



New Jersey's Clean Energy Program

LGEA Exit Meeting for:
City of Jersey City

Smruti Srinivasan, TRC

September 28, 2017



Introductions



City of Jersey City

- John Mercer – Assistant Business Administrator
- Energy Team Members:
 - Brianna Lawrence
 - Kate Lawrence
 - Barkha Patel
 - Bhavini Doshi
 - Arjun Janakiram
 - Drew Banghart
 - Joe Cunha
 - Steve Miller
 - Brian Weller
 - Andrew Vischio
 - Jasmine Wade
 - Jen Cato
 - Doug Carlucci

NJ Clean Energy Program – TRC Team

- Auditor: Smruti Srinivasan
- Program Manager: Brian DeLuca
- Outreach: Mike Mastropasqua

Agenda



- Overview of LGEA process (application to deliverable)
- Energy use & existing conditions
- Review of **E**nergy **C**onservation **M**easures (ECMs) identified
- Questions or concerns regarding the draft audit report
- Overview of NJCEP equipment incentives
- Next steps for City of Jersey City

Process to Draft Report



- Application submitted to NJCEP
- Site Visit Performed
- Utility Analysis
- Baseline Condition
- Analysis
- Recommendations
- Report

Buildings Audited (26)



- City Hall
- Municipal Courthouse
- Commerce Division
- Mary McLeod Bethune Center
- Senior Centers (2)
 - Collier Senior Center
 - Connors Senior Center
- Fire Houses (14)
 - Fire Headquarters
 - Firehouse (283 Halladay Street)
 - Firehouse (200 Sip Avenue)
 - Firehouse (Bergen & Duncan)
 - Firehouse (468 Ocean Avenue)
 - Firehouse (152 Linden Avenue)
 - Firehouse (2 Bergen Avenue)
 - Firehouse (152 Lincoln Street)
 - Firehouse & OEM
 - Firehouse (595 Palisade Avenue)
 - Firehouse (160 Grand Street)
 - Firehouse (255 Kearney Avenue)
 - Firehouse (Consolidated)
 - Firehouse (14 Orient Avenue)
- Pershing Field Athletic Center
- Police Stations (3)
 - North District Police Precinct
 - South District Police Precinct
 - East District Police Precinct
- Swimming Pools (2)
 - Lafayette Pool
 - Pavonia Pool

Recommended ECMs – All Buildings (26)



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		1,097,855	274.7	0.0	\$133,180.91	\$600,458.59	\$46,045.00	\$554,413.59	4.2	1,105,531
ECM 1	Install LED Fixtures	265,276	89.4	0.0	\$25,394.08	\$196,442.93	\$14,275.00	\$182,167.93	7.2	267,131
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	452,971	108.5	0.0	\$61,869.94	\$242,786.58	\$11,080.00	\$231,706.58	3.7	456,138
ECM 3	Retrofit Fixtures with LED Lamps	335,818	72.9	0.0	\$39,895.30	\$139,445.70	\$20,690.00	\$118,755.70	3.0	338,166
ECM 4	Install LED Exit Signs	43,790	3.8	0.0	\$6,021.59	\$21,783.38	\$0.00	\$21,783.38	3.6	44,096
Lighting Control Measures		103,249	25.4	0.0	\$13,041.67	\$48,518.00	\$9,140.00	\$39,378.00	3.0	103,971
ECM 5	Install Occupancy Sensor Lighting Controls	101,412	24.6	0.0	\$12,787.65	\$47,018.00	\$8,075.00	\$38,943.00	3.0	102,121
ECM 6	Install Daylight Dimming Controls	1,838	0.8	0.0	\$254.02	\$1,500.00	\$1,065.00	\$435.00	1.7	1,850
Motor Upgrades		12,478	6.2	0.0	\$1,039.00	\$11,769.17	\$0.00	\$11,769.17	11.3	12,566
ECM 7	Premium Efficiency Motors	12,478	6.2	0.0	\$1,039.00	\$11,769.17	\$0.00	\$11,769.17	11.3	12,566
Variable Frequency Drive (VFD) Measures		97,764	29.3	0.0	\$7,466.15	\$74,445.89	\$1,800.00	\$72,645.89	9.7	98,447
ECM 8	Install VFD on Variable Air Volume (VAV) HVAC	62,683	21.1	0.0	\$4,522.70	\$49,544.19	\$1,800.00	\$47,744.19	10.6	63,122
ECM 9	Install VFDs on Hot Water Pumps	11,581	2.1	0.0	\$1,413.20	\$6,536.80	\$0.00	\$6,536.80	4.6	11,661
ECM 10	Install VFDs on Boiler Feedwater Pumps	11,942	2.1	0.0	\$836.39	\$12,030.60	\$0.00	\$12,030.60	14.4	12,025
ECM 11	Install Air Compressors with VFDs	11,558	4.0	0.0	\$693.86	\$6,334.30	\$0.00	\$6,334.30	9.1	11,639
Electric Unitary HVAC Measures		69,080	39.0	0.0	\$8,232.82	\$143,005.13	\$3,918.50	\$139,086.63	16.9	69,563
ECM 12	Install High Efficiency Electric AC	69,080	39.0	0.0	\$8,232.82	\$143,005.13	\$3,918.50	\$139,086.63	16.9	69,563
Gas Heating (HVAC/Process) Replacement		0	0.0	458.6	\$4,084.75	\$85,022.74	\$8,745.25	\$76,277.49	18.7	53,696
ECM 13	Install High Efficiency Hot Water Boilers	0	0.0	238.1	\$2,033.91	\$70,372.29	\$6,745.25	\$63,627.04	31.3	27,876
ECM 14	Install High Efficiency Unit Heaters	0	0.0	51.1	\$495.19	\$8,766.31	\$0.00	\$8,766.31	17.7	5,981
ECM 15	Install Low-Intensity Infrared Heating	0	0.0	169.4	\$1,555.65	\$5,884.14	\$2,000.00	\$3,884.14	2.5	19,839
HVAC System Improvements		9,785	2.2	0.0	\$1,306.97	\$2,900.00	\$1,000.00	\$1,900.00	1.5	9,853
ECM 16	Install Dual Enthalpy Outside Economizer Control	9,785	2.2	0.0	\$1,306.97	\$2,900.00	\$1,000.00	\$1,900.00	1.5	9,853
Domestic Water Heating Upgrade		10,734	2.7	2,135.3	\$19,716.10	\$30,156.61	\$632.00	\$29,524.61	1.5	260,824
ECM 17	Install High Efficiency Gas Water Heater	2,044	2.7	106.3	\$1,094.64	\$23,177.66	\$632.00	\$22,545.66	20.6	14,504
ECM 18	Install Low-Flow Domestic Hot Water Devices	8,690	0.0	2,029.0	\$18,621.46	\$6,978.95	\$0.00	\$6,978.95	0.4	246,320
Food Service Equipment & Refrigeration Measures		13,124	0.1	0.0	\$1,134.25	\$3,201.20	\$330.00	\$2,871.20	2.5	13,216
ECM 19	Refrigerator/Freezer Case Electrically Commutated Motors	11,742	0.0	0.0	\$1,002.98	\$606.60	\$80.00	\$526.60	0.5	11,824
ECM 20	Refrigeration Controls	641	0.0	0.0	\$54.72	\$770.60	\$125.00	\$645.60	11.8	645
ECM 21	Replace Refrigeration Equipment	742	0.1	0.0	\$76.55	\$1,824.00	\$125.00	\$1,699.00	22.2	747
Plug Load Equipment Control - Vending Machine		11,565	0.0	0.0	\$1,597.46	\$6,469.20	\$0.00	\$6,469.20	4.0	11,646
ECM 22	Vending Machine Control	11,565	0.0	0.0	\$1,597.46	\$6,469.20	\$0.00	\$6,469.20	4.0	11,646
TOTALS		1,425,635	379.5	2,593.9	\$190,800.08	\$1,005,946.53	\$71,610.75	\$934,335.78	4.9	1,739,314

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

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

Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs



See pages 2 or 16 in the report for the following:

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			146,430	53.2	0.0	\$25,952.87	\$105,761.49	\$2,915.00	\$102,846.49	3.96	147,453
ECM 1	Install LED Fixtures	Yes	941	0.2	0.0	\$166.80	\$781.35	\$200.00	\$581.35	3.49	948
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	111,058	42.9	0.0	\$19,683.62	\$82,644.92	\$615.00	\$82,029.92	4.17	111,834
ECM 3	Retrofit Fixtures with LED Lamps	Yes	18,989	8.8	0.0	\$3,365.53	\$18,033.01	\$2,100.00	\$15,933.01	4.73	19,122
ECM 4	Install LED Exit Signs	Yes	15,442	1.3	0.0	\$2,736.93	\$4,302.20	\$0.00	\$4,302.20	1.57	15,550
Lighting Control Measures			17,071	6.3	0.0	\$3,025.72	\$7,130.00	\$1,415.00	\$5,715.00	1.89	17,191
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	16,657	6.2	0.0	\$2,952.23	\$6,380.00	\$1,100.00	\$5,280.00	1.79	16,773
ECM 6	Install Daylight Dimming Controls	Yes	415	0.1	0.0	\$73.48	\$750.00	\$315.00	\$435.00	5.92	418
Domestic Water Heating Upgrade			0	0.0	74.2	\$633.16	\$257.47	\$0.00	\$257.47	0.41	8,685
ECM 7	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	74.2	\$633.16	\$257.47	\$0.00	\$257.47	0.41	8,685
TOTALS			163,501	59.5	74.2	\$29,611.75	\$113,148.96	\$4,330.00	\$108,818.96	3.67	173,330

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Municipal Courthouse



Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Municipal Courthouse



See pages 2 or 17 in the report for the following:

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			192,195	43.3	0.0	\$23,957.19	\$91,868.54	\$12,060.00	\$79,808.54	3.33	193,539
ECM 1	Install LED Fixtures	Yes	38,194	10.4	0.0	\$4,760.89	\$31,499.75	\$1,500.00	\$29,999.75	6.30	38,461
ECM 2	Retrofit Fixtures with LED Lamps	Yes	153,051	32.7	0.0	\$19,077.84	\$59,078.13	\$10,560.00	\$48,518.13	2.54	154,121
ECM 3	Install LED Exit Signs	Yes	950	0.1	0.0	\$118.45	\$1,290.66	\$0.00	\$1,290.66	10.90	957
Lighting Control Measures			39,489	8.7	0.0	\$4,922.36	\$15,464.00	\$3,080.00	\$12,384.00	2.52	39,765
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	38,351	8.2	0.0	\$4,780.48	\$13,572.00	\$2,340.00	\$11,232.00	2.35	38,619
ECM 5	Install Daylight Dimming Controls	Yes	1,138	0.5	0.0	\$141.87	\$500.00	\$500.00	\$0.00	1.76	1,146
Variable Frequency Drive (VFD) Measures			10,062	1.7	0.0	\$1,254.27	\$3,807.95	\$0.00	\$3,807.95	3.04	10,133
ECM 6	Install VFDs on Hot Water Pumps	Yes	10,062	1.7	0.0	\$1,254.27	\$3,807.95	\$0.00	\$3,807.95	3.04	10,133
Domestic Water Heating Upgrade			0	0.0	89.3	\$749.52	\$114.72	\$0.00	\$114.72	0.15	10,460
ECM 7	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	89.3	\$749.52	\$114.72	\$0.00	\$114.72	0.15	10,460
Plug Load Equipment Control - Vending Machine			1,954	0.0	0.0	\$243.61	\$1,437.60	\$0.00	\$1,437.60	5.90	1,968
ECM 8	Vending Machine Control	Yes	1,954	0.0	0.0	\$243.61	\$1,437.60	\$0.00	\$1,437.60	5.90	1,968
TOTALS			243,701	53.7	89.3	\$31,126.95	\$112,692.81	\$15,140.00	\$97,552.81	3.13	255,866

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Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Commerce Division



See pages 2 or 13 in the report for the following:

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			9,843	2.7	0.0	\$1,228.02	\$3,964.82	\$540.00	\$3,424.82	2.79	9,911
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	8,859	2.4	0.0	\$1,105.31	\$3,623.36	\$520.00	\$3,103.36	2.81	8,921
ECM 2	Retrofit Fixtures with LED Lamps	Yes	584	0.2	0.0	\$72.83	\$233.91	\$20.00	\$213.91	2.94	588
ECM 3	Install LED Exit Signs	Yes	400	0.0	0.0	\$49.87	\$107.56	\$0.00	\$107.56	2.16	403
Lighting Control Measures			1,139	0.3	0.0	\$142.15	\$464.00	\$80.00	\$384.00	2.70	1,147
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	1,139	0.3	0.0	\$142.15	\$464.00	\$80.00	\$384.00	2.70	1,147
Electric Unitary HVAC Measures			779	0.7	0.0	\$97.23	\$10,692.63	\$438.00	\$10,254.63	105.47	785
ECM 5	Install High Efficiency Electric AC	Yes	779	0.7	0.0	\$97.23	\$10,692.63	\$438.00	\$10,254.63	105.47	785
HVAC System Improvements			1,659	0.4	0.0	\$206.99	\$750.00	\$250.00	\$500.00	2.42	1,671
ECM 6	Install Dual Enthalpy Outside Economizer Control	Yes	1,659	0.4	0.0	\$206.99	\$750.00	\$250.00	\$500.00	2.42	1,671
Domestic Water Heating Upgrade			1,353	0.0	0.0	\$168.77	\$21.51	\$0.00	\$21.51	0.13	1,362
ECM 7	Install Low-Flow Domestic Hot Water Devices	Yes	1,353	0.0	0.0	\$168.77	\$21.51	\$0.00	\$21.51	0.13	1,362
TOTALS			14,773	4.0	0.0	\$1,843.15	\$15,892.97	\$1,308.00	\$14,584.97	7.91	14,876

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Mary McLeod Bethune Center



Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Mary McLeod Bethune Center



See pages 7 or 20 in the report for the following:

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			112,470	16.4	0.0	\$5,643.83	\$49,907.22	\$3,045.00	\$46,862.22	8.30	113,256
ECM 1	Install LED Fixtures	Yes	63,033	9.3	0.0	\$3,163.07	\$31,436.29	\$1,050.00	\$30,386.29	9.61	63,474
ECM 2	Retrofit Fixtures with LED Lamps	Yes	46,427	6.8	0.0	\$2,329.75	\$14,383.83	\$1,995.00	\$12,388.83	5.32	46,752
ECM 3	Install LED Exit Signs	Yes	3,009	0.2	0.0	\$151.01	\$4,087.09	\$0.00	\$4,087.09	27.07	3,030
Lighting Control Measures			8,755	1.3	0.0	\$439.33	\$4,640.00	\$800.00	\$3,840.00	8.74	8,816
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	8,755	1.3	0.0	\$439.33	\$4,640.00	\$800.00	\$3,840.00	8.74	8,816
Motor Upgrades			2,786	1.1	0.0	\$139.81	\$1,547.10	\$0.00	\$1,547.10	11.07	2,806
ECM 5	Premium Efficiency Motors	Yes	2,786	1.1	0.0	\$139.81	\$1,547.10	\$0.00	\$1,547.10	11.07	2,806
Variable Frequency Drive (VFD) Measures			37,120	12.2	0.0	\$1,862.71	\$30,076.50	\$0.00	\$30,076.50	16.15	37,380
ECM 6	Install VFD on Variable Air Volume (VAV) HVAC	Yes	29,529	11.1	0.0	\$1,481.80	\$24,061.20	\$0.00	\$24,061.20	16.24	29,736
ECM 7	Install VFDs on Boiler Feedwater Pumps	Yes	7,591	1.1	0.0	\$380.92	\$6,015.30	\$0.00	\$6,015.30	15.79	7,644
Electric Unitary HVAC Measures			17,956	10.6	0.0	\$901.07	\$10,887.60	\$0.00	\$10,887.60	12.08	18,082
ECM 8	Install High Efficiency Electric AC	Yes	17,956	10.6	0.0	\$901.07	\$10,887.60	\$0.00	\$10,887.60	12.08	18,082
Domestic Water Heating Upgrade			2,044	2.7	6.7	\$170.12	\$2,603.22	\$50.00	\$2,553.22	15.01	2,839
ECM 9	Install High Efficiency Gas Water Heater	Yes	2,044	2.7	-7.0	\$31.95	\$2,531.52	\$50.00	\$2,481.52	77.68	1,242
ECM 10	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	13.6	\$138.18	\$71.70	\$0.00	\$71.70	0.52	1,598
TOTALS			181,132	44.3	6.7	\$9,156.87	\$99,661.64	\$3,895.00	\$95,766.64	10.46	183,179

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Senior Centers (2)



Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Senior Centers (2)



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		25,707	9.3	0.0	\$5,883.09	\$22,374.26	\$1,600.00	\$20,774.26	3.5	25,887
ECM 1	Install LED Fixtures	1,496	0.6	0.0	\$208.32	\$4,034.07	\$1,000.00	\$3,034.07	14.6	1,507
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	16,431	6.8	0.0	\$3,649.04	\$13,672.80	\$0.00	\$13,672.80	3.7	16,546
ECM 3	Retrofit Fixtures with LED Lamps	4,256	1.7	0.0	\$1,476.82	\$3,269.17	\$600.00	\$2,669.17	1.8	4,286
ECM 4	Install LED Exit Signs	3,523	0.3	0.0	\$548.91	\$1,398.22	\$0.00	\$1,398.22	2.5	3,548
Lighting Control Measures		2,577	1.0	0.0	\$529.03	\$1,856.00	\$320.00	\$1,536.00	2.9	2,595
ECM 5	Install Occupancy Sensor Lighting Controls	2,577	1.0	0.0	\$529.03	\$1,856.00	\$320.00	\$1,536.00	2.9	2,595
Electric Unitary HVAC Measures		2,872	5.4	0.0	\$999.16	\$20,947.08	\$1,288.00	\$19,659.08	19.7	2,892
ECM 6	Install High Efficiency Electric AC	2,872	5.4	0.0	\$999.16	\$20,947.08	\$1,288.00	\$19,659.08	19.7	2,892
Domestic Water Heating Upgrade		0	0.0	102.9	\$956.37	\$210.39	\$0.00	\$210.39	0.2	12,049
ECM 7	Install Low-Flow Domestic Hot Water Devices	0	0.0	102.9	\$956.37	\$210.39	\$0.00	\$210.39	0.2	12,049
TOTALS		31,155	15.8	102.9	\$8,367.65	\$45,387.73	\$3,208.00	\$42,179.73	5.0	43,422

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Pershing Field Athletic Complex



Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Pershing Field Athletic Complex



See pages 7 or 20 in the report for the following:

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			143,198	67.0	0.0	\$14,990.40	\$109,840.81	\$7,750.00	\$102,090.81	6.81	144,199
ECM 1	Install LED Fixtures	Yes	132,680	62.5	0.0	\$13,889.36	\$99,939.08	\$7,700.00	\$92,239.08	6.64	133,608
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	8,173	3.9	0.0	\$855.60	\$7,802.67	\$0.00	\$7,802.67	9.12	8,230
ECM 3	Retrofit Fixtures with LED Lamps	Yes	998	0.5	0.0	\$104.51	\$270.63	\$50.00	\$220.63	2.11	1,005
ECM 4	Install LED Exit Signs	Yes	1,346	0.1	0.0	\$140.93	\$1,828.44	\$0.00	\$1,828.44	12.97	1,356
Lighting Control Measures			891	0.4	0.0	\$93.31	\$1,624.00	\$280.00	\$1,344.00	14.40	898
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	891	0.4	0.0	\$93.31	\$1,624.00	\$280.00	\$1,344.00	14.40	898
Motor Upgrades			5,189	3.4	0.0	\$543.20	\$7,396.64	\$0.00	\$7,396.64	13.62	5,225
ECM 6	Premium Efficiency Motors	Yes	5,189	3.4	0.0	\$543.20	\$7,396.64	\$0.00	\$7,396.64	13.62	5,225
Variable Frequency Drive (VFD) Measures			5,869	1.4	0.0	\$614.40	\$8,744.15	\$0.00	\$8,744.15	14.23	5,910
ECM 7	Install VFDs on Hot Water Pumps	Yes	1,518	0.4	0.0	\$158.93	\$2,728.85	\$0.00	\$2,728.85	17.17	1,529
ECM 8	Install VFDs on Boiler Feedwater Pumps	Yes	4,351	1.0	0.0	\$455.47	\$6,015.30	\$0.00	\$6,015.30	13.21	4,381
Electric Unitary HVAC Measures			836	0.1	0.0	\$87.54	\$2,054.62	\$0.00	\$2,054.62	23.47	842
ECM 9	Install High Efficiency Electric AC	Yes	836	0.1	0.0	\$87.54	\$2,054.62	\$0.00	\$2,054.62	23.47	842
Gas Heating (HVAC/Process) Replacement			0	0.0	90.3	\$685.17	\$26,989.58	\$2,105.25	\$24,884.33	36.32	10,576
ECM 10	Install High Efficiency Hot Water Boilers	Yes	0	0.0	90.3	\$685.17	\$26,989.58	\$2,105.25	\$24,884.33	36.32	10,576
Domestic Water Heating Upgrade			0	0.0	823.8	\$6,248.80	\$1,394.07	\$0.00	\$1,394.07	0.22	96,455
ECM 11	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	823.8	\$6,248.80	\$1,394.07	\$0.00	\$1,394.07	0.22	96,455
TOTALS			155,984	72.3	914.1	\$23,262.83	\$158,043.87	\$10,135.25	\$147,908.62	6.36	264,106

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

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

Fire Houses (14)



Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Fire Houses (14)



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		365,369	57.3	0.0	\$42,406.75	\$143,101.88	\$7,420.00	\$135,681.88	3.2	367,924
ECM 1	Install LED Fixtures	23,430	3.6	0.0	\$2,617.30	\$6,421.44	\$1,100.00	\$5,321.44	2.0	23,594
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	233,265	36.8	0.0	\$27,081.40	\$103,037.72	\$3,560.00	\$99,477.72	3.7	234,896
ECM 3	Retrofit Fixtures with LED Lamps	93,322	15.4	0.0	\$10,911.28	\$27,404.51	\$2,760.00	\$24,644.51	2.3	93,974
ECM 4	Install LED Exit Signs	15,353	1.5	0.0	\$1,796.77	\$6,238.21	\$0.00	\$6,238.21	3.5	15,460
Lighting Control Measures		25,281	5.1	0.0	\$2,811.38	\$13,572.00	\$2,320.00	\$11,252.00	4.0	25,458
ECM 5	Install Occupancy Sensor Lighting Controls	25,281	5.1	0.0	\$2,811.38	\$13,572.00	\$2,320.00	\$11,252.00	4.0	25,458
Motor Upgrades		1,156	0.3	0.0	\$155.06	\$1,240.98	\$0.00	\$1,240.98	8.0	1,164
ECM 6	Premium Efficiency Motors	1,156	0.3	0.0	\$155.06	\$1,240.98	\$0.00	\$1,240.98	8.0	1,164
Variable Frequency Drive (VFD) Measures		33,154	10.0	0.0	\$3,040.90	\$25,482.99	\$1,800.00	\$23,682.99	7.8	33,386
ECM 7	Install VFD on Variable Air Volume (VAV) HVAC	33,154	10.0	0.0	\$3,040.90	\$25,482.99	\$1,800.00	\$23,682.99	7.8	33,386
Electric Unitary HVAC Measures		26,332	11.1	0.0	\$3,533.46	\$66,304.78	\$2,192.50	\$64,112.28	18.1	26,516
ECM 8	Install High Efficiency Electric AC	26,332	11.1	0.0	\$3,533.46	\$66,304.78	\$2,192.50	\$64,112.28	18.1	26,516
Gas Heating (HVAC/Process) Replacement		0	0.0	323.0	\$2,964.74	\$29,229.05	\$4,000.00	\$25,229.05	8.5	37,819
ECM 9	Install High Efficiency Hot Water Boilers	0	0.0	84.2	\$748.38	\$14,578.60	\$2,000.00	\$12,578.60	16.8	9,855
ECM 10	Install High Efficiency Unit Heaters	0	0.0	51.1	\$495.19	\$8,766.31	\$0.00	\$8,766.31	17.7	5,981
ECM 11	Install Low-Intensity Infrared Heating	0	0.0	187.7	\$1,721.17	\$5,884.14	\$2,000.00	\$3,884.14	2.3	21,983
HVAC System Improvements		12,130	2.7	0.0	\$1,677.77	\$5,150.00	\$2,250.00	\$2,900.00	1.7	12,215
ECM 12	Install Dual Enthalpy Outside Economizer Control	12,130	2.7	0.0	\$1,677.77	\$5,150.00	\$2,250.00	\$2,900.00	1.7	12,215
Domestic Water Heating Upgrade		0	0.0	893.5	\$8,386.03	\$23,695.37	\$582.00	\$23,113.37	2.8	104,623
ECM 13	Install High Efficiency Gas Water Heater	0	0.0	113.3	\$1,062.69	\$20,646.14	\$582.00	\$20,064.14	18.9	13,262
ECM 14	Install Low-Flow Domestic Hot Water Devices	0	0.0	780.3	\$7,323.34	\$3,049.23	\$0.00	\$3,049.23	0.4	91,361
Food Service Equipment & Refrigeration Measures		13,124	0.1	0.0	\$1,134.25	\$3,201.20	\$330.00	\$2,871.20	2.5	13,216
ECM 15	Refrigerator/Freezer Case Electrically Commutated Motors	11,742	0.0	0.0	\$1,002.98	\$606.60	\$80.00	\$526.60	0.5	11,824
ECM 16	Refrigeration Controls	641	0.0	0.0	\$54.72	\$770.60	\$125.00	\$645.60	11.8	645
ECM 17	Replace Refrigeration Equipment	742	0.1	0.0	\$76.55	\$1,824.00	\$125.00	\$1,699.00	22.2	747
Plug Load Equipment Control - Vending Machine		6,447	0.0	0.0	\$872.40	\$2,875.20	\$0.00	\$2,875.20	3.3	6,492
ECM 18	Vending Machine Control	6,447	0.0	0.0	\$872.40	\$2,875.20	\$0.00	\$2,875.20	3.3	6,492
TOTALS		482,995	86.6	1,216.5	\$66,982.74	\$313,853.45	\$20,894.50	\$292,958.95	4.4	628,814

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

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

Police Stations (3)



Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Police Stations (3)



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		80,473	15.9	0.0	\$10,807.76	\$33,602.24	\$850.00	\$32,752.24	3.0	81,035
ECM 1	Install LED Fixtures	1,313	0.4	0.0	\$199.81	\$827.47	\$15.00	\$812.47	4.1	1,322
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	68,137	12.8	0.0	\$8,959.68	\$24,462.51	\$0.00	\$24,462.51	2.7	68,613
ECM 3	Retrofit Fixtures with LED Lamps	10,185	2.6	0.0	\$1,520.89	\$7,021.59	\$835.00	\$6,186.59	4.1	10,257
ECM 4	Install LED Exit Signs	837	0.1	0.0	\$127.38	\$1,290.67	\$0.00	\$1,290.67	10.1	843
Lighting Control Measures		6,542	1.7	0.0	\$940.55	\$4,214.00	\$715.00	\$3,499.00	3.7	6,588
ECM 5	Install Occupancy Sensor Lighting Controls	6,542	1.7	0.0	\$940.55	\$4,214.00	\$715.00	\$3,499.00	3.7	6,588
Electric Unitary HVAC Measures		19,790	10.5	0.0	\$2,532.21	\$32,118.42	\$0.00	\$32,118.42	12.7	19,929
ECM 6	Install High Efficiency Electric AC	19,790	10.5	0.0	\$2,532.21	\$32,118.42	\$0.00	\$32,118.42	12.7	19,929
Gas Heating (HVAC/Process) Replacement		0	0.0	63.6	\$600.36	\$28,804.11	\$2,640.00	\$26,164.11	43.6	7,445
ECM 7	Install High Efficiency Hot Water Boilers	0	0.0	63.6	\$600.36	\$28,804.11	\$2,640.00	\$26,164.11	43.6	7,445
Domestic Water Heating Upgrade		0	0.0	129.8	\$1,216.94	\$687.88	\$0.00	\$687.88	0.6	15,194
ECM 8	Install Low-Flow Domestic Hot Water Devices	0	0.0	129.8	\$1,216.94	\$687.88	\$0.00	\$687.88	0.6	15,194
Plug Load Equipment Control - Vending Machine		3,163	0.0	0.0	\$481.45	\$2,156.40	\$0.00	\$2,156.40	4.5	3,185
ECM 9	Vending Machine Control	3,163	0.0	0.0	\$481.45	\$2,156.40	\$0.00	\$2,156.40	4.5	3,185
TOTALS		109,968	28.1	193.3	\$16,579.27	\$101,583.05	\$4,205.00	\$97,378.05	5.9	133,376

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

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

Swimming Pools (2)



Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Swimming Pools (2)



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		22,171	9.6	0.0	\$2,311.01	\$40,037.33	\$3,480.00	\$36,557.33	15.8	22,326
ECM 1	Install LED Fixtures	4,188	2.4	0.0	\$388.53	\$21,503.48	\$1,710.00	\$19,793.48	50.9	4,217
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	7,048	2.8	0.0	\$535.29	\$7,542.60	\$0.00	\$7,542.60	14.1	7,097
ECM 3	Retrofit Fixtures with LED Lamps	8,006	4.1	0.0	\$1,035.85	\$9,750.92	\$1,770.00	\$7,980.92	7.7	8,062
ECM 4	Install LED Exit Signs	2,930	0.2	0.0	\$351.34	\$1,240.33	\$0.00	\$1,240.33	3.5	2,950
Lighting Control Measures		1,503	0.7	0.0	\$137.86	\$946.00	\$370.00	\$576.00	4.2	1,513
ECM 5	Install Occupancy Sensor Lighting Controls	1,218	0.5	0.0	\$99.19	\$696.00	\$120.00	\$576.00	5.8	1,227
ECM 6	Install Daylight Dimming Controls	285	0.2	0.0	\$38.67	\$250.00	\$250.00	\$0.00	0.0	287
Motor Upgrades		3,347	1.3	0.0	\$200.93	\$1,584.45	\$0.00	\$1,584.45	7.9	3,370
ECM 7	Premium Efficiency Motors	3,347	1.3	0.0	\$200.93	\$1,584.45	\$0.00	\$1,584.45	7.9	3,370
Variable Frequency Drive (VFD) Measures		11,558	4.0	0.0	\$693.86	\$6,334.30	\$0.00	\$6,334.30	9.1	11,639
ECM 8	Install Air Compressors with VFDs	11,558	4.0	0.0	\$693.86	\$6,334.30	\$0.00	\$6,334.30	9.1	11,639
Domestic Water Heating Upgrade		2,805	0.0	15.1	\$570.99	\$1,171.98	\$0.00	\$1,171.98	2.1	4,592
ECM 9	Install Low-Flow Domestic Hot Water Devices	2,805	0.0	15.1	\$570.99	\$1,171.98	\$0.00	\$1,171.98	2.1	4,592
TOTALS		41,384	15.6	15.1	\$3,914.65	\$50,074.06	\$3,850.00	\$46,224.06	11.8	43,440

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

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



Some 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

PROGRAM PORTFOLIO



ELIGIBLE SECTORS

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

PROGRAMS

Equipment Rebates:

- Retrofit – Existing Buildings
- New Construction
- Direct Install – Small Business
- Large Energy Users

Whole Buildings:

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

Energy Generation:

- Combined Heat and Power (CHP) and Fuel Cells

Recommended NJCEP Incentives



➤ Direct Install

Lime Energy

Tony McCoy

855-600-5463

njdi@lime-energy.com

➤ Pay for Performance (P4P)

➤ SmartStart Buildings (i.e Retrofit – Existing Buildings)

Recommended NJCEP Incentives per Building



Building Name	SmartStart Prescriptive	Direct Install	Pay For Performance Existing Buildings	ESIP
City Hall	X		X	X
Municipal Courthouse	X		X	X
Commerce Division	X	X		X
Collier Senior Center	X	X		X
Connors Senior Center	X	X		X
Mary McLeod Bethune Center	X	X		X
Pershing Field Athletic Center	X		X	X
Fire Headquarters	X	X		X
Firehouse - 283 Halladay Street	X	X		X
Firehouse - 200 Sip Avenue	X	X		X
Firehouse - Bergen & Duncan	X	X		X
Firehouse - 468 Ocean Avenue	X	X		X
Firehouse - 152 Linden Avenue	X	X		X
Firehouse - 2 Bergen Avenue	X	X		X
Firehouse - 152 Lincoln Street	X	X		X
Firehouse & OEM	X	X		X
Firehouse - 595 Palisade Avenue	X	X		X
Firehouse - 160 Grand Street	X	X		X
Firehouse - 255 Kearney Avenue	X	X		X
Firehouse - Consolidated	X	X		X
Firehouse - 14 Orient Avenue	X	X		X
North District Police Precinct	X	X		X
South District Police Precinct	X	X		X
East District Police Precinct	X	X		X
Lafayette Pool	X	X		X
Pavonia Pool	X	X		X

Energy Savings Improvement Program (ESIP)



- Program administered directly by BPU
- Provides alternative financing options for energy savings projects at public institutions.
- Value of energy savings leveraged to pay for cost of EE projects over a 15 year contract.
- Does not count as debt or require voter approval.
- Requires an audit as 1st step (LGEA has satisfied this requirement)

Questions



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FOR MORE INFORMATION

Visit NJCleanEnergy.com

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