



New Jersey's Clean Energy Program

LGEA Exit Meeting for:
Brookdale Community College

TRC
October 31, 2017

Introductions



- **Brookdale Community College**

- Tim Drury: Director-Facilities Management & Construction
- David Stout: President (Interim)
- Robert Francis: Executive Director Operations (Interim)
- Joseph Pingitore: Executive Director Finance (Interim)
- Daniel McGraw: Manager-Facilities
- Bret Kaufman: Board of Trustees

- **NJ Clean Energy Program – TRC & BPU**

- Vish Nimbalkar: Lead Auditor:
- Brian DeLuca: Program Manager
- Mike Thulen: ESIP Coordinator

Agenda



- Overview of LGEA process (application to deliverable)
- Energy use & existing conditions
- Review of Energy Conservation Measures (ECMs) identified
- Questions or concerns regarding the draft audit report
- Overview of NJCEP equipment incentives
- Next steps for Brookdale Community College

Main Campus – Lincroft (20 bldgs)



- Central Utility Plant (CUP)
- Advanced Technology Center (ATeC)
- Automotive Technology (AUTO)
- Bankier Library (LIB)
- Center for Admissions and Records (CAR)
- Main Academic Central (MAC)
- Main Academic North (MAN)
- Main Academic South (MAS)
- Robert Collins Arena (RCA)
- Warner Student Life Center (SLC)
- Performing Arts Center (PAC)
- Center for Visual Arts (CVA)
- Larrison Hall (LAH)
- Brookdale Administration Center (BAC)
- Gorman Hall (GOR)
- Children's Learning Center (CLC)
- Maintenance Building (MNT)
- Wilbur Ray Police Station (POL)
- Print Shop (PS)
- Receiving Mail Center (RMC)

Main Campus – Lincroft (20 bldgs)



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

Main Campus – Lincroft (20 bldgs)



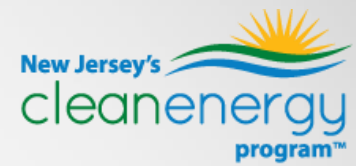
Table 1 (see handouts)

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		2,217,178	443.0	0.0	\$249,211.78	\$1,091,379.67	\$138,145.00	\$953,234.67	3.8	2,232,681
ECM 1	Install LED Fixtures	569,864	99.9	0.0	\$64,017.19	\$241,255.70	\$35,690.00	\$205,565.70	3.2	573,848
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	143,051	31.3	0.0	\$16,068.25	\$74,700.34	\$7,165.00	\$67,535.34	4.2	144,051
ECM 3	Retrofit Fixtures with LED Lamps	1,470,341	309.2	0.0	\$165,316.03	\$751,227.16	\$95,290.00	\$655,937.16	4.0	1,480,622
ECM 4	Install LED Exit Signs	33,922	2.5	0.0	\$3,810.31	\$24,196.47	\$0.00	\$24,196.47	6.4	34,159
Lighting Control Measures		264,993	55.3	0.0	\$29,769.77	\$140,078.00	\$17,405.00	\$122,673.00	4.1	266,846
ECM 5	Install Occupancy Sensor Lighting Controls	232,538	48.7	0.0	\$26,124.20	\$130,186.00	\$17,405.00	\$112,781.00	4.3	234,163
ECM 6	Install High/Low Lighting Controls	32,456	6.6	0.0	\$3,645.57	\$9,892.00	\$0.00	\$9,892.00	2.7	32,683
Motor Upgrades		3,494	2.1	0.0	\$392.47	\$5,326.13	\$0.00	\$5,326.13	13.6	3,518
ECM 7	Premium Efficiency Motors	3,494	2.1	0.0	\$392.47	\$5,326.13	\$0.00	\$5,326.13	13.6	3,518
Variable Frequency Drive (VFD) Measures		19,611	3.2	0.0	\$2,202.76	\$15,817.36	\$800.00	\$15,017.36	6.8	19,748
ECM 8	Install VFDs on Constant Volume (CV) HVAC	5,145	1.4	0.0	\$577.93	\$3,807.95	\$800.00	\$3,007.95	5.2	5,181
ECM 9	Install VFDs on Hot Water Pumps	14,465	1.8	0.0	\$1,624.83	\$12,009.41	\$0.00	\$12,009.41	7.4	14,567
Electric Unitary HVAC Measures		21,131	9.3	0.0	\$2,439.06	\$35,445.19	\$2,275.50	\$33,169.69	13.6	21,278
ECM 10	Install High Efficiency Electric AC	21,131	9.3	0.0	\$2,439.06	\$35,445.19	\$2,275.50	\$33,169.69	13.6	21,278
Electric Chiller Replacement		250,862	123.6	0.0	\$28,178.12	\$406,922.39	\$38,640.00	\$368,282.39	13.1	252,616
ECM 11	Install High Efficiency Chillers	250,862	123.6	0.0	\$28,178.12	\$406,922.39	\$38,640.00	\$368,282.39	13.1	252,616
Gas Heating (HVAC/Process) Replacement		0	0.0	110.2	\$1,349.63	\$16,766.43	\$2,400.00	\$14,366.43	10.6	12,898
ECM 12	Install High Efficiency Furnaces	0	0.0	110.2	\$1,349.63	\$16,766.43	\$2,400.00	\$14,366.43	10.6	12,898
HVAC System Improvements		19,746	4.3	22.7	\$2,547.26	\$4,689.61	\$1,250.00	\$3,439.61	1.4	22,539
ECM 13	Install Programmable Thermostats	466	0.0	22.7	\$381.57	\$989.61	\$0.00	\$989.61	2.6	3,123
ECM 14	Install Dual Enthalpy Outside Economizer Control	19,281	4.3	0.0	\$2,165.69	\$3,700.00	\$1,250.00	\$2,450.00	1.1	19,415
Domestic Water Heating Upgrade		2,483	0.0	29.1	\$639.74	\$243.78	\$0.00	\$243.78	0.4	5,904
ECM 15	Install Low-Flow Domestic Hot Water Devices	2,483	0.0	29.1	\$639.74	\$243.78	\$0.00	\$243.78	0.4	5,904
Plug Load Equipment Control - Vending Machine		16,501	0.0	0.0	\$1,853.50	\$4,140.00	\$0.00	\$4,140.00	2.2	16,617
ECM 16	Vending Machine Control	16,501	0.0	0.0	\$1,853.50	\$4,140.00	\$0.00	\$4,140.00	2.2	16,617
TOTALS		2,815,999	641	162	\$318,584.09	\$1,720,808.56	\$200,915.50	\$1,519,893.06	4.8	2,854,644

* - 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).

Satellite Campuses Audited (4)



- Northern Monmouth Higher Education Center (NMHEC)
- Wall Campus (WHEC)
- Freehold Campus (WMHEC)
- Long Branch Higher Education Center (LBHEC)



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

Satellite Campuses (4)



Table 2 (see handouts)

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		358,583	70.3	0.0	\$45,614.71	\$216,021.70	\$25,095.00	\$190,926.70	4.2	361,090
ECM 1	Install LED Fixtures	78,146	11.2	0.0	\$9,922.78	\$38,085.05	\$6,910.00	\$31,175.05	3.1	78,693
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	107,406	24.5	0.0	\$13,522.10	\$104,813.87	\$9,710.00	\$95,103.87	7.0	108,157
ECM 3	Retrofit Fixtures with LED Lamps	156,143	33.3	0.0	\$19,972.68	\$66,326.18	\$8,475.00	\$57,851.18	2.9	157,235
ECM 4	Install LED Exit Signs	16,888	1.3	0.0	\$2,197.15	\$6,796.60	\$0.00	\$6,796.60	3.1	17,006
Lighting Control Measures		54,853	12.5	0.0	\$6,925.20	\$38,356.00	\$5,700.00	\$32,656.00	4.7	55,237
ECM 5	Install Occupancy Sensor Lighting Controls	52,763	12.2	0.0	\$6,659.58	\$34,106.00	\$4,935.00	\$29,171.00	4.4	53,132
ECM 6	Install Daylight Dimming Controls	2,090	0.3	0.0	\$265.62	\$4,250.00	\$765.00	\$3,485.00	13.1	2,105
Motor Upgrades		292	0.1	0.0	\$36.36	\$3,147.84	\$0.00	\$3,147.84	86.6	294
ECM 7	Premium Efficiency Motors	292	0.1	0.0	\$36.36	\$3,147.84	\$0.00	\$3,147.84	86.6	294
Variable Frequency Drive (VFD) Measures		16,204	2.0	0.0	\$2,016.79	\$12,567.00	\$0.00	\$12,567.00	6.2	16,317
ECM 8	Install VFDs on Chilled Water Pumps	6,251	0.8	0.0	\$778.03	\$6,015.30	\$0.00	\$6,015.30	7.7	6,295
ECM 9	Install VFDs on Hot Water Pumps	9,953	1.3	0.0	\$1,238.76	\$6,551.70	\$0.00	\$6,551.70	5.3	10,022
Electric Unitary HVAC Measures		16,654	9.9	0.0	\$2,133.95	\$10,957.97	\$0.00	\$10,957.97	5.1	16,770
ECM 10	Install High Efficiency Electric AC	16,654	9.9	0.0	\$2,133.95	\$10,957.97	\$0.00	\$10,957.97	5.1	16,770
Electric Chiller Replacement		29,182	14.4	0.0	\$3,739.26	\$55,941.68	\$4,950.00	\$50,991.68	13.6	29,386
ECM 11	Install High Efficiency Chillers	29,182	14.4	0.0	\$3,739.26	\$55,941.68	\$4,950.00	\$50,991.68	13.6	29,386
Gas Heating (HVAC/Process) Replacement		0	0.0	97.2	\$1,220.56	\$32,164.59	\$2,948.00	\$29,216.59	23.9	11,379
ECM 12	Install High Efficiency Hot Water Boilers	0	0.0	97.2	\$1,220.56	\$32,164.59	\$2,948.00	\$29,216.59	23.9	11,379
Domestic Water Heating Upgrade		5,742	0.9	-23.8	\$1,345.36	\$11,854.12	\$410.00	\$11,444.12	8.5	2,998
ECM 13	Install High Efficiency Gas Water Heater	5,742	0.9	-23.8	\$1,345.36	\$11,846.95	\$410.00	\$11,436.95	8.5	2,998
ECM 14	Install Low-Flow Domestic Hot Water Devices	0	0.0	0.0	\$0.00	\$7.17	\$0.00	\$7.17	0.0	0
Plug Load Equipment Control - Vending Machine		20,128	0.0	0.0	\$2,564.31	\$4,140.00	\$0.00	\$4,140.00	1.6	20,269
ECM 15	Vending Machine Control	20,128	0.0	0.0	\$2,564.31	\$4,140.00	\$0.00	\$4,140.00	1.6	20,269
TOTALS		501,637	110.1	73.4	\$65,596.50	\$385,150.90	\$39,103.00	\$346,047.90	5.3	513,740

* - 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
- Check and Seal Duct Leakage
- Perform Proper Lighting Maintenance
- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Ensure Economizers are Functioning Properly
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Plug Load Controls & Replace Computer Monitors
- 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

Hutchinson Mechanical Services

Ed Hutchinson

856-429-5828 x215

edhutchinson@hutchbiz.com

- Pay for Performance (P4P)

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

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 or require voter approval.
- Requires an audit as 1st step (LGEA satisfied this requirement)
- Program administered directly by BPU staff

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

Questions



?



FOR MORE INFORMATION

Visit NJCleanEnergy.com

Call (866) NJSMART

Jim Friedl

Outreach Manager

732-855-6543

jfriedl@trcsolutions.com