

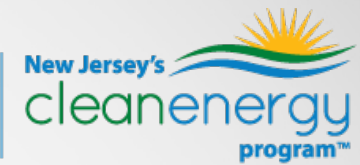
New Jersey's Clean Energy Program

LGEA Exit Meeting for:
Ocean County College

Vish Nimbalker, TRC

July 17, 2018

Introductions



Ocean County College

- James Calamia – Facilities Director
- Leonard Mannino – Assistant Director
- Joseph Greca – Maintenance Manager

NJ Clean Energy Program

- Brian DeLuca – Program Manager
- Vish Nimbalkar, P.E. – Auditor
- Sarah Walters – LGEA Account Manager
- Mike Thulen – ESIP Coordinator

Agenda

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

Process



Site Visit and Utility Analysis

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
- CHP generation

Entities Visited/Analyzed

1. Administration Building (#1)
2. John C. Bartlett Jr. Hall (#2)
3. Grunin Center for Performing Arts (#11)
4. Security & Welcome Center (#30)
5. Maintenance Building (#65)
6. Administrative Support Building (#67)
7. Facilities Management Building (#66)
8. Library (#3)
9. Health & Science Building (#4)
10. Television Studio (#6)
11. W. Kable Russell Building (#7)
12. College Center (#9)
13. Bookstore / College Center (#10)
14. Robert J. Novins Planetarium (#13)
15. CHP Plant (#21)
16. Instructional Computer Center (#22)
17. Information Technology Building (#23)
18. Technology Building (#25)
19. William T. Hering Science Building (#27)
20. Health & Human Performance Building (#29)
21. Gateway Building (#101)
22. Larson Student Center (#8)

All Opportunities



Recommended 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		1,026,652	220.3	0.0	\$174,090.04	\$693,251.66	\$61,785.00	\$631,466.66	3.6	1,033,830
ECM 1	Install LED Fixtures	193,016	43.6	0.0	\$32,320.80	\$125,118.25	\$11,550.00	\$113,568.25	3.2	194,365
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	412,752	90.9	0.0	\$69,023.03	\$375,426.38	\$29,285.00	\$346,141.38	5.0	415,638
ECM 3	Retrofit Fixtures with LED Lamps	405,420	84.7	0.0	\$70,213.59	\$186,146.15	\$20,950.00	\$165,196.15	2.0	408,255
ECM 4	Install LED Exit Signs	15,464	1.1	0.0	\$2,532.62	\$6,560.88	\$0.00	\$6,560.88	2.6	15,572
Lighting Control Measures		45,810	9.7	0.0	\$7,452.61	\$39,040.00	\$6,045.00	\$32,995.00	4.4	46,130
ECM 5	Install Occupancy Sensor Lighting Controls	43,981	9.5	0.0	\$7,153.16	\$38,040.00	\$6,045.00	\$31,995.00	4.0	44,289
ECM 6	Install High/Low Lighting Controls	1,828	0.2	0.0	\$299.45	\$1,000.00	\$0.00	\$1,000.00	3.3	1,841
Motor Upgrades		13,771	4.5	0.0	\$2,255.41	\$32,676.85	\$0.00	\$32,676.85	14.5	13,867
ECM 7	Premium Efficiency Motors	13,771	4.5	0.0	\$2,255.41	\$32,676.85	\$0.00	\$32,676.85	14.5	13,867
Variable Frequency Drive (VFD) Measures		435,728	47.3	0.0	\$71,270.98	\$157,996.61	\$8,300.00	\$149,696.61	2.1	438,775
ECM 8	Install VFDs on Constant Volume (CV) HVAC	30,675	9.2	0.0	\$5,006.03	\$11,746.15	\$2,000.00	\$9,746.15	1.9	30,889
ECM 9	Install VFDs on Chilled Water Pumps	216,579	24.0	0.0	\$35,449.36	\$67,453.10	\$2,400.00	\$65,053.10	1.8	218,094
ECM 10	Install VFDs on Hot Water Pumps	94,144	14.1	0.0	\$15,408.73	\$58,126.06	\$0.00	\$58,126.06	3.8	94,802
ECM 11	Install VFDs on Cooling Tower Fans	94,330	0.0	0.0	\$15,406.86	\$20,671.30	\$3,900.00	\$16,771.30	1.1	94,990
Electric Unitary HVAC Measures		848	0.5	0.0	\$138.92	\$4,488.66	\$276.00	\$4,212.66	30.3	854
ECM 12	Install High Efficiency Electric AC	848	0.5	0.0	\$138.92	\$4,488.66	\$276.00	\$4,212.66	30.3	854
Electric Chiller Replacement		315,235	148.0	0.0	\$51,539.06	\$272,724.75	\$15,480.00	\$257,244.75	5.0	317,439
ECM 13	Install High Efficiency Chillers	315,235	148.0	0.0	\$51,539.06	\$272,724.75	\$15,480.00	\$257,244.75	5.0	317,439
Domestic Water Heating Upgrade		69,529	1.4	20.7	\$11,389.54	\$3,458.10	\$50.00	\$3,408.10	0.3	72,439
ECM 14	Install High Efficiency Gas Water Heater	42,066	1.4	-143.5	\$4,915.23	\$2,812.80	\$50.00	\$2,762.80	0.6	25,555
ECM 15	Install Low-Flow Domestic Hot Water Devices	27,463	0.0	164.2	\$6,474.31	\$645.30	\$0.00	\$645.30	0.1	46,884
Plug Load Equipment Control - Vending Machine		22,264	0.0	0.0	\$3,843.06	\$7,762.80	\$0.00	\$7,762.80	2.0	22,419
ECM 16	Vending Machine Control	22,264	0.0	0.0	\$3,843.06	\$7,762.80	\$0.00	\$7,762.80	2.0	22,419
TOTALS		1,929,837	431.7	20.7	\$321,979.62	\$1,211,399.43	\$91,936.00	\$1,119,463.43	3.5	1,945,754

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

Administration Building



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		97,134	24.6	0.0	\$15,910.52	\$95,210.42	\$6,850.00	\$88,360.42	5.6	97,813
ECM 1	Install LED Fixtures	30,519	6.2	0.0	\$4,999.00	\$21,551.84	\$1,205.00	\$20,346.84	4.1	30,732
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	61,121	17.2	0.0	\$10,011.67	\$72,014.85	\$5,505.00	\$66,509.85	6.6	61,549
ECM 3	Retrofit Fixtures with LED Lamps	5,412	1.1	0.0	\$886.42	\$1,536.17	\$140.00	\$1,396.17	1.6	5,449
ECM 4	Install LED Exit Signs	82	0.0	0.0	\$13.43	\$107.56	\$0.00	\$107.56	8.0	83
Lighting Control Measures		11,361	2.7	0.0	\$1,861.01	\$13,582.00	\$1,845.00	\$11,737.00	6.3	11,441
ECM 5	Install Occupancy Sensor Lighting Controls	11,361	2.7	0.0	\$1,861.01	\$13,582.00	\$1,845.00	\$11,737.00	6.3	11,441
Motor Upgrades		4,860	2.5	0.0	\$796.04	\$13,345.23	\$0.00	\$13,345.23	16.8	4,894
ECM 6	Premium Efficiency Motors	4,860	2.5	0.0	\$796.04	\$13,345.23	\$0.00	\$13,345.23	16.8	4,894
Variable Frequency Drive (VFD) Measures		54,679	12.1	0.0	\$8,956.36	\$33,446.40	\$2,400.00	\$31,046.40	3.5	55,061
ECM 7	Install VFDs on Chilled Water Pumps	42,035	8.5	0.0	\$6,885.40	\$23,057.50	\$2,400.00	\$20,657.50	3.0	42,329
ECM 8	Install VFDs on Hot Water Pumps	12,643	3.7	0.0	\$2,070.96	\$10,388.90	\$0.00	\$10,388.90	5.0	12,732
Plug Load Equipment Control - Vending Machine		1,954	0.0	0.0	\$320.12	\$460.00	\$0.00	\$460.00	1.4	1,968
ECM 9	Vending Machine Control	1,954	0.0	0.0	\$320.12	\$460.00	\$0.00	\$460.00	1.4	1,968
Custom Measures		0	0.0	0.0	\$0.00	\$0.00	\$0.00	\$0.00	0.0	0
TOTALS		169,988	41.9	0.0	\$27,844.06	\$156,044.05	\$11,095.00	\$144,949.05	5.2	171,177

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John C. Bartlett Jr. Hall



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			51,458	10.6	0.0	\$7,022.85	\$41,570.97	\$4,365.00	\$37,205.97	5.30	51,818
ECM 1	Retrofit Fixtures with LED Lamps	Yes	51,458	10.6	0.0	\$7,022.85	\$41,570.97	\$4,365.00	\$37,205.97	5.30	51,818
TOTALS			51,458	10.6	0.0	\$7,022.85	\$41,570.97	\$4,365.00	\$37,205.97	5.30	51,818

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Grunin Center for Performing Arts



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			58,770	19.8	0.0	\$12,748.43	\$47,178.30	\$5,690.00	\$41,488.30	3.25	59,181
ECM 1	Install LED Fixtures	Yes	5,490	0.8	0.0	\$1,190.96	\$2,344.06	\$600.00	\$1,744.06	1.46	5,529
ECM 2	Retrofit Fixtures with LED Lamps	Yes	53,280	19.0	0.0	\$11,557.46	\$44,834.24	\$5,090.00	\$39,744.24	3.44	53,652
Lighting Control Measures			709	0.3	0.0	\$153.71	\$580.00	\$100.00	\$480.00	3.12	714
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	709	0.3	0.0	\$153.71	\$580.00	\$100.00	\$480.00	3.12	714
Variable Frequency Drive (VFD) Measures			7,160	7.5	0.0	\$1,553.21	\$43,864.90	\$3,306.67	\$40,558.24	26.11	7,210
	Install VFDs on Constant Volume (CV) HVAC	No	7,160	7.5	0.0	\$1,553.21	\$43,864.90	\$3,306.67	\$40,558.24	26.11	7,210
Domestic Water Heating Upgrade			0	0.0	76.8	\$859.02	\$258.12	\$0.00	\$258.12	0.30	8,987
ECM 4	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	76.8	\$859.02	\$258.12	\$0.00	\$258.12	0.30	8,987
Plug Load Equipment Control - Vending Machine			3,224	0.0	0.0	\$699.28	\$1,437.60	\$0.00	\$1,437.60	2.06	3,246
ECM 5	Vending Machine Control	Yes	3,224	0.0	0.0	\$699.28	\$1,437.60	\$0.00	\$1,437.60	2.06	3,246
TOTALS			69,863	27.6	76.8	\$16,013.65	\$93,318.92	\$9,096.67	\$84,222.25	5.26	79,338
TOTAL OF ALL RECOMMENDED ECMS			62,702	20	77	\$ 14,460.44	\$ 49,454.02	\$ 5,790.00	\$ 43,664.02	3.02	72,127

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Security & Welcome Center



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			15,141	2.6	0.0	\$1,942.97	\$6,538.30	\$875.00	\$5,663.30	2.91	15,247
ECM 1	Install LED Fixtures	Yes	2,442	0.4	0.0	\$313.42	\$1,172.03	\$300.00	\$872.03	2.78	2,460
ECM 2	Retrofit Fixtures with LED Lamps	Yes	12,699	2.2	0.0	\$1,629.56	\$5,366.26	\$575.00	\$4,791.26	2.94	12,788
Lighting Control Measures			188	0.1	0.0	\$24.11	\$116.00	\$20.00	\$96.00	3.98	189
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	188	0.1	0.0	\$24.11	\$116.00	\$20.00	\$96.00	3.98	189
Domestic Water Heating Upgrade			0	0.0	3.8	\$46.31	\$14.34	\$0.00	\$14.34	0.31	444
ECM 4	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	3.8	\$46.31	\$14.34	\$0.00	\$14.34	0.31	444
TOTALS			15,329	2.7	3.8	\$2,013.40	\$6,668.64	\$895.00	\$5,773.64	2.87	15,880

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Maintenance Building



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			10,006	3.1	0.0	\$5,635.12	\$6,726.94	\$1,110.00	\$5,616.94	1.00	10,076
ECM 1	Install LED Fixtures	Yes	2,248	0.5	0.0	\$1,266.20	\$295.68	\$100.00	\$195.68	0.15	2,264
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	6	0.1	0.0	\$3.46	\$166.86	\$0.00	\$166.86	48.29	6
ECM 3	Retrofit Fixtures with LED Lamps	Yes	7,752	2.6	0.0	\$4,365.47	\$6,264.40	\$1,010.00	\$5,254.40	1.20	7,806
Domestic Water Heating Upgrade			655	0.0	0.0	\$368.65	\$14.34	\$0.00	\$14.34	0.04	659
ECM 4	Install Low-Flow Domestic Hot Water Devices	Yes	655	0.0	0.0	\$368.65	\$14.34	\$0.00	\$14.34	0.04	659
TOTALS			10,661	3.1	0.0	\$6,003.77	\$6,741.28	\$1,110.00	\$5,631.28	0.94	10,736

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Administrative Support Building



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			3,065	1.0	0.0	\$424.80	\$2,857.31	\$590.00	\$2,267.31	5.34	3,087
ECM 1	Install LED Fixtures	Yes	493	0.2	0.0	\$68.39	\$781.35	\$200.00	\$581.35	8.50	497
ECM 2	Retrofit Fixtures with LED Lamps	Yes	2,572	0.8	0.0	\$356.42	\$2,075.95	\$390.00	\$1,685.95	4.73	2,590
Domestic Water Heating Upgrade			0	0.0	1.8	\$23.21	\$14.34	\$0.00	\$14.34	0.62	213
ECM 3	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	1.8	\$23.21	\$14.34	\$0.00	\$14.34	0.62	213
TOTALS			3,065	1.0	1.8	\$448.01	\$2,871.65	\$590.00	\$2,281.65	5.09	3,300

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Facilities Management Building



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			8,816	2.1	0.0	\$655.48	\$4,414.14	\$1,630.00	\$2,784.14	4.25	8,878
ECM 1	Install LED Fixtures	Yes	6,754	1.5	0.0	\$502.16	\$2,559.84	\$1,300.00	\$1,259.84	2.51	6,801
ECM 2	Retrofit Fixtures with LED Lamps	Yes	2,062	0.6	0.0	\$153.32	\$1,854.30	\$330.00	\$1,524.30	9.94	2,077
Lighting Control Measures			926	0.1	0.0	\$68.88	\$464.00	\$80.00	\$384.00	5.58	933
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	926	0.1	0.0	\$68.88	\$464.00	\$80.00	\$384.00	5.58	933
TOTALS			9,742	2.2	0.0	\$724.35	\$4,878.14	\$1,710.00	\$3,168.14	4.37	9,811

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Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Dem and 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			111,280	18.8	0.0	\$18,224.61	\$88,711.73	\$5,965.00	\$82,746.73	4.5	112,058
ECM 1	Install LED Fixtures	Yes	25,747	3.6	0.0	\$4,216.57	\$16,541.13	\$100.00	\$16,441.13	3.9	25,927
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	81,582	14.7	0.0	\$13,360.83	\$70,653.85	\$5,850.00	\$64,803.85	4.9	82,152
ECM 3	Retrofit Fixtures with LED Lamps	Yes	3,952	0.5	0.0	\$647.22	\$1,516.75	\$15.00	\$1,501.75	2.3	3,980
Lighting Control Measures			1,868	0.2	0.0	\$305.89	\$1,412.00	\$585.00	\$827.00	2.7	1,881
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	1,868	0.2	0.0	\$305.89	\$1,412.00	\$585.00	\$827.00	2.7	1,881
Motor Upgrades			8,029	1.5	0.0	\$1,314.88	\$14,350.26	\$0.00	\$14,350.26	10.9	8,085
ECM 5	Premium Efficiency Motors	Yes	8,029	1.5	0.0	\$1,314.88	\$14,350.26	\$0.00	\$14,350.26	10.9	8,085
Variable Frequency Drive (VFD) Measures			157,127	8.5	0.0	\$25,733.08	\$39,998.10	\$2,400.00	\$37,598.10	1.5	158,226
ECM 6	Install VFDs on Chilled Water Pumps	Yes	99,845	7.3	0.0	\$16,351.79	\$20,777.80	\$0.00	\$20,777.80	1.3	100,543
ECM 7	Install VFDs on Hot Water Pumps	Yes	9,953	1.3	0.0	\$1,630.00	\$6,551.70	\$0.00	\$6,551.70	4.0	10,022
ECM 8	Install VFDs on Cooling Tower Fans	Yes	47,330	0.0	0.0	\$7,751.28	\$12,668.60	\$2,400.00	\$10,268.60	1.3	47,661
Plug Load Equipment Control - Vending Machine			5,521	0.0	0.0	\$904.11	\$1,150.00	\$0.00	\$1,150.00	1.3	5,559
ECM 9	Vending Machine Control	Yes	5,521	0.0	0.0	\$904.11	\$1,150.00	\$0.00	\$1,150.00	1.3	5,559
TOTALS			283,824	29.0	0.0	\$46,482.58	\$146,622.09	\$8,950.00	\$136,672.09	2.9	285,809

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Health Science Building



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			21,785	5.9	0.0	\$3,567.84	\$14,405.40	\$1,940.00	\$12,465.40	3.49	21,938
ECM 1	Install LED Fixtures	Yes	299	0.1	0.0	\$48.93	\$445.56	\$5.00	\$440.56	9.00	301
ECM 2	Retrofit Fixtures with LED Lamps	Yes	18,344	5.6	0.0	\$3,004.16	\$13,099.40	\$1,935.00	\$11,164.40	3.72	18,472
ECM 3	Install LED Exit Signs	Yes	3,143	0.2	0.0	\$514.75	\$860.44	\$0.00	\$860.44	1.67	3,165
Lighting Control Measures			1,116	0.3	0.0	\$182.70	\$464.00	\$80.00	\$384.00	2.10	1,123
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	1,116	0.3	0.0	\$182.70	\$464.00	\$80.00	\$384.00	2.10	1,123
Domestic Water Heating Upgrade			2,553	0.0	0.0	\$418.06	\$86.04	\$0.00	\$86.04	0.21	2,571
ECM 5	Install Low-Flow Domestic Hot Water Devices	Yes	2,553	0.0	0.0	\$418.06	\$86.04	\$0.00	\$86.04	0.21	2,571
TOTALS			25,454	6.2	0.0	\$4,168.59	\$14,955.44	\$2,020.00	\$12,935.44	3.10	25,632

* - 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).

Television Studio



Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			16,602	4.6	\$2,719.03	\$10,062.99	\$1,400.00	\$8,662.99	3.19	16,719
ECM 1	Install LED Fixtures	Yes	8,235	2.6	\$1,348.66	\$4,653.04	\$880.00	\$3,773.04	2.80	8,293
ECM 2	Retrofit Fixtures with LED Lamps	Yes	5,617	1.8	\$919.96	\$4,657.07	\$520.00	\$4,137.07	4.50	5,657
ECM 3	Install LED Exit Signs	Yes	2,750	0.2	\$450.41	\$752.89	\$0.00	\$752.89	1.67	2,769
Lighting Control Measures			1,121	0.4	\$183.56	\$1,508.00	\$260.00	\$1,248.00	6.80	1,129
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	1,121	0.4	\$183.56	\$1,508.00	\$260.00	\$1,248.00	6.80	1,129
Domestic Water Heating Upgrade			15,982	0.0	\$2,617.41	\$86.04	\$0.00	\$86.04	0.03	16,094
ECM 5	Install Low-Flow Domestic Hot Water Devices	Yes	15,982	0.0	\$2,617.41	\$86.04	\$0.00	\$86.04	0.03	16,094
TOTALS			33,705	5.0	\$5,520.00	\$11,657.03	\$1,660.00	\$9,997.03	1.81	33,941

* - 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).

W. Kable Russell Building



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			49,662	12.7	0.0	\$8,133.23	\$59,300.22	\$4,440.00	\$54,860.22	6.7	50,009
ECM 1	Install LED Fixtures	Yes	6,473	0.9	0.0	\$1,060.02	\$1,905.78	\$900.00	\$1,005.78	0.9	6,518
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	41,501	11.6	0.0	\$6,796.68	\$55,811.17	\$3,515.00	\$52,296.17	7.7	41,791
ECM 3	Retrofit Fixtures with LED Lamps	Yes	137	0.0	0.0	\$22.45	\$77.50	\$25.00	\$52.50	2.3	138
ECM 4	Install LED Exit Signs	Yes	1,551	0.1	0.0	\$254.08	\$1,505.77	\$0.00	\$1,505.77	5.9	1,562
Lighting Control Measures			2,719	0.6	0.0	\$445.36	\$1,312.00	\$180.00	\$1,132.00	2.5	2,738
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	2,719	0.6	0.0	\$445.36	\$1,312.00	\$180.00	\$1,132.00	2.5	2,738
Motor Upgrades			512	0.3	0.0	\$83.81	\$3,228.64	\$0.00	\$3,228.64	38.5	515
ECM 6	Premium Efficiency Motors	Yes	512	0.3	0.0	\$83.81	\$3,228.64	\$0.00	\$3,228.64	38.5	515
Variable Frequency Drive (VFD) Measures			10,721	2.5	0.0	\$1,755.78	\$10,489.45	\$0.00	\$10,489.45	6.0	10,796
ECM 7	Install VFDs on Chilled Water Pumps	Yes	3,185	0.9	0.0	\$521.61	\$3,606.80	\$0.00	\$3,606.80	6.9	3,207
ECM 8	Install VFDs on Hot Water Pumps	Yes	7,536	1.5	0.0	\$1,234.17	\$6,882.65	\$0.00	\$6,882.65	5.6	7,589
TOTALS			63,614	16.0	0.0	\$10,418.17	\$74,330.31	\$4,620.00	\$69,710.31	6.7	64,059

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

College Center



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			24,884	7.5	0.0	\$4,053.18	\$14,575.43	\$1,435.00	\$13,140.43	3.24	25,058
ECM 1	Retrofit Fixtures with LED Lamps	Yes	24,884	7.5	0.0	\$4,053.18	\$14,575.43	\$1,435.00	\$13,140.43	3.24	25,058
Motor Upgrades			2,886	0.9	0.0	\$470.06	\$10,108.54	\$0.00	\$10,108.54	21.50	2,906
	Premium Efficiency Motors	No	2,886	0.9	0.0	\$470.06	\$10,108.54	\$0.00	\$10,108.54	21.50	2,906
Variable Frequency Drive (VFD) Measures			101,977	9.4	0.0	\$16,610.18	\$33,734.66	\$2,700.00	\$31,034.66	1.87	102,690
ECM 2	Install VFDs on Constant Volume (CV) HVAC	Yes	19,807	5.5	0.0	\$3,226.14	\$5,194.45	\$1,200.00	\$3,994.45	1.24	19,945
ECM 3	Install VFDs on Chilled Water Pumps	Yes	24,185	2.5	0.0	\$3,939.28	\$9,622.10	\$0.00	\$9,622.10	2.44	24,354
ECM 4	Install VFDs on Hot Water Pumps	Yes	10,985	1.4	0.0	\$1,789.19	\$10,915.41	\$0.00	\$10,915.41	6.10	11,061
ECM 5	Install VFDs on Cooling Tower Fans	Yes	47,001	0.0	0.0	\$7,655.58	\$8,002.70	\$1,500.00	\$6,502.70	0.85	47,329
Electric Chiller Replacement			98,560	41.3	0.0	\$16,053.64	\$69,450.35	\$3,440.00	\$66,010.35	4.11	99,249
ECM 6	Install High Efficiency Chillers	Yes	98,560	41.3	0.0	\$16,053.64	\$69,450.35	\$3,440.00	\$66,010.35	4.11	99,249
TOTAL OF ALL EVALUATED MEASURES			228,307	59.1	0.0	\$37,187.07	\$127,868.98	\$7,575.00	\$120,293.98	3.23	229,903
TOTALS OF RECOMMENDED MEASURES			225,421	58.1	0.0	\$36,717.00	\$117,760.44	\$7,575.00	\$110,185.44	3.00	226,997

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

Robert J. Novins Planetarium



Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			13,994	4.5	\$2,293.03	\$8,702.57	\$825.00	\$7,877.57	3.44	14,091
ECM 1	Install LED Fixtures	Yes	8,301	2.8	\$1,360.18	\$4,918.67	\$295.00	\$4,623.67	3.40	8,359
ECM 2	Retrofit Fixtures with LED Lamps	Yes	5,693	1.7	\$932.85	\$3,783.90	\$530.00	\$3,253.90	3.49	5,733
Lighting Control Measures			1,354	0.4	\$221.86	\$1,508.00	\$260.00	\$1,248.00	5.63	1,363
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	1,354	0.4	\$221.86	\$1,508.00	\$260.00	\$1,248.00	5.63	1,363
Domestic Water Heating Upgrade			1,332	0.0	\$218.24	\$28.68	\$0.00	\$28.68	0.13	1,341
ECM 4	Install Low-Flow Domestic Hot Water Devices	Yes	1,332	0.0	\$218.24	\$28.68	\$0.00	\$28.68	0.13	1,341
TOTALS			16,679	4.9	\$2,733.13	\$10,239.25	\$1,085.00	\$9,154.25	3.35	16,796

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

CHP Plant



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			180,687	25.1	0.0	\$29,591.59	\$27,805.55	\$1,825.00	\$25,980.55	0.9	181,951
ECM 1	Install LED Fixtures	Yes	25,437	3.7	0.0	\$4,165.85	\$7,964.11	\$1,300.00	\$6,664.11	1.6	25,615
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	17,932	1.3	0.0	\$2,936.72	\$4,343.83	\$525.00	\$3,818.83	1.3	18,057
ECM 3	Retrofit Fixtures with LED Lamps	Yes	137,319	20.1	0.0	\$22,489.01	\$15,497.60	\$0.00	\$15,497.60	0.7	138,279
TOTALS			180,687	25.1	0.0	\$29,591.59	\$27,805.55	\$1,825.00	\$25,980.55	0.9	181,951

* - 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).

Instructional Computer Center



Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			15,323	4.4	\$2,509.47	\$11,535.79	\$795.00	\$10,740.79	4.28	15,430
ECM 1	Install LED Fixtures	Yes	1,519	0.6	\$248.70	\$1,235.68	\$300.00	\$935.68	3.76	1,529
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	13,643	3.8	\$2,234.38	\$10,085.00	\$495.00	\$9,590.00	4.29	13,739
ECM 3	Install LED Exit Signs	Yes	161	0.0	\$26.40	\$215.11	\$0.00	\$215.11	8.15	162
Lighting Control Measures			1,313	0.4	\$215.01	\$1,508.00	\$260.00	\$1,248.00	5.80	1,322
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	1,313	0.4	\$215.01	\$1,508.00	\$260.00	\$1,248.00	5.80	1,322
Domestic Water Heating Upgrade			5,327	0.0	\$872.47	\$28.68	\$0.00	\$28.68	0.03	5,365
ECM 5	Install Low-Flow Domestic Hot Water Devices	Yes	5,327	0.0	\$872.47	\$28.68	\$0.00	\$28.68	0.03	5,365
TOTALS			21,963	4.8	\$3,596.96	\$13,072.47	\$1,055.00	\$12,017.47	3.34	22,117

* - 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).

Information Technology Building



Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			9,932	3.1	\$1,626.64	\$12,732.88	\$1,350.00	\$11,382.88	7.00	10,002
ECM 1	Install LED Fixtures	Yes	849	0.3	\$139.02	\$1,799.77	\$200.00	\$1,599.77	11.51	855
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	8,984	2.8	\$1,471.29	\$10,718.00	\$1,150.00	\$9,568.00	6.50	9,047
ECM 3	Install LED Exit Signs	Yes	100	0.0	\$16.33	\$215.11	\$0.00	\$215.11	13.17	100
Lighting Control Measures			114	0.0	\$18.74	\$232.00	\$40.00	\$192.00	10.24	115
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	114	0.0	\$18.74	\$232.00	\$40.00	\$192.00	10.24	115
Domestic Water Heating Upgrade			43,569	1.4	\$5,161.37	\$2,841.48	\$50.00	\$2,791.48	0.54	27,068
ECM 5	Install High Efficiency Gas Water Heater	Yes	42,066	1.4	\$4,915.23	\$2,812.80	\$50.00	\$2,762.80	0.56	25,555
ECM 6	Install Low-Flow Domestic Hot Water Devices	Yes	1,503	0.0	\$246.14	\$28.68	\$0.00	\$28.68	0.12	1,513
TOTALS			53,616	4.5	\$6,806.76	\$15,806.36	\$1,440.00	\$14,366.36	2.11	37,185

* - 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).

Technology Building



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			46,280	9.3	0.0	\$7,579.33	\$43,793.46	\$2,995.00	\$40,798.46	5.38	46,603
ECM 1	Install LED Fixtures	Yes	6,256	1.3	0.0	\$1,024.57	\$8,882.57	\$400.00	\$8,482.57	8.28	6,300
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	37,273	7.8	0.0	\$6,104.35	\$34,158.00	\$2,595.00	\$31,563.00	5.17	37,534
ECM 3	Install LED Exit Signs	Yes	2,750	0.2	0.0	\$450.41	\$752.89	\$0.00	\$752.89	1.67	2,769
Lighting Control Measures			1,498	0.3	0.0	\$245.38	\$1,972.00	\$340.00	\$1,632.00	6.65	1,509
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	1,498	0.3	0.0	\$245.38	\$1,972.00	\$340.00	\$1,632.00	6.65	1,509
Electric Unitary HVAC Measures			848	0.5	0.0	\$138.92	\$4,488.66	\$276.00	\$4,212.66	30.32	854
ECM 5	Install High Efficiency Electric AC	Yes	848	0.5	0.0	\$138.92	\$4,488.66	\$276.00	\$4,212.66	30.32	854
Domestic Water Heating Upgrade			0	0.0	81.9	\$786.62	\$86.04	\$0.00	\$86.04	0.11	9,586
ECM 6	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	81.9	\$786.62	\$86.04	\$0.00	\$86.04	0.11	9,586
Plug Load Equipment Control - Vending Machine			2,821	0.0	0.0	\$461.96	\$1,437.60	\$0.00	\$1,437.60	3.11	2,840
ECM 7	Vending Machine Control	Yes	2,821	0.0	0.0	\$461.96	\$1,437.60	\$0.00	\$1,437.60	3.11	2,840
TOTALS			51,447	10.1	81.9	\$9,212.20	\$51,777.76	\$3,611.00	\$48,166.76	5.23	61,392

* - 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).

William T. Hiering Science Building



Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			80,454	11.0	\$13,176.11	\$31,870.37	\$4,990.00	\$26,880.37	2.04	81,016
ECM 1	Install LED Fixtures	Yes	4,770	0.6	\$781.17	\$3,125.42	\$800.00	\$2,325.42	2.98	4,803
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,590	0.2	\$260.39	\$1,334.88	\$0.00	\$1,334.88	5.13	1,601
ECM 3	Retrofit Fixtures with LED Lamps	Yes	69,653	9.8	\$11,407.19	\$26,011.86	\$4,190.00	\$21,821.86	1.91	70,140
ECM 4	Install LED Exit Signs	Yes	4,441	0.3	\$727.37	\$1,398.22	\$0.00	\$1,398.22	1.92	4,472
Lighting Control Measures			16,075	2.2	\$2,632.62	\$5,002.00	\$655.00	\$4,347.00	1.65	16,187
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	14,246	1.9	\$2,333.17	\$4,002.00	\$655.00	\$3,347.00	1.43	14,346
ECM 6	Install High/Low Lighting Controls	Yes	1,828	0.2	\$299.45	\$1,000.00	\$0.00	\$1,000.00	3.34	1,841
Motor Upgrades			3,877	1.2	\$634.97	\$11,192.76	\$0.00	\$11,192.76	17.63	3,904
	Premium Efficiency Motors	No	3,877	1.2	\$634.97	\$11,192.76	\$0.00	\$11,192.76	17.63	3,904
Variable Frequency Drive (VFD) Measures			108,614	14.1	\$17,788.04	\$34,312.70	\$800.00	\$33,512.70	1.88	109,374
ECM 7	Install VFDs on Constant Volume (CV) HVAC	Yes	10,868	3.7	\$1,779.89	\$6,551.70	\$800.00	\$5,751.70	3.23	10,944
ECM 8	Install VFDs on Chilled Water Pumps	Yes	47,330	4.8	\$7,751.28	\$10,388.90	\$0.00	\$10,388.90	1.34	47,661
ECM 9	Install VFDs on Hot Water Pumps	Yes	50,417	5.5	\$8,256.87	\$17,372.10	\$0.00	\$17,372.10	2.10	50,769
Electric Chiller Replacement			216,675	106.7	\$35,485.42	\$203,274.40	\$12,040.00	\$191,234.40	5.39	218,190
ECM 10	Install High Efficiency Chillers	Yes	216,675	106.7	\$35,485.42	\$203,274.40	\$12,040.00	\$191,234.40	5.39	218,190
Plug Load Equipment Control - Vending Machine			0	0.0	\$0.00	\$1,437.60	\$0.00	\$1,437.60	0.00	0
ECM 11	Vending Machine Control	Yes	0	0.0	\$0.00	\$1,437.60	\$0.00	\$1,437.60	0.00	0
TOTALS FOR RECOMMENDED MEASURES			421,818	134.0	\$69,082.18	\$275,897.07	\$18,485.00	\$257,412.07	3.73	424,768
TOTALS FOR EVALUATED MEASURES			425,695	135.2	\$69,717.15	\$287,089.83	\$18,485.00	\$268,604.83	3.85	428,672

* - 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).

Health & Human Performance Building



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			83,321	25.7	0.0	\$13,645.60	\$64,400.91	\$3,995.00	\$60,405.91	4.4	83,903
ECM 1	Install LED Fixtures	Yes	39,524	15.0	0.0	\$6,472.99	\$18,711.79	\$775.00	\$17,936.79	2.8	39,801
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	40,322	10.2	0.0	\$6,603.56	\$42,221.77	\$3,030.00	\$39,191.77	5.9	40,604
ECM 3	Retrofit Fixtures with LED Lamps	Yes	2,990	0.6	0.0	\$489.61	\$2,714.47	\$190.00	\$2,524.47	5.2	3,010
ECM 4	Install LED Exit Signs	Yes	485	0.0	0.0	\$79.44	\$752.89	\$0.00	\$752.89	9.5	488
Lighting Control Measures			5,211	1.6	0.0	\$853.35	\$9,148.00	\$1,300.00	\$7,848.00	9.2	5,247
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	5,211	1.6	0.0	\$853.35	\$9,148.00	\$1,300.00	\$7,848.00	9.2	5,247
Motor Upgrades			371	0.2	0.0	\$60.68	\$1,752.72	\$0.00	\$1,752.72	28.9	373
ECM 6	Premium Efficiency Motors	Yes	371	0.2	0.0	\$60.68	\$1,752.72	\$0.00	\$1,752.72	28.9	373
Variable Frequency Drive (VFD) Measures			2,611	0.8	0.0	\$427.54	\$6,015.30	\$0.00	\$6,015.30	14.1	2,629
ECM 7	Install VFDs on Hot Water Pumps	Yes	2,611	0.8	0.0	\$427.54	\$6,015.30	\$0.00	\$6,015.30	14.1	2,629
Plug Load Equipment Control - Vending Machine			3,566	0.0	0.0	\$584.04	\$690.00	\$0.00	\$690.00	1.2	3,591
ECM 8	Vending Machine Control	Yes	3,566	0.0	0.0	\$584.04	\$690.00	\$0.00	\$690.00	1.2	3,591
TOTALS			95,078	28.3	0.0	\$15,571.22	\$82,006.93	\$5,295.00	\$76,711.93	4.9	95,743

* - 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).

Gateway Building



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			126,891	23.8	0.0	\$22,439.08	\$100,857.98	\$8,720.00	\$92,137.98	4.1	127,778
ECM 1	Install LED Fixtures	Yes	16,968	2.4	0.0	\$3,000.66	\$26,229.93	\$1,890.00	\$24,339.93	8.1	17,087
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	108,799	21.3	0.0	\$19,239.70	\$73,918.17	\$6,620.00	\$67,298.17	3.5	109,559
ECM 3	Retrofit Fixtures with LED Lamps	Yes	1,124	0.2	0.0	\$198.72	\$709.88	\$210.00	\$499.88	2.5	1,132
Lighting Control Measures			124	0.0	0.0	\$21.94	\$232.00	\$40.00	\$192.00	8.8	125
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	124	0.0	0.0	\$21.94	\$232.00	\$40.00	\$192.00	8.8	125
Plug Load Equipment Control - Vending Machine			1,954	0.0	0.0	\$345.60	\$460.00	\$0.00	\$460.00	1.3	1,968
ECM 5	Vending Machine Control	Yes	1,954	0.0	0.0	\$345.60	\$460.00	\$0.00	\$460.00	1.3	1,968
Custom Measures			0	0.0	0.0	\$0.00	\$0.00	\$0.00	\$0.00	0.0	0
TOTALS			128,969	23.8	0.0	\$22,806.62	\$101,549.98	\$8,760.00	\$92,789.98	4.1	129,871

* - 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).

Larson Student Center



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)
Plug Load Equipment Control - Vending Machine			3,224	0.0	0.0	\$527.95	\$690.00	\$0.00	\$690.00	1.3	3,246
ECM 1	Vending Machine Control	Yes	3,224	0.0	0.0	\$527.95	\$690.00	\$0.00	\$690.00	1.3	3,246
TOTALS			3,224	0.0	0.0	\$527.95	\$690.00	\$0.00	\$690.00	1.3	3,246

* - 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).

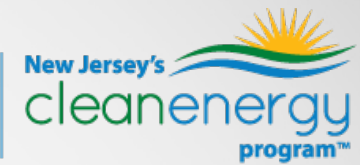
Additional Scope Study – CHP Plant



CHP Economic Analysis - Summary

	Utility (no cogen)	Existing Cogen (cooling bias)	Full ABS Cap (cooling bias)	Simultaneous Chillers	Heating only w/ ABS	Heating only w/ New HR	Existing Cogen Additional Gen	Add Gen w/ New HR
Annual Electricity (kWh/yr)	10,902,000	10,823,000	10,795,000	10,652,000	10,902,000	10,902,000	10,795,000	10,902,000
Utility Electricity (kWh/yr)	10,902,000	4,330,000	4,302,000	4,159,000	4,409,000	4,409,000	3,909,000	4,017,000
Annual Natural Gas (Th/yr)	217,000	755,000	722,000	732,000	696,000	662,000	767,000	706,000
	-	-	-	-	-	-	-	-
Electric Energy Cost	\$1,059,000	420,000	\$418,000	\$404,000	\$428,000	\$428,000	\$380,000	\$390,000
Demand Cost	\$126,000	\$66,000	\$66,000	\$66,000	\$66,000	\$66,000	\$66,000	\$66,000
Natural Gas Cost	\$168,000	\$585,000	\$559,000	\$567,000	\$538,000	\$512,000	\$593,000	\$547,000
Total Utility Cost	\$1,353,000	\$1,071,000	\$1,043,000	\$1,037,000	\$1,032,000	\$1,006,000	\$1,039,000	\$1,003,000
Savings (compared to existing)			\$28,000	\$34,000	\$39,000	\$65,000	\$32,000	\$68,000
Implementation Cost			\$50,000	\$50,000	\$0	\$300,000	\$200,000	\$500,000
Simple Payback (yrs)			1.8	1.5	0.0	4.6	6.3	7.4

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

PROGRAMS

Equipment Rebates:

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

Whole Buildings:

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

Energy Generation:

- Combined Heat and Power (CHP)

* eligible programs are highlighted in yellow

SmartStart: Overview



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

SmartStart: Financing Option



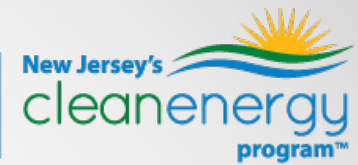
- NJNG provides 0% financing options for SmartStart that will cover up to \$130,000 per year.
- 10 year term-repayments made on regular monthly gas bill
- Need to review project with NJNG to confirm project qualifies.
- The SAVEGREEN program can help with a consultation to discuss your Commercial Energy Efficiency Project.



Direct Install: Overview

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

Direct Install:



Participating Contractor

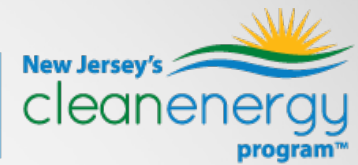
Hutchinson Mechanical Services

Ed Hutchinson

856-429-5828 x215

edhutchinson@hutchbiz.com

Direct Install: Financing Option



- Eligible NJNG customers can finance the remaining 30 percent balance at 0% APR through the “SAVEGREEN Project® On-Bill Repayment Program” (OBRP) for 36 months.
- For measures that may not qualify for Direct Install, NJNG also offers financing options for SmartStart that will cover up to \$130,000 per year.



Direct Install: Financing Option



- Questions? Contact:

Jerry Ryan

Energy Efficiency Operations Manager

New Jersey Natural Gas

732-433-4362 (cell)

732 378 4920 (office)

jryan@njng.com



P4P Existing Buildings: Overview



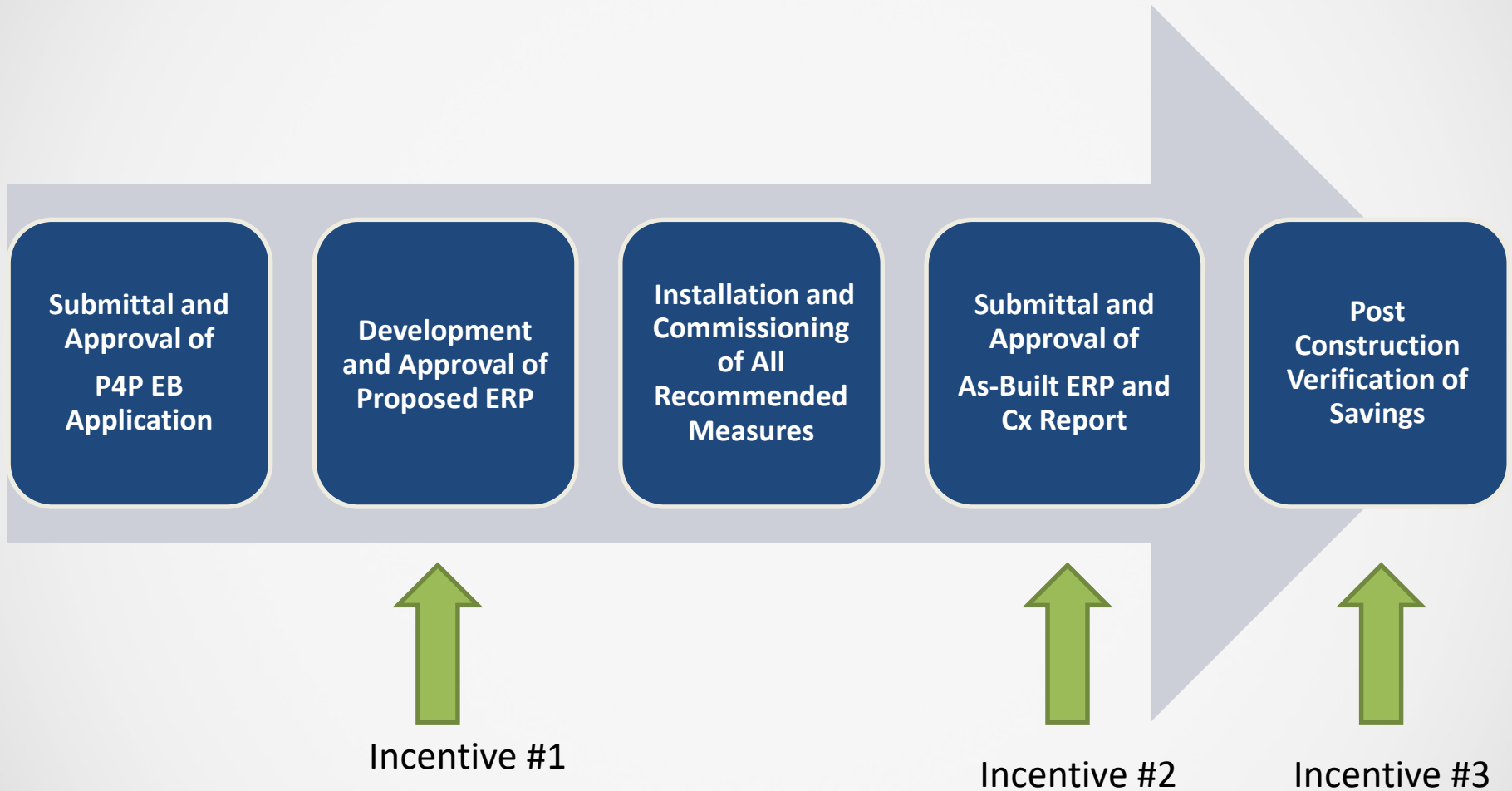
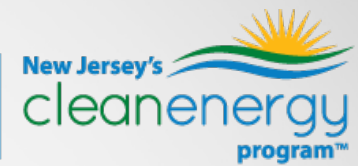
- Comprehensive, whole-building approach to saving energy in existing or new facilities
- Customer chooses from network of pre-approved participating Partners
- Incentives up to \$2 million per project
 - \$1 million for electric measures
 - \$1 million for gas measures
- \$4 million annual entity cap per fiscal year
- Incentives up to 50% of total project cost
- Incentives paid in three installments at milestones

P4P Existing Buildings: Overview



- Open to Commercial and Industrial facilities with annual peak demand of at least 200 kW in previous year
- Minimum savings 15% from existing energy use
- Must have at least two unique measures per project
- No more than 50% of total savings may come from lighting measures
 - Lighting savings up to 70% may be considered with minimum savings target increasing up to 35%

P4P EB: Process



P4P EB: Incentives



Incentive #1: Energy Reduction Plan			
Incentive Amount:		\$0.15	per sq ft
Minimum Incentive:		\$7,500	
Maximum Incentive:		\$50,000	or 50% of facility annual energy cost
Incentive #2: Installation of Recommended Measures			
Minimum Performance Target:		15%	
Electric Incentives	Base Incentive based on 15% savings:	\$0.09	per projected kWh saved
	For each % over 15% add:	\$0.005	
	Maximum Incentive:	\$0.11	
Gas Incentives	Base Incentive based on 15 % savings:	\$0.90	per projected Therm saved
	For each % over 15% add:	\$0.05	
	Maximum Incentive:	\$1.25	
Incentive Cap:		25%	of total project cost
Incentive #3: Post-Construction Benchmarking Report			
Minimum Performance Target:		15%	
Electric Incentives	Base Incentive based on 15% savings:	\$0.09	per projected kWh saved
	For each % over 15% add:	\$0.005	
	Maximum Incentive:	\$0.11	
Gas Incentives	Base Incentive based on 15% savings:	\$0.90	per projected Therm saved
	For each % over 15% add:	\$0.05	
	Maximum Incentive:	\$1.25	
Incentive Cap:		25%	of total project cost

Recommended NJCEP Incentives per Building



Ocean County College	SmartStart	Direct Install	Pay For Performance Existing Buildings
Administration Building	X		X
John C. Bartlett Jr. Hall	X		
Grunin Performing Arts Center	X		
Security Welcome Center	X	X	
Maintenance Building	X		
Administrative Support Building	X	X	
Facilities Management Building	X	X	
Library	X		X
Health Science Building	X		X
Television Studio	X		X
W. Kable Russell Building	X		
College Center	X		
Robert J. Novins Planetarium	X	X	
CHP Plant	X		

Recommended NJCEP Incentives per Building (cont.)



Ocean County College	SmartStart	Direct Install	Pay For Performance Existing Buildings
Instructional Computer Center	X	X	
Technology Building	X	X	
William T. Hering Science Building	X		
Health & Human Performance Building	X		X
Gateway Building	X		
Larsen Student Center	X		

Energy Savings Improvement Program (ESIP)

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

ESIP Process

New Jersey's Clean Energy Program Interaction

Initial Energy Audit completed
for entity building(s)

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

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

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

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

Third party review of ESP

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

Entity adopts ESP,
determines guarantee



FOR MORE INFORMATION

ESIP

Mike Thulen

ESIP Coordinator

Office: 609-777-3338

Cell: 732-330-2419

ESIP@bpu.nj.gov

Questions



?

FOR MORE INFORMATION

Visit NJCleanEnergy.com

Call (866) NJSMART

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