

LGEA Presentation

Ramapo College of New Jersey

June 27, 2024



New Jersey's
Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future

INTRODUCTIONS

- *Ramapo College of New Jersey*
 - Alan Kashian
 - Michael Yankovich
 - Robert Cuprys
 - Charles Rigoloso
 - Daniel Rocher
- *NJ Clean Energy Program*
 - Sarah Walters – LGEA Project Manager
 - Moussa Traore – LGEA Technical Manager
 - Ryan Knippenberg – LGEA Project Auditor
 - Amanda Muench – Project Manager I
- *Schneider Electric*
 - Daniel Riggle
 - Samuel Ringelberg

AGENDA

- The audit process overview
- Energy use & existing conditions
- Review of **E**nergy **C**onservation **M**asures (ECMs) identified & other recommendations
- Energy Savings Improvement Program (ESIP)
- Energy Efficiency Incentive Programs
- Questions regarding the draft audit report
- Next steps for Ramapo College

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:

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

Utility Consumption:

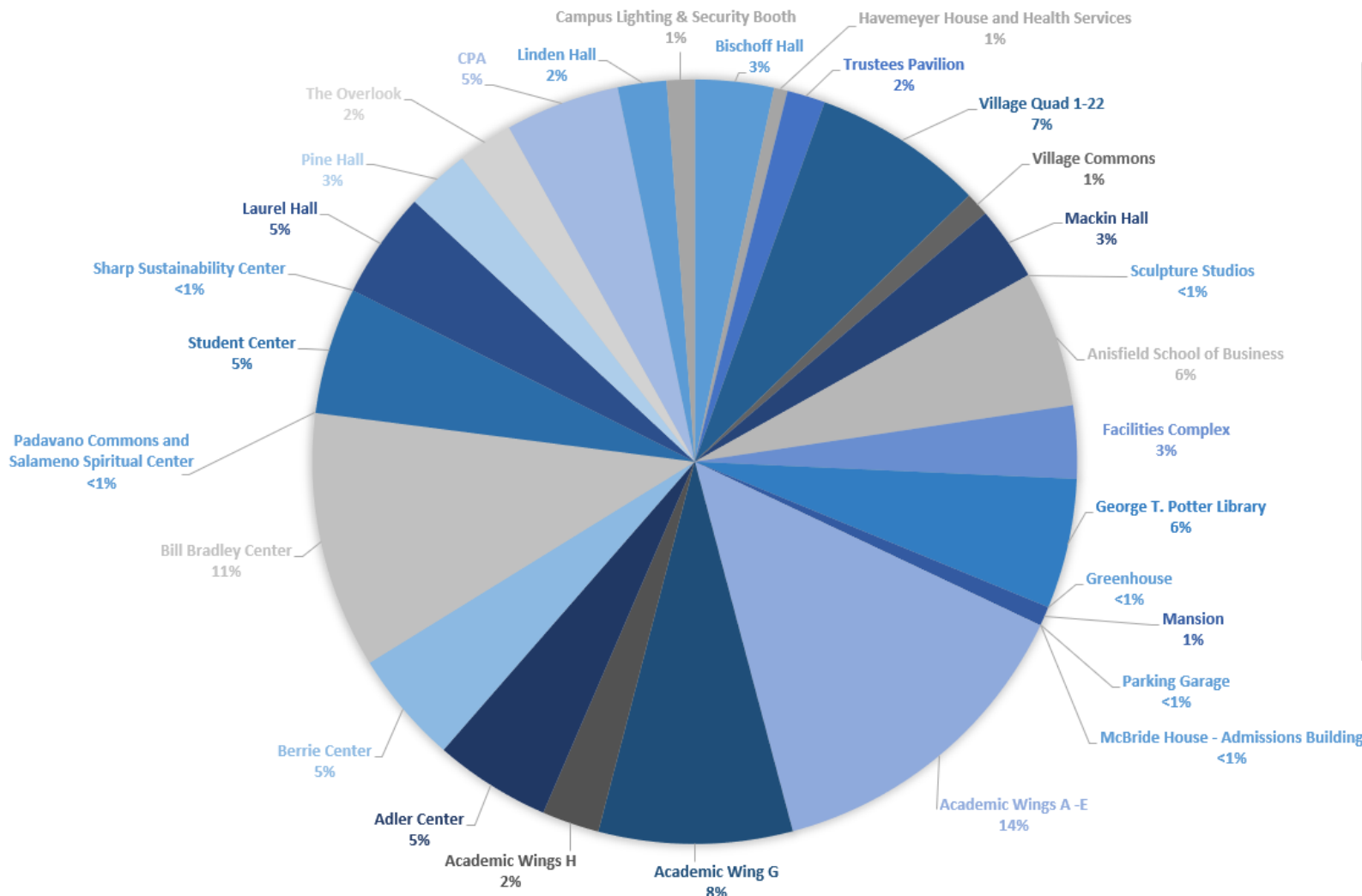
- Electric Consumption and Costs
- Natural Gas Consumption and Costs
- Solar Consumption and Costs

Sites Visited/Analyzed

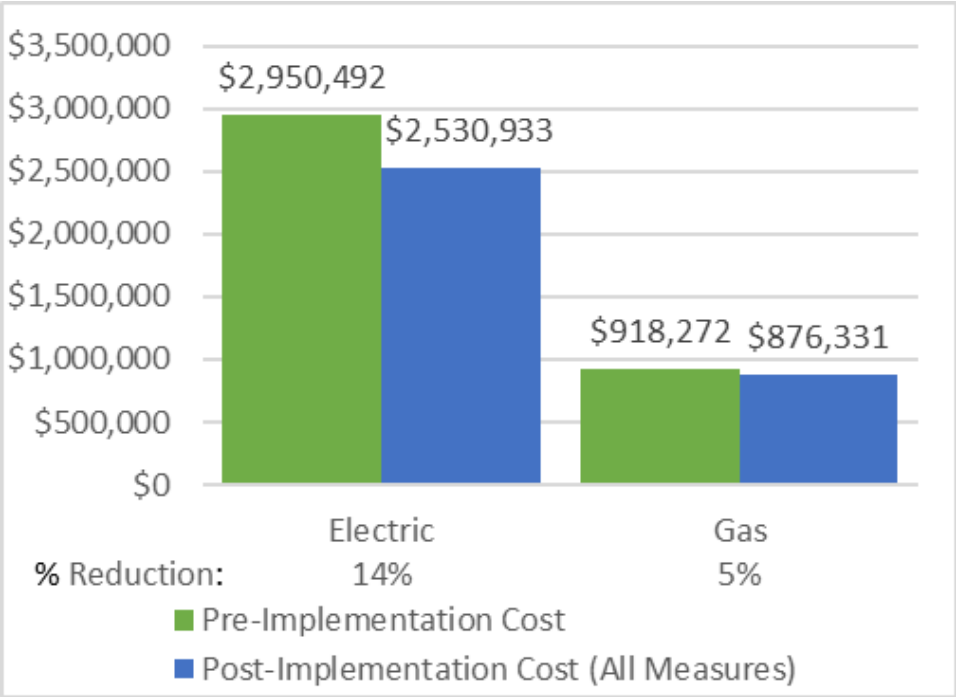
- Biscff Hall
- Havemeyer House & Health Services
- Trustees Pavilion
- Village Quads 1 – 22
- Village Commons
- Mackin Hall
- Sculpture Studios
- Anisfield School of Business
- Facilities Complex
- George T. Potter Library
- Greenhouse
- Mansion
- McBride House/Admissions Building
- Parking Garage
- Academic Wings A-E
- Academic Wing G
- Academic Wing H
- Adler Center
- Bill Bradley Center
- Padavano Commons & Salameno Spiritual Center
- Student Center
- Sharp Sustainability Center
- Laurel Hall
- Pine Hall
- The Overlook
- CPAs/Lodge/Fire Safety Building
- Linden Hall
- Campus Lighting & Security Booth

UTILITY BREAKOUT


Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



BENCHMARKING


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

63

ENERGY STAR® Score¹

Ramapo College - Mackin Hall
 Primary Property Type: Residence Hall/Dormitory
 Gross Floor Area (ft²): 62,400
 Built: 2000
 For Year Ending: May 31, 2022
 Date Generated: February 07, 2024

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

Property & Contact Information		
Property Address Ramapo College - Mackin Hall 505 Ramapo Valley Road Mahwah, New Jersey 07430	Property Owner Ramapo College of New Jersey 505 Ramapo Valley Road Mahwah, NJ 07430 (201) 684-7666	Primary Contact Mike Cunningham 505 Ramapo Valley Road Mahwah, NJ 07430 (201) 684-7666 mcunning@ramapo.edu
Property ID: 26333882		


Energy Consumption and Energy Use Intensity (EUI)		
Site EUI 79 kBtu/ft²	Annual Energy by Fuel Natural Gas (kBtu) 2,606,575 (53%) Electric - Grid (kBtu) 2,147,067 (44%) Electric - Solar (kBtu) 178,337 (4%)	National Median Comparison National Median Site EUI (kBtu/ft²) 92.9 National Median Source EUI (kBtu/ft²) 168.1 % Diff from National Median Source EUI -15% Annual Emissions Total (Location-Based) GHG Emissions (Metric Tons CO2e/year) 205

Signature & Stamp of Verifying Professional

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

LP Signature: _____ Date: _____

Licensed Professional



Professional Engineer or Registered Architect Stamp (if applicable)

Site EUI
79 kBtu/ft²

Source EUI
143.1 kBtu/ft²

National Median Comparison

National Median Site EUI (kBtu/ft²)	92.9
National Median Source EUI (kBtu/ft²)	168.1
% Diff from National Median Source EUI	-15%

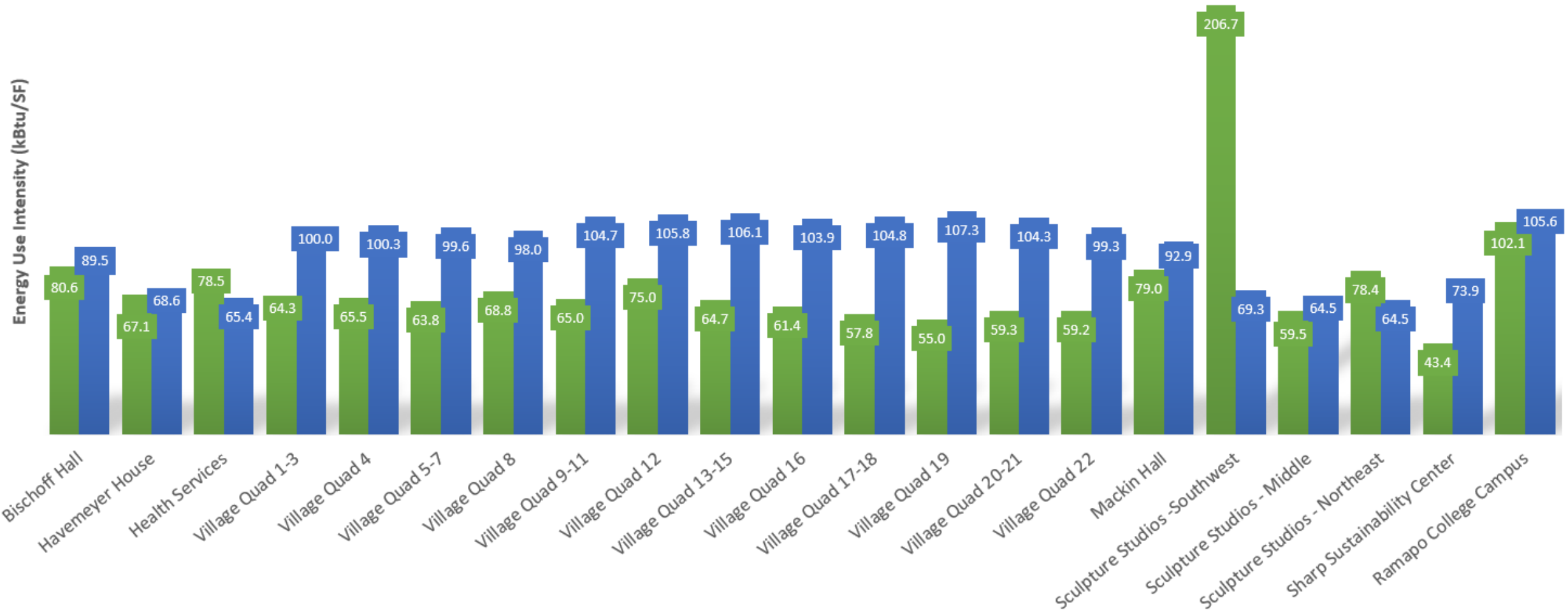
Site Name	ENERGY STAR® Score
Bischoff Hall	59
Havemeyer House	N/A
Health Services	N/A
Village Quad 1-3	83
Village Quad 4	83
Village Quad 5-7	83
Village Quad 8	80
Village Quad 9-11	84
Village Quad 12	79
Village Quad 13-15	85
Village Quad 16	88
Village Quad 17-18	89
Village Quad 19	92
Village Quad 20-21	88
Village Quad 22	87
Mackin Hall	63
Sculpture Studios -Southwest	N/A
Sculpture Studios - Middle	N/A
Sculpture Studios - Northeast	N/A
Sharp Sustainability Center	N/A
Ramapo College Campus	N/A

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

BENCHMARKING

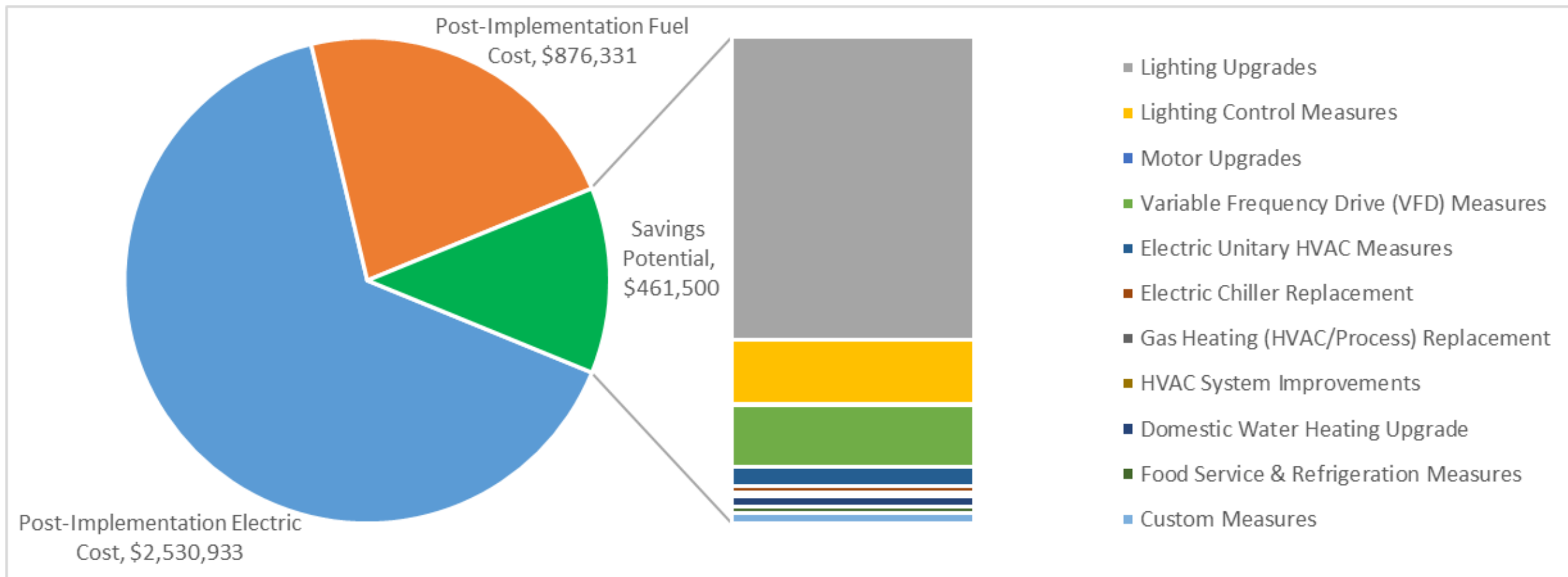
■ Site Energy Use Intensity (kBtu/SF)

■ National Median Energy Use Intensity (kBtu/SF)



ALL OPPORTUNITIES

Savings Potential



ALL OPPORTUNITIES (1 OF 2)

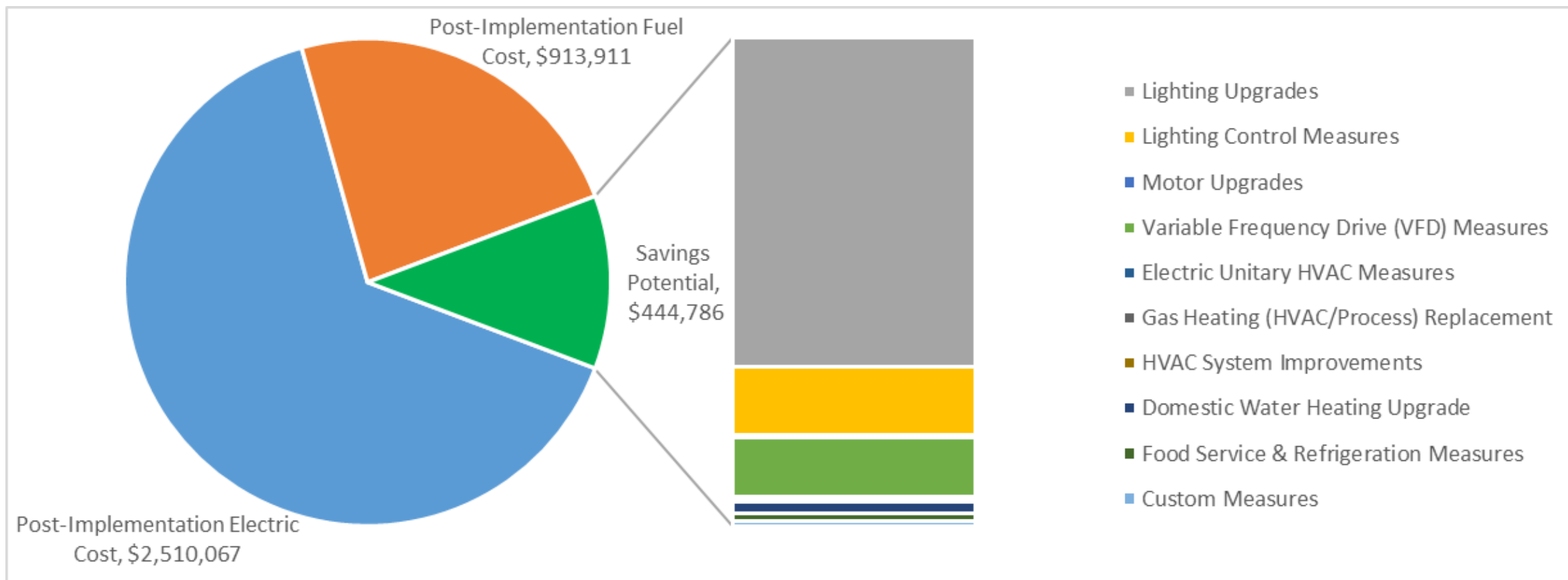
#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		2,212,357	469.5	-370.2	\$299,429	\$972,420	\$170,456	\$801,964	2.7	2,184,477
ECM 1	Install LED Fixtures	365,471	27.8	-37.7	\$49,844	\$179,573	\$21,070	\$158,503	3.2	363,613
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	195,667	63.7	-40.7	\$27,237	\$129,253	\$13,490	\$115,763	4.3	192,267
ECM 3	Retrofit Fixtures with LED Lamps	1,651,055	377.9	-291.8	\$222,326	\$662,508	\$135,896	\$526,612	2.4	1,628,436
ECM 4	Install LED Exit Signs	164	0.0	0.0	\$21	\$1,086	\$0	\$1,086	50.9	161
Lighting Control Measures		478,145	72.8	-90.0	\$63,609	\$441,597	\$123,215	\$318,382	5.0	470,950
ECM 5	Install Occupancy Sensor Lighting Controls	277,151	55.7	-57.8	\$36,860	\$315,822	\$39,790	\$276,032	7.5	272,318
ECM 6	Install Daylight Dimming/Photocell Controls	42,532	0.0	0.0	\$5,745	\$16,200	\$0	\$16,200	2.8	42,830
ECM 7	Install High/Low Lighting Controls	158,461	17.1	-32.2	\$21,004	\$109,575	\$83,425	\$26,150	1.2	155,802
Motor Upgrades		13,700	3.0	0.0	\$1,837	\$19,484	\$0	\$19,484	10.6	13,795
ECM 8	Premium Efficiency Motors	13,700	3.0	0.0	\$1,837	\$19,484	\$0	\$19,484	10.6	13,795
Variable Frequency Drive (VFD) Measures		444,781	84.9	0.0	\$60,499	\$419,371	\$37,375	\$381,996	6.3	447,891
ECM 9	Install VFD on Variable Air Volume (VAV) Fans	40,107	12.0	0.0	\$6,104	\$40,083	\$5,225	\$34,858	5.7	40,388
ECM 10	Install VFDs on Constant Volume (CV) Fans	292,184	57.5	0.0	\$39,404	\$178,554	\$19,450	\$159,104	4.0	294,227
ECM 11	Install VFDs on Chilled Water Pumps	41,258	12.3	0.0	\$5,608	\$95,151	\$8,000	\$87,151	15.5	41,546
ECM 12	Install VFDs on Heating Water Pumps	27,841	2.8	0.0	\$3,609	\$84,356	\$2,300	\$82,056	22.7	28,035
ECM 13	Install VFDs on Process/Pool Filtration Pumps	43,392	0.4	0.0	\$5,775	\$21,226	\$2,400	\$18,826	3.3	43,695
Unitary HVAC Measures		134,810	98.5	43.9	\$19,193	\$726,541	\$39,319	\$687,222	35.8	140,895
ECM 14	Install High Efficiency Air Conditioning Units	129,218	94.8	43.9	\$18,449	\$713,526	\$39,119	\$674,407	36.6	135,265
ECM 15	Install High Efficiency Heat Pumps	5,591	3.7	0.0	\$744	\$13,015	\$200	\$12,815	17.2	5,630

ALL OPPORTUNITIES (2 OF 2)

#	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 ₂ e Emissions Reduction (lbs)
Electric Chiller Replacement		39,624	-12.2	0.0	\$5,528	\$382,125	\$30,690	\$351,435	63.6	39,901
ECM 16	Install High Efficiency Chillers	39,624	-12.2	0.0	\$5,528	\$382,125	\$30,690	\$351,435	63.6	39,901
Gas Heating (HVAC/Process) Replacement		0	0.0	100.5	\$976	\$230,802	\$14,038	\$216,764	222.0	11,769
ECM 17	Install High Efficiency Hot Water Boilers	0	0.0	78.3	\$751	\$212,493	\$13,038	\$199,455	265.6	9,165
ECM 18	Install High Efficiency Furnaces	0	0.0	22.2	\$225	\$18,309	\$1,000	\$17,309	76.8	2,604
HVAC System Improvements		9,644	0.0	212.0	\$3,386	\$18,078	\$457	\$17,621	5.2	34,529
ECM 19	Implement Demand Control Ventilation (DCV)	6,455	0.0	90.8	\$1,856	\$14,954	\$0	\$14,954	8.1	17,136
ECM 20	Install Pipe Insulation	3,189	0.0	121.1	\$1,530	\$3,124	\$457	\$2,667	1.7	17,393
Domestic Water Heating Upgrade		22,845	0.0	737.6	\$10,754	\$70,805	\$11,656	\$59,150	5.5	109,364
ECM 21	Install High Efficiency Gas-Fired Water Heater	0	0.0	21.5	\$218	\$7,643	\$630	\$7,013	32.2	2,521
ECM 22	Install Low-Flow DHW Devices	22,845	0.0	716.0	\$10,536	\$63,163	\$11,026	\$52,137	4.9	106,844
Food Service & Refrigeration Measures		44,907	4.9	0.0	\$6,081	\$18,201	\$1,840	\$16,361	2.7	45,221
ECM 23	Refrigerator/Freezer Case Electrically Commutated Motors	5,657	0.5	0.0	\$775	\$4,853	\$640	\$4,213	5.4	5,696
ECM 24	Refrigeration Controls	1,032	0.0	0.0	\$157	\$3,348	\$150	\$3,198	20.4	1,039
ECM 25	Replace Refrigeration Equipment	3,201	0.4	0.0	\$426	\$1,950	\$0	\$1,950	4.6	3,223
ECM 26	Vending Machine Control	35,017	4.0	0.0	\$4,723	\$8,050	\$1,050	\$7,000	1.5	35,262
Custom Measures		-337,016	0.0	4,003.0	-\$9,793	\$189,722	\$0	\$189,722	-19.4	129,328
ECM 27	Install Laundry Ozone System	0	0.0	36.0	\$350	\$63,210	\$0	\$63,210	180.6	4,215
ECM 28	Replace Electric Water Heater with Heat Pump Water Heater	35,082	0.0	0.0	\$4,723	\$22,743	\$0	\$22,743	4.8	35,327
ECM 29	Replace Gas Fired Water Heater with Heat Pump Water Heater	-372,098	0.0	3,967.0	-\$14,866	\$103,769	\$0	\$103,769	-7.0	89,786
TOTALS		3,063,797	721.3	4,636.7	\$461,500	\$3,489,145	\$429,046	\$3,060,099	6.6	3,628,121

COST EFFECTIVE OPPORTUNITIES

Savings Potential



COST EFFECTIVE OPPORTUNITIES (1 OF 2)

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades		2,212,222	469.5	-370.2	\$299,411	\$971,406	\$170,456	\$800,950	2.7	2,184,344
ECM 1	Install LED Fixtures	365,471	27.8	-37.7	\$49,844	\$179,573	\$21,070	\$158,503	3.2	363,613
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	195,667	63.7	-40.7	\$27,237	\$129,253	\$13,490	\$115,763	4.3	192,267
ECM 3	Retrofit Fixtures with LED Lamps	1,651,055	377.9	-291.8	\$222,326	\$662,508	\$135,896	\$526,612	2.4	1,628,436
ECM 4	Install LED Exit Signs	29	0.0	0.0	\$4	\$72	\$0	\$72	19.1	28
Lighting Control Measures		473,423	70.8	-89.1	\$63,022	\$427,025	\$121,915	\$305,110	4.8	466,300
ECM 5	Install Occupancy Sensor Lighting Controls	272,513	53.7	-56.9	\$36,278	\$301,700	\$38,700	\$263,000	7.2	267,752
ECM 6	Install Daylight Dimming/Photocell Controls	42,532	0.0	0.0	\$5,745	\$16,200	\$0	\$16,200	2.8	42,830
ECM 7	Install High/Low Lighting Controls	158,378	17.1	-32.2	\$20,999	\$109,125	\$83,215	\$25,910	1.2	155,718
Motor Upgrades		13,607	2.9	0.0	\$1,823	\$18,474	\$0	\$18,474	10.1	13,702
ECM 8	Premium Efficiency Motors	13,607	2.9	0.0	\$1,823	\$18,474	\$0	\$18,474	10.1	13,702
Variable Frequency Drive (VFD) Measures		394,083	73.9	0.0	\$53,793	\$259,758	\$30,675	\$229,083	4.3	396,838
ECM 9	Install VFD on Variable Air Volume (VAV) Fans	40,107	12.0	0.0	\$6,104	\$40,083	\$5,225	\$34,858	5.7	40,388
ECM 10	Install VFDs on Constant Volume (CV) Fans	282,261	54.8	0.0	\$38,083	\$144,395	\$18,900	\$125,495	3.3	284,234
ECM 11	Install VFDs on Chilled Water Pumps	24,681	6.3	0.0	\$3,285	\$46,281	\$4,000	\$42,281	12.9	24,854
ECM 12	Install VFDs on Heating Water Pumps	3,641	0.4	0.0	\$546	\$7,774	\$150	\$7,624	14.0	3,667
ECM 13	Install VFDs on Process/Pool Filtration Pumps	43,392	0.4	0.0	\$5,775	\$21,226	\$2,400	\$18,826	3.3	43,695
Unitary HVAC Measures		14,077	5.8	0.0	\$1,873	\$22,262	\$798	\$21,465	11.5	14,175
ECM 14	Install High Efficiency Air Conditioning Units	9,284	3.1	0.0	\$1,236	\$14,308	\$798	\$13,510	10.9	9,349
ECM 15	Install High Efficiency Heat Pumps	4,793	2.7	0.0	\$638	\$7,954	\$0	\$7,954	12.5	4,826

COST EFFECTIVE OPPORTUNITIES (2 OF 2)

#	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 ₂ e Emissions Reduction (lbs)
Gas Heating (HVAC/Process) Replacement		0	0.0	14.0	\$136	\$3,007	\$500	\$2,507	18.4	1,642
ECM 18	Install High Efficiency Furnaces	0	0.0	14.0	\$136	\$3,007	\$500	\$2,507	18.4	1,642
HVAC System Improvements		9,644	0.0	212.0	\$3,386	\$18,078	\$457	\$17,621	5.2	34,529
ECM 19	Implement Demand Control Ventilation (DCV)	6,455	0.0	90.8	\$1,856	\$14,954	\$0	\$14,954	8.1	17,136
ECM 20	Install Pipe Insulation	3,189	0.0	121.1	\$1,530	\$3,124	\$457	\$2,667	1.7	17,393
Domestic Water Heating Upgrade		22,845	0.0	716.0	\$10,536	\$63,163	\$11,026	\$52,137	4.9	106,844
ECM 22	Install Low-Flow DHW Devices	22,845	0.0	716.0	\$10,536	\$63,163	\$11,026	\$52,137	4.9	106,844
Food Service & Refrigeration Measures		44,907	4.9	0.0	\$6,081	\$18,201	\$1,840	\$16,361	2.7	45,221
ECM 23	Refrigerator/Freezer Case Electrically Commutated Motors	5,657	0.5	0.0	\$775	\$4,853	\$640	\$4,213	5.4	5,696
ECM 24	Refrigeration Controls	1,032	0.0	0.0	\$157	\$3,348	\$150	\$3,198	20.4	1,039
ECM 25	Replace Refrigeration Equipment	3,201	0.4	0.0	\$426	\$1,950	\$0	\$1,950	4.6	3,223
ECM 26	Vending Machine Control	35,017	4.0	0.0	\$4,723	\$8,050	\$1,050	\$7,000	1.5	35,262
Custom Measures		35,082	0.0	0.0	\$4,723	\$22,743	\$0	\$22,743	4.8	35,327
ECM 28	Replace Electric Water Heater with Heat Pump Water Heater	35,082	0.0	0.0	\$4,723	\$22,743	\$0	\$22,743	4.8	35,327
TOTALS		3,219,889	627.8	482.7	\$444,786	\$1,824,117	\$337,666	\$1,486,451	3.3	3,298,922

* - All incentives presented in this table are included as placeholders 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).

BISCHOFF HALL

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			43,012	23.8	-7	\$6,200	\$45,357	\$7,757	\$37,600	6.1	42,516
ECM 1	Install LED Fixtures	Yes	10,262	0.0	0	\$1,494	\$5,216	\$650	\$4,566	3.1	10,334
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	9,622	7.2	-2	\$1,382	\$14,144	\$1,400	\$12,744	9.2	9,454
ECM 3	Retrofit Fixtures with LED Lamps	Yes	23,128	16.7	-5	\$3,323	\$25,997	\$5,707	\$20,290	6.1	22,729
Lighting Control Measures			5,532	3.0	-1	\$795	\$12,049	\$3,460	\$8,589	10.8	5,435
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	3,281	2.2	-1	\$471	\$6,874	\$450	\$6,424	13.6	3,224
ECM 5	Install High/Low Lighting Controls	Yes	2,251	0.8	0	\$323	\$5,175	\$3,010	\$2,165	6.7	2,212
Variable Frequency Drive (VFD) Measures			35,331	7.4	0	\$5,143	\$26,371	\$4,000	\$22,371	4.3	35,578
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	31,858	4.4	0	\$4,638	\$13,185	\$2,000	\$11,185	2.4	32,081
ECM 7	Install VFDs on Chilled Water Pumps	No	3,473	3.0	0	\$506	\$13,185	\$2,000	\$11,185	22.1	3,497
Unitary HVAC Measures			3,934	4.7	5	\$617	\$54,701	\$3,404	\$51,298	83.1	4,533
ECM 8	Install High Efficiency Air Conditioning Units	No	3,934	4.7	5	\$617	\$54,701	\$3,404	\$51,298	83.1	4,533
Electric Chiller Replacement			15,134	0.0	0	\$2,203	\$97,965	\$9,000	\$88,965	40.4	15,240
ECM 9	Install High Efficiency Chillers	No	15,134	0.0	0	\$2,203	\$97,965	\$9,000	\$88,965	40.4	15,240
HVAC System Improvements			802	0.0	41	\$489	\$5,704	\$40	\$5,664	11.6	5,597
ECM 10	Implement Demand Control Ventilation (DCV)	Yes	802	0.0	25	\$345	\$5,438	\$0	\$5,438	15.8	3,742
ECM 11	Install Pipe Insulation	Yes	0	0.0	16	\$144	\$266	\$40	\$226	1.6	1,855
Domestic Water Heating Upgrade			0	0.0	81	\$737	\$11,520	\$1,935	\$9,585	13.0	9,469
ECM 12	Install Low-Flow DHW Devices	Yes	0	0.0	81	\$737	\$11,520	\$1,935	\$9,585	13.0	9,469
Food Service & Refrigeration Measures			1,954	0.2	0	\$285	\$460	\$50	\$410	1.4	1,968
ECM 13	Vending Machine Control	Yes	1,954	0.2	0	\$285	\$460	\$50	\$410	1.4	1,968
TOTALS (COST EFFECTIVE MEASURES)			83,158	31.5	114	\$13,143	\$88,275	\$15,242	\$73,033	5.6	97,066
TOTALS (ALL MEASURES)			105,700	39.1	119	\$16,469	\$254,126	\$29,646	\$224,481	13.6	120,336

* - 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).

HAVEMEYER HOUSE AND HEALTH SERVICES

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			27,966	9.6	-6	\$4,870	\$7,554	\$739	\$6,815	1.4	27,478
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	662	0.2	0	\$115	\$305	\$50	\$255	2.2	650
ECM 2	Retrofit Fixtures with LED Lamps	Yes	27,304	9.4	-6	\$4,755	\$7,248	\$689	\$6,559	1.4	26,828
Lighting Control Measures			2,170	0.7	0	\$378	\$6,839	\$1,570	\$5,269	13.9	2,132
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	1,582	0.6	0	\$276	\$5,714	\$695	\$5,019	18.2	1,554
ECM 4	Install High/Low Lighting Controls	Yes	588	0.2	0	\$102	\$1,125	\$875	\$250	2.4	578
Unitary HVAC Measures			3,798	3.7	0	\$669	\$49,341	\$2,630	\$46,711	69.8	3,824
ECM 5	Install High Efficiency Air Conditioning Units	No	3,798	3.7	0	\$669	\$49,341	\$2,630	\$46,711	69.8	3,824
Gas Heating (HVAC/Process) Replacement			0	0.0	24	\$237	\$24,731	\$1,050	\$23,681	100.1	2,841
ECM 6	Install High Efficiency Hot Water Boilers	No	0	0.0	24	\$237	\$24,731	\$1,050	\$23,681	100.1	2,841
HVAC System Improvements			0	0.0	2	\$21	\$52	\$8	\$44	2.1	250
ECM 7	Install Pipe Insulation	Yes	0	0.0	2	\$21	\$52	\$8	\$44	2.1	250
Domestic Water Heating Upgrade			344	0.0	1	\$71	\$297	\$55	\$242	3.4	474
ECM 8	Install Low-Flow DHW Devices	Yes	344	0.0	1	\$71	\$297	\$55	\$242	3.4	474
Custom Measures			378	0.0	9	\$155	\$5,706	\$0	\$5,706	36.8	1,434
ECM 9	Replace Electric Water Heater with Heat Pump Water Heater	Yes	1,231	0.0	0	\$217	\$3,323	\$0	\$3,323	15.3	1,240
ECM 10	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-853	0.0	9	-\$62	\$2,383	\$0	\$2,383	-38.4	195
TOTALS (COST EFFECTIVE MEASURES)			31,711	10.3	-3	\$5,557	\$18,065	\$2,372	\$15,693	2.8	31,574
TOTALS (ALL MEASURES)			34,656	14.0	30	\$6,401	\$94,519	\$6,052	\$88,468	13.8	38,434

* - 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).

TRUSTEES PAVILION

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			38,517	5.1	-6	\$5,800	\$12,905	\$2,415	\$10,490	1.8	38,123
ECM 1	Install LED Fixtures	Yes	6,771	0.0	0	\$1,030	\$3,452	\$450	\$3,002	2.9	6,819
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	394	0.1	0	\$59	\$257	\$40	\$217	3.7	387
ECM 3	Retrofit Fixtures with LED Lamps	Yes	31,352	5.0	-6	\$4,711	\$9,196	\$1,925	\$7,271	1.5	30,918
Lighting Control Measures			11,586	2.1	-2	\$1,737	\$8,294	\$1,805	\$6,489	3.7	11,383
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	10,212	1.9	-2	\$1,531	\$6,944	\$825	\$6,119	4.0	10,033
ECM 5	Install High/Low Lighting Controls	Yes	1,374	0.2	0	\$206	\$1,350	\$980	\$370	1.8	1,350
Motor Upgrades			93	0.1	0	\$14	\$1,009	\$0	\$1,009	71.4	94
ECM 6	Premium Efficiency Motors	No	93	0.1	0	\$14	\$1,009	\$0	\$1,009	71.4	94
Variable Frequency Drive (VFD) Measures			40,107	12.0	0	\$6,104	\$40,083	\$5,225	\$34,858	5.7	40,388
ECM 7	Install VFD on Variable Air Volume (VAV) Fans	Yes	40,107	12.0	0	\$6,104	\$40,083	\$5,225	\$34,858	5.7	40,388
Unitary HVAC Measures			29,778	24.8	7	\$4,604	\$153,583	\$8,935	\$144,648	31.4	30,769
ECM 8	Install High Efficiency Air Conditioning Units	No	29,778	24.8	7	\$4,604	\$153,583	\$8,935	\$144,648	31.4	30,769
Gas Heating (HVAC/Process) Replacement			0	0.0	8	\$89	\$15,302	\$500	\$14,802	166.4	962
ECM 9	Install High Efficiency Furnaces	No	0	0.0	8	\$89	\$15,302	\$500	\$14,802	166.4	962
HVAC System Improvements			4,428	0.0	31	\$1,005	\$6,850	\$8	\$6,842	6.8	8,040
ECM 10	Implement Demand Control Ventilation (DCV)	Yes	4,428	0.0	28	\$977	\$6,797	\$0	\$6,797	7.0	7,739
ECM 11	Install Pipe Insulation	Yes	0	0.0	3	\$28	\$53	\$8	\$45	1.6	301
Domestic Water Heating Upgrade			0	0.0	5	\$58	\$100	\$45	\$55	0.9	627
ECM 12	Install Low-Flow DHW Devices	Yes	0	0.0	5	\$58	\$100	\$45	\$55	0.9	627
Food Service & Refrigeration Measures			2,195	0.2	0	\$334	\$4,865	\$350	\$4,515	13.5	2,211
ECM 13	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	1,163	0.1	0	\$177	\$1,517	\$200	\$1,317	7.4	1,171
ECM 14	Refrigeration Controls	Yes	1,032	0.0	0	\$157	\$3,348	\$150	\$3,198	20.4	1,039
Custom Measures			-1,970	0.0	21	-\$72	\$2,070	\$0	\$2,070	-28.7	475
ECM 15	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-1,970	0.0	21	-\$72	\$2,070	\$0	\$2,070	-28.7	475
TOTALS (COST EFFECTIVE MEASURES)			96,833	19.4	28	\$15,038	\$73,097	\$9,848	\$63,249	4.2	100,772
TOTALS (ALL MEASURES)			124,734	44.3	64	\$19,673	\$245,062	\$19,283	\$225,779	11.5	133,072

* - 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).

*** - Negative payback explained in section 4.10.

VILLAGE QUADS 1-22

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			185,394	66.4	-35	\$29,186	\$119,084	\$19,148	\$99,936	3.4	182,564
ECM 1	Install LED Fixtures	Yes	35,308	3.2	-4	\$5,593	\$18,360	\$2,600	\$15,760	2.8	35,134
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	52,047	16.9	-11	\$8,180	\$27,379	\$2,710	\$24,669	3.0	51,113
ECM 3	Retrofit Fixtures with LED Lamps	Yes	98,039	46.3	-21	\$15,412	\$73,345	\$13,838	\$59,507	3.9	96,316
Lighting Control Measures			7,642	2.6	-2	\$1,201	\$35,640	\$4,620	\$31,020	25.8	7,505
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	7,642	2.6	-2	\$1,201	\$35,640	\$4,620	\$31,020	25.8	7,505
Domestic Water Heating Upgrade			0	0.0	456	\$5,044	\$26,626	\$4,692	\$21,934	4.3	53,353
ECM 5	Install Low-Flow DHW Devices	Yes	0	0.0	456	\$5,044	\$26,626	\$4,692	\$21,934	4.3	53,353
Custom Measures			-218,702	0.0	2,332	-\$9,074	\$73,800	\$0	\$73,800	-8.1	52,817
ECM 6	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-218,702	0.0	2,332	-\$9,074	\$73,800	\$0	\$73,800	-8.1	52,817
TOTALS (COST EFFECTIVE MEASURES)			193,036	69.0	419	\$35,431	\$181,350	\$28,460	\$152,890	4.3	243,421
TOTALS (ALL MEASURES)			-25,666	69.0	2,751	\$26,357	\$255,150	\$28,460	\$226,690	8.6	296,238

* - 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).

*** - Negative Payback explained in section 4.4.

VILLAGE COMMONS

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			13,486	2.2	-2	\$2,007	\$5,849	\$1,765	\$4,084	2.0	13,399
ECM 1	Install LED Fixtures	Yes	6,600	0.3	0	\$988	\$1,975	\$1,020	\$955	1.0	6,624
ECM 2	Retrofit Fixtures with LED Lamps	Yes	6,885	1.9	-1	\$1,019	\$3,874	\$745	\$3,129	3.1	6,775
Lighting Control Measures			3,420	0.6	-1	\$506	\$3,337	\$705	\$2,632	5.2	3,360
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	1,806	0.5	0	\$267	\$3,112	\$565	\$2,547	9.5	1,775
ECM 4	Install High/Low Lighting Controls	Yes	1,614	0.1	0	\$239	\$225	\$140	\$85	0.4	1,585
Motor Upgrades			710	0.1	0	\$107	\$1,676	\$0	\$1,676	15.7	715
ECM 5	Premium Efficiency Motors	Yes	710	0.1	0	\$107	\$1,676	\$0	\$1,676	15.7	715
Variable Frequency Drive (VFD) Measures			3,641	0.4	0	\$546	\$7,774	\$150	\$7,624	14.0	3,667
ECM 6	Install VFDs on Heating Water Pumps	Yes	3,641	0.4	0	\$546	\$7,774	\$150	\$7,624	14.0	3,667
Gas Heating (HVAC/Process) Replacement			0	0.0	32	\$309	\$22,263	\$1,400	\$20,863	67.6	3,714
ECM 7	Install High Efficiency Hot Water Boilers	No	0	0.0	18	\$172	\$19,256	\$900	\$18,356	106.5	2,073
ECM 8	Install High Efficiency Furnaces	Yes	0	0.0	14	\$136	\$3,007	\$500	\$2,507	18.4	1,642
HVAC System Improvements			205	0.0	0	\$31	\$36	\$3	\$33	1.1	207
ECM 9	Install Pipe Insulation	Yes	205	0.0	0	\$31	\$36	\$3	\$33	1.1	207
Domestic Water Heating Upgrade			393	0.0	3	\$85	\$154	\$43	\$111	1.3	706
ECM 10	Install Low-Flow DHW Devices	Yes	393	0.0	3	\$85	\$154	\$43	\$111	1.3	706
Food Service & Refrigeration Measures			1,612	0.2	0	\$242	\$230	\$50	\$180	0.7	1,623
ECM 11	Vending Machine Control	Yes	1,612	0.2	0	\$242	\$230	\$50	\$180	0.7	1,623
Custom Measures			-11,817	0.0	162	-\$195	\$67,160	\$0	\$67,160	-344.4	7,069
ECM 12	Install Laundry Ozone System	No	0	0	36	\$350	\$63,210	\$0	\$63,210	180.6	4,215
ECM 13	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-11,817	0.0	126	-\$545	\$3,950	\$0	\$3,950	-7.2	2,853
TOTALS (COST EFFECTIVE MEASURES)			23,468	3.5	14	\$3,658	\$22,063	\$3,216	\$18,847	5.2	25,318
TOTALS (ALL MEASURES)			11,651	3.5	194	\$3,636	\$108,478	\$4,115	\$104,363	28.7	34,460

* - 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).

*** - Negative Payback explained in Section 4.9.

MACKIN HALL

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			147,799	33.7	-20	\$20,307	\$63,866	\$9,643	\$54,223	2.7	146,512
ECM 1	Install LED Fixtures	Yes	54,435	0.0	0	\$7,549	\$14,954	\$1,750	\$13,204	1.7	54,815
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	27,188	12.6	-6	\$3,715	\$20,307	\$2,010	\$18,297	4.9	26,700
ECM 3	Retrofit Fixtures with LED Lamps	Yes	66,177	21.1	-14	\$9,042	\$28,605	\$5,883	\$22,722	2.5	64,997
Lighting Control Measures			30,018	2.8	-5	\$4,119	\$14,324	\$6,830	\$7,494	1.8	29,698
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	2,027	1.0	0	\$277	\$3,974	\$390	\$3,584	12.9	1,991
ECM 5	Install Photocell Controls	Yes	8,751	0.0	0	\$1,214	\$1,800	\$0	\$1,800	1.5	8,812
ECM 6	Install High/Low Lighting Controls	Yes	19,239	1.8	-4	\$2,629	\$8,550	\$6,440	\$2,110	0.8	18,894
Variable Frequency Drive (VFD) Measures			34,536	7.4	0	\$4,790	\$47,566	\$4,000	\$43,566	9.1	34,778
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	21,432	4.4	0	\$2,972	\$11,881	\$2,000	\$9,881	3.3	21,582
ECM 8	Install VFDs on Chilled Water Pumps	No	13,104	3.0	0	\$1,817	\$35,685	\$2,000	\$33,685	18.5	13,195
Unitary HVAC Measures			8,613	7.3	7	\$1,264	\$51,427	\$3,325	\$48,102	38.0	9,519
ECM 9	Install High Efficiency Air Conditioning Units	No	8,613	7.3	7	\$1,264	\$51,427	\$3,325	\$48,102	38.0	9,519
Electric Chiller Replacement			11,717	0.0	0	\$1,625	\$126,034	\$9,000	\$117,034	72.0	11,799
ECM 10	Install High Efficiency Chillers	No	11,717	0.0	0	\$1,625	\$126,034	\$9,000	\$117,034	72.0	11,799
HVAC System Improvements			1,225	0.0	38	\$534	\$2,719	\$0	\$2,719	5.1	5,655
ECM 11	Implement Demand Control Ventilation (DCV)	Yes	1,225	0.0	38	\$534	\$2,719	\$0	\$2,719	5.1	5,655
Domestic Water Heating Upgrade			0	0.0	101	\$975	\$11,520	\$1,935	\$9,585	9.8	11,836
ECM 12	Install Low-Flow DHW Devices	Yes	0	0.0	101	\$975	\$11,520	\$1,935	\$9,585	9.8	11,836
Food Service & Refrigeration Measures			1,954	0.2	0	\$271	\$460	\$50	\$410	1.5	1,968
ECM 13	Vending Machine Control	Yes	1,954	0.2	0	\$271	\$460	\$50	\$410	1.5	1,968
Custom Measures			-38,771	0.0	413	-\$1,392	\$3,950	\$0	\$3,950	-2.8	9,315
ECM 14	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-38,771	0.0	413	-\$1,392	\$3,950	\$0	\$3,950	-2.8	9,315
TOTALS (COST EFFECTIVE MEASURES)			202,429	41.1	115	\$29,179	\$104,769	\$20,458	\$84,311	2.9	217,251
TOTALS (ALL MEASURES)			197,092	51.4	535	\$32,493	\$321,865	\$34,783	\$287,082	8.8	261,080

SCULPTURE STUDIOS

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			20,921	2.7	-3	\$2,563	\$7,481	\$1,362	\$6,119	2.4	20,718
ECM 1	Install LED Fixtures	Yes	6,561	0.0	0	\$815	\$3,639	\$600	\$3,039	3.7	6,607
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	9,225	1.8	-2	\$1,123	\$2,319	\$350	\$1,969	1.8	9,064
ECM 3	Retrofit Fixtures with LED Lamps	Yes	5,135	1.0	-1	\$625	\$1,524	\$412	\$1,112	1.8	5,047
Lighting Control Measures			2,572	0.5	-1	\$313	\$2,316	\$290	\$2,026	6.5	2,527
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	2,572	0.5	-1	\$313	\$2,316	\$290	\$2,026	6.5	2,527
Unitary HVAC Measures			1,286	0.6	1	\$170	\$13,373	\$474	\$12,899	76.0	1,389
ECM 5	Install High Efficiency Air Conditioning Units	No	1,286	0.6	1	\$170	\$13,373	\$474	\$12,899	76.0	1,389
HVAC System Improvements			103	0.0	0	\$15	\$143	\$24	\$119	7.8	128
ECM 6	Install Pipe Insulation	Yes	103	0.0	0	\$15	\$143	\$24	\$119	7.8	128
Custom Measures			-197	0.0	2	\$0	\$1,757	\$0	\$1,757	N/A	36
ECM 7	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-197	0.0	2	\$0	\$1,757	\$0	\$1,757	N/A	36
TOTALS (COST EFFECTIVE MEASURES)			23,595	3.2	-3	\$2,891	\$9,940	\$1,676	\$8,264	2.9	23,373
TOTALS (ALL MEASURES)			24,684	3.9	-1	\$3,061	\$25,071	\$2,150	\$22,921	7.5	24,798

* - 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).

*** - N/A Payback explained in Section 4.5.

ANISFIELD SCHOOL OF BUSINESS

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			96,950	29.3	-20	\$12,744	\$45,110	\$8,807	\$36,303	2.8	95,339
ECM 1	Retrofit Fixtures with LED Lamps	Yes	96,950	29.3	-20	\$12,744	\$45,110	\$8,807	\$36,303	2.8	95,339
Lighting Control Measures			15,904	3.8	-3	\$2,091	\$23,524	\$3,820	\$19,704	9.4	15,645
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	13,680	3.6	-3	\$1,797	\$21,574	\$2,910	\$18,664	10.4	13,441
ECM 3	Install Photocell Controls	Yes	797	0.0	0	\$106	\$600	\$0	\$600	5.7	803
ECM 4	Install High/Low Lighting Controls	Yes	1,426	0.3	0	\$187	\$1,350	\$910	\$440	2.3	1,401
HVAC System Improvements			0	0.0	14	\$111	\$400	\$60	\$340	3.1	1,598
ECM 5	Install Pipe Insulation	Yes	0	0.0	14	\$111	\$400	\$60	\$340	3.1	1,598
Domestic Water Heating Upgrade			114	0.0	0	\$15	\$14	\$4	\$10	0.7	115
ECM 6	Install Low-Flow DHW Devices	Yes	114	0.0	0	\$15	\$14	\$4	\$10	0.7	115
Food Service & Refrigeration Measures			3,506	0.4	0	\$467	\$920	\$100	\$820	1.8	3,530
ECM 7	Vending Machine Control	Yes	3,506	0.4	0	\$467	\$920	\$100	\$820	1.8	3,530
Custom Measures			12,309	0.0	0	\$1,638	\$2,380	\$0	\$2,380	1.5	12,395
ECM 8	Replace Electric Water Heater with Heat Pump Water Heater	Yes	12,309	0.0	0	\$1,638	\$2,380	\$0	\$2,380	1.5	12,395
TOTALS (COST EFFECTIVE MEASURES)			128,782	33.5	-9	\$17,066	\$72,348	\$12,791	\$59,557	3.5	128,623
TOTALS (ALL MEASURES)			128,782	33.5	-9	\$17,066	\$72,348	\$12,791	\$59,557	3.5	128,623

* - 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).

FACILITIES COMPLEX

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			53,910	6.8	-8	\$7,106	\$17,865	\$3,238	\$14,627	2.1	53,298
ECM 1	Install LED Fixtures	Yes	13,504	0.0	0	\$1,797	\$6,464	\$850	\$5,614	3.1	13,598
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	4,553	1.7	-1	\$598	\$3,857	\$540	\$3,317	5.5	4,474
ECM 3	Retrofit Fixtures with LED Lamps	Yes	35,853	5.1	-7	\$4,711	\$7,544	\$1,848	\$5,696	1.2	35,226
Lighting Control Measures			13,610	2.2	-3	\$1,788	\$13,606	\$1,670	\$11,936	6.7	13,372
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	13,460	2.2	-3	\$1,769	\$13,156	\$1,425	\$11,731	6.6	13,225
ECM 5	Install High/Low Lighting Controls	Yes	149	0.0	0	\$20	\$450	\$245	\$205	10.4	147
HVAC System Improvements			718	0.0	0	\$96	\$239	\$40	\$199	2.1	723
ECM 6	Install Pipe Insulation	Yes	718	0.0	0	\$96	\$239	\$40	\$199	2.1	723
Domestic Water Heating Upgrade			204	0.0	0	\$27	\$14	\$6	\$9	0.3	206
ECM 7	Install Low-Flow DHW Devices	Yes	204	0.0	0	\$27	\$14	\$6	\$9	0.3	206
Food Service & Refrigeration Measures			1,954	0.2	0	\$260	\$460	\$50	\$410	1.6	1,968
ECM 8	Vending Machine Control	Yes	1,954	0.2	0	\$260	\$460	\$50	\$410	1.6	1,968
Custom Measures			3,693	0.0	0	\$492	\$3,760	\$0	\$3,760	7.6	3,719
ECM 9	Replace Electric Water Heater with Heat Pump Water Heater	Yes	3,693	0.0	0	\$492	\$3,760	\$0	\$3,760	7.6	3,719
TOTALS (COST EFFECTIVE MEASURES)			74,090	9.2	-11	\$9,769	\$35,944	\$5,004	\$30,941	3.2	73,285
TOTALS (ALL MEASURES)			74,090	9.2	-11	\$9,769	\$35,944	\$5,004	\$30,941	3.2	73,285

* - 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).

GEORGE T. POTTER LIBRARY

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			624	0.1	0	\$82	\$146	\$40	\$106	1.3	613
ECM 1	Retrofit Fixtures with LED Lamps	Yes	624	0.1	0	\$82	\$146	\$40	\$106	1.3	613
Lighting Control Measures			6,175	0.7	-1	\$811	\$4,940	\$635	\$4,305	5.3	6,067
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	6,175	0.7	-1	\$811	\$4,940	\$635	\$4,305	5.3	6,067
Food Service & Refrigeration Measures			1,551	0.2	0	\$206	\$460	\$50	\$410	2.0	1,562
ECM 3	Vending Machine Control	Yes	1,551	0.2	0	\$206	\$460	\$50	\$410	2.0	1,562
TOTALS (COST EFFECTIVE MEASURES)			8,351	1.0	-1	\$1,100	\$5,546	\$725	\$4,821	4.4	8,243
TOTALS (ALL MEASURES)			8,351	1.0	-1	\$1,100	\$5,546	\$725	\$4,821	4.4	8,243

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

GREENHOUSE

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			2,209	0.9	0	\$289	\$1,237	\$230	\$1,007	3.5	2,178
ECM 1	Retrofit Fixtures with LED Lamps	Yes	2,209	0.9	0	\$289	\$1,237	\$230	\$1,007	3.5	2,178
Lighting Control Measures			78	0.0	0	\$10	\$116	\$20	\$96	9.4	77
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	78	0.0	0	\$10	\$116	\$20	\$96	9.4	77
TOTALS (COST EFFECTIVE MEASURES)			2,287	0.9	0	\$300	\$1,353	\$250	\$1,103	3.7	2,255
TOTALS (ALL MEASURES)			2,287	0.9	0	\$300	\$1,353	\$250	\$1,103	3.7	2,255

* - 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).

MANSION

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			16,385	3.8	-3	\$2,125	\$9,899	\$1,676	\$8,223	3.9	16,172
ECM 1	Install LED Fixtures	Yes	3,497	0.1	0	\$463	\$3,372	\$540	\$2,832	6.1	3,510
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	4,753	1.5	-1	\$613	\$3,104	\$414	\$2,690	4.4	4,670
ECM 3	Retrofit Fixtures with LED Lamps	Yes	8,057	2.2	-2	\$1,039	\$2,843	\$722	\$2,121	2.0	7,916
ECM 4	Install LED Exit Signs	No	77	0.0	0	\$10	\$579	\$0	\$579	58.3	76
Lighting Control Measures			4,810	1.3	-1	\$620	\$10,359	\$2,100	\$8,259	13.3	4,726
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	3,714	1.1	-1	\$479	\$8,334	\$980	\$7,354	15.4	3,649
ECM 6	Install High/Low Lighting Controls	Yes	1,097	0.2	0	\$141	\$2,025	\$1,120	\$905	6.4	1,077
Variable Frequency Drive (VFD) Measures			27,064	6.0	0	\$3,602	\$68,550	\$2,550	\$66,000	18.3	27,253
ECM 7	Install VFDs on Constant Volume (CV) Fans	No	9,923	2.7	0	\$1,321	\$34,159	\$550	\$33,609	25.4	9,992
ECM 8	Install VFDs on Chilled Water Pumps	Yes	17,141	3.3	0	\$2,281	\$34,390	\$2,000	\$32,390	14.2	17,261
Electric Chiller Replacement			4,459	-4.6	0	\$593	\$65,119	\$4,500	\$60,619	102.2	4,490
ECM 9	Install High Efficiency Chillers	No	4,459	-4.6	0	\$593	\$65,119	\$4,500	\$60,619	102.2	4,490
HVAC System Improvements			410	0.0	0	\$55	\$239	\$40	\$199	3.6	413
ECM 10	Install Pipe Insulation	Yes	410	0.0	0	\$55	\$239	\$40	\$199	3.6	413
Domestic Water Heating Upgrade			442	0.0	0	\$59	\$36	\$15	\$21	0.4	445
ECM 11	Install Low-Flow DHW Devices	Yes	442	0.0	0	\$59	\$36	\$15	\$21	0.4	445
Custom Measures			2,462	0.0	0	\$328	\$2,070	\$0	\$2,070	6.3	2,479
ECM 12	Replace Electric Water Heater with Heat Pump Water Heater	Yes	2,462	0.0	0	\$328	\$2,070	\$0	\$2,070	6.3	2,479
TOTALS (COST EFFECTIVE MEASURES)			41,573	8.3	-4	\$5,457	\$56,413	\$5,831	\$50,583	9.3	41,421
TOTALS (ALL MEASURES)			56,032	6.5	-4	\$7,381	\$156,271	\$10,881	\$145,390	19.7	55,979

* - 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).

McBRIDE HOUSE - ADMISSIONS BUILDING

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			6,080	1.6	-1	\$794	\$3,941	\$740	\$3,201	4.0	5,981
ECM 1	Install LED Fixtures	Yes	324	0.0	0	\$43	\$206	\$50	\$156	3.6	326
ECM 2	Retrofit Fixtures with LED Lamps	Yes	5,755	1.6	-1	\$751	\$3,735	\$690	\$3,045	4.1	5,655
Lighting Control Measures			1,407	0.4	0	\$184	\$2,759	\$675	\$2,084	11.4	1,382
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	1,037	0.3	0	\$135	\$2,084	\$290	\$1,794	13.3	1,019
ECM 4	Install High/Low Lighting Controls	Yes	369	0.1	0	\$48	\$675	\$385	\$290	6.0	363
Unitary HVAC Measures			898	0.6	0	\$120	\$6,305	\$294	\$6,012	50.3	904
ECM 5	Install High Efficiency Air Conditioning Units	No	898	0.6	0	\$120	\$6,305	\$294	\$6,012	50.3	904
TOTALS (COST EFFECTIVE MEASURES)			7,486	2.0	-1	\$978	\$6,700	\$1,415	\$5,285	5.4	7,363
TOTALS (ALL MEASURES)			8,384	2.6	-1	\$1,097	\$13,005	\$1,709	\$11,297	10.3	8,267

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

PARKING GARAGE

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			29,390	0.3	0	\$3,911	\$8,438	\$74	\$8,364	2.1	29,595
ECM 1	Retrofit Fixtures with LED Lamps	Yes	29,390	0.3	0	\$3,911	\$8,438	\$74	\$8,364	2.1	29,595
Lighting Control Measures			6,563	0.1	0	\$873	\$4,295	\$2,220	\$2,075	2.4	6,609
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	394	0.0	0	\$52	\$270	\$0	\$270	5.2	397
ECM 3	Install Photocell Controls	Yes	1,314	0.0	0	\$175	\$200	\$0	\$200	1.1	1,323
ECM 4	Install High/Low Lighting Controls	Yes	4,855	0.0	0	\$646	\$3,825	\$2,220	\$1,605	2.5	4,889
TOTALS (COST EFFECTIVE MEASURES)			35,953	0.4	0	\$4,785	\$12,733	\$2,294	\$10,439	2.2	36,204
TOTALS (ALL MEASURES)			35,953	0.4	0	\$4,785	\$12,733	\$2,294	\$10,439	2.2	36,204

* - 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).

ACADEMIC WINGS A - E

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			248,476	50.2	-47	\$32,690	\$96,653	\$19,943	\$76,710	2.3	244,748
ECM 1	Install LED Fixtures	Yes	10,170	0.0	0	\$1,354	\$7,763	\$800	\$6,963	5.1	10,241
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	32,607	8.3	-7	\$4,284	\$18,491	\$2,662	\$15,829	3.7	32,036
ECM 3	Retrofit Fixtures with LED Lamps	Yes	205,641	41.9	-40	\$27,045	\$69,965	\$16,481	\$53,484	2.0	202,414
ECM 4	Install LED Exit Signs	No	58	0.0	0	\$8	\$434	\$0	\$434	57.2	57
Lighting Control Measures			82,428	12.8	-15	\$10,845	\$90,231	\$26,090	\$64,141	5.9	81,194
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	44,940	10.0	-9	\$5,905	\$61,056	\$8,380	\$52,676	8.9	44,154
ECM 6	Install Photocell Controls	Yes	8,462	0.0	0	\$1,126	\$7,800	\$0	\$7,800	6.9	8,521
ECM 7	Install High/Low Lighting Controls	Yes	29,026	2.9	-6	\$3,814	\$21,375	\$17,710	\$3,665	1.0	28,518
Unitary HVAC Measures			9,284	3.1	0	\$1,236	\$14,308	\$798	\$13,510	10.9	9,349
ECM 8	Install High Efficiency Air Conditioning Units	Yes	9,284	3.1	0	\$1,236	\$14,308	\$798	\$13,510	10.9	9,349
HVAC System Improvements			0	0.0	10	\$79	\$128	\$12	\$116	1.5	1,136
ECM 9	Install Pipe Insulation	Yes	0	0.0	10	\$79	\$128	\$12	\$116	1.5	1,136
Domestic Water Heating Upgrade			114	0.0	0	\$15	\$14	\$4	\$10	0.7	115
ECM 10	Install Low-Flow DHW Devices	Yes	114	0.0	0	\$15	\$14	\$4	\$10	0.7	115
Food Service & Refrigeration Measures			3,848	0.4	0	\$512	\$1,150	\$100	\$1,050	2.1	3,875
ECM 11	Vending Machine Control	Yes	3,848	0.4	0	\$512	\$1,150	\$100	\$1,050	2.1	3,875
TOTALS (COST EFFECTIVE MEASURES)			344,093	66.5	-52	\$45,369	\$202,050	\$46,947	\$155,103	3.4	340,360
TOTALS (ALL MEASURES)			344,150	66.6	-52	\$45,377	\$202,485	\$46,947	\$155,538	3.4	340,417

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

ACADEMIC WING G

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			116,520	24.8	-24	\$15,311	\$62,956	\$10,775	\$52,181	3.4	114,498
ECM 1	Install LED Fixtures	Yes	635	0.0	0	\$85	\$164	\$25	\$139	1.6	640
ECM 2	Retrofit Fixtures with LED Lamps	Yes	115,885	24.8	-24	\$15,226	\$62,792	\$10,750	\$52,042	3.4	113,858
Lighting Control Measures			10,271	1.7	-2	\$1,349	\$11,311	\$2,770	\$8,541	6.3	10,091
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	8,796	1.5	-2	\$1,156	\$8,836	\$1,075	\$7,761	6.7	8,642
ECM 4	Install High/Low Lighting Controls	Yes	1,475	0.2	0	\$194	\$2,475	\$1,695	\$780	4.0	1,449
Domestic Water Heating Upgrade			0	0.0	1	\$11	\$124	\$0	\$124	11.3	158
ECM 5	Install Low-Flow DHW Devices	Yes	0	0.0	1	\$11	\$124	\$0	\$124	11.3	158
TOTALS (COST EFFECTIVE MEASURES)			126,791	26.5	-25	\$16,671	\$74,391	\$13,545	\$60,846	3.6	124,747
TOTALS (ALL MEASURES)			126,791	26.5	-25	\$16,671	\$74,391	\$13,545	\$60,846	3.6	124,747

* - 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).

ACADEMIC WING H

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			45,509	45.6	-8	\$5,987	\$18,519	\$3,019	\$15,500	2.6	44,863
ECM 1	Install LED Fixtures	Yes	5,225	0.0	0	\$695	\$2,271	\$250	\$2,021	2.9	5,262
ECM 2	Retrofit Fixtures with LED Lamps	Yes	40,283	45.6	-8	\$5,291	\$16,248	\$2,769	\$13,479	2.5	39,601
Lighting Control Measures			16,371	2.6	-3	\$2,150	\$14,861	\$4,165	\$10,696	5.0	16,085
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	10,089	2.0	-2	\$1,325	\$11,036	\$1,315	\$9,721	7.3	9,913
ECM 4	Install High/Low Lighting Controls	Yes	6,282	0.6	-1	\$825	\$3,825	\$2,850	\$975	1.2	6,172
Motor Upgrades			5,977	1.5	0	\$796	\$8,183	\$0	\$8,183	10.3	6,019
ECM 5	Premium Efficiency Motors	Yes	5,977	1.5	0	\$796	\$8,183	\$0	\$8,183	10.3	6,019
Variable Frequency Drive (VFD) Measures			7,540	3.0	0	\$1,003	\$11,890	\$2,000	\$9,890	9.9	7,593
ECM 6	Install VFDs on Chilled Water Pumps	Yes	7,540	3.0	0	\$1,003	\$11,890	\$2,000	\$9,890	9.9	7,593
Unitary HVAC Measures			24,576	22.6	6	\$3,320	\$157,803	\$7,754	\$150,049	45.2	25,423
ECM 7	Install High Efficiency Air Conditioning Units	No	23,778	21.6	6	\$3,214	\$152,742	\$7,554	\$145,188	45.2	24,618
ECM 8	Install High Efficiency Heat Pumps	No	799	1.0	0	\$106	\$5,061	\$200	\$4,861	45.7	804
HVAC System Improvements			0	0.0	7	\$56	\$131	\$16	\$115	2.1	767
ECM 9	Install Pipe Insulation	Yes	0	0.0	7	\$56	\$131	\$16	\$115	2.1	767
Domestic Water Heating Upgrade			0	0.0	4	\$32	\$57	\$29	\$29	0.9	444
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	4	\$32	\$57	\$29	\$29	0.9	444
Food Service & Refrigeration Measures			1,209	0.1	0	\$161	\$230	\$50	\$180	1.1	1,217
ECM 11	Vending Machine Control	Yes	1,209	0.1	0	\$161	\$230	\$50	\$180	1.1	1,217
TOTALS (COST EFFECTIVE MEASURES)			76,606	52.8	-1	\$10,184	\$53,872	\$9,279	\$44,594	4.4	76,988
TOTALS (ALL MEASURES)			101,182	75.4	4	\$13,504	\$211,675	\$17,033	\$194,643	14.4	102,411

* - 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).

ADLER CENTER

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			53,630	8.9	-11	\$7,050	\$23,443	\$3,908	\$19,535	2.8	52,743
ECM 1	Retrofit Fixtures with LED Lamps	Yes	53,630	8.9	-11	\$7,050	\$23,443	\$3,908	\$19,535	2.8	52,743
Lighting Control Measures			3,640	0.7	-1	\$478	\$3,633	\$1,055	\$2,578	5.4	3,576
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	2,872	0.6	-1	\$377	\$2,508	\$305	\$2,203	5.8	2,822
ECM 3	Install High/Low Lighting Controls	Yes	768	0.1	0	\$101	\$1,125	\$750	\$375	3.7	754
HVAC System Improvements			1,076	0.0	0	\$143	\$155	\$26	\$129	0.9	1,084
ECM 4	Install Pipe Insulation	Yes	1,076	0.0	0	\$143	\$155	\$26	\$129	0.9	1,084
Domestic Water Heating Upgrade			515	0.0	0	\$69	\$65	\$18	\$47	0.7	519
ECM 5	Install Low-Flow DHW Devices	Yes	515	0.0	0	\$69	\$65	\$18	\$47	0.7	519
Custom Measures			12,310	0.0	0	\$1,638	\$9,140	\$0	\$9,140	5.6	12,396
ECM 6	Replace Electric Water Heater with Heat Pump Water Heater	Yes	12,310	0.0	0	\$1,638	\$9,140	\$0	\$9,140	5.6	12,396
TOTALS (COST EFFECTIVE MEASURES)			71,171	9.6	-12	\$9,378	\$36,436	\$5,007	\$31,429	3.4	70,317
TOTALS (ALL MEASURES)			71,171	9.6	-12	\$9,378	\$36,436	\$5,007	\$31,429	3.4	70,317

* - 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).

BERRIE CENTER

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			88,882	21.8	-18	\$11,644	\$35,495	\$6,267	\$29,228	2.5	87,366
ECM 1	Install LED Fixtures	Yes	1,288	0.0	0	\$171	\$788	\$150	\$638	3.7	1,297
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	4,387	2.0	-1	\$575	\$2,732	\$400	\$2,332	4.1	4,310
ECM 3	Retrofit Fixtures with LED Lamps	Yes	83,208	19.8	-17	\$10,898	\$31,976	\$5,717	\$26,259	2.4	81,759
Lighting Control Measures			21,108	5.1	-4	\$2,765	\$35,226	\$5,920	\$29,306	10.6	20,739
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	18,264	4.8	-4	\$2,392	\$32,526	\$4,135	\$28,391	11.9	17,945
ECM 5	Install High/Low Lighting Controls	Yes	2,844	0.4	-1	\$372	\$2,700	\$1,785	\$915	2.5	2,794
Variable Frequency Drive (VFD) Measures			190,930	32.6	0	\$25,411	\$89,850	\$10,500	\$79,350	3.1	192,265
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	190,930	32.6	0	\$25,411	\$89,850	\$10,500	\$79,350	3.1	192,265
Unitary HVAC Measures			45,026	23.9	17	\$6,165	\$138,445	\$7,684	\$130,761	21.2	47,335
ECM 7	Install High Efficiency Air Conditioning Units	No	40,233	21.2	17	\$5,527	\$130,491	\$7,684	\$122,807	22.2	42,509
ECM 8	Install High Efficiency Heat Pumps	Yes	4,793	2.7	0	\$638	\$7,954	\$0	\$7,954	12.5	4,826
Domestic Water Heating Upgrade			0	0.0	31	\$311	\$7,822	\$712	\$7,110	22.9	3,596
ECM 9	Install High Efficiency Gas-Fired Water Heater	No	0	0.0	22	\$218	\$7,643	\$630	\$7,013	32.2	2,521
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	9	\$93	\$179	\$82	\$98	1.0	1,075
Custom Measures			-14,443	0.0	154	-\$362	\$3,350	\$0	\$3,350	-9.3	3,487
ECM 11	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-14,443	0.0	154	-\$362	\$3,350	\$0	\$3,350	-9.3	3,487
TOTALS (COST EFFECTIVE MEASURES)			305,713	62.2	-13	\$40,550	\$168,705	\$22,769	\$145,936	3.6	306,272
TOTALS (ALL MEASURES)			331,504	83.4	179	\$45,933	\$310,189	\$31,083	\$279,106	6.1	354,788

* - 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).

BILL BRADLEY CENTER

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			362,887	53.7	-75	\$47,627	\$119,201	\$15,398	\$103,803	2.2	356,612
ECM 1	Install LED Fixtures	Yes	162,175	24.2	-34	\$21,284	\$79,950	\$7,430	\$72,520	3.4	159,359
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	22,856	2.0	-5	\$2,999	\$2,537	\$100	\$2,437	0.8	22,456
ECM 3	Retrofit Fixtures with LED Lamps	Yes	177,857	27.6	-37	\$23,344	\$36,714	\$7,868	\$28,846	1.2	174,796
Lighting Control Measures			102,532	13.3	-21	\$13,455	\$48,565	\$20,070	\$28,495	2.1	100,738
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	84,378	10.6	-18	\$11,073	\$28,990	\$3,485	\$25,505	2.3	82,902
ECM 5	Install High/Low Lighting Controls	Yes	18,154	2.7	-4	\$2,382	\$19,575	\$16,585	\$2,990	1.3	17,836
Motor Upgrades			4,907	0.9	0	\$653	\$5,899	\$0	\$5,899	9.0	4,942
ECM 6	Premium Efficiency Motors	Yes	4,907	0.9	0	\$653	\$5,899	\$0	\$5,899	9.0	4,942
Variable Frequency Drive (VFD) Measures			56,435	3.4	0	\$7,511	\$27,922	\$3,500	\$24,422	3.3	56,829
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	13,043	3.0	0	\$1,736	\$6,697	\$1,100	\$5,597	3.2	13,134
ECM 8	Install VFDs on Process/Pool Filtration Pumps	Yes	43,392	0.4	0	\$5,775	\$21,226	\$2,400	\$18,826	3.3	43,695
Domestic Water Heating Upgrade			0	0.0	46	\$407	\$4,326	\$765	\$3,561	8.7	5,361
ECM 9	Install Low-Flow DHW Devices	Yes	0	0.0	46	\$407	\$4,326	\$765	\$3,561	8.7	5,361
Food Service & Refrigeration Measures			6,364	0.7	0	\$847	\$2,640	\$100	\$2,540	3.0	6,409
ECM 10	Replace Refrigeration Equipment	Yes	3,201	0.4	0	\$426	\$1,950	\$0	\$1,950	4.6	3,223
ECM 11	Vending Machine Control	Yes	3,163	0.4	0	\$421	\$690	\$100	\$590	1.4	3,185
TOTALS (COST EFFECTIVE MEASURES)			533,125	72.0	-51	\$70,500	\$208,553	\$39,833	\$168,720	2.4	530,891
TOTALS (ALL MEASURES)			533,125	72.0	-51	\$70,500	\$208,553	\$39,833	\$168,720	2.4	530,891

* - 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).

PADAVANO COMMONS & SALAMENO SPIRITUAL CENTER

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			1,633	0.8	0	\$213	\$1,251	\$160	\$1,091	5.1	1,605
ECM 1	Retrofit Fixtures with LED Lamps	Yes	1,633	0.8	0	\$213	\$1,251	\$160	\$1,091	5.1	1,605
Lighting Control Measures			255	0.1	0	\$33	\$540	\$70	\$470	14.1	251
ECM 2	Install Occupancy Sensor Lighting Controls	No	255	0.1	0	\$33	\$540	\$70	\$470	14.1	251
HVAC System Improvements			677	0.0	0	\$90	\$239	\$40	\$199	2.2	682
ECM 3	Install Pipe Insulation	Yes	677	0.0	0	\$90	\$239	\$40	\$199	2.2	682
Domestic Water Heating Upgrade			245	0.0	0	\$33	\$22	\$11	\$11	0.3	247
ECM 4	Install Low-Flow DHW Devices	Yes	245	0.0	0	\$33	\$22	\$11	\$11	0.3	247
Custom Measures			3,077	0.0	0	\$410	\$2,070	\$0	\$2,070	5.0	3,099
ECM 5	Replace Electric Water Heater with Heat Pump Water Heater	Yes	3,077	0.0	0	\$410	\$2,070	\$0	\$2,070	5.0	3,099
TOTALS (COST EFFECTIVE MEASURES)			5,632	0.8	0	\$746	\$3,581	\$211	\$3,370	4.5	5,632
TOTALS (ALL MEASURES)			5,887	0.9	0	\$779	\$4,121	\$281	\$3,840	4.9	5,882

* - 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).

STUDENT CENTER

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			81,185	11.7	-16	\$10,670	\$21,922	\$3,474	\$18,448	1.7	79,924
ECM 1	Install LED Fixtures	Yes	2,891	0.0	0	\$385	\$1,412	\$150	\$1,262	3.3	2,911
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,814	0.3	0	\$238	\$688	\$100	\$588	2.5	1,782
ECM 3	Retrofit Fixtures with LED Lamps	Yes	76,481	11.4	-15	\$10,047	\$19,822	\$3,224	\$16,598	1.7	75,230
Lighting Control Measures			34,946	4.6	-7	\$4,588	\$23,324	\$5,400	\$17,924	3.9	34,335
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	20,918	3.1	-4	\$2,746	\$18,824	\$2,260	\$16,564	6.0	20,552
ECM 5	Install High/Low Lighting Controls	Yes	14,028	1.5	-3	\$1,842	\$4,500	\$3,140	\$1,360	0.7	13,783
HVAC System Improvements			0	0.0	14	\$123	\$240	\$36	\$204	1.7	1,670
ECM 6	Install Pipe Insulation	Yes	0	0.0	14	\$123	\$240	\$36	\$204	1.7	1,670
Domestic Water Heating Upgrade			0	0.0	6	\$53	\$189	\$18	\$171	3.2	728
ECM 7	Install Low-Flow DHW Devices	Yes	0	0.0	6	\$53	\$189	\$18	\$171	3.2	728
Food Service & Refrigeration Measures			8,120	0.8	0	\$1,081	\$4,026	\$590	\$3,436	3.2	8,177
ECM 8	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	4,493	0.4	0	\$598	\$3,336	\$440	\$2,896	4.8	4,525
ECM 9	Vending Machine Control	Yes	3,627	0.4	0	\$483	\$690	\$150	\$540	1.1	3,652
Custom Measures			-65,650	0.0	700	-\$2,716	\$8,960	\$0	\$8,960	-3.3	15,852
ECM 10	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-65,650	0.0	700	-\$2,716	\$8,960	\$0	\$8,960	-3.3	15,852
TOTALS (COST EFFECTIVE MEASURES)			124,252	17.1	-2	\$16,515	\$49,701	\$9,518	\$40,183	2.4	124,833
TOTALS (ALL MEASURES)			58,602	17.1	698	\$13,799	\$58,661	\$9,518	\$49,143	3.6	140,685

* - 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).

SHARP SUSTAINABILITY CENTER

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			1,827	0.6	0	\$111	\$1,445	\$269	\$1,176	10.6	1,839
ECM 1	Retrofit Fixtures with LED Lamps	Yes	1,827	0.6	0	\$111	\$1,445	\$269	\$1,176	10.6	1,839
Lighting Control Measures			443	0.1	0	\$27	\$990	\$280	\$710	26.4	446
ECM 2	Install Occupancy Sensor Lighting Controls	No	359	0.1	0	\$22	\$540	\$70	\$470	21.6	362
ECM 3	Install High/Low Lighting Controls	No	84	0.0	0	\$5	\$450	\$210	\$240	47.3	84
Variable Frequency Drive (VFD) Measures			2,183	0.7	0	\$133	\$8,442	\$150	\$8,292	62.6	2,198
ECM 4	Install VFDs on Heating Water Pumps	No	2,183	0.7	0	\$133	\$8,442	\$150	\$8,292	62.6	2,198
TOTALS (COST EFFECTIVE MEASURES)			1,827	0.6	0	\$111	\$1,445	\$269	\$1,176	10.6	1,839
TOTALS (ALL MEASURES)			4,452	1.4	0	\$270	\$10,878	\$699	\$10,179	37.7	4,483

* - 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).

LAUREL HALL

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			148,594	24.3	-31	\$19,488	\$42,905	\$6,987	\$35,918	1.8	146,052
ECM 1	Install LED Fixtures	Yes	1,296	0.0	0	\$173	\$824	\$200	\$624	3.6	1,306
ECM 2	Retrofit Fixtures with LED Lamps	Yes	147,298	24.3	-31	\$19,315	\$42,081	\$6,787	\$35,294	1.8	144,746
Lighting Control Measures			50,354	5.4	-11	\$6,602	\$29,041	\$15,295	\$13,746	2.1	49,473
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	5,059	2.0	-1	\$663	\$11,266	\$1,480	\$9,786	14.8	4,971
ECM 4	Install High/Low Lighting Controls	Yes	45,294	3.4	-9	\$5,939	\$17,775	\$13,815	\$3,960	0.7	44,502
Variable Frequency Drive (VFD) Measures			24,997	10.4	0	\$3,327	\$22,782	\$3,300	\$19,482	5.9	25,172
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	24,997	10.4	0	\$3,327	\$22,782	\$3,300	\$19,482	5.9	25,172
Gas Heating (HVAC/Process) Replacement			0	0.0	36	\$342	\$168,506	\$11,088	\$157,418	460.3	4,251
ECM 6	Install High Efficiency Hot Water Boilers	No	0	0.0	36	\$342	\$168,506	\$11,088	\$157,418	460.3	4,251
Domestic Water Heating Upgrade			82	0.0	0	\$11	\$7	\$2	\$5	0.5	82
ECM 7	Install Low-Flow DHW Devices	Yes	82	0.0	0	\$11	\$7	\$2	\$5	0.5	82
Food Service & Refrigeration Measures			4,775	0.5	0	\$636	\$920	\$150	\$770	1.2	4,808
ECM 8	Vending Machine Control	Yes	4,775	0.5	0	\$636	\$920	\$150	\$770	1.2	4,808
Custom Measures			-19,695	0.0	210	-\$643	\$3,550	\$0	\$3,550	-5.5	4,756
ECM 9	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-19,695	0.0	210	-\$643	\$3,550	\$0	\$3,550	-5.5	4,756
TOTALS (COST EFFECTIVE MEASURES)			228,802	40.7	-41	\$30,064	\$95,656	\$25,734	\$69,922	2.3	225,587
TOTALS (ALL MEASURES)			209,107	40.7	205	\$29,763	\$267,712	\$36,822	\$230,890	7.8	234,594

* - 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).

PINE HALL

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			57,754	10.6	-10	\$7,596	\$30,725	\$5,533	\$25,192	3.3	56,973
ECM 1	Install LED Fixtures	Yes	8,769	0.1	0	\$1,166	\$12,816	\$1,155	\$11,661	10.0	8,821
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	2,109	0.8	0	\$279	\$1,986	\$282	\$1,704	6.1	2,095
ECM 3	Retrofit Fixtures with LED Lamps	Yes	46,847	9.7	-10	\$6,147	\$15,850	\$4,096	\$11,754	1.9	46,029
ECM 4	Install LED Exit Signs	Yes	29	0.0	0	\$4	\$72	\$0	\$72	19.1	28
Lighting Control Measures			10,070	1.5	-2	\$1,322	\$9,400	\$2,975	\$6,425	4.9	9,899
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	6,240	1.2	-1	\$819	\$6,750	\$1,540	\$5,210	6.4	6,131
ECM 6	Install Photocell Controls	Yes	213	0.0	0	\$28	\$400	\$0	\$400	14.1	214
ECM 7	Install High/Low Lighting Controls	Yes	3,617	0.3	-1	\$475	\$2,250	\$1,435	\$815	1.7	3,554
Variable Frequency Drive (VFD) Measures			22,016	1.6	0	\$2,930	\$68,140	\$2,000	\$66,140	22.6	22,170
ECM 8	Install VFDs on Heating Water Pumps	No	22,016	1.6	0	\$2,930	\$68,140	\$2,000	\$66,140	22.6	22,170
Unitary HVAC Measures			950	0.8	0	\$126	\$9,280	\$416	\$8,864	70.1	957
ECM 9	Install High Efficiency Air Conditioning Units	No	950	0.8	0	\$126	\$9,280	\$416	\$8,864	70.1	957
HVAC System Improvements			0	0.0	16	\$145	\$220	\$28	\$192	1.3	1,905
ECM 10	Install Pipe Insulation	Yes	0	0.0	16	\$145	\$220	\$28	\$192	1.3	1,905
Domestic Water Heating Upgrade			0	0.0	3	\$25	\$118	\$29	\$89	3.6	326
ECM 11	Install Low-Flow DHW Devices	Yes	0	0.0	3	\$25	\$118	\$29	\$89	3.6	326
Food Service & Refrigeration Measures			1,954	0.2	0	\$260	\$460	\$50	\$410	1.6	1,968
ECM 12	Vending Machine Control	Yes	1,954	0.2	0	\$260	\$460	\$50	\$410	1.6	1,968
TOTALS (COST EFFECTIVE MEASURES)			69,778	12.3	7	\$9,348	\$40,924	\$8,615	\$32,308	3.5	71,071
TOTALS (ALL MEASURES)			92,745	14.8	7	\$12,404	\$118,344	\$11,031	\$107,313	8.7	94,198

* - 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).

THE OVERLOOK

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			68,764	18.2	-14	\$9,006	\$48,569	\$5,739	\$42,830	4.8	67,571
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	17,469	5.8	-4	\$2,288	\$23,530	\$1,455	\$22,075	9.6	17,164
ECM 2	Retrofit Fixtures with LED Lamps	Yes	51,295	12.5	-11	\$6,718	\$25,039	\$4,284	\$20,755	3.1	50,407
Lighting Control Measures			5,391	1.7	-1	\$706	\$10,260	\$5,025	\$5,235	7.4	5,296
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	3,296	0.8	-1	\$432	\$4,860	\$630	\$4,230	9.8	3,238
ECM 4	Install High/Low Lighting Controls	Yes	2,095	0.9	0	\$274	\$5,400	\$4,395	\$1,005	3.7	2,058
Unitary HVAC Measures			6,063	6.1	0	\$807	\$70,597	\$3,400	\$67,197	83.3	6,106
ECM 5	Install High Efficiency Air Conditioning Units	No	6,063	6.1	0	\$807	\$70,597	\$3,400	\$67,197	83.3	6,106
Food Service & Refrigeration Measures			1,954	0.2	0	\$260	\$460	\$50	\$410	1.6	1,968
ECM 6	Vending Machine Control	Yes	1,954	0.2	0	\$260	\$460	\$50	\$410	1.6	1,968
TOTALS (COST EFFECTIVE MEASURES)			76,109	20.1	-15	\$9,972	\$59,289	\$10,814	\$48,475	4.9	74,836
TOTALS (ALL MEASURES)			82,173	26.2	-15	\$10,779	\$129,886	\$14,214	\$115,672	10.7	80,941

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

CPAs, LODGE, FIRE SAFETY BUILDING

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			45,111	10.0	-4	\$5,959	\$49,371	\$9,404	\$39,967	6.7	44,901
ECM 1	Install LED Fixtures	Yes	20,647	0.0	0	\$2,748	\$10,403	\$1,900	\$8,503	3.1	20,792
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	3,994	2.5	-1	\$523	\$6,676	\$837	\$5,839	11.2	3,925
ECM 3	Retrofit Fixtures with LED Lamps	Yes	20,469	7.5	-4	\$2,688	\$32,292	\$6,667	\$25,625	9.5	20,185
Lighting Control Measures			2,191	0.9	0	\$287	\$5,930	\$1,145	\$4,785	16.7	2,153
ECM 4	Install Occupancy Sensor Lighting Controls	No	1,978	0.8	0	\$259	\$5,480	\$725	\$4,755	18.4	1,943
ECM 5	Install High/Low Lighting Controls	Yes	214	0.1	0	\$28	\$450	\$420	\$30	1.1	210
Motor Upgrades			2,012	0.4	0	\$268	\$2,717	\$0	\$2,717	10.1	2,026
ECM 6	Premium Efficiency Motors	Yes	2,012	0.4	0	\$268	\$2,717	\$0	\$2,717	10.1	2,026
Unitary HVAC Measures			604	0.3	2	\$96	\$7,376	\$206	\$7,170	75.0	788
ECM 7	Install High Efficiency Air Conditioning Units	No	604	0.3	2	\$96	\$7,376	\$206	\$7,170	75.0	788
HVAC System Improvements			0	0.0	40	\$394	\$583	\$76	\$507	1.3	4,675
ECM 8	Install Pipe Insulation	Yes	0	0.0	40	\$394	\$583	\$76	\$507	1.3	4,675
Domestic Water Heating Upgrade			20,390	0.0	0	\$2,715	\$7,781	\$1,340	\$6,441	2.4	20,556
ECM 9	Install Low-Flow DHW Devices	Yes	20,390	0.0	0	\$2,715	\$7,781	\$1,340	\$6,441	2.4	20,556
Food Service & Refrigeration Measures			1,954	0.2	0	\$260	\$460	\$50	\$410	1.6	1,968
ECM 10	Vending Machine Control	Yes	1,954	0.2	0	\$260	\$460	\$50	\$410	1.6	1,968
TOTALS (COST EFFECTIVE MEASURES)			69,681	10.8	36	\$9,625	\$61,362	\$11,290	\$50,072	5.2	74,336
TOTALS (ALL MEASURES)			72,262	11.8	37	\$9,979	\$74,218	\$12,221	\$61,997	6.2	77,067

* - 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).

LINDEN HALL

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			19,639	2.0	-1	\$2,604	\$8,822	\$1,322	\$7,500	2.9	19,667
ECM 1	Install LED Fixtures	Yes	15,111	0.0	0	\$2,011	\$5,545	\$500	\$5,045	2.5	15,217
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	551	0.2	0	\$72	\$550	\$80	\$470	6.5	541
ECM 3	Retrofit Fixtures with LED Lamps	Yes	3,977	1.8	-1	\$520	\$2,727	\$742	\$1,985	3.8	3,909
Lighting Control Measures			3,664	1.2	-1	\$479	\$10,487	\$2,535	\$7,952	16.6	3,600
ECM 4	Install Occupancy Sensor Lighting Controls	No	2,047	0.9	0	\$268	\$7,562	\$225	\$7,337	27.4	2,011
ECM 5	Install High/Low Lighting Controls	Yes	1,618	0.3	0	\$212	\$2,925	\$2,310	\$615	2.9	1,589
Electric Chiller Replacement			8,314	-7.7	0	\$1,106	\$93,006	\$8,190	\$84,816	76.7	8,372
ECM 6	Install High Efficiency Chillers	No	8,314	-7.7	0	\$1,106	\$93,006	\$8,190	\$84,816	76.7	8,372
TOTALS (COST EFFECTIVE MEASURES)			21,256	2.3	-1	\$2,815	\$11,747	\$3,632	\$8,115	2.9	21,256
TOTALS (ALL MEASURES)			31,617	-4.5	-2	\$4,189	\$112,315	\$12,047	\$100,268	23.9	31,639

* - 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).

CAMPUS LIGHTING & SECURITY BOOTH

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			189,305	0.0	0	\$25,489	\$62,409	\$20,624	\$41,785	1.6	190,628
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,436	0.0	0	\$193	\$390	\$60	\$330	1.7	1,446
ECM 2	Retrofit Fixtures with LED Lamps	Yes	187,868	0.0	0	\$25,296	\$62,019	\$20,564	\$41,455	1.6	189,182
Lighting Control Measures			22,995	0.0	0	\$3,096	\$5,400	\$0	\$5,400	1.7	23,156
ECM 3	Install Photocell Controls	Yes	22,995	0.0	0	\$3,096	\$5,400	\$0	\$5,400	1.7	23,156
TOTALS (COST EFFECTIVE MEASURES)			212,300	0.0	0	\$28,586	\$67,809	\$20,624	\$47,185	1.7	213,784
TOTALS (ALL MEASURES)			212,300	0.0	0	\$28,586	\$67,809	\$20,624	\$47,185	1.7	213,784

* - 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 Best Practices by building

WATER BEST PRACTICES

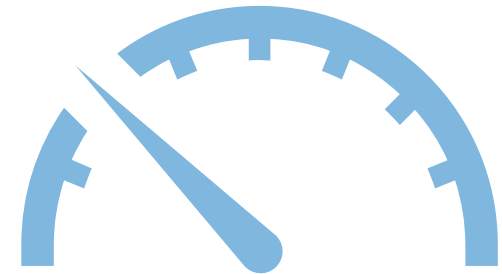


- Leak Detection and Repair
- Toilets and Urinals
- Faucets and Showerheads
- Commercial Kitchen Equipment
- Laundry Equipment
- Cooling Towers
- Steam Boiler System
- Pools and Spas
- Laboratory and Medical Equipment
- Water Metering and Submetering
- Vehicle Washing
- Single Pass Cooling System
- Landscaping and Irrigation
- On-Site Alternative Water Sources

See individual reports for specific Water Best Practices by building

MEASURES FOR FUTURE CONSIDERATION

- Retro-Commissioning Study
- Upgrade/Replace Energy Management System
- Troubleshoot Condensate Return System
- Electric Submeter
- Install High Efficiency Energy Recovery Units (ERUs)
- Pool Heating System Upgrades
- Disaggregate Boiler System



EV CHARGING STATION POTENTIAL

NJCleanEnergy.com/EV

Know your EV Charging Stations



LEVEL 1



4-6 miles/hour
Replenish Rate



7-30 hours for
full charge

Approximate time to
charge a battery*

CHARGE
110/120V

LEVEL 2



10-20 miles/hour
Replenish Rate



2-10 hours for
full charge

Approximate time to
charge a battery*

CHARGE
208/240V

DIRECT CURRENT (DC) FAST CHARGING*



120-200 miles/hour
Replenish Rate



20-90 minutes for
full charge

Approximate time to
charge a battery*

CHARGE
480V or 208V

*dependent on the size of the battery

Ramapo College of New Jersey

Potential:

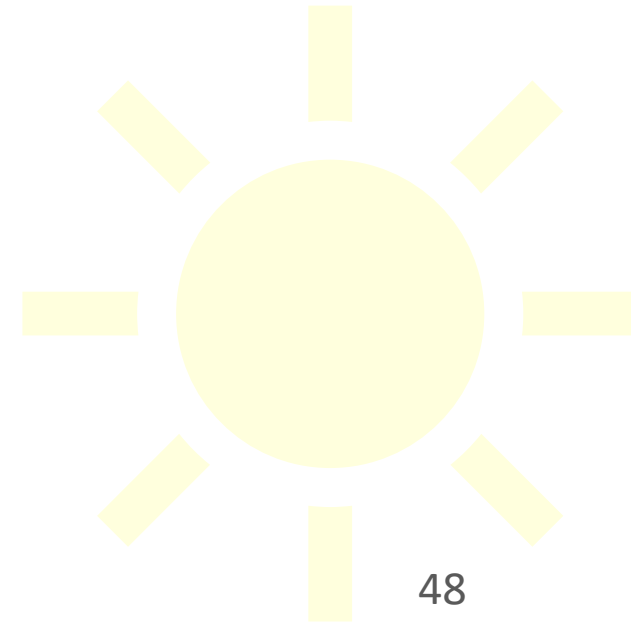
Medium to High



SOLAR ENERGY GENERATION POTENTIAL

NJCleanEnergy.com/renewable-energy

	Ramapo Campus
<i>Potential:</i>	HIGH
<i>System Potential: (kW)</i>	1,457
<i>Electric Generation: (kWh per year)</i>	1,735,827
<i>Displaced Cost: (per year)</i>	\$233,720



FINANCING MECHANISM: ESIP

NJCleanEnergy.com/ESIP

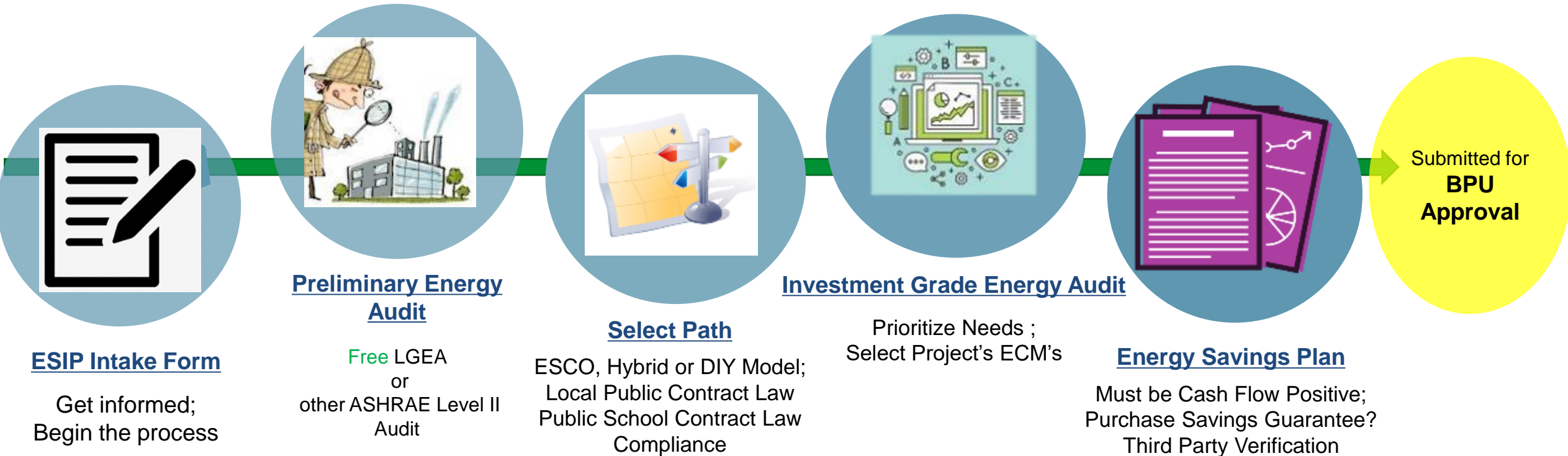
ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- 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

FOR MORE INFORMATION

Michelle Rossi

ESIP Coordinator

ESIP@bpu.nj.gov

o: 609.913.6295

c: 609.915.0903

C&I ENERGY EFFICIENCY PROGRAMS

NJCleanEnergy.com

LOCAL
GOVERNMENT
CUSTOMERS

COMMERCIAL &
INSTITUTIONAL
CUSTOMERS

LARGE
ENERGY
CUSTOMERS

EXISTING BUILDINGS

MEASUREMENT & AUDITS

FREE Energy Audits



RETROFITS

Prescriptive &
Custom Rebates

Direct Install

Engineered Solutions

And more from
your local utility!



Incentives up
to \$4 million
for eligible projects



NEW CONSTRUCTION

Prescriptive & Custom
Rebates for New
Construction and
Gut Rehabs

Pay for Performance
incentives for
buildings over
50,000 sq. ft.



DISTRIBUTED ENERGY RESOURCES

Combined Heat & Power
and Fuel Cell Installation
Incentives

Microgrid Development

Battery Storage

Muni EV Fleets



Key:
Programs run by investor-owned utility companies



Programs run by NJCEP



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

ENERGY MANAGEMENT :

- Includes the Building Tune-up (BT), Retro-commissioning (RCx), and Strategic Energy Management (SEM) subprograms. These subprograms offer a comprehensive mix of custom energy-savings measures such as basic HVAC tune-ups, building systems tune-ups, controls' calibration, diagnostic testing, and installation of measures to enhance your building's energy performance and savings.

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



**Other programs may be available to you. Check with your Utility Provider to see a full list of offering and what you may be qualified for.*

UTILITY RUN ENERGY EFFICIENCY PROGRAMS

Rockland Electric Company

Phil Madnick – MadnickP@oru.com

Kyle Haddock – HaddockK@oru.com

PSE&G

David Kirsch – David.Kirsch@pseg.com

Steve Barba – Steven.T.Barba@pseg.com

FOR MORE INFORMATION

Sarah Walters – LGEA Project Manager

SWalters@trccompanies.com

(732) 589-7372

Moussa Traore – LGEA Technical Manager

MTraore@trccompanies.com

(732) 902-1797

Ryan Knippenberg – LGEA Energy Auditor

RKnippenberg@trccompanies.com

(732) 439-7184

THANK YOU

