	2.0	48%	\$10,845	2.0	48%	\$10,845	3
3	Vending Machine Controls	F.N. Brown Elementary	3,920	0	\$1,360	\$0	\$0	\$1,360	\$670	\$0	\$670	10	2.0	48%	\$4,355	2.0	48%	\$4,355	1.3
4	Steam Trap Repair Program	FN Brown	0	1,180	\$3,010	\$0	\$0	\$3,010	\$1,220	\$0	\$1,220	5	2.5	29%	\$2,577	2.5	29%	\$2,577	7
4	Steam Trap Repair Program Replace Elec. DHW with	HB Whitehorne Middle School	0	2,500	\$6,620	\$0	\$0	\$6,620	\$2,610	\$0	\$2,610	5	2.5	28%	\$5,333	2.5	28%	\$5,333	15
5	NatGas Replace Elec. DHW with	Brookdale Elementary School	4,790	-260	\$2,210	\$130	\$0	\$2,080	\$430	\$0	\$430	15	5.1	18%	\$2,923	4.8	19%	\$3,053	0
5	NatGas	Laning Avenue School	10,600	-610	\$2,140	\$130	\$0	\$2,010	\$980	\$0	\$980	15	2.2	46%	\$9,559	2.1	49%	\$9,689	0
6	Change CRT's to Flatscreens	Brookdale Elementary School	400	0	\$300	\$0	\$0	\$300	\$60	\$0	\$60	10	5.0	15%	\$212	5.0	15%	\$212	0.1
6	Change CRT's to Flatscreens	FN Brown	400	0	\$300	\$0	\$0	\$300	\$70	\$0	\$70	10	4.3	19%	\$297	4.3	19%	\$297	0.1
6	Change CRT's to Flatscreens	Forest Elementary School	300	0	\$230	\$0	\$0	\$230	\$50	\$0	\$50	10	4.6	17%	\$197	4.6	17%	\$197	0.1
6	Change CRT's to Flatscreens	Laning Avenue School	100	0	\$80	\$0	\$0	\$80	\$20	\$0	\$20	10	4.0	21%	\$91	4.0	21%	\$91	0.0
6	Change CRT's to Flatscreens	HB Whitehorne Middle School	200	0	\$150	\$0	\$0	\$150	\$30	\$0	\$30	10	5.0	15%	\$106	5.0	15%	\$106	0.1
7	Lighting Upgrade	Brookdale Elementary School	40,600	0	\$47,400	\$5,710	\$0	\$41,600	\$6,290	\$0	\$6,290	15	7.5	10%	\$27,690	6.6	13%	\$33,490	13
7	Lighting Upgrade	FN Brown	44,900	0	\$58,400	\$6,100	\$0	\$52,300	\$7,710	\$0	\$7,710	15	7.6	10%	\$33,641	6.8	12%	\$39,741	15
7	Lighting Upgrade	Forest Elementary School	40,500	0	\$50,900	\$5,460	\$0	\$45,400	\$6,140	\$0	\$6,140	15	8.3	9%	\$22,399	7.4	10%	\$27,899	13
7	Lighting Upgrade	HB Whitehorne Middle School	36,200	0	\$46,700	\$5,600	\$0	\$41,100	\$5,580	\$0	\$5,580	15	8.4	8%	\$19,914	7.4	11%	\$25,514	12
7	Lighting Upgrade	Laning Avenue School	67,600	0	\$67,800	\$8,110	\$0	\$59,700	\$10,200	\$0	\$10,200	15	6.6	12%	\$53,967	5.9	15%	\$62,067	22
7	Lighting Upgrade	Verona High School	164,000	0	\$170,000	\$20,300	\$0	\$150,000	\$27,800	\$0	\$27,800	15	6.1	14%	\$161,875	5.4	17%	\$181,875	54

Prepared by Dome-Tech, Inc.

VERONA SCHOOL DISTRICT ECM Sorted by Payback

													Gross Implementation Co			Net In	nplementati	on Costs	
ECM #	Energy Conservation Measures (ECM)	Buildings	Energy \$	Savings Therms	Gross Installation Costs*	Rebates/ Incentive	Avoided Cost	Net Implementation Costs	Annual Energy Cost Savings	Annual Oper. Cost Savings	Total Annual Cost Savings	Measure Life Yrs	Pay Back (Gross) Yrs	Internal Rate of Return (IRR) (Gross)	Lifecycle Savings (NPV) (Gross)	Pay Back (Net) Yrs	Rate of Return (IRR) (Net)	Lifecycle Savings (NPV) (Net)	CO2 Savings Tons
Ω	Door Weatherstripping	FN Brown	0	70	\$470	\$0	\$0	\$470	\$70	\$0	\$70	15	6.7	12%	\$366	6.7	12%	\$366	0.4
	Door Weatherstripping	Laning Avenue School	0	20	\$240	\$0	\$0	\$240	\$20	\$0	\$20	15	12.0	3%	-\$1	12.0	3%	-\$1	0.1
	Door Weatherstripping	Verona High School	0	0	\$80	\$0	\$0	\$80	\$0	\$0	\$4	15	18.7	-3%	-\$29	18.7	-3%	-\$29	0.0
8	Door Weatherstripping	HB Whitehorne Middle School	0	70	\$470	\$0	\$0	\$470	\$70	\$0	\$70	15	6.7	12%	\$366	6.7	12%	\$366	0.4
9	Demand Controlled Ventilation	Laning Avenue School	0	800	\$13,200	\$0	\$0	\$13,200	\$820	\$0	\$820	15	16.1	-1%	-\$3,411	16.1	-1%	-\$3,411	5
9	Demand Controlled Ventilation	Brookdale Elementary School	320	300	\$10.800	\$0	\$0	\$10.800	\$360	\$0	\$360	15	30.0	-8%	-\$6,502	30.0	-8%	-\$6.502	2
9	Demand Controlled Ventilation	FN Brown	0	670	\$13,200	\$0	\$0	\$13,200	\$680	\$0	\$680	15	19.4	-3%	-\$5,082	19.4	-3%	-\$5,082	4
9	Demand Controlled Ventilation	Forest Elementary School	0	280	\$7,870	\$0	\$0	\$7,870	\$280	\$0	\$280	15	28.1	-7%	-\$4,527	28.1	-7%	-\$4,527	2
9	Demand Controlled Ventilation	HB Whitehorne Middle School	0	530	\$15,000	\$0	\$0	\$15,000	\$540	\$0	\$540	15	27.8	-7%	-\$8,554	27.8	-7%	-\$8,554	3
9	Demand Controlled Ventilation	Verona High School	690	1,430	\$18,100	\$0	\$0	\$18,100	\$1,570	\$0	\$1,570	15	11.5	3%	\$643	11.5	3%	\$643	9
10	Replace Window ACs with Splits	FN Brown	520	50	\$12,500	\$120	\$0	\$12,400	\$140	\$0	\$140	15	89.3	-17%	-\$10,829	88.6	-17%	-\$10,729	0.5
10	Replace Window ACs with Splits	Forest Elementary School	3,790	20	\$11,200	\$280	\$0	\$10,900	\$680	\$0	\$680	15	16.5	-1%	-\$3,082	16.0	-1%	-\$2,782	1
10	Replace Window ACs with Splits	Laning Avenue School	250	20	\$6,870	\$80	\$0	\$6,790	\$60	\$0	\$60	15	114.5	-19%	-\$6,154	113.2	-19%	-\$6,074	0.2
11	Change to Modular Condensing Boilers	Brookdale Elementary School	0	790	\$344,000	\$10,500	\$216,000	\$118,000	\$920	\$0	\$920	25	373.9	-15%	-\$327,980	128.3	-10%	-\$101,980	5
11	Change to Modular Condensing Boilers	Forest Elementary School	0	970	\$344,000	\$10,500	\$216,000	\$118,000	\$1,100	\$0	\$1,100	25	312.7	-14%	-\$324,846	107.3	-9%	-\$98,846	6
11	Change to Modular Condensing Boilers	Laning Avenue School	0	1,830	\$344,000	\$10,500	\$247,000	\$86,500	\$1,870	\$0	\$1,870	25	184.0	-12%	-\$311,437	46.3	-4%	-\$53,937	11
11	Condensing Boilers	Verona High School	0	3,860	\$572,000	\$18,400	\$299,000	\$255,000	\$3,670	\$0	\$3,670	25	155.9	-11%	-\$508,094	69.5	-7%	-\$191,094	23
	Т	OTALS	615,000	15,100	\$2,190,000	\$102,000	\$978,000	\$1,109,000	\$115,000	\$0	\$115,000	16	19.0	0.0	-\$713,328	9.6	7%	\$367,672	292

Notes:

- 1. KW Where Zero (0) values are shown in the table there is no demand reduction for this measure.
- 2. Rebates- Where Zero (0) values are shown in the table we could not find any rebates of other financial incentives that are currently available for this measure.
- 3. Gross Installation Cost is the cost of installing equipment recommended by the ECM.
- 4. Avoided Cost is the cost of replacing equipment at end of service life with like and kind equipment.
- 5. Net Implementation Cost is the Gross Installation Cost less any Rebate/Incentive and any Avoided Cost. In the case of equipment that is being replaced regardless, Net Implementation Cost represents the incremental cost incurred by upgrading to equipment that produces more energy s

Prepared by Dome-Tech, Inc. 2 of 2



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Energy Audit Purpose & Scope

Purpose:

The objectives of the energy audit are to evaluate each site's energy consumption, establish baselines for energy efficiency and identify opportunities to reduce the amount of energy used and/or its cost.

Scope:

- I. <u>Historic Energy Consumption</u>: Benchmark energy use using Energy Star Portfolio Manager
- II. <u>Facility Description</u>: Characterize building usage, occupancy, size and construction.
- III. <u>Equipment Inventory</u>: Detailed equipment list including useful life and efficiency.
- IV. <u>Energy Conservation Measures</u>: Identify and evaluate opportunities for cost savings and economic returns.
- V. <u>Renewable/Distributed Energy Measures</u>: Evaluate economic viability of various renewable/distributed energy technologies.
- VI. <u>Energy Purchasing and Procurement Strategies</u>: Perform utility tariff analysis and assess potential for savings from energy procurement strategies.
- VII. Method of Analysis: Appendices



Historic Energy Consumption

Utility Usage and Costs Summary

Time-period: Annual

	Electric - PSE&G / DIRECT ENERGY							
Buildings	Account Annual Consumptio kWh		Annual Cost	\$/kWh				
Laning Avenue Elementary School	67 228 723 00	246,840	\$37,279.66	\$0.151				
Brookdale Avenue Elementary School	67 174 764 00	151,520	\$23,457.65	\$0.155				
F.N. Brown Elementary School - COMBINED	66 627 422 01	232,247	\$39,900.33	\$0.172				
Forest Avenue Elementary School	67 075 835 06	137,440	\$20,842.49	\$0.152				
H.B. Whitehorne Middle School	42 003 725 09	528,300	\$81,501.77	\$0.154				
Verona High School - COMBINED	42 005 408 00	798,601	\$135,735.74	\$0.170				
	TOTAL	2,094,948	\$338,717.64	\$0.162				

	Natural Gas - PSE&G / HESS CORP / COMPASS ENERGY						
Buildings	Account Number(s)	Consumption		\$ / Therms			
Laning Avenue Elementary School	67 228 723 00	24,532	\$25,130.97	\$1.024			
Brookdale Avenue Elementary School	67 174 764 00	10,398	\$12,162.85	\$1.170			
F.N. Brown Elementary School	66 627 422 01	26,045	\$26,873.33	\$1.032			
Forest Avenue Elementary School	67 075 835 06	12,523	\$14,161.65	\$1.131			
H.B. Whitehorne Middle School	65 057 318 06	38,851	\$40,582.82	\$1.045			
Verona High School	42 005 408 00	58,107	\$55,224.52	\$0.950			
	TOTAL	170,456	\$174,136.13	\$1.022			



Utility Usage and Costs Summary Time-period: Jun. 2011 - May. 2012

Facility Name Laning Avenue Elementary School

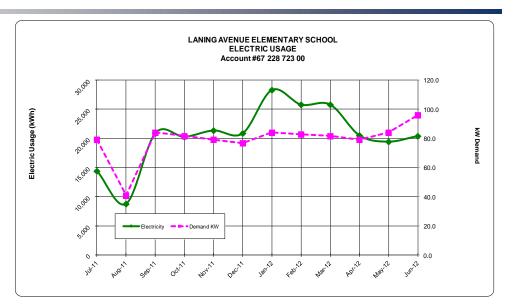
Address 18 Laning Road

Verona, NJ

Account# 67 228 723 00 - PSE&G

1113218 - Direct Energy

Meter# 9193787 PoD ID: 000009784430245193



DIRECT PSE&G ENERGY

						1 0240	LITERIO	
Energy Type	Energy Unit	Start Date	End Date	Demand KW	кwн	Delivery Cost	Supplier Cost	\$/kWh
Electricity	kWh	6/27/2011	7/27/2011	79.2	14,400	\$1,485.24	\$1,819.93	\$0.23
Electricity	kWh	7/27/2011	8/25/2011	40.8	8,760	\$827.29	\$1,006.98	\$0.21
Electricity	kWh	8/25/2011	9/27/2011	84.0	20,880	\$1,805.54	\$2,038.32	\$0.18
Electricity	kWh	9/27/2011	10/25/2011	81.6	20,280	\$981.49	\$1,847.03	\$0.14
Electricity	kWh	10/25/2011	11/22/2011	79.2	21,360	\$1,013.96	\$1,952.44	\$0.14
Electricity	kWh	11/23/2011	12/27/2011	76.8	20,880	\$990.87	\$1,586.26	\$0.12
Electricity	kWh	12/27/2011	1/26/2012	84.0	28,320	\$1,266.77	\$2,492.16	\$0.13
Electricity	kWh	1/26/2012	2/27/2012	82.8	25,800	\$1,182.36	\$2,270.40	\$0.13
Electricity	kWh	2/27/2012	3/28/2012	81.6	25,800	\$1,177.27	\$2,270.40	\$0.13
Electricity	kWh	3/28/2012	4/27/2012	79.2	20,520	\$997.83	\$1,805.76	\$0.14
Electricity	kWh	4/27/2012	5/26/2012	84.0	19,440	\$983.53	\$1,710.72	\$0.14
Electricity	kWh	5/26/2012	6/26/2012	96.0	20,400	\$1,971.91	\$1,795.20	\$0.18
	TOTALS/AVERAGE				246,840	\$14,684.06	\$22,595.60	\$0.151



Utility Usage and Costs Summary Time-period: June 2011 - May 2012

Facility Name Laning Avenue Elementary School

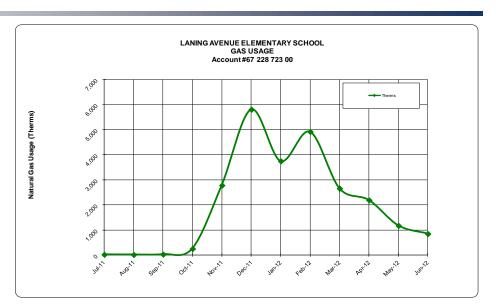
Address 18 Laning Road

Verona, NJ

Account# 67 228 723 00 - PSE&G

356872/356956 - HESS

Meter# 3164433 PoD ID: PG000009784429445193



HESS CORP / COMPASS ENERGY*

					PSE&G	COMPASS ENERGY"	
Energy Type	Energy Unit	Start Date	End Date	Therms	Delivery Cost	Supply Cost	\$/Therm
Natural Gas	Therms	6/27/2011	7/27/2011	29	\$101.82	\$21.70	\$4.199
Natural Gas	Therms	7/27/2011	8/25/2011	23	\$102.84	\$16.95	\$5.225
Natural Gas	Therms	8/25/2011	9/27/2011	37	\$104.91	\$23.59	\$3.459
Natural Gas	Therms	9/27/2011	10/25/2011	261	\$137.59	\$163.71	\$1.153
Natural Gas	Therms	10/25/2011	11/22/2011	2,788	\$1,350.92	\$1,893.22	\$1.164
Natural Gas	Therms	11/23/2011	12/27/2011	5,813	\$1,926.39	\$3,949.17	\$1.011
Natural Gas	Therms	12/27/2011	1/26/2012	3,755	\$1,524.80	\$2,551.71	\$1.086
Natural Gas	Therms	1/26/2012	2/27/2012	4,925	\$1,742.49	\$3,346.27	\$1.033
Natural Gas	Therms	2/27/2012	3/28/2012	2,665	\$1,207.85	\$1,811.32	\$1.133
Natural Gas	Therms	3/28/2012	4/27/2012	2,197	\$356.64	\$1,010.12	\$0.622
Natural Gas	Therms	4/27/2012	5/26/2012	1,182	\$258.77	\$648.27	\$0.768
Natural Gas	Therms	5/26/2012	6/26/2012	856	\$220.80	\$659.12	\$1.028
TOTALS/AVERAGE			VERAGE	24,532	\$9,035.82	\$16,095.15	\$1.024

^{*} Supply company changed in September 2011



Utility Usage and Costs Summary Time-period: June 2011 - May 2012

Facility Name Brookdale Avenue Elementary School

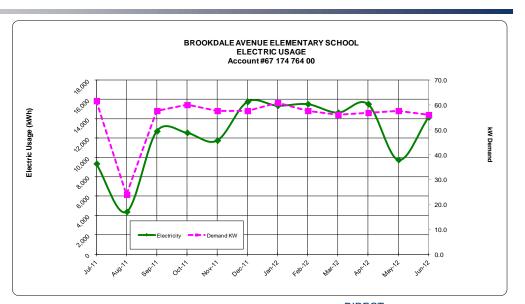
Address 14 Brookdale Court

Verona, NJ

Account# 67 174 764 00 - PSE&G

1113220 - Direct Energy

Meter# 9193164 PoD ID: PE000010271298145193



DIRECT PSE&G ENERGY

						1 OLGO	LINLINGT	
Energy Type	Energy Unit	Start Date	End Date	Demand KW	KWH	Delivery Cost	Supplier Cost	\$/kWh
Electricity	kWh	6/27/2011	7/27/2011	61.6	9,360	\$1,087.48	\$1,185.04	\$0.24
Electricity	kWh	7/27/2011	8/25/2011	24.0	4,400	\$460.14	\$539.83	\$0.23
Electricity	kWh	8/25/2011	9/26/2011	57.6	12,720	\$1,179.40	\$1,256.31	\$0.19
Electricity	kWh	9/26/2011	10/25/2011	60.0	12,560	\$649.63	\$1,176.27	\$0.15
Electricity	kWh	10/25/2011	11/23/2011	57.6	11,760	\$619.49	\$1,110.93	\$0.15
Electricity	kWh	11/23/2011	12/27/2011	57.6	15,760	\$747.40	\$1,194.38	\$0.12
Electricity	kWh	12/27/2011	1/26/2012	60.8	15,360	\$753.63	\$1,351.68	\$0.14
Electricity	kWh	1/26/2012	2/27/2012	57.6	15,520	\$746.01	\$1,365.76	\$0.14
Electricity	kWh	2/27/2012	3/28/2012	56.0	14,640	\$711.02	\$1,288.32	\$0.14
Electricity	kWh	3/27/2012	4/26/2012	56.8	15,520	\$742.61	\$1,385.08	\$0.14
Electricity	kWh	4/26/2012	5/25/2012	57.6	9,760	\$561.32	\$858.88	\$0.15
Electricity	kWh	5/25/2012	6/26/2012	56.0	14,160	\$1,240.96	\$1,246.08	\$0.18
TOTALS/AVERAGE			55.3	151,520	\$9,499.09	\$13,958.56	\$0.155	



Utility Usage and Costs Summary Time-period: June 2011 - May 2012

Facility Name Brookdale Avenue Elementary School

Address 14 Brookdale Court

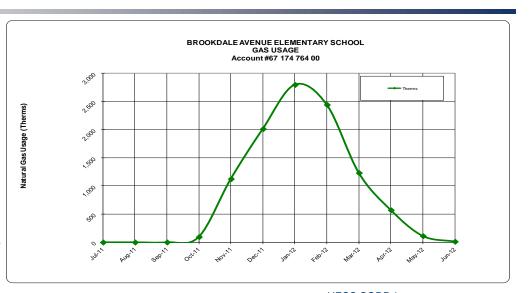
Verona, NJ

Account# 67 174 764 00 - PSE&G

356872/

494200 - HESS

Meter# 3274994 PoD ID: PG000010271297345193



HESS CORP /
PSE&G COMPASS ENERGY

					PSE&G	COMPASS ENERGY*	
Energy Type	Energy Unit	Start Date	End Date	Therms	Delivery Cost	Supply Cost	\$/Therm
Natural Gas	Therms	6/27/2011	7/27/2011	0	\$97.59	\$0.00	\$0.000
Natural Gas	Therms	7/27/2011	8/25/2011	0	\$99.50	\$0.00	\$0.000
Natural Gas	Therms	8/25/2011	9/26/2011	1	\$99.65	\$0.67	\$94.820
Natural Gas	Therms	9/26/2011	10/25/2011	96	\$113.54	\$60.33	\$1.805
Natural Gas	Therms	10/25/2011	11/23/2011	1,125	\$745.69	\$764.17	\$1.342
Natural Gas	Therms	11/23/2011	12/27/2011	2,012	\$914.58	\$1,367.24	\$1.134
Natural Gas	Therms	12/27/2011	1/26/2012	2,796	\$1,030.25	\$1,899.77	\$1.048
Natural Gas	Therms	1/26/2012	2/27/2012	2,440	\$962.32	\$1,657.76	\$1.074
Natural Gas	Therms	2/27/2012	3/28/2012	1,231	\$735.55	\$836.74	\$1.277
Natural Gas	Therms	3/27/2012	4/26/2012	571	\$180.41	\$260.53	\$0.772
Natural Gas	Therms	4/26/2012	5/25/2012	112	\$115.40	\$59.92	\$1.563
Natural Gas	Therms	5/25/2012	6/26/2012	13	\$101.32	\$59.92	\$12.606
		TOTALS/	AVERAGE	10,398	\$5,195.80	\$6,967.05	\$1.170

^{*} Supply company changed in September 2011 Verona School District FINAL LGEA Report, August 2013



Utility Usage and Costs Summary Time-period: June 2011 - May 2012

Facility Name F.N. Brown Elementary School

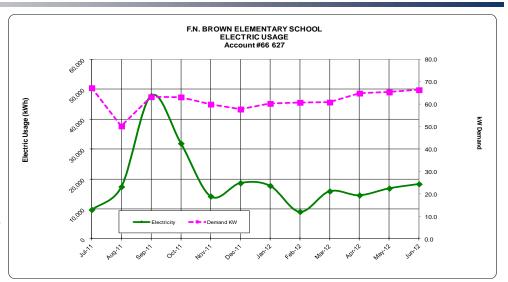
Address 125 Grove Avenue

Verona, NJ

Account# 66 627 422 01 - PSE&G

1113216 - Direct Energy

Meter# 614000456 PoD ID: PE000008822094245193



DIRECT PSE&G ENERGY

						FOLAG	LINLINGT	
Energy Type	Energy Unit	Start Date	End Date	Demand KW	KWH	Delivery Cost	Supplier Cost	\$/kWh
Electricity	kWh	6/28/2011	7/28/2011	67.2	9,748	\$1,173.55	\$1,385.10	\$0.26
Electricity	kWh	7/28/2011	8/26/2011	50.2	17,437	\$1,271.56	\$2,152.38	\$0.20
Electricity	kWh	8/26/2011	9/27/2011	63.2	47,753	\$2,568.33	\$4,758.40	\$0.15
Electricity	kWh	9/27/2011	10/26/2011	63.1	31,875	\$2,148.59	\$3,695.94	\$0.18
Electricity	kWh	10/26/2011	11/28/2011	59.9	14,227	\$711.87	\$1,615.45	\$0.16
Electricity	kWh	11/28/2011	12/28/2011	57.7	18,667	\$844.26	\$1,959.35	\$0.15
Electricity	kWh	12/28/2011	1/17/2012	60.2	17,737	\$831.74	\$1,963.00	\$0.16
Electricity	kWh	1/27/2012	2/28/2012	60.7	9,083	\$557.14	\$1,289.61	\$0.20
Electricity	kWh	2/28/2012	3/28/2012	60.8	15,921	\$776.80	\$1,763.48	\$0.16
Electricity	kWh	3/28/2012	4/27/2012	64.8	14,588	\$750.99	\$1,660.18	\$0.17
Electricity	kWh	4/27/2012	5/29/2012	65.3	16,879	\$826.58	\$1,836.46	\$0.16
Electricity	kWh	5/29/2012	6/27/2012	66.3	18,332	\$1,537.42	\$1,822.15	\$0.18
		TOTALS/A	AVERAGE	61.6	232,247	\$13,998.83	\$25,901.50	\$0.172



Utility Usage and Costs Summary Time-period: June 2011 - May 2012

Facility Name F.N. Brown Elementary School

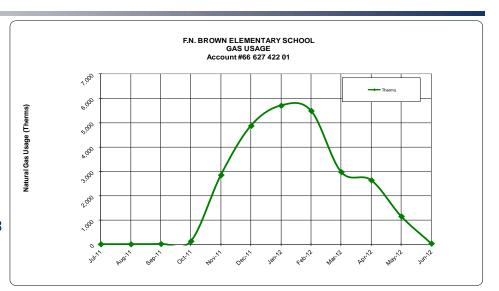
Address 125 Grove Avenue

Verona, NJ

Account# 66 627 422 01 - PSE&G

356872 / 356960 - HESS CORP

Meter# combined PoD ID: PG000008822093445193



HESS CORP /
PSE&G COMPASS ENERGY*

					PSEAG	COMPASS ENERGY	
Energy Type	Energy Unit	Start Date	End Date	Therms	Delivery Cost	Supply Cost	\$/Therm
Natural Gas	Therms	6/28/2011	7/28/2011	26	\$101.37	\$18.99	\$4.664
Natural Gas	Therms	7/28/2011	8/26/2011	27	\$103.42	\$19.80	\$4.582
Natural Gas	Therms	8/26/2011	9/27/2011	38	\$105.08	\$24.33	\$3.378
Natural Gas	Therms	9/27/2011	10/26/2011	148	\$220.64	\$69.00	\$1.951
Natural Gas	Therms	10/26/2011	11/28/2011	2,864	\$1,506.64	\$1,944.94	\$1.205
Natural Gas	Therms	11/28/2011	12/28/2011	4,883	\$1,891.33	\$3,317.32	\$1.067
Natural Gas	Therms	12/28/2011	1/17/2012	5,710	\$1,931.88	\$3,879.85	\$1.018
Natural Gas	Therms	1/27/2012	2/28/2012	5,495	\$1,842.72	\$3,733.69	\$1.015
Natural Gas	Therms	2/28/2012	3/28/2012	2,985	\$1,372.09	\$2,028.78	\$1.139
Natural Gas	Therms	3/28/2012	4/27/2012	2,649	\$400.24	\$1,215.80	\$0.610
Natural Gas	Therms	4/27/2012	5/29/2012	1,166	\$364.25	\$332.31	\$0.597
Natural Gas	Therms	5/29/2012	6/27/2012	53	\$107.05	\$341.81	\$8.435
		TOTALS/A	VERAGE	26,045	\$9,946.71	\$16,926.62	\$1.032

^{*} Supply company changed in September 2011



Utility Usage and Costs Summary Time-period: June 2011 - May 2012

Facility Name Forest Avenue Elementary School

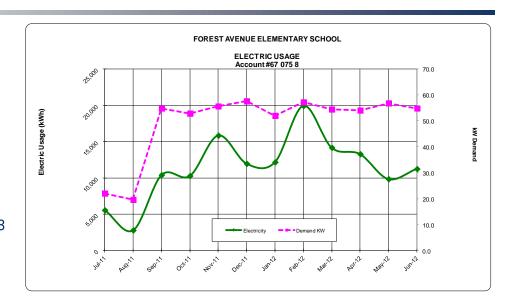
Address 118 Forest Avenue

Verona, NJ

Account# 67 075 835 06 - PSE&G

1113219 - Direct Energy

Meter# 728001728 PoD ID: PE000010038745545193



DIRECT PSF&G ENERGY

						1 OLAO	LINLINGT	
Energy Type	Energy Unit	Start Date	End Date	Demand KW	KWH	Delivery Cost	Supplier Cost	\$/kWh
Electricity	kWh	6/28/2011	7/28/2011	22.0	5,560	\$474.15	\$716.55	\$0.21
Electricity	kWh	7/28/2011	8/26/2011	19.6	2,800	\$346.77	\$368.67	\$0.26
Electricity	kWh	8/26/2011	9/27/2011	54.8	10,400	\$1,058.33	\$1,028.17	\$0.20
Electricity	kWh	9/27/2011	10/26/2011	52.8	10,280	\$548.13	\$963.09	\$0.15
Electricity	kWh	10/26/2011	11/28/2011	55.6	15,840	\$740.21	\$1,402.18	\$0.14
Electricity	kWh	11/28/2011	12/28/2011	57.6	11,960	\$627.08	\$921.00	\$0.13
Electricity	kWh	12/28/2011	1/17/2012	52.0	12,160	\$614.07	\$1,070.08	\$0.14
Electricity	kWh	1/27/2012	2/28/2012	57.2	19,920	\$885.37	\$1,769.01	\$0.13
Electricity	kWh	2/28/2012	3/28/2012	54.4	14,160	\$688.85	\$1,246.08	\$0.14
Electricity	kWh	3/28/2012	4/27/2012	54.0	13,280	\$658.94	\$1,187.33	\$0.14
Electricity	kWh	4/27/2012	5/29/2012	56.8	9,840	\$560.50	\$865.92	\$0.14
Electricity	kWh	5/29/2012	6/27/2012	54.8	11,240	\$1,112.89	\$989.12	\$0.19
TOTALS/AVERAGE		49.3	137,440	\$8,315.29	\$12,527.20	\$0.152		



Utility Usage and Costs Summary Time-period: June 2011 - May 2012

Facility Name Forest Avenue Elementary School

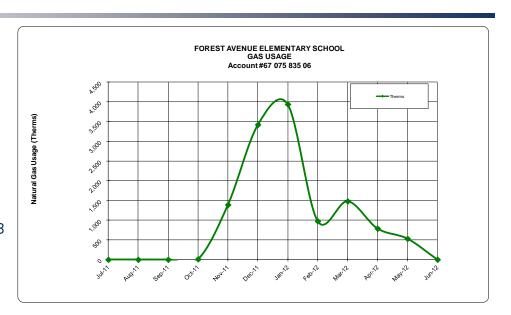
Address 118 Forest Avenue

Verona, NJ

Account# 67 075 835 06 - PSE&G

356872 / 356961 - HESS CORP

Meter# 2344823 PoD ID: PG000010038744845193



HESS CORP / PSF&G COMPASS ENERGY*

					FOLAG	COMPASS LINERGI	
Energy Type	Energy Unit	Start Date	End Date	Therms	Delivery Cost	Supply Cost	\$/Therm
Natural Gas	Therms	6/28/2011	7/28/2011	0	\$97.65	\$0.00	#DIV/0!
Natural Gas	Therms	7/28/2011	8/26/2011	0	\$99.50	\$0.00	#DIV/0!
Natural Gas	Therms	8/26/2011	9/27/2011	0	\$99.50	\$0.00	#DIV/0!
Natural Gas	Therms	9/27/2011	10/26/2011	12	\$101.20	\$7.29	\$9.316
Natural Gas	Therms	10/26/2011	11/28/2011	1,390	\$896.92	\$943.89	\$1.324
Natural Gas	Therms	11/28/2011	12/28/2011	3,418	\$1,283.27	\$2,321.93	\$1.055
Natural Gas	Therms	12/28/2011	1/17/2012	3,934	\$1,306.41	\$2,673.25	\$1.012
Natural Gas	Therms	1/27/2012	2/28/2012	974	\$664.17	\$662.01	\$1.361
Natural Gas	Therms	2/28/2012	3/28/2012	1,478	\$759.94	\$1,004.81	\$1.194
Natural Gas	Therms	3/28/2012	4/27/2012	786	\$210.96	\$361.08	\$0.727
Natural Gas	Therms	4/27/2012	5/29/2012	529	\$274.04	\$147.09	\$0.795
Natural Gas	Therms	5/29/2012	6/27/2012	1	\$99.65	\$147.09	\$231.463
		TOTALS//	AVERAGE	12,523	\$5,893	\$8,268	\$1.131



Utility Usage and Costs Summary Time-period: June 2011 - May 2012

Facility Name H.B. Whitehorne Middle School

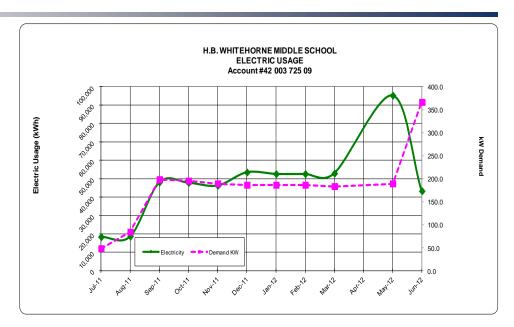
Address 600 Bloomfield Avenue

Verona, NJ

Account# 42 003 725 09 - PSEG

1113217 - Direct Energy

Meter# 778017642 PoD ID: PE000009065729765391



DIRECT PSE&G ENERGY

						FSEAG	ENERGI	
Energy Type	Energy Unit	Start Date	End Date	Demand KW	кwн	Delivery Cost	Supplier Cost	\$/kWh
Electricity	kWh	6/28/2011	7/28/2011	48.0	18,300	\$1,428.10	\$2,341.09	\$0.21
Electricity	kWh	7/28/2011	8/26/2011	84.0	18,600	\$1,876.17	\$2,261.55	\$0.22
Electricity	kWh	8/26/2011	9/27/2011	198.0	48,000	\$4,012.62	\$4,826.80	\$0.18
Electricity	kWh	9/27/2011	10/26/2011	195.0	47,700	\$2,351.69	\$4,618.64	\$0.15
Electricity	kWh	10/26/2011	11/28/2011	189.0	46,200	\$2,311.21	\$4,529.00	\$0.15
Electricity	kWh	11/28/2011	12/28/2011	186.0	53,400	\$2,502.33	\$4,084.25	\$0.12
Electricity	kWh	12/28/2011	1/17/2012	186.0	52,500	\$2,504.42	\$4,620.00	\$0.14
Electricity	kWh	1/27/2012	2/28/2012	186.0	52,500	\$2,507.11	\$4,689.30	\$0.14
Electricity	kWh	2/28/2012	3/28/2012	183.0	52,800	\$2,505.08	\$4,646.40	\$0.14
Electricity	kWh	3/28/2012	5/29/2012	189.0	95,100	\$4,757.20	\$8,368.80	\$0.14
Electricity	kWh	5/29/2012	6/27/2012	366.0	43,200	\$5,958.41	\$3,801.60	\$0.23
TOTALS/AVERAGE			182.7	528,300	\$32,714.34	\$48,787.43	\$0.154	



Utility Usage and Costs Summary Time-period: June 2011 - May 2012

Facility Name H.B. Whitehorne Middle School

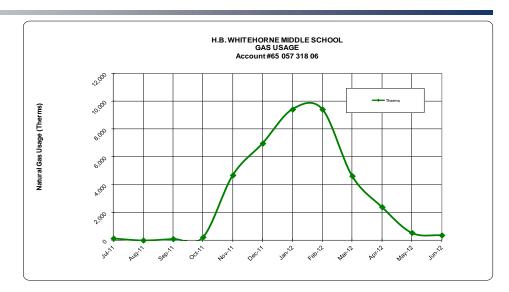
Address 600 Bloomfield Avenue

Verona, NJ

Account# 65 057 318 06 - PSE&G

356872 / 356958 - HESS CORP

Meter# 3166068 PoD ID: PG00000809427131248



HESS CORP / PSE&G COMPASS ENERGY*

Energy Type	Energy Unit	Start Date	End Date	Therms	Delivery Cost	Supply Cost	\$/Therm
Natural Gas	Therms	6/28/2011	7/28/2011	137	\$117.37	\$101.19	\$1.592
Natural Gas	Therms	7/28/2011	8/26/2011	0	\$99.50	\$0.00	#DIV/0!
Natural Gas	Therms	8/26/2011	9/27/2011	102	\$114.31	\$64.54	\$1.760
Natural Gas	Therms	9/27/2011	10/26/2011	226	\$132.49	\$141.79	\$1.211
Natural Gas	Therms	10/26/2011	11/28/2011	4,679	\$2,306.22	\$3,177.40	\$1.172
Natural Gas	Therms	11/28/2011	12/28/2011	6,966	\$2,742.44	\$4,732.46	\$1.073
Natural Gas	Therms	12/28/2011	1/17/2012	9,408	\$3,154.59	\$6,393.07	\$1.015
Natural Gas	Therms	1/27/2012	2/28/2012	9,412	\$3,110.69	\$6,395.22	\$1.010
Natural Gas	Therms	2/28/2012	3/28/2012	4,619	\$2,212.35	\$3,139.13	\$1.159
Natural Gas	Therms	3/28/2012	4/27/2012	2,393	\$375.55	\$1,099.25	\$0.616
Natural Gas	Therms	4/27/2012	5/29/2012	543	\$176.45	\$297.44	\$0.873
Natural Gas	Therms	5/29/2012	6/27/2012	366	\$151.33	\$348.04	\$1.366
		TOTALS/AVERAGE		38,851	\$14,693	\$25,890	\$1.045



Utility Usage and Costs Summary Time-period: June 2011 - May 2012

Facility Name Verona High School - COMBINED

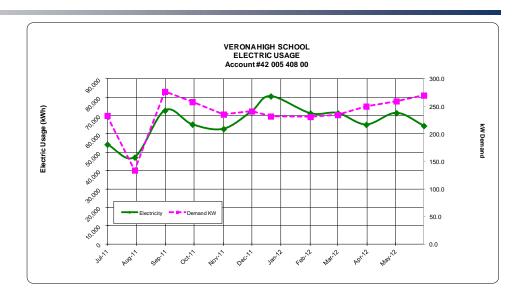
Address 151 Fairview Avenue

Verona, NJ

Account# 42 005 408 00 - PSE&G

1113222 - Direct Energy

Meter# 126408067 PoD ID: PE000011746289545193



DIRECT PSE&G ENERGY

Energy Type	Energy Unit	Start Date	End Date	Demand KW	кwн	Delivery Cost	Supplier Cost	\$/kWh
Electricity	kWh	6/28/2011	7/28/2011	233.3	54,288	\$4,551.22	\$6,929.57	\$0.21
Electricity	kWh	7/28/2011	8/26/2011	133.9	47,229	\$3,241.97	\$6,456.17	\$0.21
Electricity	kWh	8/26/2011	9/27/2011	277.0	72,758	\$5,510.33	\$8,582.66	\$0.19
Electricity	kWh	9/27/2011	10/26/2011	258.2	65,181	\$3,048.39	\$7,296.93	\$0.16
Electricity	kWh	10/26/2011	11/28/2011	235.5	62,710	\$2,931.55	\$6,915.83	\$0.16
Electricity	kWh	11/28/2011	12/28/2011	241.3	72,368	\$3,221.48	\$7,738.94	\$0.15
Electricity	kWh	12/28/2011	1/17/2012	232.0	80,558	\$3,457.42	\$8,729.85	\$0.15
Electricity	kWh	1/27/2012	2/28/2012	231.1	71,230	\$3,195.42	\$8,349.59	\$0.16
Electricity	kWh	2/28/2012	3/28/2012	234.6	71,336	\$3,210.45	\$7,912.83	\$0.16
Electricity	kWh	3/28/2012	4/27/2012	250.0	65,076	\$3,088.16	\$7,400.71	\$0.16
Electricity	kWh	4/27/2012	5/29/2012	259.5	71,426	\$3,299.47	\$7,918.63	\$0.16
Electricity	kWh	5/29/2012	6/27/2012	270.0	64,441	\$5,451.21	\$7,296.96	\$0.20
		TOTALS/A	AVERAGE	238.0	798,601	\$44,207.07	\$91,528.67	\$0.170



Utility Usage and Costs Summary Time-period: June 2011 - May 2012

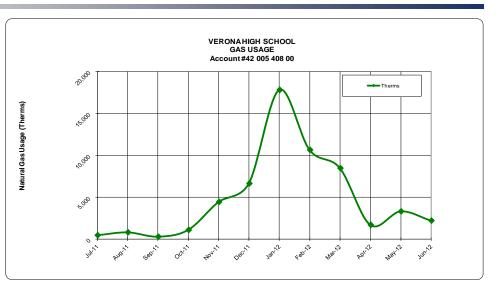
Facility Name Verona High School Address 151 Fairview Avenue

Verona, NJ

Account# 42 005 408 00 - PSE&G

356872 / 356957 - HESS CORP

Meter# 1639191 PoD ID: PG000011746288745193



HESS CORP /
COMPASS
PSE&G ENERGY*

					PSE&G	ENERGY*	
Energy Type	Energy Unit	Start Date	End Date	Therms	Delivery Cost	Supply Cost	\$/Therm
Natural Gas	Therms	6/28/2011	7/28/2011	488	\$167.78	\$359.82	\$1.081
Natural Gas	Therms	7/28/2011	8/26/2011	834	\$220.98	\$614.58	\$1.002
Natural Gas	Therms	8/26/2011	9/27/2011	318	\$145.89	\$202.17	\$1.093
Natural Gas	Therms	9/27/2011	10/26/2011	1,123	\$257.60	\$703.41	\$0.856
Natural Gas	Therms	10/26/2011	11/28/2011	4,456	\$1,645.95	\$2,213.44	\$0.866
Natural Gas	Therms	11/28/2011	12/28/2011	6,666	\$2,776.69	\$4,528.66	\$1.096
Natural Gas	Therms	12/28/2011	1/17/2012	17,809	\$4,797.50	\$12,101.40	\$0.949
Natural Gas	Therms	1/27/2012	2/28/2012	10,651	\$3,177.35	\$7,237.20	\$0.978
Natural Gas	Therms	2/28/2012	3/28/2012	8,479	\$2,554.64	\$5,762.25	\$0.981
Natural Gas	Therms	3/28/2012	4/27/2012	1,719	\$310.55	\$790.73	\$0.641
Natural Gas	Therms	4/27/2012	5/29/2012	3,332	\$466.06	\$1,824.97	\$0.688
Natural Gas	Therms	5/29/2012	6/27/2012	2,232	\$360.02	\$2,004.88	\$1.059
	•	TOTALS/A	VERAGE	58,107	\$16,881.01	\$38,343.51	\$0.950

^{*} Supply company changed in September 2011



Energy Star Portfolio

Energy Star Scores

- > An Energy Star Score is calculated to establish a facility-specific energy intensity baseline.
- > Energy Star can be used to compare energy consumption to other similar facilities and to gauge the success of energy conservation and cost containment efforts.
- ➤ Buildings with an *Energy Star* rating/score of 75, or above, are eligible to apply for an official *Energy Star* Building label.

Facility Name	Total Floor Area (sq ft)	Energy Star Score	Eligible to Apply for Energy Star	Current Site Energy Intensity (kBtu/sqft)	Current Site Electric Energy Intensity (kBtu/sqft)	Current Site Natural Gas Energy Intensity (kBtu/sqft)	Current Source Energy Intensity (kBtu/sqft)
Brookdale Avenue School	37,972	70	N/A	41	14	27	71.1
F.N. Brown School	38,985	7	N/A	87	20	67	133.7
Forest Avenue School	27,750	43	N/A	62	17	45	100.2
H.B. Whitehorne Middle School	118,224	81	YES	48	15	33	82.2
Laning Avenue School	46,477	18	N/A	71	18	53	111.9
Verona High School	120,245	64	N/A	71	23	48	121.4

- ➤ Note that natural gas fuel consumption at the F.N. Brown Elementary School is much greater, on a per square foot basis, than at any of the District's other schools.
- > Possible reasons for increased heating energy consumption are: the school's age and construction, age of boilers, and losses through steam traps.



Energy Star Portfolio (cont'd)

Portfolio Manager Sign-In

- An account has been created for Verona School District in Portfolio Manager. You should have received an email to notify you of the generation of this account and shared access with Dome-Tech. Please use this to read your facility information. We would ask that you refrain from altering the sign-in information until after the report is finalized.
- Your building's information is currently shared as read only. When the report is finalized, the shared access will be changed so that you can use/edit the information as needed.
- Website link to sign-in:
 https://www.energystar.gov/istar/pmpam/index.cfm?fuseaction=login.Login

Username: VeronaSD

Password: DTVerona1

Email for account: <u>pmcdevitt@veronaschools.org</u>

Security Verification Question: What is your birth city?

Answer: Verona



Facility Information

Building Name: Laning Avenue Elementary School

Address: 18 Laning Avenue

Verona, NJ 07044

Gross Floor Area: 46,477 sq ft

Year Built: 1911, renovated 1950s, 1998, 2007

Occupants: Students: 214

Staff: 49

Building Usage: Elementary School, K-4

Construction Features:

Façade: Single story brick façade, in good condition.

Roof Type: 30% pitched roof with asphalt shingles. 70% flat roof, metal deck, built up,

ballasted with grey river rock

Windows: Covering approximately 25% of façade, double pane windows, operable. Good

condition

Exterior Doors: 13 steel & glass double doors, 3 steel & glass single doors. Mostly in good

condition.



Major Mechanical Systems - Laning Avenue Elementary School

Air Handlers / AC Systems / Ventilation Systems

The school's Media Center, Computer Room, Music Room, Main Office, Nurses office, and preschool office are conditioned by roof top air handling units (RTUs) which use direct expansion (DX) cooling and natural gas heating. A heating only natural gas fired RTU serves the preschool wing. A heating and ventilation unit, located in the attic, has been retrofitted with a duct mounted DX coil, and serves the Café/Auditorium. Most classrooms (except those in the 2007 section), are conditioned by unit ventilators. The unit ventilators were installed as part of the school's the 1998 retrofit.



Rooftop unit serving the Media Center



Major Mechanical Systems - Laning Avenue Elementary School

Boilers

The school is heated by four (4) natural gas boilers. Two (2) main 300 MBH cast iron sectional boilers produce heating hot water for the radiant heating systems, and two (2) 3.9 MBH Munchkin Boilers are used to provide heating hot water to the new gym. The main boilers are located in the basement and are served by two 5 HP circulating pumps. The Munchkin Boilers are located in the crawl space of the 2007 addition and are served by four ³/₄ HP circulating pumps. (two supply pumps and two return pumps).



300 MBH Boiler



3.9 MBH Munchkin Boilers



Major Mechanical Systems - Laning Avenue Elementary School

Domestic Hot Water

Domestic hot water is provided by two (2) domestic water heaters. One water heater is electric powered, and one is a natural gas fired. Both are located in the basement mechanical room.



HW#2, Electric Water Heater



HW#1, Natural Gas Water Heater

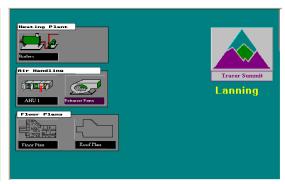


Major Electrical Systems - Laning Avenue Elementary School

Controls

Most of the school's HVAC equipment is monitored and controlled by a Trane Tracer® Building Management System (BMS). The system is functioning properly





Home Screen's for Laning Avenue BMS

Utility Power

Electricity enters the facility as a 120/208VAC Wye service from the utility and is used for lighting and equipment power.

Lighting

Most of the school's interior is illuminated by linear fluorescent lighting fixtures, using 32 Watt T-8 lamps and electronic ballasts. Compact fluorescent bulbs are used in a few areas (rest rooms, lobby, and main office).

The gym and multi-purpose room are lit by metal halide high bay lighting fixtures.

Exterior lighting fixtures use high pressure sodium and compact fluorescent lamps.



Building Name: Brookdale Elementary School

Address: 14 Brookdale Court

Verona, New Jersey 07044

Gross Floor Area: 37,972 sq ft

Year Built: 1927, Additions 1998

Occupants: Students: 115

Staff: 15

Building Usage: Elementary School, K-4

Construction Features:

Façade: Two story brick façade, in good condition.

Roof Type: Flat roof, metal deck, built up, ballasted with grey river rock

Windows: Covering approximately 50% of façade, double pane, double hung windows,

operable.

Exterior Doors: 4 steel & glass double doors, 3 steel double doors, and 4 steel and glass single

doors. 1 Steel roll-up door. All in good condition.





Major Mechanical Systems - Brookdale Elementary School

Air Handlers / AC Systems / Ventilation Systems

The school's faculty room, main office, principal's office, nurses office, and the media center are conditioned by roof top air handling units (RTUs) which use direct expansion (DX) cooling and natural gas fired heating. Heating only natural gas fired RTU's serve the 2nd floor new addition classrooms, the cafeteria, and the new addition basement area. The gym is served by two (2) ceiling hung heating and ventilation units with hot water heating coils.

Classrooms (other than those in the new addition served by rooftop units) are served by unit ventilators with hot water coils. The SGI and Music rooms contain unit ventilators that contain hot water heating coils as well as DX cooling coils. All equipment, other than stand-alone cabinet unit heaters in the hallways, is controlled by a building management system.

Boilers

Two (2) 2,511,000 Btuh natural gas-fired Cleaver Brooks fire tube boilers produce heating hot water for the radiant hot water system, unit heaters and the air handlers. Two (2) 2HP pumps are used for heating hot water distribution. Two (2) additional ³/₄HP inline pumps distribute heating hot water to the new addition.



RTU#1 serving top floor class rooms



Fire tube hot water boiler



Heating hot water pumps



Major Mechanical Systems - Brookdale Elementary School

Domestic Hot Water

The school's domestic hot water is provided by two (2) domestic water heaters, located in the boiler mechanical room. One is a 3,600 Watt, 40 gallon, electric water heater and the other is a 40,000 BTU, 50 gallon, natural

gas water heater.



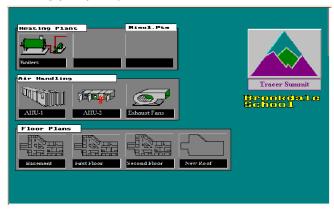
Gas-fired water heater (left) and electric water heater (right)



Major Electrical Systems - Brookdale Elementary School

Controls

Most of the school's HVAC equipment is monitored and controlled by a Trane Tracer® Building Management System (BMS). The system is functioning properly



BMS home Screen

Utility Power

Electricity enters the facility as a 120/208VAC Wye service from the utility and is used for lighting and equipment power.

Lighting

Most of the school's interior is illuminated by linear fluorescent lighting fixtures, using 32 Watt T-8 lamps and electronic ballasts. A few compact fluorescent bulbs are used in the media center.

The gym is lit by metal halide high bay lighting fixtures.

Exterior lighting fixtures use high pressure sodium and compact fluorescent lamps.



Building Name: F.N. Brown Elementary School

Address: 125 Grove Avenue

Verona, New Jersey 07044

Gross Floor Area: 38,985 sq ft

Year Built: 1930s, Additions 1963

Occupants: Students: 192

Staff: 21

Building Usage: Elementary School, K-4

Construction Features:

Façade: Two story brick façade, in good condition.

Roof Type: 70% pitched roof with asphalt shingles. 30% flat roof, metal deck, built up,

ballasted with grey river rock

Windows: Covering approximately 50% of façade, double pane, double hung windows,

operable.

Exterior Doors: 10 steel & glass double doors, 4 steel double doors, and 4 steel or steel and glass

and glass single doors. 1 Steel roll-up door. Most are in good condition, with some requiring either weather stripping replacement or door replacement due to rust.

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Major Mechanical Systems - F.N. Brown Elementary School

Air Handlers / AC Systems / Ventilation Systems

Most of the school is conditioned by unit ventilators, equipped with steam heating coils. Three (3) steam heated air handling units are also used. Two (2) of these units serve the auditorium and one (1) serves the gym.

Mechanical cooling is available in some rooms (Music Room, OT/PT, Child Study, SGI, Faculty Room, Principal's Office, Teachers Work Room, Main Office, Computer Lab, Nurses Office and Library Office,), using split system direct refrigeration (DX) units. The DX condensing units are located in the front of the building and serve either ductless, wall mounted evaporators or ceiling mounted fan coil units, or unit. A few packaged unit ventilators also contain DX cooling. Most equipment, other than stand-alone cabinet unit heaters in the hallways, is controlled by a building management system.



Condensing unit serving OT/PT



Ductless evaporator unit (typ.)



Condensing unit serving the faculty room



<u>Major Mechanical Systems - F.N. Brown Elementary School</u>

Boilers

Two (2) Cleaver Brooks, natural gas fired 4,184,000 Btu fire tube boilers provide steam for the steam unit ventilators, unit heaters and air handlers. A small shell and tube heat exchanger is used to convert steam to heating hot water for the hydronic unit ventilators. Two (2) ½ HP pumps distribute the heating hot water to unit ventilators(approximately eight (8)); located in recently renovated lower level classrooms.



Fire tube steam boiler



Domestic Water Heater



Heating hot water pumps

Domestic Hot Water

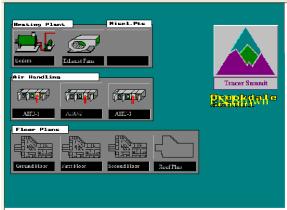
One (1) natural gas fired 48 gallon, 65,000 BTU domestic water heater provides domestic hot water.



Major Electrical Systems - F.N. Brown Elementary School

Controls

The School has been retrofitted with a Trane Tracer® Building Management System that monitors and controls most HVAC equipment throughout the building. The system is functioning properly



BMS home Screen

Utility Power

Electricity enters the facility as a 120/208VAC Wye service from the utility and is used for lighting and equipment power.

Lighting

Most of the school's interior is illuminated by linear fluorescent lighting fixtures, using 32 Watt T-8 lamps and electronic ballasts. Compact fluorescent bulbs are used in the auditorium and miscellaneous areas. The gym is lit by new linear fluorescent high bay lighting fixtures which use T5 high output lamps. Exterior lighting fixtures use high pressure sodium and compact fluorescent lamps.



Building Name: Forest Avenue Elementary School

Address: 118 Forest Avenue

Verona, New Jersey 07044

Gross Floor Area: 27,750 sq ft

Year Built: 1930s, Addition circa 1960s

Occupants: Students: 208

Staff: 17

Building Usage: Elementary School, K-4

Construction Features:

Facade: Two story brick facade, in good condition.

Roof Type: Flat roof, metal deck, built up, ballasted with grey river rock

Windows: Covering approximately 50% of façade, double pane, double hung windows,

operable. Good Condition

Exterior Doors: 4 steel & glass double doors and 3 steel or steel & glass single doors. 1 Steel roll-

up door. All in good condition.





Major Mechanical Systems - Forest Avenue Elementary School

Air Handlers / AC Systems / Ventilation Systems

The main office and nurses office are conditioned by roof top air handling units (RTU) which use direct expansion (DX) cooling. The gym is served by two (2) ceiling hung heating and ventilation units with hot water heating coils. Classrooms are served by unit ventilators which use hot water coils. Unit ventilators serving the computer room and classroom #3 are equipped with DX cooling coils. A window air conditioner is used to cool the library. Most equipment, other than stand-alone cabinet unit heaters in the hallways, is controlled by a building management system.

Boilers

Two (2) natural gas fired Cleaver Brooks, 2,511,000 Btuh fire tube boilers provide heating hot water for the radiant hot water system, unit heaters and air handlers. Two (2) 3HP pumps and two (2) 1½HP pumps are used for heating hot water circulation through the boilers and for distribution throughout the building.



RTU serving main office



Computer room unit ventilator



Fire tube heating hot water boiler



Major Mechanical Systems - Forest Avenue Elementary School

Domestic Hot Water

Domestic hot water is provided by a gas fired 50 gallon, 40,000 BTU domestic water heater.



Domestic Water Heater



Major Electrical Systems - Forest Avenue Elementary School

Controls

The School has been retrofitted with a Trane Tracer® Building Management System that monitors and controls most HVAC equipment throughout the building. The system is functioning properly



BMS home Screen

Utility Power

Electricity enters the facility as a 120/208VAC Wye service from the utility and is used for lighting and equipment power.

Lighting

Most of the school's interior is illuminated by linear fluorescent lighting fixtures, using 32 Watt T-8 lamps and electronic ballasts. A few compact fluorescent bulbs are used in storage closets.

The gym is lit by linear fluorescent fixtures, which use T8 lamps.

Exterior lighting fixtures use metal halide lamps.



Building Name: H.B. Whitehorne Middle School

Address: 600 Bloomfield Avenue

Verona, New Jersey 07044

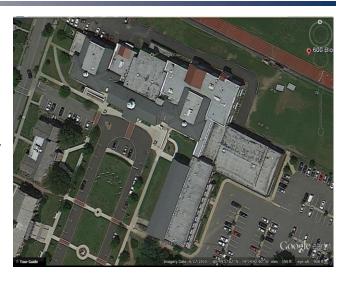
Gross Floor Area: 118,224 sq ft

Year Built: 1920, Additions - Late 1920s, 1967, 2007

Occupants: Students: 623

Staff: 65

Building Usage: Grades 5 - 8



Construction Features:

Façade: Two story brick façade, in good condition.

Roof Type: 45% pitched roof with asphalt shingles. 55% flat roof, metal deck, built up,

ballasted with grey river rock

Windows: Covering approximately 50% of façade, double pane, double hung windows,

operable. Windows installed 1998 and many no longer open correctly. Good

condition, but some of the operable windows are difficult to open.

Exterior Doors: 11 steel & glass double doors, 4 steel double doors, and 7 steel or steel & glass

and glass single doors. Most are in good condition, with some requiring either

weather stripping replacement or door replacement due to rust.



Major Mechanical Systems - H.B. Whitehorne Middle School

Air Handlers / AC Systems / Ventilation Systems

The new computer lab, the core offices, science labs and the media center are served by roof top air handling units (RTUs) using direct expansion (DX) cooling and natural gas heating. A heating only natural gas fired RTU serves the new cafeteria. Ceiling hung air handling units that utilize DX cooling serve the faculty room, guidance offices, the main office, the music room and two (2) classrooms. Six (6) additional heating and ventilation units serve the old gym area and the auditorium. Most other classrooms are served by unit ventilators using either hot water heating coils (1967 and 2007 additions only) or steam heating coils. The old computer room is served by unit ventilators and a ductless split DX cooling system.



RTU#5 serving Media Center



Auditorium AHU (1 of 2)



Unit ventilators serving cafeteria (3)



Major Mechanical Systems - H.B. Whitehorne Middle School

Boilers

Two (2) natural gas fired Cleaver Brooks, 6,277,000 BTU fire tube boilers provide steam for the steam unit ventilators, unit heaters and radiant heating. Two (2) shell and tube heat exchangers are used to convert steam to heating hot water. One of the heat exchangers serves the 1967 addition and the other serves the 2007 addition. Each utilizes a set of 5HP pumps to distribute water to terminal units.



Steam to heating hot water heat exchanger (1 of 2)



Fire tube steam boiler



Heating hot water pumps for 1967 section of building



Major Mechanical Systems - H.B. Whitehorne Middle School

Domestic Hot Water

Domestic hot water is provided by two (2) natural gas fired 76,000 Btuh domestic water heaters with 75 gallon tanks.



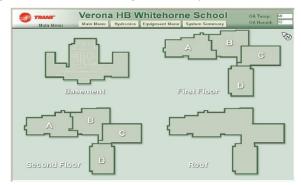
Natural gas fired domestic hot water heaters



Major Electrical Systems - H.B. Whitehorne Middle School

Controls

The School has been retrofitted with a Trane Tracer® Building Management System that monitors and controls most HVAC equipment throughout the building. The system is functioning properly



BMS home Screen

Utility Power

Electricity enters the facility from two (2) services. Both services are 120/208VAC Wye and are used for lighting and equipment power.

Lighting

Most of the school's interior is illuminated by linear fluorescent lighting fixtures, using 32 Watt T-8 lamps and electronic ballasts. A few fixtures use older, less efficient T12 lamps and magnetic ballasts. A few compact fluorescent and incandescent bulbs are used in various areas.

The gym is lit by metal halide high bay lighting fixtures.

Exterior lighting fixtures use metal halide lamps.



Building Name: Verona High School

Address: 120 Fairview Avenue

Verona, New Jersey 07044

Gross Floor Area: 120,224 sq ft

Year Built: 1956, Additions 1975, 2007

Occupants: Students: 604

Staff: 89

Building Usage: Grades 9 - 12

Verona High School O 2011 Georgie Google earth Inspired 617/2018, Vol-223 807.91, 261554518 W. eie. 42 81 m. eye all "mater O

Construction Features:

Facade: Two story brick facade, in good condition.

Roof Type: Flat roof, metal deck, built up, ballasted with grey river rock

Windows: Covering approximately 50% of façade, double pane, double hung windows,

operable. Good Condition

Exterior Doors: 7 steel & glass double doors, 9 steel double doors, and 5 steel & glass single

doors, and 4 steel single doors. 2 roll-up doors. Most in good condition, some

require weather stripping replacement.



Major Mechanical Systems - Verona High School

Air Handlers / AC Systems / Ventilation Systems

Roof top air handling units (RTUs) utilizing direct expansion (DX) cooling and natural gas heating supply air to the Board Offices and Special Services Rooms, Café, and Inner Offices. The old gym is served by two (2) hot water heating only air handling units (AHUs) located in the penthouse mechanical rooms. The new gym is served by two (2) heating hot water only ceiling hung AHUs, and the Auditorium is served by an air handler located in the second penthouses. Most rooms contain heating only unit ventilators, but some rooms also contain ductless split, direct expansion cooling units. These include the Graphics Room, Guidance Offices, Student Activities Room, and classrooms 12, 14, 18, 26 and 30.

Boilers

Two (2) natural gas fired Cleaver Brooks, 5,230,000 Btuh fire tube boilers provide heating hot water for the radiant hot water system, unit heaters and the air handlers. Three (3) 7.5HP constant speed primary pumps and one (1) 3HP standby pump are used for heating hot water distribution.



Fire tube heating hot water boiler



Major Mechanical Systems - Verona High School

Domestic Hot Water

Domestic hot water is provided by two (2) natural gas fired domestic water heaters, located in the boiler mechanical room. Only one- an 85 gallon, 500,000 Btuh unit- is currently operational. The other 80 gallon, 750,000 Btuh unit is currently offline and requires replacement.



Natural gas fired domestic hot water heaters

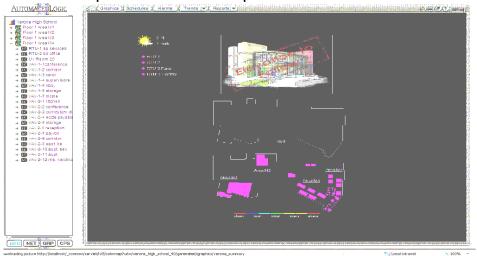


Major Electrical Systems - Verona High School

Controls

The School has been retrofitted with an Automated Logic Building Management System (BMS) that monitors and controls HVAC equipment. Unlike the other schools in the District, the control upgrade is not as comprehensive and does not include the majority of the HVAC equipment. The portion of the building that is controlled by the BMS is functioning properly.

The boiler room equipment, HAC-1 serving inner offices, gym H&V units, exhaust fans, and many classroom unit ventilators are not controlled by the Automated Logic System. These pieces of equipment rely on building staff, mechanical time clocks, pneumatic control panels and pneumatic actuators to operate. Exhaust fans, for example, are turned on and off by the maintenance staff and operate for many more hours than necessary. In addition, HAC-1 is controlled from a pneumatic control panel that limits the units functionality.



BMS home Screen



Major Electrical Systems - Verona High School (cont'd)

Utility Power

The facility is served by two (2) electrical services. The original service is 120/208VAC and the main disconnect is located in the boiler mechanical room. The second service is provided from the utility company at 480VAC. The service enters the facility as a 120/208VAC Wye from a facility owned 480-120/208VAC pad-mounted transformer located at the back of the school.

Lighting

Most of the school's interior is illuminated by linear fluorescent lighting fixtures, using 32 Watt T-8 lamps and electronic ballasts. A few fixtures use older, less efficient T12 lamps and magnetic ballasts. Compact fluorescent bulbs are used in the auditorium.

The gyms are lit by metal halide high bay lighting fixtures.

Exterior lighting fixtures use metal halide and high pressure sodium lamps.



Greenhouse Gas Emission Reduction

Implementation of all identified ECMs will yield:

- ➤ 615,000 kilowatt-hours of annual avoided electric usage.
- > 15,100 therms of annual avoided natural gas usage.
- This equates to the following <u>annual</u> reductions:

 \triangleright 292 tons of CO_2 ;

-OR-

50 Cars removed from road;

-OR-

80 Acres of trees planted annually



The Energy Information Administration (EIA) estimates that power plants in the state of New Jersey emits 0.666 lbs CO₂ per kWh generated.



The Environmental Protection Agency (EPA) estimates that one car emits 11,560 lbs CO₂ per year.



The EPA estimates that reducing CO₂ emissions by 7,333 pounds is equivalent to planting an acre of trees.



Energy Conservation Measures (ECMs) Notes and Assumptions

- The average CO₂ emission rate from power plants serving the facilities within this report was obtained from the Environmental Protection Agency's (EPA) eGRID2007 report. It is stated that power plants within the state of NJ emit 0.66 lbs of CO₂ per kWh generated.
 - \triangleright The EPA estimates that burning one therm of natural gas emits 11.708 lbs CO₂.
 - \triangleright The EPA estimates that one car emits 11,560 lbs CO₂ per year.
 - \triangleright The EPA estimates that reducing CO₂ emissions by 7,333 lbs is equivalent to planting an acre of trees.
- The following utility prices calculated from the utility bills provided were used within this study:

School	\$ /	kWh	\$ / Therms		
Laning Avenue Elementary School	\$	0.15	\$	1.02	
Brookdale Avenue Elementary School	\$	0.15	\$	1.17	
F.N. Brown Elementary School	\$	0.17	\$	1.03	
Forest Avenue Elementary School	\$	0.15	\$	1.13	
H.B. Whitehorne Middle School	\$	0.15	\$	1.04	
Verona High School	\$	0.17	\$	0.95	
Averaged Costs	\$	0.16	\$	1.06	



ECM #1: Computer Power Management

	Brookdale E.S.	F.N. Brown School	Forest E.S.	H.B. Whitehorne M.S.	Laning Avenue School	Verona High School	TOTAL
Estimated Annual Savings:	\$1,860	\$2,840	\$2,730	\$7,500	\$2,780	\$11,800	\$29,510
Gross Estimated Implementation Cost ¹ :	\$810	\$1,080	\$1,170	\$3,320	\$1,170	\$4,660	\$12,210
Approx. NJ Smart Start Rebate ² :	\$ O	\$ 0	\$ 0	\$ 0	\$O	\$ 0	\$ O
Net Estimated Implementation Cost:	\$810	\$1,080	\$1,170	\$3,320	\$1,170	\$4,660	\$12,210
Simple Payback (years):	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Annual Avoided CO ₂ Emissions (tons):	4	5	6	16	6	23	61

¹ Cost estimates based on RSMeans cost estimating data.

Observations/Issues

Dome-Tech observed, and staff indicate, that at night and on weekends many personal computers are left "on" in a screen saver- mode. Computer screen savers were originally developed to prevent the permanent etching of patterns on older monochrome monitors. In this mode, both the computer and monitor consume the same amount of energy as the computer in regular operation, which is approximately 75W for the computer and monitor.

Recommended Measure

Dome-Tech recommends installing a school district wide computer power management system (such as Verdiem *Surveyor* software). This software would place the computers into a standby/sleep mode during periods of inactivity. In this mode, the computer and monitor will draw between 1 and 3 Watts each. This would significantly reduce the computers' electrical energy consumption.

The computers will "wake up" instantaneously when the mouse or button on the keyboard is touched, causing no interruption during daytime use. When the computers "wake up," all active files and programs will be available as before entering the standby/sleep mode, ensuring no data will be lost.

² No prescriptive New Jersey Smart Start rebates are available for this measure.



ECM #2: Insulate Piping

	F.N. Brown School	Verona High School	TOTAL
Estimated Annual Savings:	\$180	\$400	\$2,440
Gross Estimated Implementation Cost ¹ :	\$230	\$870	\$1,910
Approx. NJ Smart Start Rebate ² :	\$ 0	\$ 0	\$O
Net Estimated Implementation Cost:	\$230	\$870	\$1,910
Simple Payback (years):	1.3	2.2	0.8
Annual Avoided CO ₂ Emissions (tons):	1	2	7

Cost estimates based on RSMeans cost estimating data.

Observations/Issues

Approximately 75 feet of bare, uninsulated heating hot water (HHW) supply and return piping was found at Verona High School, at the two (2) penthouse air handling units.

Approximately 20 feet of bare, uninsulated low pressure condensate (LPC) piping was found at F.N. Brown Elementary School, near the condensate return station in the boiler room.

Recommended Measure

Insulate HHW and LPC piping to reduce heat losses.

² No prescriptive New Jersey Smart Start rebates are available for this measure.



ECM #3: Install Vending Machine Controls

	F.N. Brown School	H.B. Whitehorne M.S.	Verona High School	TOTAL
Estimated Annual Savings:	\$670	\$300	\$1,670	\$2,640
Gross Estimated Implementation Cost ¹ :	\$1,360	\$680	\$3,400	\$5,440
Approx. NJ Smart Start Rebate ² :	\$ 0	\$0	\$ 0	\$ 0
Net Estimated Implementation Cost:	\$1,360	\$680	\$3,400	\$5,440
Simple Payback (years):	2.0	2.3	2.0	2.1
Annual Avoided CO_2 Emissions (tons):	1.3	0.6	3	5.2



Observations/Issues

There are two (2) beverage vending machines are located at F.N. Brown Elementary School, five (5) machines at Verona High School, and one (1) machine at H.B. Whitehorne Middle School. These machines are plugged in and cooling their contents 24/7.

Recommended Measures

- Install vending machine occupancy control devices for each vending machine.
- * These devices reduce electrical energy consumption by turning off the unit's lights and managing compressor cooling cycles when the surrounding area is vacant. They automatically re-powers the cooling system at one to three hour intervals, independent of sales, to ensure that the product stays cold.
- The microcontroller will never power down the machine while the compressor is running, eliminating compressor short-cycling. In addition, when the machine is powered up, the cooling cycle is allowed to finish before again powering down (which reduces compressor wear and tear).
- This measure can be implemented by the operations staff.
- This ECM is not expected to reduce the building(s)' electrical demand.

¹ Cost estimates based on published retail costs.

² No prescriptive New Jersey Smart Start rebates are available for this measure.



ECM #4: Steam Trap Maintenance Program

	F.N. Brown School	H.B. Whitehorne Middle School	TOTAL
Estimated Annual Savings:	\$1,220	\$2,610	\$3,830
Gross Estimated Implementation Cost ¹ :	\$3,010	\$6,620	\$9,630
Approx. NJ Smart Start Rebate ² :	\$ O	\$O	\$O
Net Estimated Implementation Cost:	\$3,010	\$6,620	\$9,630
Simple Payback (years):	2.5	2.5	2.5
Annual Avoided CO ₂ Emissions (tons):	7	15	22

¹ Cost estimates based on RSMeans cost estimating data.

Observations/Issues

H.B Whitehorne Middle School and F.N. Brown Elementary School use low pressure steam for heating. Interviews with building maintenance staff indicate that all steam traps were replaced during the 1998 renovations, but have not been tested since then. Currently, there is no steam trap testing and maintenance program in place at H.B Whitehorne Middle School and F.N. Brown Elementary School.

The U.S. Department of Energy estimates that in steam systems that have not been maintained for 3 to 5 years, between 15% to 30% of the installed steam traps may have failed—thus allowing live steam to escape into the condensate return system. In systems with a regularly scheduled maintenance program, leaking traps should account for less than 5% of the trap population. (Dome Tech assumed 10% trap failure rate for calculations)

Recommended Measure

Implement an annual steam trap maintenance program to reduce or eliminate energy loss associated with steam trap failure.

² No prescriptive New Jersey Smart Start rebates are available for this measure.



ECM #5: Replace Electric Hot Water Heaters

	Brookdale E.S.	Laning Avenue School	TOTAL
Estimated Annual Savings:	\$430	\$980	\$1,410
Gross Estimated Implementation Cost ¹ :	\$2,210	\$2,140	\$4,350
Approx. NJ Smart Start Rebate ² :	\$0	\$ 0	\$0
Net Estimated Implementation Cost:	\$2,210	\$2,140	\$4,350
Simple Payback (years):	4.8	2.1	3.1
Annual Avoided CO ₂ Emissions (tons):	0	0	0

¹ Cost estimates based on RSMeans cost estimating data.

Observations/Issues

Laning Avenue School and Brookdale Elementary School are each served by an electric domestic hot water heater, that operates in conjunction with a natural gas hot water heater.

Based on the District's current energy rates, it is approximately three-and-a-half times more expensive to generate domestic hot water using electricity, versus natural gas.

Recommended Measure

- Replace the electric hot water heaters with natural gas hot water heaters.
- The cost estimate includes new gas fired water heaters, gas piping, and flue modification.

² No prescriptive New Jersey Smart Start rebates are available for this measure.



ECM #6: Replace CRT Monitors w/Flat Screen

	Brookdale E.S.	F.N. Brown School	Forest E.S.	H.B. Whitehorne M.S.	Laning Avenue School	TOTAL
Estimated Annual Savings:	\$60	\$70	\$50	\$30	\$20	\$230
Gross Estimated Implementation Cost ¹ :	\$300	\$300	\$230	\$150	\$80	\$1,060
Approx. NJ Smart Start Rebate ² :	\$ 0	\$ 0	\$0	\$O	\$ O	\$0
Net Estimated Implementation Cost:	\$300	\$300	\$230	\$150	\$80	\$1,060
Simple Payback (years):	5.0	4.3	4.6	5.0	4.0	4.6
Annual Avoided CO ₂ Emissions (tons):	0.1	0.1	0.1	0.1	0.0	0.5

¹ Cost estimates based on published retail costs.

Observations/Issues

While most of the District's personal computers use modern Liquid Crystal Display (LCD) flat screen monitors, older, inefficient Cathode Ray Tube (CRT) computer monitors are utilized in each of the schools.

❖ Brookdale E.S.: 4 CRTs

FN Brown: 4 CRTs

❖ Forest E.S.: 3 CRTs

HB Whitehorne MS: 2 CRTs
 Laning Avenue School: 1 CRT

Recommended Measures

- Replace the remaining CRT monitors with LCD flat screen monitors.
- LCD monitors consume approximately one quarter of the energy of CRT monitors.

² No prescriptive New Jersey Smart Start rebates are available for this measure.



ECM #7: Lighting Upgrade

	Brookdale E.S.	F.N. Brown School	Forest E.S.	H.B. Whitehorne M.S.	Laning Avenue School	Verona High School	TOTAL
Estimated Annual Savings:	\$6,290	\$7,710	\$6,140	\$5,580	\$10,200	\$27,800	\$63,720
Gross Estimated Implementation Cost ¹ :	\$47,400	\$58,400	\$50,900	\$46,700	\$67,800	\$170,000	\$441,200
Approx. NJ Smart Start Rebate ² :	\$5,710	\$6,100	\$5,460	\$5,600	\$8,110	\$20,300	\$51,280
Net Estimated Implementation Cost:	\$41,600	\$52,300	\$45,400	\$41,100	\$59,700	\$150,000	\$390,100
Simple Payback (years):	6.6	6.8	7.4	7.4	5.9	5.4	6.2
Annual Avoided CO ₂ Emissions (tons):	13	15	13	12	22	54	130

¹ Cost estimates based on actual costs of similar comprehensive lighting projects; see room-by-room surveys in Appendix for details

Observations/Issues

Dome-Tech, performed a room-by-room lighting audit of all six buildings. Audit findings and recommendations are summarized below:

Interior Lighting

- General Linear Fluorescent Lighting:
 - The vast majority of linear fluorescent light fixtures in the District's schools use higher efficiency 32 Watt T-8 lamps with electronic ballasts.
 - Only a handful of areas use older, inefficient T12 lamps with magnetic ballasts.
- Screw in bulbs:
 - Located in miscellaneous areas (storage, closets, mechanical spaces, etc.).
 - Most areas lit with screw-in compact fluorescent lamps.
 - A few areas use incandescent light bulbs
- High Bay Lighting:
 - High bay areas (gyms, multipurpose rooms, auditoriums) use metal halide fixtures and linear fluorescent fixtures (with both T8 and T5 lamps).



ECM #7: Lighting Upgrade (cont'd)

Exterior Lighting

Schools use mercury vapor, high pressure sodium, metal halide, and compact lamps for exterior lighting.

Recommended Measures

Interior Lighting

- Re-lamp and re-ballast linear fluorescent fixtures from 4ft 32W T8 lamps with standard ballasts- to 28W T8 lamps with high efficiency, low power ballasts.
- Due to marginal measured light levels, the addition of specular reflectors is recommended for linear fluorescent fixtures in classrooms at FN Brown and Forest Ave Elementary Schools.
 - Note that lighting fixture mock-ups, and/or a more detailed lighting design study may be required to ensure that the proposed retrofits meet required classroom light levels.
- Replace screw-in incandescent lamps with compact fluorescent lamps.
- Replace metal halide high bay lighting with new induction fixtures

Exterior Lighting

Replace mercury vapor, high pressure sodium, and metal halide exterior lighting with induction lighting. This will reduce electrical energy consumption by nearly 50% and provide approximately equal lighting output. Additionally, induction lamps operate for approximately 100,000 hours, which is up to five (5) times longer than existing metal halide lamps.

Occupancy Sensors

Install dual technology occupancy sensors to control lights in classrooms, offices, rest rooms, libraries, cafeterias, and multi purpose rooms.

A complete room-by-room lighting survey of each school is included in the Appendix.



ECM #8: Door Weather Stripping

	F.N. Brown School	H.B. Whitehorne M.S.	Laning Avenue School	Verona High School	TOTAL
Estimated Annual Savings:	\$70	\$70	\$20	\$4	\$164
Gross Estimated Implementation Cost ¹ :	\$470	\$470	\$240	\$80	\$1,260
Approx. NJ Smart Start Rebate ² :	\$ O	\$0	\$ 0	\$ 0	\$0
Net Estimated Implementation Cost:	\$470	\$470	\$240	\$80	\$1,260
Simple Payback (years):	6.7	6.7	12.0	18.7	7.7
Annual Avoided CO_2 Emissions (tons):	0.4	0.4	0.1	0.0	0.9

¹ Cost estimates based on RSMeans cost estimating data.

Observations/Issues

Doors at multiple schools are inadequately sealed. This implies that either weather stripping requires replacement or that the door's bottom brushes are missing, worn, or damaged.

Recommended Measures

Replace door seals to reduce air infiltration which will reduce conditioning costs and increase occupant comfort.

	F.N. Brown School	H.B. Whitehorne M.S.	Laning Avenue School	Verona High School	TOTAL
Door Weather Stripping To Be Replaced	6	6	3	1	16

² No prescriptive New Jersey Smart Start rebates are available for this measure.



ECM #9: Demand Controlled Ventilation

	Brookdale E.S.	F.N. Brown School	Forest E.S.	H.B. Whitehorne M.S.	Laning Avenue School	Verona High School	TOTAL
Estimated Annual Savings:	\$360	\$680	\$280	\$540	\$820	\$1,570	\$4,250
Gross Estimated Implementation Cost ¹ :	\$10,800	\$13,200	\$7,870	\$15,000	\$13,200	\$18,100	\$78,170
Approx. NJ Smart Start Rebate ² :	\$ 0	\$0	\$ 0	\$ 0	\$ 0	\$ 0	\$ O
Net Estimated Implementation Cost:	\$10,800	\$13,200	\$7,870	\$15,000	\$13,200	\$18,100	\$78,170
Simple Payback (years):	30.0	19.4	28.1	27.8	16.1	11.5	18.4
Annual Avoided CO ₂ Emissions (tons):	2	4	2	3	5	9	24

¹ Cost estimates based on RSMeans cost estimating data.

Observations/Issues

Building codes require that a minimum amount of fresh air be provided to ensure adequate air quality. To comply, ventilation systems often operate at a fixed rate based on an assumed occupancy (e.g., 20 CFM/person multiplied by the maximum design occupancy). Since maximum design occupancy is rarely achieved throughout the entire day, this results in excessive fresh air volumes, which require costly and unnecessary conditioning.

Note that the savings presented in the table above are based on an *adjusted baseline* (see O&M section of this report). Air handling units throughout the school district currently operate with no ventilation outside air. The minimum outside air percentage is often programmed in the building management systems (BMS) as 0%. While many of the units do take advantage of free cooling when outside air conditions permit, their fresh air dampers are completely closed during the heating season. Operating in this manner reduces energy consumption at the expense of building indoor air quality (IAQ). A lack of fresh air in a facility can adversely affect air quality by raising CO₂ concentrations, creating "sick building syndrome".

² No prescriptive New Jersey Smart Start rebates are available for this measure.



ECM #9: Demand Controlled Ventilation (cont'd)

Recommended Measures

- ❖ Demand-controlled ventilation (DCV) controls the amount of outside air being supplied based upon the CO₂ levels generated by building occupants. DCV should be added to any space that is ventilated by a large quantity of outdoor air, and/or where occupancy varies dramatically (gymnasiums and libraries).
- Because CO₂ levels correlate directly with the number of people in an occupied zone, CO₂ sensors are used to control ventilation rate of outside air supplied to each zone. Reducing the amount of outdoor air supplied to a zone reduces the energy required to heat and cool that air, while space conditions are kept in compliance with building codes and standards, such as the ASHRAE Indoor Air Quality Standard.
- ♦ Dome-Tech recommends adding DCV control sequences, including CO₂ sensors, related hardware, and controls programming. This will allow air handling units to provide the correct outside air ventilation rates for any particular occupancy level.
- ♦ Dome-Tech also recommends testing CO₂ sensor calibrations, per the manufacturer's calibration schedule.
- ❖ The chart below indicates the RTUs/areas where the control sequence should be installed:

School	Area/ AHU to Install DCV
Brookdale Avenue School	Gym / Café AHUs (2) and Media Center RTU
F.N. Brown School	Gym / Café AHU and Auditorium AHUs (2)
Forest Avenue School	Gym AHUs (2)
H.B. Whitehorne Middle School	1967 Gym AHUs (4), Other Gym/ Auditorium AHUs (2), New Café RTU, Computer Room RTU and Media Center RTU
Laning Avenue School	Gym 1 AHUs (2), Café / Auditorium attic-hung AHU
Verona High School	Old Gym AHUs in penthouses (2), New Gym AHUs (2), Auditorium RTU and Cafeteria RTU



ECM #10: Replace Window ACs w/ DX Split

	F.N. Brown School	Forest E.S.	Laning Avenue School	TOTAL
Estimated Annual Savings:	\$140	\$680	\$60	\$880
Gross Estimated Implementation Cost ¹ :	\$12,500	\$11,200	\$6,870	\$30,570
Approx. NJ Smart Start Rebate ² :	\$120	\$280	\$80	\$480
Net Estimated Implementation Cost:	\$12,400	\$10,900	\$6,790	\$30,090
Simple Payback (years):	88.6	16.0	113.2	34.2
Annual Avoided CO_2 Emissions (tons):	0.5	1	0.2	2.0

¹ Cost estimates based on RSMeans cost estimating data.

Observations/Issues

There are window air conditioning units located in various schools. The use of window air conditioners results in air infiltration simply by the nature of their installation method. They also are less efficient than alternative cooling methods.

Recommended Measures

Replace window air conditioning units with ductless split air conditioning systems similar to those that are installed throughout the District. The Seasonal Energy Efficiency Ratio (SEER) of typical window AC units is limited to approximately 10 SEER, while comparably sized split AC units range from 14-16 SEER or greater.

- FN Brown: 2 units (includes spot cooler in Music Tech Room & Kitchen Unit)
- Forest E.S.: 1 unit (Library AC)
- **❖** Laning Avenue School: 1 unit (Special Instruction Room)

² No prescriptive New Jersey Smart Start rebates are available for this measure.



ECM #11: Replace Boilers with High Efficiency Modulating Condensing Boilers

- > Several of the Verona Schools are equipped with older fire tube, heating hot water or boilers.
- For the most part, these boilers are old and are nearing or past the end of the equipment service life (ASHRAE states the service life of similar equipment to be 25 years).
- The ages, sizes, types and configurations of the boilers do not lend themselves to efficient operation. Generally, as boilers approach the end of their service life, the efficiency degrades and the boiler must consume more fuel in order to produce the same rated output. In addition, there is a direct correlation between risk of equipment failure (tube breaks & meltdown, shell cracks, furnace surface area failure) and equipment age.
- If the existing boilers could be replaced by high efficiency, modulating or modular condensing boilers, savings will be realized in two ways.
 - ➤ Modulating boilers, usually 1,000 MBH or smaller, employ multiple burners to meet the heating load. Each burner operates independently, eliminating the "all on/all off" operation of single burner boilers. As building loads increase only those burners necessary to meet the load are fired. This allows each burner to run at optimal efficiency. Modular boilers operate under the same principal but for larger installations. In this case multiple boilers are used rather than multiple burners. Modular boilers usually are employed in 1500, 2000 or 3000 MBH sizes.
 - ➤ Condensing boilers recover energy from the exhaust gas thus allowing efficiencies of 90% and above.
- When a boiler is both a modulating/modular type and a condensing type, extremely high efficiencies can be realized.



Forest E.S. Boiler



ECM #11: Replace Boilers with High Efficiency Modulating Condensing Boilers (cont'd)

The high first cost of a new boiler system may preclude this ECM from being justified by economics alone at some of the facilities; however, reliability issues warrant consideration of these projects as part of a long-term capital improvement plan. The ECM table details the economics at each site

	Brookdale E.S	Forest	Laning E.S.	Verona HS	TOTAL
Estimated Annual Savings:	\$920	\$1,100	\$1,870	\$3,670	\$7,560
Gross Estimated Implementation Cost1:	\$344,000	\$344,000	\$344,000	\$572,000	\$1,604,000
NJ Smart Start Rebate ² :	\$10,500	\$10,500	\$10,500	\$18,400	\$49,900
Avoided Cost (Like and Kind Replacement): *	\$216,000	\$216,000	\$247,000	\$299,000	\$978,000
Net Estimated Incremental Implementation Cost:	\$118,000	\$118,000	\$86,500	\$255,000	\$577,500
Estimated Simple Payback (years): (Incremental and without Avoided Costs)	128.3	107.3	46.3	69.5	76.4
Annual Avoided CO ₂ Emissions (tons):	5	6	11	23	44

NOTE 1: The presented economics should be used for planning purposes only. If the client decides to proceed with any boiler replacement project, these economics should be refined with an investment grade analysis.

^{* =} Avoided Cost: Cost of Like and Kind replacement..



O&M: Supply Correct Outside Air Ventilation

	Brookdale E.S.	F.N. Brown School	Forest E.S.	H.B. Whitehorne M.S.	Laning Avenue School	Verona High School	TOTAL
Estimated Annual Energy <i>Penalty</i> :	\$740	\$1,250	\$690	\$2,500	\$2,080	\$3,060	\$10,320

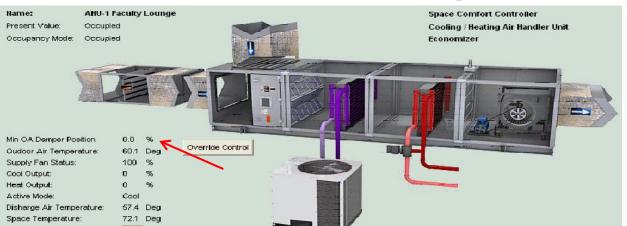
Observations/Issues

Many of the school district's air handling units operate without ventilation air. The minimum outside air percentage is often programmed in the building management systems (BMS) as 0%. While many of the units do take advantage of free cooling when outside air conditions permit, their fresh air dampers are completely closed during the heating season.

Also, areas at Brookdale Avenue Elementary School are inadequately ventilated because some unit ventilators have their outside air intakes covered with either Plexiglas or plywood in an attempt to prevent freezing coils.

A lack of fresh air in a facility can adversely affects air quality by raising CO₂ concentrations, creating "sick building

syndrome".



Example screenshot of unit operating w/ 0% outside air (typ.)



O&M: Supply Correct Outside Air Ventilation (cont'd)

Recommended Measures

- Re-program BMS for all air handling units to utilize minimum design outside air percentages (typically ~20% of total airflow).
- Remove Plexiglas/plywood from the inlets of unit ventilators at Brookdale. Install freeze-stats to open the heating valves and start heating pump to circulate water, to prevent coil damage during freezing conditions.
- Increasing ventilation rates will increase energy consumption (estimated energy cost penalty shown above), but will satisfy building code requirements and improve air quality.
- Much of the energy penalty associated with this issue can be offset by implementing demand controlled ventilation (see ECM#8)



O&M: Brookdale Elementary School

Observations/Issues

Unit vent intakes are covered (due to past coil freezing issues).

Operation in this manner does not provide adequate ventilation to the building.

Recommended Measures

Remove Plexiglas and plywood over unit vent OA intakes.



Small amount of bare uninsulated DHW piping observed at Brookdale Elementary, directly above water heater

Recommended Measures

Insulate DHW piping ~8ft of ¾" directly above water heater







O&M: F.N. Brown Elementary School

Observations/Issues

FNB utilizes many DX split units. Units are approximately 10 years old and half-way through their useful lives.

Recommended Measures

Consider 2 pipe VRV system at end of equipment useful life.





F.N. Brown School



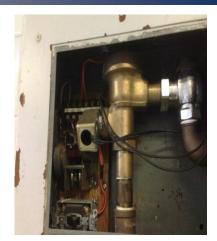
O&M: Forest Avenue Elementary School

Observations/Issues

Three urinals are controlled by door switch and solenoid valve. Solenoid valve leaks.

Replace with auto flush valves.





Observations/Issues

AHU's in Gym/ Auditorium have extremely dirty coils.

Recommended Measures
Clean coil with water based neutral-pH coil cleaning solution.



Forest Avenue School



O&M: Forest Avenue Elementary School (cont'd)

Observations/Issues

Art room is too hot due to a blocked exhaust grill located in closet.

Recommended Measures

Relocate exhaust grill to the center of the room to allow air circulation and reduce overheating.



Forest Avenue School



O&M: Laning Avenue Elementary School

- Observations/Issues
 PTAC unit in Faculty Room 117 has dirty coil. (This building is clean)
- Recommended Measures
 Clean coil with water based neutral-pH coil cleaning solution.



Room 117 PTAC Coil



O&M: H.B. Whitehorne Middle School

- Observations/Issues
 Discharge grilles on Café unit vents are dirty.
- Recommended Measures
 Clean unit vents.
- Observations/Issues
 Floor mounted urinals flush by way of solenoid valve and timer located in the crawlspace behind the wall.
- Recommended Measures
 Replace w/ auto flush valves to conserve water.





H.B. Whitehorne Middle School



O&M: H.B. Whitehorne Middle School (cont'd)

- New water heater installed with PEX piping has not been insulated.
- Recommended Measures
 Insulate 3/4" domestic hot water piping. ~10ft.
- Observations/Issues
 Walk-in freezer evaporator coil is frozen.
- Recommended Measures Install defrost cycle.



H.B. Whitehorne Middle School

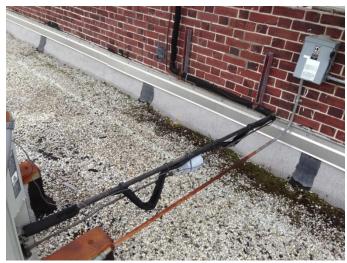


O&M: H.B. Whitehorne Middle School (cont'd)

- Observations/Issues
 Small domestic hot water pumps (1/12 HP) are energized 24/7.
- Recommended Measures

 Install aquastat and operate recirculation pumps based on loop temp.
- Observations/Issues Approximately 10 feet of refrigerant piping on roof (to UV-22 condenser) has damaged insulation.
- Reinsulate to improve system efficiency and increase system output.





H.B. Whitehorne Middle School



O&M: Verona High School

- Observations/Issues
 Door Switch flushes 4 urinal simultaneously.
- Replace w/ auto flush urinals.

Observations/Issues

Exhaust fans are manually turned on at 6am and off at 11pm. Building occupancy varies and there are classes/ events after regular hours.

Recommended Measures Determine an optimum time to shut off exhaust fans that does not disrupt afterschool activities.





Verona High School



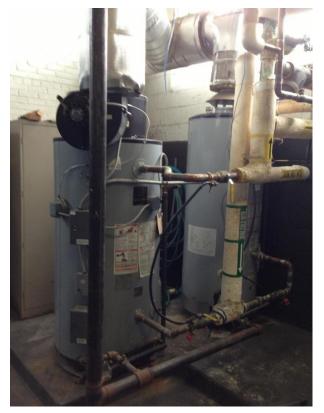
Observations/Issues

Domestic Water setpoint is at 160°F.

Setpoint was noted while one water heater was offline and may have been raised to satisfy building demands while second unit is being replaced.

Recommended Measures

Reduce setpoints to 120-125°F after completion.



Verona High School



Observations/Issues

Boiler Reset functions are no longer functioning properly. Boiler temp setpoint is adjusted by staff periodically.

Recommended Measures

Automatic reset function should be restored. (Because setpoint is being adjusted, proper reset savings are difficult to quantify).

Observations/Issues

RTU-3 serving the café utilizes an enthalpy heat recovery wheel., which is dirty.

Recommended Measures

Clean heat wheel to optimize heat recovery.





Verona High School



- Observations/Issues
 HS utilizes many DX split units. Units are approx 10yrs old and ½ way through useful life.
- Recommended Measures
 Consider 2- pipe VRV system at end of useful life.







Verona High School



- Observations/Issues
 HHW pumps have rusted flex connectors (2).
- Recommended Measures
 Replace prior to failure.



Verona High School



Renewable/Distributed Energy Measures

Distributed Generation & Renewable Energy

Distributed Generation (on-site generation) generates electricity from many small energy sources. These sources can be renewable (solar/wind/ geothermal) or can be small scale power generation technologies (CHP, fuel cells, microturbines).

Renewable energy is energy generated from natural resources (sunlight, wind, and underground geothermal heat) which are naturally replenished.



Renewable Energy Technologies: Wind

Wind turbines generate electricity by harnessing a wind stream's kinetic energy as it spins the turbine airfoils. As with most renewable energy sources, wind energy is subject to intermittent performance due to the unpredictability of wind resources.

NJ Wind Speed

As previously stated, wind speed is critical to the successful wind turbine installation. According to average wind data from NASA's Surface Meteorology and Solar Energy records, the average annual wind speed for the Verona area is <u>5.8 meters per second</u> at 50 meters above the surface of the earth. Ideal wind speeds for a successful project should average over <u>6 meters per second</u>.

For the Verona School District, Dome-Tech considered three (3) types of wind turbine technologies; building integrated wind turbines (1 kW each) and traditional ground mounted wind turbines (5 kW & 50 kW).

Building Integrated Wind Turbines

Model: AeroVironment AVX1000

Height: 8.5'

Rotor Diameter: 6' Weight: 130 lbs.

Cut-In Wind Speed: 2.2 m/s

Maximum Generating Capacity: 1kW



5 kW Ground Mount

Model: WES5 Tulipo

Height: 40'

Rotor Diameter: 16' Weight: 1,900 lbs.

Cut-In Wind Speed: 3.0 m/s

Maximum Generating Capacity: 5.2 kW



50 kW Ground Mount

Model: Entegrity EW50

Height: 102'

Rotor Diameter: 50' Weight: 21,000 lbs.

Cut-In Wind Speed: 4.0 m/s

Maximum Generating Capacity: 50 kW





Renewable Energy Technologies: Wind (cont'd)

The project economics and wind turbine pros and cons are presented in the following tables:

Wind Turbine Pros & Cons

Wind Turbine Economics						
	Building	Ground Mount	Ground Mount			
	Integrated	5 kW	50 kW			
Gross Installation Cost Estimate	\$325,000	\$312,000	\$250,000			
Number of Units	50	10	1			
Net Installation Cost Estimate	\$325,000	\$312,000	\$250,000			
Annual Energy Savings	\$6,308	\$9,956	\$18,780			
Simple Payback	51.5 yrs.	31.3 yrs.	13.3 yrs.			
System Capacity	50 kW	52 kW	50 kW			
Annual Avoided Energy Use	37,108 kWh	58,567 kWh	110,472 kWh			
Annual CO2 Emisions, tons	13	20	39			
% of Annual Electric Use*	4.6%	7.3%	13.8%			
Verona High School:	798,601 kWh/year annual consumption					

Pros	Cons
➤ Annual reduction in energy spend and use can be potentially reduced by \$18,780 (2.5% reduction). ➤ Typical equipment life span is 15-30 years. ➤ Reduction of annual greenhouse gas emissions by 39 tons per year. ➤ A wind turbine project could be incorporated into science and other curriculums to raise student awareness of energy alternatives. ➤ High visible "green" project.	 ▶ Payback period is at least 13.3 years. ▶ Average area wind speed is just below minimum requirements. ▶ Prone to lighting strikes. ▶ Bird collisions are likely, but may be reduced with avian guard (building integrate only). ▶ Zoning may be an issue. Check with local zoning regulations. ▶ Wind turbines do create noise, although below 50 dB (a typical car ride is over 80 dB).

Due to an average annual wind speed of 5.8 meters/sec, which is slightly below the minimum required wind speed of 6.0 meters/sec, Dome-Tech does not recommend installation of a wind turbine.

The New Jersey State Clean Energy Program does not currently provide rebates for small wind system projects.



Renewable Energy Technologies: Solar Photovoltaic

Solar Photovoltaic

Sunlight can be converted into electricity using photovoltaics (PV).

A solar cell or photovoltaic cell is a device that converts sunlight directly into electricity.

Photons in sunlight hit the solar panel and are absorbed by semiconducting materials, such as silicon. Electrons are knocked loose from their atoms, allowing them to flow through the material to produce electricity.

Solar cells are often electrically connected and encapsulated as a module, in series, creating an additive voltage. The modules are connected in an array. The power output of an array is measured in watts or kilowatts, and typical energy needs are measured in kilowatt-hours.

This system application can be considered for potential placement on additional buildings or areas such as parking lots, in overhead mounting.



Renewable Energy Technologies: Solar Photovoltaic (cont'd)

Building	BROOKDALE AVENUE ELEMENTARY SCHOOL	LANING AVENUE ELEMENTARY SCHOOL	F.N. BROWN ELEMENTARY SCHOOL	FOREST AVENUE ELEMENTARY SCHOOL	H.B. WHITEHORNE MIDDLE SCHOOL	VERONA HIGH SCHOOL	TOTALS
Site Energy Use (kWh):	329,200	329,200	329,200	329,200	329,200	329,200	1,975,200 kw dc
Location to Install Panels:	roof	roof	roof	roof	roof	roof	roof
		Assumpti	ons				
System Capacity, kw-dc (maximum utilization of roof space)	40 kw dc	127 kw dc	39 kw dc	61 kw dc	104 kw dc	309 kw dc	681 kw dc
Annual Electric Generation, kwhrs of AC electricity produced	42,666 kwh	134,058 kwh	41,454 kwh	63,999 kwh	109,695 kwh	325,449 kwh	717,321 kw dc
Total Annual Facility Electric Use, kwhrs	329,200 kwh	329,200 kwh	329,200 kwh	329,200 kwh	329,200 kwh	329,200 kwh	1,975,200 kw dc
% of Total Annual Usage	13%	41%	13%	19%	33%	99%	36%
All-In Cost of Electric Year 1	\$0.155 / kwh	\$0.151 / kwh	\$0.172 / kwh	\$0.152 / kwh	\$0.154 / kwh	\$0.170 / kwh	\$0.159 / kwh
Annual Electric Cost Savings	\$6,605	\$20,247	\$7,122	\$9,705	\$16,923	\$55,316	115,917 kw dc
Estimated SREC Value (Year 1):	\$100 / SREC	\$100 / SREC	\$100 / SREC	\$100 / SREC	\$100 / SREC	\$100 / SREC	\$100 / SREC
Estimated Year 1 SREC Revenue:	\$4,247	\$13,343	\$4,126	\$6,370	\$10,918	\$32,392	71,395 kw dc
		Environmental	Impact				
Equivalent Annual CO2 Emission Reduction (tons per year) ¹	14 tons/yr	44 tons/yr	14 tons/yr	21 tons/yr	36 tons/yr	107 tons/yr	237 tons/yr
Equivalent Cars Removed From Road Annually ²	2	8	2	4	6	19	7
Equivalent Acres of Trees Planted Annually ³	4	12	4	6	10	29	65
Financial Results							
System Installed Cost	\$222,640	\$699,545	\$216,315	\$333,960	\$572,413	\$1,698,263	\$3,743,135
Simple Payback	20.0	20.4	18.2	20.3	20.0	18.3	19.5
IRR (25 Years)	1.7%	1.5%	2.4%	1.5%	1.7%	2.4%	1.9%
Net Present Value (25 yrs, 4% discount rate)	(\$47,364)	(\$158,731)	(\$32,275)	(\$75,003)	(\$122,938)	(\$265,040)	(\$701,350)



Solar Photo Voltaic System

Non-Financial Benefits of Solar PV

The implementation of solar PV projects at the Verona schools would place your facilities at the forefront of renewable energy utilization. This allows the Verona School District the opportunity to not only gain experience with this energy technology, but also to win recognition as an environmentally sensitive, socially conscience institution. Additionally, these projects could be incorporated into science education and additional curriculums to raise awareness of current energy alternatives to the younger generations.





Renewable Energy Technologies: CHP/Cogeneration

- <u>CHP</u> (combined heat and power) or cogeneration is the use of a heat engine to simultaneously generate both electricity and useful heat.
- Fuel Cells are electrochemical conversion devices that operate by catalysis, separation the protons and the electrons of the reactant fuel, and forcing the electrons to travel through a circuit to produce electricity. The catalyst is typically a platinum group metal or alloy. Another catalytic process takes the electrons back in, combining them with the protons and oxidant, producing waste products (usually water and carbon dioxide).
- ➤ <u>Microturbines</u> are rotary engines that extract energy from a flow of combustion gas. They can be used with absorption chillers to provide cooling through waste heat rather than electricity. Microturbines are best suited for facilities with year-round thermal and/or cooling loads.
- Not recommended for Verona Schools, due to the lack of year-round thermal load.



Retail Energy Purchasing: Recommendations and Resources

Electric

- For the period studied, Verona School District was utilizing Direct Energy as a Third Party Supplier for electricity at all schools at a fixed rate of \$0.088 per kWh starting in Jan 2012. Direct Energy contracts were not provided to Dome-Tech therefore further details about the term of contract were unknown.
- Dome-Tech recommends the District evaluate their current contract with Direct Energy. All schools utilized a third party supplier at fixed rate but for an undetermined period of time. Based on information received, these accounts were locked into a new fixed price contract in early 2012 that may have already ended.

Natural Gas

- For the period studied, the District was utilizing Hess Corp. as a Third Party Supplier for natural gas at a fixed rate of \$0.68 per therm in the summer period and a variable floating rate in the winter period. The Hess contract began in September 2011 and the previous supplier was Compass Energy. Supplier contracts and invoices were not provided therefore Dome-Tech was unable to include further contract details in this report.
- If the District is seeking budget certainty or would like to reduce their market exposure for Natural Gas, the District should consider a fixed price contract with a supplier. Further details are outlined in the following sections.

Energy Purchasing Co-Operatives

Many public entities participate in various energy aggregation buying groups. Sometimes, an entity will have multiple options to choose from. These might include purchasing through a County co-operative, or purchasing through a trade-type association like ACES. It is likely that Verona School District currently participates in ACES. Co-operative purchasing may not necessarily provide you with the lowest rates; however, there is often substantial volume, and it can represent a good alternative for entities with limited energy consumption who can have a difficult time getting energy suppliers to respond to them on a direct, singular basis.



Retail Energy Purchasing: Recommendations and Resources

- To learn more about energy deregulation, visit the New Jersey Board of Public Utilities website: <u>www.bpu.state.nj.us</u>
- For more information about the retail energy supply companies that are licensed and registered to serve customers in New Jersey, please visit the following website for more information:

 http://www.bpu.state.nj.us/bpu/commercial/shopping.html
- Provided below is a list of NJ BPU-licensed retail energy suppliers:

Company	Electricity	Natural Gas	Website
Hess	Х	X	hess.com
Sprague	Х	X	spragueenergy.com
UGI	Х	X	ugienergyservices.com
South Jersey Energy	X	X	southjerseyenergy.com
Direct	X	X	directenergy.com
Global	Х	X	globalp.com
Liberty	Х		libertypowercorp.com
Reliant / NRG	X		reliant.com
First Energy	Х		fes.com
ConEd Solutions	X		conedsolutions.com
Constellation / Exelon	X	X	newenergy.com
Glacial	Х		glacialenergy.com
Integrys	X		integrysenergy.com
Suez	Х		suezenergyresources.com
Sempra	X		semprasolutions.com
Woodruff		X	woodruffenergy.com
NextEra	Х		mxenergy.com
Hudson		X	hudsonenergyservices.com
Great Eastern		X	greateasterngas.com

^{*}Note: Not every Supplier serves customers in all utility territories within New Jersey. Refer to the BPU website for current supplier list.



Utility Tariff and Rate Review: Electricity

Accounts and Rate Class: The District has six facilities included in this study and each school has it's own electric account. All accounts are served by Public Service Electric & Gas under rate classes General Lighting and Power (GLP) or Large Power and Lighting (LPL-S) and Direct Energy as a third party supplier.

Note: F.N. Brown Elementary and Verona High School appear to have multiple combined meters but their own account numbers.

- Electric Consumption and Cost: Based on the one-year period studied, the total annual electric expenditure for is about \$338,000 and the total annual consumption is about 2,094,000 kilowatt-hours (kWh).
- Average/Effective Rate per kWh: For the one year period studied, the District's average monthly cost per kilowatt-hour ranged from 15.1¢/kWh to 17.1¢/kWh, inclusive of utility delivery charges. The District's overall, average cost per kilowatt-hour during this period was 16.2¢/kWh.
 - Note that these average electric rates are "all-inclusive"; that is, they include all supply service (generation and commodity-related) charges, as well as all delivery service charges. The supply service charges typically represent the majority (60-80%) of the total monthly bill. It is the supply portion of your bill that is deregulated, which is discussed on subsequent slides in this section.



Utility Tariff and Rate Review: Natural Gas

- Accounts and Rate Class: The District has six facilities included in this study each with it's own natural gas account. All accounts are served by Public Service Electric & Gas under rate class Large Volume Gas (LVG) and Hess Corp. as the Third Party Supplier.
- Natural Gas Consumption and Cost: Based on the one-year period studied, the total annual natural gas expenditure for the District is about \$174,000 and the total annual consumption is about 170,000 therms. Natural Gas is used mostly in the winter period for heating purposes.
- > Average/Effective Rate per Therm: For the one year period studied, the District's overall, average cost was \$1.022 per therm.
 - o Note that these average electric rates are "all-inclusive"; that is, they include all supply service (generation and commodity-related) charges, as well as all delivery service charges. The supply service charges typically represent the majority (60-80%) of the total monthly bill. It is the supply portion of your bill that is deregulated, which is discussed on subsequent slides in this section.



Utility Deregulation in New Jersey: Background and Retail Energy Purchasing

Electric Accounts:

- In August 2003, per the Electric Discount and Energy Competition Act [N.J.S.A. 48:3-49], the State of New Jersey deregulated its electric marketplace thus making it possible for customers to shop for a third-party (someone other than the utility) supplier of retail electricity.
- > Per this process, every single electric account for every customer in New Jersey was placed into one of two categories: "BGS-FP" or "BGS-CIEP". BGS-FP stands for Basic Generation Service-Fixed Price; BGS-CIEP stands for Basic Generation Service-Commercial and Industrial Energy Pricing.
- At its first pass, this categorization of accounts was based on rate class. The largest electric accounts in the State (those served under a Primary or a Transmission-level rate class) were moved into BGS-CIEP pricing. All other accounts (the vast majority of accounts in the State of New Jersey, including residential) were placed in the BGS-FP category, receiving default electric supply service from the utility.
- > The New Jersey Board of Public Utilities (NJBPU) has continued to move new large energy users from the BGS-FP category into the BGS-CIEP category by lowering the demand (kW) threshold for electric accounts receiving Secondary service. Originally, this threshold started at 1,500kW; now, it has come down to 750 kW. So, if an account's "peak load contribution" (as assigned by the utility) is less than 750 kW, then that facility/account is in the BGS-FP category. If you are unsure, you may contact Dome-tech for assistance.



Utility Deregulation in New Jersey: Background and Retail Energy Purchasing (cont'd)

- > There are at least 3 important differentiating factors to note about each rate category:
 - The rate structure for BGS-FP accounts is different than the rate structure for BGS-CIEP accounts.
 - 2. The "do-nothing" option (i.e., what happens when you don't shop for retail energy) varies.
 - 3. The decision about whether, and why, to shop for a retail provider varies.

BGS-FP: Secondary (small to medium) Electric Accounts:

- BGS-FP rate schedules for all utilities are set, and re-set, each year. Per the results of our State's BGS Auction process, held each February, new utility default rates go into effect every year on June 1st. The BGS-FP rates become each customer's default rates, and they dictate a customer's "Price to Compare" (benchmark) for shopping purposes. To learn more about the BGS Auction process, please go to www.bgs-auction.com.
- A customer's decision about whether to buy energy from a retail energy supplier is, therefore, predominantly dependent upon whether a supplier can offer rates that are lower than the utility's (default) Price to Compare.

BGS-CIEP: Primary (large) Electric Accounts:

- > The BGS-CIEP category is quite different. These accounts pay an hourly market rate for energy when they do not switch to a retail provider.
- > For BGS-CIEP accounts, the process of setting forth a buying strategy can be complex, which is why many public entities seek professional assistance when shopping for energy.
- For more information concerning hourly electric market prices for our region, please refer to <u>www.pim.com</u>.



Utility Deregulation in New Jersey: Background and Retail Energy Purchasing (cont'd)

Natural Gas Accounts:

- The natural gas market in New Jersey is also deregulated. Most customers that remain with the utility for natural gas service pay rates that are market-based and that fluctuate on a monthly basis. While natural gas is a commodity that is exceptionally volatile and that is traded minute-by-minute during open trading sessions, market rates are "settled" monthly, 3 business days prior to the subsequent month (this is called the "prompt month"). Customers that do not shop for a natural gas supplier will typically pay this monthly settlement rate to the utility, plus other costs that are necessary to bring gas from Louisiana (The "Henry Hub") up to New Jersey (at the "City Gate") and ultimately to your facility.
- For additional information about natural gas trading and current market futures rates for various commodities, you can refer to www.nymex.com.
- A customer's decision about whether to buy natural gas from a retail supplier is typically dependent upon whether a customer seeks budget certainty and/or longer-term rate stability. Customers can secure longer-term fixed prices by enlisting a retail natural gas supplier. Many larger natural gas customers also seek the assistance of a professional consultant to assist in their procurement process.



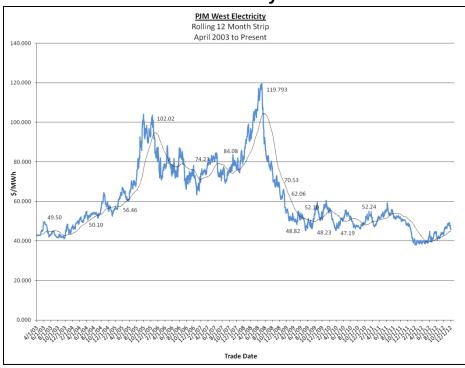
Historical Energy Futures Settlement Prices

Below please find graphs that show the last ten years' worth of market settlement prices for both natural gas and electricity. Each of these graphs shows the average closing prices of a rolling 12-month period of energy futures prices. The graphs are representative of the commodity, alone; they do not include any of the additional components (capacity, transmission, ancillary services, etc.) that comprise a retail energy price. They are meant to provide an indication of the level of pricing that a particular customer might expect to see, but the graphs do not account for the specific load profile of any individual energy user.

Natural Gas

Henry Hub Natural Gas Rolling 12 Month Strip April 2003 to Present 14.000 12.000 10.000

Electricity





Potential Project Funding Sources

Through the NJ Clean Energy Program, the New Jersey Board of Public Utilities currently offers a variety of subsidies or rebates for many of the project types outlined in this report. More detailed information can be found at: www.njcleanenergy.com

NJ Smart Start Buildings – Equipment Rebates noted in ECMs where available.

Equipment Rebates: Water Heaters, Lighting, Lighting Controls/Sensors, Chillers, Boilers, Heat Pumps, Air Conditioners, Energy Management, Systems/Building Controls, Motor-ASDs/VSDs, Custom/Others.

http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/nj-smartstart-buildings

<u>Pay for Performance Program</u> – Performance-Based Incentives for installations. Provides incentives of up to \$0.11/ kWh and \$1.25/therm saved; up to 25% of total project cost. A minimum reduction target of 15% compared to baseline must be achieved. Energy modeling of building and systems and energy reduction plan is required (incentives provided to pay for part of study costs).

http://www.njcleanenergy.com/commercial-industrial/programs/pay-performance/existing-buildings

<u>Energy Savings Improvement Program (ESIP)</u> – Public entities can contract with energy saving companies (ESCO) in up to 20-year lease purchases enabling public entities to implement energy conservation measures at their facilities, and pay for the costs using the value of energy savings that result from the improvements. A "Do It Yourself" approach allows the public entity to contract with an engineering firm(s) to develop an Energy Savings Plan, develop plans and specs, oversee construction, commissioning, etc. (No ESCO is needed for the Do It Yourself approach).

http://www.njcleanenergy.com/commercial-industrial/programs/energy-savings-improvement-program



Potential Project Funding Sources (cont'd)

<u>Direct Install Program</u> – NJ Clean Energy makes the investment in energy efficiency upgrades by initially covering 70% of the cost to install the recommended energy efficiency measures (up to \$75,000 per project). If eligible, the entity will pay ONLY 30% of the total cost to install the energy efficiency measures.

http://www.njcleanenergy.com/commercial-industrial/programs/direct-install

We encourage you to contact the program directly for further information

Steps to Participate for Buildings

1. CONTACT THE PARTICIPATING CONTRACTOR IN YOUR AREA

Identify the contractor assigned and trained to provide Direct Install services in the county where your project is located. Using the contact information provided, call or email the Participating Contractor to discuss your project. The contractor will schedule an Energy Assessment and work with you to complete the Program Application and Participation Agreement. If you're unable to contact the Participating Contractor or have questions, you may contact us at 866-NJSMART or send an e-mail to <u>DirectInstall@trcsolutions.com</u>.

2. REVIEW RESULTS

After the Energy Assessment, the contractor will review results with you, including what measures qualify and your share of the project cost.

3. DECIDE TO MOVE FORWARD

You will sign a Scope of Work document to proceed with implementation of qualifying measures.

4. ARRANGE INSTALLATION

You and the Participating Contractor will set a convenient start date for the installation.

5. CONFIRM INSTALLATION

Once the Participating Contractor completes the installation, you accept the work by signing a Project Completion Form. A program representative will approve the project as complete.

6. COMPLETE TRANSACTION

You pay the Participating Contractor your share of the project cost and the program pays its share.



Next Steps

- The following projects should be considered for implementation:
 - > Piping Insulation
 - > PC Power Management
 - > Implement a Steam Trap Repair Program
 - Replace Electric Water Heaters with Gas
 - > Replace CRT Screens with Flat Screen Monitors
 - > Lighting Upgrades

Note that additional "Phase 2" engineering may be required to further develop these projects, to bring them to bidding and implementation.

- > Consider applying for Pay-For-Performance Program
- Continue with ESIP process



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PORTFOLIO MANAGER / ENERGY STAR



ENERGY STAR[®] Statement of Energy Performance

70

Verona - Brookdale Avenue School

Primary Property Function: K-12 School

Gross Floor Area (ft²): 37,972

Built: 1928

ENERGY STAR® Score¹

For Year Ending: June 30, 2012 Date Generated: August 22, 2013

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 & Conta	act Information				
Property Address Verona - Brookdale Ave 14 Brookdale Court Verona, New Jersey 070		Property Owner		Primary Contact	
Property ID : 3551278					
Energy Consump	tion and Energy	Use Intensity (EU	(I)		
40.0 kBtu/ft2 Ele	` '	512,728 (33%) 1,039,700 (67%)	National Median Co National Median Site National Median Sou % Diff from National Annual Emissions Greenhouse Gas Emi	EUI (kBtu/ft²) arce EUI (kBtu/ft²)	49.8 86.6 -18%
Signature & Stam	p of Verifying F	Professional			
I	(Name) verify that the	e above information is true	e and correct to the bes	t of my knowledge.	
Signature: Licensed Professional	Date	o:			
, ()					



ENERGY STAR® Statement of Energy Performance

7

Verona - F.N. Brown School

Primary Property Function: K-12 School

Gross Floor Area (ft²): 38,985

Built: 1932

ENERGY STAR®

Score¹

For Year Ending: June 30, 2012 Date Generated: August 22, 2013

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 & Con	ntact Information				
Property Address Verona - F.N. Brown 125 Grove Avenue Verona, New Jersey		Property Owner		Primary Contact	
Property ID: 355129	93				
Energy Consur	nption and Energy	Use Intensity (EU	II)		
97 lzRtu/ft2	Annual Energy by Fuel Natural Gas (kBtu) Electric - Grid (kBtu)	2,604,140 (77%) 789,101 (23%)	Annual Emissions	e EUI (kBtu/ft²)	53.5 82.2 63% 238
Signature & Sta	amp of Verifying I	Professional			
I	(Name) verify that the	e above information is true	e and correct to the bes	st of my knowledge.	
Signature:	Date	e:			
Licensed Profession	nal				
, ()					



ENERGY STAR® Statement of Energy Performance

43

Verona - Forest Avenue School

Primary Property Function: K-12 School

Gross Floor Area (ft²): 27,750

Built: 1928

ENERGY STAR® Score¹

For Year Ending: June 30, 2012 Date Generated: August 22, 2013

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 & Co	ontact Information				
Property Address Verona - Forest Av 118 Forest Avenue Verona, New Jersey	renue School	Property Owner		Primary Contact	
Property ID: 3551	295				
Energy Consu	umption and Energy	Use Intensity (EU	JI)		
Site EUI 62 kBtu/ft² Source EUI 100.2 kBtu/ft²	Annual Energy by Fuel Natural Gas (kBtu) Electric - Grid (kBtu)	1,252,200 (73%)	% Diff from Nation Annual Emissions		58.7 94.9 6% 126
Signature & S	tamp of Verifying l	Professional			
I	(Name) verify that the	e above information is tru	e and correct to the b	est of my knowledge.	
Signature:	Date	e:			
Licensed Profession	onal				
, <u> </u>	- 				



ENERGY STAR[®] Statement of Energy Performance

81

Verona - H.B. Whitehorne

Primary Property Function: K-12 School

Gross Floor Area (ft²): 118,224

Built: 1922

ENERGY STAR® Score¹

For Year Ending: June 30, 2012 Date Generated: August 22, 2013

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 & C	ontact Information				
Property Address Verona - H.B. Whi 600 Bloomfield Av Verona, New Jerse	tehorne /enue	Property Owner		Primary Contact	
Property ID : 3551	272				
Energy Const	umption and Energy	y Use Intensity (E	UI)		
Site EUI 48 kBtu/ft ² Source EUI 82.2 kBtu/ft ²	Annual Energy by Fuel Natural Gas (kBtu) Electric - Grid (kBtu)	3,883,730 (68%)	% Diff from Nation Annual Emissions		66.7 114.2 -28% 434
Signature & S	tamp of Verifying	Professional			
I	(Name) verify that the	e above information is tr	rue and correct to the be	est of my knowledge.	
Signature:	Dat	e:			
Licensed Professi	onal				
	<u> </u>				



ENERGY STAR® Statement of Energy Performance

18

Verona - Laning Avenue School

Primary Property Function: K-12 School

Gross Floor Area (ft²): 46,477

Built: 1911

ENERGY STAR® Score¹

For Year Ending: June 30, 2012 Date Generated: August 22, 2013

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 & Co	ontact Information				
Property Address		Property Owner		Primary Contact	
Verona - Laning Av	venue School				
18 Laning Road		,		,	
Verona, New Jersey	y 07044	()		()	
Property ID: 3551	274				
Enancy Concy	umption and Engage	, Ilaa Intansity, (EI	II)		
Energy Consu	imption and Energy	Use Intensity (EC) 1)		
Site EUI	Annual Energy by Fuel		National Median Co	omparison	
70.8 kBtu/ft ²	Natural Gas (kBtu)	2,452,713 (75%)	National Median Site	e EUI (kBtu/ft²)	52.4
/0.8 KDtu/It²	Electric - Grid (kBtu)	835,667 (25%)	National Median Sou	urce EUI (kBtu/ft²)	82.8
			% Diff from Nationa	al Median Source EUI	35%
Source EUI			Annual Emissions		
111.9 kBtu/ft ²			Greenhouse Gas Em	issions (MtCO2e/year)	236
111.9 KDtu/It-					
Signature & St	tamp of Verifying l	Professional			
I	(Name) verify that the	e above information is tru	e and correct to the be	st of my knowledge.	
Signature:	Date	e:			
Licensed Profession	nnal				
Licenseu i roressi	Jilai				
,					
(_				
			ı		



ENERGY STAR® Statement of Energy Performance

64

Verona - Verona High School

Primary Property Function: K-12 School

Gross Floor Area (ft²): 120,245

Built: 1956

ENERGY STAR® Score¹

For Year Ending: June 30, 2012 Date Generated: August 22, 2013

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	mation		
Property Address Verona - Verona High School 151 Fairview Avenue Verona, New Jersey 07044	Property Owner	Primary Contact	
Property ID : 3551223			
Energy Consumption and	l Energy Use Intensity (EU	Л)	
Site EUI 70.8 kBtu/ft² Annual Energ Natural Gas (k Electric - Grid Source EUI 121.4 kBtu/ft²		National Median Comparison National Median Site EUI (kBtu/ft²) National Median Source EUI (kBtu/ft²) % Diff from National Median Source EUI Annual Emissions Greenhouse Gas Emissions (MtCO2e/year)	80.5 138.1 -12% 651
Signature & Stamp of Ver	rifying Professional		
I (Name) ver	rify that the above information is true	e and correct to the best of my knowledge.	
Signature:	Date:		
Licensed Professional			
, ()			



510 Thornall Street, Suite 170 Edison, NJ 08837

> Tel: 732.590.0122 Fax: 732.590.0129

EQUIPMENT INVENTORY LISTS

VERONA SCHOOL DISTRICT Brookdale Avenue School

EQUIPMENT LIST

	Fans													
Bldg	Tag#	Location	Area Serving	Equipment	Quantity	Mfg	Model	Fuel	CFM	Output Btuh	Age	Estimated Service Life	Efficiency	Notes
Brookdale	EF#1	Roof		Exhaust Fan		Cook	135ace				1998	20		
Brookdale	EF#4	Roof		Exhaust Fan		Cook	90acem				1998	20		
Brookdale	EF#2	Roof		Exhaust Fan		Cook	1203cb				1998	20		
Brookdale	EF#4	Roof		Exhaust Fan		Cook	150c2e				1998	20		
Brookdale	EF#5	Roof		Exhaust Fan		Cook	150c4b				1998	20		
Brookdale	EF#6	Roof		Exhaust Fan		Cook	150c2e				1998	20		
Brookdale	EF#7	Roof		Exhaust Fan		Cook	180c4b				1998	20		
Brookdale	EF#3	Roof		Exhaust Fan		Dayton					1998	20		
Brookdale	EF#3	Roof		Exhaust Fan		CaptiveAir	du50hfa				1998	20		
Brookdale	EF#8	Roof		Exhaust Fan		Cook	150c2e				1998	20		
Brookdale	EF#12	Roof	gym	Exhaust Fan		Cook					1998	20		
Brookdale	EF#13	Roof	stage	Exhaust Fan		Cook					1998	20		

	Ventilators														
Bldg	Tag#	Location	Area Serving	Equipment	Mfgr	Model	Quantity	GPM	Head ft	НР	Efficien cy	Motor RPM	VFD?	Age	Estimated Service Life
Brookdale	СН	Corridors / Stairs / Boys BR / Gym	Corridors / Stairs / Boys BR / Gym	Cabinet Unit Heaters	Trane		~7						No	1998	20
Brookdale	uv#1	art room	art room &	Unit Vent w/ DX	MagicAire		1						No	1998	20
Brookdale	uv#10	rm 8	rm 8	Unit Ventilator	MagicAire		1						No	1998	20
Brookdale	uv#11	rm 7	rm 7	Unit Ventilator	MagicAire		1						No	1998	20
Brookdale	uv#12	rm 6	rm 6	Unit Ventilator	MagicAire		1						No	1998	20
Brookdale	uv#13	computer rm	computer rm	Unit Ventilator	MagicAire		1						No	1998	20
Brookdale	uv#2	ldtc 113	ldtc 113	Unit Ventilator	MagicAire		1						No	1998	20
Brookdale	uv#3	sgi 112	sgi 112	Unit Ventilator	MagicAire		1						No	1998	20
Brookdale	uv#5	kindergarten	kindergarten	Unit Ventilator	MagicAire		1						No	1998	20
Brookdale	uv#8	rm 2	rm 2	Unit Ventilator	MagicAire		1						No	1998	20
Brookdale	uv#9	rm 1	rm 1	Unit Ventilator	MagicAire		1						No	1998	20

	VAVs														
Bldg	Tag#	Location	Area Serving	Equipment	Mfgr	Model	Quantity	GPM	Head ft	НР	Efficien cy	Motor RPM	VFD?	Age	Estimated Service Life
Brookdale	vav#1	Ceiling	media 201	VAV Box			1							1998	20
Brookdale	vav#2	Ceiling	computer room	VAV Box			1							1998	20
Brookdale	vav#3	Ceiling	corridor 208	VAV Box			1							1998	20
Brookdale	vav#4	Ceiling	girls toilet	VAV Box			1							1998	20
Brookdale	vav#5	Ceiling	media office	VAV Box			1							1998	20
Brookdale	vav#6	Ceiling	media center	VAV Box			1							1998	20
Brookdale	vav#10	Ceiling	rm 302	VAV Box			1							1998	20
Brookdale	vav#11	Ceiling	boys toilet 308	VAV Box			1							1998	20
Brookdale	vav#12	Ceiling	corridor 301	VAV Box			1							1998	20
Brookdale	vav#7	Ceiling	sgi 306	VAV Box			1							1998	20
Brookdale	vav#8	Ceiling	lld 304	VAV Box			1							1998	20
Brookdale	vav#9	Ceiling	rm 303	VAV Box			1							1998	20

Boilers

Bldg	Tag#	Location	Area Serving	Equipment	Mfg	Model	Quantity	Fuel	Heating Input Btuh	Output Btuh	Age	Estimated Service Life	Efficiency	Notes
FN Brown		Boiler Room	Steam Heat & HX	Boiler	Cleaver Brooks	CB700 100 015	2	nat ga	4,184,000		1998	30		

Heating Hot Water Pumps

Bidg	Tag#	Location Area Serving	Equipment	Pump Mfg Pump Model	Motor Mfg	Motor Model	Quantity G	PM	Head ft	НР	Efficiency	Motor RPM	VFD?	Age	Estimated Service Life	
FN Brown		Boiler Room HHW System (HX)	HHW Pump	B&G	ІТТ	M3154T	2			0.5 , 1phase			NO	1998	20	

Heat Exchangers

Bldg	Tag#	Location	Area Serving	Equipment	Туре	Make	Model	GPM	Head ft	НР	Efficiency	Motor RPM	VFD?	Age	Estimated Service Life
FN Brown	НХ	Boiler Room	Lower Level Fan Coils & FinTube	Heat Exchanger	Shell & Tube										24

Prepared by Dome-Tech, Inc. 1 of 5

VERONA SCHOOL DISTRICT F.N. Brown Elementary School EQUIPMENT LIST

Air Handling Units - AHUs

Bldg	Tag#	Location	Area Serving	Equipment	Mfg	Model Quantity	Cooling Capacity (Tons)	Cooling Technology	Heating Technology	Heating Capacity (MBH)	Heating GPM	Supply Air CFM	Static Pressure w.c.	Fan HP	Age	Estimated Service Life	Efficiency	Controls	Notes:
FN Brown	AHU-1,2	Auditorium	Auditorium	AHU	Trane	2		na	Steam						1998	20			
FN Brown	AHU1	Gym	Gym	AHU	Trane	1		na	Steam					2	1998	20			

Prepared by Dome-Tech, Inc. 2 of 5

VERONA SCHOOL DISTRICT F.N. Brown Elementary School

EQUIPMENT LIST

Condensing Units

Bldg	Tag#	Location	Area Serving	Equipment	Туре	Mfg	Quantity	Model	Tons	kW/Ton	Refrigerant	VFD?	Estimated Service Life
FN Brown	SAC01	OUTSIDE	Library Office	COND	Scroll	Mitsubishi	1	Slim - PU18EK1	1.5	12A COMP	R22	1998	3 20
FN Brown	SAC02	OUTSIDE	Nurses Office	COND	Scroll	EMI	1	S1CA8000		5.4A COMF	R22	1998	3 20
FN Brown	SAC03	OUTSIDE	Computer Lab	COND	Scroll	EMI	1	S1CA4000		8A COMP,	R22	1998	3 20
FN Brown	SAC04	OUTSIDE	Main Office	COND	Scroll	EMI	1	S1CA4000		8A COMP,	R22	1998	3 20
FN Brown	SAC05	OUTSIDE	Teachers Work Room	COND	Scroll	YORK	1	AFFINITY, CZB02411A	2	12.8A COM	R410	1998	3 20
FN Brown	SAC06	OUTSIDE	Principal's Office	COND	Scroll	Freidrich	1	MR24C3E	2	9.6A COMP	R22	1998	3 20
FN Brown	SAC07	OUTSIDE	Faculty Room	COND	Scroll	Mitsubishi	1	Slim - mu24wn	2	16A COMP	R22	1998	3 20
FN Brown	SAC08	OUTSIDE	MUSIC	COND	Scroll	TRANE	1	XB13, 2TT13304ZA1000AA		15.4A COM	R22	1998	3 20
FN Brown	SAC09	OUTSIDE	CHILD STUDY	COND	Scroll	YORK	1	AFFINITY, CZB01811A	1.5	10.3A COM	R410	1998	3 20
FN Brown	SAC10	OUTSIDE	OT/PT	COND	Scroll	YORK	1	AFFINITY, CZB01811A	1.5	10.3A COM	R410	1998	3 20
FN Brown	SAC11	OUTSIDE	SGI	COND	Scroll	YORK	1	AFFINITY, CZB01811A	1.5	10.3A COM	R410	1998	3 20

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VERONA SCHOOL DISTRICT F.N. Brown Elementary School

EQUIPMENT LIST

Domestic Hot Water

Bldg	Tag#	Location	Area Serving	Equipment	Quantity	Mfg	Model	Fuel	Gal	Btuh Input	# of elements	Age	Estimated Service Life	Notes
FN Brown		Boiler Room	Domestic Hot Water	Water Heater	1	BRADFORD WHITE	Defender M2XR504T6FBN	Natural Gas	48 gal	65,000		1998	20	

Prepared by Dome-Tech, Inc. 4 of 5

					Fans									
Bldg	Tag#	Location	Area Serving	Equipment	Quantity	Mfg	Model	HP	CFM	Output Btuh	Age	Estimated Service Life	Efficiency	Notes
FN Brown	Ef#1	Roof	work room	Exhaust Fan	Cook						1998	20		
FN Brown	EF#10	Auditorium	Auditorium	Exhaust Fan	1	Cook	21CS0NB	0.50				20		
FN Brown	EF#11	Auditorium	Auditorium	Exhaust Fan	1	Cook	21CS0NB	0.50				20		
FN Brown	Ef#14	Roof		Exhaust Fan	1	Cook	270сру				1998	20		
FN Brown	Ef#15	Roof	attic	Exhaust Fan	1	Cook	165cpv				1998	20		
FN Brown	Ef#2	Roof	attic child study	Exhaust Fan	1	Cook	120cpv				1998	20		
FN Brown	EF#3	Café	Café	Exhaust Fan	1	Cook	120son10d					20		
FN Brown	Ef#4	Roof	cafeteria 011	Exhaust Fan	1	Cook					1998	20		
FN Brown	Ef#6	Roof	annex	Exhaust Fan	1	Cook					1998	20		
FN Brown	Ef#7	Roof	breezeway direct drive	Exhaust Fan	1	Cook					1998	20		
FN Brown	Ef#8	Roof	stage	Exhaust Fan	1	Cook					1998	20		
FN Brown	EF#9	Auditorium	Auditorium	Exhaust Fan	1	Cook	21CS0NB	0.50				20		

					Ventila	tors									
Bldg	Tag#	Location	Area Serving	Equipment	Mfgr	Model	Quantity	GPM	Head ft	НР	Efficie ncy	Motor RPM	VFD?	Age	Estimated Service Life
FN Brown	FCU	Art Storage	Art Storage	FCU w/ Dx	Envirotech	HPE08	1							1998	20
FN Brown	UV	RmA2	RmA2	Unit Ventilator	Trane		1							1998	20
FN Brown	UV	RmA3	RmA3	Unit Ventilator	Trane		1							1998	20
FN Brown	UV	Café#2	Café#2	Unit Vent	Trane		2							1998	20
FN Brown	AC	Kitchen	Kitchen	Window AC	(old)		1							1998	20
FN Brown	FCU	B-8 SGI	B-8 SGI	FCU w/ Dx	Envirotech		1							1998	20
FN Brown	FCU	Physical Therapy	Physical Therapy	FCU w/ Dx	Envirotech		1							1998	20
FN Brown	FCU	Boys BR	Boys BR	FCU	Envirotech		1							1998	20
FN Brown	FCU	North Stair Tower	North Stair Tower	Cabinet Unit	Envirotech		1							1998	20
FN Brown	FCU	Child Study	Study	FCU w/ Dx	Envirotech	HPE06	1							1998	20
FN Brown	FCU	Rm B9	Rm B9	FCU w/ Dx	Envirotech	HPE06	1							1998	20
FN Brown	FCU	Rm B8	Rm B8	FCU w/ Dx	Envirotech	HPE06	1							1998	20
FN Brown	FCU	l eachers work	Teachers Work Room	FCU w/ Dx	Envirotech	HPE08	1							1998	20
FN Brown	UV#2/UV#14?	Computer Room	Computer Room	Trane UV w/ Dx	Envirotech		1							1998	20
FN Brown	UV	Principals Office	Principals Office	Trane UV w/ Dx	Trane	PTEC0901G8	1							1998	20
FN Brown	UV	Conference Room	Conference Room	Trane UV w/ Dx	Trane	PTEC0901G8	1							1998	20
FN Brown	UV#19	ROOM #11	ROOM #11	Unit Ventilator	trane	uvb125	1							1998	20
FN Brown	UV#20	ROOM #13	ROOM #13	Unit Ventilator	Trane		1							1998	20
FN Brown	UV#21	ROOM #15	ROOM #15	Unit Ventilator	Trane		1							1998	20
FN Brown	UV#22	ROOM #16	ROOM #16	Unit Ventilator	Trane		1							1998	20
FN Brown	UV#17	ROOM #17	ROOM #17	Unit Ventilator	Trane		1							1998	20
FN Brown	UV#18	ROOM #18	ROOM #18	Unit Ventilator	Trane		1							1998	20
FN Brown	UV#3	ROOM #10 resource room	ROOM #10 resource room	Unit Ventilator	Trane		1							1998	20
FN Brown	UV#11	main office a/c	main office a/c	Unit Ventilator	Trane		1							1998	20
FN Brown	UV#12	room #7 2nd	room #7 2nd grades	Unit Ventilator	Trane		1							1998	20
FN Brown	UV#1	room b7 007 music a/c	room b7 007 music a/c	Unit Ventilator	Trane		1							1998	20
FN Brown	UV#01	cafeteria	cafeteria	Unit Ventilator	Trane	vuv100	1							1998	20
FN Brown	UV#02	cafeteria 013 right	cafeteria 013 right	Unit Ventilator	Trane		1							1998	20
FN Brown	UV#03	cafeteria 011 left	cafeteria 011 left	Unit Ventilator	Trane		1							1998	20
FN Brown	UV#04	cafeteria 011 right	cafeteria 011 right	Unit Ventilator	Trane		1							1998	20
FN Brown	UV#13	room #6 2nd	room #6 2nd grades	Unit Ventilator	Trane		1							1998	20
FN Brown	UV#12	room #7 2nd	room #7 2nd grades	Unit Ventilator	Trane		1							1998	20
FN Brown	UV#15	room#1 media	room#1 media center & a/c	Unit Ventilator	Trane		1							1998	20
FN Brown	CHs	Corridors / Stairs /	Corridors / Stairs / Bathrooms	Cabinet Heaters			~11							1998	20

					Split U	nits									
Bldg	Tag#	Location	Area Serving	Equipment	Mfg	Model	Quantity	GPM	Head ft	Tons	Efficie ncy	Motor RPM	VFD?	Age	Estimated Service Life
FN Brown	SAC12	Rm A2	Rm A2	Evaporator	Freidrich	MW24CBE									
FN Brown		Main Office	Main Office	Evaporator	EMI										
FN Brown		Nurses Office	Nurses Office	Evaporator	EMI										
FN Brown		Principals Room	Principals Office	Evaporator	Freidrich										

ERONA SCHOOL DISTRICT Forest Avenue School

Boilers

Bidg	Tag#	Location	Area Serving	Equipment	Mfg	Model	Quantity	Fuel	Heating Input Btuh	Output Btuh	Age	Estimated Service Life	Efficiency	Notes
Forest		Boiler Room	HHW System	Boiler	Cleaver Brooks	CB 700 060 030	2	nat ga	2,511,000		1998	30		

Heating Hot Water Pumps

Bldg Tag#	Location	Area Serving	Equipment	Pump Mfg	Pump Model	Motor Mfg	Motor Model	Quantity	GPM Head ft	НР	Efficiency	Motor RPM	VFD?	Age	Estimated Service Life
Forest	Boiler Room	HHW System	HHW Pumps	TACO	FE1507E	Baldor	M3154T	4		1.5	79.5			1998	20

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Air Handling Units - AHUs

Bldg	Tag#	Location	Area Serving	Equipment	Mfg	Model	Quantity	Cooling Capacity (Tons)	Cooling Technology	Heating Technology	Heating Capacity (MBH)	Heating GPM	Supply Air CFM	Static Pressure w.c.	Fan HP	Age	Estimated Service Life	Efficiency	Controls	Notes:
Forest	RTU	Roof		RTU	Trane	tcc024f100bd	1		DX	Natural Gas							15			
Forest	AHU-1,2	Gym	Gym	AHU	Trane	MCAA06GAR0AB A000	2	na	na	HHW							20			

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VERONA SCHOOL DISTRICT Forest Avenue School

EQUIPMENT LIST

Condensing Units

Bldg	Tag#	Location	Area Serving	Equipment	Туре	Mfg	Quantity	Model	Tons	kW/Ton	Refrigerant	VFD?	Age
Forest	SAC#1	Roof	Computer Room	Condensing Unit		Carrier	1						
Forest	SAC#2	Roof	Music Room	Condensing Unit		Carrier	1						

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VERONA SCHOOL DISTRICT Forest Avenue School EQUIPMENT LIST

Domestic Hot Water

Bldg	Tag#	Location	Area Serving	Equipment	Quantity	Mfg	Model	Fuel	Gal	Btuh Input	# of elements	Age Estimated Service Life	Notes
Forest		Boiler Room	Domestic Hot Water	Water Heater	1	Bradford White	MI5036FBN	Natural Gas	50	40,000		20	

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SOUTH PLAINFIELD FRANKLIN ELEMENTARY SCHOOL

Boilers

Bld	dg	Tag#	Location	Area Serving	Equipment	Mfg	Model	Quantity	Fuel	Heating Input Btuh	Output Btuh	Age	Estimated Service Life	Efficiency	Notes
HBW	MS	Boiler 1 & 2	Boiler Room	Steam Heating	Fire-Tube Boiler	CLEAVER BROOKS	CB7001500015	2	nat ga	6277000		1998	30		

Heating Hot Water Pumps

Bldg	Tag#	Location	Area Serving	Equipment	Pump Mfg	Pump Model	Motor Mfg	Motor Model	Quantity	GPM	Head ft	НР	Efficiency	Motor RPM VFD?	Age	Estimated Service Life
HBW MS			HHW LOOP1	HHW Pump	GOULD	#3756	Baldor Reliance		2			5	87.5%	NO		20
HBW MS			HHW LOOP2	HHW Pump	CRANE		Marathon		2			5	87.5%	NO		20

Heat Exchangers

Bldg	Tag#	Location	Area Serving	Equipment	Туре	Make	Model	GPM	Head ft	НР	Efficiency	Motor RPM	VFD?	Age	Estimated Service Life
HBW MS	HX-1	Boiler Room	HHW LOOP2	Heat Exchanger	SHELL & TUBE	THRUSH									24
	HX-2	Boiler Room	HHW LOOP1	Heat Exchanger	SHELL & TUBE	THRUSH									24

Completed by Dome-Tech, Inc. 1 of 6

Boilers

Bldg	Tag#	Location	Area Serving	Equipment	Mfg	Model	Quantity	Fuel	Heating Input Btuh	Output Btuh	Age	Estimated Service Life	Efficiency	Notes
Laning	Boiler 1 & 2	Boiler Room	HHW	Cast Iron Sectional	Weil McLain	128P	2	nat ga	3,753,000	3,000,000		30		

Heating Hot Water Pumps

Bldg	Tag#	Location	Area Serving	Equipment	Pump Mfg	Pump Model	Motor Mfg	Motor Model	Quantity	GPM	Head ft	HP	Efficiency	Motor RPM	VFD?	Age	Estimated Service Life
Laning	HWP	Boiler Rm	HHW System	HHW Pump	2	Baldor	M32-18T			5	81.5%		NO	1998	20		20

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VERONA SCHOOL DISTRICT Verona High School

EQUIPMENT LIST

Fans Output Estimated Blda Tag# Location Area Serving Equipment Quantity Mfa Model Fuel CFM Age Efficiency Notes Btuh Service Life Return Fan for Axial Fan Verona HS RF Fan Rm 2 Auditorium 8000 2007 20 1 HAC#3 EF-1 Main Office Verona HS Roof Exhaust Fan Cook 18-1 20 Verona HS EF-2 Roof West Wing Exhaust Fan Cook 01M 20 Verona HS EF-3 East Wing Exhaust Fan Cook 1225ACEB 20 Roof Verona HS FF-4 **Board Office** Exhaust Fan 120ACE 20 Roof Cook Verona HS FF-5 Roof Toilet Exhaust Fan Cook 20 Verona HS EF-6 Roof Exhaust Fan 20 Science Cook Verona HS EF-7 Roof Old Gym Boys Exhaust Fan Cook 20 Verona HS EF-8 Roof Exhaust Fan 20 Cook Home EF-9 Exhaust Fan Verona HS Roof 1 Cook 16510d 20 Economics Exhaust Fan Verona HS EF-10 Roof Faculty Toilets Cook 20 Verona HS EF-11 Exhaust Fan 20 Roof Inner Offices Cook Teachers Work Verona HS EF-12 Roof Exhaust Fan Dayton 4YC72 20 1 Room Verona HS EF-13 Roof Ticket Booth Exhaust Fan Cook 20 Verona HS EF-14 Roof Ice Room Exhaust Fan Cook 20 Verona HS EF-15 Roof Kitchen Toilet Exhaust Fan Cook 20 EF-16 1195 ACEB 20 Verona HS Roof Kitchen Storage Exhaust Fan Cook Verona HS EF-17 Roof Library Exhaust Fan Cook 20 Verona HS EF-18 Roof Girls Locker Exhaust Fan Cook 20 Old Gym Verona HS EF-19 Roof Exhaust Fan Cook 20 1 Corridor Verona HS EF-20 Roof Dish Room Exhaust Fan Cook 20 Verona HS EF-21 Roof Dish Room Exhaust Fan 20 Cook Verona HS EF-22 Roof Fromt Hood Exhaust Fan 20 Cook Verona HS EF-23 Roof Team Room Exhaust Fan Cook 20

Verona HS

EF-24

EF-25

EF-26

EF-27

EF-28

EF-29

EF-30

EF-31

EF-32

EF-33

Fume Hood 1

Fume Hood 2

Roof

Corridor

Large Hood

Girls Locker

Coaches Office

Graphics

Darkroom

Math Wing

Toilet

Old Gym

New Gym

Stage

Science

Science

Exhaust Fan

Hood Exhaust

Hood Exhaust

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Cook

Airmaster

Cook

1

1

1

225ACEB

245R3B

ardk10500x-

120ucv

20

20

20

20

20

20

20

20

20

20

20

20

VERONA SCHOOL DISTRICT Verona High School EQUIPMENT LIST

Ventilators Estimated Efficien Head GPM Quantity ΗР Motor RPM VFD? Bldg Tag# Location Area Serving Equipment Mfgr Model Age Service CV Life Boys Locker Verona HS Bovs Locker Room Unit Vent Trane 2 20 Room Boys New Gym Boys New Gym 2 Verona HS Unit Vent Trane 20 Locker Room Locker Room **Boys Sports** Boys Sports Verona HS Unit Vent Trane 20 Locker Room Locker Room Verona HS Corridors Corridors Ceilina 12 20 Verona HS Faculty Dining Faculty Dining Unit Vent Nesbit 20 Music Room Verona HS Music Room Unit Vent Nesbit 20 Verona HS Rm 10 Rm 10 Unit Vent 20 Nesbit Verona HS Rm 11 Rm 11 Unit Vent Nesbit 20 -Verona HS Rm 12 Rm 12 Unit Vent Nesbit 20 Rm 13 Trane 20 Verona HS Rm 13 Unit Vent Verona HS Rm 15 Rm 15 Unit Vent Nesbit 20 Verona HS Rm 18 Rm 18 Science Unit Vent 20 Verona HS RM 20 RM 20 Unit Vent Carrier 40uvf3 1/5 20 Verona HS RM 22 RM 22 40uvf3 1/5 20 Unit Vent Carrier Verona HS Rm 23 Rm 23 Unit Vent Airedale Sentinel 20 Verona HS RM 24 RM 24 Unit Vent Carrier 40uvf3 1/5 20 Verona HS RM 25 RM 25 Unit Vent Carrier 40uvf3 1/5 20 Verona HS RM 26 RM 26 Unit Vent 20 Nesbit Verona HS RM 27 RM 27 Unit Vent Carrier 40uvf3 1/5 20 Verona HS RM 28 RM 28 Unit Vent Nesbit 20 RM 29 Verona HS -RM 29 Unit Vent -20 Verona HS RM 30 RM 30 Unit Vent 20 --RM 31 Verona HS RM 31 Unit Vent 20 Verona HS RM 32 RM 32 Unit Vent 20 Verona HS RM 33 RM 33 Unit Vent Nesbit 20 Verona HS RM 34 RM 34 20 Unit Vent Nesbit Verona HS RM 35 RM 35 Unit Vent 20 Verona HS RM 36 RM 36 Unit Vent 20 RM 37 RM 37 20 Verona HS Unit Vent RM 38 Verona HS RM 38 Unit Vent 20 RM 39 RM 39 20 Verona HS Unit Vent Verona HS RM 40 RM 40 Unit Vent 20 Verona HS RM 41 RM 41 Unit Vent 20 Verona HS RM 43 RM 43 Unit Vent 20 Verona HS Rm 45 Rm 45 Ceiling Mntd Carrier 24abr324a 20 Verona HS RM 47 RM 47 Ceiling Mntd Carrier 24abr324a 20 Verona HS -Rm 49 Rm 49 Unit Vent Nesbit 20 RM 51 RM 51 20 Verona HS -Unit Vent RM 53 RM 53 Verona HS 20 Unit Vent Rm <u>53</u> 20 Verona HS Rm 53 Unit Vent Nesbit RM 55 RM 55 20 Verona HS Unit Vent Nesbit STORAGE STORAGE 20 Verona HS Unit Vent Verona HS Woodshop Woodshop Unit Vent Nesbit 20

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VERONA SCHOOL DISTRICT Verona High School

EQUIPMENT LIST

					:	Split Units									
Bldg	Tag#	Location	Area Serving	Equipment	Mfg	Model	Quantity	GPM	Head	HP	Efficien	Motor RPM	VFD?	Age	Estimated
Verona HS	-	Main Office	Main Office	Evaporator	Sanyo	-	1								15
Verona HS	-	Server Room	Server Room	Evaporator	Sanyo	-	1								15
Verona HS	-	Rm 12	Rm 12	Evaporator	Goodman	4 A	1								15
Verona HS	-	Rm 10	Rm 10 Computer Room	Evaporator	Goodman	-	1								15
Verona HS	-	Nurses Office	Nurses Office	Evaporator	Goodman	-	1							10 yrs old	15
Verona HS	-	Vice Principal	Vice Principal	Evaporator	Freidrich	-	1								15
Verona HS	-	Teachers Copy Room	Teachers Copy Room	Evaporator	Freidrich	-	1								15
Verona HS	-	Computer Room	Computer Rm	Evaporator	Panasonic	CS-	1								15
Verona HS	-	Rm 49	Rm 49	Evaporator	Freidrich	-	1								15
Verona HS	-	Computer Room	Computer	Evaporator	Goodman	-	2								15
Verona HS	-	Rm 39	Rm 39	Evaporator	Freidrich	-	1								15
Verona HS	-	Rm 34	Rm 34	Evaporator	Freidrich	-	1								15
Verona HS	-	Rm 26	Rm 26	Evaporator	Mitsubishi	Slim	2								15
Verona HS	-	Rm 45	Rm 45	Ceiling Mntd	Carrier	24abr324a	1								15
Verona HS	-	RM 47	RM 47	Ceiling Mntd	Carrier	24abr324a	1								15
Verona HS	-	Faculty Dining	Faculty Dining	Evaporator	Freidrich	-	1								15
Verona HS	-	Board Office	Board Office	Evaporator	Sanyo	KS2472	1								15
Verona HS	-	Music Office	Music Office	Evaporator	Haier	HSU12XC	1								15
Verona HS	SAC-6	Library	Library	Evaporator	Trane	-	1								15
Verona HS	SAC-4	Conference Room	Conference	Evaporator	Carrier	38hdfo24-	1								15

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510 Thornall Street, Suite 170 Edison, NJ 08837

Tel: 732.590.0122 Fax: 732.590.0129

LIGHTING INVENTORY LISTS



LIGHTING RETROFIT SUMMARY FOR: Brookdale Avenue 14 Brookdale Avenue

BUILDING INFORMA	TION		EXISTIN	G FIXTURES	S	P	ROPOS	ED FIXTUR	ES			SAVI	INGS					FIN	ANCIAL		
BUILDING	SQ. FT.	PRE TOTAL FIXT. QTY	PRE TOTAL FIXT. WATTS	PRE ANNUAL KWH CONSUMPTION	PRE WATTS / SQ. FT	POST TOTAL FIXT. QTY	POST TOTAL FIXT. WATTS	POST ANNUAL KWH CONSUMPTION	POST WATTS / SQ. FT	WATTS SAVED	ANNUAL KWH SAVED	ANNUAL KWH SAVED WITH SENSORS	ANNUAL SAVINGS \$ FIXT.	ANNUAL SAVINGS \$ SENSORS	ANNUAL SAVINGS \$ TOTAL	CO2 REDUCTION (TONS)	NJ Smart Start REBATE \$	FIXTURES TOTAL (INSTALLED) COST \$	SENSORS TOTAL (INSTALLED) COST \$	MATERIAL TOTAL (INSTALLED) COST \$	SIMPLE PAYBACK NET OF REBATE (YEARS)
Brookdale Avenue	37,972	431	42,176	68,051	1.11	431	27,301	34,141	0.72	14,875	33,910	6,690	\$5,250	\$1,036	\$6,285	11.2	\$5,710	\$34,390	\$12,962	\$47,353	6.6

12%	PERCENTAGE OF REBATES IN TOTAL INSTALLED COST
50%	PERCENTAGE OF CONSUMPTION COMPARE TO EXISTING STATE
45%	EXISTING PERCENTAGE OF LIGHTING ENERGY CONSUMPTION OF THE WHOLE BUILDING
23%	PROPOSED PERCENTAGE OF LIGHTING ENERGY CONSUMPTION OF THE WHOLE BUILDING



LIGHTING UPGRADE PROJECT
LINE x LINE DETAIL

CUSTOMER:

Verona Schools

FACILITY SQ. FT.

DATE OF AUDIT:

57,972

57,972

57,972

	SPAC	CE DESCRIPTION	EXISTING	FIXTI	RES				R	EPI ACE	MENT FIX	TURES					\equiv			FNFRGY	ANALYSIS		COS	ST ANALYSI	S		REBATES	
	0.70	DESCRIPTION			DDE	DEFAULT		PRE		POS		TORLEG	оту	POST	ANNUAL	P	POST	WATTS	TOTAL		NNUAL ANNUA	TOTAL ANNUAL L \$ SAVINGS / LINE	TOTAL FIXTURE	TOTAL SENSOR COST	TOTAL		TOTAL	70741
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION FIXT QTY	; "";	TS WATTS		PRE ANNUAL KWH	AVERAGE LIGHT LEVEL FOOT	PROPOSED FIXTURE DESCRIPTION FIXED	XT. WATT	S HOURS	SENSOR TYPE	SENSORS /	TOTAL WATTS	HOURS	ANNUAL V	KWH WITH	SAVED /	WATTS SAVED		KWH KWH SAVED SAVE FROM WITH	(INCLUDING	COST (MATERIAL PLUS LABOR)	(MATERIAL PLUS LABOR)	INSTALLED COST AFTER	FIXTURES REBATE	SENSORS REBATE	REBATE /
1		3		FIX	LINE	2610		CANDLES		FIXI		45	LINE	LINE	2610	SE	OCC NSOR	FIXT.	LINE		FIXT. OCC				INCENTIVES	PER LINE	PER LINE	LINE
1	2 N/A	WORK ROOM	4 5 2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 3	88		2,070	546	10	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power	3 63		15 Wall	16	189	1,346		20 254	21 25	22 75	725	24 25 155 137	26 \$45	27 \$228	28 \$215	29 \$393	53 \$30	54 \$20	55 \$50
2	N/A	FACULTY REST ROOM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1	58		2,070	120		High Efficiency Ballast Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	1 42		Wall	1	42	1,035	87	43	16	16	1,035	33 43	\$12	\$68	\$215	\$273	\$10	\$0	\$10
2	N/A	FACULTY ROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 4	88		2,070	729		High Efficiency Ballast Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power	4 63		Ceiling	1	252	1,346		339	25	100		207 183		\$304	\$363	\$593	\$40	\$35	\$75
4									High Efficiency Ballast Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power				'															
4	N/A	FACULTY ROOM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58			240		High Efficiency Ballast				1	84	1,346		113	16	32	725	66 61	\$20	\$137	\$363	\$480	\$20	\$0	\$20
5	N/A	CLASSROOM 2	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 14			1,530	2,399	65 FC	High Efficiency Ballast 2'x4" Silver Reflector Kit	4 42	306	Ceiling	1	588	1,224	900 7	720	70	980	306	1,499 180	\$260	\$1,411	\$363	\$1,529	\$210	\$35	\$245
6	N/A	CLASSROOM 2 REST ROOM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1	58	58	360	21		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1 42	252	Wall	1	42	108	15	5	16	16	252	6 11	\$3	\$68	\$215	\$273	\$10	\$0	\$10
7	N/A	CLASSROOM STORAGE	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	58	360	21		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1 42				42	360	15	15	16	16	0	6 0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
8	N/A	CLASSROOM	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 12	11	2 1,344	1,530	2,056		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	2 42	306	Ceiling	1	504	1,224	771 6	617	70	840	306	1,285 154	\$223	\$1,209	\$363	\$1,357	\$180	\$35	\$215
9	N/A	MAIN OFFICE RECEPTION	2'x2' Troffer w/ (2) FB32T8 3*-U Lamps & (1) Electronic Ballast 6	58	348	2,070	720		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	6 28				168	2,070	348 3	348	30	180	0	373 0	\$58	\$363	\$0	\$303	\$60	\$0	\$60
10	N/A	PRINCIPAL OFFICE	2'x2' Troffer w/ (2) FB32T8 3*-U Lamps & (1) Electronic Ballast 4	58	3 232	2,070	480		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	4 28	724.5	Wall	1	112	1,346	232	151	30	120	725	248 81	\$51	\$242	\$215	\$416	\$40	\$0	\$40
11	N/A	NURSE OFFICE	2'x2' Troffer w/ (2) FB32T8 3*-U Lamps & (1) Electronic Ballast 6	58	348	2,070	720		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	6 28	724.5	Wall	1	168	1,346	348 2	226	30	180	725	373 122	\$77	\$363	\$215	\$517	\$60	\$0	\$60
12	N/A	NURSE REST ROOM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	58	2,070	120		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1 42	1035	Wall	1	42	1,035	87	43	16	16	1,035	33 43	\$12	\$68	\$215	\$273	\$10	\$0	\$10
13	N/A	CLASSROOM	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 12	11	2 1,344	1,530	2,056		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	2 42	306	Ceiling	1	504	1,224	771 6	617	70	840	306	,285 154	\$223	\$1,209	\$363	\$1,357	\$180	\$35	\$215
14	N/A	CUSTODIAN CLOSET	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1	58	3 58	360	21		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1 42				42	360	15	15	16	16	0	6 0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
15	N/A	BOYS REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58	3 116	2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2 42	1035	Ceiling	1	84	1,035	174	87	16	32	1,035	66 87	\$24	\$137	\$363	\$480	\$20	\$0	\$20
16	N/A	BOYS REST ROOM	4' Wrap Fluorescent w/ (1) FO32T8 Lamp & (1) Electronic Ballast 1	32	2 32	2,070	66		Relamp & Reballast w/ (1) F28T8 Lamp & (1) 1/32 Elec. Low-Power High Efficiency Ballast	1 22	1035	Ceiling		22	1,035	46	23	10	10	1,035	21 23	\$7	\$51	\$0	\$41	\$10	\$0	\$10
17	N/A	GIRLS REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58		2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	2 42		Ceiling	1	84	1,035	174	87	16	32	1,035	66 87	\$24	\$137	\$363	\$480	\$20	\$0	\$20
18	N/A	GIRLS REST ROOM	4' Wrap Fluorescent w/ (1) FO32T8 Lamp & (1) Electronic Ballast 2	32		2,070	132		Relamp & Reballast w/ (1) F28T8 Lamp & (1) 1/32 Elec. Low-Power			Ceiling	•	44	1,035		46	10	20	1,035	41 46	\$13	\$101	\$0	\$81	\$20	\$0	\$20
10	N/A	MEDIA CENTER				2,610	303	73 FC	High Efficiency Ballast Relamp & Reballast w/ (2) F1778 Lamps & (1) 2/17 Elec. Low-Power				1								157 29	\$29			\$464		\$0	\$20
19			2'x2' Troffer w/ (2) FB32T8 3*-U Lamps & (1) Electronic Ballast 2	58				7370	High Efficiency Ballast 4			Ceiling	-	56	2,088		117	30	60	522			\$121	\$363		\$20	·	
20	N/A	MEDIA CENTER	Downlight Fixture w/ (1) 26W Quad CFL & Electronic Ballast 8	26			543		None E Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power			Ceiling	1	208	2,088		434	0	0	522	0 109	\$17	\$0	\$363	\$328	\$0	\$35	\$35
21	N/A	MEDIA CENTER	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 16	88			3,675		High Efficiency Ballast	6 63		Ceiling	1	1,008	2,088	2,631 2	,105	25	400		1,044 526		\$1,217	\$363	\$1,385	\$160	\$35	\$195
22	N/A	COMPUTER ROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 10	88	880	1,530	1,346		riigii Ellicielicy Ballast	0 63	306	Ceiling	1	630	1,224	964 7	771	25	250	306	383 193	\$89	\$761	\$363	\$989	\$100	\$35	\$135
23	N/A	MEDIA OFFICE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 2	88	3 176	1,530	269		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	2 63	306	Wall	1	126	1,224	193 1	154	25	50	306	77 39	\$18	\$152	\$215	\$347	\$20	\$0	\$20
24	N/A	SGI #2	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 2	11	2 224	1,530	343		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	2 42	306	Wall	1	84	1,224	129	103	70	140	306	214 26	\$37	\$202	\$215	\$386	\$30	\$0	\$30
25	N/A	STORAGE/ ELECTRICAL	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	88	360	32		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	1 63				63	360	23	23	25	25	0	9 0	\$1	\$76	\$0	\$66	\$10	\$0	\$10
26	N/A	SGI #3	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 6	88	528	1,530	808		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	6 63	306	Wall	1	378	1,224	578	463	25	150	306	230 116	\$53	\$456	\$215	\$591	\$60	\$20	\$80
27	N/A	SGI FOYER	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	116	2,610	303	27 FC	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2 42				84	2,610	219 2	219	16	32	0	84 0	\$13	\$137	\$0	\$117	\$20	\$0	\$20
28	N/A	SGI FOYER	Exit Sign w/ LED 1	2	2	8,760	18		None 1	1 2				2	8,760	18	18	0	0	0	0 0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
29	N/A	CLASSROOM 9	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	968	1,530	1,481	69 FC	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	1 63	306	Ceiling	1	693	1,224	1,060 8	848	25	275	306	421 212	\$98	\$837	\$363	\$1,055	\$110	\$35	\$145
30	N/A	CLASSROOM 8	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 10	88	880	1,530	1,346		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	0 63	306	Ceiling	1	630	1,224	964	771	25	250	306	383 193	\$89	\$761	\$363	\$989	\$100	\$35	\$135
31	N/A	BOYS REST ROOM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58	3 116	2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2 42	1035	Wall	1	84	1,035	174	87	16	32	1,035	66 87	\$24	\$137	\$215	\$331	\$20	\$0	\$20
32	N/A	BOYS REST ROOM	2'x4' Troffer w/ (1) FO32T8 Lamp & (1) Electronic Ballast 1	32	2 32	2,070	66		Relamp & Reballast w/ (1) F28T8 Lamp & (1) 1/32 Elec. Normal- Power High Efficiency Ballast	1 25				25	2,070	52	52	7	7	0	14 0	\$2	\$25	\$0	\$15	\$10	\$0	\$10
33	N/A	CUSTODIAN CLOSET	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1	58	3 58	360	21		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1 42				42	360	15	15	16	16	0	6 0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
34	N/A	SECOND FLOOR HALL, ADDITION	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 5				757		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power					210	2,610		548	16	80	0	209 0	\$32	\$341	\$0	\$291	\$50	\$0	\$50
35	N/A	SECOND FLOOR HALL, ADDITION	Exit Sign w/ LED 3	2		8,760	53		High Efficiency Ballast	3 2				6	8,760		53	0	0	0	0 0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
36	N/A	CLASSROOM 7	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 12				2,056		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	2 42		Coiling	4	504	1,224		617		840		1,285 154	\$223		\$363				\$215
									High Efficiency Ballast 2'x4' Silver Reflector Kit Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power			Ceiling	1					70		_			\$1,209		\$1,357	\$180	\$35	
37	N/A	CLASSROOM 7 STORAGE	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 1	11			40		High Efficiency Ballast 2'x4' Silver Reflector Kit	1 42		-		42	360		15	70	70	0	25 0	\$4	\$101	\$0	\$86	\$15	\$0	\$15
38	N/A	CLASSROOM 6	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 12				2,056	86 FC	High Efficiency Ballast 2'x4' Silver Reflector Kit	2 42		Ceiling	1	504	1,224		617	70	840		1,285 154	\$223	\$1,209	\$363	\$1,357	\$180	\$35	\$215
39	N/A	CLASSROOM 6 STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58	3 116	360	42		High Efficiency Ballast	2 42				84	360	30	30	16	32	0	12 0	\$2	\$137	\$0	\$117	\$20	\$0	\$20
40	N/A	STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58	3 116	360	42		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2 42				84	360	30	30	16	32	0	12 0	\$2	\$137	\$0	\$117	\$20	\$0	\$20
41	N/A	CLASSROOM 5	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 5	11	2 560	1,530	857		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	5 42	306	Ceiling	1	210	1,224	321 2	257	70	350	306	536 64	\$93	\$504	\$363	\$757	\$75	\$35	\$110
42	N/A	CLASSROOM 5 STORAGE	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 1	11	2 112	360	40		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	1 42				42	360	15	15	70	70	0	25 0	\$4	\$101	\$0	\$86	\$15	\$0	\$15
43	N/A	CLASSROOM 4	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 12	11	2 1,344	1,530	2,056		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	2 42	306	Ceiling	1	504	1,224	771 6	617	70	840	306	,285 154	\$223	\$1,209	\$363	\$1,357	\$180	\$35	\$215



LIGHTING UPGRADE PROJECT LINE x LINE DETAIL CUSTOMER: Veronal FACILITY: Brookda

Verona Schools
Brookdale Avenue

FACILITY SQ. FT. 37,972 DATE OF AUDIT: 5/6/2013

	SPAC	E DESCRIPTION	EXISTING	FIXTU	RES					REPLA	ACEMENT F	IXTURES								ENERG	Y ANALYS	SIS		cos	T ANALYSI	S		REBATES	
	PRINT			RE PRE	PRE TOTAL	DEFAULT ANNUAL	PRE	PRE AVERAGE		POST	POST ANNU		QTY SENSORS	POST TOTAL	ANNUAL HOURS	POST	POST ANNUAL KWH	WATTS SAVED	TOTAL WATTS	ANNUAL	KWH	NNUAL KWH	TOTAL ANNUAL \$ SAVINGS / LINE (INCLUDING	TOTAL FIXTURE COST (MATERIAL	TOTAL SENSOR COST (MATERIAL	TOTAL INSTALLED	TOTAL FIXTURES	TOTAL SENSORS	TOTAL REBATE
	UMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION FI.	· ,	WAIIS	2610	ANNUAL KWH	FOOT CANDLES	PROPOSED FIXTURE DESCRIPTION	QTY	FIXT. HOUF	S Type	LINE	WATTS / LINE	2610	KWH	WITH OCC SENSOR	FIXT.	SAVED / LINE	HOURS SAVED	FROM	WITH OCC	\$0.155	PLUS LABOR)	PLUS LABOR)	COST AFTER INCENTIVES	REBATE PER LINE	REBATE PER LINE	/ LINE
44	N/A	CLASSROOM 4 STORAGE	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	112	112	360	40		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	1	42			42	360	15	15	70	70	0	25	0	\$4	\$101	\$0	\$86	\$15	\$0	\$15
45	N/A	GIRLS REST ROOM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42 103	5 Ceiling	1	84	1,035	174	87	16	32	1,035	66	87	\$24	\$137	\$363	\$480	\$20	\$0	\$20
46	N/A	COPY ROOM	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	1 112	112	2,070	232		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	1	42			42	2,070	87	87	70	70	0	145	0	\$22	\$101	\$0	\$86	\$15	\$0	\$15
47	N/A	SECOND FLOOR HALL, OLD SCHOOL	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	522	2,610	1,362		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	9	42			378	2,610	987	987	16	144	0	376	0	\$58	\$614	\$0	\$524	\$90	\$0	\$90
48	N/A	SECOND FLOOR HALL, OLD SCHOOL	Exit Sign w/ LED	2 2	4	8,760	35		None	2	2			4	8,760	35	35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
49	N/A	STAIRWELL A, OLD SCHOOL	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	5 58	348	2,610	908		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	6	42			252	2,610	658	658	16	96	0	251	0	\$39	\$410	\$0	\$350	\$60	\$0	\$60
50	N/A	STAIRWELL B, OLD SCHOOL	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	5 58	348	2,610	908		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	6	42			252	2,610	658	658	16	96	0	251	0	\$39	\$410	\$0	\$350	\$60	\$0	\$60
51	N/A	STAIRWELL, BY MEDIA CENTER	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1 58	58	2,610	151		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42			42	2,610	110	110	16	16	0	42	0	\$6	\$68	\$0	\$58	\$10	\$0	\$10
52	N/A	STAIRWELL, BY MEDIA CENTER	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast			2,610	757		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	5	42			210	2,610	548	548	16	80	0	209	0	\$32	\$341	\$0	\$291	\$50	\$0	\$50
53	N/A	CAFETERIA	2'x2' Troffer w/ (2) FB32T8 3*-U Lamps & (1) Electronic Ballast 2	0 58	1,160	2,610	3,028	46 FC	Delever & Debellest of (6) E47T0 Leaves & (4) 0.47 Fire Leve Devel	20	28 522	Ceiling	3	560	2,088	1,462	1,169	30	600	522	1,566	292	\$288	\$1,209	\$1,090	\$1,994	\$200	\$105	\$305
54	N/A	CAFETERIA	Exit Sign w/ LED	2 2	4	8,760	35		None	2	2			4	8,760	35	35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
55	N/A	GIRLS REST ROOM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42 103	5 Ceiling	1	84	1,035	174	87	16	32	1,035	66	87	\$24	\$137	\$363	\$480	\$20	\$0	\$20
56	N/A	GIRLS REST ROOM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42			84	2,070	174	174	16	32	0	66	0	\$10	\$137	\$0	\$117	\$20	\$0	\$20
57	N/A	KITCHEN	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42			84	2,070	174	174	16	32	0	66	0	\$10	\$137	\$0	\$117	\$20	\$0	\$20
58	N/A	CUSTODIAN CLOSET	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1 58	58	360	21		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
59	N/A	CAFETERIA ENTRANCE STAIRS	2'x2' Troffer w/ (2) FB32T8 3*-U Lamps & (1) Electronic Ballast	5 58	290	2,610	757		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	5	28			140	2,610	365	365	30	150	0	392	0	\$61	\$302	\$0	\$252	\$50	\$0	\$50
60	N/A	DISPLAY CASES	3' Fixture w/ (1) F30T12/25w Lamps & (1) Energy Efficient Magnetic Rallast	2 38	76	360	27		Relamp & Reballast w/ (1) F25T8 Lamps & (1) 1/25 Elec. Normal- Power High Efficiency Ballast	2	23			46	360	17	17	15	30	0	11	0	\$2	\$0	\$0	\$0	\$0	\$0	\$0
61	N/A	ELEVATOR ROOM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1 58	58	360	21		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
62	N/A	ELEVATOR	4' Industrial Hood w/ (4) F25T8 Lamps & (1) Electronic Ballast	l 85	85	8,760	745		None None	1	85			85	8,760	745	745	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
63	N/A	BOYS REST ROOM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42 103	5 Wall	1	84	1,035	174	87	16	32	1,035	66	87	\$24	\$137	\$215	\$331	\$20	\$0	\$20
64	N/A	BOYS REST ROOM	4' Wrap Fluorescent w/ (1) FO32T8 Lamp & (1) Electronic Ballast	1 32	32	2,070	66		Relamp & Reballast w/ (1) F28T8 Lamp & (1) 1/32 Elec. Low-Power High Efficiency Ballast	1	22			22	2,070	46	46	10	10	0	21	0	\$3	\$51	\$0	\$41	\$10	\$0	\$10
65	N/A	BASEMENT HALL, ADDITION	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1 58	232	2,610	606		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	4	42			168	2,610	438	438	16	64	0	167	0	\$26	\$273	\$0	\$233	\$40	\$0	\$40
66	N/A	BASEMENT HALL, ADDITION	Exit Sign w/ LED	1 2	2	8,760	18		None	1	2			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
67	N/A	BOILER ROOM	4' Industrial Hood w/ (3) FO32T8 Lamps & (1) Electronic Ballast	3 88	264	2,610	689		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	3	63			189	2,610	493	493	25	75	0	196	0	\$30	\$228	\$0	\$198	\$30	\$0	\$30
68	N/A	BOILER ROOM	4' Industrial Hood w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	2,610	303		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42			84	2,610	219	219	16	32	0	84	0	\$13	\$137	\$0	\$117	\$20	\$0	\$20
69	N/A	BOILER OFFICE	4' Industrial Hood w/ (3) FO32T8 Lamps & (1) Electronic Ballast	3 88	264	2,610	689		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	3	63			189	2,610	493	493	25	75	0	196	0	\$30	\$228	\$0	\$198	\$30	\$0	\$30
70	N/A	STAGE	4' Industrial Hood w/ (3) FO32T8 Lamps & (1) Electronic Ballast	7 88	616	360	222	71 FC	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	7	63			441	360	159	159	25	175	0	63	0	\$10	\$532	\$0	\$462	\$70	\$0	\$70
71	N/A	STAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	360	42		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42			84	360	30	30	16	32	0	12	0	\$2	\$137	\$0	\$117	\$20	\$0	\$20
72	N/A	STAGE	Incandescent Fixture w/ (1) 150w Incandescent Lamp 5	2 150	7,800	360	2,808		None	52	150			7,800	360	2,808	2,808	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
73	N/A	GYM	HID Fixture w/ (1) 250w Metal Halide Lamp & Ballast 2	1 295	6,195	2,610	16,169	29 FC	New Fixture w/ (1) 165w ICETRON Induction Lamp & Induction Ballast Universal Voltage	21	175 522	Ceiling	3	3,675	2,088	9,592	7,673	120	2,520	522	6,577	1,918	\$1,315	\$8,054	\$1,090	\$7,989	\$1,050	\$105	\$1,155
74	N/A	GYM	Exit Sign w/ LED	3 2	6	8,760	53		None	3	2			6	8,760	53	53	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
75	N/A	MUSIC ROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	9 88	792	1,530	1,212		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	9	63 306	Ceiling	1	567	1,224	868	694	25	225	306	344	174	\$80	\$684	\$363	\$923	\$90	\$35	\$125
76	N/A	MUISIC ROOM STORAGE	Compact Fluorescent Fixture w/ 14w CFL & Magnetic Ballast	1 16	16	360	6		None	1	16			16	360	6	6	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
77	N/A	STORAGE	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	360	42		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42			84	360	30	30	16	32	0	12	0	\$2	\$137	\$0	\$117	\$20	\$0	\$20
78	N/A	SGI#1	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	3 88	264	2,070	546		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	3	63 724	5 Wall	1	189	1,346	391	254	25	75	725	155	137	\$45	\$228	\$215	\$393	\$30	\$20	\$50
79	N/A	STORAGE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	1 88	352	360	127		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	4	63			252	360	91	91	25	100	0	36	0	\$6	\$304	\$0	\$264	\$40	\$0	\$40
80	N/A	ART ROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	2 88	1,056	1,530	1,616	56 FC	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	12	63 306	Ceiling	1	756	1,224	1,157	925	25	300	306	459	231	\$107	\$913	\$363	\$1,121	\$120	\$35	\$155
81	N/A	SERVER CLOSET	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1 58	58	360	21		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
82	N/A	STORAGE (OLD REST ROOM)	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	3 58	174	360	63		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	3	42			126	360	45	45	16	48	0	17	0	\$3	\$205	\$0	\$175	\$30	\$0	\$30
83	N/A	CLASSROOM ACROSS FROM GYM	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 1	6 112	1,792	1,530	2,742		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	16	42 306	Ceiling	1	672	1,224	1,028	823	70	1,120	306	1,714	206	\$297	\$1,612	\$363	\$1,700	\$240	\$35	\$275
84	N/A	CLASSROOM ACROSS FROM GYM	Exit Sign w/ LED	1 2	2	8,760	18		None	1	2			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
85	N/A	CLASSROOM REST ROOM	Compact Fluorescent Fixture w/ 14w CFL & Magnetic Ballast	1 16	16	360	6		None	1	16 252	Wall	1	16	108	6	2	0	0	252	0	4	\$1	\$0	\$215	\$215	\$0	\$0	\$0
86	N/A	CLASSROOM STORAGE	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	1112	112	360	40		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	1	42			42	360	15	15	70	70	0	25	0	\$4	\$101	\$0	\$86	\$15	\$0	\$15
81 82 83 84	N/A N/A N/A	SERVER CLOSET STORAGE (OLD REST ROOM) CLASSROOM ACROSS FROM GYM CLASSROOM ACROSS FROM GYM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts Exit Sign w/ LED	58 3 58 6 112 1 2	58 174 1,792 2	360 360 1,530 8,760	21 63 2,742 18	56 FC	High Efficiency Ballast Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2x4' Silver Reflector Kit None	1 3 16	42 42 42 306 2	Ceiling	1	42 126 672 2	360 360 1,224 8,760	15 45 1,028 18	15 45 823 18	16 16 70	16 48 1,120	0 0 306 0	6 17 1,714	0 0 206 0	\$1 \$3 \$297 \$0	\$68 \$205 \$1,612 \$0	\$0 \$0 \$363 \$0	\$58 \$17 \$1,70 \$0	5 00	\$10 \$5 \$30 \$240 \$0	\$10 \$0 \$5 \$30 \$0 \$00 \$240 \$35 \$0 \$0



LIGHTING RETROFIT SUMMARY FOR: FN Brown 125 Grove Avenue

BUILDING INFORMA	ATION		EXISTIN	G FIXTURES	6	F	ROPOS	ED FIXTUR	ES			SAVI	INGS					FIN	ANCIAL		
BUILDING	SQ. FT.	PRE TOTAL FIXT. QTY	PRE TOTAL FIXT. WATTS	PRE ANNUAL KWH CONSUMPTION	PRE WATTS / SQ. FT	POST TOTAL FIXT. QTY	POST TOTAL FIXT. WATTS	POST ANNUAL KWH CONSUMPTION	POST WATTS / SQ. FT	WATTS SAVED	ANNUAL KWH SAVED	ANNUAL KWH SAVED WITH SENSORS	ANNUAL SAVINGS \$ FIXT.	ANNUAL SAVINGS \$ SENSORS	ANNUAL SAVINGS \$ TOTAL	CO2 REDUCTION (TONS)	NJ Smart Start REBATE \$	FIXTURES TOTAL (INSTALLED) COST \$	SENSORS TOTAL (INSTALLED) COST \$	MATERIAL TOTAL (INSTALLED) COST \$	SIMPLE PAYBACK NET OF REBATE (YEARS)
FN Brown	38,985	626	42,114	76,298	1.08	626	28,079	40,861	0.72	14,035	35,437	9,452	\$6,088	\$1,624	\$7,712	11.7	\$6,095	\$39,706	\$18,658	\$58,364	6.8

10%	PERCENTAGE OF REBATES IN TOTAL INSTALLED COST
54%	PERCENTAGE OF CONSUMPTION COMPARE TO EXISTING STATE
33%	EXISTING PERCENTAGE OF LIGHTING ENERGY CONSUMPTION OF THE WHOLE BUILDING
18%	PROPOSED PERCENTAGE OF LIGHTING ENERGY CONSUMPTION OF THE WHOLE BUILDING



LIGHTING UPGRADE PROJECT LINE x LINE DETAIL FACILITY SQ. FT. DAT
38,985

DATE OF AUDIT: 5/6/2013

CUSTOMER FACILITY:

Verona Schools FN Brown

	SPA	CE DESCRIPTION	EXISTING FIXTURES			RFPI A	CEMEN	T FIXTU	RES				ENERG	Y ANAL	YSIS		COS	ST ANALYSI	s	R	REBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION	PRE FIXT. QTY	SENSOR TYPE	QTY SENSORS / LINE	POST TOTAL WATTS / LINE	ANNUAL HOURS	POST ANNUAL KWH	POST ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	TOTAL ANNUAL \$ SAVINGS / LINE (INCLUDING SENSORS) \$0.172	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
1	2	3	4	5	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	53	54	55
1	N/A	1A OFFICE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2	Wall	1	84	1,346	174	113	16	32	725	66	61	\$22	\$137	\$215	\$331	\$20	\$0	\$20
2	N/A	MEDIA CENTER	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	16	Ceiling	1	672	1,346	1,391	904	16	256	725	530	487	\$175	\$1,612	\$363	\$1,780	\$160	\$35	\$195
3	N/A	MEDIA CENTER OFFICE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2	Wall	1	84	1,346	174	113	16	32	725	66	61	\$22	\$137	\$215	\$331	\$20	\$0	\$20
4	N/A	MEDIA CENTER REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1	Wall	1	42	108	15	5	16	16	252	6	11	\$3	\$68	\$215	\$273	\$10	\$0	\$10
5	N/A	MEDIA CENTER	Exit Sign w/ LED Emergency Lights	1			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	N/A	STAIRWELL- MEDIA CENTER	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	2,610	110	110	16	16	0	42	0	\$7	\$68	\$0	\$58	\$10	\$0	\$10
7	N/A	BOYS REST ROOM	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	3	Wall	1	84	1,035	174	87	30	90	1,035	186	87	\$47	\$181	\$215	\$366	\$30	\$0	\$30
8	N/A	CUSTODIAN CLOSET		0			0	360	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	N/A	COMPUTER LAB	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	12	Ceiling	1	756	1,224	1,157	925	25	300	306	459	231	\$119	\$913	\$363	\$1,121	\$120	\$35	\$155
10	N/A	COMPUTER LAB- STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2			84	360	30	30	16	32	0	12	0	\$2	\$137	\$0	\$117	\$20	\$0	\$20
11	N/A	NURSE'S OFFICE	2'x2' Troffer w/ (3) FB32T8 1-5/8"-U Lamps & (1) Electronic Ballast	5	Wall	1	195	1,346	404	262	48	240	725	497	141	\$110	\$254	\$215	\$398	\$50	\$20	\$70
12	N/A	NURSE'S OFFICE	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	2	Wall	0	56	1,346	116	75	30	60	725	124	41	\$28	\$121	\$0	\$101	\$20	\$0	\$20
13	N/A	NURSE'S REST ROOM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1	Wall	1	42	1,035	87	43	16	16	1,035	33	43	\$13	\$68	\$215	\$273	\$10	\$0	\$10
14	N/A	MAIN OFFICE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	4			252	2,070	522	522	25	100	0	207	0	\$36	\$304	\$0	\$264	\$40	\$0	\$40
15	N/A	MAIN OFFICE	2'x2' Troffer w/ (3) FB32T8 1-5/8"-U Lamps & (1) Electronic Ballast	2			78	2,070	161	161	48	96	0	199	0	\$34	\$101	\$0	\$81	\$20	\$0	\$20
16	N/A	MAIN OFFICE	Downlight Fixture w/ (1) 26w CFL & Electronic Ballast	3			78	2,070	161	161	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	N/A	SMALL CONFERENCE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	2	Wall	1	126	1,346	261	170	25	50	725	104	91	\$33	\$152	\$215	\$347	\$20	\$0	\$20
18	N/A	PRINCIPAL' S OFFICE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	2	Wall	1	126	1,346	261	170	25	50	725	104	91	\$33	\$152	\$215	\$347	\$20	\$0	\$20
19	N/A	FACULTY RM CORRIDOR	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	2			56	2,610	146	146	30	60	0	157	0	\$27	\$121	\$0	\$101	\$20	\$0	\$20
20	N/A	FACULTY RM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	1	Wall	1	63	1,346	130	85	25	25	725	52	46	\$17	\$76	\$215	\$281	\$10	\$0	\$10
21	N/A	FACULTY RM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	6	Wall	0	252	1,346	522	339	16	96	725	199	183	\$66	\$410	\$0	\$350	\$60	\$0	\$60
22	N/A	CONFERENCE RM	2'x2' Troffer w/ (3) FB32T8 3"-U Lamps & (1) Electronic Ballast	5	Wall	1	255	1,346	528	343	37	185	725	383	185	\$98	\$488	\$215	\$632	\$50	\$20	\$70
23	N/A	CLASSROOM 7	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	16	Ceiling	1	672	1,224	1,028	823	16	256	306	392	206	\$103	\$1,612	\$363	\$1,780	\$160	\$35	\$195
24	N/A	CLASSROOM 7- TEACHER STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
25	N/A	CLASSROOM 6	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	12	Ceiling	1	504	1,530	771	771	16	192	0	294	0	\$50	\$1,209	\$363	\$1,417	\$120	\$35	\$155
26	N/A	CLASSROOM 6- TEACHER STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
27	N/A	GIRLS REST ROOM	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	2	Ceiling	1	56	1,035	116	58	30	60	1,035	124	58	\$31	\$121	\$363	\$464	\$20	\$0	\$20
28	N/A	GIRLS REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1	Ceiling	0	42	1,035	87	43	16	16	1,035	33	43	\$13	\$68	\$0	\$58	\$10	\$0	\$10



LIGHTING UPGRADE PROJECT LINE x LINE DETAIL

FACILITY SQ. FT. DATE OF AUDIT: CUSTOMER

5/6/2013

FACILITY: FN Brown

	SPAC	E DESCRIPTION	EXISTING FIXTURES			REPLA	CEMEN	T FIXTU	IRES				ENERG	Y ANAL	YSIS		COS	ST ANALYS	IS	F	REBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION	PRE FIXT. QTY	SENSOR TYPE	QTY SENSORS / LINE	POST TOTAL WATTS / LINE	ANNUAL HOURS	POST ANNUAL KWH	POST ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	TOTAL ANNUAL \$ SAVINGS / LINE (INCLUDING SENSORS) \$0.172	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
29	N/A	LOBBY CHANDELIER	Fixture w/ 23w Screw-In CFL	6			138	2,610	360	360	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
30	N/A	AUDITORIUM LOBBY	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2			84	2,610	219	219	16	32	0	84	0	\$14	\$137	\$0	\$117	\$20	\$0	\$20
31	N/A	OFFICE 8	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1	Wall	1	42	1,346	87	57	16	16	725	33	30	\$11	\$68	\$215	\$273	\$10	\$0	\$10
32	N/A	AUDITORIUM	Fixture w/ 23w Screw-In CFL	64	Ceiling	3	1,472	1,224	2,252	1,802	0	0	306	0	450	\$77	\$0	\$1,090	\$985	\$0	\$105	\$105
33	N/A	AUDITORIUM	Exit Sign w/ LED	1			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
34	N/A	STAIRWELL- LEFT SIDE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2			84	2,610	219	219	16	32	0	84	0	\$14	\$137	\$0	\$117	\$20	\$0	\$20
35	N/A	STAIRWELL- LEFT SIDE	Exit Sign w/ LED	1			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
36	N/A	STAIRWELL- RIGHT SIDE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2			84	2,610	219	219	16	32	0	84	0	\$14	\$137	\$0	\$117	\$20	\$0	\$20
37	N/A	STAIRWELL- RIGHT SIDE	Exit Sign w/ LED	1			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
38	N/A	STORAGE BELOW AUDITORIUM		0			0	2,610	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
39	N/A	STAGE		0			0	2,070	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
40	N/A	MECHANICAL ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	2,610	110	110	16	16	0	42	0	\$7	\$68	\$0	\$58	\$10	\$0	\$10
41	N/A	MECHANICAL ROOM 2	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	2,610	110	110	16	16	0	42	0	\$7	\$68	\$0	\$58	\$10	\$0	\$10
42	N/A	MECH RM HALL	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2			84	2,610	219	219	16	32	0	84	0	\$14	\$137	\$0	\$117	\$20	\$0	\$20
43	N/A	MECH RM HALL	Exit Sign w/ LED	1			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
44	N/A	LOWER STAGE		0			0	2,610	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
45	N/A	GYM	New 2'x4' Pendent Mounted Box w/ (4) F54T5HO Lamps & (2) 2/54 T5 Elec. HO Ballasts	12	Ceiling	3	2,904	1,224	4,443	3,554	0	0	306	0	889	\$153	\$0	\$1,090	\$985	\$0	\$105	\$105
46	N/A	GYM	Exit Sign w/ LED	4			8	8,760	70	70	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
47	N/A	GYM HALL	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2			84	2,610	219	219	16	32	0	84	0	\$14	\$137	\$0	\$117	\$20	\$0	\$20
48	N/A	GYM STAIRS	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	5			210	2,610	548	548	16	80	0	209	0	\$36	\$341	\$0	\$291	\$50	\$0	\$50
49	N/A	PHYSICAL THERAPY	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	6	Wall	1	252	1,346	522	339	70	420	725	869	183	\$181	\$605	\$215	\$709	\$90	\$20	\$110
50	N/A	B-8 SGI ROOM	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	3	Wall	1	126	1,346	261	170	70	210	725	435	91	\$90	\$302	\$215	\$472	\$45	\$0	\$45
51	N/A	B-7 MUSIC CLASSROOM	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	12	Ceiling	1	504	1,224	771	617	70	840	306	1,285	154	\$247	\$1,209	\$363	\$1,357	\$180	\$35	\$215
52	N/A	B-7 MUSIC CLASSROOM	2'x2' Troffer w/ (2) FB32T8 3*-U Lamps & (1) Electronic Ballast	2	Ceiling	0	56	1,224	86	69	30	60	306	92	17	\$19	\$121	\$0	\$101	\$20	\$0	\$20
53	N/A	CAFETERIA #1	4' Fixture w/ (3) FO32T8 Lamps & (1) Electronic Ballast	8	Ceiling	1	504	1,346	1,043	678	25	200	725	414	365	\$134	\$608	\$363	\$857	\$80	\$35	\$115
54	N/A	CAFETERIA #1	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	3	Ceiling	1	84	1,346	174	113	30	90	725	186	61	\$42	\$181	\$363	\$515	\$30	\$0	\$30
55	N/A	CAFETERIA #1	Exit Sign w/ LED	1			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
56	N/A	CAFETERIA #1	Downlight Fixture w/ (1) 26w CFL & Electronic Ballast	6	Ceiling	1	156	1,346	323	210	0	0	725	0	113	\$19	\$0	\$363	\$363	\$0	\$0	\$0



LIGHTING UPGRADE PROJECT LINE x LINE DETAIL

FACILITY SQ. FT.

DATE OF AUDIT:

CUSTOMER

FACILITY:

FN Brown

	SPAC	E DESCRIPTION	EXISTING FIXTURES			REPLA	ACEMEN	T FIXTU	RES				ENERG	Y ANAL	YSIS		COS	ST ANALYS	IS	F	REBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION	PRE FIXT. QTY	SENSOR TYPE	QTY SENSORS / LINE	POST TOTAL WATTS / LINE	ANNUAL HOURS	POST ANNUAL KWH	POST ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	TOTAL ANNUAL \$ SAVINGS / LINE (INCLUDING SENSORS) \$0.172	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
57	N/A	KITCHEN	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	4			252	2,070	522	522	25	100	0	207	0	\$36	\$304	\$0	\$264	\$40	\$0	\$40
58	N/A	CAFETERIA #2	Downlight Fixture w/ (1) 26w CFL & Electronic Ballast	6	Ceiling	1	156	1,346	323	210	0	0	725	0	113	\$19	\$0	\$363	\$363	\$0	\$0	\$0
59	N/A	CAFETERIA #2	4' Fixture w/ (3) FO32T8 Lamps & (1) Electronic Ballast	18	Ceiling	1	1,134	1,346	2,347	1,526	25	450	725	932	822	\$301	\$1,369	\$363	\$1,517	\$180	\$35	\$215
60	N/A	CAFETERIA #2	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	4	Ceiling	1	112	1,346	232	151	30	120	725	248	81	\$57	\$242	\$363	\$565	\$40	\$0	\$40
61	N/A	CAFETERIA #2	Exit Sign w/ LED	1			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
62	N/A	BOILER ROOM	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	6			252	2,610	658	658	70	420	0	1,096	0	\$188	\$605	\$0	\$515	\$90	\$0	\$90
63	N/A	BOILER ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	2,610	110	110	16	16	0	42	0	\$7	\$68	\$0	\$58	\$10	\$0	\$10
64	N/A	BOILER ROOM- STORAGE	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2			84	360	30	30	16	32	0	12	0	\$2	\$137	\$0	\$117	\$20	\$0	\$20
65	N/A	GIRLS REST ROOM- ENTRANCE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1	Wall	1	42	1,035	87	43	16	16	1,035	33	43	\$13	\$68	\$215	\$273	\$10	\$0	\$10
66	N/A	GIRLS REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2	Ceiling	1	84	1,035	174	87	16	32	1,035	66	87	\$26	\$137	\$363	\$480	\$20	\$0	\$20
67	N/A	GIRLS REST ROOM	4' Wrap Fluorescent w/ (1) FO32T8 Lamp & (1) Electronic Ballast	1	Ceiling	0	22	1,035	46	23	10	10	1,035	21	23	\$7	\$51	\$0	\$41	\$10	\$0	\$10
68	N/A	FACULTY REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1	Wall	1	42	1,035	87	43	16	16	1,035	33	43	\$13	\$68	\$215	\$273	\$10	\$0	\$10
69	N/A	ART STORAGE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	4			252	360	91	91	25	100	0	36	0	\$6	\$304	\$0	\$264	\$40	\$0	\$40
70	N/A	TEACHERS WORK RM	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	7	Wall	1	294	1,346	609	396	70	490	725	1,014	213	\$211	\$705	\$215	\$795	\$105	\$20	\$125
71	N/A	BOYS REST ROOM- ENTRANCE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1	Wall	1	42	1,035	87	43	16	16	1,035	33	43	\$13	\$68	\$215	\$273	\$10	\$0	\$10
72	N/A	BOYS REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2	Ceiling	1	84	1,035	174	87	16	32	1,035	66	87	\$26	\$137	\$363	\$480	\$20	\$0	\$20
73	N/A	BOYS REST ROOM	4' Wrap Fluorescent w/ (1) FO32T8 Lamp & (1) Electronic Ballast	1	Ceiling	1	22	1,035	46	23	10	10	1,035	21	23	\$7	\$51	\$363	\$404	\$10	\$0	\$10
74	N/A	CUSTODIAN CLOSET	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
75	N/A	PIPE CHASE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
76	N/A	CHILD STUDY TEAM	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	4	Wall	1	168	1,346	348	226	70	280	725	580	122	\$120	\$403	\$215	\$558	\$60	\$0	\$60
77	N/A	MECH ELEC RM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2			84	360	30	30	16	32	0	12	0	\$2	\$137	\$0	\$117	\$20	\$0	\$20
78	N/A	BASEMENT HALL BY CAFETERIA	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	16			672	2,610	1,754	1,754	16	256	0	668	0	\$115	\$1,092	\$0	\$932	\$160	\$0	\$160
79	N/A	BASEMENT HALL BY CAFETERIA	Exit Sign w/ LED	4			8	8,760	70	70	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
80	N/A	BASEMENT CLASSROOM HALL	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	11			462	2,610	1,206	1,206	16	176	0	459	0	\$79	\$751	\$0	\$641	\$110	\$0	\$110
81	N/A	BASEMENT CLASSROOM HALL	Exit Sign w/ LED	4			8	8,760	70	70	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
82	N/A	CLASSROOM A1	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	12	Ceiling	1	504	1,224	771	617	16	192	306	294	154	\$77	\$819	\$363	\$1,027	\$120	\$35	\$155
83	N/A	A1 REST ROOM	Incandescent Fixture w/ (1) 60w Incandescent Lamp	1	Wall	1	14	108	5	2	46	46	252	17	4	\$3	\$16	\$215	\$231	\$0	\$0	\$0
84	N/A	CLASSROOM A3	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	14	Ceiling	1	588	1,224	900	720	16	224	306	343	180	\$90	\$1,411	\$363	\$1,599	\$140	\$35	\$175



LIGHTING UPGRADE PROJECT LINE x LINE DETAIL

FACILITY SQ. FT.

DATE OF AUDIT:

5/6/2013

FACILITY:

Verona Schools

FN Brown

	SPAC	E DESCRIPTION	EXISTING FIXTURES			REPLA	CEMEN	IT FIXTU	RES				ENERG	Y ANAL	YSIS		cos	T ANALYS	IS	R	EBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION	PRE FIXT. QTY	SENSOR TYPE	QTY SENSORS / LINE	POST TOTAL WATTS / LINE	ANNUAL HOURS 2610	POST ANNUAL KWH	POST ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	TOTAL ANNUAL \$ SAVINGS / LINE (INCLUDING SENSORS) \$0.172	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
85	N/A	A3 REST ROOM	Incandescent Fixture w/ (1) 60w Incandescent Lamp	1	Wall	1	14	108	5	2	46	46	252	17	4	\$3	\$16	\$215	\$231	\$0	\$0	\$0
86	N/A	CLASSROOM A5	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	14	Ceiling	1	588	1,224	900	720	16	224	306	343	180	\$90	\$1,411	\$363	\$1,599	\$140	\$35	\$175
87	N/A	A5 REST ROOM	Incandescent Fixture w/ (1) 60w Incandescent Lamp	1	Wall	1	14	108	5	2	46	46	252	17	4	\$3	\$16	\$215	\$231	\$0	\$0	\$0
88	N/A	CLASSROOM A6	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	14	Ceiling	1	588	1,224	900	720	16	224	306	343	180	\$90	\$1,411	\$363	\$1,599	\$140	\$35	\$175
89	N/A	A6 REST ROOM	Incandescent Fixture w/ (1) 60w Incandescent Lamp	1	Wall	1	14	108	5	2	46	46	252	17	4	\$3	\$16	\$215	\$231	\$0	\$0	\$0
90	N/A	CLASSROOM A4	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	14	Ceiling	1	588	1,224	900	720	16	224	306	343	180	\$90	\$1,411	\$363	\$1,599	\$140	\$35	\$175
91	N/A	A4 REST ROOM	Incandescent Fixture w/ (1) 60w Incandescent Lamp	1	Wall	1	14	108	5	2	46	46	252	17	4	\$3	\$16	\$215	\$231	\$0	\$0	\$0
92	N/A	CLASSROOM A2	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	14	Ceiling	1	588	1,224	900	720	16	224	306	343	180	\$90	\$1,411	\$363	\$1,599	\$140	\$35	\$175
93	N/A	A2 REST ROOM	Incandescent Fixture w/ (1) 60w Incandescent Lamp	1	Wall	1	14	108	5	2	46	46	252	17	4	\$3	\$16	\$215	\$231	\$0	\$0	\$0
94	N/A	STAIRWELL BY LARGE CAFETERIA	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	4			168	2,610	438	438	16	64	0	167	0	\$29	\$273	\$0	\$233	\$40	\$0	\$40
95	N/A	STAIRWELL BY LARGE CAFETERIA	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	1			42	2,610	110	110	70	70	0	183	0	\$31	\$101	\$0	\$86	\$15	\$0	\$15
96	N/A	FIRST FLOOR HALL	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	11			462	2,610	1,206	1,206	70	770	0	2,010	0	\$345	\$1,108	\$0	\$943	\$165	\$0	\$165
97	N/A	FIRST FLOOR HALL	Exit Sign w/ LED	5			10	8,760	88	88	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
98	N/A	MAIN HALL DISPLAY CASE	Incandescent Fixture w/ (1) 60w Incandescent Lamp	1			14	360	5	5	46	46	0	17	0	\$3	\$16	\$0	\$16	\$0	\$0	\$0
99	N/A	MAIN HALL DISPLAY CASE	Incandescent Fixture w/ (1) 60w Incandescent Lamp	1			14	360	5	5	46	46	0	17	0	\$3	\$16	\$0	\$16	\$0	\$0	\$0
100	N/A	MAIN ENTRANCE CHANDELIER	Incandescent Fixture w/ (1) 60w Incandescent Lamp	2			28	2,610	73	73	46	92	0	240	0	\$41	\$33	\$0	\$33	\$0	\$0	\$0
101	N/A	MAIN ENTRANCE CHANDELIER	Compact Fluorescent Antique Chandelier Fixture w/ (2) 13w CFL & Magnetic Ballast	1			30	2,610	78	78	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
102	N/A	ROOM 9 SPEECH	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	2	Wall	1	84	1,224	129	103	70	140	306	214	26	\$41	\$202	\$215	\$386	\$30	\$0	\$30
103	N/A	CLASSROOM 11	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	15	Ceiling	1	945	1,224	1,446	1,157	25	375	306	574	289	\$148	\$1,141	\$363	\$1,319	\$150	\$35	\$185
104	N/A	CLASSROOM 11	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	2	Ceiling	0	84	1,224	129	103	70	140	306	214	26	\$41	\$202	\$0	\$172	\$30	\$0	\$30
105	N/A	ROOM 10 SGI	2'x2' Troffer w/ (3) FB32T8 3"-U Lamps & (1) Electronic Ballast	9	Wall	1	459	1,346	950	618	37	333	725	689	333	\$176	\$878	\$215	\$982	\$90	\$20	\$110
106	N/A	BOYS REST ROOM	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	4	Ceiling	1	112	1,035	232	116	30	120	1,035	248	116	\$63	\$242	\$363	\$565	\$40	\$0	\$40
107	N/A	CUSTODIAN CLOSET	Incandescent Fixture w/ (1) 60w Incandescent Lamp	1			14	360	5	5	46	46	0	17	0	\$3	\$16	\$0	\$16	\$0	\$0	\$0
108	N/A	CLASSROOM 13	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	12	Ceiling	1	756	1,224	1,157	925	25	300	306	459	231	\$119	\$913	\$363	\$1,121	\$120	\$35	\$155
109	N/A	CLASSROOM 13- STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
110	N/A	ART ROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	12	Ceiling	1	756	1,224	1,157	925	25	300	306	459	231	\$119	\$913	\$363	\$1,121	\$120	\$35	\$155
111	N/A	ART STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
112	N/A	CLASSROOM 15	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	12	Ceiling	1	756	1,224	1,157	925	25	300	306	459	231	\$119	\$913	\$363	\$1,121	\$120	\$35	\$155



LIGHTING UPGRADE PROJECT
LINE x LINE DETAIL

FACILITY SQ. FT.

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	SPAC	CE DESCRIPTION	EXISTING FIXTURES			REPLA	CEMEN	T FIXTU	IRES				ENERG	Y ANAL	YSIS		COS	ST ANALYS	IS	F	REBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION	PRE FIXT. QTY	SENSOR TYPE	QTY SENSORS / LINE	POST TOTAL WATTS / LINE	ANNUAL HOURS	POST ANNUAL KWH	POST ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	TOTAL ANNUAL \$ SAVINGS / LINE (INCLUDING SENSORS) \$0.172	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
113	N/A	CLASSROOM 15- STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
114	N/A	CLASSROOM 14	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	12	Ceiling	1	756	1,224	1,157	925	25	300	306	459	231	\$119	\$913	\$363	\$1,121	\$120	\$35	\$155
115	N/A	CLASSROOM 14- STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
116	N/A	CLASSROOM 17	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	12	Ceiling	1	756	1,224	1,157	925	25	300	306	459	231	\$119	\$913	\$363	\$1,121	\$120	\$35	\$155
117	N/A	CLASSROOM 17- STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
118	N/A	CLASSROOM 16	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	12	Ceiling	1	756	1,224	1,157	925	25	300	306	459	231	\$119	\$913	\$363	\$1,121	\$120	\$35	\$155
119	N/A	CLASSROOM 16- STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
120	N/A	GIRLS REST ROOM	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	2	Ceiling	1	56	1,035	116	58	30	60	1,035	124	58	\$31	\$121	\$363	\$464	\$20	\$0	\$20
121	N/A	GIRLS REST ROOM	4' Wrap Fluorescent w/ (1) FO32T8 Lamp & (1) Electronic Ballast	1	Ceiling	0	22	1,035	46	23	10	10	1,035	21	23	\$7	\$51	\$0	\$41	\$10	\$0	\$10
122	N/A	AUDITORIUM BALCONY STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
123	N/A	AUDITORIUM BALCONY FAN ROOM	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	4			168	360	60	60	70	280	0	101	0	\$17	\$403	\$0	\$343	\$60	\$0	\$60
124	N/A	AUDIT. BALCONY FAN ROOM ENTRANCE	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	1			42	360	15	15	70	70	0	25	0	\$4	\$101	\$0	\$86	\$15	\$0	\$15
125	N/A	BALCONY SIDE STAIRWELL	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
126	N/A	UPPER FLOOR HALLWAY	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	10			420	2,610	1,096	1,096	70	700	0	1,827	0	\$314	\$1,008	\$0	\$858	\$150	\$0	\$150
127	N/A	UPPER FLOOR HALLWAY	Exit Sign w/ LED	4			8	8,760	70	70	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
128	N/A	EXTERIOR- MAIN ENTRANCE	HID Fixture w/ (1) 100w High Pressure Sodium	1			25	4,745	119	119	105	105	0	498	0	\$86	\$75	\$0	\$75	\$0	\$0	\$0
129	N/A	EXTERIOR- RIGHT ENTRANCE	Downlight Fixture w/ (1) 26w CFL & Electronic Ballast	1			26	4,745	123	123	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
130	N/A	EXTERIOR- LOWER HALL	Compact Fluorescent Wall Pack Fixture w/ (1) 13w CFL	1			15	4,745	71	71	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
131	N/A	EXTERIOR- LOWER HALL UNDER EAVE	HID Wall Pack Fixture w/ (1) 35w High Pressure Sodium	3			135	4,745	641	641	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
132	N/A	EXTERIOR- CAFÉ/ SIDE/ FRONT	Compact Fluorescent Wall Pack Fixture w/ (1) 13w CFL	9			135	4,745	641	641	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0



LIGHTING RETROFIT SUMMARY FOR: Forest Avenue 118 Forest Avenue

BUILDING INFORM	ATION		EXISTIN	G FIXTURE	S	P	ROPOS	ED FIXTUR	ES			SAV	INGS					FIN	ANCIAL		
BUILDING	SQ. FT.	PRE TOTAL FIXT. QTY	PRE TOTAL FIXT. WATTS	PRE ANNUAL KWH CONSUMPTION	PRE WATTS / SQ. FT	POST TOTAL FIXT. QTY	POST TOTAL FIXT. WATTS	POST ANNUAL KWH CONSUMPTION	POST WATTS / SQ. FT	WATTS SAVED	ANNUAL KWH SAVED	ANNUAL KWH SAVED WITH SENSORS	ANNUAL SAVINGS \$ FIXT.	ANNUAL SAVINGS \$ SENSORS	ANNUAL SAVINGS \$ TOTAL	CO2 REDUCTION (TONS)	NJ Smart Start REBATE \$	FIXTURES TOTAL (INSTALLED) COST \$	SENSORS TOTAL (INSTALLED) COST \$	MATERIAL TOTAL (INSTALLED) COST \$	SIMPLE PAYBACK NET OF REBATE (YEARS)
Forest Avenue	27,750	598	49,876	70,513	1.80	598	38,807	37,719	1.40	11,069	32,794	7,667	\$4,973	\$1,163	\$6,136	10.8	\$5,455	\$39,159	\$11,723	\$50,882	7.4

11%	PERCENTAGE OF REBATES IN TOTAL INSTALLED COST
53%	PERCENTAGE OF CONSUMPTION COMPARE TO EXISTING STATE
3070	
51%	EXISTING PERCENTAGE OF LIGHTING ENERGY CONSUMPTION OF THE WHOLE BUILDING
27%	PROPOSED PERCENTAGE OF LIGHTING ENERGY CONSUMPTION OF THE WHOLE BUILDING



LIGHTING UPGRADE PROJECT FACILITY SQ. FT. DATE OF AUDIT: CUSTOMER: Verona Schools
LINE x LINE DETAIL 27,750 5/6/2013 FACILITY: Forest Avenue

PART	TOTAL	FL R R PI	TOTAL FIXTURES REBATE PER LINE 53 \$60 \$40 \$180 \$160	TOTAL SENSORS REBATE PER LINE 54 \$0 \$70	TOTAL REBATE / LINE 55 \$60 \$40
1 NA	\$517 \$416 \$2,290 \$1,780 \$1,962	:	\$60 \$40 \$180	\$0 \$0	\$60
2 NA COPYRIGHM 21/07/07/07/07/07/07/07/07/07/07/07/07/07/	\$416 \$2,290 \$1,780 \$1,962		\$40 \$180	\$0	
3 NN LightNet 4 Weep Processor of QLI POZE/B Lamps & (1) Electronic ballest 18 Celling 2 756 1.224 1.157 925 16 288 306 441 231 \$102 \$1,814 \$727 \$1,814 \$727 \$1,814 \$1	\$2,290 \$1,780 \$1,962		\$180	•	\$40
4 NNA GLASSROCM 17 4 Wind Printencent W (7) POXTTS Lamps A (1) Excensive Ballest 16 Ceiling 1 672 1,224 1,167 925 16 288 306 392 206 \$91 \$1,612 \$363 \$1,814 \$363 \$1 NA GLASSROCM 16 4 Wind Printencent W (7) POXTTS Lamps A (1) Excensive Ballest 16 Ceiling 1 756 1,224 1,167 925 16 288 306 441 231 \$102 \$1,814 \$363 \$1,814 \$363 \$1,814 \$363 \$1,814 \$363 \$1,814 \$363 \$1,814 \$363 \$1,814 \$363 \$1,814 \$363 \$1,814 \$363 \$1,814 \$	\$1,780 \$1,962			\$70	г — —
5 N/A CLASSHOOM 11 4 Wrop Placescent or (2) POXITIS Lamps & (1) Electronic Balasst 18 Colling 1 756 1,224 1,157 925 16 288 306 441 231 \$102 \$1,814 \$383 6	\$1,962	+	\$160		\$250
6 NA CLASSROOM 18 4 Wings Processeers will post post bamps a (1) Exectionic Bellest 16 Ceiling 1 672 1,224 1,028 823 16 256 306 392 206 \$91 \$1,612 \$363 \$71 NA CLASSROOM 12 2x4 Troffer will (0) POSZTB Lamps a (1) Exectionic Bellest 12 Ceiling 1 756 1,224 1,157 925 25 300 306 459 231 \$105 \$913 \$363 \$81 NA CLASSROOM 13 2x4 Troffer will (2) POSZTB Lamps a (1) Exectionic Bellest 15 Ceiling 1 945 1,224 1,446 1,157 25 375 306 574 289 \$131 \$1,141 \$363 \$910 NA RESOURCE ROOM 4 Winsp Processeers will (2) POSZTB Lamps a (1) Exectionic Bellest 1 Wall 1 126 1,346 261 170 16 48 725 99 91 \$29 \$302 \$215 \$100 NA MENS REST ROOM 4 Winsp Processeers will (2) POSZTB Lamps a (1) Exectionic Bellest 1 Wall 1 42 1,035 87 43 16 16 16 1,035 33 43 \$12 \$88 \$215 \$11 NA CLASSROOM 14 4 Winsp Processeers will (2) POSZTB Lamps a (1) Exectionic Bellest 1 Ceiling 1 504 1,224 771 617 16 192 306 294 154 \$68 \$1,209 \$363 \$12 NA CLASSROOM 14 2x4 Troffer will (2) POSZTB Lamps a (1) Exectionic Bellest 1 Ceiling 1 504 1,224 771 617 16 192 306 294 154 \$68 \$1,209 \$363 \$12 NA CLASSROOM 14 1 Exectionic Bellest 1 Ceiling 1 168 1,224 257 206 70 280 306 428 51 \$73 \$403 \$0 \$12 NA CLASSROOM 14 1 Exectionic Bellest 1 Wall 1 30 1,035 62 31 90 90 306 138 9 \$22 \$23 \$0 \$14 NA CLASSROOM 14 1 Exectionic Bellest 1 Wall 1 30 1,035 62 31 90 90 1,035 186 31 \$33 \$23 \$215 \$15 NA CLASSROOM 14 1 Exectionic Bellest 1 Wall 1 30 1,035 62 31 90 90 1,035 186 31 \$33 \$23 \$215 \$15 NA CLASSROOM 14 Execution Execution Confidence of Enthrew (2) 60 in Incondescent Lamps 1 Vall 1 30 1,035 62 31 90 90 1,035 186 31 \$33 \$22 \$23 \$215 \$15 NA CLASSROOM 14 Execution Execution Confidence of Enthrew (2) 60 in Incondescent Lamps 1 Na Na CLASSROOM 14 Execution Execution Confidence Incondescent Lamps 1 Na			φ100	\$35	\$195
7 N/A CLASSROOM 12 2/M Trofler wt (3) FOXZTB Lamps & (1) Electronic Ballest 12 Ceiling 1 945 1,224 1,157 925 25 300 306 459 231 \$105 \$913 \$363 \$ 8 N/A CLASSROOM 13 2/M Trofler wt (3) FOXZTB Lamps & (1) Electronic Ballest 15 Ceiling 1 945 1,224 1,446 1,157 25 375 306 574 289 \$131 \$1,141 \$363 \$ 9 N/A RESOURCE ROOM 4 Winsp Fluorescent wt (2) FOXZTB Lamps & (1) Electronic Ballest 1 Wall 1 126 1,346 261 170 16 48 725 99 91 \$29 \$302 \$215 \$ 10 N/A MENS REST ROOM 4 Winsp Fluorescent wt (2) FOXZTB Lamps & (1) Electronic Ballest 1 Wall 1 42 1,035 87 43 16 16 16 1,035 33 43 \$12 \$68 \$215 \$ 11 N/A CLASSROOM 14 4 Winsp Fluorescent wt (2) FOXZTB Lamps & (1) Electronic Ballest 12 Ceiling 1 504 1,224 771 617 16 192 306 294 154 \$68 \$1,209 \$363 \$ 12 N/A CLASSROOM 14 2/M Trofler wt (4) FOXZTB Lamps & (2) Electronic Ballest 12 Ceiling 1 68 1,224 257 206 70 280 306 428 51 \$73 \$403 \$0 \$ 13 N/A CLASSROOM 14 Product States 4 Ceiling 1 68 1,224 257 206 70 280 306 428 51 \$73 \$403 \$0 \$ 14 N/A FACULTY REST ROOM 10 Incardescent Finane wt (2) 600 Micandescent Lamps 1 Wall 1 30 1,035 62 31 90 90 1,035 186 31 \$33 \$22 \$23 \$0 \$ 16 N/A GUSTODAN CLOSET 0 0 0 360 0 0 0 0 0 0 0 0 0 0 \$0 \$0 \$0 \$0 \$0 \$0	\$1,780	⅃ L`	\$180	\$35	\$215
8 NA CLASSROOM 13 2***Troffer wf (3) FO32T8 Lamps & (1) Electronic Ballasts 15 Ceiling 1 945 1,224 1,446 1,157 25 375 306 574 289 \$131 \$1,411 \$363 3			\$160	\$35	\$195
9 N/A RESOURCE ROOM 4*Wrap Fluorescent w/ (2) FO3278 Lamps & (1) Electronic Ballast 1 Wall 1 126 1.346 261 170 16 48 725 99 91 \$29 \$302 \$215 10 N/A MENS REST ROOM 4*Wrap Fluorescent w/ (2) FO3278 Lamps & (1) Electronic Ballast 1 Wall 1 42 1.035 87 43 16 16 16 1.035 33 43 \$12 \$68 \$215 11 N/A CLASSROOM 14 4*Wrap Fluorescent w/ (2) FO3278 Lamps & (1) Electronic Ballast 1 Ceiling 1 504 1.224 771 617 16 17 16 192 306 294 154 \$68 \$215 12 N/A CLASSROOM 14 2*x4* Troffer w/ (4) FO3278 Lamps & (2) Electronic Ballast 4 Ceiling 1 68 1.224 257 206 70 280 306 428 51 \$73 \$403 \$0 \$13 N/A CLASSROOM 14 Incandescent Future w/ (2) 60w Incandescent Lamps 1 Ceiling 0 30 1.224 46 37 90 90 306 138 9 \$22 \$23 \$0 \$14 N/A FACULTY REST ROOM Incandescent Future w/ (2) 60w Incandescent Lamps 1 Wall 1 30 1.035 62 31 90 90 1.035 186 31 \$33 \$23 \$215 \$15 N/A CUSTODIAN CLOSET 0 0 360 0 0 0 0 0 0 0 0 0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$1,121		\$120	\$35	\$155
10 N/A MENS REST ROOM 4 Wrap Fluorescent w(2) F032T8 Lamps & (1) Electronic Ballast 1 Wall 1 42 1,035 87 43 16 16 1,035 33 43 \$12 \$68 \$215 11 N/A CLASSROOM 14 4 Wrap Fluorescent w(2) F032T8 Lamps & (1) Electronic Ballast 12 Ceiling 1 504 1,224 771 617 16 192 306 294 154 \$68 \$1,209 \$363 12 N/A CLASSROOM 14 2x4 Troffer w(4) F032T8 Lamps & (2) Electronic Ballasts 4 Ceiling 1 68 1,224 257 206 70 280 306 428 51 \$73 \$403 \$0 \$0 \$13 N/A CLASSROOM 14 Incandescent Fixture w(2) 60w Incandescent Lamps 1 Ceiling 0 30 1,224 46 37 90 90 306 138 9 \$22 \$23 \$0 \$0 \$14 N/A FACULTY REST ROOM Incandescent Fixture w(2) 60w Incandescent Lamps 1 Wall 1 30 1,035 62 31 90 90 1,035 186 31 \$33 \$23 \$215 \$15 N/A CUSTODIAN CLOSET 0 0 360 0 0 0 0 0 0 0 0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,319	3	\$150	\$35	\$185
11 N/A CLASSROOM 14 4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 12 Ceiling 1 504 1,224 771 617 12 N/A CLASSROOM 14 2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 4 Ceiling 1 168 1,224 257 206 13 N/A CLASSROOM 14 Incandescent Fixture w/ (2) 60w Incandescent Lamps 1 Ceiling 0 30 1,224 46 37 90 90 306 138 9 \$22 \$23 \$0 14 N/A FACULTY REST ROOM Incandescent Fixture w/ (2) 60w Incandescent Lamps 1 Wall 1 30 1,035 62 31 90 90 1,035 186 31 \$33 \$23 \$215 15 N/A CUSTODIAN CLOSET 0 0 360 0 0 0 0 0 0 0 \$0 \$0 \$0 \$0 16 N/A BOYS REST ROOM 2'x4' Troffer w/ (1) FO32T8 Lamp & (1) Electronic Ballast 4 Wall 1 100 1,035 207 104 7 28 1,035 58 104 \$24 \$101 \$215	\$487		\$30	\$0	\$30
12 N/A CLASSROOM 14 2'X4' Troffer w' (4) FO32T8 Lamps & (2) Electronic Ballasts	\$273		\$10	\$0	\$10
13 N/A CLASSROOM 14 Incandescent Fixture w/ (2) 60w Incandescent Lamps 1 Ceiling 0 30 1,224 46 37 90 90 306 138 9 \$22 \$23 \$0 \$14 N/A FACULTY REST ROOM Incandescent Fixture w/ (2) 60w Incandescent Lamps 1 Wall 1 30 1,035 62 31 90 90 1,035 186 31 \$33 \$23 \$215 \$15 N/A CUSTODIAN CLOSET 0 0 360 0 0 0 0 0 0 0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$1,417		\$120	\$35	\$155
14 N/A FACULTY REST ROOM Incandescent Fixture w/ (2) 60w Incandescent Lamps 1 Wall 1 30 1,035 62 31 90 90 1,035 186 31 \$33 \$23 \$215 15 N/A CUSTODIAN CLOSET 0 0 360 0 0 0 0 0 0 0 \$0	\$343		\$60	\$0	\$60
15 N/A CUSTODIAN CLOSET 0 0 360 0 0 0 0 0 0 0 0 \$0 \$0 \$0 \$0 \$0 \$0 \$10 \$1	\$23		\$0	\$0	\$0
16 N/A BOYS REST ROOM 2'x4' Troffer w/ (1) FO32T8 Lamp & (1) Electronic Ballast 4 Wall 1 100 1,035 207 104 7 28 1,035 58 104 \$24 \$101 \$215 17 N/A GIRLS REST ROOM 2'x4' Troffer w/ (1) FO32T8 Lamp & (1) Electronic Ballast 4 Wall 1 100 1,035 207 104 7 28 1,035 58 104 \$24 \$101 \$215	\$237		\$0	\$0	\$0
17 N/A GIRLS REST ROOM 2'x4' Troffer w/ (1) FO32T8 Lamp & (1) Electronic Ballast 4 Wall 1 100 1,035 207 104 7 28 1,035 58 104 \$24 \$101 \$215	\$0		\$0	\$0	\$0
	\$276		\$40	\$0	\$40
	\$276		\$40	\$0	\$40
18 N/A AUDITORIUM/ GYM 2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 42 Ceiling 3 1,764 1,482 4,075 2,614 16 672 828 1,552 1,461 \$4,232 \$1,090	\$4,797	5	\$420	\$105	\$525
19 N/A AUDITORIUM/ GYM Exit Sign w/ LED 3 6 8,760 53 53 0 0 0 0 \$0 \$0 \$0	\$0		\$0	\$0	\$0
20 N/A STAGE Incandescent Fixture w/ (1) 150w Incandescent Lamp 124 18,600 360 6,696 0 0 0 0 0 \$0 \$0 \$0 \$0	\$0		\$0	\$0	\$0
21 N/A STAGE STORAGE Incandescent 12"x12" Square Fixture w/ 23w Screw-In CFL 1 23 360 8 8 0 0 0 0 0 \$0 \$0 \$0 \$0	\$0		\$0	\$0	\$0
22 N/A STAGE STORAGE 4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1 42 360 15 15 16 16 0 6 0 \$1 \$68 \$0	\$58		\$10	\$0	\$10
23 N/A ART ROOM 4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 12 Ceiling 1 504 1,224 771 617 16 192 306 294 154 \$68 \$1,209 \$363	\$1,417		\$120	\$35	\$155
24 N/A NURSE'S OFFICE 4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 4 Wall 1 168 1,346 348 226 16 64 725 132 122 \$39 \$273 \$215	\$448		\$40	\$0	\$40
25 N/A NURSE'S OFFICE Incandescent Fixture w/ (1) 60w Incandescent Lamp 1 Wall 14 2,070 29 29 46 46 0 95 0 \$14 \$16 \$0	\$16		\$0	\$0	\$0
26 N/A NURSE'S STORAGE Incandescent Fixture w/ (1) 60w Incandescent Lamp 1 14 360 5 5 46 46 0 17 0 \$3 \$16 \$0	\$16		\$0	\$0	\$0
27 N/A NURSE'S REST ROOM Incandescent Fixture w/ (1) 60w Incandescent Lamp 1 Wall 1 14 108 5 2 46 46 252 17 4 \$3 \$16 \$215	\$231		\$0	\$0	\$0
28 N/A MAIN OFFICE 4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 4 Ceiling 1 168 1,346 348 226 16 64 725 132 122 \$39 \$273 \$363	\$596		\$40	\$0	\$40
29 N/A OFFICE STORAGE 4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1 42 360 15 15 16 16 0 6 0 \$1 \$68 \$0			\$10	\$0	\$10



LIGHTING UPGRADE PROJECT FACILITY SQ. FT. DATE OF AUDIT: CUSTOMER: Verona Schools
LINE x LINE DETAIL 27,750 5/6/2013 FACILITY: Forest Avenue

DOII	e-Tech, Inc. SPAC	E DESCRIPTION	EXISTING FIXTURES			REPLA	CEMEN	IT FIXTU	RES				ENERG	Y ANAL	YSIS		COS	ST ANALYS	IS	R	REBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION	PRE FIXT. QTY	SENSOR TYPE	QTY SENSORS / LINE	POST TOTAL WATTS / LINE	ANNUAL HOURS	POST ANNUAL KWH	POST ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	TOTAL ANNUAL \$ SAVINGS / LINE (INCLUDING SENSORS) \$0.152	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
30	N/A	PRINCIPAL OFFICE	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	2	Wall	1	84	1,346	174	113	70	140	725	290	61	\$53	\$202	\$215	\$386	\$30	\$0	\$30
31	N/A	BOILER ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	8			336	2,610	877	877	16	128	0	334	0	\$51	\$546	\$0	\$466	\$80	\$0	\$80
32	N/A	BOILER ROOM	Exit Sign w/ LED	1			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
33	N/A	ELECTRICAL ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2			84	360	30	30	16	32	0	12	0	\$2	\$137	\$0	\$117	\$20	\$0	\$20
34	N/A	CUSTODIAN CLOSET	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
35	N/A	CAFETERIA	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	26	Ceiling	3	1,092	1,482	2,523	1,618	70	1,820	828	4,204	904	\$775	\$2,620	\$1,090	\$3,215	\$390	\$105	\$495
36	N/A	KITCHEN	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2			84	2,070	174	174	16	32	0	66	0	\$10	\$137	\$0	\$117	\$20	\$0	\$20
37	N/A	KITCHEN STORAGE		0			0	360	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
38	N/A	CLASSROOM 3	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	12	Ceiling	1	756	1,224	1,157	925	25	300	306	459	231	\$105	\$913	\$363	\$1,121	\$120	\$35	\$155
39	N/A	COMPUTER LAB	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	12	Ceiling	1	756	1,224	1,157	925	25	300	306	459	231	\$105	\$913	\$363	\$1,121	\$120	\$35	\$155
40	N/A	STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
41	N/A	GIRLS REST ROOM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	3	Wall	1	126	1,035	261	130	16	48	1,035	99	130	\$35	\$205	\$215	\$389	\$30	\$0	\$30
42	N/A	RESOURCE ROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	11	Wall	1	693	1,346	1,435	932	25	275	725	569	502	\$162	\$837	\$215	\$921	\$110	\$20	\$130
43	N/A	CUSTODIAN CLOSET	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
44	N/A	BOYS REST ROOM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	3	Wall	1	126	1,035	261	130	16	48	1,035	99	130	\$35	\$205	\$215	\$389	\$30	\$0	\$30
45	N/A	CLASSROOM 23	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	16	Ceiling	1	672	1,224	1,028	823	16	256	306	392	206	\$91	\$1,612	\$363	\$1,780	\$160	\$35	\$195
46	N/A	CLASSROOM 23 STORAGE	Incandescent 12"x12" Square Fixture w/ 23w Screw-In CFL	1			84	360	30	30	-61	-61	0	-22	0	-\$3	\$84	\$0	\$74	\$10	\$0	\$10
47	N/A	CLASSROOM 22	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	16	Ceiling	1	672	1,224	1,028	823	16	256	306	392	206	\$91	\$1,612	\$363	\$1,780	\$160	\$35	\$195
48	N/A	CLASSROOM 22 STORAGE	Incandescent 12"x12" Square Fixture w/ 23w Screw-In CFL	1			23	360	8	8	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
49	N/A	CLASSROOM 24	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	16	Ceiling	1	672	1,224	1,028	823	16	256	306	392	206	\$91	\$1,612	\$363	\$1,780	\$160	\$35	\$195
50	N/A	READING CLOSET	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2			84	360	30	30	16	32	0	12	0	\$2	\$137	\$0	\$117	\$20	\$0	\$20
51	N/A	CLASSROOM 25	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	16	Ceiling	1	672	1,224	1,028	823	16	256	306	392	206	\$91	\$1,612	\$363	\$1,780	\$160	\$35	\$195
52	N/A	CLASSROOM 21	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	16	Ceiling	1	672	1,224	1,028	823	16	256	306	392	206	\$91	\$1,612	\$363	\$1,780	\$160	\$35	\$195
53	N/A	CLASSROOM 21 STORAGE	Incandescent 12"x12" Square Fixture w/ 23w Screw-In CFL	1			23	360	8	8	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
54	N/A	CLASSROOM 20	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	16	Ceiling	1	672	1,224	1,028	823	16	256	306	392	206	\$91	\$1,612	\$363	\$1,780	\$160	\$35	\$195
55	N/A	CLASSROOM 20 STORAGE	Incandescent 12"x12" Square Fixture w/ 23w Screw-In CFL	1			23	360	8	8	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
56	N/A	STORAGE ROOM	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	1			42	360	15	15	70	70	0	25	0	\$4	\$101	\$0	\$86	\$15	\$0	\$15
57	N/A	GIRLS REST ROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	3	Wall	1	189	1,035	391	196	25	75	1,035	155	196	\$53	\$228	\$215	\$393	\$30	\$20	\$50
58	N/A	SECOND FLOOR HALL	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	7			294	2,610	767	767	16	112	0	292	0	\$44	\$478	\$0	\$408	\$70	\$0	\$70

Dom	ne-Tech, Inc		LIGHTING UPGRADE PROJECT LINE x LINE DETAIL		FAC	27,750). FT.		E OF <i>A</i> 5/6/201	NUDIT:		OMER: ILITY:		ona Sch est Ave								
Doll		CE DESCRIPTION	EXISTING FIXTURES			REPLA	CEMEN	IT FIXTU	RES				ENERG	Y ANAL	YSIS		COS	T ANALYS	S	R	REBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION	PRE FIXT. QTY	SENSOR TYPE	QTY SENSORS / LINE	POST TOTAL WATTS / LINE	ANNUAL HOURS 2610	POST ANNUAL KWH	POST ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	TOTAL ANNUAL \$ SAVINGS / LINE (INCLUDING SENSORS) \$0.152	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
59	N/A	SECOND FLOOR HALL	Exit Sign w/ LED	2			4	8,760	35	35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
60	N/A	STAIRWELL A	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	6			252	2,610	658	658	16	96	0	251	0	\$38	\$410	\$0	\$350	\$60	\$0	\$60
61	N/A	STAIRWELL A	Exit Sign w/ LED	1			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
62	N/A	STAIRWELL B	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	6			252	2,610	658	658	16	96	0	251	0	\$38	\$410	\$0	\$350	\$60	\$0	\$60
63	N/A	STAIRWELL B	Exit Sign w/ LED	1			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
64	N/A	FIRST FLOOR HALL	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	7			294	2,610	767	767	16	112	0	292	0	\$44	\$478	\$0	\$408	\$70	\$0	\$70
65	N/A	FIRST FLOOR HALL	2'x4' Troffer w/ (1) FO32T8 Lamp & (1) Electronic Ballast	14			350	2,610	914	914	7	98	0	256	0	\$39	\$355	\$0	\$215	\$140	\$0	\$140
66	N/A	FIRST FLOOR HALL	Troffer w/ (4) F17T8 Lamps & (1) 4/17 Elec. NP HE Ballast	2			116	2,610	303	303	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
67	N/A	FIRST FLOOR HALL	2'x4' Troffer w/ (6) FO32T8/32w Lamps & (2) Electronic Ballasts	3			378	2,610	987	987	40	120	0	313	0	\$47	\$456	\$0	\$426	\$30	\$0	\$30
68	N/A	FIRST FLOOR HALL	Exit Sign w/ LED	5			10	8,760	88	88	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
69	N/A	MAIN ENTRANCE	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	1			42	2,610	110	110	70	70	0	183	0	\$28	\$101	\$0	\$86	\$15	\$0	\$15
70	N/A	MAIN ENTRANCE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1			42	2,610	110	110	16	16	0	42	0	\$6	\$68	\$0	\$58	\$10	\$0	\$10
71	N/A	MAIN ENTRANCE	Exit Sign w/ LED	1			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
72	N/A	EXTERIOR- MAIN ENTRANCE EAVE	HID Fixture w/ (1) 250w Metal Halide Lamp & Ballast	1			175	4,745	830	830	120	120	0	569	0	\$86	\$384	\$0	\$334	\$50	\$0	\$50
73	N/A	EXTERIOR- FRONT	Incandescent Flood Fixture w/ (1) 100w Halogen Lamp	17			391	4,745	1,855	1,855	77	1,309	0	6,211	0	\$942	\$387	\$0	\$387	\$0	\$0	\$0
74	N/A	EXTERIOR- SIDE ENTRANCE WALLPACK	HID Fixture w/ (1) 100w Metal Halide Lamp & Ballast	1			70	4,745	332	332	50	50	0	237	0	\$36	\$293	\$0	\$243	\$50	\$0	\$50
75	N/A	EXTERIOR- SIDE ENTRANCE WALL SCONCE	HID Fixture w/ (1) 100w Metal Halide Lamp & Ballast	1			70	4,745	332	332	50	50	0	237	0	\$36	\$293	\$0	\$243	\$50	\$0	\$50
				598		38	38,807		45,385	37,719		11,069	19,733	25,127	7,667	\$4,973	\$39,159	\$11,723	\$45,427	\$4,610	\$845	\$5,455



LIGHTING RETROFIT SUMMARY FOR: HB Whitehorne Middle School 600 Bloomfield Avenue

BUILDING INFORMA	ATION		EXISTIN	G FIXTURE	S	F	PROPOS	ED FIXTUR	ES			SAV	NGS					FIN	ANCIAL		
BUILDING	SQ. FT.	PRE TOTAL FIXT. QTY	PRE TOTAL FIXT. WATTS	PRE ANNUAL KWH CONSUMPTION	PRE WATTS / SQ. FT	POST TOTAL FIXT. QTY	POST TOTAL FIXT. WATTS	POST ANNUAL KWH CONSUMPTION	POST WATTS / SQ. FT	WATTS SAVED	ANNUAL KWH SAVED	ANNUAL KWH SAVED WITH SENSORS	ANNUAL SAVINGS \$ FIXT.	ANNUAL SAVINGS \$ SENSORS	ANNUAL SAVINGS \$ TOTAL	CO2 REDUCTION (TONS)	NJ Smart I Start REBATE \$	FIXTURES TOTAL (INSTALLED) COST \$	SENSORS TOTAL (INSTALLED) COST \$	TOTAL	SIMPLE PAYBACK NET OF REBATE (YEARS)
HB Whitehorne Middle School	118,224	412	34,601	69,349	0.29	412	22,403	39,404	0.19	12,198	29,945	6,238	\$4,620	\$962	\$5,582	9.9	\$5,600	\$37,301	\$9,430	\$46,730	7.4

12%	PERCENTAGE OF REBATES IN TOTAL INSTALLED COST
57%	PERCENTAGE OF CONSUMPTION COMPARE TO EXISTING STATE
-	
13%	EXISTING PERCENTAGE OF LIGHTING ENERGY CONSUMPTION OF THE WHOLE BUILDING
7%	PROPOSED PERCENTAGE OF LIGHTING ENERGY CONSUMPTION OF THE WHOLE BUILDING



COST (MATERIAL PLUS LABOR) PLUS COST AFTER INCENTIVES INCENTIVES PER LINE P	TOTAL SENSORS REPATE REBATE REBATE FEBATE FEBAT
\$683 \$0 \$583 \$100 \$1,008 \$0 \$1,008 \$0 \$60 \$0 \$50 \$10 \$0 \$0 \$0 \$0 \$137 \$0 \$117 \$20 \$68 \$0 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$101 \$0 \$101	\$0 \$100 \$0 \$0 \$0 \$10 \$0 \$0 \$0 \$20 \$0 \$10 \$0 \$20 \$0 \$20 \$0 \$20 \$0 \$20
\$1,008 \$0 \$1,008 \$0 \$60 \$0 \$50 \$10 \$0 \$0 \$0 \$0 \$137 \$0 \$117 \$20 \$68 \$0 \$58 \$10 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$127 \$20 \$137 \$0 \$127 \$20 \$137 \$0 \$127 \$20 \$137 \$0 \$127 \$20 \$137 \$0 \$127 \$20 \$137 \$0 \$127 \$20 \$137 \$0 \$127 \$20 \$137 \$0 \$127 \$20 \$137 \$0 \$127 \$20 \$137 \$0 \$127 \$20 \$137 \$0 \$127 \$20 \$137 \$0 \$127 \$20 \$137 \$0 \$127 \$20 \$137 \$0 \$127 \$20 \$137 \$0 \$127 \$20 \$137 \$0 \$101 \$0 \$101	\$0 \$0 \$0 \$10 \$0 \$0 \$0 \$20 \$0 \$10 \$0 \$20 \$0 \$20 \$0 \$20
\$60 \$0 \$50 \$10 \$10 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$101 \$0 \$101 \$0 \$2,662 \$0 \$2,272 \$390	\$0 \$10 \$0 \$0 \$0 \$20 \$0 \$10 \$0 \$20 \$0 \$20 \$0 \$20 \$0 \$20
\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$137 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$101 \$0 \$101 \$0 \$2,662 \$0 \$2,272 \$390	\$0 \$0 \$0 \$20 \$0 \$10 \$0 \$20 \$0 \$20 \$0 \$20
\$137 \$0 \$117 \$20 \$137 \$0 \$18 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$101 \$0 \$101 \$0 \$2,662 \$0 \$2,272 \$390	\$0 \$20 \$0 \$10 \$0 \$20 \$0 \$20 \$0 \$20
\$68 \$0 \$58 \$10 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$101 \$0 \$101 \$0 \$2,662 \$0 \$2,272 \$390	\$0 \$10 \$0 \$20 \$0 \$20 \$0 \$20
\$137 \$0 \$117 \$20 \$137 \$0 \$117 \$20 \$101 \$0 \$101 \$0 \$2,662 \$0 \$2,272 \$390	\$0 \$20 \$0 \$20 \$0 \$0
\$137 \$0 \$117 \$20 \$101 \$0 \$101 \$0 \$2,662 \$0 \$2,272 \$390	\$0 \$20 \$0 \$0
\$101 \$0 \$101 \$0 \$2,662 \$0 \$2,272 \$390	\$0 \$0
\$2,662 \$0 \$2,272 \$390	
	\$0 \$390
\$0 \$0 \$0 \$0	
	\$0 \$0
\$60 \$727 \$777 \$10	\$0 \$10
	\$0 \$10
	\$0 \$10
	\$105 \$465
	\$0 \$70
\$0 \$0 \$0	\$0 \$0
\$152 \$0 \$132 \$20	\$0 \$20
\$202 \$215 \$416 \$0	\$0 \$0
\$68 \$0 \$58 \$10	\$0 \$10
\$137 \$0 \$117 \$20	\$0 \$20
\$202 \$0 \$172 \$30	\$0 \$30
\$0 \$363 \$363 \$0	\$0 \$0
\$0 \$363 \$363 \$0	\$0 \$0
\$137 \$0 \$117 \$20	\$0 \$20
\$101 \$0 \$86 \$15	\$0 \$15
\$68 \$0 \$58 \$10	\$0 \$10
\$456 \$0 \$396 \$60	\$0 \$60
\$152 \$0 \$132 \$20	\$0 \$20
\$68 \$0 \$58 \$10	\$0 \$10
	\$0 \$10
	\$0 \$30
	\$0 \$50
	\$0 \$10
	\$0 \$10
	\$0 \$30
\$68 \$0 \$58 \$10	\$0 \$10
\$68 \$0 \$58 \$10	\$0 \$10
\$137 \$0 \$117 \$20	\$0 \$20
\$0 \$0 \$0	\$0 \$0
\$68 \$0 \$58 \$10	\$0 \$10
\$137 \$0 \$117 \$20	\$0 \$20
\$614 \$1,090 \$1,509 \$90	\$105 \$195
\$ \$:: : : : : : : : : : : : : : : : :	\$478 \$0 \$408 \$770 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0



	SPA	CE DESCRIPTION	EXISTING I	FIXTURI	ES					REPL	ACEMEN	NT FIXTUR	RES							ENERG	Y ANALY	/SIS		COS	T ANALYSI	IS		REBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION FIXT. GTY	WAIIS	PRE TOTAL WATTS / LINE	DEFAULT ANNUAL HOURS	PRE ANNUAL KWH	PRE AVERAGE LIGHT LEVEL FOOT CANDLES	PROPOSED FIXTURE DESCRIPTION	POST FIXT. QTY	WAIIS H		NSOR SEN	NSORS T	VATTS	ANNUAL HOURS	POST ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	**SAVINGS / LINE (INCLUDING SENSORS)	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
44	N/A	MUSIC ROOM 107	4' Uplight Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 24	58	1,392	1,530	2,130		Relamp & Rebaillast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	24	42	306 Ce	eiling	1 1	,008 1	1,224	1,542 1,234	16	384	306	588	308	\$138	\$1,638	\$363	\$1,726	\$240	\$35	\$275
45	N/A	MUSIC ROOM 107	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58	116	1,530	177		Relamp & Rebaillast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42	306 Ce	eiling		84 1	1,224	129 103	16	32	306	49	26	\$12	\$137	\$0	\$117	\$20	\$0	\$20
46	N/A	MUSIC ROOM 107	Exit Sign w/ LED 1	2	2	8,760	18		Relamp & Reballast w/ (4) F28T8 Lamps & (1) 4/32 Elec. Low-Power High Efficiency Ballast	1	84		eiling	1	84 8	8,760	736 736	-82	-82	0	-718	0	-\$111	\$84	\$363	\$437	\$10	\$0	\$10
47	N/A	STAGE	4' Wrap Fluorescent w/ (3) FO32T8 Lamps & (1) Electronic Ballast 6	88	528	360	190		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power	6	63		3			360	136 136	25	150	0	54	0	\$8	\$456	\$0	\$396	\$60	\$0	\$60
48	N/A	NURSE OFFICE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 5	88	440	2,070	911		High Efficiency Ballast Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power	5	63					2,070	652 652	25	125	0	259	0	\$40	\$380	\$0	\$330	\$50	\$0	\$50
49	N/A	NURSE OFFICE	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast 1	58	58	2,070	120		High Efficiency Ballast Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power	1	28					2,070	58 58	30	30	0	62	0	\$10	\$60	\$0	\$50	\$10	\$0	\$10
50	N/A	EXAM ROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 2	88	176	2,070	364		High Efficiency Ballast Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power	2	63					2,070	261 261	25	50	0	104	0	\$16	\$152	\$0	\$132	\$20	\$0	\$20
51	N/A	STORAGE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 2	88	176	360	63		High Efficiency Ballast Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power	2	63					360	45 45	25	50	0	18	0	\$3	\$152	\$0	\$132	\$20	\$0	\$20
52	N/A	CLASSROOM 108	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 9	88	792	1,530	1,212	41 FC	High Efficiency Ballast Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power	9		306 Ce	eiling			1,224	868 694	25	225	306	344	174	\$80	\$684	\$363	\$923	\$90	\$35	\$125
53	N/A	CLASSROOM 108	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast 2	58	116	1,530	177	4110	High Efficiency Ballast Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power	2			eiling			1,224	86 69	30	60	306	92	174	\$17	\$121	\$0	\$101	\$20	\$0	\$20
54	N/A	CLASSROOM 109	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 9				1,212		High Efficiency Ballast Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power	9											344	174	\$80						\$125
54				88	792	1,530			High Efficiency Ballast Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power	9						1,224		25	225	306				\$684	\$363	\$923	\$90		
55	N/A	CLASSROOM 109	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast 2	58	116	1,530	177	00.50	High Efficiency Ballast Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	2		306 Ce	eiling			1,224	86 69	30	60	306	92	17	\$17	\$121	\$0	\$101	\$20	\$0	\$20
56	N/A	HALL, CR109 TO MUSIC	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 10		580	2,610	1,514	23 FC	High Efficiency Ballast	10	42					2,610	1,096 1,096	16	160	0	418	0	\$64	\$683	\$0	\$583	\$100	\$0	\$100
57	N/A	HALL, CR109 TO MUSIC	Exit Sign w/ LED 1	2	2	8,760	18		None	1	2					8,760	18 18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
58	N/A	HALL, CR109 TO MUSIC	Downlight Fixture w/ (2) 26w CFL & Electronic Ballast 2	54	108	2,610	282		None	2	54					2,610	282 282	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
59	N/A	HALL, CR109 TO MUSIC	Fixture w/ (4) 26w CFL 1	104	104	2,610	271		None Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power	1	104					2,610	271 271	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
60	N/A	CLASSROOM 110	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 9	88	792	1,530	1,212	53 FC	High Efficiency Ballast	9	63	306 Ce	eiling	1	567 1	1,224	868 694	25	225	306	344	174	\$80	\$684	\$363	\$923	\$90	\$35	\$125
61	N/A	CLASSROOM 110	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast 2	58	116	1,530	177		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	2	28				56 1	1,530	86 86	30	60	0	92	0	\$14	\$121	\$0	\$101	\$20	\$0	\$20
62	N/A	CLASSROOM 111	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 9	88	792	1,530	1,212		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	9	63	306 Ce	eiling	1	567 1	1,224	868 694	25	225	306	344	174	\$80	\$684	\$363	\$923	\$90	\$35	\$125
63	N/A	CLASSROOM 111	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast 2	58	116	1,530	177		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	2	28				56 1	1,530	86 86	30	60	0	92	0	\$14	\$121	\$0	\$101	\$20	\$0	\$20
64	N/A	FACUTLY REST ROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	88	360	32		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	1	63	252 V	/all	1	63	108	23 7	25	25	252	9	16	\$4	\$76	\$215	\$281	\$10	\$0	\$10
65	N/A	FACUTLY REST ROOM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	58	360	21		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42	252 V	/all	1	42	108	15 5	16	16	252	6	11	\$3	\$68	\$215	\$273	\$10	\$0	\$10
66	N/A	CLASSROOM 112	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 9	88	792	1,530	1,212		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	9	63	306 Ce	eiling	1	567 1	1,224	868 694	25	225	306	344	174	\$80	\$684	\$363	\$923	\$90	\$35	\$125
67	N/A	CLASSROOM 112	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast 2	58	116	1,530	177		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	2	28	306 Ce	eiling		56 1	1,224	86 69	30	60	306	92	17	\$17	\$121	\$0	\$101	\$20	\$0	\$20
68	N/A	HALL, CR110 TO CR112	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 5	58	290	2,610	757		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	5	42				210 2	2,610	548 548	16	80	0	209	0	\$32	\$341	\$0	\$291	\$50	\$0	\$50
69	N/A	HALL, CR110 TO CR112	Exit Sign w/ LED 1	2	2	8,760	18		None	1	2				2 8	8,760	18 18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
70	N/A	CST LOBBY	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 4	88	352	2,070	729	71 FC	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	4	63			:	252 2	2,070	522 522	25	100	0	207	0	\$32	\$304	\$0	\$264	\$40	\$0	\$40
71	N/A	CST CONFERENCE	4' Uplight Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 3	58	174	2,070	360		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	3	42 7	724.5 Ce	eiling	1	126 1	1,346	261 170	16	48	725	99	91	\$29	\$205	\$363	\$538	\$30	\$0	\$30
72	N/A	CST CONFERENCE	Downlight Fixture w/ (1) 26w CFL & Electronic Ballast 6	26	156	2,070	323		None	6	26 7	724.5 Ce	eiling		156 1	1,346	323 210	0	0	725	0	113	\$17	\$0	\$0	\$0	\$0	\$0	\$0
73	N/A	LDTC OFFICE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 2	88	176	2,070	364		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	2	63				126 2	2,070	261 261	25	50	0	104	0	\$16	\$152	\$0	\$132	\$20	\$0	\$20
74	N/A	PSYCHOLOGIST	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 2	88	176	2,070	364		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	2	63				126 2	2,070	261 261	25	50	0	104	0	\$16	\$152	\$0	\$132	\$20	\$0	\$20
75	N/A	CLASSROOM 106	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 12	88	1,056	1,530	1,616		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	12	63	306 Ce	eiling	1	756 1	1,224	1,157 925	25	300	306	459	231	\$106	\$913	\$363	\$1,121	\$120	\$35	\$155
76	N/A	CLASSROOM 105	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 12	112	1,344	1,530	2,056	68 FC	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	12	42	306 Ce	eiling	1	504 1	1,224	771 617	70	840	306	1,285	154	\$222	\$1,209	\$363	\$1,357	\$180	\$35	\$215
77	N/A	HALL, CAFÉ TO CR105	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 22	58	1,276	2,610	3,330		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	22	42				924 2	2,610	2,412 2,412	16	352	0	919	0	\$142	\$1,502	\$0	\$1,282	\$220	\$0	\$220
78	N/A	HALL, CAFÉ TO CR105	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58	116	2,610	303		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42				84 2	2,610	219 219	16	32	0	84	0	\$13	\$137	\$0	\$117	\$20	\$0	\$20
79	N/A	HALL, CAFÉ TO CR105	Exit Sign w/ LED 4	2	8	8,760	70		None	4	2				8 8	8,760	70 70	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
80	N/A	ELEVATOR LOWER HALL	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 3	58	174	2,610	454		Relamp & Reballast w/ (2) F28T6 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	3	42				126 2	2,610	329 329	16	48	0	125	0	\$19	\$205	\$0	\$175	\$30	\$0	\$30
81	N/A	CLASSROOM 112 RAMP UP	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 7	58	406	2,610	1,060		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	7	42				294 2	2,610	767 767	16	112	0	292	0	\$45	\$478	\$0	\$408	\$70	\$0	\$70
82	N/A	CLASSROOM 112 RAMP UP	Downlight Fixture w/ (1) 26w CFL & Electronic Ballast 1	26	26	2,610	68		None	1	26				26 2	2,610	68 68	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
83	N/A	STAIRWELL TO GYM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 4	58	232	2,610	606		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	4	42				168 2	2,610	438 438	16	64	0	167	0	\$26	\$273	\$0	\$233	\$40	\$0	\$40
84	N/A	GYM	HID Fixture w/ (1) 250w Metal Halide Lamp & Ballast 30	295	8,850	2,610	23,099		New Fixture w/ (1) 165w Induction Lamp & Induction Ballast Universal Voltage	30	175	522 Ce	eiling	3 5	5,250 2	2,088	13,703 10,962	120	3,600	522	9,396	2,741	\$1,872	\$11,505	\$1,090	\$10,990	\$1,500	\$105	\$1,605
85	N/A	GYM	Exit Sign w/ LED 4	2	8	8,760	70		None	4	2				8 8	8,760	70 70	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
86	N/A	GYM STORAGE	4' Industrial Hood w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58	116	2,610	303		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42				84 2	2,610	219 219	16	32	0	84	0	\$13	\$137	\$0	\$117	\$20	\$0	\$20
86	N/A	GYM STUKAGE	4 moustrial riood w/ (2) PO3218 Lamps & (1) Electronic Ballast 2	58	116	2,610	303			2	42				04 2	2,010	219 219	16	32	U	84	U	\$13	\$13/	\$0	\$117	\$20	\$0	\$20



	SPA	CE DESCRIPTION	EXISTING	FIXTUR	ES					REPLA	CEMEN	NT FIXTURI	ES							ENERG	Y ANAL	YSIS		cos	ST ANALYSI	IS	ı	REBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION FIXT. QTY	WAIIS	PRE TOTAL WATTS / LINE	DEFAULT ANNUAL HOURS	PRE ANNUAL KWH	PRE AVERAGE LIGHT LEVEL FOOT CANDLES	PROPOSED FIXTURE DESCRIPTION	FIXT.	WAIIS F	ANNUAL HOURS SAVED TY		DRS WAT	HOURS	ANNUA KWH		WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	**TOTAL ANNUAL \$ SAVINGS / LINE (INCLUDING SENSORS) \$0.154	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
87	N/A	GYM OFFICE	0	0	0	2,070	0	LOCKED		0	0			0	2,070	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
88	N/A	GIRLS LOCKER	4' Wrap Fluorescent w/ (1) FO32T8 Lamp & (1) Electronic Ballast 10	32	320	1,530	490		Relamp & Reballast w/ (1) F28T8 Lamp & (1) 1/32 Elec. Low-Power High Efficiency Ballast	10	22			220	1,530	337	7 337	10	100	0	153	0	\$24	\$507	\$0	\$407	\$100	\$0	\$100
89	N/A	GIRLS LOCKER	Exit Sign w/ LED 1	2	2	8,760	18		None	1	2			2	8,760) 18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90	N/A	GIRLS SHOWER	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 5	58	290	1,530	444		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	5	42			210				16	80	0	122	0	\$19	\$341	\$0	\$291	\$50	\$0	\$50
91	N/A	GIRLS LOCKER REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1	58	58	1,530	89		High Efficiency Ballast Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	1	42			42				16	16	0	24	0	\$4	\$68	\$0	\$58	\$10	\$0	\$10
92	N/A	CUSTODIAN	Incandescent Fixture w/ (1) 60w Incandescent Lamp 1	60	60	360	22		High Efficiency Ballast Relamp w/ (1) 14 watt Compact Fluorescent Mini Spring Lamp Screw-	1	14			14		5	5	46	46	0	17	0	\$3	\$16	\$0	\$16	\$0	\$0	\$0
93							21		In 1 Piece Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	1	42						15			0	6	0	\$3 \$1		\$0				\$10
93	N/A	STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1	58	58	360			High Efficiency Ballast Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	-				42				16	16				**	\$68	**	\$58	\$10	\$0	
94	N/A	GIRLS COACH OFFICE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58	116	1,530	177		High Efficiency Ballast Relamp w/ (1) 14 watt Compact Fluorescent Mini Spring Lamp Screw-	2	42			84	,,,,,			16	32	0	49	0	\$8	\$137	\$0	\$117	\$20	\$0	\$20
95	N/A	COACH REST ROOM	Incandescent Fixture w/ (1) 60w Incandescent Lamp 2	60	120	360	43		In 1 Piece Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	2	14			28		10		46	92	0	33	0	\$5	\$33	\$0	\$33	\$0	\$0	\$0
96	N/A	BOYS COACH OFFICE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58	116	1,530	177		High Efficiency Ballast	2	42			84	1,530	129	9 129	16	32	0	49	0	\$8	\$137	\$0	\$117	\$20	\$0	\$20
97	N/A	COACH REST ROOM	Incandescent Fixture w/ (1) 60w Incandescent Lamp 2	60	120	360	43		Relamp w/ (1) 14 watt Compact Fluorescent Mini Spring Lamp Screw- In 1 Piece	2	14			28	360	10	10	46	92	0	33	0	\$5	\$33	\$0	\$33	\$0	\$0	\$0
98	N/A	BOYS LOCKER	4' Wrap Fluorescent w/ (1) FO32T8 Lamp & (1) Electronic Ballast 10	32	320	1,530	490		Relamp & Reballast w/ (1) F28T8 Lamp & (1) 1/32 Elec. Low-Power High Efficiency Ballast	10	22			220	1,530	337	7 337	10	100	0	153	0	\$24	\$507	\$0	\$407	\$100	\$0	\$100
99	N/A	BOYS LOCKER	Exit Sign w/ LED 1	2	2	8,760	18		None	1	2			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
100	N/A	BOYS SHOWER	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 5	58	290	1,530	444		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	5	42			210	1,530	321	321	16	80	0	122	0	\$19	\$341	\$0	\$291	\$50	\$0	\$50
101	N/A	BOYS LOCKER REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1	58	58	1,530	89		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42			42	1,530	64	64	16	16	0	24	0	\$4	\$68	\$0	\$58	\$10	\$0	\$10
102	N/A	CUSTODIAN	Incandescent 12"x12" Square Fixture w/ 23w Screw-In CFL 1	23	23	360	8		None	1	23			23	360	8	8	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
103	N/A	GYM HALL	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 12	58	696	2,610	1,817		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	12	42			504	2,610	1,31	5 1,315	16	192	0	501	0	\$77	\$819	\$0	\$699	\$120	\$0	\$120
104	N/A	GYM HALL	Exit Sign w/ LED 1	2	2	8,760	18		None	1	2			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
105	N/A	HALL, CLASSROOM 101	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 17	58	986	2,610	2,573		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	17	42			714	2,610	1,864	1,864	16	272	0	710	0	\$110	\$1,160	\$0	\$990	\$170	\$0	\$170
106	N/A	HALL, CLASSROOM 101	Exit Sign w/ LED 2	2	4	8,760	35		None	2	2			4	8,760	35	35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
107	N/A	CLASSROOM 101	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 15	112	1,680	1,530	2,570		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	15	42	306 Ceil	ing 1	630) 1,224	964	4 771	70	1,050	306	1,607	193	\$278	\$1,511	\$363	\$1,615	\$225	\$35	\$260
108	N/A	CLASSROOM 115 MUSIC	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 38	112	4,256	1,530	6,512	85 FC	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	38	42	306 Ceil	ing 2	1,59	06 1,224	2,442	1,954	70	2,660	306	4,070	488	\$703	\$3,829	\$727	\$3,915	\$570	\$70	\$640
109	N/A	CLASSROOM 115 MUSIC	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	58	58	1,530	89		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	1	28	306 Ceil	ing	28	1,224	43	34	30	30	306	46	9	\$8	\$60	\$0	\$50	\$10	\$0	\$10
110	N/A	CLASSROOM 115 STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 4	58	232	360	84		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	4	42			168	360	60	60	16	64	0	23	0	\$4	\$273	\$0	\$233	\$40	\$0	\$40
111	N/A	CLASSROOM 105	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 12	112	1,344	1,530	2,056		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	12	42	306 Ceil	ing 1	504	1 1,224	771	1 617	70	840	306	1,285	154	\$222	\$1,209	\$363	\$1,357	\$180	\$35	\$215
112	N/A	CLASSROOM 114 SHOP	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 38	112	4,256	1,530	6,512		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	38	42			1,59	6 1,530	2,442	2,442	70	2,660	0	4,070	0	\$628	\$3,829	\$0	\$3,259	\$570	\$0	\$570
113	N/A	COMPUTER ROOM	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 2	112	224	360	81		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	2	42			84	360	30	30	70	140	0	50	0	\$8	\$202	\$0	\$172	\$30	\$0	\$30
114	N/A	ROBOT ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 4	58	232	360	84		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	4	42			168	360	60	60	16	64	0	23	0	\$4	\$273	\$0	\$233	\$40	\$0	\$40
115	N/A	CLASSROOM 103	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 18	112	2,016	1,530	3,084		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	18	42	306 Ceil	ing 1	756	5 1,224	1,15	7 925	70	1,260	306	1,928	231	\$333	\$1,814	\$363	\$1,872	\$270	\$35	\$305
116	N/A	CLASSROOM 103 SERVER/ STORAGE	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 2	112	224	360	81		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	2	42			84	360	30	30	70	140	0	50	0	\$8	\$202	\$0	\$172	\$30	\$0	\$30
117	N/A	CLASSROOM 103 REFRIGERATOR	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1	58	58	360	21		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
118	N/A	CLASSROOM 104	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 18		2,016	1,530	3,084		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	18		306 Ceil	ina 1	756				70	1,260	306	1,928	231	\$333	\$1,814	\$363	\$1,872	\$270	\$35	\$305
119	N/A	ROOM 113	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 4	58	232	1,530	355		High Efficiency Ballast 2'x4' Silver Reflector Kit Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	4		306 W		168				16	64	306	98	51	\$23	\$273	\$215	\$448	\$40	\$0	\$40
120	N/A	GIRLS REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 6	58	348	2,070	720		High Efficiency Ballast Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	6		1035 Ceil						16	96	1,035	199	261	\$71	\$410	\$363	\$678	\$60	\$35	\$95
	N/A	CUSTODIAN							High Efficiency Ballast Relamp w/ (1) 14 watt Compact Fluorescent Mini Spring Lamp Screw-	4		1035 Cell	iiig i								17	0							
121			Incandescent Fixture w/ (1) 60w Incandescent Lamp 1	60	60	360	22		In 1 Piece Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	1	14	4005 0.3		14				46	46	0		-	\$3	\$16	\$0	\$16	\$0	\$0	\$0
122	N/A	BOYS REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 6	58	348	2,070	720		High Efficiency Ballast Relamp w/ (1) 14 watt Compact Fluorescent Mini Spring Lamp Screw-	6		1035 Ceil	ing 1	252				16	96	1,035	199	261	\$71	\$410	\$363	\$678	\$60	\$35	\$95
123	N/A	STORAGE	Incandescent Fixture w/ (1) 60w Incandescent Lamp 1	60	60	360	22		In 1 Piece Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power	1	14			14			5	46	46	0	17	0	\$3	\$16	\$0	\$16	\$0	\$0	\$0
124	N/A	MAIN FLOOR REST ROOM	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	58	58	2,070	120		Relamp & Reballast w/ (2) F1718 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	1		1035 Ceil	ing 1	28	1,035	58	29	30	30	1,035	62	29	\$14	\$60	\$363	\$414	\$10	\$0	\$10
125	N/A	AUDITORIUM	Incandescent Drum Fixture w/ (2) 60w Incandescent Lamps 5	120	600	1,530	918		Relamp w/ (2) 15 watt Compact Fluorescent Screw-In	5	30			150	1,530	230	230	90	450	0	689	0	\$106	\$114	\$0	\$114	\$0	\$0	\$0
126	N/A	MAIN OFFICE	2'x4' Troffer w/ (4) F40T12/34w Lamps & (2) Energy Efficient Magnetic Ballasts 7	146	1,022	2,070	2,116	65 FC	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	7	42			294	2,070	609	609	104	728	0	1,507	0	\$232	\$705	\$0	\$600	\$105	\$0	\$105
127	N/A	COPY ROOM	2'x4' Troffer w/ (4) F40T12/34w Lamps & (2) Energy Efficient Magnetic Ballasts	146	292	2,070	604		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	2	42			84	2,070	174	1 174	104	208	0	431	0	\$66	\$202	\$0	\$172	\$30	\$0	\$30
128	N/A	PRINCIPAL OFFICE	2'x4' Troffer w/ (4) F40T12/34w Lamps & (2) Energy Efficient Magnetic Ballasts	146	292	2,070	604		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	2	42	724.5 Wa	all 1	84	1,346	174	113	104	208	725	431	61	\$76	\$202	\$215	\$386	\$30	\$0	\$30
129	N/A	ASISTANT PRINCIPAL LOBBY	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	58	348	2,070	720		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	6	28			168	2,070	348	348	30	180	0	373	0	\$57	\$363	\$0	\$303	\$60	\$0	\$60



	SPAC	CE DESCRIPTION	EXISTING	G FIXTU	RES					REPL	ACEME	NT FIXT	URES							ENERG	SY ANAL	YSIS		COS	ST ANALYSI	IS		REBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION FI	RE WAT XT. / ITY FIX	TS WATT	s HOURS	PRE ANNUAL KWH	PRE AVERAGE LIGHT LEVEL FOOT CANDLES	PROPOSED FIXTURE DESCRIPTION	POST FIXT. QTY	POST WATTS / FIXT.		SENSOR TYPE	QTY SENSORS / LINE	POST TOTAL WATTS / LINE	ANNUAL HOURS	POST ANNUAL KWH WITH OCC SENSO	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	**TOTAL ANNUAL **SAVINGS / LINE (INCLUDING SENSORS)	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
130	N/A	CONFERENCE ROOM	Downlight Fixture w/ (1) 26w CFL & Electronic Ballast	5 26	130	2,070	269		None	5	26	724.5	Wall	1	130	1,346	269 175	0	0	725	0	94	\$15	\$0	\$215	\$215	\$0	\$0	\$0
131	N/A	ASISTANT PRINCIPAL OFFICE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	2 88	176	2,070	364		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	2	63	724.5	Wall	1	126	1,346	261 170	25	50	725	104	91	\$30	\$152	\$215	\$347	\$20	\$0	\$20
132	N/A	GUIDACE OFFICE 1	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	2 88	176	2,070	364		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	2	63	724.5	Wall	1	126	1,346	261 170	25	50	725	104	91	\$30	\$152	\$215	\$347	\$20	\$0	\$20
133	N/A	GUIDACE OFFICE 2	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	2 88	176	2,070	364		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	2	63	724.5	Wall	1	126	1,346	261 170	25	50	725	104	91	\$30	\$152	\$215	\$347	\$20	\$0	\$20
134	N/A	TIME OUT ROOM	4' Wrap Fluorescent w/ (2) F40T12/34w Lamps & (1) Energy Efficient Magnetic Ballast	2 73	146	1,530	223		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42				84	1,530	129 129	31	62	0	95	0	\$15	\$137	\$0	\$117	\$20	\$0	\$20
135	N/A	TIME OUT REST ROOM	2x2' Troffer w/ (2) F20T12 Lamps & (1) Standard Magnetic Ballast	1 56	56	360	20		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	1	28				28	360	10 10	28	28	0	10	0	\$2	\$60	\$0	\$50	\$10	\$0	\$10
136	N/A	CUSTODIAN	2'x2' Troffer w/ (2) F17T8 Lamps & (1) Electronic Ballast	1 34	34	360	12		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	1	28				28	360	10 10	6	6	0	2	0	\$0	\$60	\$0	\$50	\$10	\$0	\$10
137	N/A	BOYS REST ROOM	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	2 11:	2 224	2,070	464		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2x4* Silver Reflector Kit	2	42	1035	Ceiling	1	84	1,035	174 87	70	140	1,035	290	87	\$58	\$202	\$363	\$535	\$30	\$0	\$30
138	N/A	CLASSROOM 223	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	14 11:			2,399	68 FC	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2/x4' Silver Reflector Kit	14	42		Ceiling	1	588	1,224	900 720	70	980	306	1,499	180	\$259	\$1,411	\$363	\$1,529	\$210	\$35	\$245
139	N/A	CLASSROOM 220	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	12 11:			2,056		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2x4* Silver Reflector Kit	12	42		Ceiling	1	504	1,224	771 617	70	840	306	1,285	154	\$222	\$1,209	\$363	\$1,357	\$180	\$35	\$215
140	N/A	STORAGE	2'x2' Troffer w/ (2) F17T8 Lamps & (1) Electronic Ballast	1 34		360	12		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	1	28				28	360	10 10	6	6	0	2	0	\$0	\$60	\$0	\$50	\$10	\$0	\$10
141	N/A	CLASSROOM 221	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	12 11:			2,056		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	12	42	306	Ceiling	1	504	1,224	771 617	70	840	306	1,285	154	\$222	\$1,209	\$363	\$1,357	\$180	\$35	\$215
142	N/A	CLASSROOM 222 SCIENCE		14 88			1,885		High Efficiency Ballast 2'x4' Silver Reflector Kit Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power	14	63		Ceiling	1	882	1,224	1,349 1,080	25	350	306	536	270	\$124	\$1,065	\$363	\$1,253	\$140	\$35	\$175
143	N/A	PREP ROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	2 88			269		High Efficiency Ballast Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	2	63				126	1,530	193 193	25	50	0	77	0	\$12	\$152	\$0	\$132	\$20	\$0	\$20
144	N/A	HALL, SECOND FLOOR	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	9 58			1,362		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	9	42				378	2,610	987 987	16	144	0	376	0	\$58	\$614	\$0	\$524	\$90	\$0	\$90
145	N/A	HALL, SECOND FLOOR	Exit Sign w/ LED	2 2		8,760	35		None	2	2				4	8,760	35 35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
146	N/A	THIRD FLOOR- SMALL OFFICE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	2,610	303		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42				84	2,610	219 219	16	32	0	84	0	\$13	\$137	\$0	\$117	\$20	\$0	\$20
147	N/A	CLASSROOM 301	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	12 11:			2,056		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2/x4' Silver Reflector Kit	12	42	306	Ceiling	1	504	1,224	771 617	70	840	306	1,285	154	\$222	\$1,209	\$363	\$1,357	\$180	\$35	\$215
148	N/A	AUDITORIUM UPPER BALCONY	Incandescent Drum Fixture w/ (2) 60w Incandescent Lamps	4 12	0 480	2,610	1,253		Relamp w/ (2) 15 watt Compact Fluorescent Screw-In	4	30				120	2,610	313 313	90	360	0	940	0	\$145	\$91	\$0	\$91	\$0	\$0	\$0
149	N/A	AUDITORIUM UPPER BALCONY	Exit Sign w/ LED	2 2	4	8,760	35		None	2	2				4	8,760	35 35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
150	N/A	BOOK STORAGE	2'x2' Troffer w/ (2) F17T8 Lamps & (1) Electronic Ballast	1 34	34	360	12		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	1	28				28	360	10 10	6	6	0	2	0	\$0	\$60	\$0	\$50	\$10	\$0	\$10
151	N/A	CLASSROOM 302	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	10 11:	2 1,12	0 1,530	1,714		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2¼4 Silver Reflector Kit	10	42	306	Ceiling	1	420	1,224	643 514	70	700	306	1,071	129	\$185	\$1,008	\$363	\$1,186	\$150	\$35	\$185
152	N/A	CLASSROOM 303	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	11 11:	2 1,23	2 1,530	1,885		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	11	42	306	Ceiling	1	462	1,224	707 565	70	770	306	1,178	141	\$204	\$1,108	\$363	\$1,272	\$165	\$35	\$200
153	N/A	CUSTODIAN	2'x2' Troffer w/ (2) F17T8 Lamps & (1) Electronic Ballast	1 34	34	360	12		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	1	28				28	360	10 10	6	6	0	2	0	\$0	\$60	\$0	\$50	\$10	\$0	\$10
154	N/A	ELEVATOR LOBBY	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	2,610	303		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42				84	2,610	219 219	16	32	0	84	0	\$13	\$137	\$0	\$117	\$20	\$0	\$20
155	N/A	UPPER HALL	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	6 58	348	2,610	908		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	6	42				252	2,610	658 658	16	96	0	251	0	\$39	\$410	\$0	\$350	\$60	\$0	\$60
156	N/A	UPPER HALL	Exit Sign w/ LED	2 2	4	8,760	35		None	2	2				4	8,760	35 35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
157	N/A	SECOND FLOOR- FACULTY ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	2,610	303		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42				84	2,610	219 219	16	32	0	84	0	\$13	\$137	\$0	\$117	\$20	\$0	\$20
158	N/A	FACULTY REST ROOM	2'x2' Troffer w/ (2) F20T12 Lamps & (1) Standard Magnetic Ballast	1 56	56	360	20		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	1	28	252	Wall	1	28	108	10 3	28	28	252	10	7	\$3	\$60	\$215	\$265	\$10	\$0	\$10
159	N/A	CUSTODIAN		0 0	0	360	0	NO LIGHTS		0	0				0	360	0 0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
160	N/A	WOMENS RR (NEXT TO LIBRARY)	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42	1035	Wall	1	84	1,035	174 87	16	32	1,035	66	87	\$24	\$137	\$215	\$331	\$20	\$0	\$20
161	N/A	WOMENS RR (NEXT TO LIBRARY)	4' Uplight Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42	1035	Wall		84	1,035	174 87	16	32	1,035	66	87	\$24	\$137	\$0	\$117	\$20	\$0	\$20
162	N/A	WOMENS RR VESTIBULE	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1 58	58	2,070	120		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42	1035	Wall	1	42	1,035	87 43	16	16	1,035	33	43	\$12	\$68	\$215	\$273	\$10	\$0	\$10
163	N/A	MEDIA CENTER- CUSTODIAN	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1 58	58	360	21		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42				42	360	15 15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
164	N/A	COMPUTER ROOM	4' Uplight Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	29 58	1,68	2 1,530	2,573	92 FC!	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	29	42	306	Ceiling	1	1,218	1,224	1,864 1,491	16	464	306	710	373	\$167	\$1,979	\$363	\$2,018	\$290	\$35	\$325
165	N/A	MEDIA CENTER VESTIBULE	2'x2' Troffer w/ (2) F17T8 Lamps & (1) Electronic Ballast	5 34	170	1,530	260		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	5	28	306	Ceiling	1	140	1,224	214 171	6	30	306	46	43	\$14	\$302	\$363	\$616	\$50	\$0	\$50
166	N/A	MEDIA CENTER VESTIBULE	Downlight Fixture w/ (1) 26w CFL & Electronic Ballast	6 26	156	1,530	239		None	6	26	306	Ceiling	1	156	1,224	239 191	0	0	306	0	48	\$7	\$0	\$363	\$363	\$0	\$0	\$0
167	N/A	MEDIA CENTER VESTIBULE	Fixture w/ (4) 26w CFL	1 10	4 104	1,530	159		None	1	104	306	Ceiling		104	1,224	159 127	0	0	306	0	32	\$5	\$0	\$0	\$0	\$0	\$0	\$0
168	N/A	MEDIA CENTER VESTIBULE	Exit Sign w/ LED	1 2	2	8,760	18		None	1	2				2	8,760	18 18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
169	N/A	MEDIA SPECIALIST OFFICE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	4 88	352	2,070	729		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	4	63	724.5	Wall	1	252	1,346	522 339	25	100	725	207	183	\$60	\$304	\$215	\$459	\$40	\$20	\$60
170	N/A	MEDIA SPECIALIST OFFICE	Downlight Fixture w/ (1) 26w CFL & Electronic Ballast	1 26	26	2,070	54		None	1	26	724.5	Wall		26	1,346	54 35	0	0	725	0	19	\$3	\$0	\$0	\$0	\$0	\$0	\$0
171	N/A	BOOK STORAGE	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	3 58	174	360	63		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	3	42				126	360	45 45	16	48	0	17	0	\$3	\$205	\$0	\$175	\$30	\$0	\$30
172	N/A	READING AREA	Downlight Fixture w/ (1) 26w CFL & Electronic Ballast	2 26	52	1,530	80		None	2	26				52	1,530	80 80	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0



	SPAC	CE DESCRIPTION	EXISTING	IXTURE	ES					REPL	ACEMEN	IT FIXTUR	ES							ENERG'	ANALY	SIS		COS	ST ANALYSI	IS		REBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION FIXT. QTY	PRE WATTS / FIXT.	PRE TOTAL WATTS / LINE	DEFAULT ANNUAL HOURS	PRE ANNUAL KWH	PRE AVERAGE LIGHT LEVEL FOOT CANDLES	PROPOSED FIXTURE DESCRIPTION	POST FIXT. QTY	WAIIS H	ANNUAL HOURS TY		DRS WATTS		ANNUAL KWH	POST ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	**TOTAL ANNUAL **SAVINGS / LINE (INCLUDING SENSORS) **O.154	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
173	N/A	READING AREA	4' Uplight Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 3	58	174	1,530	266		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	3	42			126	1,530	193	193	16	48	0	73	0	\$11	\$205	\$0	\$175	\$30	\$0	\$30
174	N/A	MEDIA CENTER	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast 1	58	58	1,530	89		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power	1	28	306 Cei	lina	28	1,224	43	34	30	30	306	46	9	\$8	\$60	\$0	\$50	\$10	\$0	\$10
175	N/A	MEDIA CENTER	Exit Sign w/ LED 1	2	2	8,760	18		High Efficiency Ballast None	1	2			2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
176	N/A	MEDIA CENTER	6	0	0	1,530	0	MED		6	0			0	1,530	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
								SCONCE															**	**	, ,				
177	N/A	MEDIA CENTER	2	0	0	1,530	0	HANGING	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	2	0			0	1,530		0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
178	N/A	MEDIA CENTER	4' Uplight Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 25		1,450	1,530	2,219		High Efficiency Ballast Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power	25		306 Cei					1,285	16	400	306	612	321	\$144	\$1,706	\$727	\$2,113	\$250	\$70	\$320
179	N/A	CLASSROOM 208 ART	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	704	1,530	1,077		High Efficiency Ballast	8	63	306 Cei	ling 1	504	1,224	771	617	25	200	306	306	154	\$71	\$608	\$363	\$857	\$80	\$35	\$115
180	N/A	CLASSROOM 208 ART	2'x2' Troffer w/ (2) FB32T8 3*-U Lamps & (1) Electronic Ballast 3	58	174	1,530	266		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	3	28	306 Cei	ling 1	84	1,224	129	103	30	90	306	138	26	\$25	\$181	\$363	\$515	\$30	\$0	\$30
181	N/A	STORAGE	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	58	360	21		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42			42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
182	N/A	CLASSROOM 207	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 12	112	1,344	1,530	2,056	65 FC	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4" Silver Reflector Kit	12	42	306 Cei	ling 1	504	1,224	771	617	70	840	306	1,285	154	\$222	\$1,209	\$363	\$1,357	\$180	\$35	\$215
183	N/A	CLASSROOM 206	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 15	112	1,680	1,530	2,570	92 FC!	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	15	42	306 Cei	ling 1	630	1,224	964	771	70	1,050	306	1,607	193	\$278	\$1,511	\$363	\$1,615	\$225	\$35	\$260
184	N/A	CLASSROOM 209	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 6	88	528	1,530	808		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	6	63	306 Cei	ling 1	378	1,224	578	463	25	150	306	230	116	\$53	\$456	\$363	\$725	\$60	\$35	\$95
185	N/A	HALL, ELEVATOR TO CR209	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 12	58	696	2,610	1,817		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	12	42			504	2,610	1,315	1,315	16	192	0	501	0	\$77	\$819	\$0	\$699	\$120	\$0	\$120
186	N/A	HALL, ELEVATOR TO CR209	Exit Sign w/ LED 2	2	4	8,760	35		None	2	2			4	8,760	35	35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
187	N/A	CLASSROOM 210	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	528	1,530	808	37 FC	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	6	63	306 Cei	ling 1	378	1,224	578	463	25	150	306	230	116	\$53	\$456	\$363	\$725	\$60	\$35	\$95
188	N/A	CLASSROOM 211 SCIENCE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 12	88	1,056	1,530	1,616		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	12	63	306 Cei	ling 1	756	1,224	1,157	925	25	300	306	459	231	\$106	\$913	\$363	\$1,121	\$120	\$35	\$155
189	N/A	PREP ROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 3	88	264	360	95		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	3	63			189	360	68	68	25	75	0	27	0	\$4	\$228	\$0	\$198	\$30	\$0	\$30
190	N/A	CLASSROOM 212 SCIENCE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 12	88	1,056	1,530	1,616		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	12	63	306 Cei	ling 1	756	1,224	1,157	925	25	300	306	459	231	\$106	\$913	\$363	\$1,121	\$120	\$35	\$155
191	N/A	HALL, CR211 TO DOUBLE DOORS	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 12	58	696	2,610	1,817	11 FC	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	12	42			504	2,610	1,315	1,315	16	192	0	501	0	\$77	\$819	\$0	\$699	\$120	\$0	\$120
192	N/A	HALL, CR211 TO DOUBLE DOORS	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	88	2,610	230		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	1	63			63	2,610	164	164	25	25	0	65	0	\$10	\$76	\$0	\$66	\$10	\$0	\$10
193	N/A	HALL, CR211 TO DOUBLE DOORS	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	112	112	2,610	292		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	1	42			42	2,610	110	110	70	70	0	183	0	\$28	\$101	\$0	\$86	\$15	\$0	\$15
194	N/A	HALL, CR211 TO DOUBLE DOORS	Downlight Fixture w/ (1) 26w CFL & Electronic Ballast 1	26	26	2,610	68		None	1	26			26	2,610	68	68	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
195	N/A	HALL, CR211 TO DOUBLE DOORS	Exit Sign w/ LED 2	2	4	8,760	35		None	2	2			4	8,760	35	35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
196	N/A	BOYS REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 6	58	348	2,070	720		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	6	42	1035 Cei	ling 1	252	1,035	522	261	16	96	1,035	199	261	\$71	\$410	\$363	\$678	\$60	\$35	\$95
197	N/A	STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 4	58	232	360	84		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	4	42			168	360	60	60	16	64	0	23	0	\$4	\$273	\$0	\$233	\$40	\$0	\$40
198	N/A	STORAGE	2'x2' Troffer w/ (2) F17T8 Lamps & (1) Electronic Ballast	34	34	360	12		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	1	28			28	360	10	10	6	6	0	2	0	\$0	\$60	\$0	\$50	\$10	\$0	\$10
199	N/A	CUSTODIAN	Incandescent Fixture w/ (1) 60w Incandescent Lamp 1	60	60	360	22		Relamp w/ (1) 14 watt Compact Fluorescent Mini Spring Lamp Screw- In 1 Piece	1	14			14	360	5	5	46	46	0	17	0	\$3	\$16	\$0	\$16	\$0	\$0	\$0
200	N/A	GIRLS REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 6	58	348	2,070	720		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	6	42	1035 Cei	ling 1	252	1,035	522	261	16	96	1,035	199	261	\$71	\$410	\$363	\$678	\$60	\$35	\$95
201	N/A	CLASSROOM 205	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 9	112	1,008	1,530	1,542		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	9	42	306 Cei	ling 1	378	1,224	578	463	70	630	306	964	116	\$167	\$907	\$363	\$1,100	\$135	\$35	\$170
202	N/A	WOMENS REST ROOM	Incandescent Fixture w/ (2) 60w Incandescent Lamps 1	120	120	2,070	248		Relamp w/ (2) 15 watt Compact Fluorescent Screw-In	1	30 1	1035 W	all 1	30	1,035	62	31	90	90	1,035	186	31	\$34	\$23	\$215	\$237	\$0	\$0	\$0
203	N/A	MEN REST ROOM	Incandescent Fixture w/ (2) 60w Incandescent Lamps 1	120	120	2,070	248		Relamp w/ (2) 15 watt Compact Fluorescent Screw-In	1	30 1	1035 W	all 1	30	1,035	62	31	90	90	1,035	186	31	\$34	\$23	\$215	\$237	\$0	\$0	\$0
204	N/A	CLASSROOM 213	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 15	112	1,680	1,530	2,570		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	15	42	306 Cei	ling 1	630	1,224	964	771	70	1,050	306	1,607	193	\$278	\$1,511	\$363	\$1,615	\$225	\$35	\$260
205	N/A	CLASSROOM 214	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 15	112	1,680	1,530	2,570		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	15	42	306 Cei	ling 1	630	1,224	964	771	70	1,050	306	1,607	193	\$278	\$1,511	\$363	\$1,615	\$225	\$35	\$260
206	N/A	CLASSROOM 204	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 15	112	1,680	1,530	2,570		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	15		306 Cei	lina 1		1,224		771	70	1,050	306	1,607	193	\$278	\$1,511	\$363	\$1,615	\$225	\$35	\$260
207	N/A	CLASSROOM 203	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 15		1,680	1,530	2,570		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	15		306 Cei		630	1,224		771	70	1,050	306	1,607	193	\$278	\$1,511	\$363	\$1,615	\$225	\$35	\$260
208	N/A	CLASSROOM 215	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 15	112	1,680	1,530	2,570		High Efficiency Ballast 2'x4' Silver Reflector Kit Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	15		306 Cei			1,224		771	70	1,050	306	1,607	193	\$278	\$1,511	\$363	\$1,615	\$225	\$35	\$260
209	N/A	CLASSROOM 216	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 15	112	1,680	1,530	2,570		High Efficiency Ballast 2'x4' Silver Reflector Kit Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	15		306 Cei			1,224		771	70	1,050	306	1,607	193	\$278	\$1,511	\$363	\$1,615	\$225	\$35	\$260
210	N/A	CLASSROOM 201	4' Wrap Fluorescent w (4) FO32T8 Lamps & (2) Electronic Ballasts 15	112	1,680	1,530	2,570		High Efficiency Ballast 2'x4' Silver Reflector Kit Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	15		306 Cei			1,224		771	70	1,050	306	1,607	193	\$278	\$1,511	\$363	\$1,615	\$225	\$35	\$260
210						1,530	2,570		High Efficiency Ballast 2'x4' Silver Reflector Kit Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	15								70			1,607	193							
217	N/A	CLASSROOM 202	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 15	112	1,680				High Efficiency Ballast 2'x4' Silver Reflector Kit Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power			306 Cei		630	1,224		771		1,050	306			\$278	\$1,511	\$363	\$1,615	\$225	\$35	\$260
212	N/A	CLASSROOM 217	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 15	112	1,680	1,530	2,570		High Efficiency Ballast 2'x4' Silver Reflector Kit Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	15		306 Cei	ling 1		1,224		771	70	1,050	306	1,607	193	\$278	\$1,511	\$363	\$1,615	\$225	\$35	\$260
213	N/A	HALL, CR217	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 17	58	986	2,610	2,573		High Efficiency Ballast	17	42			714			1,864	16	272	0	710	0	\$110	\$1,160	\$0	\$990	\$170	\$0	\$170
214	N/A	HALL, CR217	Exit Sign w/ LED 2	2	4	8,760	35		None Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	2	2			4	8,760		35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
215	N/A	STAIRWELL, CR217 TOP LANDING	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 5	58	290	2,610	757		Relamp & Reballast w (2) F2818 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	5	42			210	2,610	548	548	16	80	0	209	0	\$32	\$341	\$0	\$291	\$50	\$0	\$50



Dome	-Tech, Inc.																														
	SPAC	E DESCRIPTION	EXIST	TING FI	XTURE	S					REPL	ACEME	NT FIXT	TURES								ENERG	Y ANAL	YSIS		cos	T ANALYSI	S		REBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION	PRE FIXT. QTY	PRE WATTS / FIXT.	PRE TOTAL WATTS / LINE	DEFAULT ANNUAL HOURS	PRE ANNUAL KWH	PRE AVERAGE LIGHT LEVEL FOOT CANDLES	PROPOSED FIXTURE DESCRIPTION	POST FIXT. QTY		ANNUAL HOURS SAVED	SENSOR TYPE	QTY SENSORS / LINE	POST TOTAL WATTS / LINE	ANNUAL HOURS	POST ANNUAL KWH	POST ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	* \$ SAVINGS / LINE (INCLUDING SENSORS)	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
216	N/A	STAIRWELL, MEDIA CENTER	4' Strip Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1	58	58	2,610	151		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42				42	2,610	110	110	16	16	0	42	0	\$6	\$68	\$0	\$58	\$10	\$0	\$10
217	N/A	STAIRWELL, MEDIA CENTER	Exit Sign w/ LED	1	2	2	8,760	18		None	1	2				2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
218	N/A	STAIRWELL, MEDIA CENTER	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	4	58	232	2,610	606		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	4	42				168	2,610	438	438	16	64	0	167	0	\$26	\$273	\$0	\$233	\$40	\$0	\$40
219	N/A	STAIRWELL, CENTER 1	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	7	58	406	2,610	1,060		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	7	42				294	2,610	767	767	16	112	0	292	0	\$45	\$478	\$0	\$408	\$70	\$0	\$70
220	N/A	STAIRWELL, CENTER 2	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	7	58	406	2,610	1,060		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	7	42				294	2,610	767	767	16	112	0	292	0	\$45	\$478	\$0	\$408	\$70	\$0	\$70
221	N/A	AUDITORIUM	Incandescent Drum Fixture w/ (2) 60w Incandescent Lamps	5	120	600	1,530	918		Relamp w/ (2) 15 watt Compact Fluorescent Screw-In	5	30	306	Ceiling	1	150	1,224	230	184	90	450	306	689	46	\$113	\$114	\$363	\$477	\$0	\$0	\$0
222	N/A	AUDITORIUM	Exit Sign w/ LED	5	2	10	8,760	88		None	5	2				10	8,760	88	88	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
223	N/A	AUDITORIUM	5 Watt LED PAR 19 fixture	12	5	60	1,530	92		None	12	5	306	Ceiling	1	60	1,224	92	73	0	0	306	0	18	\$3	\$0	\$363	\$363	\$0	\$0	\$0
224	N/A	AUDITORIUM	HID Fixture w/ (1) 400w Metal Halide Lamp & Ballast	9	455	4,095	1,530	6,265		New Fixture w/ (1) 165w Induction Lamp & Induction Ballast Universal Voltage	9	175	306	Ceiling	1	1,575	1,224	2,410	1,928	280	2,520	306	3,856	482	\$669	\$3,452	\$363	\$3,330	\$450	\$35	\$485
225	N/A	MAIN LOBBY	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	8	112	896	2,610	2,339		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	8	42				336	2,610	877	877	70	560	0	1,462	0	\$225	\$806	\$0	\$686	\$120	\$0	\$120
226	N/A	MAIN LOBBY	Exit Sign w/ LED	2	2	4	8,760	35		None	2	2				4	8,760	35	35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
227	N/A	EXTERIOR, ENTRANCE SCONCE	Incandescent Vanity Fixture w/ (4) 15w Incandescent Lamps	1	60	60	4,745	285	OFF	None	1	60				60	4,745	285	285	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
228	N/A	EXTERIOR, ENTRANCE CHANDELIER		1	0	0	4,745	0	OFF		1	0				0	4,745	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
229	N/A	EXTERIOR, WALL PACK	HID Fixture w/ (1) 150w Metal Halide Lamp & Ballast	15	195	2,925	4,745	13,879		New Fixture w/ (1) 100w Induction Lamp & Induction Ballast Universal Voltage	15	110				1,650	4,745	7,829	7,829	85	1,275	0	6,050	0	\$933	\$5,655	\$0	\$4,605	\$1,050	\$0	\$1,050
230	N/A	BENCH LIGHTS		2	0	0	4,745	0			2	0				0	4,745	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
231	N/A	EXTERIOR, SIDE DOOR WALL PACK	HID Fixture w/ (1) 50w Metal Halide Lamp & Ballast	3	62	186	4,745	883		New Wall Pack Fixture w/ (1) 40w Induction Lamp & Induction Ballast Universal Voltage	3	40				120	4,745	569	569	22	66	0	313	0	\$48	\$761	\$0	\$761	\$0	\$0	\$0
232	N/A	EXTERIOR, FLOODLIGHTS		2	0	0	4,745	0	H1X50		2	0				0	4,745	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
233	N/A	EXTERIOR, REAR EAVE	HID Fixture w/ (1) 50w High Pressure Sodium Lamp & Ballast	2	60	120	4,745	569		New Wall Pack Fixture w/ (2) 18w CF Lamps & Electronic Ballast Photocell	2	40				80	4,745	380	380	20	40	0	190	0	\$29	\$163	\$0	\$163	\$0	\$0	\$0
234	N/A	EXTERIOR, MEDIA SCONCE	HID Fixture w/ (1) 50w Metal Halide Lamp & Ballast	3	62	186	4,745	883		None	3	62				186	4,745	883	883	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
				412		34,601		69,349			412				28	22,403		45,642	39,404		12,198	11,201	23,707	6,238	\$4,620	\$37,301	\$9,430	\$41,130	\$5,005	\$595	\$5,600



LIGHTING RETROFIT SUMMARY FOR: Laning Ave 18 Laning Road

BUILDING INFORM	ATION		EXISTIN	G FIXTURES	S	F	ROPOS	ED FIXTUR	ES			SAVI	NGS					FIN	ANCIAL		
BUILDING	SQ. FT.	PRE TOTAL FIXT. QTY	PRE TOTAL FIXT. WATTS	PRE ANNUAL KWH CONSUMPTION	PRE WATTS / SQ. FT	POST TOTAL FIXT. QTY	POST TOTAL FIXT. WATTS	POST ANNUAL KWH CONSUMPTION	POST WATTS / SQ. FT	WATTS SAVED	ANNUAL KWH SAVED	ANNUAL KWH SAVED WITH SENSORS	ANNUAL SAVINGS \$ FIXT.	ANNUAL SAVINGS \$ SENSORS	ANNUAL SAVINGS \$ TOTAL	CO2 REDUCTION (TONS)	NJ Smart Start REBATE \$	FIXTURES TOTAL (INSTALLED) COST \$	SENSORS TOTAL (INSTALLED) COST \$	MATERIAL TOTAL (INSTALLED) COST \$	SIMPLE PAYBACK NET OF REBATE (YEARS)
Laning Ave	46,477	574	52,368	106,614	1.13	574	28,169	48,973	0.61	24,199	57,641	9,939	\$8,705	\$1,501	\$10,206	19.1	\$8,105	\$50,330	\$17,471	\$67,801	5.8

12%	PERCENTAGE OF REBATES IN TOTAL INSTALLED COST
46%	PERCENTAGE OF CONSUMPTION COMPARE TO EXISTING STATE
-	
43%	EXISTING PERCENTAGE OF LIGHTING ENERGY CONSUMPTION OF THE WHOLE BUILDING
20%	PROPOSED PERCENTAGE OF LIGHTING ENERGY CONSUMPTION OF THE WHOLE BUILDING



LIGHTING UPGRADE PROJECT CUSTOMER: Verona Schools FACILITY SQ. FT. DATE OF AUDIT:
LINE x LINE DETAIL FACILITY: Laning Ave 46,477 5/6/2013

	SPAC	E DESCRIPTION	EXISTI	NG FIX	XTURE	S					REPLA	ACEME	NT FIX	TURES								ENERG	Y ANALYS	SIS		COS	T ANALYSI	S	R	REBATES	
	PRINT UMBER	SPACE DESCRIPTION		PRE FIXT. QTY	PRE WATTS / FIXT.	PRE TOTAL WATTS / LINE	DEFAULT ANNUAL HOURS	PRE ANNUAL KWH	PRE AVERAGE LIGHT LEVEL FOOT CANDLES	PROPOSED FIXTURE DESCRIPTION	FIXT.	POST WATTS / FIXT.	ANNUAL HOURS SAVED	SENSOR TYPE	QTY SENSORS / LINE	POST TOTAL WATTS / LINE	ANNUAL HOURS	POST ANNUAL KWH	POST NNUAL KWH WITH OCC ENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	KWH SAVED S FROM	ANNUAL KWH SAVED WITH OCC	TOTAL ANNUAL \$ SAVINGS / LINE (INCLUDING SENSORS) \$0.151	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		25	26	27	28	29	53	54	55
1	N/A	MAIN LOBBY	Downlight Fixture w/ (1) one 26W QUAD CFL and High Efficiency Electronic Ballast	11	27	297	2,070	615		None	11	27				297	2,070	615	615	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	N/A	MAIN LOBBY	Exit Sign w/ LED	2	2	4	8,760	35		None	2	2				4	8,760	35	35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3 1	N/A	MEDIA CENTER	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	9	58	522	2,070	1,081		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'\(\textit{2}\)' Silver Reflector Kit	9	28				252	2,070	522	522	30	270	0	559	0	\$84	\$644	\$0	\$554	\$90	\$0	\$90
4	N/A	MEDIA CENTER	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	30	88	2,640	2,070	5,465	58 FC	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	30	63	724.5	Ceiling	3	1,890	1,346	3,912 2	2,543	25	750	725	1,553 1	1,369	\$441	\$2,282	\$1,090	\$2,967	\$300	\$105	\$405
5	N/A	MEDIA CENTER	Exit Sign w/ LED	2	2	4	8,760	35		None	2	2				4	8,760	35	35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	N/A	COMPUTER LAB	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	12	88	1,056	360	380		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	12	63	252	Ceiling	1	756	108	272	82	25	300	252	108	191	\$45	\$913	\$363	\$1,121	\$120	\$35	\$155
7	N/A	LIBRARIAN OFFICE	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	3	58	174	1,530	266		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	3	28	306	Wall	1	84	1,224	129	103	30	90	306	138	26	\$25	\$181	\$215	\$366	\$30	\$0	\$30
8	N/A	BOOK STORAGE		0	0	0	2,070	0	LOCKED		0	0				0	2,070	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	N/A	MULTIPURPOSE ROOM	HID Fixture w/ (1) 250w Metal Halide Lamp & Ballast	6	295	1,770	360	637		New Fixture w/ (1) 165w Induction Lamp & Induction Ballast Universal Voltage	6	175	252	Ceiling	3	1,050	108	378	113	120	720	252	259	265	\$79	\$2,301	\$1,090	\$2,986	\$300	\$105	\$405
10	N/A	MULTIPURPOSE ROOM	Exit Sign w/ LED	3	2	6	8,760	53		None	3	2				6	8,760	53	53	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	N/A	STAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2	58	116	1,530	177		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42				84	1,530	129	129	16	32	0	49	0	\$7	\$137	\$0	\$117	\$20	\$0	\$20
12	N/A	STAGE	Exit Sign w/ LED	2	2	4	8,760	35		None	2	2				4	8,760	35	35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
13	N/A	GYM	HID Fixture w/ (1) 250w Metal Halide Lamp & Ballast	12	295	3,540	2,310	8,177		New Fixture w/ (1) 165w Induction Lamp & Induction Ballast Universal Voltage	12	175	828	Ceiling	3	2,100	1,482	4,851 3	3,112	120	1,440	828	3,326	1,739	\$765	\$4,602	\$1,090	\$4,987	\$600	\$105	\$705
14	N/A	GYM	Exit Sign w/ LED	2	2	4	8,760	35		None	2	2				4	8,760	35	35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
15	N/A	BOYS REST RM NEXT TO GYM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2	58	116	2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42				84	2,070	174	174	16	32	0	66	0	\$10	\$137	\$0	\$117	\$20	\$0	\$20
16	N/A	BOYS REST RM NEXT TO GYM	4' Wrap Fluorescent w/ (1) FO32T8 Lamp & (1) Electronic Ballast	2	32	64	2,070	132		Relamp & Reballast w/ (1) F28T8 Lamp & (1) 1/32 Elec. Low-Power High Efficiency Ballast	2	22				44	2,070	91	91	10	20	0	41	0	\$6	\$101	\$0	\$81	\$20	\$0	\$20
17	N/A	CUSTODIAN CLOSET		0	0	0	1,530	0	LOCKED		0	0				0	1,530	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
18	N/A	GIRLS REST RM NEXT TO GYM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2	58	116	2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42	724.5	Ceiling	1	84	1,346	174	113	16	32	725	66	61	\$19	\$137	\$363	\$480	\$20	\$0	\$20
19	N/A	GIRLS REST RM NEXT TO GYM	4' Wrap Fluorescent w/ (1) FO32T8 Lamp & (1) Electronic Ballast	2	32	64	2,070	132		Relamp & Reballast w/ (1) F28T8 Lamp & (1) 1/32 Elec. Low-Power High Efficiency Ballast	2	22	724.5	Ceiling	1	44	1,346	91	59	10	20	725	41	32	\$11	\$101	\$363	\$445	\$20	\$0	\$20
20	N/A	ATTIC ACROSS FROM 112	Incandescent Fixture w/ (1) 60w Incandescent Lamp	1	60	60	360	22		Relamp w/ (1) 14 watt Compact Fluorescent Mini Spring Lamp Screw- In 1 Piece	1	14				14	360	5	5	46	46	0	17	0	\$3	\$16	\$0	\$16	\$0	\$0	\$0
21	N/A	BOILER ROOM- STAIRWELL	Fixture w/ 23w Screw-In CFL	1	23	23	1,530	35		None	1	23				23	1,530	35	35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	N/A	BASEMENT STORAGE	4' Wrap Fluorescent w/ (3) FO32T8 Lamps & (1) Electronic Ballast	4	88	352	1,530	539		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	4	63				252	1,530	386	386	25	100	0	153	0	\$23	\$304	\$0	\$264	\$40	\$0	\$40
23	N/A	BOILER ROOM	4' Wrap Fluorescent w/ (3) FO32T8 Lamps & (1) Electronic Ballast	5	88	440	1,530	673		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	5	63				315	1,530	482	482	25	125	0	191	0	\$29	\$380	\$0	\$330	\$50	\$0	\$50
24	N/A	BOILER ROOM	Incandescent Fixture w/ (1) 60w Incandescent Lamp	3	60	180	1,530	275		Relamp w/ (1) 14 watt Compact Fluorescent Mini Spring Lamp Screw- In 1 Piece	3	14				42	1,530	64	64	46	138	0	211	0	\$32	\$49	\$0	\$49	\$0	\$0	\$0
25	N/A	BOILER ROOM	Exit Sign w/ LED	1	2	2	8,760	18		None	1	2				2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	N/A	BASEMENT EXIT- STAIRWELL	4' Wrap Fluorescent w/ (4) F40T12/34w Lamps & (2) Energy Efficient Magnetic Ballasts	1	146	146	360	53		Relamp & Reballast w/ (4) F28T8 Lamps & (1) 4/32 Elec. Low-Power High Efficiency Ballast	1	84				84	360	30	30	62	62	0	22	0	\$3	\$84	\$0	\$74	\$10	\$0	\$10
27	N/A	BASEMENT EXIT- STAIRWELL	Exit Sign w/ LED	1	2	2	8,760	18		None	1	2				2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
28	N/A	CLASSROOM 124	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	12	88	1,056	1,530	1,616	73 FC	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	12	63	306	Ceiling	1	756	1,224	1,157	925	25	300	306	459	231	\$104	\$913	\$363	\$1,121	\$120	\$35	\$155
29	N/A	CLASSROOM 123	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	9	88	792	2,070	1,639		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	9	63	724.5	Ceiling	1	567	1,346	1,174	763	25	225	725	466	411	\$132	\$684	\$363	\$923	\$90	\$35	\$125
30	N/A	CLASSROOM 114	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	12	88	1,056	2,610	2,756		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	12	63	522	Ceiling	1	756	2,088	1,973 1	,579	25	300	522	783	395	\$178	\$913	\$363	\$1,121	\$120	\$35	\$155
31	N/A	CLASSROOM 115 ART	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	27	112	3,024	2,610	7,893	89 FC	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	27	42	522	Ceiling	1	1,134	2,088	2,960 2	2,368	70	1,890	522	4,933	592	\$834	\$2,720	\$363	\$2,644	\$405	\$35	\$440
32	N/A	RESOURCE CENTER	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	6	112	672	2,070	1,391		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	6	42	724.5	Ceiling	2	252	1,346	522	339	70	420	725	869	183	\$159	\$605	\$727	\$1,171	\$90	\$70	\$160
33	N/A	STORAGE		0	0	0	2,610	0	LOCKED		0	0				0	2,610	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
34	N/A	CLASSROOM 112	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	12	112	1,344	2,610	3,508		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	12	42	522	Ceiling	1	504	2,088	1,315 1	,052	70	840	522	2,192	263	\$371	\$1,209	\$363	\$1,357	\$180	\$35	\$215
35	N/A	CLASSROOM 111	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	12	112	1,344	1,530	2,056		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	12	42	306	Ceiling	1	504	1,224	771	617	70	840	306	1,285	154	\$217	\$1,209	\$363	\$1,357	\$180	\$35	\$215
36	N/A	CLASSROOM 110	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	12	112	1,344	1,530	2,056		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	12	42	306	Ceiling	1	504	1,224	771	617	70	840	306	1,285	154	\$217	\$1,209	\$363	\$1,357	\$180	\$35	\$215
37	N/A	CLASSROOM 109	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	12	112	1,344	1,530	2,056		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4" Silver Reflector Kit	12	42	306	Ceiling	1	504	1,224	771	617	70	840	306	1,285	154	\$217	\$1,209	\$363	\$1,357	\$180	\$35	\$215
38	N/A	CLASSROOM 108	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	12	112	1,344	1,530	2,056		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	12	42	306	Ceiling	1	504	1,224	771	617	70	840	306	1,285	154	\$217	\$1,209	\$363	\$1,357	\$180	\$35	\$215
39	N/A	GIRLS REST ROOM	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	2	112	224	1,530	343		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	2	42	306	Ceiling	1	84	1,224	129	103	70	140	306	214	26	\$36	\$202	\$363	\$535	\$30	\$0	\$30
40	N/A	120 SGI	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	3	58	174	1,530	266		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	3	42	306	Ceiling	1	126	1,224	193	154	16	48	306	73	39	\$17	\$205	\$363	\$538	\$30	\$0	\$30
41	N/A	CUSTODIAN CLOSET		0	0	0	360	0	LOCKED		0	0				0	360	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
42	N/A	BOYS REST ROOM	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	2	112	224	2,610	585		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	2	42	522	Ceiling	1	84	2,088	219	175	70	140	522	365	44	\$62	\$202	\$363	\$535	\$30	\$0	\$30
43	N/A	ROOM ACROSS FROM NURSE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	11	88	968	2,070	2,004		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	11	63				693	2,070	1,435 1	,435	25	275	0	569	0	\$86	\$837	\$0	\$727	\$110	\$0	\$110



LIGHTING UPGRADE PROJECT CUSTOMER: Verona Schools FACILITY SQ. FT. DATE OF AUDIT:
LINE x LINE DETAIL FACILITY: Laning Ave 46,477 5/6/2013

	SPA	ACE DESCRIPTION	EXIST	ING FI	XTURE	S					REPL	ACEM	ENT FIX	TURES								ENERG	Y ANALY	/SIS		cos	T ANALYSI	IS	R	EBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION	PRE FIXT. QTY	PRE WATTS / FIXT.	PRE TOTAL WATTS / LINE	DEFAULT ANNUAL HOURS	PRE ANNUAL KWH	PRE AVERAGE LIGHT LEVEL FOOT CANDLES	PROPOSED FIXTURE DESCRIPTION	POST FIXT. QTY	POST WATTS / FIXT.	ANNUAL HOURS SAVED	SENSOR TYPE	QTY SENSORS / LINE	POST TOTAL WATTS / LINE	ANNUAL HOURS	POST ANNUAL KWH	POST ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	**TOTAL ANNUAL **SAVINGS / LINE (INCLUDING SENSORS) \$0.151	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
44	N/A	MAIN OFFICE	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	11	58	638	2,610	1,665		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'x2' Silver Reflector Kit	11	28	522	Ceiling	1	308	2,088	804	643	30	330	522	861	161	\$154	\$787	\$363	\$1,005	\$110	\$35	\$145
45	N/A	MAIN OFFICE	Downlight Fixture w/ (1) one 26W QUAD CFL and High Efficiency Electronic Ballast	8	27	216	1,530	330		None	8	27	306	Ceiling		216	1,224	330	264	0	0	306	0	66	\$10	\$0	\$0	\$0	\$0	\$0	\$0
46	N/A	PRINCIPAL OFFICE	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	6	58	348	1,530	532	56 FC	Relamp & Reballast w/ (4) F28T8 Lamps & (1) 4/32 Elec. Low-Power High Efficiency Ballast	6	84	306	Wall	1	504	1,224	771	617	-26	-156	306	-239	154	-\$13	\$503	\$215	\$638	\$60	\$20	\$80
47	N/A	NURSE'S OFFICE	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	7	58	406	360	146		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	7	28	252	Wall	1	196	108	71	21	30	210	252	76	49	\$19	\$423	\$215	\$548	\$70	\$20	\$90
48	N/A	NURSE'S REST ROOM	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	1	58	58	1,530	89		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	1	28	306	Ceiling	1	28	1,224	43	34	30	30	306	46	9	\$8	\$60	\$363	\$414	\$10	\$0	\$10
49	N/A	117 FACULTY	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	5	58	290	360	104		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	5	42	252	Wall	1	210	108	76	23	16	80	252	29	53	\$12	\$341	\$215	\$486	\$50	\$20	\$70
50	N/A	117 FACULTY	Compact Fluorescent 12"x12" Square Fixture w/ (2) 23w CFL & Electronic Ballast	1	46	46	1,530	70		None	1	46	306	Wall		46	1,224	70	56	0	0	306	0	14	\$2	\$0	\$0	\$0	\$0	\$0	\$0
51	N/A	WOMENS RR	Compact Fluorescent 12"x12" Square Fixture w/ (2) 23w CFL & Electronic Ballast	1	46	46	360	17		None	1	46	252	Ceiling	1	46	108	17	5	0	0	252	0	12	\$2	\$0	\$363	\$363	\$0	\$0	\$0
52	N/A	MENS RR	Compact Fluorescent 12"x12" Square Fixture w/ (2) 23w CFL & Electronic Ballast	1	46	46	1,530	70		None	1	46	306	Ceiling	1	46	1,224	70	56	0	0	306	0	14	\$2	\$0	\$363	\$363	\$0	\$0	\$0
53	N/A	CUSTODIAN OFFICE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2	58	116	1,530	177		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42	306	Ceiling	1	84	1,224	129	103	16	32	306	49	26	\$11	\$137	\$363	\$480	\$20	\$0	\$20
54	N/A	CLASSROOM 101	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	8	112	896	1,530	1,371		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	8	42	306	Ceiling	1	336	1,224	514	411	70	560	306	857	103	\$145	\$806	\$363	\$1,014	\$120	\$35	\$155
55	N/A	CLASSROOM 102	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	8	112	896	1,530	1,371		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	8	42	306	Ceiling	1	336	1,224	514	411	70	560	306	857	103	\$145	\$806	\$363	\$1,014	\$120	\$35	\$155
56	N/A	CLASSROOM 103	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	16	112	1,792	1,530	2,742		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	16	42	306	Ceiling	1	672	1,224	1,028	823	70	1,120	306	1,714	206	\$290	\$1,612	\$363	\$1,700	\$240	\$35	\$275
57	N/A	CLASSROOM 105	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	11	112	1,232	360	444		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	11	42	252	Ceiling	1	462	108	166	50	70	770	252	277	116	\$59	\$1,108	\$363	\$1,272	\$165	\$35	\$200
58	N/A	CUSTODIAN CLOSET	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1	58	58	1,530	89		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42				42	1,530	64	64	16	16	0	24	0	\$4	\$68	\$0	\$58	\$10	\$0	\$10
59	N/A	CLASSROOM 104	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	10	112	1,120	1,530	1,714		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	10	42	306	Ceiling	1	420	1,224	643	514	70	700	306	1,071	129	\$181	\$1,008	\$363	\$1,186	\$150	\$35	\$185
60	N/A	CST CONFERENCE ROOM	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	5	58	290	360	104		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast	5	28	252	Wall	1	140	108	50	15	30	150	252	54	35	\$13	\$302	\$215	\$467	\$50	\$0	\$50
61	N/A	CST OFFICE		0	0	0	360	0	LOCKED		0	0				0	360	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
62	N/A	OT/PT STORAGE	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	3	58	174	360	63		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	3	42				126	360	45	45	16	48	0	17	0	\$3	\$205	\$0	\$175	\$30	\$0	\$30
63	N/A	130 OT/PT CLASSROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	9	88	792	1,530	1,212	39 FC	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	9	63	306	Ceiling	1	567	1,224	868	694	25	225	306	344	174	\$78	\$684	\$363	\$923	\$90	\$35	\$125
64	N/A	CLASSROOM 128	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	14	88	1,232	1,530	1,885	54 FC	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	14	63	306	Ceiling	1	882	1,224	1,349	1,080	25	350	306	536	270	\$122	\$1,065	\$363	\$1,253	\$140	\$35	\$175
65	N/A	CLASSROOM 128- STORAGE	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1	58	58	1,530	89		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42				42	1,530	64	64	16	16	0	24	0	\$4	\$68	\$0	\$58	\$10	\$0	\$10
66	N/A	CLASSROOM 128- REST ROOM	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	1	58	58	2,070	120		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'x2' Silver Reflector Kit	1	28	724.5	Wall	1	28	1,346	58	38	30	30	725	62	20	\$12	\$72	\$215	\$276	\$10	\$0	\$10
67	N/A	CLASSROOM 129	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	11	88	968	2,070	2,004		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	11	63	724.5	Ceiling	1	693	1,346	1,435	932	25	275	725	569	502	\$162	\$837	\$363	\$1,055	\$110	\$35	\$145
68	N/A	CLASSROOM 127	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	11	88	968	2,070	2,004		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	11	63	724.5	Ceiling	1	693	1,346	1,435	932	25	275	725	569	502	\$162	\$837	\$363	\$1,055	\$110	\$35	\$145
69	N/A	CLASSROOM 127- REST ROOM	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	1	58	58	2,070	120		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'x2' Silver Reflector Kit	1	28	724.5	Wall	1	28	1,346	58	38	30	30	725	62	20	\$12	\$72	\$215	\$276	\$10	\$0	\$10
70	N/A	CLASSROOM 126	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	11	88	968	2,070	2,004	71 FC	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	11	63	724.5	Ceiling	1	693	1,346	1,435	932	25	275	725	569	502	\$162	\$837	\$363	\$1,055	\$110	\$35	\$145
71	N/A	CLASSROOM 126- REST ROOM	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	1	58	58	2,610	151		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'x2' Silver Reflector Kit	1	28	522	Wall	1	28	2,088	73	58	30	30	522	78	15	\$14	\$72	\$215	\$276	\$10	\$0	\$10
72	N/A	#1 PIP OFFICE	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	6	58	348	2,610	908		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'x2' Silver Reflector Kit	6	28	522	Wall	1	168	2,088	438	351	30	180	522	470	88	\$84	\$429	\$215	\$584	\$60	\$0	\$60
73	N/A	#2 OFFICE	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	6	58	348	2,610	908		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'x2' Silver Reflector Kit	6	28	522	Wall	1	168	2,088	438	351	30	180	522	470	88	\$84	\$429	\$215	\$584	\$60	\$0	\$60
74	N/A	KITCHEN	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2	58	116	2,610	303		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42				84	2,610	219	219	16	32	0	84	0	\$13	\$137	\$0	\$117	\$20	\$0	\$20
75	N/A	REST ROOM NEXT TO LIBRARY	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	1	58	58	2,610	151		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'x2' Silver Reflector Kit	1	28	522	Wall	1	28	2,088	73	58	30	30	522	78	15	\$14	\$72	\$215	\$276	\$10	\$0	\$10
76	N/A	REST ROOM NEXT TO LIBRARY	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	1	58	58	2,610	151		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'x2' Silver Reflector Kit	1	28	522	Wall	1	28	2,088	73	58	30	30	522	78	15	\$14	\$72	\$215	\$276	\$10	\$0	\$10
77	N/A	HALLWAY NEXT TO LIBRARY	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	3	58	174	2,610	454	30 FC	Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'x2' Silver Reflector Kit	3	28				84	2,610	219	219	30	90	0	235	0	\$35	\$215	\$0	\$185	\$30	\$0	\$30
78	N/A	HALLWAY NEXT TO LIBRARY	Exit Sign w/ LED	2	2	4	8,760	35		None None	2	2				4	8,760	35	35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
79	N/A	HALLWAY KITCHEN TO OFFICE #1	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	12	58	696	2,610	1,817		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	12	42				504	2,610	1,315	1,315	16	192	0	501	0	\$76	\$819	\$0	\$699	\$120	\$0	\$120
80	N/A	HALLWAY KITCHEN TO OFFICE #1	Exit Sign w/ LED	7	2	14	8,760	123		None Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	7	2				14	8,760	123	123	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
81	N/A	HALLWAY KITCHEN TO 101	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	10	112	1,120	2,610	2,923		High Efficiency Ballast 2'x4' Silver Reflector Kit	10	42				420	2,610	1,096	1,096	70	700	0	1,827	0	\$276	\$1,008	\$0	\$858	\$150	\$0	\$150
82	N/A	HALLWAY KITCHEN TO 101	Exit Sign w/ LED	2	2	4	8,760	35		None Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	2	2				4	8,760	35	35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
83	N/A	HALLWAY OUTSIDE AUDITORIUM	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	6	112	672	2,610	1,754		Relamp & Rebailast w/ (2) F2818 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2/x4' Silver Reflector Kit Relamp & Rebailast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	6	42				252	2,610	658	658	70	420	0	1,096	0	\$166	\$605	\$0	\$515	\$90	\$0	\$90
84	N/A	HALLWAY NEXT TO MAIN OFFICE	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	18	112	2,016	2,610	5,262		High Efficiency Ballast 2'x4' Silver Reflector Kit	18	42				756	2,610	1,973		70	1,260	0	3,289	0	\$497	\$1,814	\$0	\$1,544	\$270	\$0	\$270
85	N/A	HALLWAY NEXT TO MAIN OFFICE	Exit Sign w/ LED	4	2	8	8,760	70		None Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	4	2				8	8,760	70	70	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
86	N/A	SIDE HALLWAY	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	2	112	224	2,610	585		High Efficiency Ballast 2'x4" Silver Reflector Kit	2	42				84	2,610	219	219	70	140	0	365	0	\$55	\$202	\$0	\$172	\$30	\$0	\$30

Dom	e-Tech, Inc.		LIGHTING UPGRADE PROJECT LINE x LINE DETAIL		CUST FACIL	OMER: LITY:				Verona Schools Laning Ave			F/	ACILITY 46,47				TE OF A 5/6/201													
		E DESCRIPTION	EXIST	ING FI	XTURE	ES					REP	LACEN	IENT F	IXTURES								ENERG	Y ANAL	YSIS		COS	T ANALYSI	IS	F	REBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION	PRE FIXT. QTY	PRE WATTS / FIXT.	PRE TOTAL WATTS / LINE	DEFAULT ANNUAL HOURS	PRE ANNUAL KWH	PRE AVERAGE LIGHT LEVEL FOOT CANDLES	PROPOSED FIXTURE DESCRIPTION	POST FIXT. QTY	POST WATTS / FIXT.	ANNUA HOUR SAVE	S SENSUR	QTY SENSORS / LINE	POST TOTAL WATTS / LINE	ANNUAL HOURS	POST ANNUAL KWH	POST ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	**SAVINGS / LINE (INCLUDING SENSORS)	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
87	N/A	MAIN HALLWAY	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	27	112	3,024	2,610	7,893		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	27	42				1,134	2,610	2,960	2,960	70	1,890	0	4,933	0	\$745	\$2,720	\$0	\$2,315	\$405	\$0	\$405
88	N/A	MAIN HALLWAY	Exit Sign w/ LED	4	2	8	2,610	21		None	4	2				8	2,610	21	21	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
89	N/A	EXTERIOR- 1/2 ROUND WALL SCONCE	Wall-Mounted Fixture w/ (1) 42W CFL and Electronic Ballast	7	45	315	8,760	2,759		None	7	45				315	8,760	2,759	2,759	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
90	N/A	EXTERIOR- MEDIUM WALLPACK	HID Fixture w/ (1) 250w High Pressure Sodium	6	295	1,770	2,610	4,620		New Fixture w/ (1) 150w Induction Lamp & Induction Ballast Universal Voltage	6	157				942	2,610	2,459	2,459	138	828	0	2,161	0	\$326	\$2,652	\$0	\$2,352	\$300	\$0	\$300
91	N/A	EXTERIOR- SMALL WALLPACK	HID Fixture w/ (1) 70w High Pressure Sodium Lamp & Ballast	3	92	276	4,745	1,310		New Wall Pack Fixture w/ (1) 40w Induction Lamp & Induction Ballast Universal Voltage	3	40				120	4,745	569	569	52	156	0	740	0	\$112	\$761	\$0	\$761	\$0	\$0	\$0
92	N/A	EXTERIOR- MAIN ENTRANCE	Wall-Mounted Fixture w/ (1) 42W CFL and Electronic Ballast	6	45	270	2,610	705		None	6	45				270	2,610	705	705	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
93	N/A	EXTERIOR- GYM ENTRANCE	Wall-Mounted Fixture w/ (1) 42W CFL and Electronic Ballast	9	45	405	8,760	3,548		None	9	45				405	8,760	3,548	3,548	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
				574		52,368		106,614			574				53	28,169		58,913	48,973		24,199	21,177	47,701	9,939	8,705	50,330	17,471	59,696	6,925	1,180	8,105



LIGHTING RETROFIT SUMMARY FOR: Verona High School 151 Fairview Avenue

BUILDING INFORMA	ATION		EXISTIN	G FIXTURE	S	P	ROPOS	ED FIXTUR	ES			SAV	NGS					FIN	ANCIAL		
BUILDING	SQ. FT.	PRE TOTAL FIXT. QTY	PRE TOTAL FIXT. WATTS	PRE ANNUAL KWH CONSUMPTION	PRE WATTS / SQ. FT	POST TOTAL FIXT. QTY	POST TOTAL FIXT. WATTS	POST ANNUAL KWH CONSUMPTION	POST WATTS / SQ. FT	WATTS SAVED	ANNUAL KWH SAVED	ANNUAL KWH SAVED WITH SENSORS	ANNUAL SAVINGS \$ FIXT.	ANNUAL SAVINGS \$ SENSORS	ANNUAL SAVINGS \$ TOTAL	CO2 REDUCTION (TONS)	NJ Smart Start REBATE \$	FIXTURES TOTAL (INSTALLED) COST \$	SENSORS TOTAL (INSTALLED) COST \$	MATERIAL TOTAL (INSTALLED) COST \$	SIMPLE PAYBACK NET OF REBATE (YEARS)
Verona High School	120,245	1578	167,788	358,721	1.40	1,578	106,996	218,205	0.89	60,792	140,517	23,085	\$23,883	\$3,924	\$27,807	46.4	\$20,340	\$138,772	\$31,405	\$170,178	5.4

12%	PERCENTAGE OF REBATES IN TOTAL INSTALLED COST
61%	PERCENTAGE OF CONSUMPTION COMPARE TO EXISTING STATE
45%	EXISTING PERCENTAGE OF LIGHTING ENERGY CONSUMPTION OF THE WHOLE BUILDING
27%	PROPOSED PERCENTAGE OF LIGHTING ENERGY CONSUMPTION OF THE WHOLE BUILDING



2011	SPAC	CE DESCRIPTION	EXISTING	FIXTUR	ES			REP	LACEME	NT FIXTURES							ENERG	Y ANALY	/SIS		COS	T ANALYSI	IS	R	REBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION		RE WATTS	PRE TOTAL WATTS / LINE	DEFAULT ANNUAL HOURS	PRE AVERAGE LIGHT LEVEL FOOT CANDLES	PROPOSED FIXTURE DESCRIPTION FIXT. QTY		ANNUAL HOURS SAVED SENSOR TYPE	QTY SENSORS / LINE	POST TOTAL WATTS / LINE	ANNUAL HOURS	POST ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	**TOTAL ANNUAL **SAVINGS / LINE (INCLUDING SENSORS)	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
1	2	3	4	6	7	8	9 10		13	14 15	16	17	18	19 20	21	22	23	24	25	26	27	28	29	53	54	55
1	N/A	CLASSROOM 28	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	2 112	1,344	1,530	2,056 72 FC	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	42	306 Ceiling	1	504	1,224	771 617	70	840	306	1,285	154	\$245	\$1,209	\$363	\$1,357	\$180	\$35	\$215
2	N/A	CLASSROOM 30	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 1	2 112	1,344	1,530	2,056	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	42	306 Ceiling	1	504	1,224	771 617	70	840	306	1,285	154	\$245	\$1,209	\$363	\$1,357	\$180	\$35	\$215
3	N/A	CLASSROOM 32	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 1	2 112	1,344	1,530	2,056	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	42	306 Ceiling	1	504	1,224	771 617	70	840	306	1,285	154	\$245	\$1,209	\$363	\$1,357	\$180	\$35	\$215
4	N/A	CLASSROOM 31	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 1	2 112	1,344	1,530	2,056	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	42	306 Ceiling	1	504	1,224	771 617	70	840	306	1,285	154	\$245	\$1,209	\$363	\$1,357	\$180	\$35	\$215
5	N/A	CLASSROOM 34	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 1	2 112	1,344	1,530	2,056	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4" Silver Reflector Kit	42	306 Ceiling	1	504	1,224	771 617	70	840	306	1,285	154	\$245	\$1,209	\$363	\$1,357	\$180	\$35	\$215
6	N/A	CLASSROOM 33	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 1	2 112	1,344	1,530	2,056	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	42	306 Ceiling	1	504	1,224	771 617	70	840	306	1,285	154	\$245	\$1,209	\$363	\$1,357	\$180	\$35	\$215
7	N/A	ART ROOM 36	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 2	5 88	2,200	1,530	3,366 74 FC	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	63	306 Ceiling	1	1,575	1,224	2,410 1,928	25	625	306	956	482	\$244	\$1,901	\$363	\$1,980	\$250	\$35	\$285
8	N/A	CLASSROOM 35		2 112		1,530	2,056	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	42	306 Ceiling	1	504	1,224	771 617	70	840	306	1,285	154	\$245	\$1,209	\$363	\$1,357	\$180	\$35	\$215
9	N/A	CLASSROOM 37	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 1			1,530	2,056	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	42	306 Ceiling	1	504	1,224	771 617	70	840	306	1,285	154	\$245	\$1,209	\$363	\$1,357	\$180	\$35	\$215
10		CLASSROOM 39				-		High Efficiency Ballast 2'x4' Silver Reflector Kit					-							•						
						1,530	2,056 63 FC	Polyme 9 Behallest w/ (2) E29T9 Lampa 9 (4) 2/22 Elan Law Davier	42	306 Ceiling	'	504	1,224		70	840	306	1,285	154	\$245	\$1,209	\$363	\$1,357	\$180	\$35	\$215
11	N/A	COMPUTER CLASS 38	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts			1,530	3,599	High Efficiency Ballast 2'x4' Silver Reflector Kit Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	42	306 Ceiling	1	882	1,224	1,349 1,080	70	1,470	306	2,249	270	\$428	\$2,116	\$363	\$2,129	\$315	\$35	\$350
12	N/A	COMPUTER CLASS 38	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	348	1,530	532	High Efficiency Ballast 6	42	306 Ceiling	1	252	1,224	386 308	16	96	306	147	77	\$38	\$410	\$363	\$678	\$60	\$35	\$95
13	N/A	CLASSROOM 40	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 1	5 112	1,680	1,530	2,570	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	42	306 Ceiling	1	630	1,224	964 771	70	1,050	306	1,607	193	\$306	\$1,511	\$363	\$1,615	\$225	\$35	\$260
14	N/A	CLASSROOM 45	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 1	2 112	1,344	1,530	2,056	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	42	306 Ceiling	1	504	1,224	771 617	70	840	306	1,285	154	\$245	\$1,209	\$363	\$1,357	\$180	\$35	\$215
15	N/A	CLASSROOM 47	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	0 112	1,120	1,530	1,714	Relamp & Reballast wl (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	42	306 Ceiling	1	420	1,224	643 514	70	700	306	1,071	129	\$204	\$1,008	\$363	\$1,186	\$150	\$35	\$185
16	N/A	WOODSHOP 42	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	0 112	2,240	1,530	3,427	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	42			840	1,530	1,285 1,285	70	1,400	0	2,142	0	\$364	\$2,015	\$0	\$1,715	\$300	\$0	\$300
17	N/A	42 STORAGE/ INSTRUCTOR	2'x4' Troffer w/ (2) F40T12/34w Lamps & (1) Energy Efficient Magnetic Ballast	73	146	360	53	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	42			84	360	30 30	31	62	0	22	0	\$4	\$137	\$0	\$137	\$0	\$0	\$0
18	N/A	CUSTODIAN	Incandescent Fixture w/ (1) 60w Incandescent Lamp	60	60	360	22	Relamp w/ (1) 14 watt Compact Fluorescent Mini Spring Lamp Screw- In 1 Piece 1	14			14	360	5 5	46	46	0	17	0	\$3	\$16	\$0	\$16	\$0	\$0	\$0
19	N/A	CLASSROOM 49	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 1	2 112	1,344	1,530	2,056	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	42	306 Ceiling	1	504	1,224	771 617	70	840	306	1,285	154	\$245	\$1,209	\$363	\$1,357	\$180	\$35	\$215
20	N/A	BOYS REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	2,070	240	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	42	1035 Wall	1	84	1,035	174 87	16	32	1,035	66	87	\$26	\$137	\$215	\$331	\$20	\$0	\$20
21	N/A	STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	360	42	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2	42			84	360	30 30	16	32	0	12	0	\$2	\$137	\$0	\$117	\$20	\$0	\$20
22	N/A	KITCHEN	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 1	8 112	2,016	1,530	3,084	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4" Silver Reflector Kit	42			756	1,530	1,157 1,157	70	1,260	0	1,928	0	\$328	\$1,814	\$0	\$1,544	\$270	\$0	\$270
23	N/A	ICE MAKER RM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	58	360	21	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	42			42	360	15 15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
24	N/A	KITCHEN REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	58	360	21	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	42			42	360	15 15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
25	N/A	KITCHEN REST ROOM	Downlight Fixture w/ (1) 13w CFL screw in	15	15	360	5	None 1	15			15	360	5 5	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	N/A	KITCHEN STORAGE	Incandescent Fixture w/ (1) 60w Incandescent Lamp	1 60	60	360	22	Relamp w/ (1) 14 watt Compact Fluorescent Mini Spring Lamp Screw- In 1 Piece 1	14			14	360	5 5	46	46	0	17	0	\$3	\$16	\$0	\$16	\$0	\$0	\$0
27		KITCHEN OFFICE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast		58	1,530	89	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	42			42	1,530	64 64	16	16	0	24	0	\$4	\$68	\$0	\$58	\$10	\$0	\$10
28		SERVING AREA		2 112		1,530	2,056	High Efficiency Ballast Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power Link Efficiency Ballast 7/4/ 5/hor Pallaster Kin	42			504	1,530	771 771	70	840	0	1,285	0	\$218	\$1,209	\$0	\$1,029	\$180	\$0	\$180
29		DISHWASHER ROOM		2 58	116	1,530	177	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	42			84	1,530	129 129	16	32	0	49	0	\$8	\$137	\$0	\$117	\$20	\$0	\$20
30		GIRLS REST ROOM				2,070	240	High Efficiency Ballast Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	42	1035 Ceiling				174 87	16				87		-					\$20
		CLASSROOM 51			116	-		High Efficiency Ballast Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power			'	84	1,035			32	1,035	66		\$26	\$137	\$363	\$480	\$20	\$0	
31				2 112		1,530	2,056	High Efficiency Ballast 2'x4' Silver Reflector Kit Relamp & Reballast w/ (2) F2818 Lamps & (1) 2/32 Elec. Low-Power 12	42	306 Ceiling	'	504	1,224	771 617	70	840	306	1,285	154	\$245	\$1,209	\$363	\$1,357	\$180		\$215
32		CAFETERIA		26 58	7,308	2,610	19,074	High Efficiency Ballast		522 Ceiling	3	5,292		13,812 11,050	16	2,016	522	5,262	2,762	\$1,364	\$8,600	\$1,090	\$8,325	\$1,260		\$1,365
33	N/A	CAFETERIA	Exit Sign w/ LED	1 2	8	8,760	70	None 4 Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	2			8	8,760	70 70	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
34	N/A	FACULTY CAFETERIA	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	232	2,070	480	High Efficiency Ballast 4	42	724.5 Ceiling	1	168	1,346	348 226	16	64	725	132	122	\$43	\$273	\$363	\$596	\$40	\$0	\$40
35	N/A	CLASSROOM 53	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	0 112	2,240	1,530	3,427	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	42	306 Ceiling	1	840	1,224	1,285 1,028	70	1,400	306	2,142	257	\$408	\$2,015	\$363	\$2,043	\$300	\$35	\$335
36	N/A	CLASSROOM 53 STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	58	360	21	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	42			42	360	15 15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
37	N/A	SCHOOL STORE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	58	1,530	89	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	42			42	1,530	64 64	16	16	0	24	0	\$4	\$68	\$0	\$58	\$10	\$0	\$10
38	N/A	CAFÉ HALL	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	8 58	1,044	2,610	2,725 24 FC	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	42			756	2,610	1,973 1,973	16	288	0	752	0	\$128	\$1,229	\$0	\$1,049	\$180	\$0	\$180
39	N/A	CAFÉ HALL	Exit Sign w/ LED	2	18	8,760	158	None 9	2			18	8,760	158 158	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
40	N/A	SHORT HALL	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	232	2,610	606	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	42			168	2,610	438 438	16	64	0	167	0	\$28	\$273	\$0	\$233	\$40	\$0	\$40
41	N/A	SHORT HALL	Exit Sign w/ LED	2	2	8,760	18	None 1	2			2	8,760	18 18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
42	N/A	STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	5 58	290	2,610	757	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	42			210	2,610	548 548	16	80	0	209	0	\$35	\$341	\$0	\$291	\$50	\$0	\$50
43	N/A	CLASSROOM 41	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	7 112	784	1,530	1,200	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	42	306 Ceiling	1	294	1,224	450 360	70	490	306	750	90	\$143	\$705	\$363	\$929	\$105	\$35	\$140
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	SPAC	E DESCRIPTION	EXISTING	FIXTUR	ES					REPL	ACEME	NT FIXT	URES							ENERG	GY ANAL	YSIS		COS	ST ANALYSI	S	R	EBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION FIX	CT. WALL		DEFAULT ANNUAL HOURS 2610	PRE ANNUAL KWH	PRE AVERAGE LIGHT LEVEL FOOT CANDLES	PROPOSED FIXTURE DESCRIPTION	POST FIXT. QTY	WAIIS	ANNUAL HOURS SAVED	SENSOR TYPE	QTY SENSORS / LINE	POST TOTAL WATTS / LINE	ANNUAL HOURS	POST ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	**TOTAL ANNUAL **SAVINGS / LINE (INCLUDING SENSORS)	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
44	N/A	CLASSROOM 43	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 7	7 112	784	1,530	1,200		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	7	42	306	Ceiling	1	294	1,224	450 360	70	490	306	750	90	\$143	\$705	\$363	\$929	\$105	\$35	\$140
45	N/A	ROOM 17	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	3 112	336	2,610	877		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	3	42	522	Wall	1	126	2,088	329 263	70	210	522	548	66	\$104	\$302	\$215	\$472	\$45	\$0	\$45
46	N/A	FACULTY MENS REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1	58	58	2,070	120		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42				42	2,070	87 87	16	16	0	33	0	\$6	\$68	\$0	\$58	\$10	\$0	\$10
47	N/A	FACULTY MENS REST ROOM	Incandescent 12*x12* Square Fixture w/ 23w Screw-In CFL 1	23	23	2,070	48		None	1	23				23	2,070	48 48	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
48	N/A	CUSTODIAN	Downlight Fixture w/ (1) 13w CFL screw in 1	1 15	15	2,070	31		None	1	15				15	2,070	31 31	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
49	N/A	FACULTY ROOM	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	112	448	360	161		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	4	42	252	Wall	1	168	108	60 18	70	280	252	101	42	\$24	\$403	\$215	\$558	\$60	\$0	\$60
50	N/A	FACULTY WOMENS REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	2 58	116	360	42		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42	252	Wall	1	84	108	30 9	16	32	252	12	21	\$6	\$137	\$215	\$331	\$20	\$0	\$20
51	N/A	FACULTY WOMENS REST ROOM	Downlight Fixture w/ (1) 13w CFL screw in 2	2 15	30	360	11		None	2	15				30	360	11 11	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
52	N/A	LIBRARIAN/ SOCIAL WORKER	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	3 112	896	2,070	1,855		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	8	42	724.5	Wall	1	336	1,346	696 452	70	560	725	1,159	243	\$238	\$806	\$215	\$881	\$120	\$20	\$140
53	N/A	LIBRARY/ MEDIA CENTER	2'x2' Troffer w/ (2) FB40T12/34w 3"-U Lamps & (1) Energy Efficient Magnetic Ballast	4 73	1,022	2,070	2,116		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'x2' Silver Reflector Kit	14	28	724.5	Ceiling	1	392	1,346	811 527	45	630	725	1,304	284	\$270	\$1,001	\$363	\$1,329	\$0	\$35	\$35
54	N/A	LIBRARY/ MEDIA CENTER	-	8 112	5,376	2,070	11,128		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	48	42	724.5	Ceiling	1	2,016	1,346	4,173 2,713	70	3,360	725	6,955	1,461	\$1,430	\$4,836	\$363	\$4,444	\$720	\$35	\$755
55	N/A	LIBRARY/ MEDIA CENTER		5 0	0	2,070	0			5	0	724.5	Ceiling	1	0	1,346	0 0	0	0	725	0	0	\$0	\$0	\$363	\$363	\$0	\$0	\$0
56	N/A	LIBRARYHALL	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast S	58	522	2,610	1,362		Relamp & Reballast w/ (2) F28T6 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	9	42				378	2,610	987 987	16	144	0	376	0	\$64	\$614	\$0	\$524	\$90	\$0	\$90
57	N/A	LIBRARYHALL	Exit Sign w/ LED 2	2 2	4	8,760	35		None	2	2				4	8,760	35 35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
58	N/A	OLD SECTION HALL	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	5 58	348	2,610	908		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	6	42				252	2,610	658 658	16	96	0	251	0	\$43	\$410	\$0	\$350	\$60	\$0	\$60
59	N/A	OLD SECTION HALL	Exit Sign w/ LED 3	3 2	6	8,760	53		None	3	2				6	8,760	53 53	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
60	N/A	FILE STORAGE	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 4	112	448	2,610	1,169		Relamp & Reballast w/ (2) F28T6 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	4	42				168	2,610	438 438	70	280	0	731	0	\$124	\$403	\$0	\$343	\$60	\$0	\$60
61	N/A	COMPUTER CLASS	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 2	1 112	2,352	1,530	3,599		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	21	42	306	Ceiling	1	882	1,224	1,349 1,080	70	1,470	306	2,249	270	\$428	\$2,116	\$363	\$2,129	\$315	\$35	\$350
62	N/A	COMPUTER CLASS	Exit Sign w/ LED 1	1 2	2	8,760	18		None	1	2				2	8,760	18 18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
63	N/A	CUSTODIAN	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1	58	58	2,610	151		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42				42	2,610	110 110	16	16	0	42	0	\$7	\$68	\$0	\$58	\$10	\$0	\$10
64	N/A	PIPE CHASE	Incandescent Fixture w/ (1) 60w Incandescent Lamp	60	60	360	22		Relamp w/ (1) 14 watt Compact Fluorescent Mini Spring Lamp Screw- In 1 Piece	1	14				14	360	5 5	46	46	0	17	0	\$3	\$16	\$0	\$16	\$0	\$0	\$0
65	N/A	WOMENS REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2 58	116	2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42	1035	Wall	1	84	1,035	174 87	16	32	1,035	66	87	\$26	\$137	\$215	\$331	\$20	\$0	\$20
66	N/A	MENS REST ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	174	2,070	360		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	3	42	1035	Wall	1	126	1,035	261 130	16	48	1,035	99	130	\$39	\$205	\$215	\$389	\$30	\$0	\$30
67	N/A	ROOM 29	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	112	448	1,530	685		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	4	42	306	Wall	1	168	1,224	257 206	70	280	306	428	51	\$82	\$403	\$215	\$558	\$60	\$0	\$60
68	N/A	CLASSROOM 27	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	2 88	1,056	1,530	1,616	56 FC	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	12	63	306	Ceiling	1	756	1,224	1,157 925	25	300	306	459	231	\$117	\$913	\$363	\$1,121	\$120	\$35	\$155
69	N/A	CLASSROOM 24	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	2 88	1,056	1,530	1,616		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	12	63	306	Ceiling	1	756	1,224	1,157 925	25	300	306	459	231	\$117	\$913	\$363	\$1,121	\$120	\$35	\$155
70	N/A	CLASSROOM 24	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	2 88	1,056	1,530	1,616	71 FC	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	12	63	306	Ceiling	1	756	1,224	1,157 925	25	300	306	459	231	\$117	\$913	\$363	\$1,121	\$120	\$35	\$155
71	N/A	CLASSROOM 22	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	2 88	1,056	108	114	OCC SENSOR	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	12	63	0	Ceiling	1	756	108	82 82	25	300	0	32	0	\$6	\$913	\$363	\$1,121	\$120	\$35	\$155
72	N/A	NEW SECTION HALL	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	528	2,610	1,378		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	6	63				378	2,610	987 987	25	150	0	392	0	\$67	\$456	\$0	\$396	\$60	\$0	\$60
73	N/A	NEW SECTION HALL	Exit Sign w/ LED 2	2 2	4	8,760	35		None	2	2				4	8,760	35 35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
74	N/A	NEW SECTION HALL	2'x2' Troffer w/ (2) F17T8 Lamps & (1) Electronic Ballast	34	204	2,610	532		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'X2' Silver Reflector Kit	6	28				168	2,610	438 438	6	36	0	94	0	\$16	\$429	\$0	\$369	\$60	\$0	\$60
75	N/A	NEW SECTION HALL	Downlight Fixture w/ (1) 26w CFL & Electronic Ballast	26	104	2,610	271		None	4	26				104	2,610	271 271	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
76	N/A	NEW SECTION HALL	1	0	0	2,610	0	UNKNOW N		1	0				0	2,610	0 0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
77	N/A	NEW SECTION HALL	4' Uplight Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	174	2,610	454		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	3	42				126	2,610	329 329	16	48	0	125	0	\$21	\$205	\$0	\$175	\$30	\$0	\$30
78	N/A	CLASSROOM 20	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	0 88	1,760	108	190	OCC SENSOR	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	20	63	0	Ceiling	1	1,260	108	136 136	25	500	0	54	0	\$9	\$1,521	\$363	\$1,649	\$200	\$35	\$235
79	N/A	FACULTY MENS REST ROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	88	360	32	OCC SENSOR	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	1	63	252	Wall	1	63	108	23 7	25	25	252	9	16	\$4	\$76	\$215	\$281	\$10	\$0	\$10
80	N/A	FACULTY WOMENS REST ROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	88	360	32	OCC SENSOR	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	1	63	252	Wall	1	63	108	23 7	25	25	252	9	16	\$4	\$76	\$215	\$281	\$10	\$0	\$10
81	N/A	BOARD OFFICE RECEPTION	2'x2' Troffer w/ (2) FB40T12/34w 3"-U Lamps & (1) Energy Efficient Magnetic Ballast	73	438	2,070	907	LOCKED	Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'x2' Silver Reflector Kit	6	28				168	2,070	348 348	45	270	0	559	0	\$95	\$429	\$0	\$429	\$0	\$0	\$0
82	N/A	BOARD OFFICE RECEPTION	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	792	2,070	1,639	LOCKED	Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	9	63				567	2,070	1,174 1,174	25	225	0	466	0	\$79	\$684	\$0	\$594	\$90	\$0	\$90
83	N/A	BOARD OFFICE RECEPTION	4' Uplight Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	58	2,070	120		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42				42	2,070	87 87	16	16	0	33	0	\$6	\$68	\$0	\$58	\$10	\$0	\$10
84	N/A	ATHLETIC DIRECTOR	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	352	2,070	729		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	4	63	724.5	Wall	1	252	1,346	522 339	25	100	725	207	183	\$66	\$304	\$215	\$459	\$40	\$20	\$60
85	N/A	OFFICE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	528	2,070	1,093		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	6	63	724.5	Wall	1	378	1,346	782 509	25	150	725	311	274	\$99	\$456	\$215	\$591	\$60	\$20	\$80
86	N/A	OFFICE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	528	2,070	1,093		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	6	63	724.5	Wall	1	378	1,346	782 509	25	150	725	311	274	\$99	\$456	\$215	\$591	\$60	\$20	\$80



	SPAC	CE DESCRIPTION	EXISTING I	IXTURI	ES					REPLA	CEMEN	NT FIXTURI	S						ENER	GY ANAL	YSIS		COS	ST ANALYS	IS	R	EBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION FIXT. QTY	PRE WATTS / FIXT.	PRE TOTAL WATTS / LINE	DEFAULT ANNUAL HOURS	PRE ANNUAL KWH	PRE AVERAGE LIGHT LEVEL FOOT CANDLES	PROPOSED FIXTURE DESCRIPTION	FIXT.	WAIIS	ANNUAL HOURS SAVED TYPE		POST TOTAL WATTS / LINE	ANNUAL HOURS	POST ANNU ANNUAL KWH OC SENS	H SA H C F	ATTS WATTS AVED SAVEI / IXT. LINE	ANNUA HOURS SAVED	SAVED	ANNUAL KWH SAVED WITH OCC	**SAVINGS / LINE (INCLUDING SENSORS)	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
87	N/A	114D PAYROLL	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 2	88	176	2,070	364		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	2	63	724.5 W	1 1	126	1,346	261 17	0 :	25 50	725	104	91	\$33	\$152	\$215	\$347	\$20	\$0	\$20
88	N/A	114 ACCOUNTS PAYCHECK	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 2	88	176	2,070	364		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	2	63	724.5 Wa	1	126	1,346	261 17	0	25 50	725	104	91	\$33	\$152	\$215	\$347	\$20	\$0	\$20
89	N/A	114G DIRECTOR	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 7	88	616	2,070	1,275		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	7	63	724.5 Wa	1	441	1,346	913 59	3	25 175	725	362	320	\$116	\$532	\$215	\$657	\$70	\$20	\$90
90	N/A	114K CONFERENCE	4' Uplight Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 16	58	928	2,070	1,921		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	16	42	724.5 Wa	1	672	1,346	1,391 90	4	16 256	725	530	487	\$173	\$1,092	\$215	\$1,127	\$160	\$20	\$180
91	N/A	COPY AREA	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 4	88	352	2,070	729		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	4	63	724.5 Wa	1	252	1,346	522 33	9	25 100	725	207	183	\$66	\$304	\$215	\$459	\$40	\$20	\$60
92	N/A	114J BREAK ROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 2	88	176	2,070	364		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	2	63	724.5 Wa	1	126	1,346	261 17		25 50	725	104	91	\$33	\$152	\$215	\$347	\$20	\$0	\$20
93	N/A	115 SPECIAL SERVICES	2'x2' Troffer w/ (2) FB40T12/34w 3"-U Lamps & (1) Energy Efficient	73	730	2,070	1,511		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power			724.5 Wa		280	1,346	580 37	\dashv	45 450		932	203	\$193	\$715	\$215	\$910	\$0	\$20	\$20
94	N/A	115 SPECIAL SERVICES	Magnetic Ballast 2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 2	88	176	2,070	364		High Efficiency Ballast 2'x2' Silver Reflector Kit Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power			724.5 Wa		126	1,346	261 17	$\dashv \vdash$	25 50	725		91	\$33	\$152	\$0	\$132	\$20	\$0	\$20
95	N/A	115F BREAK ROOM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 2	88	176	2,070	364		High Efficiency Ballast Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power	2		724.5 Wa		126	1,346	261 17	$\dashv\vdash$	25 50	725	104	91	\$33	\$152	\$215	\$347	\$20	\$0	\$20
95	N/A	AA5G STORAGE	2'x2' Troffer w/ (2) FB40T12/34w 3'-U Lamps & (1) Energy Efficient	73	219	360	79		High Efficiency Ballast Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power	-	28	724.5		94	360	30 30	╁	45 135		49	0	\$8	\$215	\$0	\$215	\$0	\$0	\$0
97	N/A	115D SOCIAL WORKER	Magnetic Ballast 2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 2	88	176	2,070	364		High Efficiency Ballast 2'x2' Silver Reflector Kit Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power			724.5 Wa	1	126	1,346	261 17	\dashv	25 50	725		91	\$33	_	\$215	\$347	\$20	\$0	\$20
97	N/A								High Efficiency Ballast Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power								$\dashv \vdash$						\$152					
98		115C	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 2	88	176	2,070	364		High Efficiency Ballast Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power			724.5 Wa		126	1,346	261 17	\dashv	25 50	725	104	91	\$33	\$152	\$215	\$347	\$20	\$0	\$20
99	N/A	115B	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 2	88	176	2,070	364		High Efficiency Ballast Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power			724.5 Wa		126	1,346	261 17		25 50	725	104	91	\$33	\$152	\$215	\$347	\$20	\$0	\$20
100	N/A	OFFICE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 2	88	176	2,070	364		High Efficiency Ballast Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power			724.5 Wa		126	1,346	261 17	\dashv	25 50	725	104	91	\$33	\$152	\$215	\$347	\$20	\$0	\$20
101	N/A	115A CONFERENCE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 4	88	352	2,070	729		High Efficiency Ballast			724.5 Ceil	-	252	1,346	522 33		25 100		207	183	\$66	\$304	\$363	\$593	\$40	\$35	\$75
102	N/A	CLASSROOM 18	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 15	88	1,320	1,530	2,020		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast		63	306 Ceil	ng 1	945	1,224	1,446 1,1	57	25 375	306	574	289	\$147	\$1,141	\$363	\$1,319	\$150	\$35	\$185
103	N/A	CLASSROOM 18 STORAGE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 3	88	264	360	95		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	3	63			189	360	68 68		25 75	0	27	0	\$5	\$228	\$0	\$198	\$30	\$0	\$30
104	N/A	CLASSROOM 23	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 15	88	1,320	1,530	2,020		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	15	63	306 Ceil	ng 1	945	1,224	1,446 1,1	57	25 375	306	574	289	\$147	\$1,141	\$363	\$1,319	\$150	\$35	\$185
105	N/A	CLASSROOM 21	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 15	88	1,320	1,530	2,020		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	15	63	306 Ceil	ng 1	945	1,224	1,446 1,1	57	25 375	306	574	289	\$147	\$1,141	\$363	\$1,319	\$150	\$35	\$185
106	N/A	CLASSROOM 21 STORAGE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 3	88	264	360	95		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	3	63			189	360	68 68		25 75	0	27	0	\$5	\$228	\$0	\$198	\$30	\$0	\$30
107	N/A	CLASSROOM 21 PREP RM	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	264	360	95		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	3	63			189	360	68 68		25 75	0	27	0	\$5	\$228	\$0	\$198	\$30	\$0	\$30
108	N/A	CLASSROOM 16	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 15	88	1,320	1,530	2,020		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	15	63	306 Ceil	ng 1	945	1,224	1,446 1,1	57	25 375	306	574	289	\$147	\$1,141	\$363	\$1,319	\$150	\$35	\$185
109	N/A	CLASSROOM 16 STORAGE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 3	88	264	360	95		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	3	63			189	360	68 68		25 75	0	27	0	\$5	\$228	\$0	\$198	\$30	\$0	\$30
110	N/A	CLASSROOM 19	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 15	88	1,320	1,530	2,020		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	15	63	306 Ceil	ng 1	945	1,224	1,446 1,1	57	25 375	306	574	289	\$147	\$1,141	\$363	\$1,319	\$150	\$35	\$185
111	N/A	CLASSROOM 14	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	1,320	1,530	2,020		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	15	63	306 Ceil	ng 1	945	1,224	1,446 1,1	57	25 375	306	574	289	\$147	\$1,141	\$363	\$1,319	\$150	\$35	\$185
112	N/A	CLASSROOM 14 STORAGE	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast 3	88	264	360	95		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	3	63			189	360	68 68	: :	25 75	0	27	0	\$5	\$228	\$0	\$198	\$30	\$0	\$30
113	N/A	SCIENCE HALL	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	88	968	2,610	2,526		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	11	63			693	2,610	1,809 1,8	9 :	25 275	0	718	0	\$122	\$837	\$0	\$727	\$110	\$0	\$110
114	N/A	SCIENCE HALL	Exit Sign w/ LED 3	2	6	8,760	53		None	3	2			6	8,760	53 53		0 0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
115	N/A	CLASSROOM 12	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 12	112	1,344	1,530	2,056		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	12	42	306 Ceil	ng 1	504	1,224	771 61	7	70 840	306	1,285	154	\$245	\$1,209	\$363	\$1,357	\$180	\$35	\$215
116	N/A	COMPUTER OFFICE	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 4	112	448	2,070	927		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	4	42	724.5 Wa	1	168	1,346	348 22	6	70 280	725	580	122	\$119	\$403	\$215	\$558	\$60	\$0	\$60
117	N/A	OFFICE	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 4	112	448	2,070	927		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	4	42	724.5 W	1	168	1,346	348 22	6	70 280	725	580	122	\$119	\$403	\$215	\$558	\$60	\$0	\$60
118	N/A	STUDENT ASSISTANCE	2'x4' Troffer w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 4	112	448	2,070	927		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	4	42	724.5 Wa	1	168	1,346	348 22	6	70 280	725	580	122	\$119	\$403	\$215	\$558	\$60	\$0	\$60
119	N/A	CLASSROOM 10	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 27	58	1,566	1,530	2,396		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	27	42	306 W	1	1,134	1,224	1,735 1,3	38	16 432	306	661	347	\$171	\$1,843	\$215	\$1,767	\$270	\$20	\$290
120	N/A	COURTYARD ACCESS HALL	2'x2' Troffer w/ (2) FB40T12/34w 3"-U Lamps & (1) Energy Efficient Magnetic Ballast 3	73	219	2,610	572		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'x2' Silver Reflector Kit	3	28			84	2,610	219 21	9	45 135	0	352	0	\$60	\$215	\$0	\$215	\$0	\$0	\$0
121	N/A	CLASSROOM 15	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 12	112	1,344	1,530	2,056		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	12	42	306 Ceil	ng 1	504	1,224	771 61	7	70 840	306	1,285	154	\$245	\$1,209	\$363	\$1,357	\$180	\$35	\$215
122	N/A	NURSE	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 3	112	336	2,070	696		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	3	42	724.5 Ceil	ng 1	126	1,346	261 17	0	70 210	725	435	91	\$89	\$302	\$363	\$621	\$45	\$0	\$45
123	N/A	NURSE OFFICE	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 4	112	448	2,070	927		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2x4* Silver Reflector Kit			724.5 Wa		168	1,346	348 22	\dashv	70 280		580	122	\$119	\$403	\$215	\$558	\$60	\$0	\$60
124	N/A	NURSE REST ROOM	Downlight Fixture w/ (1) 13w CFL screw in 1	15	15	360	5		High Efficiency Ballast 2x4 Sliver Reflector Kit None	1	15			15	360	5 5	$\dashv \vdash$	0 0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
125	N/A	CLASSROOM 13	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 12	112	1,344	1,530	2,056		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power	12		306 Ceil	na 1	504	1,224	771 61	$\dashv\vdash$	70 840		1,285	154	\$245	\$1,209	\$363	\$1,357	\$180	\$35	\$215
126	N/A	"WHITE GYM" (AKA OLD GYM)	HID Fixture w/ (1) 250w Metal Halide Lamp & Ballast 20		5,900	2,610	15,399		High Efficiency Ballast 2'x4' Silver Reflector Kit New Fixture w/ (1) 165w Induction Lamp & Induction Ballast			522 Ceil		3,500			$\dashv \vdash$	20 2,40		6,264	1,827	\$1,375	\$7,670	\$1,090	\$7,655	\$1,000		\$1,105
127	N/A	"WHITE GYM" (AKA OLD GYM)	Exit Sign w/ LED 4	293	8	8,760	70		Universal Voltage None	4	2	JLL Oell	, J	8	8,760	70 70	\dashv	0 0	0	0,204	0	\$0	\$0	\$1,090	\$0	\$1,000	\$103	\$0
128	N/A	"MAROON GYM" AKA NEW GYM							New Fixture w/ (1) 165w Induction Lamp & Induction Ballast			522 Call	ng 3				$\dashv \vdash$				2,741					·		
				295	8,850	2,610	23,099		Universal Voltage			522 Ceil	ng 3	5,250		13,703 10,9	\dashv	20 3,600		9,396	1	\$2,063	\$11,505	\$1,090	\$10,990	\$1,500		\$1,605
129	N/A	"MAROON GYM" AKA NEW GYM	Exit Sign w/ LED 4	2	8	8,760	70		None	4	2			8	8,760	70 70	╧	0 0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0



	SPAC	E DESCRIPTION	EXISTING F	IXTURE	ES					REPLA	CEMENT	T FIXTURES							ENERG	Y ANAL	YSIS		COS	ST ANALYSI	IS	R	REBATES	
LINE	PRINT NUMBER	SPACE DESCRIPTION	PRE FIXTURE DESCRIPTION FIXT. QTY	PRE WATTS / FIXT.	PRE TOTAL WATTS / LINE	DEFAULT ANNUAL HOURS	PRE ANNUAL KWH	PRE AVERAGE LIGHT LEVEL FOOT CANDLES	PROPOSED FIXTURE DESCRIPTION	FIXT.	HO	INUAL SENSOR TYPE	QTY SENSORS / LINE	POST TOTAL WATTS / LINE	ANNUAL HOURS	POST ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	TOTAL WATTS SAVED / LINE	ANNUAL HOURS SAVED	ANNUAL KWH SAVED FROM FIXT.	ANNUAL KWH SAVED WITH OCC	**TOTAL ANNUAL **SAVINGS / LINE (INCLUDING SENSORS)	TOTAL FIXTURE COST (MATERIAL PLUS LABOR)	TOTAL SENSOR COST (MATERIAL PLUS LABOR)	TOTAL INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
130	N/A	CLASSROOM 55	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 27	112	3,024	1,530	4,627		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2/x4' Silver Reflector Kit	27	42 3	306 Ceiling	1	1,134	1,224	1,735 1,388	70	1,890	306	2,892	347	\$550	\$2,720	\$363	\$2,644	\$405	\$35	\$440
131	N/A	CLASSROOM 55 STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1	58	58	2,610	151	9 FC	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42			42	2,610	110 110	16	16	0	42	0	\$7	\$68	\$0	\$58	\$10	\$0	\$10
132	N/A	BOILER ROOM ENTRANCE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58	116	2,610	303		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42			84	2,610	219 219	16	32	0	84	0	\$14	\$137	\$0	\$117	\$20	\$0	\$20
133	N/A	BOILER OFFICE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58	116	2,610	303	13 FC	Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	2	42			84	2,610	219 219	16	32	0	84	0	\$14	\$202	\$0	\$182	\$20	\$0	\$20
134	N/A	BOILER ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 5	58	290	2,610	757		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	5	42			210	2,610	548 548	16	80	0	209	0	\$35	\$341	\$0	\$291	\$50	\$0	\$50
135	N/A	BOILER ROOM	4' Wrap Fluorescent w/ (3) FO32T8 Lamps & (1) Electronic Ballast 11	88	968	2,610	2,526		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	11	63			693	2,610	1,809 1,809	25	275	0	718	0	\$122	\$837	\$0	\$727	\$110	\$0	\$110
136	N/A	BOILER ROOM	Exit Sign w/ LED 1	2	2	8,760	18		None	1	2			2	8,760	18 18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
137	N/A	OLD GYM OFFICE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58	116	2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42 72	24.5 Wall	1	84	1,346	174 113	16	32	725	66	61	\$22	\$137	\$215	\$331	\$20	\$0	\$20
138	N/A	OLD GYM OFFICE REST ROOM	Downlight Fixture w/ (1) 13w CFL screw in 1	15	15	360	5		None	1	15 2	252 Wall	1	15	108	5 2	0	0	252	0	4	\$1	\$0	\$215	\$215	\$0	\$0	\$0
139	N/A	OLD GYM OFFICE REST ROOM	Incandescent Fixture w/ (2) 60w Incandescent Lamps 1	120	120	360	43		Relamp w/ (2) 15 watt Compact Fluorescent Screw-In	1	30 2	252 Wall		30	108	11 3	90	90	252	32	8	\$7	\$23	\$0	\$23	\$0	\$0	\$0
140	N/A	OLD GYM STORAGE	Incandescent Fixture w/ (2) 60w Incandescent Lamps 1	120	120	360	43		Relamp w/ (2) 15 watt Compact Fluorescent Screw-In	1	30			30	360	11 11	90	90	0	32	0	\$6	\$23	\$0	\$23	\$0	\$0	\$0
141	N/A	TEAM ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 12	58	696	1,530	1,065		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	12	42 3	306 Ceiling	2	504	1,224	771 617	16	192	306	294	154	\$76	\$819	\$727	\$1,356	\$120	\$70	\$190
142	N/A	TEAM ROOM	Exit Sign w/ LED 1	2	2	8,760	18		None	1	2			2	8,760	18 18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
143	N/A	TEAM ROOM SHOWER	4' Wrap Fluorescent w/ (2) F40T12/34w Lamps & (1) Energy Efficient Magnetic Ballast	73	146	360	53		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42			84	360	30 30	31	62	0	22	0	\$4	\$137	\$0	\$137	\$0	\$0	\$0
144	N/A	TEAM ROOM REST ROOM	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58	116	1,530	177		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42 3	306 Wall	1	84	1,224	129 103	16	32	306	49	26	\$13	\$137	\$215	\$331	\$20	\$0	\$20
145	N/A	HALL BETWEEN GYMS	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 6	58	348	2,610	908		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	6	42			252	2,610	658 658	16	96	0	251	0	\$43	\$410	\$0	\$350	\$60	\$0	\$60
146	N/A	HALL BETWEEN GYMS	Exit Sign w/ LED 2	2	4	8,760	35		None	2	2			4	8,760	35 35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
147	N/A	GIRLS LOCKER	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 12	58	696	2,610	1,817		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	12	42			504	2,610	1,315 1,315	16	192	0	501	0	\$85	\$819	\$0	\$699	\$120	\$0	\$120
148	N/A	GIRLS LOCKER	Exit Sign w/ LED 1	2	2	8,760	18		None	1	2			2	8,760	18 18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
149	N/A	GIRLS SHOWER	4' Wrap Fluorescent w/ (2) F40T12/34w Lamps & (1) Energy Efficient Magnetic Ballast	73	146	360	53		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42			84	360	30 30	31	62	0	22	0	\$4	\$137	\$0	\$137	\$0	\$0	\$0
150	N/A	GIRLS LOCKER	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	58	580	2,070	1,201		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	10	42 72	24.5 Ceiling		420	1,346	869 565	16	160	725	331	304	\$108	\$683	\$0	\$583	\$100	\$0	\$100
151	N/A	GIRLS LOCKER	Exit Sign w/ LED 1	2	2	8,760	18		None	1	2			2	8,760	18 18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
152	N/A	GIRLS LOCKER LOBBY	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1	58	58	2,610	151		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42			42	2,610	110 110	16	16	0	42	0	\$7	\$68	\$0	\$58	\$10	\$0	\$10
153	N/A	GIRLS LOCKER LOBBY	Exit Sign w/ LED 1	2	2	8,760	18		None	1	2			2	8,760	18 18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
154	N/A	NEW GYM STORAGE	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 4	112	448	360	161		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	4	42			168	360	60 60	70	280	0	101	0	\$17	\$403	\$0	\$343	\$60	\$0	\$60
155	N/A	ELECTRICAL	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 2	112	224	360	81		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	2	42			84	360	30 30	70	140	0	50	0	\$9	\$202	\$0	\$172	\$30	\$0	\$30
156	N/A	TEACHER STORAGE	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts 4	112	448	360	161		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	4	42			168	360	60 60	70	280	0	101	0	\$17	\$403	\$0	\$343	\$60	\$0	\$60
157	N/A	BOYS LOCKER LOBBY	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 6	58	348	1,530	532		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	6	42			252	1,530	386 386	16	96	0	147	0	\$25	\$410	\$0	\$350	\$60	\$0	\$60
158	N/A	BOYS LOCKER LOBBY	Exit Sign w/ LED 1	2	2	8,760	18		None	1	2			2	8,760	18 18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
159	N/A	BOYS LOCKER	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 12	58	696	1,530	1,065		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	12	42 3	306 Ceiling	2	504	1,224	771 617	16	192	306	294	154	\$76	\$819	\$727	\$1,356	\$120	\$70	\$190
160	N/A	BOYS LOCKER	Exit Sign w/ LED 1	2	2	8,760	18		None	1	2			2	8,760	18 18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
161	N/A	BOYS LOCKER ENTRANCE	2'x2' Troffer w/ (2) FB40T12/34w 3"-U Lamps & (1) Energy Efficient Magnetic Ballast	73	73	1,530	112		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'x2' Silver Reflector Kit	1	28			28	1,530	43 43	45	45	0	69	0	\$12	\$72	\$0	\$72	\$0	\$0	\$0
162	N/A	BOYS LOCKER OFFICE	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1	58	58	1,530	89		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42			42	1,530	64 64	16	16	0	24	0	\$4	\$68	\$0	\$58	\$10	\$0	\$10
163	N/A	BOYS LOCKER OFFICE REST ROOM	2'x2' Troffer w/ (2) FB40T12/34w 3"-U Lamps & (1) Energy Efficient Magnetic Ballast	73	73	1,530	112		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'x2' Silver Reflector Kit	1	28 3	306 Wall	1	28	1,224	43 34	45	45	306	69	9	\$13	\$72	\$215	\$286	\$0	\$0	\$0
164	N/A	OFFICE	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 2	58	116	1,530	177		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast			306 Wall	1	84	1,224	129 103	16	32	306	49	26	\$13	\$137	\$215	\$331	\$20	\$0	\$20
165	N/A	NEW GYM TEAM ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 27	58	1,566	1,530	2,396		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast			306 Ceiling	2	1,134	1,224	1,735 1,388	16	432	306	661	347	\$171	\$1,843	\$727	\$2,229	\$270	\$70	\$340
166	N/A	NEW GYM TEAM ROOM	Exit Sign w/ LED 2	2	4	8,760	35		None None Polymn & Poholiset w/ (2) E28T8 arms & (4) 2/32 Elas Lou. Dougr		2			4	8,760	35 35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
167	N/A	NEW GYM TEAM ROOM SHOWER	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast 5	58	290	360	104		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power		42			210	360	76 76	16	80	0	29	0	\$5	\$341	\$0	\$291	\$50	\$0	\$50
168	N/A	ATHLETIC TRAINER OFFICE	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 3	58	174	1,530	266		Relamp & Reballast w/ (2) F2818 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power			306 Wall	1	126	1,224	193 154	16	48	306	73	39	\$19	\$205	\$215	\$389	\$30	\$0	\$30
169	N/A	GYM/ AUDITORIUM HALL	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 6	58	348	2,610	908		High Efficiency Ballast Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power		42			252	2,610	658 658	16	96	0	251	0	\$43	\$410	\$0	\$350	\$60	\$0	\$60
170	N/A	GYM/ AUDITORIUM LOBBY	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 5	58	290	2,610	757		High Efficiency Ballast		42			210	2,610	548 548	16	80	0	209	0	\$35	\$341	\$0	\$291	\$50	\$0	\$50
171	N/A	GYM/ AUDITORIUM LOBBY	Exit Sign w/ LED 1	2	2	8,760	18		None Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power		2			2	8,760	18 18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
172	N/A	MUSIC ROOM LOBBY	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast 1	58	58	1,530	89		High Efficiency Ballast	1	42			42	1,530	64 64	16	16	0	24	0	\$4	\$68	\$0	\$58	\$10	\$0	\$10



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SP	ACE DESCRIPTION	EXIST	ING FIXT		PRE I	DEFAULT		PRE		KEPL		NT FIXT	UKES		POST	ANNUAL	1	POST		TOTAL	ENERG	ANNUAL	ANNUAL	TOTAL ANNUAL	TOTAL FIXTURE	TOTAL SENSOR	TOTAL		EBATES	
LINE PRINT NUMBER	SPACE DESCRIPTION		FIXT. W		TOTAL WATTS	ANNUAL HOURS 2610	ANNUAL LIC	VERAGE BHT LEVEL FOOT CANDLES	PROPOSED FIXTURE DESCRIPTION	POST FIXT. QTY	WATTS	ANNUAL HOURS SAVED	SENSOR TYPE	QTY SENSORS / LINE	TOTAL WATTS / LINE	HOURS	ANNUAL	ANNUAL KWH WITH OCC SENSOR	WATTS SAVED / FIXT.	WATTS SAVED / LINE	ANNUAL HOURS SAVED	KWH SAVED FROM FIXT.	KWH SAVED WITH OCC	\$ SAVINGS / LINE (INCLUDING SENSORS) \$0.170	COST (MATERIAL PLUS LABOR)	COST (MATERIAL PLUS LABOR)	INSTALLED COST AFTER INCENTIVES	TOTAL FIXTURES REBATE PER LINE	TOTAL SENSORS REBATE PER LINE	TOTAL REBATE / LINE
173 N/A	MUSIC ROOM	4' Wrap Fluorescent w/ (4) FO32T8 Lamps & (2) Electronic Ballasts	28	112	3,136	1,530	4,798		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast 2'x4' Silver Reflector Kit	28	42	306	Ceiling	2	1,176	1,224	1,799	1,439	70	1,960	306	2,999	360	\$571	\$2,821	\$727	\$3,058	\$420	\$70	\$490
174 N/A	MUSIC KEYBOARDS	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1	58	58	360	21		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42				42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
175 N/A	MUSIC STORAGE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1	58	58	360	21		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42				42	360	15	15	16	16	0	6	0	\$1	\$68	\$0	\$58	\$10	\$0	\$10
176 N/A	MUSIC LOCKER	2'x4' Troffer w/ (3) FO32T8 Lamps & (1) Electronic Ballast	10	88	880	360	317		Relamp & Reballast w/ (3) F28T8 Lamps & (1) 3/32 Elec. Low-Power High Efficiency Ballast	10	63				630	360	227	227	25	250	0	90	0	\$15	\$761	\$0	\$661	\$100	\$0	\$100
177 N/A	MUSIC LOCKER	2'x4' Troffer w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2	58	116	360	42		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42				84	360	30	30	16	32	0	12	0	\$2	\$137	\$0	\$117	\$20	\$0	\$20
178 N/A	WEIGHT ROOM	4' Wrap Fluorescent w/ (2) F40T12/34w Lamps & (1) Energy Efficient Magnetic Ballast	24	73	1,752	1,530	2,681		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	24	42	306	Ceiling	1	1,008	1,224	1,542	1,234	31	744	306	1,138	308	\$246	\$1,638	\$363	\$1,966	\$0	\$35	\$35
179 N/A	WEIGHT ROOM	Exit Sign w/ LED	2	2	4	8,760	35		None	2	2				4	8,760	35	35	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
180 N/A	HALL, LOWER LEVEL	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2	58	116	2,610	303		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42				84	2,610	219	219	16	32	0	84	0	\$14	\$137	\$0	\$117	\$20	\$0	\$20
181 N/A	HALL, LOWER LEVEL	Exit Sign w/ LED	1	2	2	8,760	18		None	1	2				2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
182 N/A	LOWER LEVEL MENS ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2	58	116	2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42	1035	Wall	1	84	1,035	174	87	16	32	1,035	66	87	\$26	\$137	\$215	\$331	\$20	\$0	\$20
183 N/A	LOWER LEVEL WOMENS ROOM	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	2	58	116	2,070	240		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	2	42	1035	Wall	1	84	1,035	174	87	16	32	1,035	66	87	\$26	\$137	\$215	\$331	\$20	\$0	\$20
184 N/A	AUDITORIUM	Downlight Fixture w/ (1) 26w CFL & Electronic Ballast	20	26	520	2,610	1,357		None	20	26	522	Ceiling	3	520	2,088	1,357	1,086	0	0	522	0	271	\$46	\$0	\$1,090	\$985	\$0	\$105	\$105
185 N/A	AUDITORIUM	Incandescent Flood Fixture w/ (1) 250w Halogen Lamp	14	250	3,500	2,610	9,135		None	14	250				3,500	2,610	9,135	9,135	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
186 N/A	AUDITORIUM	Incandescent Flood Fixture w/ (1) 500w Halogen Lamp	45 5	500 2	22,500	2,610	58,725		None	45	500				22,500	2,610	58,725	58,725	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
187 N/A	AUDITORIUM	Fluorecsent Wall Sconce, 42W and electronic ballast	14	43	602	2,610	1,571		None	14	43				602	2,610	1,571	1,571	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
188 N/A	AUDITORIUM	Exit Sign w/ LED	4	2	8	8,760	70		None	4	2				8	8,760	70	70	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
189 N/A	AUDITORIUM BOOTH	2'x2' Troffer w/ (2) FB32T8 3"-U Lamps & (1) Electronic Ballast	2	58	116	360	42		Relamp & Reballast w/ (2) F17T8 Lamps & (1) 2/17 Elec. Low-Power High Efficiency Ballast 2'x2' Silver Reflector Kit	2	28				56	360	20	20	30	60	0	22	0	\$4	\$143	\$0	\$123	\$20	\$0	\$20
190 N/A	STAGE	4' Industrial Hood w/ (2) FO32T8 Lamps & (1) Electronic Ballast	24	58	1,392	2,610	3,633		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	24	42				1,008	2,610	2,631	2,631	16	384	0	1,002	0	\$170	\$1,638	\$0	\$1,398	\$240	\$0	\$240
191 N/A	STAGE	Exit Sign w/ LED	1	2	2	8,760	18		None	1	2				2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
192 N/A	STAGE	Incandescent Flood Fixture w/ (1) 250w Halogen Lamp	10	250	2,500	360	900		None	10	250				2,500	360	900	900	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
193 N/A	PROP RROM	4' Industrial Hood w/ (2) FO32T8 Lamps & (1) Electronic Ballast	8	58	464	360	167		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	8	42				336	360	121	121	16	128	0	46	0	\$8	\$546	\$0	\$466	\$80	\$0	\$80
194 N/A	PROP RROM	Exit Sign w/ LED	1	2	2	8,760	18		None	1	2				2	8,760	18	18	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
195 N/A	STAGE REAR ENTRANCE	4' Wrap Fluorescent w/ (2) FO32T8 Lamps & (1) Electronic Ballast	1	58	58	2,610	151		Relamp & Reballast w/ (2) F28T8 Lamps & (1) 2/32 Elec. Low-Power High Efficiency Ballast	1	42				42	2,610	110	110	16	16	0	42	0	\$7	\$68	\$0	\$58	\$10	\$0	\$10
196 N/A	EXTERIOR, MAIN ENTRANCE EAVE	HID Fixture w/ (1) 75w Mercury Vapor Lamp & Ballast	9	93	837	4,745	3,972		None	9	93				837	4,745	3,972	3,972	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
197 N/A	EXTERIOR, COBRA HEAD LOT	HID Fixture w/ (1) 100w High Pressure Sodium	2	130	260	4,745	1,234		None	2	130				260	4,745	1,234	1,234	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
198 N/A	EXTERIOR, BOE ENTRANCE PATH LGT	HID Fixture w/ (1) 100w Metal Halide Lamp & Ballast	3	120	360	4,745	1,708		None	3	120				360	4,745	1,708	1,708	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
199 N/A	EXTERIOR, BOE ENTRANCE EAVE	HID Fixture w/ (1) 70w Metal Halide Lamp & Ballast	2	95	190	4,745	902		New Wall Pack Fixture w/ (1) 70w Induction Lamp & Induction Ballast Universal Voltage	2	70				140	4,745	664	664	25	50	0	237	0	\$40	\$585	\$0	\$585	\$0	\$0	\$0
200 N/A	EXTERIOR, WALL PACK	HID Fixture w/ (1) 100w Metal Halide Lamp & Ballast	6	120	720	4,745	3,416		New Wall Pack Fixture w/ (1) 70w Induction Lamp & Induction Ballast Universal Voltage	6	70				420	4,745	1,993	1,993	50	300	0	1,424	0	\$242	\$1,755	\$0	\$1,755	\$0	\$0	\$0
201 N/A	LOWER FRONT ENTRANCE EAVE	HID Fixture w/ (1) 100w Metal Halide Lamp & Ballast	1	120	120	4,745	569		New Wall Pack Fixture w/ (1) 70w Induction Lamp & Induction Ballast Universal Voltage	1	70				70	4,745	332	332	50	50	0	237	0	\$40	\$293	\$0	\$293	\$0	\$0	\$0
202 N/A	EXTERIOR, AUD. WALL SCONCE		0	0	0	4,745	0			0	0				0	4,745	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
203 N/A	POLE LIGHT	HID Fixture w/ (1) 75w Mercury Vapor Lamp & Ballast	0	93	0	4,745	0		None	0	93				0	4,745	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
204 N/A	EXTERIOR, GYM WALLPACK	HID Fixture w/ (1) 100w High Pressure Sodium	6	130	780	4,745	3,701		New Wall Pack Fixture w/ (1) 70w Induction Lamp & Induction Ballast Universal Voltage	6	70				420	4,745	1,993	1,993	60	360	0	1,708	0	\$290	\$1,755	\$0	\$1,755	\$0	\$0	\$0
205 N/A	EXTERIOR, GYM WALLPACK	HID Fixture w/ (1) 100w Metal Halide Lamp & Ballast	3	120	360	4,745	1,708		New Wall Pack Fixture w/ (1) 70w Induction Lamp & Induction Ballast Universal Voltage	3	70				210	4,745	996	996	50	150	0	712	0	\$121	\$878	\$0	\$878	\$0	\$0	\$0
206 N/A	EXTERIOR, GYM UNDER EAVE	HID Fixture w/ (1) 100w Metal Halide Lamp & Ballast	2	120	240	4,745	1,139		New Wall Pack Fixture w/ (1) 70w Induction Lamp & Induction Ballast Universal Voltage	2	70				140	4,745	664	664	50	100	0	475	0	\$81	\$585	\$0	\$585	\$0	\$0	\$0
207 N/A	STREET LAMP	HID Fixture w/ (1) 100w High Pressure Sodium	10	130	1,300	4,745	6,169		None	10	130				1,300	4,745	6,169	6,169	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
208 N/A	"VERONA HIGH SCHOOL" SIGN	4' Uplight Fluorescent w/ (1) F40T12/34w Lamp & (1) Energy Efficient Magnetic Ballasts	3	42	126	4,745	598		Relamp & Reballast w/ (1) F28T8 Lamp & (1) 1/32 Elec. Low-Power High Efficiency Ballast	3	22				66	4,745	313	313	20	60	0	285	0	\$48	\$152	\$0	\$152	\$0	\$0	\$0
209 N/A	LOT LIGHTS	HID Fixture w/ (1) 250w Metal Halide Lamp & Ballast	6 2	295	1,770	4,745	8,399		New Fixture w/ (1) 165w Induction Lamp & Induction Ballast Universal Voltage	6	175				1,050	4,745	4,982	4,982	120	720	0	3,416	0	\$581	\$2,301	\$0	\$2,001	\$300	\$0	\$300
210 N/A	SIDE LOT GOOSE NECK	HID Fixture w/ (1) 100w High Pressure Sodium	9	130	1,170	4,745	5,552		None	9	130				1,170	4,745	5,552	5,552	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
211 N/A	TENNIS COURT	HID Fixture w/ (1) 250w Metal Halide Lamp & Ballast	16	295	4,720	4,745	22,396		New Fixture w/ (1) 165w Induction Lamp & Induction Ballast Universal Voltage	16	175				2,800	4,745	13,286	13,286	120	1,920	0	9,110	0	\$1,548	\$6,136	\$0	\$5,336	\$800	\$0	\$800



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ECM Costs & Calculations



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ECM #1:

PC POWER MANAGEMENT

Brookdale Elementary School - Computer Time of Day Optimization

Electricity Savings (kWh/yr)	12,043
Natural Gas Savings (therms/yr)	0
Estimated Cost Savings (\$/yr)	\$1,864
Estimated Implementation Cost (\$)	\$807
Estimated Rebate (\$)	\$0
Estimated Implementation Cost after Rebate (\$)	\$807
Simple Payback (Years)	0.4

- 1. Assuming computers are completely powered down during summer vacation.
- 2. Computer and monitor power consumption values based on 2009 ASHRAE Fundamentals, Section 18.12, Table 8.
- 3. Savings assumes all computers go into standby/sleep mode during unoccupied building hours.

FN Brown School - Computer Time of Day Optimization

Electricity Savings (kWh/yr)	16,503
Natural Gas Savings (therms/yr)	0
Estimated Cost Savings (\$/yr)	\$2,835
Estimated Implementation Cost (\$)	\$1,076
Estimated Rebate (\$)	\$0
Estimated Implementation Cost after Rebate (\$)	\$1,076
Simple Payback (Years)	0.4

- 1. Assuming computers are completely powered down during summer vacation.
- 2. Computer and monitor power consumption values based on 2009 ASHRAE Fundamentals, Section 18.12, Table 8.
- 3. Savings assumes all computers go into standby/sleep mode during unoccupied building hours.

Forest Elementary School - Computer Time of Day Optimization

Electricity Savings (kWh/yr)	17,990
Natural Gas Savings (therms/yr)	0
Estimated Cost Savings (\$/yr)	\$2,728
Estimated Implementation Cost (\$)	\$1,166
Estimated Rebate (\$)	\$0
Estimated Implementation Cost after Rebate (\$)	\$1,166
Simple Payback (Years)	0.4

- 1. Assuming computers are completely powered down during summer vacation.
- 2. Computer and monitor power consumption values based on 2009 ASHRAE Fundamentals, Section 18.12, Table 8.
- 3. Savings assumes all computers go into standby/sleep mode during unoccupied building hours.

Laning Avenue School - Computer Time of Day Optimization

Electricity Savings (kWh/yr)	17,990
Natural Gas Savings (therms/yr)	0
Estimated Cost Savings (\$/yr)	\$2,775
Estimated Implementation Cost (\$)	\$1,166
Estimated Rebate (\$)	\$0
Estimated Implementation Cost after Rebate (\$)	\$1,166
Simple Payback (Years)	0.4

- 1. Assuming computers are completely powered down during summer vacation.
- 2. Computer and monitor power consumption values based on 2009 ASHRAE Fundamentals, Section 18.12, Table 8.
- ${\it 3. Savings assumes all computers go into standby/sleep mode during unoccupied building hours.}\\$

HB Whitehorne Middle School - Computer Time of Day Optimization

Electricity Savings (kWh/yr)	49,659
Natural Gas Savings (therms/yr)	0
Estimated Cost Savings (\$/yr)	\$7,500
Estimated Implementation Cost (\$)	\$3,319
Estimated Rebate (\$)	\$0
Estimated Implementation Cost after Rebate (\$)	\$3,319
Simple Payback (Years)	0.4

- 1. Assuming computers are completely powered down during summer vacation.
- 2. Computer and monitor power consumption values based on 2009 ASHRAE Fundamentals, Section 18.12, Table 8.
- ${\it 3. Savings assumes all computers go into standby/sleep mode during unoccupied building hours.}\\$

Verona High School - Computer Time of Day Optimization

Electricity Savings (kWh/yr)	69,285
Natural Gas Savings (therms/yr)	0
Estimated Cost Savings (\$/yr)	\$11,776
Estimated Implementation Cost (\$)	\$4,664
Estimated Rebate (\$)	\$0
Estimated Implementation Cost after Rebate (\$)	\$4,664
Simple Payback (Years)	0.4

- 1. Assuming computers are completely powered down during summer vacation.
- 2. Computer and monitor power consumption values based on 2009 ASHRAE Fundamentals, Section 18.12, Table 8.
- 3. Savings assumes all computers go into standby/sleep mode during unoccupied building hours.



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ECM #2:

INSULATE PIPING

CALCULATIONS

Verona High School - HHW Pipe Insulation

N/N	SCRIPTION	UNIT	QTY	MATERIAL		LABOR		TOTAL
IN/IN	WORK		OINIT	OIVII QII	PER UNIT	TOTAL	PER UNIT	TOTAL
1	2" Pipe Insu	LF	75	5	375	5	341	716
2			1		-		-	•
3			1		-		-	-
4			1		-		-	-
5			1		-		-	•
6			1		-		-	•
Other Estimated Implementation Costs						150		

TOTAL		\$ 866
SUB-TOTAL		716
O&P	10%	72
ASBESTOS ABATEMENT		-
DIRECT COST		787
PAYMENT & PERFORMANCE BOND	0%	-
SUB-TOTAL		787
CONTINGENCY	10%	79
ASBESTOS CONTINGENCY	0%	-
SUB-TOTAL		866
ASBESTOS DESIGN & AIR MONITORING, TESTING		-
IC FEE	0.0%	-
SUB-TOTAL		866
INTEREST DURING CONSTRUCTION	0%	-
TOTAL		\$ 866

FN Brown Elementary School - HHW Pipe Insulation

N/N	SCRIPTION	UNIT	QTY	MATERIAL		LABOR		TOTAL
	WORK		Q I I	PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAL
1	2" Pipe Insu	LF	20	5	100	5	91	191
2			1		-		-	•
3			1		-		-	•
4			1		-		-	•
5			1		-		-	•
6			1		-		-	-
Other Estimated Implementation Costs						40		

Other Estimated implementation costs		+0
TOTAL		\$ 231
SUB-TOTAL		191
O&P	10%	19
ASBESTOS ABATEMENT		-
DIRECT COST		210
PAYMENT & PERFORMANCE BOND	0%	-
SUB-TOTAL		210
CONTINGENCY	10%	21
ASBESTOS CONTINGENCY	0%	-
SUB-TOTAL		231
ASBESTOS DESIGN & AIR MONITORING, TESTING		-
IC FEE	0.0%	-
SUB-TOTAL		231
INTEREST DURING CONSTRUCTION	0%	-
TOTAL		\$ 231

CALCULATIONS

Verona Highschool - Insulate HHW Piping

1. Price of #2 Fuel Oil, \$/gal	Х
2. Price of City Water, \$/1000 gallons	х
3. Price of Electricity, \$/kWh (blended rate)	\$0.170
4. Price of the Demand of Electricity, \$/kW/month	\$0.000
5. Price of Natural Gas, \$/therm	\$0.950

Total Savings			
	Existing Condition	Proposed System	Savings
Number of Ft of underinsulated pipe	75	75	
Inches of insulation	0	1.0	
Annual Btu losses	50,159,983	7,760,539	42,399,444
Annual Therms lost	502	78	424
Annual Cost and Savings, \$	\$ 477	\$ 74	\$ 403

^{1.} Assumes HHW reset betweern 150 and 180degF

^{2.} Assumes 75 feet of 2.00 inch pipe.

CALCULATIONS

F.N. Brown - Insulate LPC Piping

1. Price of #2 Fuel Oil, \$/gal	х
2. Price of City Water, \$/1000 gallons	х
3. Price of Electricity, \$/kWh (blended rate)	\$0.172
4. Price of the Demand of Electricity, \$/kW/month	\$0.000
5. Price of Natural Gas, \$/therm	\$1.032

Total Savings					
		Existing Condition	Proposed System		Savings
Number of Ft of underinsulated pipe		20	20		
Inches of insulation		0	1.0		
Annual Btu losses	2	0,068,364	3,030,067		17,038,297
Annual Therms lost		201	30		170
Annual Cost and Savings, \$	\$	207	\$ 31	\$	176

^{1.} Assumes 20 feet of 2.00 inch pipe.



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ECM #3:

VENDING MACHINE CONTROLS

		Ve	erona HS - '	Vending Mei	ser			
			1			1		1
N	DESCRIPTION OF	UNIT	QTY	MATE		LAE		TOTAL
	WORK			PER UNIT	TOTAL	PER UNIT	TOTAL	
	Soda Machine		5	179	895	500	2,500	3,39
	Snack Machine		-	179	-	500	-	-
	Other Estimated Imple	mentation C	osts					-
	TOTAL							\$ 3,39
	SUB-TOTAL							3,39
	O&P						0%	-
	ASBESTOS ABATEM	ENT						-
	DIRECT COST							3,39
	PAYMENT & PERFOR	MANCE BC	DND				0%	-
	SUB-TOTAL							3,39
	CONTINGENCY						0%	-
	ASBESTOS CONTING	SENCY					0%	-
	SUB-TOTAL							3,39
	ASBESTOS DESIGN 8	& AIR MONI	TORING, TI	ESTING				-
	IC FEE						0.0%	-
	SUB-TOTAL							3,39
	INTEREST DURING C	ONSTRUC	TION				0%	-
	TOTAL							\$ 3,39
		HB Whiteho	orne Middle	School - Ve	ending Mise	er		
٧	DESCRIPTION OF	UNIT	QTY	MATE	RIAL	LAE	BOR	TOTAL
N	WORK	UNIT	QII	PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAL
	Soda Machine		1	179	179	500	500	67
	Snack Machine		-	179	-	500	-	-
	Other Estimated Imple	mentation C	osts					-
	TOTAL							\$ 67
	SUB-TOTAL							67
	O&P						0%	-
	ASBESTOS ABATEM	ENT						-
	DIRECT COST							67
	PAYMENT & PERFOR	MANCE BC	ND				0%	_
	SUB-TOTAL							67
	CONTINGENCY						0%	_
	ASBESTOS CONTING	SENCY					0%	_
	SUB-TOTAL							67
	ASBESTOS DESIGN 8	& AIR MONI	TORING. TI	ESTING				_
	IC FEE						0.0%	_
	SUB-TOTAL							67
	INTEREST DURING C	ONSTRUC	TION				0%	-
	TOTAL						-,-	\$ 67
								•
		F	N Brown -	Vending Mis	ser			
. 1	DESCRIPTION OF	LINUT	OTV	MATE	RIAL	LAE	BOR	TOTAL
N	WORK	UNIT	QTY	PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAI
	Soda Machine		2	179	358	500	1,000	1,35
	Snack Machine		-	179	-	500	-	-
	Other Estimated Imple	mentation C	osts			,		-
	TOTAL							\$ 1,35
	SUB-TOTAL							1,35
	O&P						0%	-
	ASBESTOS ABATEM	ENT						-
	DIRECT COST							1,35
	PAYMENT & PERFOR	MANCE BC	ND				0%	
	SUB-TOTAL							1,35
							0%	-
		SENCY						_
		, LI 10 1					U /U	1,35
		S VID MUVII	TORING T	ESTING				
		X AIR IVIUNI	TOKING, H	LOTING			0.00/	-
							0.0%	1 25
		ONCTOUC	TION				00/	1,35
	INTEREST DURING C	CINOTKUC	HUN				U%	-
	TOTAL							\$ 1,35
	CONTINGENCY ASBESTOS CONTING SUB-TOTAL ASBESTOS DESIGN & IC FEE SUB-TOTAL INTEREST DURING C	& AIR MONI		ESTING			0% 0% 0.0%	

Verona High School - Vending Machine Power Management System

Price of #2 Fuel Oil, \$/gal	
Price of City Water, \$/1000 gallons	
Price of Electricity, \$/kWh (blended rate)	\$0.170
Price of the Demand of Electricity, \$/kW/month	
Price of Natural Gas, \$/therm	

	Existing Condition	Proposed System	Savings
Soda Machine Power Consumption	100%	44%	56%
Soda Machine Annual Op Cost	\$ 2,978	\$ 1,310	1,668
Run Hours	8,760	8,760	
Soda Annual Energy Consumption (kWh)	17,520	7,709	9,811
Snack Machine Power Consumption	100%	44%	56%
Annual Op Cost	\$ -	\$ -	0
Run Hours	8,760	8,760	
Annual Energy Consumption (kWh)	-	-	-
Total Annual Energy Consumption (kWh)	17,520	7,709	9,811
Annual Cost and Savings, \$	\$ 2,978	\$ 1,310	\$ 1,668

^{1.} Run hours based on fan motors being run 8760 hrs

VERONA SCHOOL DISTRICT

CALCULATIONS

HB Whitehorne Middle School- Vending Machine Power Management System

Price of #2 Fuel Oil, \$/gal	
Price of City Water, \$/1000 gallons	
Price of Electricity, \$/kWh (blended rate)	\$0.154
Price of the Demand of Electricity, \$/kW/month	
Price of Natural Gas, \$/therm	

	sting dition	posed /stem	S	avings
Soda Machine Power Consumption	100%	44%		56%
Soda Machine Annual Op Cost	\$ 541	\$ 238		303
Run Hours	8,760	8,760		
Soda Annual Energy Consumption (kWh)	3,504	1,542		1,962
Snack Machine Power Consumption	100%	44%		56%
Annual Op Cost	\$ -	\$		0
Run Hours	8,760	8,760		
Annual Energy Consumption (kWh)	-	-		-
Total Annual Energy Consumption (kWh)	3,504	1,542		1,962
Annual Cost and Savings, \$	\$ 541	\$ 238	\$	303

^{1.} Run hours based on fan motors being run 8760 hrs

VERONA SCHOOL DISTRICT

CALCULATIONS

FN Brown Elementary - Vending Machine Power Management System

Price of #2 Fuel Oil, \$/gal	
Price of City Water, \$/1000 gallons	
Price of Electricity, \$/kWh (blended rate)	\$0.172
Price of the Demand of Electricity, \$/kW/month	
Price of Natural Gas, \$/therm	

	Existing Condition		posed ystem	;	Savings
Soda Machine Power Consumption	100%		44%		56%
Soda Machine Annual Op Cost	\$ 1,204	\$	530		674
Run Hours	8,760		8,760		
Soda Annual Energy Consumption (kWh)	7,008		3,084		3,924
Snack Machine Power Consumption	100%		44%		56%
Annual Op Cost	\$ -	\$	-		0
Run Hours	8,760		8,760		
Annual Energy Consumption (kWh)	-		-		-
Total Annual Energy Consumption (kWh)	7,008		3,084		3,924
Annual Cost and Savings, \$	\$ 1,204	\$	530	\$	674

^{1.} Run hours based on fan motors being run 8760 hrs



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ECM #4:

STEAM TRAP REPAIR PROGRAM

		F.N.Browi	n - Steam Tra	ap Survey					
	DESCRIPTION OF	1		MATE	ΡΙΔΙ	LAB	OR		
N/N	WORK	UNIT	QTY	PER UNIT	TOTAL	PER UNIT	TOTAL		TOTAL
1	Steam Trap Survey	ea	30	0	-	55	1,650		1,650
2	Replace Failed Traps	ea	3	82	246	40	120		366
	r Estimated Implementation Costs	- Cu		02	210	10	120		998
TOT	•							\$	3,014
	-TOTAL							•	2,016
O&P							15%		302
ASBI	ESTOS ABATEMENT								-
_	ECT COST								2,318
	MENT & PERFORMANCE BOND						0%		_,
	-TOTAL								2,318
CON	TINGENCY						30%		696
ASB	ESTOS CONTINGENCY						10%		-
	-TOTAL								3,014
ASBI	ESTOS DESIGN & AIR MONITORING, TE	STING							-
IC FE							0.0%		-
SUB	-TOTAL								3,014
INTE	REST DURING CONSTRUCTION						0%		-
TOT	AL							\$	3,014
New	Jersey Smart Start Rebate							\$	
		Middle Scho	ool - Steam 1	rap Survey	/				
	DECODIDATION OF	1		NAATE	DIAL	LAD	00		
N/N	DESCRIPTION OF	UNIT	QTY	MATE		LAB			TOTAL
4	WORK		0.5	PER UNIT	TOTAL	PER UNIT	TOTAL		0.57
2	Steam Trap Survey	ea	65	0 82	- 574	55	3,575 280		3,575
	Replace Failed Traps	ea	7	82	5/4	40	280		854
TOT	r Estimated Implementation Costs							\$	2,192
	AL -TOTAL							Þ	6,621
O&P							450/		4,429
							15%		664
	ESTOS ABATEMENT								- - 00°
	ECT COST						00/		5,093
	MENT & PERFORMANCE BOND -TOTAL						0%		- F 00'
306	· · · · · · · ·						200/		5,093
CON	ITINGENCY						30%		1,528
	ESTOS CONTINCENOV						10%		-
ASB	ESTOS CONTINGENCY								6.60
ASBI SUB	-TOTAL	CTINO							6,62
ASBI SUB ASBI	-TOTAL ESTOS DESIGN & AIR MONITORING, TE	STING					0.00/		6,62
ASBI SUB ASBI IC FE	-TOTAL ESTOS DESIGN & AIR MONITORING, TE EE	STING					0.0%		6,621 - -
ASBI SUB ASBI IC FE SUB	- TOTAL ESTOS DESIGN & AIR MONITORING, TE EE - TOTAL	STING							6,621 - - 6,621
ASBI SUB ASBI IC FE SUB	-TOTAL ESTOS DESIGN & AIR MONITORING, TE EE -TOTAL REST DURING CONSTRUCTION	STING					0.0% 0%	\$	-

New Jersey Smart Start Rebate

Savings from Steam Trap Maintenance Program - F.N. Brown

Price of Natural Gas, \$/therm	\$1.03
Catimated Number of Cteam Trans ¹	20
Estimated Number of Steam Traps	30
Estimated Failure Rate ²	10%
Reduction in Number of Leaking Traps	3
Avg. Size of Orifice (inches diameter) ³	0.12
Average Steam Pressure (psig)	7
Steam Loss Through Trap(s) (lbs/hr) ⁴	7.6
Annual Steam Plant Operating Hours	4,320
Heating Plant Efficiency	80%
Annual Steam Loss (lbs)	98,166
Latent Heat of Steam at Avg Pressure (Btu/lbm)	960
Annual Fuel Savings (therms)	1,178
Annual Fuel Savings	\$1,215

^{1.}Steam trap quantity estimated based on building blueprints and equipment.

^{2.} Per Hart F.L. and Jaber D., Best Practices in Steam System Management. Steam Digest. US DoE: "In steam systems that have not been maintained for 3 to 5 years, from 15 to 30 percent of traps may have failed, and regularly-scheduled maintenance should reduce this to under 5 percent of traps."

^{3.} Based on Spirax Sarco 1/2" thermostatic trap

^{4.} Based on modified Napier equation. Steam flow (lb/hr) = $24.24 \times P_a \times D^2$ Where P_a is absolute pressure, psia, and D is Orifice diamter in inches

Savings from Steam Trap Maintenance Program - HB Whitehorne Middle School

Price of Natural Gas, \$/therm	\$1.04
Estimated Number of Steam Traps ¹	65
Estimated Failure Rate ²	10%
Reduction in Number of Leaking Traps	7
Avg. Size of Orifice (inches diameter) ³	0.12
Average Steam Pressure (psig)	5
Steam Loss Through Trap(s) (lbs/hr) ⁴	6.9
Applied Steam Plant Operating Hours	4,320
Annual Steam Plant Operating Hours	, ,
Heating Plant Efficiency	80%
Annual Steam Loss (lbs)	207,942
Latent Heat of Steam at Avg Pressure (Btu/lbm)	960
Annual Fuel Savings (therms)	2,495
Annual Fuel Savings	\$2,607

^{1.}Steam trap quantity estimated based on building blueprints and equipment.

Where Pa is absolute pressure, psia, and D is Orifice diamter in inches

^{2.} Per Hart F.L. and Jaber D., Best Practices in Steam System Management. Steam Digest. US DoE:

[&]quot;In steam systems that have not been maintained for 3 to 5 years, from 15 to 30 percent of traps may have failed, and regularly-scheduled maintenance should reduce this to under 5 percent of traps."

^{3.} Based on Spirax Sarco 1/2" thermostatic trap

^{4.} Based on modified Napier equation. Steam flow (lb/hr) = $24.24 \times P_a \times D^2$

School				
	\$ / k\	Wh	\$ / Th	erms
Laning Avenue Elementary School	\$	0.15	\$	1.02
Brookdale Avenue Elementary School	\$	0.15	\$	1.17
F.N. Brown Elementary School	\$	0.17	\$	1.03
Forest Avenue Elementary School	\$	0.15	\$	1.13
H.B. Whitehorne Middle School	\$	0.15	\$	1.04
Verona High School	\$	0.17	\$	0.95
Averaged Costs	\$	0.16	\$	1.06



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ECM #5:

REPLACE ELECTRIC DHW WITH NATURAL GAS

N/N	DESCRIPTION OF	UNIT	QTY	MATERIAL		LABOR		T	OTAI
	WORK			PER UNIT	TOTAL	PER UNIT	TOTAL		
1	Install new 60 gal, 65 MBH nat gas Water Heater	each	1	1215.00	1,215	328.00	328		1,5
2	Install new 75 gal, 75 MBH nat gas Water Heater	each	-	1520.00	-	492.00	-		
3	Install new 100 gal, 75 MBH nat gas	each	-	1870.00	-	656.00	-		
4	Water Heater Demo For Large Heaters	each	-		-	230.00	_		
5	Install Nat Gas Piping	ft per heater	25	6.25	156	5.80	145		3
6	Install Flue	ft per heater	50	9.00	450	1.45	73		5
	Other Estimated Implementation Costs								3
	TOTAL							\$	
	SUB-TOTAL O&P						20%		1,
	ASBESTOS ABATE	MENT							2,2
	PAYMENT & PERF	ORMANCE BON	ID				0%		
	SUB-TOTAL CONTINGENCY						0%		2,2
	ASBESTOS CONTI	NGENCY					0%		0.1
	SUB-TOTAL ASBESTOS DESIG	N & AIR MONIT	ORING, TESTII	NG					2,
	IC FEE SUB-TOTAL						0.0%		2,:
	INTEREST DURING	CONSTRUCTI	ON				0%		۷,
	TOTAL NJ SmartStart Reb	ate						\$ \$	
			place Electric F	Resistance Wa	ater Heaters	With natural	gas units		
N/N	NJ SmartStart Reb Laning Avenue El DESCRIPTION OF		olace Electric I	MATERIAL		LABOR		\$	
N/N 1	NJ SmartStart Reb Laning Avenue El DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas	ementary - Rep			TOTAL		gas units TOTAL 328	\$	OTA
	NJ SmartStart Reb Laning Avenue El DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal, 75 MBH nat gas	ementary - Rep	QTY	MATERIAL PER UNIT	TOTAL	LABOR PER UNIT	TOTAL	\$	ОТА
1	NJ SmartStart Reb Laning Avenue El DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal,	ementary - Rep UNIT each	QTY 1	MATERIAL PER UNIT 1215.00	TOTAL 1,215	LABOR PER UNIT 328.00	TOTAL 328	\$	OTA
1 2	DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas	ementary - Rep UNIT each each	QTY 1	MATERIAL PER UNIT 1215.00 1520.00	TOTAL 1,215	LABOR PER UNIT 328.00 492.00	328 -	\$	OTA
1 2 3	DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Unstall new 100 gal, 75 MBH nat gas Water Heater Demo For Large	ementary - Rep UNIT each each	QTY 1 -	MATERIAL PER UNIT 1215.00 1520.00	TOTAL 1,215	LABOR PER UNIT 328.00 492.00 656.00	328 -	\$	OT <i>/</i>
1 2 3 4	DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install Nat Gas	ementary - Rep UNIT each each each	QTY 1	MATERIAL PER UNIT 1215.00 1520.00 1870.00	TOTAL 1,215	LABOR PER UNIT 328.00 492.00 656.00 230.00	328 - -	\$	1,
1 2 3 4 5	DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install Nat Gas Piping	ementary - Rep UNIT each each each each ft per heater	QTY 1 20	MATERIAL PER UNIT 1215.00 1520.00 1870.00	TOTAL 1,215 125	LABOR PER UNIT 328.00 492.00 656.00 230.00 5.80	328 - - - 116	\$	1,
1 2 3 4 5	DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Demo For Large Heaters Install Nat Gas Piping Install Flue Other Estimated Implementation	ementary - Rep UNIT each each each each ft per heater	QTY 1 20	MATERIAL PER UNIT 1215.00 1520.00 1870.00	TOTAL 1,215 125	LABOR PER UNIT 328.00 492.00 656.00 230.00 5.80	328 - - - 116	\$	OT/
1 2 3 4 5	DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Demo For Large Heaters Install Nat Gas Piping Install Flue Other Estimated Implementation Costs TOTAL	ementary - Rep UNIT each each each each ft per heater	QTY 1 20	MATERIAL PER UNIT 1215.00 1520.00 1870.00	TOTAL 1,215 125	LABOR PER UNIT 328.00 492.00 656.00 230.00 5.80	328 - - - 116	\$	1,:
1 2 3 4 5	DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Demo For Large Heaters Demo For Large Heaters Install Nat Gas Piping Install Flue Other Estimated Implementation Costs TOTAL SUB-TOTAL	ementary - Rep UNIT each each each each ft per heater	QTY 1 20	MATERIAL PER UNIT 1215.00 1520.00 1870.00	TOTAL 1,215 125	LABOR PER UNIT 328.00 492.00 656.00 230.00 5.80	TOTAL 328 116 73	*	1,:
1 2 3 4 5	DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Demo For Large Heaters Install Nat Gas Piping Install Flue Other Estimated Implementation Costs TOTAL SUB-TOTAL O&P ASBESTOS ABATE	ementary - Rep UNIT each each each ft per heater ft per heater	QTY 1 20	MATERIAL PER UNIT 1215.00 1520.00 1870.00	TOTAL 1,215 125	LABOR PER UNIT 328.00 492.00 656.00 230.00 5.80	328 - - - 116	*	OTA 1,5
1 2 3 4 5	DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Demo For Large Heaters Install Nat Gas Piping Install Flue Other Estimated Implementation Costs TOTAL SUB-TOTAL O&P ASBESTOS ABATE DIRECT COST	ementary - Rep UNIT each each each ft per heater ft per heater	QTY 1 - 20 50	MATERIAL PER UNIT 1215.00 1520.00 1870.00	TOTAL 1,215 125	LABOR PER UNIT 328.00 492.00 656.00 230.00 5.80	TOTAL 328 116 73	*	OTA 1,5
1 2 3 4 5	DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Demo For Large Heaters Install Nat Gas Piping Install Flue Other Estimated Implementation Costs TOTAL SUB-TOTAL O&P ASBESTOS ABATE DIRECT COST PAYMENT & PERFO	ementary - Rep UNIT each each each ft per heater ft per heater	QTY 1 - 20 50	MATERIAL PER UNIT 1215.00 1520.00 1870.00	TOTAL 1,215 125	LABOR PER UNIT 328.00 492.00 656.00 230.00 5.80	TOTAL 328 116 73 20% 0%	*	1,4 1,4 2,
1 2 3 4 5	DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Demo For Large Heaters Install Nat Gas Piping Install Flue Other Estimated Implementation Costs TOTAL SUB-TOTAL O&P ASBESTOS ABATE DIRECT COST PAYMENT & PERFORM	ementary - Rep UNIT each each each ft per heater ft per heater MENT ORMANCE BON	QTY 1 - 20 50	MATERIAL PER UNIT 1215.00 1520.00 1870.00	TOTAL 1,215 125	LABOR PER UNIT 328.00 492.00 656.00 230.00 5.80	TOTAL 328 116 73 20% 0% 0%	*	OTA 1,5
1 2 3 4 5	DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Demo For Large Heaters Install Nat Gas Piping Install Flue Other Estimated Implementation Costs TOTAL SUB-TOTAL O&P ASBESTOS ABATE DIRECT COST PAYMENT & PERFORMS SUB-TOTAL CONTINGENCY ASBESTOS CONTI	ementary - Rep UNIT each each each ft per heater ft per heater MENT ORMANCE BON	QTY 1 - 20 50	MATERIAL PER UNIT 1215.00 1520.00 1870.00 6.25 9.00	TOTAL 1,215 125	LABOR PER UNIT 328.00 492.00 656.00 230.00 5.80	TOTAL 328 116 73 20% 0%	*	2;; OTA 1,5
1 2 3 4 5	DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Demo For Large Heaters Install Nat Gas Piping Install Flue Other Estimated Implementation Costs TOTAL SUB-TOTAL O&P ASBESTOS ABATE DIRECT COST PAYMENT & PERFO SUB-TOTAL CONTINGENCY ASBESTOS CONTI SUB-TOTAL ASBESTOS DESIG	ementary - Rep UNIT each each each ft per heater ft per heater MENT ORMANCE BON	QTY 1 - 20 50	MATERIAL PER UNIT 1215.00 1520.00 1870.00 6.25 9.00	TOTAL 1,215 125	LABOR PER UNIT 328.00 492.00 656.00 230.00 5.80	TOTAL 328 116 73 20% 0% 0% 0%	*	OTA 1,4,
1 2 3 4 5	DESCRIPTION OF WORK Install new 60 gal, 65 MBH nat gas Water Heater Install new 75 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Install new 100 gal, 75 MBH nat gas Water Heater Demo For Large Heaters Install Nat Gas Piping Install Flue Other Estimated Implementation Costs TOTAL SUB-TOTAL O&P ASBESTOS ABATE DIRECT COST PAYMENT & PERFORMS SUB-TOTAL CONTINGENCY ASBESTOS CONTI	ementary - Rep UNIT each each each ft per heater ft per heater MENT ORMANCE BON	QTY 1 - 20 50	MATERIAL PER UNIT 1215.00 1520.00 1870.00 6.25 9.00	TOTAL 1,215 125	LABOR PER UNIT 328.00 492.00 656.00 230.00 5.80	TOTAL 328 116 73 20% 0% 0%	*	OTA 1,4,

TOTAL

NJ SmartStart Rebate

2,141

130

Brookdale Elementary School - Replace Electric Resistance Water Heaters With natural gas units

Price of natural gas (\$/therm) \$1.17
Price of Electricity, \$/kWh (blended rate) \$0.15

	Existing Condition	Proposed System	Savings
Annual domestic water heating energy input, kWh	4,787	0	4,787
Annual domestic water heating energy input, therms	0	263	-263
Annual Cost and Savings, \$	\$ 741	\$ 308	\$ 433

Existing water heater energy factor 0.88 Proposed water heater energy factor 0.544



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ECM #6:

CHANGE CRT'S TO FLATSCREENS

Laning Avenue Elementary - Replace Electric Resistance Water Heaters With natural gas units

Price of natural gas (\$/therm) \$1.02 Price of Electricity, \$/kWh (blended rate) \$0.15

	Existing Condition	Proposed System	Savings
Annual domestic water heating energy input, kWh	10,620	0	10,620
Annual domestic water heating energy input, therms	0	609	-609
Annual Cost and Savings, \$	\$ 1,604	\$ 624	\$ 980

Existing water heater energy factor 0.85 Proposed water heater energy factor 0.506

FN Brown - CRT to FlatScreen Computer

Electricity Savings (kWh/yr)	401
Natural Gas Savings (therms/yr)	0
Estimated Cost Savings (\$/yr)	\$69
Estimated Implementation Cost (\$)	\$300
Estimated Rebate (\$)	\$0
Estimated Implementation Cost after Rebate (\$)	\$300
Simple Payback (Years)	4.3

Forest Elem - CRT to FlatScreen Computer

Electricity Savings (kWh/yr)	301
Natural Gas Savings (therms/yr)	0
Estimated Cost Savings (\$/yr)	\$46
Estimated Implementation Cost (\$)	\$225
Estimated Rebate (\$)	\$0
Estimated Implementation Cost after Rebate (\$)	\$225
Simple Payback (Years)	4.9

Middle School - CRT to FlatScreen Computer

Electricity Savings (kWh/yr)	201
Natural Gas Savings (therms/yr)	0
Estimated Cost Savings (\$/yr)	\$31
Estimated Implementation Cost (\$)	\$150
Estimated Rebate (\$)	\$0
Estimated Implementation Cost after Rebate (\$)	\$150
Simple Payback (Years)	4.8

Brookdale - CRT to FlatScreen Computer

Electricity Savings (kWh/yr)	401
Natural Gas Savings (therms/yr)	0
Estimated Cost Savings (\$/yr)	\$62
Estimated Implementation Cost (\$)	\$300
Estimated Rebate (\$)	\$0
Estimated Implementation Cost after Rebate (\$)	\$300
Simple Payback (Years)	4.8

Brookdale - CRT to FlatScreen Computer

Electricity Savings (kWh/yr)	100
Natural Gas Savings (therms/yr)	0
Estimated Cost Savings (\$/yr)	\$15
Estimated Implementation Cost (\$)	\$75
Estimated Rebate (\$)	\$0
Estimated Implementation Cost after Rebate (\$)	\$75
Simple Payback (Years)	4.9



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ECM #8:

DOOR WEATHERIZATION

235

COST ESTIMATES

		Laning	Avenue S	chool	- Doo	or W	eathe	rizatio	n				
N/N	CRIPTION	UNIT	QTY		MATE	ERIA	۱L		LAE	3OR		TC	OTAL
IN/IN	WORK	UNIT	QII	PER	UNIT	TO	DTAL	PER	UNIT	TO	JATC	10) I AL
1	Door Wear	Ea	3	\$	22	\$	65	\$	57	\$	171	\$	235
	Other Estir	nated Impl	ementation	Costs	3								-
	TOTAL											\$	235
	SUB-TOTA	AL											235
	O&P										0%		-
	ASBESTO	S ABATEN	1ENT						SF				-
	DIRECT C	OST											235
	PAYMENT	& PERFO	RMANCE I	BOND)						0%		-
	SUB-TOTA	AL											235
	CONTING	ENCY									0%		-
	Engineerin	g Fees									0%		-
	Architectur	al fees for	Renovation	1							0%		-
	ASBESTO	S CONTIN	GENCY							•	15%		-
	SUB-TOTA	AL											235
	ASBESTO	S DESIGN	& AIR MO	NITOF	RING,	TE:	STING						-
	IC FEE									C	0.0%		-
	SUB-TOTA	AL											235
	INTEREST	DURING	CONSTRU	CTIO	N						0%		-

	Verona High School - Door Weatherization								
N/N	CRIPTION	UNIT	NIT QTY		RIAL	LAE	BOR	TOTA	\
IN/IN	WORK	UNIT	3	PER UNIT	TOTAL	PER UNIT	TOTAL	1017	1 L
1	Door Wear	Ea	1	\$ 22	\$ 22	\$ 57	\$ 57	\$	78
Other Estimated Implementation Costs							_		

Other Estimated Implementation Costs			-
TOTAL			\$ 78
SUB-TOTAL			78
O&P		0%	-
ASBESTOS ABATEMENT	SF		-
DIRECT COST			78
PAYMENT & PERFORMANCE BOND		0%	-
SUB-TOTAL			78
CONTINGENCY		0%	-
Engineering Fees		0%	-
Architectural fees for Renovation		0%	-
ASBESTOS CONTINGENCY		15%	-
SUB-TOTAL			78
ASBESTOS DESIGN & AIR MONITORING, TESTING			-
IC FEE		0.0%	-
SUB-TOTAL			78
INTEREST DURING CONSTRUCTION		0%	-
TOTAL			\$ 78

TOTAL

471

471

0%

COST ESTIMATES

		Mic	ddle Schoo	ol - Do	or W	eath	erizat	ion					
N/N	CRIPTION		QTY	l l	MATERIAL				LAE	3OR	?	TOTAL	
IN/IN	WORK	UNIT	Q I I	PER I	JNIT	TC	TAL	PER	UNIT	Т	OTAL		JIAL
1	Door Wear	Ea	6	\$	22	\$	130	\$	57	\$	341	\$	471
	Other Estim	nated Impl	ementation	Costs									-
	TOTAL											\$	471
	SUB-TOTA	\L											471
	O&P										0%		-
	ASBESTOS	S ABATEN	IENT						SF				-
	DIRECT CO	OST											471
	PAYMENT	& PERFO	RMANCE I	BOND							0%		-
	SUB-TOTA	\L											471
	CONTINGE	ENCY									0%		-
	Engineering	g Fees									0%		-
	Architectura	al fees for	Renovation	1							0%		-
	ASBESTOS	S CONTIN	GENCY								15%		-
	SUB-TOTA	\L											471
	ASBESTOS	S DESIGN	& AIR MO	NITOR	RING	TES	STING						-
	IC FEE									(0.0%		-

	FN Brown - Door Weatherization								
N/N	CRIPTION	UNIT	QTY	MATE	ERIAL	LAE	BOR	TC	TAL
IN/IN	WORK	UNIT	QII	PER UNIT	TOTAL	PER UNIT	TOTAL	10	/IAL
1	Door Wear	Ea	6	\$ 22	\$ 130	\$ 57	\$ 341	\$	471
	Other Estir	nated Imple	ementation	Costs	<u> </u>	_	_		_

Other Estimated implementation Costs			-
TOTAL			\$ 471
SUB-TOTAL			471
O&P		0%	-
ASBESTOS ABATEMENT	SF		-
DIRECT COST			471
PAYMENT & PERFORMANCE BOND		0%	-
SUB-TOTAL			471
CONTINGENCY		0%	-
Engineering Fees		0%	-
Architectural fees for Renovation		0%	-
ASBESTOS CONTINGENCY		15%	-
SUB-TOTAL			471
ASBESTOS DESIGN & AIR MONITORING, TESTING			-
IC FEE		0.0%	-
SUB-TOTAL			471
INTEREST DURING CONSTRUCTION		0%	-
TOTAL			\$ 471

SUB-TOTAL

TOTAL

INTEREST DURING CONSTRUCTION

Laning Avenue Elementary School - Savings From Weatherstripping Doors

1. Price of #2 Fuel Oil, \$/gal	
2. Price of City Water, \$/1000 gallons	
3. Price of Electricity, \$/kWh (blended rate)	\$0.151
4. Price of the Demand of Electricity, \$/kW/month	
5. Price of Natural Gas, \$/therm	\$1.024

	Existing Condition	Proposed System	Savings
Number of Doors	3	3	
Estimated Infiltration Rate per Door, CFM	11	2	
Annual Cooling Infiltration Total Hours, OAT > 80F	814	814	
Annual Heating Infiltration Total Hours, OAT < 65F	1,729	1,729	
Annual Cooling Load, kBTU	-	-	
Annual Cooling Electrical Consumption, kWh	-	-	0
Annual Heating Load, kBTU	1,913	486	
Annual Heating Consumption, Therms	23	5.93	17
Annual Cost and Savings, \$	\$ 24	\$ 6	\$ 18

- 1. Infiltration rate was calculated according to ASHRAE Fundamentals 2005 Door Leakage Rate Equation F27.12
- 2. Estimated hours of infiltration was based on all hours below 65F and above 80F for the region.
- 3. It is assumed that each door has a leakage area of 2 square inches (3 linear feet by 0.05 in). Vestibule doors are not included. There is/are 3 door(s).
- 4. A 60% load factor was used when calculating the existing leakage rate.
- 5. Assume no cooling
- 6. The average outside air temperature above 80F during the year is 81F. The average outside air temperature below 65F is
- 7. New weatherstripping is assumed to reduce inflitration by 80%.

Verona High School - Savings From Weatherstripping Doors

1. Price of #2 Fuel Oil, \$/gal	
2. Price of City Water, \$/1000 gallons	
3. Price of Electricity, \$/kWh (blended rate)	\$0.170
4. Price of the Demand of Electricity, \$/kW/month	
5. Price of Natural Gas, \$/therm	\$0.950

	Existing Condition	Proposed System	Savings
Number of Doors	1	1	
Estimated Infiltration Rate per Door, CFM	8	2	
Annual Cooling Infiltration Total Hours, OAT > 80F	814	814	
Annual Heating Infiltration Total Hours, OAT < 65F	1,729	1,729	
Annual Cooling Load, kBTU	-	-	
Annual Cooling Electrical Consumption, kWh	-	-	0
Annual Heating Load, kBTU	496	126	
Annual Heating Consumption, Therms	6	1.54	5
Annual Cost and Savings, \$	\$ 6	\$ 1	\$ 4

- 1. Infiltration rate was calculated according to ASHRAE Fundamentals 2005 Door Leakage Rate Equation F27.12
- 2. Estimated hours of infiltration was based on all hours below 65F and above 80F for the region.
- 3. It is assumed that each door has a leakage area of 4 square inches (7 linear feet by 0.05 in). Vestibule doors are not included. There is/are 1 door(s).
- 4. A 60% load factor was used when calculating the existing leakage rate.
- 5. Assume no cooling
- 6. The average outside air temperature above 80F during the year is 81F. The average outside air temperature below 65F is 42F.
- 7. New weatherstripping is assumed to reduce inflitration by 80%.

Middle School Savings - Savings From Weatherstripping Doors

1. Price of #2 Fuel Oil, \$/gal	
2. Price of City Water, \$/1000 gallons	
3. Price of Electricity, \$/kWh (blended rate)	\$0.154
4. Price of the Demand of Electricity, \$/kW/month	
5. Price of Natural Gas, \$/therm	\$1.045

	Existing Condition	Proposed System	Savings
Number of Doors	6	6	
Estimated Infiltration Rate per Door, CFM	21	4	
Annual Cooling Infiltration Total Hours, OAT > 80F	814	814	
Annual Heating Infiltration Total Hours, OAT < 65F	1,729	1,729	
Annual Cooling Load, kBTU	-	-	
Annual Cooling Electrical Consumption, kWh	-	-	0
Annual Heating Load, kBTU	7,652	1,945	
Annual Heating Consumption, Therms	93	23.72	70
Annual Cost and Savings, \$	\$ 97	\$ 25	\$ 73

- 1. Infiltration rate was calculated according to ASHRAE Fundamentals 2005 Door Leakage Rate Equation F27.12
- 2. Estimated hours of infiltration was based on all hours below 65F and above 80F for the region.
- 3. It is assumed that each door has a leakage area of 2 square inches (3 linear feet by 0.05 in). Vestibule doors are not included. There is/are 6 door(s).
- 4. A 60% load factor was used when calculating the existing leakage rate.
- 5. Assume no cooling
- 6. The average outside air temperature above 80F during the year is 81F. The average outside air temperature below 65F is 42F.
- 7. New weatherstripping is assumed to reduce inflitration by 80%.

FN Brown - Savings From Weatherstripping Doors

1. Price of #2 Fuel Oil, \$/gal							
2. Price of City Water, \$/1000 gallons							
3. Price of Electricity, \$/kWh (blended rate)	\$0.172						
4. Price of the Demand of Electricity, \$/kW/month							
5. Price of Natural Gas, \$/therm	\$1.032						

	Existing Condition	Proposed System	Savings
Number of Doors	(6	
Estimated Infiltration Rate per Door, CFM	2	4	
Annual Cooling Infiltration Total Hours, OAT > 80F	814	814	
Annual Heating Infiltration Total Hours, OAT < 65F	1,729	1,729	
Annual Cooling Load, kBTU	-	-	
Annual Cooling Electrical Consumption, kWh	-	-	0
Annual Heating Load, kBTU	7,652	1,945	
Annual Heating Consumption, Therms	93	23.72	70
Annual Cost and Savings, \$	\$ 96	\$ 24	\$ 72

- 1. Infiltration rate was calculated according to ASHRAE Fundamentals 2005 Door Leakage Rate Equation F27.12
- 2. Estimated hours of infiltration was based on all hours below 65F and above 80F for the region.
- 3. It is assumed that each door has a leakage area of 2 square inches (3 linear feet by 0.05 in). Vestibule doors are not included. There is/are 6 door(s).
- 4. A 60% load factor was used when calculating the existing leakage rate.
- 5. Assume no cooling
- 6. The average outside air temperature above 80F during the year is 81F. The average outside air temperature below 65F is 42F.
- 7. New weatherstripping is assumed to reduce inflitration by 80%.



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ECM #9:

DEMAND CONTROL VENTILATION

Laning Avenue - Demand Control Ventilation

NI/NI	DECODIDEION OF WORK	LINUT	JNIT QTY	MATERIAL		LABOR			TOTAL
N/N	DESCRIPTION OF WORK	UNIT		PER UNIT	TOTAL	PER UNIT	TOTAL	ļ	TOTAL
1	CO2 Sensors & Control Wiring	EA	2	375	750	625	1,250		2,000
2	RA / OA Modulating Damper Actuators	EA (avg)	3	600	1,800	100	300		2,100
3	Commissioning	hrs	4		0	150.0	600		600
4	Modulating exhaust dampers 26"x26" with actuator	EA	3	895	2,685	125.0	375		3,060
5	Ductwork demolition	lbs	194		0	0.75	146		146
6	Ductwork modifications	lbs	194	0.69	134	4.77	927		1,061
	Other Estimated Implementation Costs								4,241
	TOTAL								13,208
	SUB-TOTAL								8,967
	O&P 30%								
	ASBESTOS ABATEMENT								
	DIRECT COST								
	PAYMENT & PERFORMANCE BOND 0%								
	SUB-TOTAL SUB-TOTAL								11,657
	CONTINGENCY 10%								1,166
	ASBESTOS CONTINGENCY 0%								-
	SUB-TOTAL								12,823
	DISPOSAL								-
	MATERIAL HANDLING FEE 0.0%								-
	ASBESTOS DESIGN & AIR MONITORING, TESTING								-
	SUB-TOTAL								12,823
	IC FEE 3.0%								385
	SUB-TOTAL								13,208
	INTEREST DURING CONSTRUCTION 0%								-
	TOTAL							\$	13,208

Brookdale Elementary - Demand Control Ventilation

	DESCRIPTION OF WORK	UNIT	QTY	MATERIAL		LABOR			
N/N				PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAL	
1	CO2 Sensors & Control Wiring	EA	2	375	750	625	1,250		2,000
2	RA / OA Modulating Damper Actuators	EA (avg)	3	600	1,800	100	300		2,100
3	Commissioning	hrs	4		0	150.0	600		600
4	Modulating exhaust dampers 26" x26" with actuator	EA	2	895	1,790	125.0	250		2,040
5	Ductwork demolition	lbs	97		0	0.75	73		73
6	Ductwork modifications	lbs	97	0.69	67	4.77	464		531
	Other Estimated Implementation Costs								3,473
	TOTAL							\$	10,816
	SUB-TOTAL								7,344
	O&P 30%								
	ASBESTOS ABATEMENT								
	DIRECT COST								
	PAYMENT & PERFORMANCE BOND 0%								-
	SUB-TOTAL SUB-TOTAL								9,547
	CONTINGENCY 10%								955
	ASBESTOS CONTINGENCY 0%								-
	SUB-TOTAL								10,501
	DISPOSAL								-
	MATERIAL HANDLING FEE 0								-
	ASBESTOS DESIGN & AIR MONITORING, TESTING								-
	SUB-TOTAL								10,501
	IC FEE 3.0%								315
	SUB-TOTAL								10,816
	INTEREST DURING CONSTRUCTION						0%		-
	TOTAL							\$	10,816

FN Brown - Demand Control Ventilation

			_	MATER	RIAL	LABO)R		
N/N	DESCRIPTION OF WORK	UNIT	QTY	PER UNIT	TOTAL	PER UNIT	TOTAL	7	TOTAL
1	CO2 Sensors & Control Wiring	EA	2	375	750	625	1,250		2,000
2	RA / OA Modulating Damper Actuators	EA (avg)	3	600	1,800	100	300		2,100
3	Commissioning	hrs	4		0	150.0	600		600
4	Modulating exhaust dampers 48" x48" with actuator	EA	3	895	2,685	125.0	375		3,060
5	Ductwork demolition	lbs	194		0	0.75	146		146
6	Ductwork modifications	lbs	194	0.69	134	4.77	927		1,061
	Other Estimated Implementation Costs								4,241
	TOTAL							\$	13,208
	SUB-TOTAL								8,967
	O&P						30%		2,690
	ASBESTOS ABATEMENT								-
	DIRECT COST								11,657
	PAYMENT & PERFORMANCE BOND						0%		-
	SUB-TOTAL								11,657
	CONTINGENCY						10%		1,166
	ASBESTOS CONTINGENCY						0%		-
	SUB-TOTAL								12,823
	DISPOSAL								-
	MATERIAL HANDLING FEE						0.0%		-
	ASBESTOS DESIGN & AIR MONITORIN	NG, TEST	ING						-
	SUB-TOTAL								12,823
	IC FEE						3.0%		385
	SUB-TOTAL								13,208
	INTEREST DURING CONSTRUCTION						0%		-
	TOTAL							\$	13,208

Forest Avenue - Demand Control Ventilation

				MATER	RIAL	LABO	OR .		
N/N	DESCRIPTION OF WORK	UNIT	QTY	PER UNIT	TOTAL	PER UNIT	TOTAL	T	OTAL
1	CO2 Sensors & Control Wiring	EA	1	375	375	625	625		1,000
2	RA / OA Modulating Damper Actuators	EA (avg)	2	600	1,200	100	200		1,400
3	Commissioning	hrs	2		0	150.0	300		300
4	Modulating exhaust dampers 48" x48" with actuator	EA	2	895	1,790	125.0	250		2,040
5	Ductwork demolition	lbs	97		0	0.75	73		73
6	Ductwork modifications	lbs	97	0.69	67	4.77	464		531
	Other Estimated Implementation Costs								2,527
	TOTAL							\$	7,871
	SUB-TOTAL								5,344
	O&P						30%		1,603
	ASBESTOS ABATEMENT								-
	DIRECT COST								6,947
	PAYMENT & PERFORMANCE BOND						0%		-
	SUB-TOTAL								6,947
	CONTINGENCY						10%		695
	ASBESTOS CONTINGENCY						0%		-
	SUB-TOTAL								7,641
	DISPOSAL								-
	MATERIAL HANDLING FEE						0.0%		-
	ASBESTOS DESIGN & AIR MONITORIN	NG, TEST	ING						-
	SUB-TOTAL								7,641
	IC FEE						3.0%		229
	SUB-TOTAL								7,871
	INTEREST DURING CONSTRUCTION						0%		-
	TOTAL							\$	7,871

HB Whitehorne Middle School - Demand Control Ventilation

NI/NI	DESCRIPTION OF WORK	LINIT	OTV	MATER	RIAL	LABO)R	TOTAL
N/N	DESCRIPTION OF WORK	UNIT	QTY	PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAL
1	CO2 Sensors & Control Wiring	EA	2	375	750	625	1,250	2,000
2	RA / OA Modulating Damper Actuators	EA (avg)	6	600	3,600	100	600	4,200
3	Commissioning	hrs	4		0	150.0	600	600
4	Modulating exhaust dampers 48" x48" with actuator	EA	3	895	2,685	125.0	375	3,060
5	Ductwork demolition	lbs	194		0	0.75	146	146
6	Ductwork modifications	lbs	194	0.69	134	4.77	927	1,061
	Other Estimated Implementation Costs							3,980
	TOTAL							\$ 15,047
	SUB-TOTAL							11,067
	O&P						20%	2,213
	ASBESTOS ABATEMENT							-
	DIRECT COST							13,281
	PAYMENT & PERFORMANCE BOND						0%	-
	SUB-TOTAL							13,281
	CONTINGENCY						10%	1,328
	ASBESTOS CONTINGENCY						0%	-
	SUB-TOTAL							14,609
	DISPOSAL							-
	MATERIAL HANDLING FEE						0.0%	-
	ASBESTOS DESIGN & AIR MONITORIN	NG, TEST	ING					-
	SUB-TOTAL							14,609
	IC FEE						3.0%	438
	SUB-TOTAL							15,047
	INTEREST DURING CONSTRUCTION						0%	-
	TOTAL							\$ 15,047

Verona High School - Demand Control Ventilation

				MATER	RIAL	LABO)R		_
N/N	DESCRIPTION OF WORK	UNIT	QTY	PER UNIT	TOTAL	PER UNIT	TOTAL	Т	OTAL
1	CO2 Sensors & Control Wiring	EA	4	375	1,500	625	2,500		4,000
2	RA / OA Modulating Damper Actuators	EA (avg)	4	600	2,400	100	400		2,800
3	Commissioning	hrs	8		0	150.0	1,200		1,200
4	Modulating exhaust dampers 48" x48" with actuator	EA	3	895	2,685	125.0	375		3,060
5	Ductwork demolition	lbs	194		0	0.75	146		146
6	Ductwork modifications	lbs	194	0.69	134	4.77	927		1,061
	Other Estimated Implementation Costs								5,801
	TOTAL							\$	18,068
	SUB-TOTAL								12,267
	O&P						30%		3,680
	ASBESTOS ABATEMENT								-
	DIRECT COST								15,947
	PAYMENT & PERFORMANCE BOND						0%		-
	SUB-TOTAL								15,947
	CONTINGENCY						10%		1,595
	ASBESTOS CONTINGENCY						0%		-
	SUB-TOTAL								17,542
	DISPOSAL								-
	MATERIAL HANDLING FEE						0.0%		-
	ASBESTOS DESIGN & AIR MONITORIN	NG, TEST	ING						-
	SUB-TOTAL								17,542
	IC FEE						3.0%		526
	SUB-TOTAL								18,068
	INTEREST DURING CONSTRUCTION						0%		-
	TOTAL							\$	18,068

Laning Avenue - Demand Control Ventilation

3. Price of Electricity, \$/kWh (blended rate)	\$0.151
5. Price of Natural Gas, \$/therm	\$1.024

	Existing Condition	oosed stem	Sav	ings
Run Hours	2,592	2,592		
Heating-Only Units Airflow, CFM	12,800	12,800		
Heating and Cooling Units Airflow, CFM	0	0		
Estimated Cooling Electric Use, kWh	0	0		-
Estimated Heating Natural Gas Use, therms	2,907	2,107		800
Annual Electric Cost	\$ -	\$ -	\$	-
Annual Natural Gas Cost	\$ 2,978	\$ 2,159	\$	819
Annual Cost and Savings, \$	\$ 2,978	\$ 2,159	\$	819

Brookdale Elementary - Demand Control Ventilation

3. Price of Electricity, \$/kWh (blended rate)	\$0.151
5. Price of Natural Gas, \$/therm	\$1.024

	Existin Conditi	_	Proposed System	Sa	vings
Run Hours	2,	592	2,592		
Heating-Only Units Airflow, CFM	4,	000	4,000		
Heating and Cooling Units Airflow, CFM	5,	000	5,000		
Estimated Cooling Electric Use, kWh	24,	253	23,936		317
Estimated Heating Natural Gas Use, therms	1,	612	1,309		303
Annual Electric Cost	\$ 3,6	663	\$ 3,615	\$	48
Annual Natural Gas Cost	\$ 1,6	352	\$ 1,341	\$	310
Annual Cost and Savings, \$	\$ 5,3	314	\$ 4,956	\$	358

FN Brown - Demand Control Ventilation

3. Price of Electricity, \$/kWh (blended rate)	\$0.151
5. Price of Natural Gas, \$/therm	\$1.024

	cisting ndition	Propos Syste		Savin	gs
Run Hours	2,592	2	2,592		
Heating-Only Units Airflow, CFM	9,000	Ç	9,000		
Heating and Cooling Units Airflow, CFM	0		0		
Estimated Cooling Electric Use, kWh	0		0		-
Estimated Heating Natural Gas Use, therms	2,044	1	,377		667
Annual Electric Cost	\$ -	\$	-	\$	-
Annual Natural Gas Cost	\$ 2,094	\$ 1,	,410	\$	683
Annual Cost and Savings, \$	\$ 2,094	\$ 1,	,410	\$	683

Forest Avenue - Demand Control Ventilation

3. Price of Electricity, \$/kWh (blended rate)	\$0.151
5. Price of Natural Gas, \$/therm	\$1.024

	Existing Condition		Proposed System	Sa	vings
Run Hours	2,59)2	2,592		
Heating-Only Units Airflow, CFM	5,00	0	5,000		
Heating and Cooling Units Airflow, CFM		0	0		
Estimated Cooling Electric Use, kWh		0	0		-
Estimated Heating Natural Gas Use, therms	1,13	35	859		277
Annual Electric Cost	\$ -	\$	-	\$	-
Annual Natural Gas Cost	\$ 1,163	3 \$	880	\$	283
Annual Cost and Savings, \$	\$ 1,163	3 \$	880	\$	283

HB Whitehorne Middle School - Demand Control Ventilation

3. Price of Electricity, \$/kWh (blended rate)	\$0.151
5. Price of Natural Gas, \$/therm	\$1.024

	isting ndition	Propose System		Savings
Run Hours	2,592	2,5	92	
Heating-Only Units Airflow, CFM	15,000	15,0	00	
Heating and Cooling Units Airflow, CFM	0		0	
Estimated Cooling Electric Use, kWh	0		0	-
Estimated Heating Natural Gas Use, therms	3,406	2,8	78	528
Annual Electric Cost	\$ -	\$ -	9,	\$ -
Annual Natural Gas Cost	\$ 3,490	\$ 2,94	18 5	\$ 541
Annual Cost and Savings, \$	\$ 3,490	\$ 2,94	18 \$	\$ 541

Verona High School - Demand Control Ventilation

3. Price of Electricity, \$/kWh (blended rate)	\$0.151
5. Price of Natural Gas, \$/therm	\$1.024

	Existing ondition	oposed System	S	avings
Run Hours	2,592	2,592		
Heating-Only Units Airflow, CFM	18,800	18,800		
Heating and Cooling Units Airflow, CFM	12,200	12,200		
Estimated Cooling Electric Use, kWh	59,178	58,486		692
Estimated Heating Natural Gas Use, therms	6,097	4,662		1,435
Annual Electric Cost	\$ 8,938	\$ 8,833	\$	104
Annual Natural Gas Cost	\$ 6,246	\$ 4,776	\$	1,470
Annual Cost and Savings, \$	\$ 15,184	\$ 13,609	\$	1,574



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ECM #10:

REPLACE WINDOW AC'S WITH SPLITS

FN Brown Elementary School - Replace Window A/C & Spot Cooler Unit with Split Units

N/N		LINIT	UNIT QTY		LINIT OTY MATERIAL		LAE	TOTAL
IN/IN	DESCRIPTION OF	UNIT	QII	PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAL
1	Remove Window AC	each	2		-	130.00	260	260
2	Install Insulated	sq ft	3.8	15.00	2		-	2
3	Caulk new panels	l.f	16.0	0.09	1	0.87	14	15
4	Compressors, 1/2 ton	each	2.0	1500.00	3,000	1200.00	2,400	5,400
5	Evaporators, 1/2 ton	each	2.0	1000.00	2,000	225.00	450	2,450
6	Evaporators, 1 1/2	each	0.0	1700.00	-	225.00	-	-
7	Refrigerant Piping, Evap Liquid, 1/4"	l.f	60	2.80	168	3.67	220	388
8	Refrigerant Piping, Evan Gas. 1/2"	l.f	60	3.35	201	3.95	237	438
12	Electric Wiring, Cond, 14 AWG in conduit	l.f	150.0	2.81	421	4.91	737	1,157
Other Estimated Implementation Costs								2,386
	Cost Adjustmen to Mat	ch Revised	Cost Estin	nate				

TOTAL \$ 14,883

SUB-TOTAL		\$ 10,111
O&P	20%	2,022
ASBESTOS ABATEMENT		-
DIRECT COST		12,133
PAYMENT & PERFORMANCE BOND	0%	-
SUB-TOTAL		12,133
CONTINGENCY	0%	-
ASBESTOS CONTINGENCY	10%	-
SUB-TOTAL		12,133
ASBESTOS DESIGN & AIR MONITORING, TESTING		-
IC FEE	3.0%	364
SUB-TOTAL		12,497
INTEREST DURING CONSTRUCTION	0%	-
TOTAL		\$ 12,497
NJ Smart Start Rebate		\$ 123

Laning Elementary School - Replace Window A/C Unit with Split Unit

N/N		UNIT QTY		LINIT OTY MATERIAL		LAE	TOTAL	
IN/IN	DESCRIPTION OF	UNIT	QII	PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAL
1	Remove Window AC	each	1		-	130.00	130	130
2	Install Insulated	sq ft	1.9	15.00	1		-	1
3	Caulk new panels	l.f	8.0	0.09	1	0.87	7	8
4	Compressors, 1 ton	each	1.0	2000.00	2,000	1200.00	1,200	3,200
5	Evaporators, 1 ton	each	1.0	1000.00	1,000	225.00	225	1,225
6	Evaporators, 1 1/2	each	0.0	1700.00	-	225.00	-	ı
7	Refrigerant Piping,	l.f	30	2.80	84	3.67	110	194
8	Refrigerant Piping, Evap Gas, 1/2"	l.f	30	3.35	101	3.95	119	219
9	Electric Wiring, Cond, 14 AWG in conduit	l.f	75.0	2.81	210	4.91	368	579
Other Estimated Implementation Costs								1,311
	Cost Adjustmen to Mat	ch Revised	Cost Estin	nate				

TOTAL \$ 8,178

SUB-TOTAL	\$	5,555
O&P 20	%	1,111
ASBESTOS ABATEMENT		-
DIRECT COST		6,666
PAYMENT & PERFORMANCE BOND 09	%	-
SUB-TOTAL		6,666
CONTINGENCY 09	%	-
ASBESTOS CONTINGENCY 10	%	-
SUB-TOTAL		6,666
ASBESTOS DESIGN & AIR MONITORING, TESTING		-
IC FEE 3.0)%	200
SUB-TOTAL		6,866
INTEREST DURING CONSTRUCTION 09	%	-
TOTAL	\$	6,866
NJ Smart Start Rebate	\$	77

Forest Elementary School - Replace Window A/C Unit with Split Unit

N/N		UNIT QTY MATERIAL		LAE	TOTAL				
IN/IN	DESCRIPTION OF	UNIT	QII	PER UNIT	TOTAL	PER UNIT	TOTAL	IOIAL	
1	Remove Window AC	each	1		-	130.00	130	130	
2	Install Insulated	sq ft	1.9	15.00	1		-	1	
3	Caulk new panels	l.f	8.0	0.09	1	0.87	7	8	
4	Compressors, 3 ton	each	1.0	5000.00	5,000	1200.00	1,200	6,200	
5	Evaporators, 3 ton	each	1.0	1500.00	1,500	225.00	225	1,725	
6	Evaporators, 1 1/2	each	0.0	1700.00	-	225.00	-	-	
7	Refrigerant Piping, Evap Liquid, 1/4"	l.f	30	2.80	84	3.67	110	194	
8	Refrigerant Piping, Evap Gas, 1/2"	l.f	30	3.35	101	3.95	119	219	
9	Electric Wiring, Cond, 14 AWG in conduit	l.f	75	2.81	210	4.91	368	579	
Other Estimated Implementation Costs							2,137		
	Cost Adjustmen to Mat	ch Revised	l Cost Estin	nate			•		

TOTAL \$ 13,330

SUB-TOTAL		\$ 9,055
O&P	20%	1,811
ASBESTOS ABATEMENT		-
DIRECT COST		10,866
PAYMENT & PERFORMANCE BOND	0%	-
SUB-TOTAL		10,866
CONTINGENCY	0%	-
ASBESTOS CONTINGENCY	10%	-
SUB-TOTAL		10,866
ASBESTOS DESIGN & AIR MONITORING, TESTING		-
IC FEE	3.0%	326
SUB-TOTAL		11,192
INTEREST DURING CONSTRUCTION	0%	-
TOTAL		\$ 11,192
NJ Smart Start Rebate		\$ 276

FN Brown Elementary School - Replace Window A/C & Spot Cooler Unit with Split Units

Price of #2 Fuel Oil, \$/gal
 Price of City Water, \$/1000 gallons
 Price of Electricity, \$/kWh (blended rate)
 Price of the Demand of Electricity, \$/kW/month
 Price of Natural Gas, \$/therm
 \$0.000
 N/A

Energy Savings Due to Efficiency Improvement

	Existing Condition	٠ ١	Proposed System		Savings
Annual Cooling Energy, kWh	94	40	470)	470
Annual Electric and Savings, \$	\$ 14	46	\$ 73	3	\$ 73
Total Annual Cost and Savings, \$	\$ 14	46	\$ 73	3	\$ 73

Laning Elementary School - Replace Window A/C Unit with Split Unit

1. Price of #2 Fuel Oil, \$/gal \$0.000
2. Price of City Water, \$/1000 gallons N/A
3. Price of Electricity, \$/kWh (blended rate) \$0.151
4. Price of the Demand of Electricity, \$/kW/month N/A
5. Price of Natural Gas, \$/therm \$1.024

Energy Savings Due to Efficiency Improvement

	Existing Condition		Proposed System		Savings	
Annual Cooling Energy, kWh		522		294		229
Annual Electric and Savings, \$	\$	79	\$	44	\$	35
Total Annual Cost and Savings, \$	\$	79	\$	44	\$	35

Forest Elementary School - Replace Window A/C Unit with Split Unit

1. Price of #2 Fuel Oil, \$/gal \$0.000
2. Price of City Water, \$/1000 gallons N/A
3. Price of Electricity, \$/kWh (blended rate) \$0.172
4. Price of the Demand of Electricity, \$/kW/month N/A
5. Price of Natural Gas, \$/therm \$1.032

Energy Savings Due to Efficiency Improvement

	Existing Condition		Proposed System		Sa	avings
Annual Cooling Energy, kWh		8,027		4,264		3,763
Annual Electric and Savings, \$	\$	1,379	\$	733	\$	646
Total Annual Cost and Savings, \$	\$	1,379	\$	733	\$	646



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ECM #11:

CHANGE TO MODULAR CONDENSING BOILERS

130,853

Total

216,172

COST ESTIMATES

Brookdale Elementary School - Boiler Conversion to High Efficiency Condensing Boilers

DESCRIPTION OF MATERIAL LABOR TOTAL N/N UNIT QTY WORK PER UNIT TOTAL PER UNIT TOTAL 1,500 MBH Nat Gas Condensing Boiler 1 ea 4 37,000 148,000 10,000 40,000 188,000 2 **Demo Existing Boilers** ls 2 2,776 5,552 5,552 3 Piping Modifications ls 1 4,000 4,000 6,000 6,000 10,000 HHW piping 4 LF 300 13 3,825.00 21 6,225 10,050 5 radiator ea 2,933 2,840

Other Estimated Implementation Costs

TOTAL		\$ 344,450
SUB-TOTAL SUB-TOTAL		213,602
O&P	20%	42,720.40
ASBESTOS ABATEMENT	0%	-
DIRECT COST		256,322
PAYMENT & PERFORMANCE BOND	0%	-
SUB-TOTAL SUB-TOTAL		256,322
CONTINGENCY	10%	25,632
ASBESTOS CONTINGENCY	10%	21,360.20
SUB-TOTAL SUB-TOTAL		303,315
ASBESTOS DESIGN & AIR MONITORING, TESTING	15%	32,040.30
IC FEE	3.0%	9,099
SUB-TOTAL SUB-TOTAL		344,455
INTEREST DURING CONSTRUCTION	0%	-
TOTAL		\$ 344,455
Total SmartStart Rebate		\$ 10,500
	Total	\$ 333,955

Brookdale Elementary School - Like in Kind Boiler Replacement

N/N	DESCRIPTION OF	UNIT	QTY	MATERIAL		LABOR		TOTAL	
IN/IN	WORK	UNIT	ONII QII F	PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAL	
1	2511 MBH Nat Gas Fire Tube Boiler	ea	2	49,201	98,402	5,024	10,048	108,450	
2	Demo Existing Boilers	ls	2		-	2,776	5,552	5,552	
3	Piping Modifications	ls	1	4,000	4,000	6,000	6,000	10,000	
4	HHW piping	LF	300	13	3,825.00	21	6,225	10,050	
5	radiator	ea	-	2,933	0	2,840	-	-	
	Other Estimated Implementation Costs							82,120	

TOTAL		\$ 216,170
SUB-TOTAL SUB-TOTAL		134,052
O&P	20%	26,810.39
ASBESTOS ABATEMENT	0%	-
DIRECT COST		160,862
PAYMENT & PERFORMANCE BOND	0%	-
SUB-TOTAL		160,862
CONTINGENCY	10%	16,086
ASBESTOS CONTINGENCY	10%	13,405.20
SUB-TOTAL		190,354
ASBESTOS DESIGN & AIR MONITORING, TESTING	15%	20,107.79
IC FEE	3.0%	5,711
SUB-TOTAL		216,172
INTEREST DURING CONSTRUCTION	0%	-
TOTAL		\$ 216,172
Total SmartStart Rebate		

Laning Avenue School - Boiler Conversion to High Efficiency Condensing Boilers

N/N	DESCRIPTION OF	UNIT	QTY	MAT	ERIAL	LAB	OR	TOTAL
IN/IN	WORK	UNIT	UNII QII	PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAL
1	1,500 MBH Nat Gas Condensing Boiler	ea	4	37,000	148,000	10,000	40,000	188,000
2	Demo Existing Boilers	Is	2		-	2,776	5,552	5,552
3	Piping Modifications	Is	1	4,000	4,000	6,000	6,000	10,000
4	HHW piping	LF	300	13	3,825.00	21	6,225	10,050
5	radiator	ea	-	2,933	0	2,840	-	-
	Other Estimated Implementation Costs							130.853

TOTAL		\$ 344,450
SUB-TOTAL		213,602
O&P	20%	42,720.40
ASBESTOS ABATEMENT	0%	-
DIRECT COST		256,322
PAYMENT & PERFORMANCE BOND	0%	-
SUB-TOTAL		256,322
CONTINGENCY	10%	25,632
ASBESTOS CONTINGENCY	10%	21,360.20
SUB-TOTAL		303,315
ASBESTOS DESIGN & AIR MONITORING, TESTING	15%	32,040.30
IC FEE	3.0%	9,099
SUB-TOTAL		344,455
INTEREST DURING CONSTRUCTION	0%	-
TOTAL		\$ 344,455
Total SmartStart Rebate		\$ 10,500
	Total	\$ 333,955

Laning Avenue School - Like in Kind Boiler Replacement

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N/N	DESCRIPTION OF	UNIT C	LINIT	QTY	MAT	ERIAL	LAB	OR	TOTAL
IN/IN	WORK	UNIT	QII	PER UNIT	TOTAL	PER UNIT	TOTAL	IOTAL	
1	3000 MBH Nat Gas Fire Tube Boiler	ea	2	58,654	117,309	5,024	10,048	127,357	
2	Demo Existing Boilers	ls	2		-	2,776	5,552	5,552	
3	Piping Modifications	ls	1	4,000	4,000	6,000	6,000	10,000	
4	HHW piping	LF	300	13	3,825.00	21	6,225	10,050	
5	radiator	ea	-	2,933	0	2,840	-	-	
	Other Estimated Implementation Costs							93.702	

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TOTAL	\$ 246,660
SUB-TOTAL	152,959
O&P 20%	30,591.71
ASBESTOS ABATEMENT 0%	, -
DIRECT COST	183,550
PAYMENT & PERFORMANCE BOND 0%	-
SUB-TOTAL	183,550
CONTINGENCY 10%	18,355
ASBESTOS CONTINGENCY 10%	15,295.86
SUB-TOTAL	217,201
ASBESTOS DESIGN & AIR MONITORING, TESTING 15%	22,943.79
IC FEE 3.0%	6,516
SUB-TOTAL	246,661
INTEREST DURING CONSTRUCTION 0%	-
TOTAL	\$ 246,661
Total SmartStart Rebate	

Total

246,661

Prepared by Dome-Tech, Inc. 2 of 8

Forest Elementary School - Boiler Conversion to High Efficiency Condensing Boilers

N/N	DESCRIPTION OF	UNIT	QTY	MATI	ERIAL	LAB	BOR	TOTAL
IN/IN	WORK			PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAL
1	1,500 MBH Nat Gas Condensing Boiler	ea	4	37,000	148,000	10,000	40,000	188,000
2	Demo Existing Boilers	ls	2		-	2,776	5,552	5,552
3	Piping Modifications	ls	1	4,000	4,000	6,000	6,000	10,000
4	HHW piping	LF	300	13	3,825.00	21	6,225	10,050
5	radiator	ea	-	2,933	0	2,840	-	-
Other Estimated Implementation Costs								130,853

TOTAL	•	\$ 344,450
SUB-TOTAL		213,602
O&P	20%	42,720.40
ASBESTOS ABATEMENT	0%	-
DIRECT COST		256,322
PAYMENT & PERFORMANCE BOND	0%	-
SUB-TOTAL		256,322
CONTINGENCY	10%	25,632
ASBESTOS CONTINGENCY	10%	21,360.20
SUB-TOTAL		303,315
ASBESTOS DESIGN & AIR MONITORING, TESTING	15%	32,040.30
IC FEE	3.0%	9,099
SUB-TOTAL		344,455
INTEREST DURING CONSTRUCTION	0%	-
TOTAL		\$ 344,455
Total SmartStart Rebate		\$ 10,500
	Total	\$ 333,955

Forest Elementary School - Like in Kind Boiler Replacement

N/N	DESCRIPTION OF	UNIT	UNIT QTY	MATERIAL		LABOR		TOTAL	
IN/IN	WORK	OINII	QII	PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAL	
1	2511 MBH Nat Gas Fire Tube Boiler	ea	2	49,201	98,402	5,024	10,048	108,450	
2	Demo Existing Boilers	ls	2		-	2,776	5,552	5,552	
3	Piping Modifications	ls	1	4,000	4,000	6,000	6,000	10,000	
4	HHW piping	LF	300	13	3,825.00	21	6,225	10,050	
5	radiator	ea	-	2,933	0	2,840	-	-	
	Other Estimated Implementation Costs							82.120	

Other Estimated Implementation Costs		62,120
TOTAL	\$	216,170
SUB-TOTAL		134,052
O&P 20%		26,810.39
ASBESTOS ABATEMENT 0%	,	-
DIRECT COST		160,862
PAYMENT & PERFORMANCE BOND 0%		-
SUB-TOTAL		160,862
CONTINGENCY 10%		16,086
ASBESTOS CONTINGENCY 10%		13,405.20
SUB-TOTAL		190,354
ASBESTOS DESIGN & AIR MONITORING, TESTING 15%	,	20,107.79
IC FEE 3.0%		5,711
SUB-TOTAL		216,172
INTEREST DURING CONSTRUCTION 0%		-
TOTAL	\$	216,172
Total SmartStart Rebate		

Total

216,172

Verona High School - Boiler Conversion to High Efficiency Condensing Boilers

N/N	DESCRIPTION OF	UNIT	UNIT QTY	MATERIAL		LABOR		TOTAL	
IN/IN	WORK	UNIT	QII	PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAL	
1	1,500 MBH Nat Gas Condensing Boiler	ea	7	37,000	259,000	10,000	70,000	329,000	
2	Demo Existing Boilers	ls	2		-	2,776	5,552	5,552	
3	Piping Modifications	ls	1	4,000	4,000	6,000	6,000	10,000	
4	HHW piping	LF	300	13	3,825.00	21	6,225	10,050	
5	radiator	ea	-	2,933	0	2,840	-	-	
	Other Estimated Implementation Costs			•		-		217.229	

TOTAL		\$ 571,830
SUB-TOTAL		354,602
O&P	20%	70,920.40
ASBESTOS ABATEMENT	0%	-
DIRECT COST		425,522
PAYMENT & PERFORMANCE BOND	0%	-
SUB-TOTAL		425,522
CONTINGENCY	10%	42,552
ASBESTOS CONTINGENCY	10%	35,460.20
SUB-TOTAL		503,535
ASBESTOS DESIGN & AIR MONITORING, TESTING	15%	53,190.30
IC FEE	3.0%	15,106
SUB-TOTAL		571,831
INTEREST DURING CONSTRUCTION	0%	-
TOTAL		\$ 571,831
Total SmartStart Rebate		\$ 18,375
	Total	\$ 553,456

Verona High School - Like in Kind Boiler Replacement

N/N	DESCRIPTION OF	UNIT	IIT QTY	MATERIAL		LABOR		TOTAL
IN/IN	WORK	OINII	QII	PER UNIT	TOTAL	PER UNIT	TOTAL	TOTAL
1	5200 MBH Nat Gas Fire Tube Boiler	ea	2	74,860	149,720	5,024	10,048	159,768
2	Demo Existing Boilers	ls	2		-	2,776	5,552	5,552
3	Piping Modifications	ls	1	4,000	4,000	6,000	6,000	10,000
4	HHW piping	LF	300	13	3,825.00	21	6,225	10,050
5	radiator	ea	-	2,933	0	2,840	-	-
Other Estimated Implementation Costs						113,558		

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TOTAL	\$ 298,930
SUB-TOTAL	185,370
O&P 20%	37,073.98
ASBESTOS ABATEMENT 0%	-
DIRECT COST	222,444
PAYMENT & PERFORMANCE BOND 0%	-
SUB-TOTAL	222,444
CONTINGENCY 10%	22,244
ASBESTOS CONTINGENCY 10%	18,536.99
SUB-TOTAL SUB-TOTAL	263,225
ASBESTOS DESIGN & AIR MONITORING, TESTING 15%	27,805.48
IC FEE 3.0%	7,897
SUB-TOTAL SUB-TOTAL	298,927
INTEREST DURING CONSTRUCTION 0%	-
TOTAL	\$ 298,927
Total SmartStart Rebate	

Total

298,927

Prepared by Dome-Tech, Inc. 4 of 8

Brookdale Elementary School- Replace Boilers with Higher Efficiency Boilers

1. Price of #2 Fuel Oil, \$/gal	
2. Price of City Water, \$/1000 gallons	
3. Price of Electricity, \$/kWh (blended rate)	\$0.155
4. Price of the Demand of Electricity, \$/kW/month	
5. Price of Natural Gas, \$/therm	\$1.170

	Existing Condition	Proposed System	Savings
Heating Boiler Fuel Consumption, therms	10,106	9,320	786
Heating Boiler Fuel Cost	\$ 11,822	\$ 10,902	\$ 919

Laning Avenue School- Replace Boilers with Higher Efficiency Boilers

1. Price of #2 Fuel Oil, \$/gal	
2. Price of City Water, \$/1000 gallons	
3. Price of Electricity, \$/kWh (blended rate)	\$0.151
4. Price of the Demand of Electricity, \$/kW/month	
5. Price of Natural Gas, \$/therm	\$1.024

	Existing Condition	Proposed System	Savings
Heating Boiler Fuel Consumption, therms	23,476	21,650	1,826
Heating Boiler Fuel Cost	\$ 24,050	\$ 22,179	\$ 1,871

Forest Elementary School- Replace Boilers with Higher Efficiency Boilers

1. Price of #2 Fuel Oil, \$/gal	
2. Price of City Water, \$/1000 gallons	
3. Price of Electricity, \$/kWh (blended rate)	\$0.152
4. Price of the Demand of Electricity, \$/kW/month	
5. Price of Natural Gas, \$/therm	\$1.131

	Existing Condition	Proposed System	Savings
Heating Boiler Fuel Consumption, therms	12,487	11,516	971
Heating Boiler Fuel Cost	\$ 14,121	\$ 13,023	\$ 1,098

Verona High School- Replace Boilers with Higher Efficiency Boilers

1. Price of #2 Fuel Oil, \$/gal	
2. Price of City Water, \$/1000 gallons	
3. Price of Electricity, \$/kWh (blended rate)	\$0.170
4. Price of the Demand of Electricity, \$/kW/month	
5. Price of Natural Gas, \$/therm	\$0.950

	Existing Condition	Proposed System	Savings
Heating Boiler Fuel Consumption, therms	49,583	45,726	3,856
Heating Boiler Fuel Cost	\$ 47,123	\$ 43,458	\$ 3,665



510 Thornall Street, Suite 170 Edison, NJ 08837

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RENEWABLES CALCULATIONS

VERONA SCHOOL DISTRICT (ALL SCHOOLS) PV SYSTEM SIZING

Building	BROOKDALE AVENUE ELEMENTARY SCHOOL	LANING AVENUE ELEMENTARY SCHOOL	F.N. BROWN ELEMENTARY SCHOOL	FOREST AVENUE ELEMENTARY SCHOOL	H.B. WHITEHORNE MIDDLE SCHOOL	VERONA HIGH SCHOOL	TOTALS
Site Energy Use (kWh):	329,200	329,200	329,200	329,200	329,200	329,200	1,975,200 kw dc
Location to Install Panels:	roof	roof	roof	roof	roof	roof	roof
		Assumpti	ons				
System Capacity, kw-dc (maximum utilization of roof space)	40 kw dc	127 kw dc	39 kw dc	61 kw dc	104 kw dc	309 kw dc	681 kw dc
Annual Electric Generation, kwhrs of AC electricity produced	42,666 kwh	134,058 kwh	41,454 kwh	63,999 kwh	109,695 kwh	325,449 kwh	717,321 kw dc
Total Annual Facility Electric Use, kwhrs	329,200 kwh	329,200 kwh	329,200 kwh		329,200 kwh	329,200 kwh	1,975,200 kw dc
% of Total Annual Usage	13%	41%	13%		33%	99%	36%
All-In Cost of Electric Year 1	\$0.155 / kwh	\$0.151 / kwh	\$0.172 / kwh		\$0.154 / kwh	\$0.170 / kwh	\$0.159 / kwh
Annual Electric Cost Savings	\$6,605	\$20,247	\$7,122		\$16,923	\$55,316	115,917 kw dc
Estimated SREC Value (Year 1):	\$100 / SREC	\$100 / SREC			\$100 / SREC	\$100 / SREC	\$100 / SREC
Estimated Year 1 SREC Revenue:	\$4,247	\$13,343		\$6,370	\$10,918	\$32,392	71,395 kw dc
	Environmental Impact						
Equivalent Annual CO2 Emission Reduction (tons per year) ¹	14 tons/yr	44 tons/yr	14 tons/yr	21 tons/yr	36 tons/yr	107 tons/yr	237 tons/yr
Equivalent Cars Removed From Road Annually ²	2	8	2	4	6	19	7
Equivalent Acres of Trees Planted Annually ³	4	12	4	6	10	29	65
Financial Results							
System Installed Cost	\$222,640	\$699,545	\$216,315	\$333,960	\$572,413	\$1,698,263	\$3,743,135
Simple Payback	20.0	20.4	18.2		20.0	18.3	19.5
IRR (25 Years)	1.7%	1.5%	2.4%	1.5%	1.7%	2.4%	1.9%
Net Present Value (25 yrs, 4% discount rate)	(\$47,364)	(\$158,731)	(\$32,275)	(\$75,003)	(\$122,938)	(\$265,040)	(\$701,350)

^{1.} Estimated CO2 Emissions Rate: 0.66 lbs/kWh

^{2.} EPA Estimate: 11,560 lbs CO2 per car

^{3.} EPA Estimate: 7,333 lbs CO2 per acre of trees planted

VERONA SCHOOL DISTRICT

WIND ANALYSIS

Wind Turbine Economics

	Building	Ground Mount	Ground Mount
	Integrated	5 kW	50 kW
Gross Installation Cost Estimate	\$325,000	\$312,000	\$250,000
Number of Units	50	10	1
Net Installation Cost Estimate	\$325,000	\$312,000	\$250,000
Annual Energy Savings	\$6,308	\$9,956	\$18,780
Simple Payback	51.5 yrs.	31.3 yrs.	13.3 yrs.
System Capacity	50 kW	52 kW	50 kW
Annual Avoided Energy Use	37,108 kWh	58,567 kWh	110,472 kWh
Annual CO2 Emisions, tons	13	20	39
% of Annual Electric Use*	4.6%	7.3%	13.8%

Verona High School:

798,601 kWh/year annual consumption