



# LGEA Presentation Summit Board of Education

July 27, 2023

New Jersey's Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future

## INTRODUCTIONS

- Summit Board of Education
  - Derek J. Jess School Business Administrator
  - Michael Martino Director of Facilities
- NJ Clean Energy Program
  - Sarah Walters LGEA Project Manager
  - Moussa Traore LGEA Technical Manager
  - Juno Romanick LGEA Project Auditor
  - Melissa Lott LGEA Account Manager

Other Representatives

- Tiffany Lewis Outreach Account Manager (TRC)
- Gary Joshua Assistant Program Manager (Willdan)



## Agenda

- The audit process overview
- Energy use & existing conditions
- Review of Energy Conservation Measures (ECMs) identified & other recommendations
- Energy Savings Improvement Program (ESIP)
- Energy Efficiency Incentive Programs
- Questions regarding the draft audit report
- Next steps for Summit Board of Education



# LGEA PROCESS



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

# SITE VISIT & UTILITY ANALYSIS

# Overview of Systems, Baseline & Existing Conditions:

- Lighting System
- HVAC and Mechanical Systems
- Plug Load Equipment
- Cooking and Refrigeration Equipment

### **Utility Consumption:**

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

### **Sites Visited/Analyzed**

- Summit Primary Center at Jefferson School
- Summit Primary Center at Wilson School
- Brayton Elementary School
- Franklin Elementary School
- Lincoln-Hubbard Elementary School
- Washington Elementary School
- Lawton C. Johnson Summit MS
- Summit High School



## UTILITY BREAKOUT

program

#### Percent of Total Annual Energy Costs



Pre & Post Implementation Cost

## Benchmarking



Licensed Professional

() -

Professional Engineer or Registered Architect Stamp (if applicable) ENERGY STAR<sup>®</sup> scores are percentile ranking from 1 (least efficient) to 100 (most efficient). It compares your building's energy performance to similar buildings nationwide.

## Benchmarking



# ALL OPPORTUNITIES

### **Savings Potential**





# ALL OPPORTUNITIES

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (Ibs)
Lighting	Upgrades	498,583	113.7	-99.2	\$57,050	\$208,233	\$49,490	\$158,743	2.8	490,453
ECM 1	Install LED Fixtures	18,594	0.1	-0.1	\$2,200	\$16,891	\$1,965	\$14,926	6.8	18,718
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	3,444	1.0	-0.6	\$408	\$1,573	\$225	\$1,348	3.3	3,400
ECM 3	Retrofit Fixtures with LED Lamps	476,544	112.6	-98.6	\$54,442	\$189,769	\$47,300	\$142 <i>,</i> 469	2.6	468,335
Lighting	control Measures	227,777	55.0	-47.6	\$26,892	\$203,982	\$54,085	\$149,897	5.6	223,800
ECM 4	Install Occupancy Sensor Lighting Controls	191,094	47.8	-40.0	\$22,599	\$158,942	\$20,455	\$138,487	6.1	187,752
ECM 5	Install Daylight Dimming/Photocell Controls	248	0.0	0.0	\$32	\$400	\$0	\$400	12.4	250
ECM 6	Install High/Low Lighting Controls	36,435	7.2	-7.6	\$4,261	\$44,640	\$33 <i>,</i> 630	\$11,010	2.6	35,798
Motor l	Jpgrades	11,010	3.1	0.0	\$1,325	\$36,699	\$0	\$36,699	27.7	11,087
ECM 7	Premium Efficiency Motors	11,010	3.1	0.0	\$1,325	\$36,699	\$0	\$36,699	27.7	11,087
Variable	e Frequency Drive (VFD) Measures	146,565	46.4	39.1	\$18,297	\$252,397	\$13,950	\$238,447	13.0	152,168
ECM 8	Install VFD on Variable Air Volume (VAV) Fans	14,514	4.4	0.0	\$1,826	\$18,941	\$1,475	\$17,466	9.6	14,616
ECM 9	Install VFDs on Constant Volume (CV) Fans	124,013	41.4	0.0	\$15,084	\$205,834	\$11,750	\$194,084	12.9	124,880
ECM 10	Install VFDs on Chilled Water Pumps	1,886	0.4	0.0	\$215	\$7,015	\$150	\$6 <i>,</i> 865	31.9	1,899
ECM 11	Install VFDs on Kitchen Hood Fan Motors	6,152	0.2	39.1	\$1,171	\$20,607	\$575	\$20,032	17.1	10,773
Unitary	HVAC Measures	52,008	111.0	0.0	\$6,443	\$1,150,060	\$49,026	\$1,101,034	170.9	52,372
ECM 12	Install High Efficiency Air Conditioning Units	37,220	45.3	0.0	\$4,580	\$456,906	\$21,569	\$435,337	95.1	37,480
ECM 13	Install High Efficiency Heat Pumps	14,788	65.7	0.0	\$1,863	\$693,154	\$27,457	\$665,697	357.4	14,892

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# ALL OPPORTUNITIES (CONT.)

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (lbs)
Gas Hea	ting (HVAC/Process) Replacement	0	0.0	75.5	\$848	\$17,467	\$1,000	\$16,467	19.4	8,837
ECM 14	Install High Efficiency Furnaces	0	0.0	70.0	\$784	\$9,272	\$1,000	\$8,272	10.6	8,195
ECM 15	Install High Efficiency Unit Heaters	0	0.0	5.5	\$65	\$8,195	\$0	\$8,195	126.9	643
HVAC Sy	ystem Improvements	5,325	0.0	309.1	\$4,166	\$41,094	\$448	\$40,646	9.8	41,559
ECM 16	Implement Demand Control Ventilation (DCV)	3,648	0.0	230.8	\$3 <i>,</i> 034	\$38,064	\$0	\$38,064	12.5	30,696
ECM 17	Install Pipe Insulation	1,677	0.0	78.4	\$1,132	\$3 <i>,</i> 030	\$448	\$2,582	2.3	10,864
Domest	ic Water Heating Upgrade	4,342	0.0	159.7	\$2,303	\$1,778	\$861	<b>\$918</b>	0.4	23,071
ECM 18	Install Low-Flow DHW Devices	4,342	0.0	159.7	\$2,303	\$1,778	\$861	\$918	0.4	23,071
Food Se	rvice & Refrigeration Measures	16,643	1.4	31.7	\$2,286	\$47,525	\$2,645	\$44,880	19.6	20,470
ECM 19	Food Service Equipment Replacement	0	0.0	31.7	\$347	\$20,344	\$1,125	\$19,219	55.4	3,710
ECM 20	Refrigerator/Freezer Case Electrically Commutated Motors	2,163	0.3	0.0	\$251	\$2 <i>,</i> 730	\$360	\$2 <i>,</i> 370	9.4	2,178
ECM 21	Refrigeration Controls	5,192	0.1	0.0	\$604	\$9 <i>,</i> 407	\$475	\$8 <i>,</i> 932	14.8	5,228
ECM 22	Replace Refrigeration Equipment	3,305	0.4	0.0	\$390	\$13 <i>,</i> 894	\$485	\$13 <i>,</i> 409	34.4	3,328
ECM 23	Vending Machine Control	5,984	0.7	0.0	\$694	\$1,150	\$200	\$950	1.4	6,026
Custom	Measures	-24,022	0.0	825.4	\$6,447	\$74,438	\$0	\$74,438	11.5	72,449
ECM 24	Retro-Commissioning Study	27,392	0.0	139.4	\$4,953	\$51,300	\$0	\$51,300	10.4	43,900
ECM 25	Replace Electric Water Heater with Heat Pump Water Heater	12,924	0.0	0.0	\$1,598	\$6,210	\$0	\$6,210	3.9	13,014
ECM 26	Replace Gas Fired Water Heater with Heat Pump Water Heater	-64,338	0.0	686.0	-\$104	\$16,928	\$0	\$16,928	-162.8	15,534
	TOTALS	938,231	330.6	1,293.7	\$126,057	\$2,033,672	\$171,505	\$1,862,168	14.8	1,096,266

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

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

## COST EFFECTIVE OPPORTUNITIES

### **Savings Potential**





- Lighting Control Measures
- Variable Frequency Drive (VFD) Measures
- Gas Heating (HVAC/Process) Replacement
- HVAC System Improvements
- Domestic Water Heating Upgrade
- Food Service & Refrigeration Measures
- Custom Measures



## COST EFFECTIVE OPPORTUNITIES

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>z</sub> e Emissions Reduction (Ibs)
Lighting	Upgrades	498,583	113.7	-99.2	\$57,050	\$208,233	\$49,490	\$158,743	2.8	490,453
ECM 1	Install LED Fixtures	18,594	0.1	-0.1	\$2,200	\$16,891	\$1,965	\$14,926	6.8	18,718
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	3,444	1.0	-0.6	\$408	\$1,573	\$225	\$1,348	3.3	3,400
ECM 3	Retrofit Fixtures with LED Lamps	476,544	112.6	-98.6	\$54,442	\$189,769	\$47,300	\$142,469	2.6	468,335
Lighting	Control Measures	227,777	55.0	-47.6	\$26,892	\$203,982	\$54,085	\$149,897	5.6	223,800
ECM 4	Install Occupancy Sensor Lighting Controls	191,094	47.8	-40.0	\$22,599	\$158,942	\$20,455	\$138,487	6.1	187,752
ECM 5	Install Daylight Dimming/Photocell Controls	248	0.0	0.0	\$32	\$400	\$0	\$400	12.4	250
ECM 6	Install High/Low Lighting Controls	36,435	7.2	-7.6	\$4,261	\$44,640	\$33,630	\$11,010	2.6	35,798
Variable	Frequency Drive (VFD) Measures	99,537	31.8	15.6	\$12,218	\$146,371	\$10,375	\$135,996	11.1	102,064
ECM 8	Install VFD on Variable Air Volume (VAV) Fans	10,333	3.0	0.0	\$1,328	\$10,500	\$1,200	\$9,300	7.0	10,405
ECM 9	Install VFDs on Constant Volume (CV) Fans	87,821	28.7	0.0	\$10,529	\$132,364	\$9,100	\$123,264	11.7	88,435
ECM 11	Install VFDs on Kitchen Hood Fan Motors	1,383	0.0	15.6	\$361	\$3,508	\$75	\$3,433	9.5	3,224
Gas Hea	ting (HVAC/Process) Replacement	0	0.0	70.0	\$784	\$9,272	\$1,000	\$8,272	10.6	8,195
ECM 14	Install High Efficiency Furnaces	0	0.0	70.0	\$784	\$9,272	\$1,000	\$8,272	10.6	8,195
HVAC S	ystem Improvements	4,519	0.0	238.8	\$3,252	\$27,500	\$448	\$27,052	8.3	32,507
ECM 16	Implement Demand Control Ventilation (DCV)	2,843	0.0	160.4	\$2,120	\$24,470	\$0	\$24,470	11.5	21,643
ECM 17	Install Pipe Insulation	1,677	0.0	78.4	\$1,132	\$3,030	\$448	\$2,582	2.3	10,864
Domest	ic Water Heating Upgrade	4,342	0.0	159.7	\$2,303	\$1,778	\$861	\$918	0.4	23,071
ECM 18	Install Low-Flow DHW Devices	4,342	0.0	159.7	\$2,303	\$1,778	\$861	\$918	0.4	23,071
Food Se	rvice & Refrigeration Measures	10,488	1.0	0.0	\$1,212	\$7,746	\$760	\$6,986	5.8	10,561
ECM 20	Refrigerator/Freezer Case Electrically Commutated Motors	2,163	0.3	0.0	\$251	\$2,730	\$360	\$2,370	9.4	2,178
ECM 21	Refrigeration Controls	2,341	0.0	0.0	\$267	\$3 <i>,</i> 867	\$200	\$3,667	13.7	2,357
ECM 23	Vending Machine Control	5,984	0.7	0.0	\$694	\$1,150	\$200	\$950	1.4	6,026
Custom	Measures	40,316	0.0	139.4	\$6,551	\$57,510	\$0	\$57,510	8.8	56,914
ECM 24	Retro-Commissioning Study	27,392	0.0	139.4	\$4,953	\$51,300	\$0	\$51,300	10.4	43,900
ECM 25	Replace Electric Water Heater with Heat Pump Water Heater	12,924	0.0	0.0	\$1,598	\$6,210	\$0	\$6,210	3.9	13,014
	TOTALS	885,562	201.4	476.7	\$110,262	\$662,391	\$117,019	\$545,373	4.9	947,566

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

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

### SUMMIT PRIMARY CENTER AT JEFFERSON SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (Ibs)
Lighting	Upgrades		10,308	1.3	-1	\$1,219	\$9,947	\$1,394	\$8,553	7.0	10,288
ECM 1	Install LED Fixtures	Yes	5,570	0.0	0	\$664	\$6,768	\$950	\$5,818	8.8	5,609
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,307	0.4	0	\$153	\$386	\$60	\$326	2.1	1,284
ECM 3	Retrofit Fixtures with LED Lamps	Yes	3,432	0.9	-1	\$403	\$2,792	\$384	\$2,408	6.0	3,395
Lighting	Control Measures		8,664	2.7	-2	\$1,011	\$11,766	\$2,905	\$8,861	8.8	8,512
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	6,977	2.2	-1	\$814	\$8,526	\$945	\$7,581	9.3	6,855
ECM 5	Install High/Low Lighting Controls	Yes	1,687	0.5	0	\$197	\$3,240	\$1,960	\$1,280	6.5	1,658
Motor l	Jpgrades		2,824	0.8	0	\$337	\$8,492	\$0	\$8,492	25.2	2,844
ECM 6	Premium Efficiency Motors	No	2,824	0.8	0	\$337	\$8,492	\$0	\$8,492	25.2	2,844
Variable	Frequency Drive (VFD) Measures		16,353	5.7	0	\$1,949	\$31,215	\$1,275	\$29,940	15.4	16,467
ECM 7	Install VFD on Variable Air Volume (VAV) Fans	No	4,181	1.4	0	\$498	\$8,442	\$275	\$8,167	16.4	4,211
ECM 8	Install VFDs on Constant Volume (CV) Fans	No	12,171	4.4	0	\$1,451	\$22,774	\$1,000	\$21,774	15.0	12,257
Unitary	HVAC Measures		8,288	16.0	0	\$988	\$169,376	\$6,115	\$163,261	165.3	8,346
ECM 9	Install High Efficiency Air Conditioning Units	No	5,898	8.2	0	\$703	\$81,653	\$2,657	\$78,996	112.4	5,939
ECM 10	Install High Efficiency Heat Pumps	No	2,390	7.8	0	\$285	\$87,722	\$3,458	\$84,264	295.8	2,407
HVAC S	ystem Improvements		1,354	0.0	103	\$1,361	\$14,888	\$188	\$14,700	10.8	13,440
ECM 11	Implement Demand Control Ventilation (DCV)	No	805	0.0	70	\$914	\$13,594	\$0	\$13,594	14.9	9,053
ECM 12	Install Pipe Insulation	Yes	548	0.0	33	\$446	\$1,294	\$188	\$1,106	2.5	4,388
Domest	ic Water Heating Upgrade		2,224	0.0	19	\$486	\$201	\$100	\$100	0.2	4,462
ECM 13	Install Low-Flow DHW Devices	Yes	2,224	0.0	19	\$486	\$201	\$100	\$100	0.2	4,462
Custom	Measures		-3,769	0.0	269	\$2,676	\$36,019	\$0	\$36,019	13.5	27,672
ECM 14	Retro-Commissioning Study	Yes	9,567	0.0	94	\$2,230	\$30,000	\$0	\$30,000	13.5	20,611
ECM 15	Replace Electric Water Heater with Heat Pump Water Heater	Yes	3,077	0.0	0	\$367	\$2,070	\$0	\$2,070	5.6	3,099
ECM 16	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-16,413	0.0	175	\$79	\$3,950	\$0	\$3,950	50.0	3,963
	TOTALS (COST EFFECTIVE MEASURES)		34,389	3.9	143	\$5,760	\$55,277	\$4,587	\$50,690	8.8	51,360
	TOTALS (ALL MEASURES)		46,247	26.5	388	\$10,026	\$281,904	\$11,977	\$269,927	26.9	92,033

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

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

### SUMMIT PRIMARY CENTER AT WILSON SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (lbs)
Lighting	Control Measures		1,435	0.5	0	\$181	\$2,122	\$285	\$1,837	10.2	1,410
ECM 1	Install Occupancy Sensor Lighting Controls	Yes	1,435	0.5	0	\$181	\$2,122	\$285	\$1,837	10.2	1,410
Variable	Frequency Drive (VFD) Measures		10,333	3.0	0	\$1,328	\$10,500	\$1,200	\$9,300	7.0	10,405
ECM 2	Install VFD on Variable Air Volume (VAV) Fans	Yes	10,333	3.0	0	\$1,328	\$10,500	\$1,200	\$9,300	7.0	10,405
Unitary	HVAC Measures		7,900	10.0	0	\$1,015	\$122,284	\$6,360	\$115,924	114.2	7,955
ECM 3	Install High Efficiency Air Conditioning Units	No	7,900	10.0	0	\$1,015	\$122,284	\$6,360	\$115,924	114.2	7,955
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	5	\$65	\$8,195	\$0	\$8,195	126.9	643
ECM 4	Install High Efficiency Unit Heaters	No	0	0.0	5	\$65	\$8,195	\$0	\$8,195	126.9	643
Domesti	c Water Heating Upgrade		0	0.0	13	\$156	\$201	\$100	\$100	0.6	1,556
ECM 5	Install Low-Flow DHW Devices	Yes	0	0.0	13	\$156	\$201	\$100	\$100	0.6	1,556
Custom	Measures		-13,130	0.0	140	-\$40	\$2,696	\$0	\$2,696	-67.4	3,170
ECM 6	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-13,130	0.0	140	-\$40	\$2,696	\$0	\$2,696	-67.4	3,170
	TOTALS (COST EFFECTIVE MEASURES)		11,768	3.5	13	\$1,665	\$12,823	\$1,585	\$11,237	6.7	13,370
	TOTALS (ALL MEASURES)		6,538	13.5	158	\$2,705	\$145,999	\$7,945	\$138,054	51.0	25,139

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# BRAYTON ELEMENTARY SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (lbs)
Lighting	Control Measures		1,435	0.5	0	\$181	\$2,122	\$285	\$1,837	10.2	1,410
ECM 1	Install Occupancy Sensor Lighting Controls	Yes	1,435	0.5	0	\$181	\$2,122	\$285	\$1,837	10.2	1,410
Variable	Frequency Drive (VFD) Measures		10,333	3.0	0	\$1,328	\$10,500	\$1,200	\$9,300	7.0	10,405
ECM 2	Install VFD on Variable Air Volume (VAV) Fans	Yes	10,333	3.0	0	\$1,328	\$10,500	\$1,200	\$9,300	7.0	10,405
Unitary	HVAC Measures		7,900	10.0	0	\$1,015	\$122,284	\$6,360	\$115,924	114.2	7,955
ECM 3	Install High Efficiency Air Conditioning Units	No	7,900	10.0	0	\$1,015	\$122,284	\$6,360	\$115,924	114.2	7,955
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	5	\$65	\$8,195	\$0	\$8,195	126.9	643
ECM 4	Install High Efficiency Unit Heaters	No	0	0.0	5	\$65	\$8,195	\$0	\$8,195	126.9	643
Domesti	c Water Heating Upgrade		0	0.0	13	\$156	\$201	\$100	\$100	0.6	1,556
ECM 5	Install Low-Flow DHW Devices	Yes	0	0.0	13	\$156	\$201	\$100	\$100	0.6	1,556
Custom	Measures		-13,130	0.0	140	-\$40	\$2,696	\$0	\$2,696	-67.4	3,170
ECM 6	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-13,130	0.0	140	-\$40	\$2,696	\$0	\$2,696	-67.4	3,170
	TOTALS (COST EFFECTIVE MEASURES)		11,768	3.5	13	\$1,665	\$12,823	\$1,585	\$11,237	6.7	13,370
	TOTALS (ALL MEASURES)		6,538	13.5	158	\$2,705	\$145,999	\$7,945	\$138,054	51.0	25,139

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## FRANKLIN ELEMENTARY SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (lbs)
Lighting	Upgrades		1,073	0.0	0	\$137	\$192	\$35	\$157	1.2	1,079
ECM 1	Retrofit Fixtures with LED Lamps	Yes	1,073	0.0	0	\$137	\$192	\$35	\$157	1.2	1,079
Lighting	Control Measures		17,576	5.0	-4	\$2,196	\$16,898	\$3,880	\$13,018	5.9	17,269
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	15,558	4.5	-3	\$1,944	\$14,198	\$1 <i>,</i> 870	\$12,328	6.3	15,286
ECM 3	Install High/Low Lighting Controls	Yes	2,017	0.5	0	\$252	\$2,700	\$2,010	\$690	2.7	1,982
Variable	Frequency Drive (VFD) Measures		8,715	2.7	16	\$1,295	\$23,440	\$625	\$22,815	17.6	10,607
ECM 4	Install VFDs on Constant Volume (CV) Fans	No	7,332	2.7	0	\$934	\$19,933	\$550	\$19,383	20.7	7,384
ECM 5	Install VFDs on Kitchen Hood Fan Motors	Yes	1,383	0.0	16	\$361	\$3 <i>,</i> 508	\$75	\$3,433	9.5	3,224
Unitary	HVAC Measures		4,248	11.6	0	\$541	\$169,530	\$6,802	\$162,728	300.6	4,277
ECM 6	Install High Efficiency Heat Pumps	No	4,248	11.6	0	\$541	\$169,530	\$6 <i>,</i> 802	\$162,728	300.6	4,277
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	15	\$174	\$3,007	\$500	\$2,507	14.4	1,724
ECM 7	Install High Efficiency Furnaces	Yes	0	0.0	15	\$174	\$3,007	\$500	\$2,507	14.4	1,724
HVAC S	ystem Improvements		0	0.0	95	\$1,120	\$6,601	\$164	\$6,437	5.7	11,092
ECM 8	Implement Demand Control Ventilation (DCV)	Yes	0	0.0	49	\$581	\$5 <i>,</i> 438	\$0	\$5,438	9.4	5,753
ECM 9	Install Pipe Insulation	Yes	0	0.0	46	\$539	\$1,163	\$164	\$999	1.9	5,340
Domest	ic Water Heating Upgrade		0	0.0	14	\$162	\$186	\$88	\$98	0.6	1,605
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	14	\$162	\$186	\$88	\$98	0.6	1,605
Custom	Measures		-13,130	0.0	140	-\$18	\$3,166	\$0	\$3,166	-175.9	3,170
ECM 11	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-13,130	0.0	140	-\$18	\$3,166	\$0	\$3,166	-175.9	3,170
	TOTALS (COST EFFECTIVE MEASURES)		20,032	5.0	135	\$4,150	\$30,392	\$4,742	\$25,650	6.2	35,992
	TOTALS (ALL MEASURES)		18,482	19.3	275	\$5,607	\$223,022	\$12,094	\$210,927	37.6	50,823

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

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

## LINCOLN-HUBBARD ELEMENTARY SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (lbs)
Lighting	Upgrades		939	0.0	0	\$122	\$741	\$84	\$657	5.4	945
ECM 1	Install LED Fixtures	Yes	218	0.0	0	\$28	\$471	\$50	\$421	14.9	219
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	673	0.0	0	\$87	\$129	\$20	\$109	1.2	678
ECM 3	Retrofit Fixtures with LED Lamps	Yes	48	0.0	0	\$6	\$141	\$14	\$127	20.6	48
Lighting	Control Measures		18,870	5.4	-4	\$2,401	\$16,010	\$4,680	\$11,330	4.7	18,540
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	15,933	4.6	-3	\$2,027	\$11,960	\$1,600	\$10,360	5.1	15,655
ECM 5	Install High/Low Lighting Controls	Yes	2,937	0.7	-1	\$374	\$4,050	\$3,080	\$970	2.6	2,885
Variable	Frequency Drive (VFD) Measures		6,915	2.6	0	\$897	\$13,664	\$600	\$13,064	14.6	6,963
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	6,915	2.6	0	\$897	\$13,664	\$600	\$13,064	14.6	6,963
Unitary	HVAC Measures		5,806	22.1	0	\$753	\$218,524	\$8,983	\$209,541	278.4	5,846
ECM 7	Install High Efficiency Air Conditioning Units	No	2,961	4.5	0	\$384	\$35,778	\$1,839	\$33,939	88.4	2,982
ECM 8	Install High Efficiency Heat Pumps	No	2,844	17.6	0	\$369	\$182,746	\$7,144	\$175,602	476.2	2,864
HVAC Sy	stem Improvements		0	0.0	31	\$364	\$5,438	\$0	\$5,438	14.9	3,676
ECM 9	Implement Demand Control Ventilation (DCV)	Yes	0	0.0	31	\$364	\$5,438	\$0	\$5,438	14.9	3,676
Domesti	c Water Heating Upgrade		0	0.0	11	\$128	\$172	\$80	\$92	0.7	1,294
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	11	\$128	\$172	\$80	\$92	0.7	1,294
Food Se	rvice & Refrigeration Measures		845	0.1	0	\$110	\$4,144	\$120	\$4,024	36.7	851
ECM 11	Replace Refrigeration Equipment	No	845	0.1	0	\$110	\$4,144	\$120	\$4,024	36.7	851
Custom	Measures		-8,535	0.0	91	-\$50	\$3,166	\$0	\$3,166	-63.3	2,060
ECM 12	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-8,535	0.0	91	-\$50	\$3,166	\$0	\$3,166	-63.3	2,060
	TOTALS (COST EFFECTIVE MEASURES)		26,725	8.0	38	\$3,912	\$36,025	\$5,444	\$30,581	7.8	31,419
	TOTALS (ALL MEASURES)		24,840	30.1	129	\$4,724	\$261,859	\$14,547	\$247,313	52.4	40,176

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

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

# 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 M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (lbs)
Lighting	Upgrades		1,253	0.0	0	\$155	\$761	\$104	\$657	4.2	1,259
ECM 1	Install LED Fixtures	Yes	1,117	0.0	0	\$139	\$692	\$100	\$592	4.3	1,124
ECM 2	Retrofit Fixtures with LED Lamps	Yes	137	0.0	0	\$17	\$69	\$4	\$65	3.9	134
Lighting	Control Measures		26,110	5.1	-5	\$3,185	\$16,600	\$3,845	\$12,755	4.0	25,654
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	22,363	4.4	-5	\$2,728	\$13,000	\$1,710	\$11,290	4.1	21,972
ECM 4	Install High/Low Lighting Controls	Yes	3,747	0.7	-1	\$457	\$3,600	\$2,135	\$1,465	3.2	3,681
Variable	e Frequency Drive (VFD) Measures		14,142	4.6	0	\$1,758	\$25,914	\$875	\$25,039	14.2	14,241
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	14,142	4.6	0	\$1,758	\$25,914	\$875	\$25,039	14.2	14,241
Unitary	HVAC Measures		5,625	13.2	0	\$699	\$138,600	\$5,315	\$133,285	190.6	5,664
ECM 6	Install High Efficiency Air Conditioning Units	No	1,723	1.6	0	\$214	\$16,475	\$464	\$16,012	74.8	1,735
ECM 7	Install High Efficiency Heat Pumps	No	3,901	11.7	0	\$485	\$122,125	\$4,851	\$117,274	241.8	3,929
Domest	ic Water Heating Upgrade		0	0.0	23	\$253	\$172	\$86	\$86	0.3	2,667
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	23	\$253	\$172	\$86	\$86	0.3	2,667
Custom	Measures		4,695	0.0	186	\$2,648	\$25,250	\$0	\$25,250	9.5	26,459
ECM 9	Retro-Commissioning Study	Yes	17,825	0.0	46	\$2,723	\$21,300	\$0	\$21,300	7.8	23,289
ECM 10	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-13,130	0.0	140	-\$75	\$3,950	\$0	\$3,950	-52.7	3,170
	TOTALS (COST EFFECTIVE MEASURES)		59,330	9.7	63	\$8,075	\$64,747	\$4,910	\$59,837	7.4	67,108
	TOTALS (ALL MEASURES)		51,825	22.9	203	\$8,699	\$207,296	\$10,225	\$197,071	22.7	75,943

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

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

# LAWTON C. JOHNSON SUMMIT MS

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (Ibs)
Lighting	Upgrades		207,422	46.9	-43	\$23,167	\$81,347	\$21,295	\$60,052	2.6	203,895
ECM 1	Install LED Fixtures	Yes	3,793	0.0	0	\$432	\$1,984	\$250	\$1,734	4.0	3,820
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	479	0.3	0	\$53	\$655	\$85	\$570	10.7	470
ECM 3	Retrofit Fixtures with LED Lamps	Yes	203,150	46.6	-42	\$22,682	\$78,708	\$20,960	\$57,748	2.5	199,605
Lighting	Control Measures		57,852	12.5	-12	\$6,459	\$54,299	\$14,345	\$39,954	6.2	56,840
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	46,758	10.6	-10	\$5,220	\$41,474	\$5,175	\$36,299	7.0	45,940
ECM 5	Install High/Low Lighting Controls	Yes	11,094	1.9	-2	\$1,239	\$12,825	\$9,170	\$3,655	3.0	10,900
Motor U	Jpgrades		4,726	1.3	0	\$538	\$19,411	\$0	\$19,411	36.0	4,759
ECM 6	Premium Efficiency Motors	No	4,726	1.3	0	\$538	\$19,411	\$0	\$19,411	36.0	4,759
Variable	Frequency Drive (VFD) Measures		6,979	1.9	0	\$795	\$12,043	\$1,050	\$10,993	13.8	7,027
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	5,092	1.5	0	\$580	\$5,028	\$900	\$4,128	7.1	5,128
ECM 8	Install VFDs on Chilled Water Pumps	No	1,886	0.4	0	\$215	\$7,015	\$150	\$6,865	31.9	1,899
Unitary	HVAC Measures		2,541	2.7	0	\$290	\$29,633	\$1,575	\$28,058	96.9	2,559
ECM 9	Install High Efficiency Air Conditioning Units	No	2,541	2.7	0	\$290	\$29,633	\$1,575	\$28,058	96.9	2,559
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	55	\$610	\$6,265	\$500	\$5,765	9.5	6,471
ECM 10	Install High Efficiency Furnaces	Yes	0	0.0	55	\$610	\$6,265	\$500	\$5,765	9.5	6,471
Domest	ic Water Heating Upgrade		1,946	0.0	12	\$357	\$158	\$71	\$87	0.2	3,398
ECM 11	Install Low-Flow DHW Devices	Yes	1,946	0.0	12	\$357	\$158	\$71	\$87	0.2	3,398
Food Se	rvice & Refrigeration Measures		9,073	0.8	27	\$1,326	\$33,870	\$1,825	\$32,045	24.2	12,239
ECM 12	Food Service Equipment Replacement	No	0	0.0	27	\$292	\$18,580	\$1,000	\$17,580	60.1	3,103
ECM 13	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	1,049	0.1	0	\$119	\$1,213	\$160	\$1,053	8.8	1,056
ECM 14	Refrigeration Controls	Yes	2,341	0.0	0	\$267	\$3,867	\$200	\$3,667	13.7	2,357
ECM 15	Replace Refrigeration Equipment	No	2,460	0.3	0	\$280	\$9,750	\$365	\$9,385	33.5	2,477
ECM 16	Vending Machine Control	Yes	3,224	0.4	0	\$367	\$460	\$100	\$360	1.0	3,246
Custom	Measures		3,077	0.0	0	\$351	\$2,070	\$0	\$2,070	5.9	3,099
ECM 17	Replace Electric Water Heater with Heat Pump Water Heater	Yes	3,077	0.0	0	\$351	\$2,070	\$0	\$2,070	5.9	3,099
	TOTALS (COST EFFECTIVE MEASURES)		282,003	61.4	13	\$32,278	\$154,706	\$37,571	\$117,135	3.6	285,490
	TOTALS (ALL MEASURES)		293,616	66.1	39	\$33,894	\$239,095	\$40,661	\$198,434	5.9	300,287

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

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

# SUMMIT HIGH SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (Ibs)
Lighting	Upgrades		277,227	65.2	-56	\$32,204	\$114,711	\$26,556	\$88,155	2.7	272,634
ECM1	Install LED Fixtures	Yes	7,621	0.0	0	\$901	\$6,562	\$600	\$5,962	6.6	7,674
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	985	0.3	0	\$114	\$404	\$60	\$344	3.0	968
ECM 3	Retrofit Fixtures with LED Lamps	Yes	268,621	64.9	- 56	\$31,188	\$107,745	\$25,896	\$81,849	2.6	263,991
Lighting	Control Measures		82,675	19.7	-17	\$9,597	\$74,424	\$22,195	\$52,229	5.4	81,229
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	68,303	17.0	- 14	\$7,929	\$57,324	\$7,515	\$49,809	6.3	67,109
ECM 5	Install High/Low Lighting Controls	Yes	14,371	2.7	-3	\$1,668	\$17,100	\$14,680	\$2,420	1.5	14,120
Variable	e Frequency Drive (VFD) Measures		66,441	20.2	23	\$8,105	\$104,857	\$7,225	\$97,632	12.0	69,653
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	61,672	20.0	0	\$7,294	\$87,758	\$6,725	\$81,033	11.1	62,103
ECM7	Install VFDs on Kitchen Hood Fan Motors	No	4,769	0.2	23	\$810	\$17,099	\$500	\$16,599	20.5	7,550
Unitary	HVAC Measures		11,232	12.1	0	\$1,329	\$117,701	\$5,738	\$111,963	84.3	11,311
ECM 8	Install High Efficiency Air Conditioning Units	No	11,232	12.1	0	\$1,329	\$117,701	\$5,738	\$111,963	84.3	11,311
HVAC S	ystem Improvements		2,843	0.0	80	\$1,174	\$13,594	\$0	\$13,594	11.6	12,215
ECM 9	Implement Demand Control Ventilation (DCV)	Yes	2,843	0.0	80	\$1,174	\$13,594	\$0	\$13,594	11.6	12,215
Domest	ic Water Heating Upgrade		0	0.0	48	\$506	\$373	\$182	\$191	0.4	5,640
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	48	\$506	\$373	\$182	\$191	0.4	5,640
Food Se	rvice & Refrigeration Measures		6,725	0.5	5	\$850	\$9,511	\$700	\$8,811	10.4	7,379
ECM 11	Food Service Equipment Replacement	No	0	0.0	5	\$54	\$1,764	\$125	\$1,639	30.1	608
ECM 12	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	1,114	0.1	0	\$132	\$1,517	\$200	\$1,317	10.0	1,122
ECM 13	Refrigeration Controls	No	2,850	0.0	0	\$337	\$5,541	\$275	\$5,266	15.6	2,870
ECM 14	Vending Machine Control	Yes	2,760	0.3	0	\$326	\$690	\$100	\$590	1.8	2,780
	TOTALS (COST EFFECTIVE MEASURES)		428,291	105.3	55	\$51,233	\$293,066	\$55,958	\$237,109	4.6	437,723
	TOTALS (ALL MEASURES)		447,143	117.6	84	\$53,763	\$435,171	\$62,595	\$372,576	6.9	460,061

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

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

### 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



### MEASURES FOR FUTURE CONSIDERATION

### Retro-Commissioning Study





### EV CHARGING STATION POTENTIAL

NJCleanEnergy.com/EV



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### SOLAR ENERGY GENERATION POTENTIAL

NJCleanEnergy.com/renewable-energy

	Summit Primary Center at Jefferson School	Brayton ES	Franklin ES	Washington ES	Lawton C. Johnson Summit MS	Summit HS
Potential:	High	Medium	High	Medium	High	High
System Potential: (kW)	116	93	98	109	295	541
Electric Generation: (kWh per year)	138,199	69,977	116,754	82,016	351,454	644,531
Displaced Cost: (per year)	\$16,470	\$9,100	\$14,880	\$10,200	\$40,050	\$76,230



### FINANCING MECHANISM: ESIP

NJCleanEnergy.com/ESIP

### **ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)**

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



### ENERGY SAVINGS IMPROVEMENT PROGRAM

NJCleanEnergy.com/ESIP





### ENERGY SAVINGS IMPROVEMENT PROGRAM

NJCleanEnergy.com/ESIP

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### **C&I** ENERGY EFFICIENCY PROGRAMS

#### NJCleanEnergy.com



### UTILITY RUN ENERGY EFFICIENCY PROGRAMS

#### NJCleanEnergy.com/Transition

#### **PRESCRIPTIVE & CUSTOM REBATES:**

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

### **DIRECT INSTALL:**

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

#### **ENGINEERED SOLUTIONS:**

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



### UTILITY RUN ENERGY EFFICIENCY PROGRAMS

### JCP&L

PSE&G

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