

New Jersey's Clean Energy Program

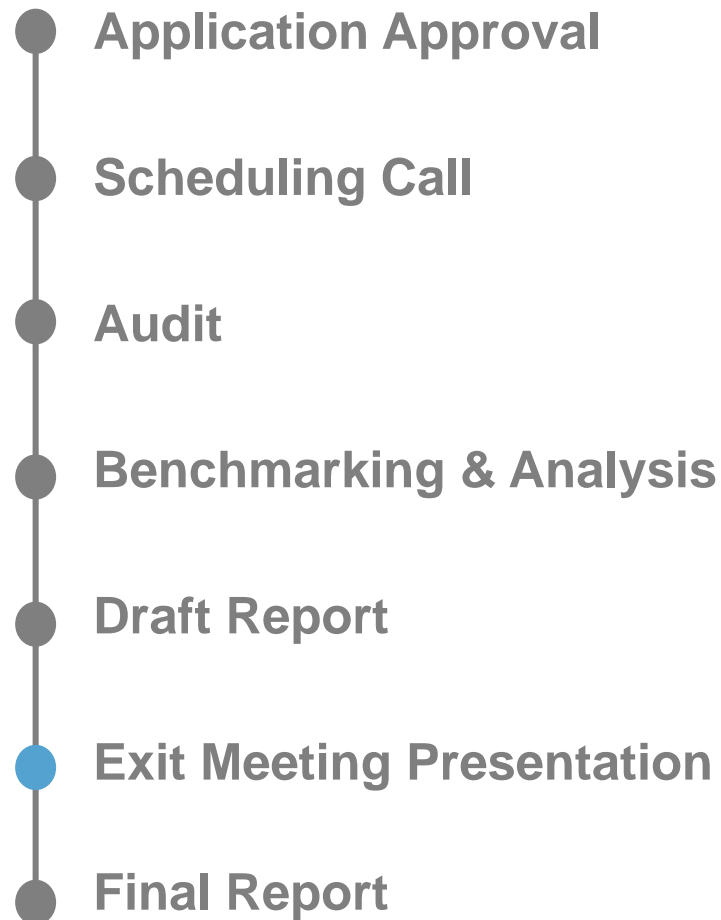
LGEA Exit Meeting for:
Lodi Board of Education

January 31, 2020

AGENDA

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

LGEA PROCESS



SITE VISIT & UTILITY ANALYSIS

Overview of Systems, Baseline & Existing Conditions:

- Lighting System
- HVAC and Mechanical Systems
- Plug Load Equipment
- Food Service and Refrigeration

Utility Consumption:

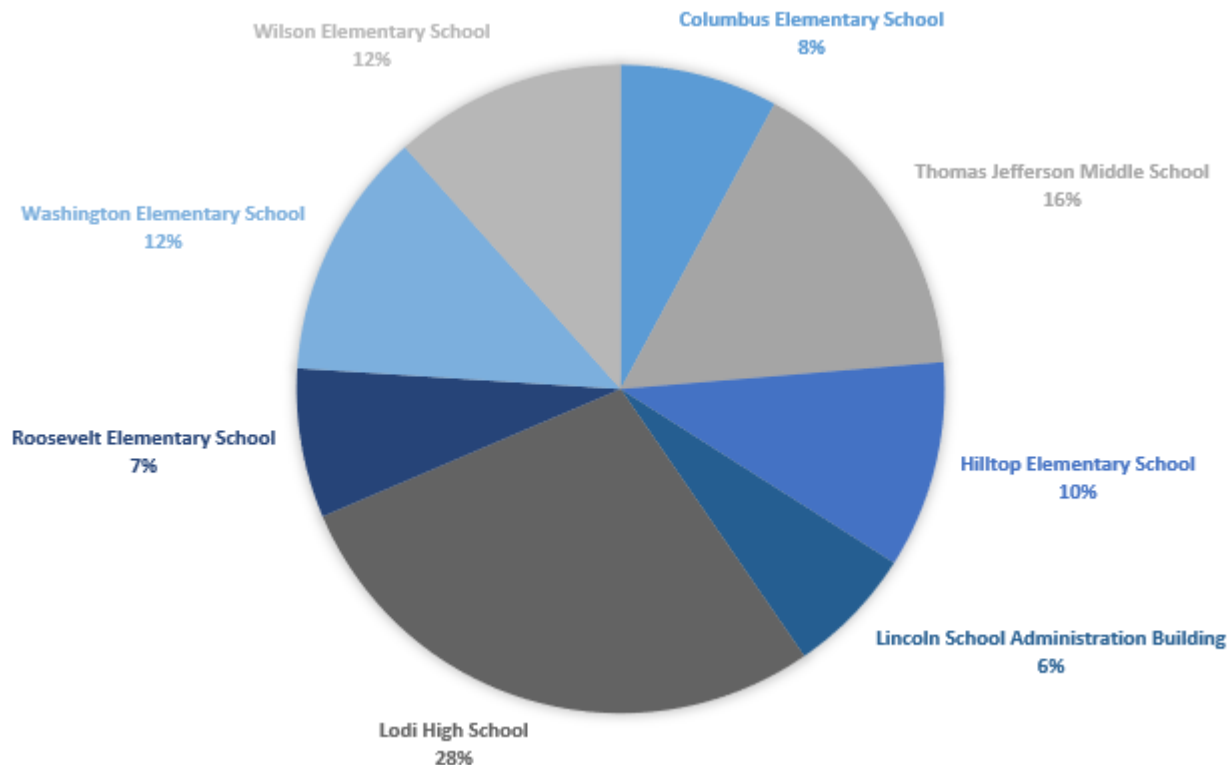
- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Sites Visited/Analyzed

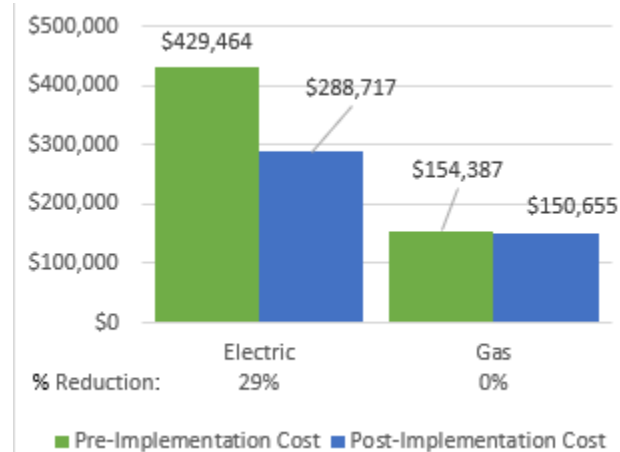
- Washington Elementary School
- Roosevelt Elementary School
- Hilltop Elementary School
- Columbus Elementary School
- Wilson Elementary School
- Thomas Jefferson Middle School
- Lincoln School Administration Building
- Lodi High School

UTILITY BREAKOUT


Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



BENCHMARKING

 **ENERGY STAR® Statement of Energy Performance**
LEARN MORE AT energystar.gov

77
ENERGY STAR® Score¹

Lodi High School
Primary Property Type: K-12 School
Gross Floor Area (ft²): 142,400
Built: 1972
For Year Ending: November 30, 2018
Date Generated: July 03, 2019

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

Property & Contact Information		
Property Address Lodi High School 99 Putnam Street Lodi, New Jersey 07644	Property Owner Lodi Board of Education 8 Hunter Street Lodi, NJ 07644 (973) 778 4920	Primary Contact Robert Brown 8 Hunter Street Lodi, NJ 07644 (973) 778 4920 robert.brown@lodi.k12.nj.us

Property ID: 7212000

Energy Consumption and Energy Use Intensity (EUI)		
Site EUI 46.2 kBtu/ft²	Annual Energy by Fuel Natural Gas (kBtu) 3,291,520 (50%) Electric - Grid (kBtu) 3,289,563 (50%)	National Median Comparison National Median Site EUI (kBtu/ft²) 63.2 National Median Source EUI (kBtu/ft²) 121.7 % Diff from National Median Source EUI -27%
Source EUI 89 kBtu/ft²	Annual Emissions Greenhouse Gas Emissions (Metric Tons CO2e/year) 508	

Signature & Stamp of Verifying Professional

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

Signature: _____ Date: _____

Licensed Professional

() _____

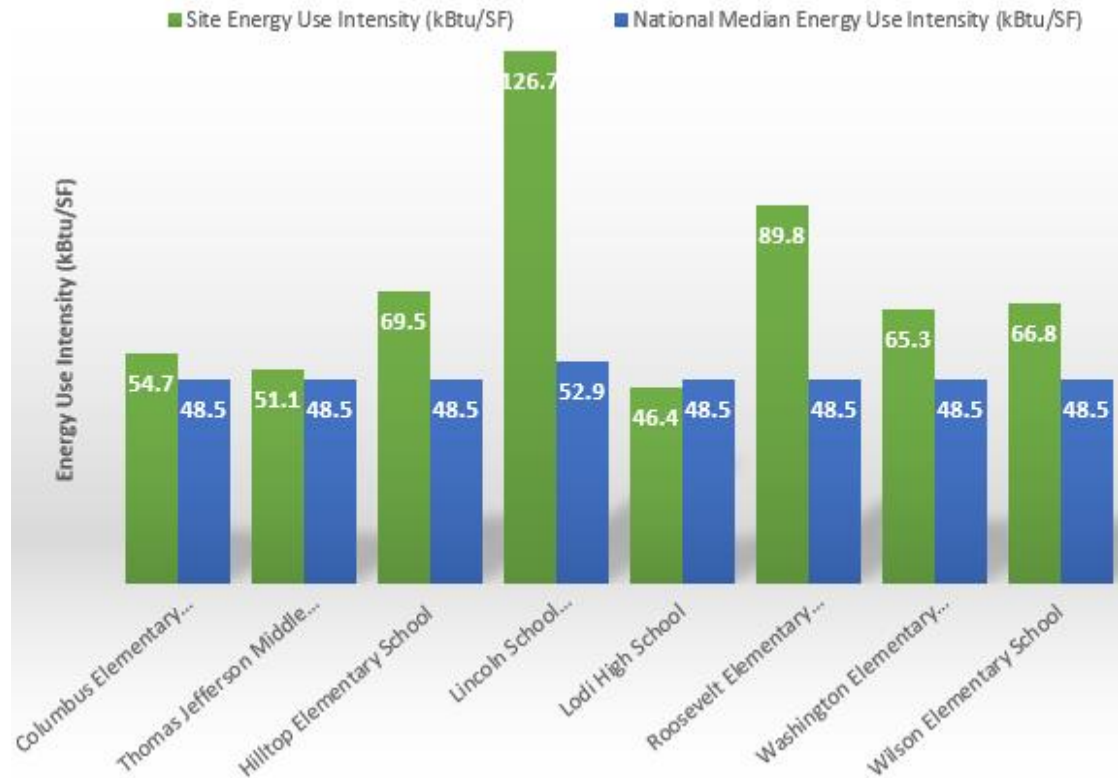
Professional Engineer Stamp
(if applicable)

Site EUI
46.2 kBtu/ft²

National Median Comparison
National Median Site EUI (kBtu/ft²) 63.2
National Median Source EUI (kBtu/ft²) 121.7
% Diff from National Median Source EUI -27%

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

BENCHMARKING

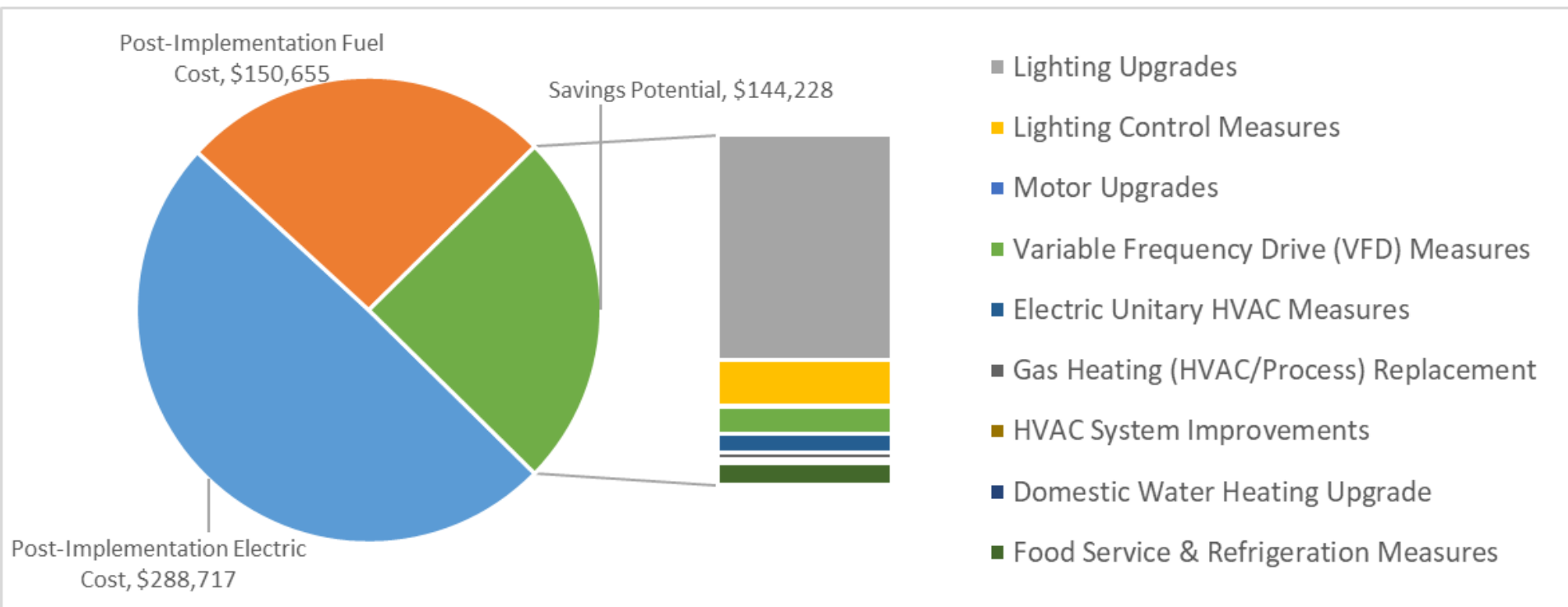


Building Name	Energy Star Score
Washington Elementary School	44
Roosevelt Elementary School	25
Hilltop Elementary School	38
Columbus Elementary School	63
Wilson Elementary School	42
Thomas Jefferson Middle School	95
Lincoln School Admin. Building	N/A
Lodi High School	77



ALL OPPORTUNITIES

Savings Potential



ALL OPPORTUNITIES

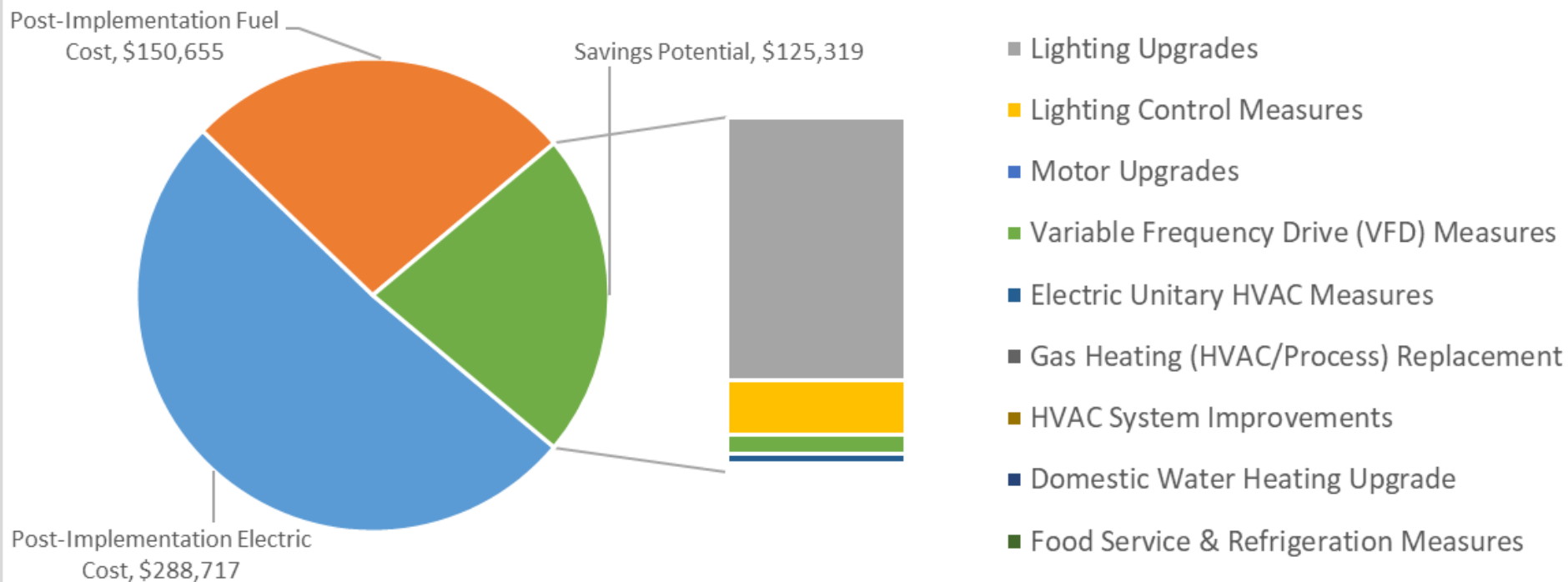
#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		648,850	144.2	-137.8	\$92,567	\$337,240	\$152,376	\$184,864	2.0	637,255
ECM 1	Install LED Fixtures	52,412	8.0	-9.2	\$7,877	\$74,639	\$24,020	\$50,619	6.4	51,703
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,774	1.0	-0.6	\$386	\$2,284	\$672	\$1,612	4.2	2,723
ECM 3	Retrofit Fixtures with LED Lamps	593,664	135.1	-128.0	\$84,304	\$260,317	\$127,684	\$132,633	1.6	582,829
Lighting Control Measures		133,511	26.6	-29.2	\$19,205	\$99,950	\$37,190	\$62,760	3.3	131,023
ECM 4	Install Occupancy Sensor Lighting Controls	108,789	23.2	-23.9	\$15,698	\$82,900	\$21,000	\$61,900	3.9	106,753
ECM 5	Install Daylight Dimming/Photocell Controls	223	0.0	0.0	\$33	\$400	\$0	\$400	12.1	225
ECM 6	Install High/Low Lighting Controls	24,499	3.4	-5.3	\$3,474	\$16,650	\$16,190	\$460	0.1	24,046
Motor Upgrades		656	0.3	0.0	\$97	\$8,031	\$0	\$8,031	82.7	660
ECM 7	Premium Efficiency Motors	656	0.3	0.0	\$97	\$8,031	\$0	\$8,031	82.7	660
Variable Frequency Drive (VFD) Measures		76,360	31.3	39.1	\$11,564	\$194,869	\$17,980	\$176,889	15.3	81,472
ECM 8	Install VFD on Variable Air Volume (VAV) Fans	9,752	2.9	0.0	\$1,343	\$8,152	\$3,100	\$5,052	3.8	9,820
ECM 9	Install VFDs on Constant Volume (CV) Fans	45,313	24.7	0.0	\$6,795	\$75,810	\$13,680	\$62,130	9.1	45,630
ECM 10	Install VFDs on Heating Water Pumps	13,658	3.5	0.0	\$2,004	\$107,341	\$0	\$107,341	53.6	13,754
ECM 11	Install VFDs on Kitchen Hood Fan Motors	7,636	0.2	39.1	\$1,422	\$3,565	\$1,200	\$2,365	1.7	12,268
Electric Unitary HVAC Measures		52,480	16.1	0.0	\$7,551	\$290,314	\$27,602	\$262,712	34.8	52,846
ECM 12	Install High Efficiency Air Conditioning Units	27,221	13.0	0.0	\$4,025	\$260,723	\$24,382	\$236,342	58.7	27,411
ECM 13	Install High Efficiency Heat Pumps	25,258	3.1	0.0	\$3,526	\$29,591	\$3,220	\$26,371	7.5	25,435

ALL OPPORTUNITIES

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Gas Heating (HVAC/Process) Replacement		0	0.0	338.9	\$2,845	\$181,844	\$20,936	\$160,909	56.6	39,675
ECM 14	Install High Efficiency Hot Water Boilers	0	0.0	78.8	\$695	\$55,909	\$8,722	\$47,187	67.8	9,225
ECM 15	Install High Efficiency Steam Boilers	0	0.0	77.2	\$651	\$79,207	\$2,614	\$76,594	117.7	9,044
ECM 16	Install High Efficiency Furnaces	0	0.0	182.8	\$1,499	\$46,728	\$9,600	\$37,128	24.8	21,406
HVAC System Improvements		6,170	0.0	30.7	\$1,170	\$10,875	\$0	\$10,875	9.3	9,806
ECM 17	Implement Demand Control Ventilation (DCV)	6,170	0.0	30.7	\$1,170	\$10,875	\$0	\$10,875	9.3	9,806
Domestic Water Heating Upgrade		0	0.0	63.2	\$546	\$1,083	\$1,041	\$41	0.1	7,402
ECM 18	Install Low-Flow DHW Devices	0	0.0	63.2	\$546	\$1,083	\$1,041	\$41	0.1	7,402
Food Service & Refrigeration Measures		54,420	8.3	135.9	\$8,683	\$113,269	\$12,590	\$100,679	11.6	70,708
ECM 19	Food Service Equipment Replacement	34,933	6.1	135.9	\$5,972	\$95,520	\$10,850	\$84,670	14.2	51,085
ECM 20	Refrigerator/Freezer Case Electrically Commutated Motors	1,439	0.2	0.0	\$198	\$910	\$240	\$670	3.4	1,449
ECM 21	Replace Refrigeration Equipment	9,707	1.1	0.0	\$1,336	\$15,230	\$1,000	\$14,230	10.6	9,775
ECM 22	Vending Machine Control	8,341	1.0	0.0	\$1,176	\$1,610	\$500	\$1,110	0.9	8,400
TOTALS		972,446	226.9	440.7	\$144,228	\$1,237,474	\$269,715	\$967,760	6.7	1,030,849

COST EFFECTIVE OPPORTUNITIES

Savings Potential



COST EFFECTIVE OPPORTUNITIES

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		648,850	144.2	-137.8	\$92,567	\$337,240	\$152,376	\$184,864	2.0	637,255
ECM 1	Install LED Fixtures	52,412	8.0	-9.2	\$7,877	\$74,639	\$24,020	\$50,619	6.4	51,703
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,774	1.0	-0.6	\$386	\$2,284	\$672	\$1,612	4.2	2,723
ECM 3	Retrofit Fixtures with LED Lamps	593,664	135.1	-128.0	\$84,304	\$260,317	\$127,684	\$132,633	1.6	582,829
Lighting Control Measures		133,380	26.6	-29.2	\$19,186	\$99,750	\$37,190	\$62,560	3.3	130,891
ECM 4	Install Occupancy Sensor Lighting Controls	108,789	23.2	-23.9	\$15,698	\$82,900	\$21,000	\$61,900	3.9	106,753
ECM 5	Install Daylight Dimming/Photocell Controls	92	0.0	0.0	\$14	\$200	\$0	\$200	14.4	93
ECM 6	Install High/Low Lighting Controls	24,499	3.4	-5.3	\$3,474	\$16,650	\$16,190	\$460	0.1	24,046
Variable Frequency Drive (VFD) Measures		45,567	13.8	39.1	\$6,950	\$42,966	\$9,580	\$33,386	4.8	50,464
ECM 8	Install VFD on Variable Air Volume (VAV) Fans	9,752	2.9	0.0	\$1,343	\$8,152	\$3,100	\$5,052	3.8	9,820
ECM 9	Install VFDs on Constant Volume (CV) Fans	23,490	9.7	0.0	\$3,477	\$22,855	\$5,280	\$17,575	5.1	23,654
ECM 10	Install VFDs on Heating Water Pumps	4,689	1.0	0.0	\$709	\$8,394	\$0	\$8,394	11.8	4,721
ECM 11	Install VFDs on Kitchen Hood Fan Motors	7,636	0.2	39.1	\$1,422	\$3,565	\$1,200	\$2,365	1.7	12,268

COST EFFECTIVE OPPORTUNITIES

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Electric Unitary HVAC Measures		25,258	3.1	0.0	\$3,526	\$29,591	\$3,220	\$26,371	7.5	25,435
ECM 13	Install High Efficiency Heat Pumps	25,258	3.1	0.0	\$3,526	\$29,591	\$3,220	\$26,371	7.5	25,435
HVAC System Improvements		6,170	0.0	30.7	\$1,170	\$10,875	\$0	\$10,875	9.3	9,806
ECM 17	Implement Demand Control Ventilation (DCV)	6,170	0.0	30.7	\$1,170	\$10,875	\$0	\$10,875	9.3	9,806
Domestic Water Heating Upgrade		0	0.0	63.2	\$546	\$1,083	\$1,041	\$41	0.1	7,402
ECM 18	Install Low-Flow DHW Devices	0	0.0	63.2	\$546	\$1,083	\$1,041	\$41	0.1	7,402
Food Service & Refrigeration Measures		9,780	1.1	0.0	\$1,374	\$2,520	\$740	\$1,780	1.3	9,849
ECM 20	Refrigerator/Freezer Case Electrically Commutated Motors	1,439	0.2	0.0	\$198	\$910	\$240	\$670	3.4	1,449
ECM 22	Vending Machine Control	8,341	1.0	0.0	\$1,176	\$1,610	\$500	\$1,110	0.9	8,400
TOTALS		869,005	188.8	-34.0	\$125,319	\$524,024	\$204,147	\$319,877	2.6	871,102

WASHINGTON ELEMENTARY SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			75,479	16.4	-16	\$10,534	\$35,844	\$17,680	\$18,164	1.7	74,182
ECM 1	Install LED Fixtures	Yes	9,252	1.8	-2	\$1,293	\$11,049	\$5,000	\$6,049	4.7	9,112
ECM 2	Retrofit Fixtures with LED Lamps	Yes	66,227	14.6	-14	\$9,242	\$24,796	\$12,680	\$12,116	1.3	65,070
Lighting Control Measures			18,869	3.9	-4	\$2,633	\$12,730	\$4,980	\$7,750	2.9	18,539
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	15,773	3.4	-3	\$2,201	\$10,480	\$2,730	\$7,750	3.5	15,497
ECM 4	Install High/Low Lighting Controls	Yes	3,096	0.5	-1	\$432	\$2,250	\$2,250	\$0	0.0	3,042
Motor Upgrades			454	0.2	0	\$64	\$5,616	\$0	\$5,616	87.6	457
ECM 5	Premium Efficiency Motors	No	454	0.2	0	\$64	\$5,616	\$0	\$5,616	87.6	457
Variable Frequency Drive (VFD) Measures			10,484	6.0	0	\$1,481	\$45,378	\$2,800	\$42,578	28.7	10,557
ECM 6	Install VFDs on Constant Volume (CV) Fans	No	6,903	5.0	0	\$975	\$12,619	\$2,800	\$9,819	10.1	6,951
ECM 7	Install VFDs on Heating Water Pumps	No	3,581	1.0	0	\$506	\$32,759	\$0	\$32,759	64.8	3,606
Electric Unitary HVAC Measures			4,064	2.0	0	\$574	\$76,073	\$6,628	\$69,445	121.0	4,092
ECM 8	Install High Efficiency Air Conditioning Units	No	4,064	2.0	0	\$574	\$76,073	\$6,628	\$69,445	121.0	4,092
Gas Heating (HVAC/Process) Replacement			0	0.0	69	\$569	\$16,041	\$2,400	\$13,641	24.0	8,028
ECM 9	Install High Efficiency Furnaces	No	0	0.0	69	\$569	\$16,041	\$2,400	\$13,641	24.0	8,028
HVAC System Improvements			2,300	0.0	12	\$421	\$2,719	\$0	\$2,719	6.5	3,666
ECM 10	Implement Demand Control Ventilation (DCV)	Yes	2,300	0.0	12	\$421	\$2,719	\$0	\$2,719	6.5	3,666
Domestic Water Heating Upgrade			0	0.0	8	\$70	\$143	\$143	\$0	0.0	980
ECM 11	Install Low-Flow DHW Devices	Yes	0	0.0	8	\$70	\$143	\$143	\$0	0.0	980
TOTALS (COST EFFECTIVE MEASURES)			96,647	20.2	0	\$13,657	\$51,436	\$22,803	\$28,633	2.1	97,367
TOTALS (ALL MEASURES)			111,649	28.4	69	\$16,346	\$194,544	\$34,631	\$159,914	9.8	120,501

ROOSEVELT ELEMENTARY SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			47,119	12.0	-9	\$7,618	\$31,257	\$13,662	\$17,595	2.3	46,339
ECM 1	Install LED Fixtures	Yes	15,943	3.7	-3	\$2,580	\$16,707	\$5,760	\$10,947	4.2	15,706
ECM 2	Retrofit Fixtures with LED Lamps	Yes	31,176	8.3	-7	\$5,039	\$14,550	\$7,902	\$6,648	1.3	30,633
Lighting Control Measures			11,466	3.0	-2	\$1,853	\$7,010	\$2,510	\$4,500	2.4	11,266
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	10,365	2.7	-2	\$1,675	\$6,110	\$1,610	\$4,500	2.7	10,184
ECM 4	Install High/Low Lighting Controls	Yes	1,101	0.3	0	\$178	\$900	\$900	\$0	0.0	1,082
Motor Upgrades			202	0.1	0	\$33	\$2,415	\$0	\$2,415	73.2	203
ECM 5	Premium Efficiency Motors	No	202	0.1	0	\$33	\$2,415	\$0	\$2,415	73.2	203
Variable Frequency Drive (VFD) Measures			9,385	4.9	0	\$1,533	\$17,032	\$2,720	\$14,312	9.3	9,450
ECM 6	Install VFDs on Constant Volume (CV) Fans	No	9,385	4.9	0	\$1,533	\$17,032	\$2,720	\$14,312	9.3	9,450
Electric Unitary HVAC Measures			3,306	1.7	0	\$540	\$20,421	\$1,656	\$18,765	34.7	3,329
ECM 7	Install High Efficiency Air Conditioning Units	No	3,306	1.7	0	\$540	\$20,421	\$1,656	\$18,765	34.7	3,329
Gas Heating (HVAC/Process) Replacement			0	0.0	19	\$165	\$4,405	\$2,400	\$2,005	12.2	2,278
ECM 8	Install High Efficiency Furnaces	No	0	0.0	19	\$165	\$4,405	\$2,400	\$2,005	12.2	2,278
HVAC System Improvements			664	0.0	11	\$198	\$2,719	\$0	\$2,719	13.7	1,905
ECM 9	Implement Demand Control Ventilation (DCV)	Yes	664	0.0	11	\$198	\$2,719	\$0	\$2,719	13.7	1,905
Domestic Water Heating Upgrade			0	0.0	3	\$28	\$57	\$57	\$0	0.0	392
ECM 10	Install Low Flow DHW Devices	Yes	0	0.0	3	\$28	\$57	\$57	\$0	0.0	392
TOTALS (COST EFFECTIVE MEASURES)			59,249	15.0	2	\$9,697	\$41,043	\$16,229	\$24,814	2.6	59,902
TOTALS (ALL MEASURES)			72,142	21.6	21	\$11,969	\$85,315	\$23,005	\$62,310	5.2	75,162

HILLTOP ELEMENTARY SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			50,915	10.7	-12	\$7,373	\$37,140	\$13,290	\$23,850	3.2	49,916
ECM 1	Install LED Fixtures	Yes	646	0.0	0	\$95	\$594	\$40	\$554	5.9	649
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	517	0.0	0	\$75	\$69	\$20	\$49	0.7	507
ECM 3	Retrofit Fixtures with LED Lamps	Yes	49,752	10.6	-11	\$7,203	\$36,477	\$13,230	\$23,247	3.2	48,760
Lighting Control Measures			13,078	2.7	-3	\$1,894	\$11,785	\$4,235	\$7,550	4.0	12,818
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	10,933	2.4	-3	\$1,583	\$10,210	\$2,660	\$7,550	4.8	10,715
ECM 5	Install High/Low Lighting Controls	Yes	2,146	0.3	0	\$311	\$1,575	\$1,575	\$0	0.0	2,103
Variable Frequency Drive (VFD) Measures			8,023	3.1	0	\$1,176	\$39,120	\$1,200	\$37,920	32.2	8,079
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	4,897	2.1	0	\$718	\$4,761	\$1,200	\$3,561	5.0	4,932
ECM 7	Install VFDs on Heating Water Pumps	No	3,126	1.0	0	\$458	\$34,359	\$0	\$34,359	75.0	3,148
HVAC System Improvements			2,029	0.0	0	\$298	\$2,719	\$0	\$2,719	9.1	2,044
ECM 8	Implement Demand Control Ventilation (DCV)	Yes	2,029	0.0	0	\$298	\$2,719	\$0	\$2,719	9.1	2,044
Domestic Water Heating Upgrade			0	0.0	5	\$40	\$86	\$86	\$0	0.0	588
ECM 9	Install Low-Flow DHW Devices	Yes	0	0.0	5	\$40	\$86	\$86	\$0	0.0	588
Food Service & Refrigeration Measures			1,612	0.2	0	\$236	\$230	\$100	\$130	0.6	1,623
ECM 10	Vending Machine Control	Yes	1,612	0.2	0	\$236	\$230	\$100	\$130	0.6	1,623
TOTALS (COST EFFECTIVE MEASURES)			72,532	15.7	-10	\$10,559	\$56,721	\$18,911	\$37,810	3.6	71,920
TOTALS (ALL MEASURES)			75,658	16.7	-10	\$11,017	\$91,080	\$18,911	\$72,169	6.6	75,068

COLUMBUS ELEMENTARY SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			42,457	7.5	-9	\$6,339	\$36,063	\$14,076	\$21,987	3.5	41,677
ECM 1	Install LED Fixtures	Yes	14,466	1.5	-3	\$2,163	\$22,058	\$6,800	\$15,258	7.1	14,244
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	50	0.0	0	\$7	\$65	\$12	\$53	7.1	49
ECM 3	Retrofit Fixtures with LED Lamps	Yes	27,942	6.0	-6	\$4,169	\$13,941	\$7,264	\$6,677	1.6	27,385
Lighting Control Measures			8,284	1.5	-2	\$1,236	\$12,715	\$4,035	\$8,680	7.0	8,121
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	7,021	1.4	-2	\$1,047	\$11,390	\$2,940	\$8,450	8.1	6,881
ECM 5	Install Daylight Dimming/Photocell Controls	Yes	92	0.0	0	\$14	\$200	\$0	\$200	14.4	93
ECM 6	Install High/Low Lighting Controls	Yes	1,171	0.2	0	\$175	\$1,125	\$1,095	\$30	0.2	1,148
Variable Frequency Drive (VFD) Measures			12,981	3.2	0	\$1,963	\$13,154	\$1,200	\$11,954	6.1	13,072
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	8,293	2.2	0	\$1,254	\$4,761	\$1,200	\$3,561	2.8	8,351
ECM 8	Install VFDs on Heating Water Pumps	Yes	4,689	1.0	0	\$709	\$8,394	\$0	\$8,394	11.8	4,721
Electric Unitary HVAC Measures			2,999	1.5	0	\$454	\$47,673	\$4,080	\$43,593	96.1	3,020
ECM 9	Install High Efficiency Air Conditioning Units	No	2,999	1.5	0	\$454	\$47,673	\$4,080	\$43,593	96.1	3,020
Gas Heating (HVAC/Process) Replacement			0	0.0	79	\$695	\$55,909	\$8,722	\$47,187	67.8	9,225
ECM 10	Install High Efficiency Hot Water Boilers	No	0	0.0	79	\$695	\$55,909	\$8,722	\$47,187	67.8	9,225
HVAC System Improvements			1,176	0.0	9	\$254	\$2,719	\$0	\$2,719	10.7	2,192
ECM 11	Implement Demand Control Ventilation (DCV)	Yes	1,176	0.0	9	\$254	\$2,719	\$0	\$2,719	10.7	2,192
Domestic Water Heating Upgrade			0	0.0	4	\$37	\$72	\$72	\$0	0.0	490
ECM 12	Install Low-Flow DHW Devices	Yes	0	0.0	4	\$37	\$72	\$72	\$0	0.0	490
TOTALS (COST EFFECTIVE MEASURES)			64,898	12.2	2	\$9,829	\$64,723	\$19,383	\$45,341	4.6	65,552
TOTALS (ALL MEASURES)			67,898	13.7	80	\$10,978	\$168,305	\$32,185	\$136,120	12.4	77,798

WILSON ELEMENTARY SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			68,764	14.1	-16	\$9,937	\$37,753	\$19,624	\$18,129	1.8	67,401
ECM 1	Install LED Fixtures	Yes	129	0.0	0	\$19	\$966	\$200	\$766	40.5	130
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	387	0.1	0	\$56	\$386	\$120	\$266	4.8	379
ECM 3	Retrofit Fixtures with LED Lamps	Yes	68,248	14.0	-16	\$9,862	\$36,401	\$19,304	\$17,097	1.7	66,892
Lighting Control Measures			19,170	3.6	-4	\$2,770	\$11,790	\$4,390	\$7,400	2.7	18,788
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	15,774	3.2	-4	\$2,279	\$9,990	\$2,590	\$7,400	3.2	15,460
ECM 5	Install High/Low Lighting Controls	Yes	3,396	0.5	-1	\$491	\$1,800	\$1,800	\$0	0.0	3,328
Variable Frequency Drive (VFD) Measures			7,798	5.8	0	\$1,141	\$55,133	\$2,880	\$52,253	45.8	7,853
ECM 6	Install VFDs on Constant Volume (CV) Fans	No	5,535	5.1	0	\$810	\$23,304	\$2,880	\$20,424	25.2	5,574
ECM 7	Install VFDs on Heating Water Pumps	No	2,263	0.7	0	\$331	\$31,829	\$0	\$31,829	96.1	2,279
Electric Unitary HVAC Measures			17,449	5.6	0	\$2,554	\$50,913	\$5,836	\$45,077	17.7	17,571
ECM 8	Install High Efficiency Air Conditioning Units	No	11,863	4.9	0	\$1,736	\$44,572	\$5,146	\$39,426	22.7	11,946
ECM 9	Install High Efficiency Heat Pumps	Yes	5,587	0.6	0	\$818	\$6,341	\$690	\$5,651	6.9	5,626
Gas Heating (HVAC/Process) Replacement			0	0.0	39	\$320	\$9,063	\$1,600	\$7,463	23.3	4,622
ECM 10	Install High Efficiency Furnaces	No	0	0.0	39	\$320	\$9,063	\$1,600	\$7,463	23.3	4,622
Domestic Water Heating Upgrade			0	0.0	8	\$68	\$143	\$143	\$0	0.0	980
ECM 11	Install Low-Flow DHW Devices	Yes	0	0.0	8	\$68	\$143	\$143	\$0	0.0	980
Food Service & Refrigeration Measures			0	0.0	74	\$597	\$16,599	\$1,500	\$15,099	25.3	8,635
ECM 12	Food Service Equipment Replacement	No	0	0.0	74	\$597	\$16,599	\$1,500	\$15,099	25.3	8,635
TOTALS (COST EFFECTIVE MEASURES)			93,521	18.4	-12	\$13,592	\$56,027	\$24,847	\$31,180	2.3	92,795
TOTALS (ALL MEASURES)			113,182	29.1	101	\$17,387	\$181,394	\$35,973	\$145,421	8.4	125,851

THOMAS JEFFERSON MIDDLE SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			97,006	18.5	-22	\$13,997	\$58,633	\$27,158	\$31,475	2.2	95,129
ECM 1	Install LED Fixtures	Yes	9,486	1.1	-2	\$1,372	\$16,746	\$4,820	\$11,926	8.7	9,354
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	43	0.0	0	\$6	\$129	\$40	\$89	14.3	42
ECM 3	Retrofit Fixtures with LED Lamps	Yes	87,477	17.4	-20	\$12,619	\$41,758	\$22,298	\$19,460	1.5	85,733
Lighting Control Measures			24,368	4.7	-6	\$3,515	\$20,265	\$7,165	\$13,100	3.7	23,886
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	20,958	4.2	-5	\$3,023	\$17,590	\$4,690	\$12,900	4.3	20,540
ECM 5	Install Daylight Dimming/Photocell Controls	No	131	0.0	0	\$19	\$200	\$0	\$200	10.4	132
ECM 6	Install High/Low Lighting Controls	Yes	3,279	0.5	-1	\$473	\$2,475	\$2,475	\$0	0.0	3,214
Variable Frequency Drive (VFD) Measures			10,300	5.3	0	\$1,505	\$13,334	\$2,880	\$10,454	6.9	10,372
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	10,300	5.3	0	\$1,505	\$13,334	\$2,880	\$10,454	6.9	10,372
Electric Unitary HVAC Measures			4,090	2.4	0	\$597	\$67,496	\$6,320	\$61,176	102.4	4,119
ECM 8	Install High Efficiency Air Conditioning Units	No	4,090	2.4	0	\$597	\$67,496	\$6,320	\$61,176	102.4	4,119
Gas Heating (HVAC/Process) Replacement			0	0.0	51	\$409	\$14,501	\$1,600	\$12,901	31.5	6,030
ECM 9	Install High Efficiency Furnaces	No	0	0.0	51	\$409	\$14,501	\$1,600	\$12,901	31.5	6,030
Domestic Water Heating Upgrade			0	0.0	8	\$67	\$143	\$143	\$0	0.0	980
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	8	\$67	\$143	\$143	\$0	0.0	980
Food Service & Refrigeration Measures			5,657	1.2	37	\$1,124	\$28,827	\$4,050	\$24,777	22.0	10,083
ECM 11	Food Service Equipment Replacement	No	4,045	1.0	37	\$889	\$28,597	\$3,950	\$24,647	27.7	8,460
ECM 12	Vending Machine Control	Yes	1,612	0.2	0	\$235	\$230	\$100	\$130	0.6	1,623
TOTALS (COST EFFECTIVE MEASURES)			133,155	28.7	-19	\$19,300	\$92,405	\$37,446	\$54,959	2.8	131,858
TOTALS (ALL MEASURES)			141,422	32.0	70	\$21,214	\$203,199	\$49,316	\$153,882	7.3	150,599

LINCOLN SCHOOL ADMIN. BUILDING

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			36,067	9.1	-6	\$5,415	\$11,365	\$3,030	\$8,335	1.5	35,566
ECM 1	Install LED Fixtures	Yes	950	0.0	0	\$144	\$724	\$200	\$524	3.6	957
ECM 2	Retrofit Fixtures with LED Lamps	Yes	35,116	9.1	-6	\$5,271	\$10,641	\$2,830	\$7,811	1.5	34,609
Lighting Control Measures			7,768	2.0	-2	\$1,164	\$6,300	\$1,255	\$5,045	4.3	7,632
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	6,648	1.7	-1	\$996	\$5,400	\$700	\$4,700	4.7	6,531
ECM 4	Install High/Low Lighting Controls	Yes	1,120	0.3	0	\$168	\$900	\$555	\$345	2.1	1,100
Gas Heating (HVAC/Process) Replacement			0	0.0	77	\$651	\$79,207	\$2,614	\$76,594	117.7	9,044
ECM 5	Install High Efficiency Steam Boilers	No	0	0.0	77	\$651	\$79,207	\$2,614	\$76,594	117.7	9,044
Domestic Water Heating Upgrade			0	0.0	5	\$46	\$93	\$52	\$41	0.9	637
ECM 6	Install Low-Flow DHW Devices	Yes	0	0.0	5	\$46	\$93	\$52	\$41	0.9	637
TOTALS (COST EFFECTIVE MEASURES)			43,834	11.1	-3	\$6,625	\$17,759	\$4,337	\$13,422	2.0	43,835
TOTALS (ALL MEASURES)			43,834	11.1	75	\$7,276	\$96,966	\$6,951	\$90,015	12.4	52,879

LODI HIGH SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			231,043	55.9	-48	\$31,353	\$89,183	\$43,856	\$45,327	1.4	227,044
ECM 1	Install LED Fixtures	Yes	1,540	0.0	0	\$212	\$5,796	\$1,200	\$4,596	21.7	1,550
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,778	0.8	0	\$241	\$1,635	\$480	\$1,155	4.8	1,747
ECM 3	Retrofit Fixtures with LED Lamps	Yes	227,726	55.1	-48	\$30,900	\$81,752	\$42,176	\$39,576	1.3	223,747
Lighting Control Measures			30,508	5.3	-6	\$4,140	\$17,355	\$8,620	\$8,735	2.1	29,975
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	21,318	4.3	-4	\$2,893	\$11,730	\$3,080	\$8,650	3.0	20,945
ECM 5	Install High/Low Lighting Controls	Yes	9,190	1.0	-2	\$1,247	\$5,625	\$5,540	\$85	0.1	9,030
Variable Frequency Drive (VFD) Measures			17,388	3.1	39	\$2,765	\$11,717	\$4,300	\$7,417	2.7	22,088
ECM 6	Install VFD on Variable Air Volume (VAV) Fans	Yes	9,752	2.9	0	\$1,343	\$8,152	\$3,100	\$5,052	3.8	9,820
ECM 7	Install VFDs on Kitchen Hood Fan Motors	Yes	7,636	0.2	39	\$1,422	\$3,565	\$1,200	\$2,365	1.7	12,268
Electric Unitary HVAC Measures			20,571	3.0	0	\$2,832	\$27,738	\$3,082	\$24,656	8.7	20,715
ECM 8	Install High Efficiency Air Conditioning Units	No	899	0.5	0	\$124	\$4,489	\$552	\$3,937	31.8	906
ECM 9	Install High Efficiency Heat Pumps	Yes	19,672	2.4	0	\$2,708	\$23,250	\$2,530	\$20,720	7.7	19,809
Gas Heating (HVAC/Process) Replacement			0	0.0	4	\$36	\$2,719	\$1,600	\$1,119	30.8	449
ECM 10	Install High Efficiency Furnaces	No	0	0.0	4	\$36	\$2,719	\$1,600	\$1,119	30.8	449
Domestic Water Heating Upgrade			0	0.0	20	\$190	\$344	\$344	\$0	0.0	2,353
ECM 11	Install Low-Flow DHW Devices	Yes	0	0.0	20	\$190	\$344	\$344	\$0	0.0	2,353
Food Service & Refrigeration Measures			47,151	7.0	25	\$6,725	\$67,614	\$6,940	\$60,674	9.0	50,366
ECM 12	Food Service Equipment Replacement	No	30,888	5.1	25	\$4,486	\$50,324	\$5,400	\$44,924	10.0	33,989
ECM 13	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	1,439	0.2	0	\$198	\$910	\$240	\$670	3.4	1,449
ECM 14	Replace Refrigeration Equipment	No	9,707	1.1	0	\$1,336	\$15,230	\$1,000	\$14,230	10.6	9,775
ECM 15	Vending Machine Control	Yes	5,118	0.6	0	\$705	\$1,150	\$300	\$850	1.2	5,153
TOTALS (COST EFFECTIVE MEASURES)			305,169	67.5	5	\$42,059	\$143,910	\$60,190	\$83,720	2.0	307,872
TOTALS (ALL MEASURES)			346,662	74.2	33	\$48,041	\$216,671	\$68,742	\$147,929	3.1	352,990



SOLAR ENERGY GENERATION POTENTIAL

	Washington ES	Hilltop ES	Columbus ES	Thomas Jefferson MS	Lodi HS
<i>Potential:</i>	HIGH	HIGH	HIGH	HIGH	MEDIUM
<i>System Potential: (kW)</i>	87	84	74	131	212
<i>Electric Generation: (kWh per year)</i>	103,649	100,075	88,161	156,070	159,518
<i>Displaced Cost: (per year)</i>	\$226,200	\$14,670	\$13,330	\$22,800	\$21,960

SREC Registration Program (SRP):

<http://www.NJCleanEnergy.com/SREC>

**Community Solar Energy Pilot
Program:**

<http://www.NJCleanEnergy.com/CommunitySolar>

ENERGY EFFICIENT BEST PRACTICES

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

See individual reports for specific EE practices by building

CLEAN ENERGY PROGRAM PORTFOLIO

ELIGIBLE SECTORS

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

INCENTIVE PROGRAMS

Equipment Rebates:

- **SmartStart**
- **Customer Tailored Energy Efficiency Pilot (CTEEP)**
- **Direct Install**
- Large Energy Users

Whole Buildings:

- **Pay for Performance**

Energy Generation:

- Combined Heat and Power – Fuel Cells

OTHER PROGRAMS

Renewable Energy Generation:

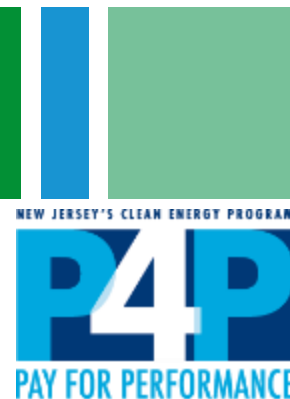
- SREC Registration Program (SRP)
- **Community Solar**

RECOMMENDED NJCEP INCENTIVES PER BUILDING

Lodi BOE	Pay For Performance	Direct Install	SmartStart	CTEEP
Washington Elementary School		X	X	X
Roosevelt Elementary School		X	X	X
Hilltop Elementary School		X	X	X
Columbus Elementary School		X	X	X
Wilson Elementary School		X	X	X
Thomas Jefferson Middle School		X	X	X
Lincoln School Admin. Building		X	X	X
Lodi High School	X		X	X

PAY FOR PERFORMANCE

NJCleanEnergy.com/P4P



What is P4P: Comprehensive, whole-building approach to saving energy in existing or new facilities.

Qualifications: Annual peak demand 200 kW+ in the previous year for existing buildings

About: Customer choose from a network of pre-approved ***Participating Partners***

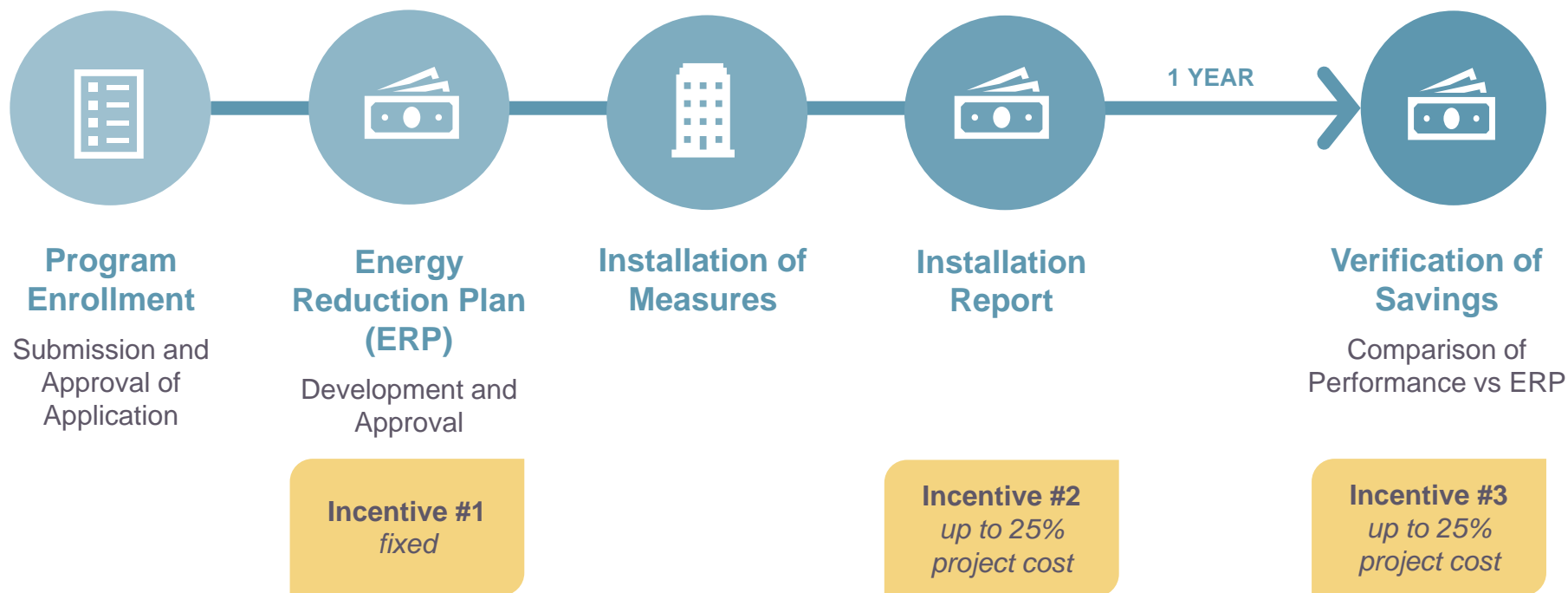
Incentives:

- Incentives paid in three installments
 - Up to \$2MM per project((\$4MM entity cap/year)
 - \$1 million for electric measures
 - \$1 million for gas measures
 - Up to 50% of project cost (or 80% for UEZ/OZ/ MUNI/K-12 Public Schools) up to \$2MM per project / \$4MM per entity annually
- Incentive #2 & #3 are doubles for UEZ/OZ/ MUNI/K-12 Public Schools



PAY FOR PERFORMANCE

NJCleanEnergy.com/P4P



DIRECT INSTALL

NJCleanEnergy.com/DI



What is DI: Turn-key retrofit program to replace outdated and inefficient equipment, including lighting, HVAC, refrigeration, etc.

Qualifications: Average electric peak demand <200 kW in the previous 12 months

About:

- Pre-approved participating contractors provide support and process paperwork
- Incentives paid directly to the contractor
- Fast project turnaround time (4-6 months)

Incentives:

- \$125,000 incentive funding per project/building (\$250K UEZ/OZ/MUNI/K-12 Public Schools), or
- \$250,000 entity cap (\$4MM UEZ/OZ/MUNI/K-12 Public Schools)

DIRECT INSTALL

NJCleanEnergy.com/DI

Facilities in Urban Enterprise Zones (UEZ), Opportunity Zones (OZ), municipalities, and K-12 public schools:

INCENTIVE FUNDING

Up to **80%** of installed cost is paid
directly to the contractor

CUSTOMER

20% of
installed cost

All other eligible facilities:

INCENTIVE FUNDING

Up to **70%** of installed cost is paid
directly to the contractor

CUSTOMER

30% of
installed cost



DIRECT INSTALL

NJCleanEnergy.com/DI

Participating Contractor

Lime Energy

Chris Fornicola

732-427-7278

chris.fornicola@lime-energy.com



SMARTSTART

NJCleanEnergy.com/SSB

What is SSB: Individual high efficiency equipment rebates for new construction, renovation, remodeling, equipment replacement

Qualifications: • All C&I customer types contributing into the Societal Benefits Charge (SBC)

About:

- Prescriptive and custom designed measures
- Pre-approval required only for lighting projects with incentives >\$100,000 and all custom projects
- For measures not requiring pre-approval, applications must be submitted to the program within one year of purchase.

Incentives:

- Prescriptive: \$500,000 cap for each electric or gas account
- Custom, lesser of the following:
 - \$0.16/kWh and/or \$1.60/Therm saved annually
 - 50% of incremental installed cost
 - Buy-down to 1 year payback based on incremental cost and savings



SMARTSTART

NJCleanEnergy.com/SSB

Prescriptive Incentives

- Lighting & Lighting Controls
- Packaged HVAC
- Boilers & Water Heaters
- Chillers
- VFD's
- Food Service
- Refrigeration

Prescriptive Only:

**DOUBLE
INCENTIVES FOR
OZ/UEZ/ MUNI/K-12
PUBLIC SCHOOLS**

Custom Incentives

- New or innovative technologies proven to be cost-effective and not listed as prescriptive
- Projects must have a minimum first year energy savings of 75,000 kWh or 1,500 therms
- Project pre and post inspection required

CUSTOMER TAILORED ENERGY EFFICIENCY PILOT

NJCleanEnergy.com/CTEEP

What is CTEEP: A streamlined/single application process for participants submitting multiple different technology types.

Qualifications:

- All C&I customer types contributing into the Societal Benefits Charge (SBC)

About:

- On site assistance available
- Additional technical incentive available to offset soft costs associated with developing and planning custom projects

Incentives:

- \$250,000 fiscal year entity cap
- Technical assistance incentives for custom project evaluation (up to \$10K)

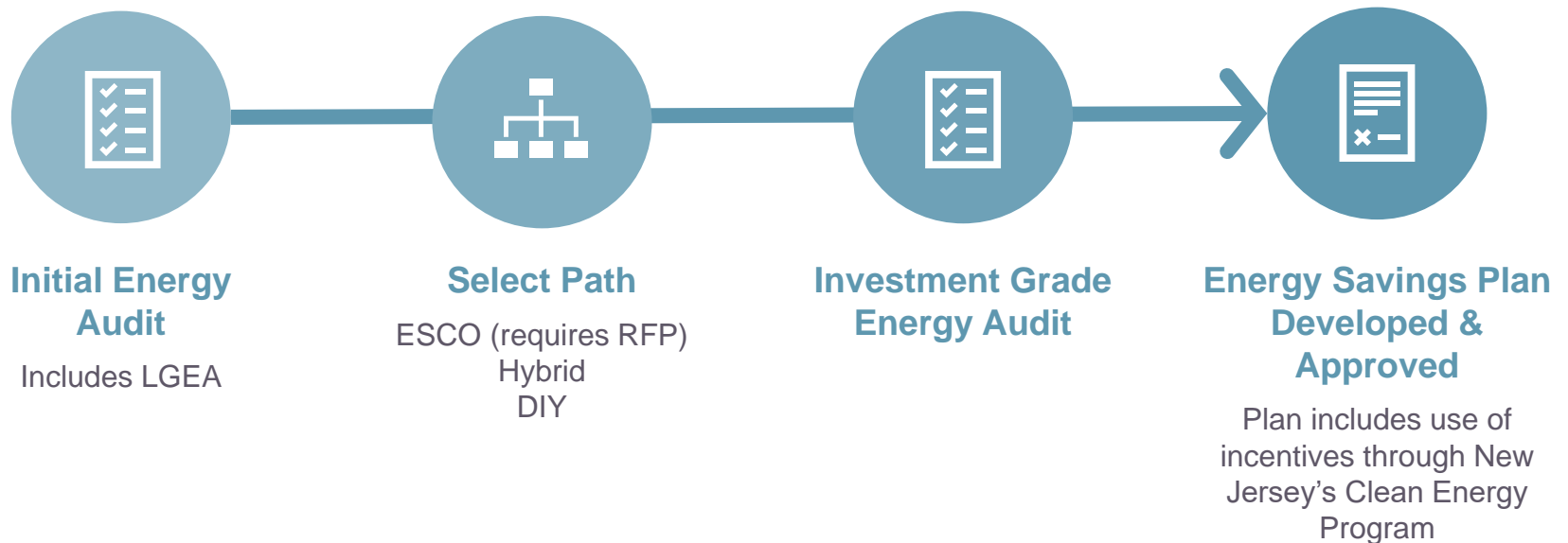
**SAME INCENTIVE
VALUES AS
SMARTSTART**

FINANCING MECHANISM: ESIP

ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- Provides alternative financing for energy savings projects at public institutions
- Administered directly by the BPU
- Value of energy savings leveraged to pay for cost of EE projects over a 15 year contract
- Requires NO new bonding and is outside of capital budget
- Does not count as debt or require voter approval

FINANCING MECHANISM: ESIP



ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

FOR MORE INFORMATION

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FOR MORE INFORMATION

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QUESTIONS

