



**Somerset County Energy Council:
Framework for Establishing a Somerset County
Energy Savings Incentive Program**

Final Report

March 17, 2015

Center for Building Knowledge
New Jersey Institute of Technology
Newark, NJ 07102-1982

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Executive Summary

The Somerset County Energy Council (SCEC) in collaboration with Hillsborough Township successfully applied to the Sustainable Jersey 2013 Small Grant program so as to evaluate the impact of earlier efforts to conduct energy audits of local government and public school facilities throughout the county and consider how specifically new legislation and program offerings since that time may encourage participants to accomplish even greater savings. Hillsborough Township subsequently contracted with New Jersey Institute of Technology's Center for Building Knowledge to conduct this evaluation and recommend strategies for this purpose. The findings of this effort are described herein in this report.

At the time Somerset County Energy Council initiated the energy audit program this represented a new and novel approach by which municipalities could evaluate the potential savings attributable to energy conservation measures. This leadership served to not only served to raise awareness amongst the participants of the potential for savings but proved particularly timely as subsequent federal stimulus efforts could be implemented at often little to no cost resulting in immediate savings to the local government authority. Of the 83 originally audited facilities, 55 thereafter made application to the NJ Clean Energy Program (NJCEP) and 35 successfully completed their projects resulting in the following savings:

Secured in excess of \$1 million dollars in incentives from the NJCEP program.

Resulted in operational savings attributable to reduced energy consumption by nearly \$500 thousand dollars annually.

These savings are anticipated to result in approximately \$8 million dollars in savings over the anticipated life of the energy conservation measures.

As impressive as these savings were the council sought to consider what other methods might be available to assist these and associated facilities with even greater savings. Savings that not simply reduce the tax burden on the citizens of the county but also create economic opportunities associated with the both the installation and operation of such improvements.

As documented by this report, the savings accomplished to date are but a relatively small percentage of the potential throughout county facilities but numerous obstacles are likely to hinder wider adoption be it the size and sophistication of an organization, organization values, perceived risk, financial ability, and /or the specific program offering. This report propose that as a consequence not a single program is appropriate for all organizations and facilities types but rather a diversity of strategies may be most effective and the county government is in a unique position to support such efforts by addressing each of these obstacles through educational efforts and technical assistance that would encourage both deeper savings associated with any one facility and opportunities to collaborate across organizations to accomplish a greater breadth of savings. The SCEC should be applauded for their efforts to date and encouraged to continue to support such efforts throughout the county so local government and public schools may become hallmarks of public stewardship.

Background

The Somerset County Energy Council (SCEC), under the direction of the County Board of Chosen Freeholders, successfully applied for a grant from the Sustainable Jersey 2013 Small Grant program to follow up on the county’s previous energy audit efforts and identify methods by which further action to upgrade the energy performance of county facilities might be encouraged , including specifically the possibility of implementing a county-wide Energy Savings Improvement Program (ESIP) for municipal buildings and, perhaps, school districts in the county. Through a competitive solicitation, New Jersey Institute of Technology’s Center for Building Knowledge was selected to undertake a revised scope of work to answer this question.

The originally audited facilities-83 in total - included a diversity of uses throughout the county that can be generally categorized as either Local Government (LG) or Public School (PS) facilities. The audits were funded by Somerset County to identify energy saving opportunities throughout the fifty municipal and county organizations throughout Somerset. These audits were conducted in 2010 by some four contractors who surveyed said facilities, as identified in Appendix ‘B’, and identified cost-effective energy conservation measures (ECM’s) in these facilities. In aggregate the potential savings from implementing these measures amounted to nearly \$2.4 million in annual savings or a Simple Payback (SPB) of 6.08 years if all identified ECM’s with a fifteen year or less service life were to be implemented.

The following table presents the findings from the SCEAP energy audit program. We have highlighted the “0-15 Years” time frame as the most relevant because of its correspondence to the maximum allowable time frame for the ESIP program.

<i>ECM Group</i>	<i>Capital Cost (1)</i>	<i>Program Cost (2)</i>	<i>Rebates (3)</i>	<i>Net Cost (4)</i>	<i>Annual Savings (5)</i>	<i>Payback (6)</i>
<i>0 - 5 Years</i>	<i>\$4,212,318</i>	<i>\$5,476,013</i>	<i>\$402,358</i>	<i>\$5,073,655</i>	<i>\$1,499,268</i>	<i>3.38</i>
<i>0 - 10 Years</i>	<i>\$8,839,936</i>	<i>\$11,491,917</i>	<i>\$598,083</i>	<i>\$10,893,834</i>	<i>\$2,183,555</i>	<i>4.99</i>
<i>0 - 15 years</i>	<i>\$11,807,110</i>	<i>\$15,349,243</i>	<i>\$646,944</i>	<i>\$14,702,299</i>	<i>\$2,416,808</i>	<i>6.08</i>
<i>0 - 20 Years</i>	<i>\$13,044,020</i>	<i>\$16,957,226</i>	<i>\$658,791</i>	<i>\$16,298,435</i>	<i>\$2,489,252</i>	<i>6.55</i>
<i>ALL</i>	<i>\$25,866,139</i>	<i>\$33,625,981</i>	<i>\$797,593</i>	<i>\$32,828,388</i>	<i>\$2,654,303</i>	<i>12.37</i>

ECM Groups are all Energy Conservation Measures with a simple payback period equal to or less than the time frame indicated.

(1) Total cost estimated to implement ECM.

(2) Total costs plus 30% factor for program administration, engineering, financing and contingency

(3) Total of Smart Start estimated rebates under prescriptive program

(4) Program cost less estimated rebate

(5) Estimated annual energy savings

(6) Net cost/annual savings

As part of the audit process, a minimum of twelve months of utility consumption data was submitted to the US Department of Environmental Protection's - Energy Star Portfolio Manager (ESPM) by Birdsall Engineering in a single account for the use by the SCEC. This tool, provided free of charge, serves to monitor and track energy consumption in facilities or portfolios of facilities in a series of rolling twelve month periods that are normalized for seasonal variations. This facilitates objective comparisons across years and across similar facility types in the region as a means to measure progress toward energy conservation objectives. The SCEC encouraged participating municipal organizations to include additional facilities for this purpose which served to increase the number of participating facilities by twenty nine for a total of one hundred and twelve, see Appendix 'C' for a complete list. CBK incorporated this Portfolio Manager data set of 112 facilities as part of its analytical efforts over the course of the project.

Subsequent to these efforts, the State of New Jersey, the Clean Energy Program (CEP), and various Investor Owned Utilities have continued to develop new legislation and programs influenced by the pioneering efforts initiated by the SCEC. Of particular note are the introduction of Local Government Energy Audit (LGEA) program administered by the CEP and the ESIP legislation [P.L. 2009, c.4] approved by the legislature in 2009 and subsequently revised in September of 2012 that "allows government agencies to make energy related improvements to their facilities and pay for the costs using the value of energy savings that result from the improvements" These two developments, since the time of the original Somerset County audits, have the potential of both increasing participation in such audits across the county while, at the same time, incentivizing these same facilities to implement even more ECM's with longer payback periods, resulting in even greater savings.

Study Objective / Scope of Work

The primary research questions for this study were: what have the originally audited facilities accomplished since their audits; how much energy has been saved; and how might the relatively new ESIP legislation encourage even greater energy efficiency savings if services were procured cooperatively on a county-wide basis. The Scope of Work for the project evolved to include the following activities:

1. Develop an inventory of local government and public school properties throughout Somerset County and identify which ones have performed energy audits to date.
2. Building upon a spreadsheet previously developed by SCEC, identify: which ECM's have been implemented; how these ECM's relate to the ECM's recommended in the original audits;

Evaluate the potential for the ESIP program to be applied within the county to expand and deepen potential energy savings.

3. Evaluate the potential for approaches other than the ESIP program to expand and deepen potential energy savings.

The objectives of the study were relatively simple but the primary challenge was both how to acquire the variety of data sources needed to answer the research questions in a satisfactory manner while preserving the confidentiality of participants who had not previously explicitly agreed to share such information publically. In consultation with the SCEC it was agreed that until such time as we could secure the participating organizations' approval, the data would be presented in aggregate form, without attribution to individual facilities or jurisdictions. To fulfill this agreement, CBK created a firewall to protect the identities of unique organizations and their associated facilities. This strategy, while preserving the anonymity of participant data required the delivery of aggregated facility and jurisdictional data sufficient to address the research questions posed by the project without endangering the privacy of the data sources. If and when approval is granted, CBK is in a position to disclose the specifics of the associated data.

Available Data Sources

The study accessed, compared and reconciled information from four primary data sources:

- (1) NJ Treasury Database (Public)
- (2) NJBPU Clean Energy Program (Private)
- (3) Somerset County Energy Star Portfolio Manager account (Private)
- (4) Somerset County GIS Database (Public)

Each data set provided unique transcription problems and each exhibited different levels of reliability when CBK cross-compared similar fields. As a consequence, data fields associated with each source provided varying levels of accuracy that needed to be reconciled. CBK accomplished this by rigorously analyzing and comparing information from each of the data sets to determine, in its best judgement, the most reasonable common interpretation of the available information.

Problems encountered with the data have included the following:

- Inconsistent Naming Conventions
- Inconsistent Facility Address Use
- Inconsistent Facility Use Types (Consistent with ESPM)
- Inconsistent and/or Multiple Facility Use Designations for Same Property/Building
- Multiple Properties Identified by Same Address
- Multiple Owners Identified by Same Address
- Incomplete Data, PSEG Program Data not presently available

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Number of Facilities

415	Number of Local Government and Public Schools Identified by one or more available sources
112	Number of Local Government and Public Schools Identified by Energy Star Portfolio Manager (ESPM)
83	Number of Local Government and Public Schools Identified by Somerset County Energy Council
55	Number of Local Government and Public Schools who participated in SCEAP for which available NJBPU Clean Energy Program savings data is available
35	Number of Local Government and Public Schools who participated in SCEAP for which available NJBPU Clean Energy Program that ultimately received financial incentives.

Findings

The subsequent findings were originally presented to the SCEC on Tuesday 24th, 2015 at the Somerset County Municipal Facility. An annotated description follows:

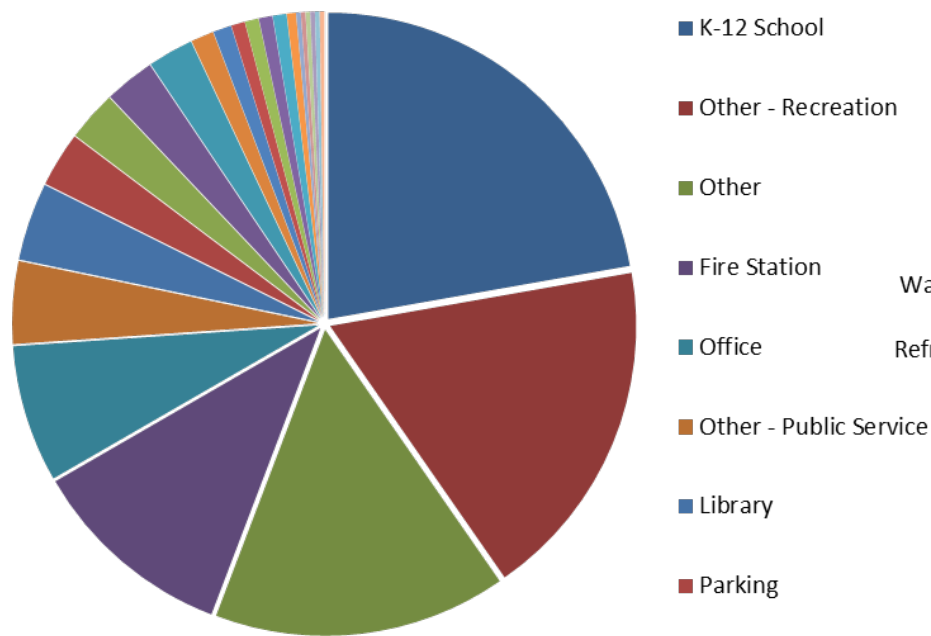
Table 1 – Facilities by Use Category

NJIT 412 ESPM 112 SCEAP 84 ESPM 35 # ESPM 35 % ESPM Use (LG-PS Order)					NJIT 412 ESPM 112 SCEAP 84 ESPM 35 ESPM Use (LG-PS Order)				
414	112	83	55		414	112	83	55	
92	53	39	25	27.17%	0	0	0	0	0 Adult Education
75	7	6	6	8.00%	0	0	0	0	0 Aquarium
64	1	1	1	1.56%	0	0	0	0	0 Convention Center
45	8	5	1	2.22%	0	0	0	0	0 Drinking Water Treatment / Distribution
30	16	14	10	33.33%	0	0	0	0	0 Energy / Power Station
18	0	0	0	0.00%	0	0	0	0	0 Fitness Center / Health Club / Gym
17	5	3	3	17.65%	0	0	0	0	0 Ice / Curling Rink
12	0	0	0	0.00%	0	0	0	0	0 Indoor Arena
11	11	7	6	54.55%	0	0	0	0	0 Mailing Center / Post Office
11	0	0	0	0.00%	0	0	0	0	0 Other - Entertainment/Public Assembly
10	6	6	3	30.00%	0	0	0	0	0 Other - Lodging/Residential
5	1	0	0	0.00%	0	0	0	0	0 Other - Stadium
4	0	0	0	0.00%	0	0	0	0	0 Other - Utility
3	0	0	0	0.00%	0	0	0	0	0 Other - Specialty Hospital
3	2	0	0	0.00%	0	0	0	0	0 Outpatient Rehabilitation / Physical Therapy
3	0	0	0	0.00%	0	0	0	0	0 Residence Hall / Dormitory
3	0	0	0	0.00%	0	0	0	0	0 Roller Rink
2	0	0	0	0.00%	0	0	0	0	0 Stadium (Closed)
1	0	0	0	0.00%	0	0	0	0	0 Stadium (Open)
1	0	0	0	0.00%	0	0	0	0	0 Swimming Pool
1	0	0	0	0.00%	0	0	0	0	0 Zoo
1	1	1	0	0.00%					
1	0	0	0	0.00%					
1	1	1	0	0.00%					
1	0	0	0	0.00%					
1	1	1	0	0.00%					

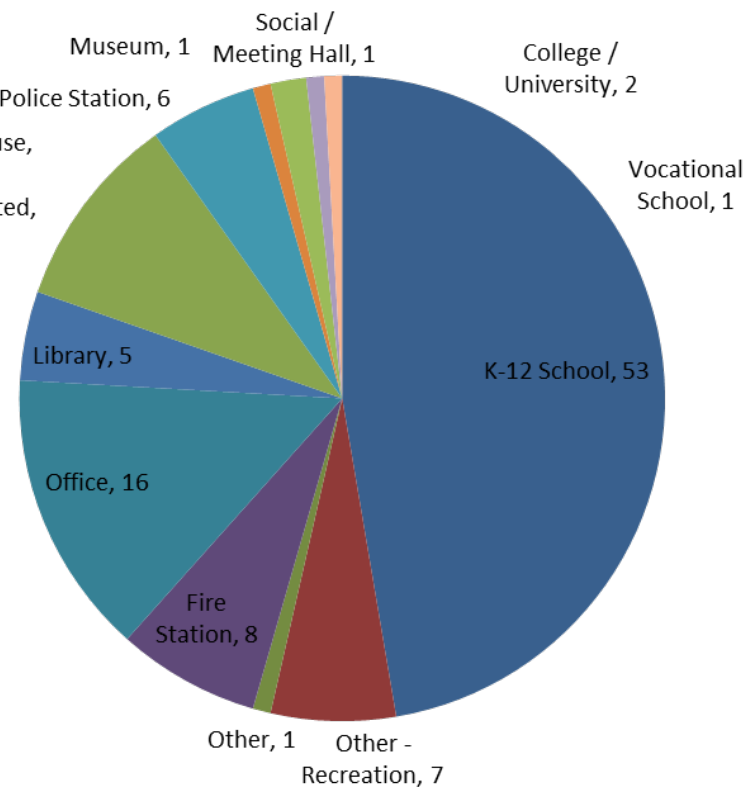
The number of facilities identified as both Local Government (LG) and Public Schools (PS) throughout Somerset County total four hundred and fifteen (415). Table 1 categorizes the use of each facility in accordance with the ESPM categories for the purpose of correlation with available energy consumption data such as Commercial Building Energy Consumption Survey (CBECS) conducted by the U.S. Energy Information Agency. This same categorization is subsequently divided as indicated by the columns as all Somerset LG-PS facilities, ESPM participants, the original SCEAP participants, and those SCEAP participants who had applied to the CEP for incentives.

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Chart 1 – All Somerset LG-PS Facilities by Use & Chart 2 – ESPM Facilities by Use



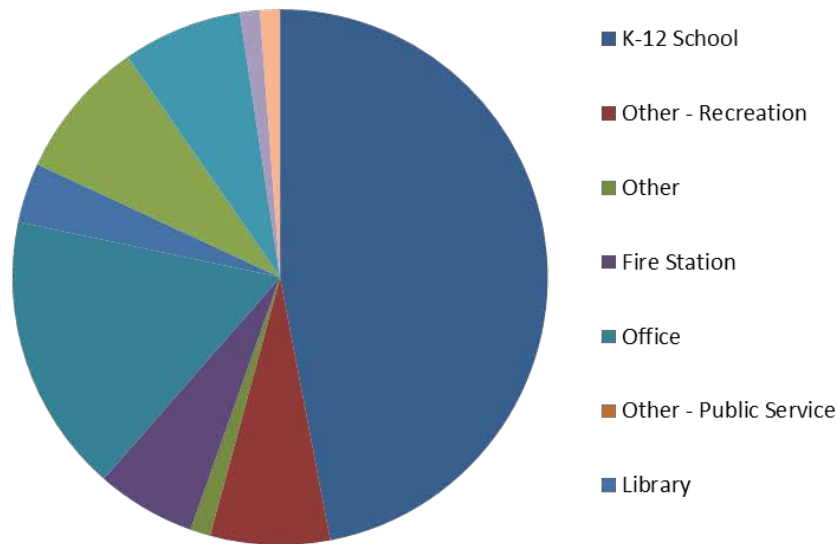
Facilities by Building Use, All Somerset County LG-PS [412]



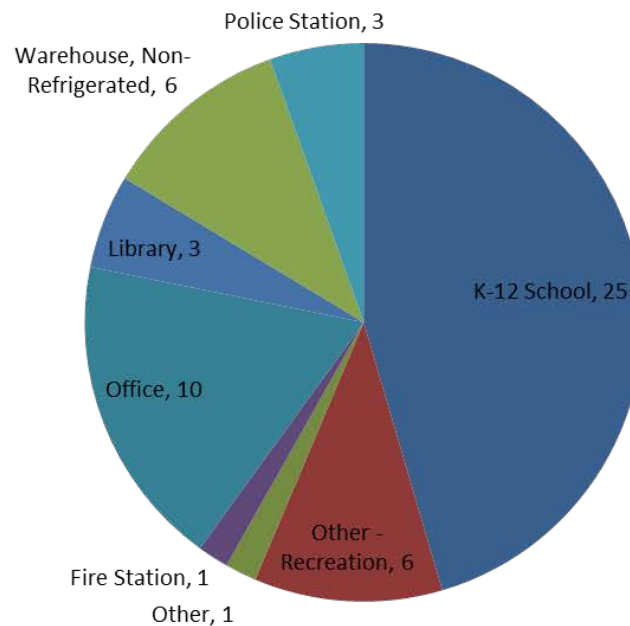
Facilities by Building Use Registered with ESPM [112]

Comparing Chart 1 and 2, we can see that the facilities participating in the SCEAP efforts are primarily K-12 school facilities, (Municipal) Offices, and (Public Works) Non-Refrigerated Warehouses when expressed as a percentage. This is largely attributable to the fact that those facilities designated as Other – Recreation are parks or those designated as Other may not contain structures as the use could not be readily identified.

Chart 3 – SCEAP Facilities by Use & Chart 4 – CEP Program Applicant Facilities by Use



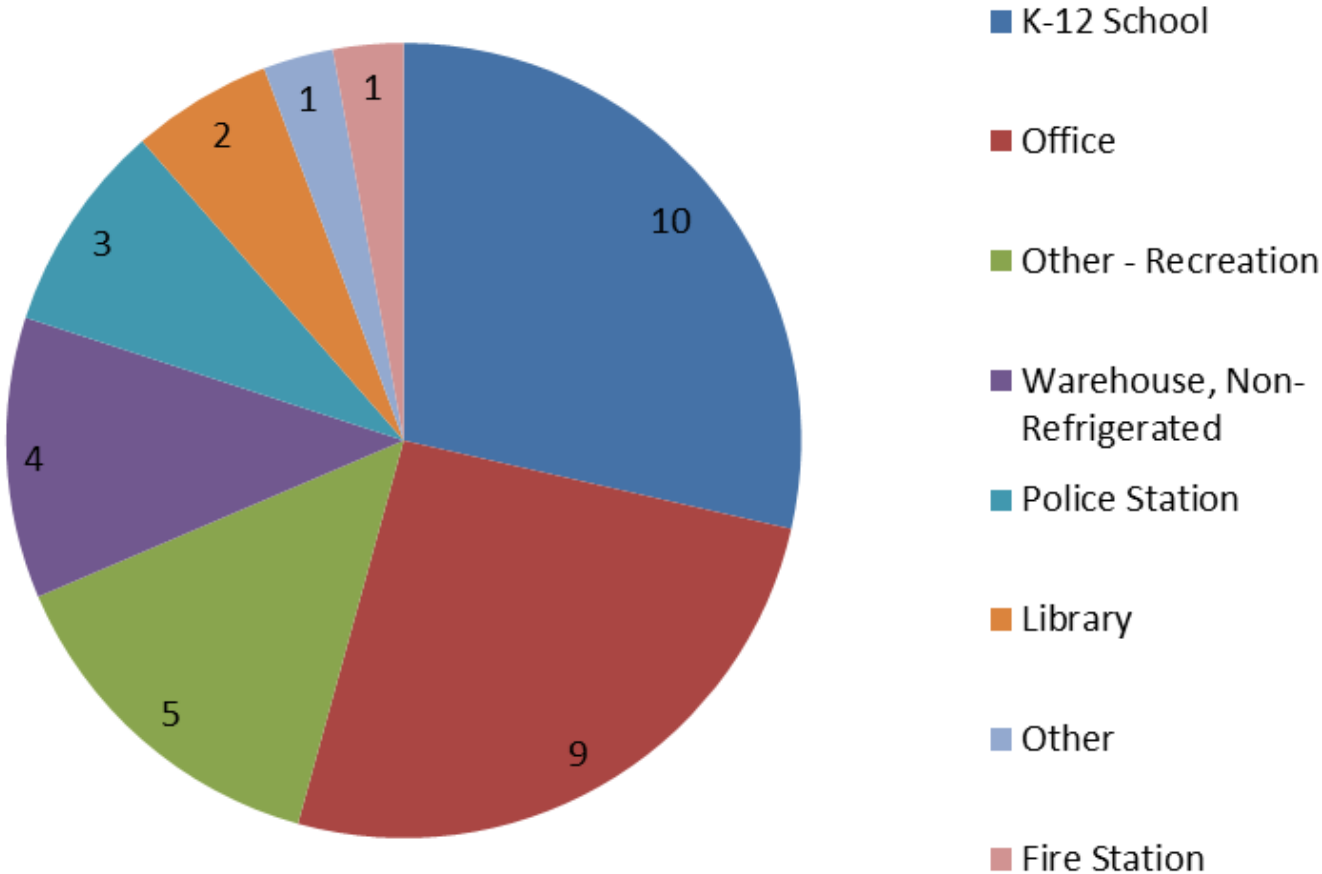
Facilities by Building Use, Original SCEAP Participants [84]



Facilities by Building Use, CEP Program Applicants [55]

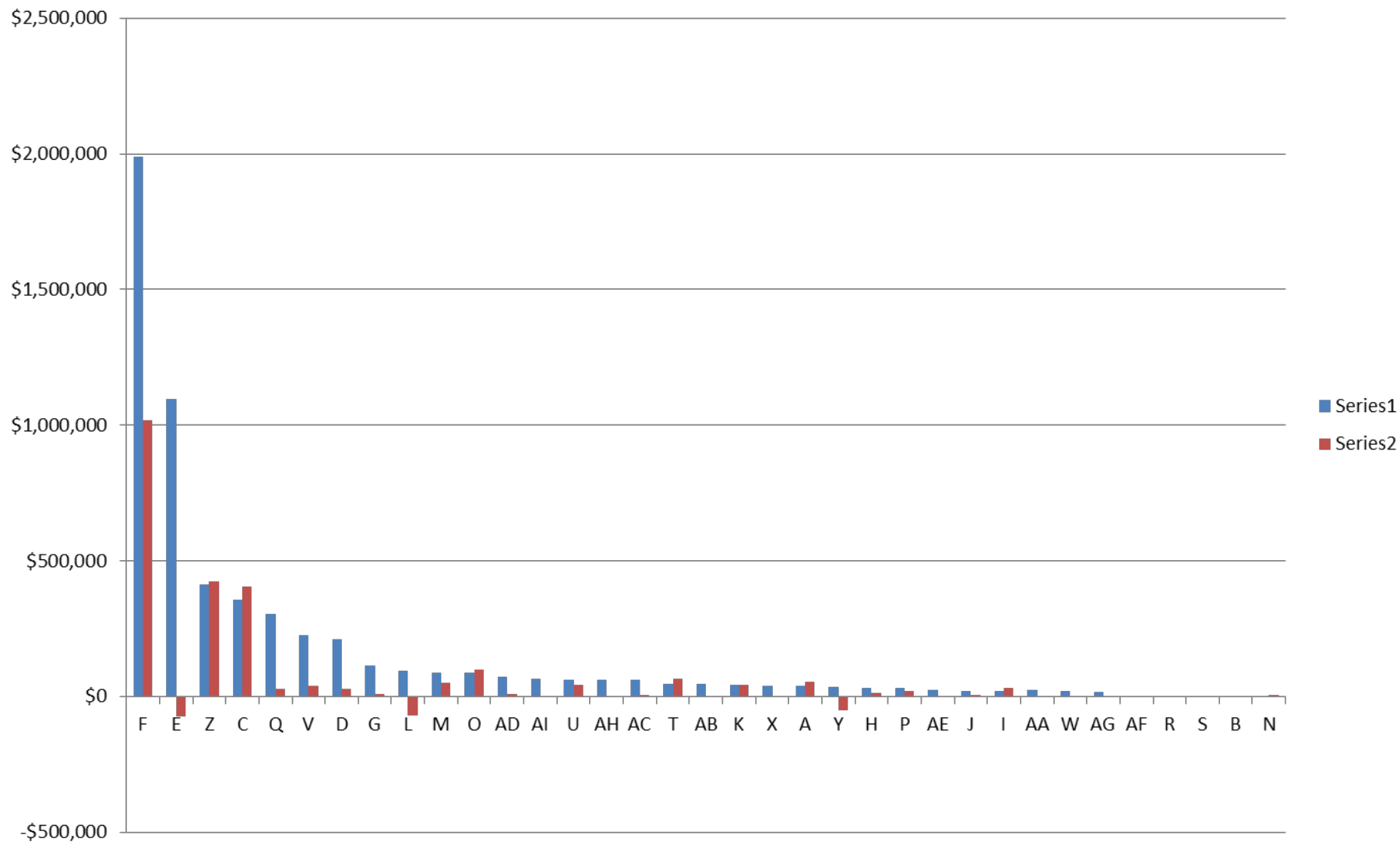
Comparing Chart 3 and 4, we can again see that the facilities participating in the SCEAP efforts are primarily K-12 school facilities, (Municipal) Offices, and (Public Works) Non-Refrigerated Warehouses when expressed as a percentage. This is in large measure attributable to both the percentage of buildings so classified and the relatively large attributable savings opportunities specific to schools.

Chart 5 –Facilities to Successfully Complete the CEP Program by Use



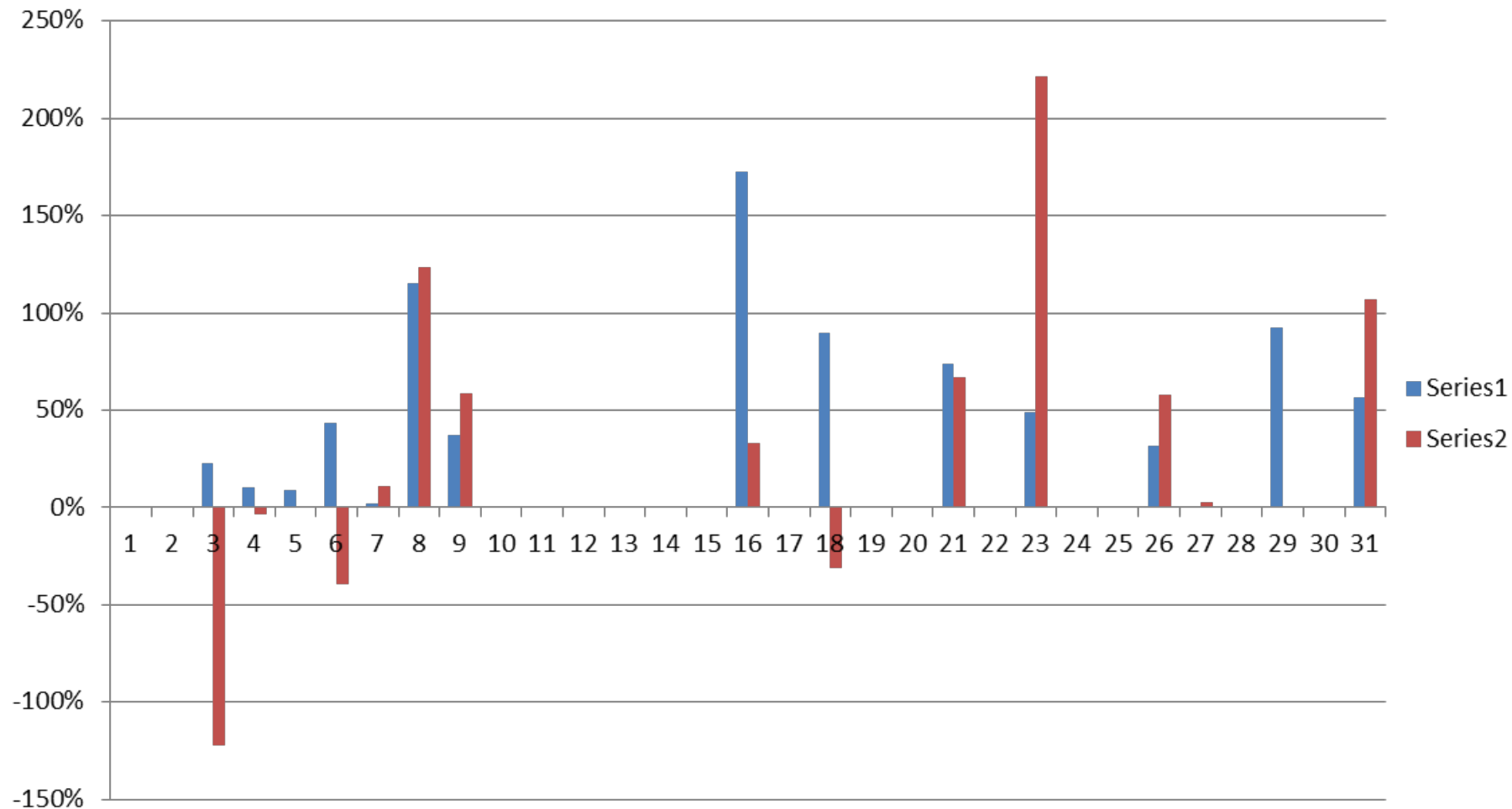
While the proportion of K-12 to apply to CEP program is large (55/83) the number to successfully complete the program and implement ECM is significantly smaller (35/83) while the number of (municipal) offices, recreational facilities, and (public works) non-refrigerated warehouses is proportionately larger. WE speculate that this reflects the ARRA stimulus incentives during the recent economic crisis which created opportunities for no-cost improvements to local government entities but this will require further study.

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 Chart 6 – Savings Attributable to Facilities Successfully Completing the CEP Program



Amongst the facilities to have successfully completed the CEP there is a very large divergence amongst both the electrical and natural gas savings accomplished. The blue column indicates electric savings and the red natural gas. It is common to have increased natural consumption with corresponding electrical savings when lighting improvements are implemented.

Chart 7 –Savings Attributable to LG-PS Organizations in Somerset County



Amongst the LG-PS facilities throughout the county there is a similar very large divergence amongst organizations and the respective electrical and natural gas savings accomplished. The blue column indicates electric savings and the red natural gas. It is common to have increased natural consumption with corresponding electrical savings when lighting improvements are implemented. As these values are expressed as percentages so as to maintain the confidentiality of the organization on a percentage basis at first glance it may appear that savings attributable to one or the other fuel source may outweigh each other. Rather it is expressed as a percentage of the potential savings identified in the SCEAP.

Framework for Establishing a Somerset County Energy Savings Incentive Program

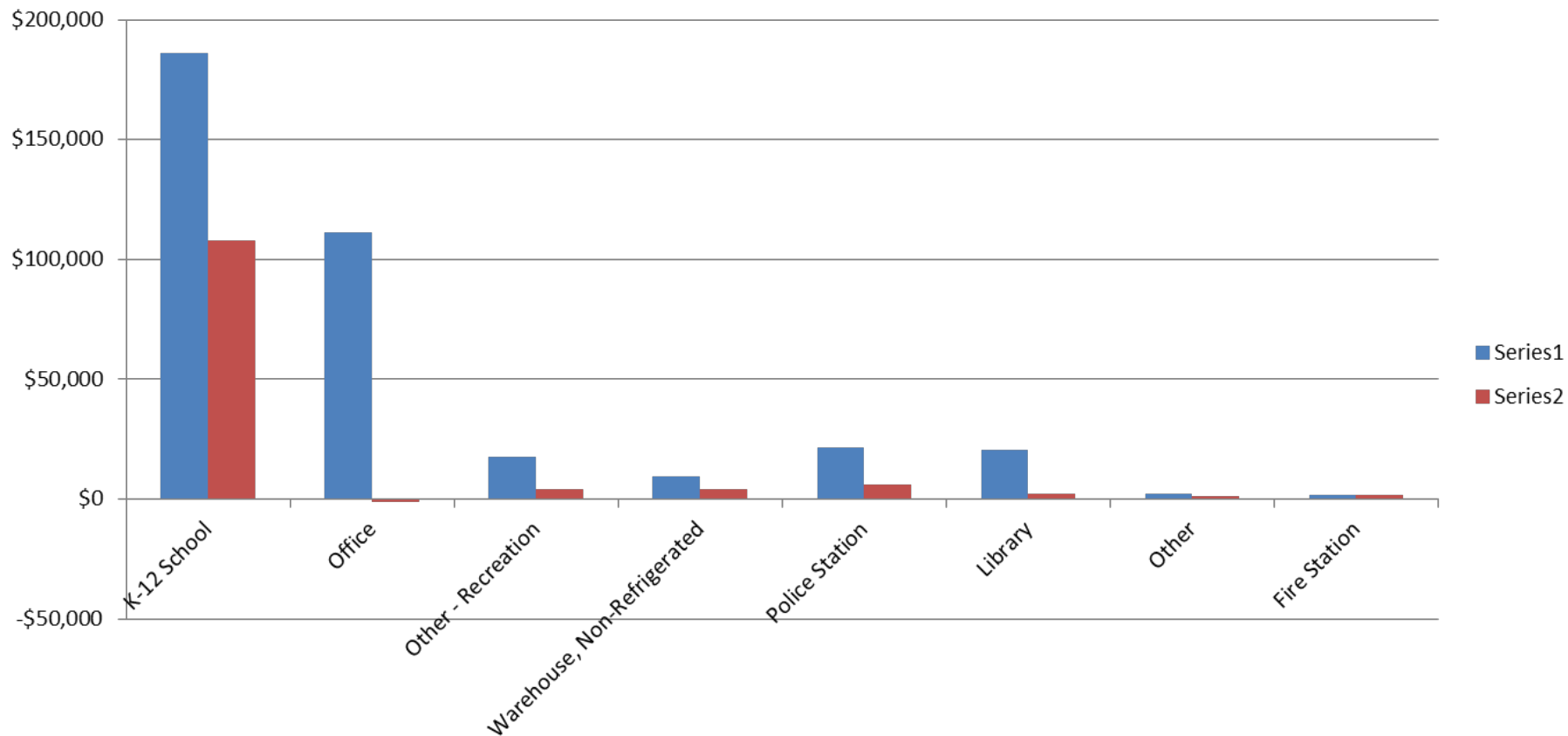
Table 2 – Detailed Aggregate Savings by Facilities to have Completed CEP by Use

	Square Footage	ESPM USE/NET Assigned	Committed Incentive	Paid Incentive	Estimated Annual Electrical Savings (kWh)	Estimated Annual Electrical Savings (\$0.135/kWh)	Estimated Life Electrical Savings (kWh)	Estimated Life Electrical Savings (\$0.135/kWh)	Estimated Annual Natural Gas Savings (\$1.00/Therm)	Estimated Annual Natural Gas Savings (\$1.00/Therm)	Estimated Life Natural Gas Savings (Therm)	Estimated Life Natural Gas Savings (\$1.00/Therm)
10	524979	K-12 School	\$660,812	\$370,239	1,376,877	\$185,878	21,804,621	\$2,943,624	108,034	\$108,034	1,948,899	\$1,948,899
9	109480	Office	\$346,535	\$285,364	822,946	\$111,098	12,972,573	\$1,751,297	-1,189	-\$1,189	-46,375	-\$46,375
5	45800	Other - Recreation	\$93,710	\$93,710	130,665	\$17,640	1,959,973	\$264,596	4,230	\$4,230	64,238	\$64,238
4	30674	Warehouse, Non-Refrigerated	\$97,993	\$97,993	70,754	\$9,552	1,061,304	\$143,276	3,958	\$3,958	67,707	\$67,707
3	30000	Police Station	\$110,585	\$110,585	157,556	\$21,270	2,373,884	\$320,474	6,171	\$6,171	100,039	\$100,039
2	38000	Library	\$50,685	\$50,685	151,360	\$20,434	2,270,403	\$306,504	1,950	\$1,950	29,250	\$29,250
1	8000	Other	\$29,649	\$29,649	15,335	\$2,070	230,029	\$31,054	1,327	\$1,327	22,159	\$22,159
1	4500	Fire Station	\$34,974	\$34,974	11,027	\$1,489	165,401	\$22,329	1,878	\$1,878	31,165	\$31,165
35			\$1,424,943	\$1,073,199	2,736,519	\$369,430	42,838,186	\$5,783,155	\$126,359	\$126,359	2,217,082	\$2,217,082

Amongst the approximately 42% of LG-PS facilities having participated in the SCEAP the savings and incentives were significant.

- ✓ In excess of one million dollars (\$1M) in financial incentives were paid to implement ECM in these facilities.
- ✓ The annual savings attributable to these ECM are estimated to save these same facilities nearly half a million dollars (\$500k) annually.
- ✓ The ECM implemented is anticipated to save approximately eight million dollars (\$8M) over than anticipated service life.

Chart 8 – Average Estimated Annual Savings by Use Type



Similar to the diversity we identified amongst participants in the program, both facilities and organizations, the estimated savings vary dramatically from use to use and the proportion of savings attributable to electric and natural gas too vary. This suggests that the benefit and corresponding incentive is greatest for just two building uses, K-12 Schools and (municipal) offices and this is likely to have influenced who had participated in to the program. It is also important to note that the proportionate estimated savings opportunities vary significantly amongst use types. Where a school might accomplish nearly a third of their potential savings attributable to natural gas conventionally used for space heating and cooling, an office building in contrast has relatively little to no benefit as the majority of savings are likely attributable to improvements to lighting. This suggests that the ECM suitable for one use type is not necessarily suitable to all.

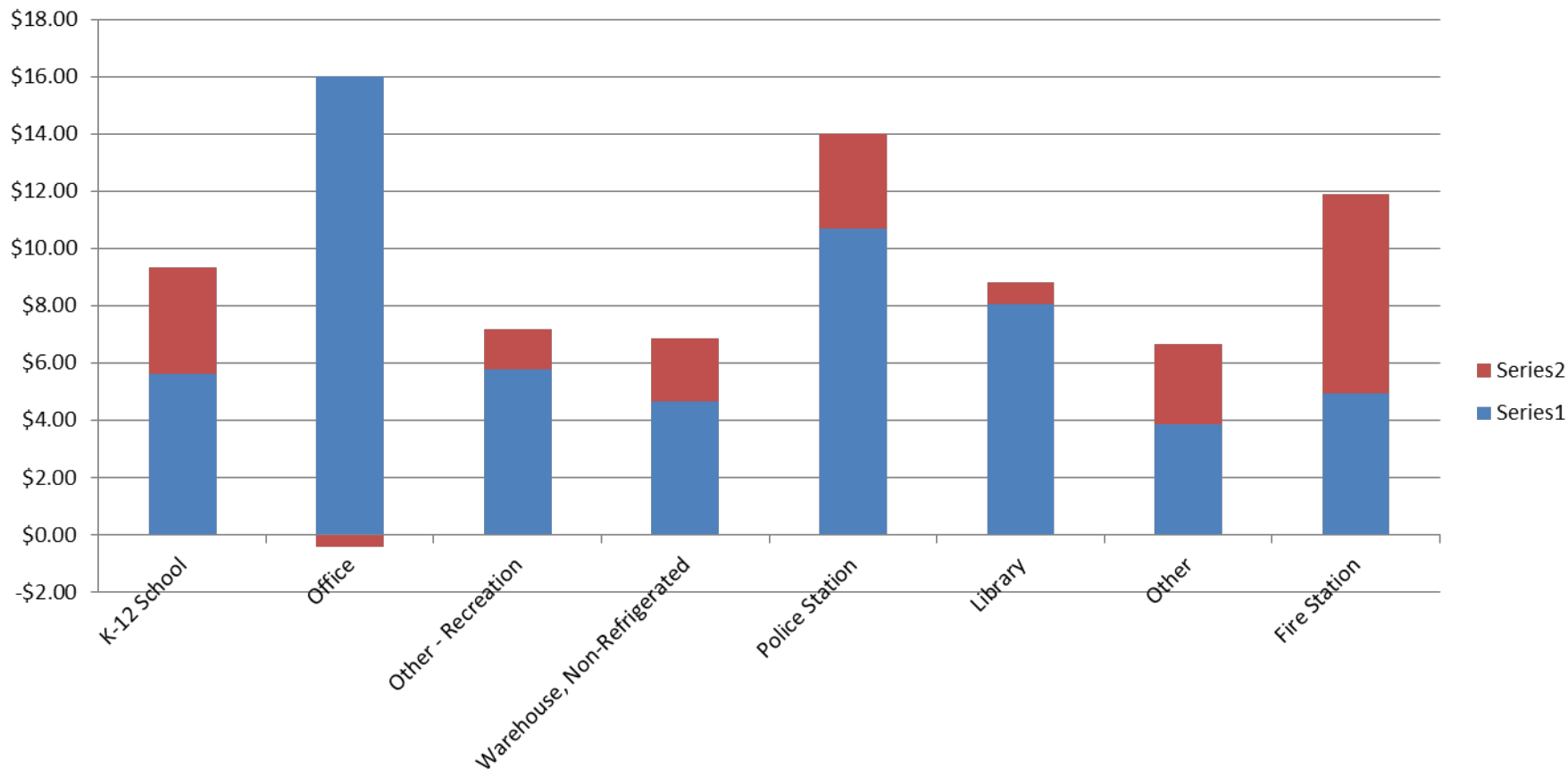
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Table 3 – Detailed Average Savings by Facilities to have Completed CEP by Use

	Square Footage	ESPM USE NJIT Assigned	Average Life Savings by Facility Type (\$)	Average Annual Electrical Savings by Facility Type (\$/SF)	Average Life Electrical Savings by Facility Type (\$/SF)	Average Annual Natural Gas Savings by Facility Type (\$/SF)	Average Life Natural Gas Savings by Facility Type (\$/SF)	Average Combined Fuel Annual Savings by Facility Type (\$/SF)	Average Combined Fuel Life Savings by Facility Type (\$/SF)
10	524979	K-12 School	\$489,252	\$0.35	\$5.61	\$0.21	\$3.71	\$0.56	\$9.32
9	109480	Office	\$189,436	\$1.01	\$16.00	-\$0.01	-\$0.42	\$1.00	\$15.57
5	45800	Other - Recreation	\$65,767	\$0.39	\$5.78	\$0.09	\$1.40	\$0.48	\$7.18
4	30674	Warehouse, Non-Refrigerated	\$52,746	\$0.31	\$4.67	\$0.13	\$2.21	\$0.44	\$6.88
3	30000	Police Station	\$140,171	\$0.71	\$10.68	\$0.21	\$3.33	\$0.91	\$14.02
2	38000	Library	\$167,877	\$0.54	\$8.07	\$0.05	\$0.77	\$0.59	\$8.84
1	8000	Other	\$53,213	\$0.26	\$3.88	\$0.17	\$2.77	\$0.42	\$6.65
1	4500	Fire Station	\$53,495	\$0.33	\$4.96	\$0.42	\$6.93	\$0.75	\$11.89

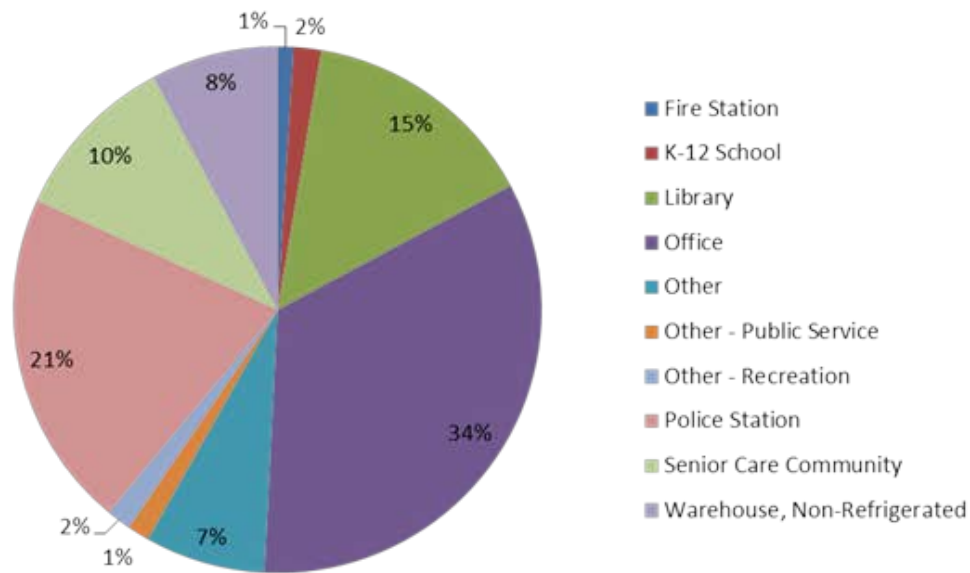
Amongst the approximately 42% of LG-PS facilities having participated in the SCEAP the average savings on a square foot basis too vary significantly. As such, while the estimated savings of a school may be relatively low as a percentage of its total consumption the size of such facilities yield the greatest savings. Similarly, an office or police station may reduce a very significant portion of their total consumption but as these facilities represent significantly less square footage throughout the county they do not contribute nearly as much aggregate savings.

Chart 9 – Average Estimated Life Savings by Use Type on a Square Footage Basis

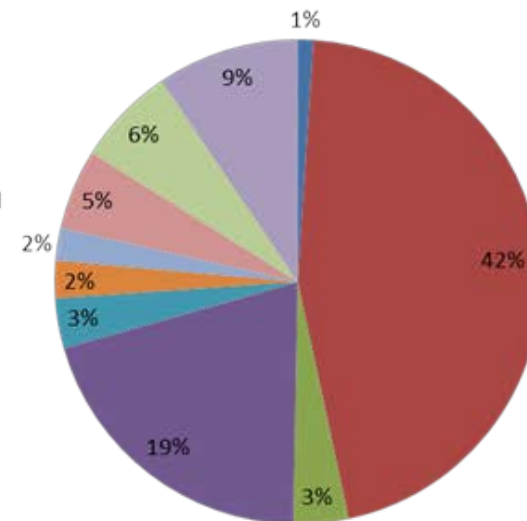


As discussed previously, the savings attributable over the life of the measure vary significantly depending upon the type of use. This is largely attributable to the unique energy profile associated for each use where as a school and fire station, consume a significant amount of energy for space heating/cooling (Natural Gas – Series 2) , an office, police station or library are predominately lighting loads (Electric – Series 1). As such the measures appropriate for one are not the same as the other.

Chart 10 – Annual Deemed Savings by Use Type



Annual Electrical Deemed Savings by Use Type (%)



Annual Natural Gas Deemed Savings by Use Type (%)

In contrast to the previous examples identifying the potential savings, the charts designate deemed savings or in lay person terms savings anticipated from the implemented measures as a percentage of the total accomplished. Again we see schools rise to the top due both to their number and size but other uses which we would not have previously anticipated to contribute a significant share such as libraries. This suggests that a particular use type may prove more willing or adept at navigating the CEP process and may serve as leaders for other participants.

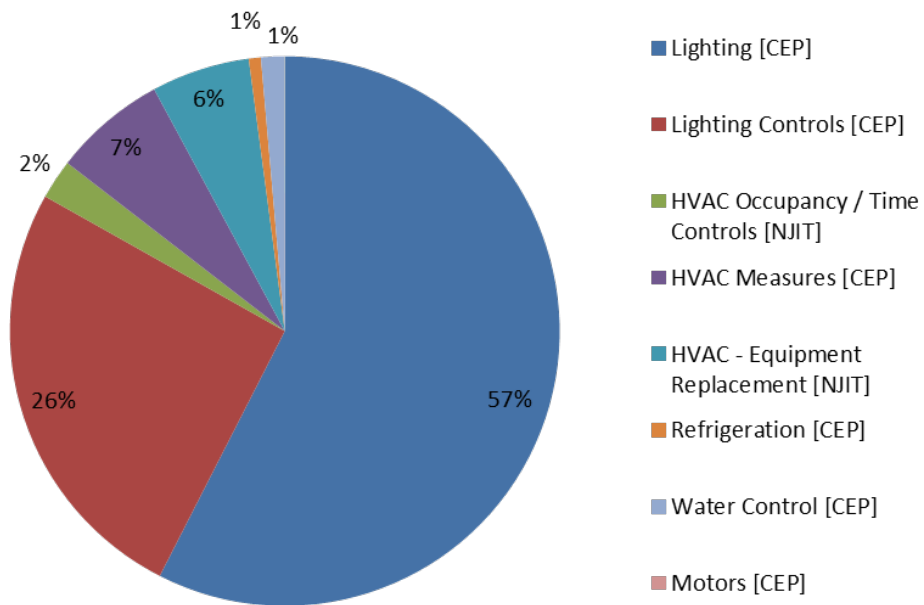
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Table 4 – Number of Applications by Measure Type

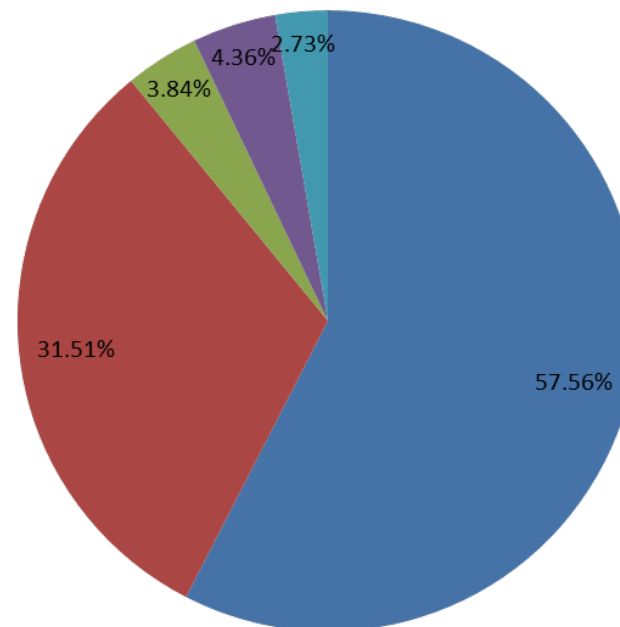
CEP Measure	CEP All		NJIT 412		ESPM 112		ESPM 84	
Applications, Total #								
NJIT Measure	113,168	100%	2,356	100%	1,288	100%	1,171	100%
Lighting [CEP]	65,086	57.33%	1,226	52.04%	694	53.88%	674	57.56%
Lighting Controls [CEP]	29,016	25.56%	834	35.40%	444	34.47%	369	31.51%
HVAC Occupancy/ Time Controls [NJIT]	2,630	2.32%	100	4.24%	54	4.19%	45	3.84%
HVAC Measures [CEP]	7,517	6.62%	99	4.20%	57	4.43%	51	4.36%
HVAC - Equipment Replacement [NJIT]	6,545	5.76%	97	4.12%	39	3.03%	32	2.73%
Refrigeration [CEP]	805	0.71%	0	0.00%	0	0.00%	0	0.00%
Water Control [CEP]	1,544	1.36%	0	0.00%	0	0.00%	0	0.00%
Motors [CEP]	18	0.02%	0	0.00%	0	0.00%	0	0.00%
HVAC Variable Frequency Drives [CEP]	7	0.01%	0	0.00%	0	0.00%	0	0.00%

Similar to our analysis of building uses and the distinctions amongst them it is important to study the specific ECM types that have been implemented so as to determine whether the projects completed to date are proportionate to what we witness on a county wide basis and the degree to which they accomplish savings relative to the potential. The above table illustrates all measures approved by the CEP and implemented throughout the county in recent years, totaling in excess of one hundred thirteen thousand. These measures are further categorized according to whether they are county LG-PS facilities (NJIT 412), ESPM Participants (112), or SCEAP Participants (ESPM 84). In all instances the measures implemented are roughly consistent in which those that may be categorized as Lighting or Lighting Controls amount to 82-88%. This is attributable to both how the applications are tallied resulting in multiple measures for the same facility and the relative short SPB periods associated with lighting technologies. It is important that this is simply a tally of the applications received, not necessarily approved, and does not reflect the savings attributable to the measures.

Chart 11 – Types of Measures by Number of Applications



Types of Measures Implemented by All of Somerset County (%)



Types of Measures Implemented by Originally Audited Facilities (%)

Again, as described in the previous table we can see graphically that the applications for specific measure categories is largely consistent between all facilities throughout the county and those that were pursued by LG_PS facilities suggesting that the type of measures do not vary significantly between for-profit and non-profit enterprises.

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Table 5 – Aggregate and Average Annual and Life Electrical and Natural Gas Savings by Measure Type, 1 of 2

In contrast to the earlier data demonstrating consistent types of measures are implemented throughout the county and amongst the participants in the SCEAP we see here that the respective measures are not necessarily equivalent in terms of savings. This table compares the savings attributable to all

CEP Measure	CEP All			NJIT 412				
Annual Savings, Total \$	Annual kWh	Average	Annual Therm	Average	Annual kWh	Average	Annual Therm	Average
NJIT Measure	\$21,968,287	\$2,706	\$3,039,770	\$1,193	\$328,962	\$982	\$89,232	\$899
Lighting [CEP]	\$13,239,969	\$203	\$0	\$0	\$206,218	\$168	\$0	\$0
Lighting Controls [CEP]	\$2,323,955	\$80	\$0	\$0	\$48,711	\$58	\$0	\$0
HVAC Occupancy / Time Controls [NJIT]	\$199,692	\$76	\$822,250	\$313	\$8,221	\$82	\$63,178	\$632
HVAC Measures [CEP]	\$2,354,537	\$313	\$985,101	\$131	\$27,209	\$275	\$8,133	\$82
HVAC - Equipment Replacement [NJIT]	\$2,784,965	\$426	\$883,959	\$135	\$38,602	\$398	\$17,921	\$185
Refrigeration [CEP]	\$763,821	\$949	\$0	\$0	\$0	\$0	\$0	\$0
Water Control [CEP]	\$295,455	\$191	\$345,731	\$224	\$0	\$0	\$0	\$0
Motors [CEP]	\$4,288	\$238	\$0	\$0	\$0	\$0	\$0	\$0
HVAC Variable Frequency Drives [CEP]	\$1,605	\$229	\$2,730	\$390	\$0	\$0	\$0	\$0

ESPM Use (LG-PS)	CEP All			NJIT 412				
Life Savings, Total \$	Life kWh	Average	Life Therm	Average	Life kWh	Average	Life Therm	Average
NJIT Measure	\$319,060,057	\$0	\$6,671,470	\$0	\$36,644,789	\$0	\$1,419,863	\$0
Lighting [CEP]	\$194,025,722	\$2,981	\$0	\$0	\$22,960,893	\$18,728	\$0	\$0
Lighting Controls [CEP]	\$35,836,132	\$1,235	\$0	\$0	\$5,422,992	\$6,502	\$0	\$0
HVAC Occupancy / Time Controls [NJIT]	\$3,011,112	\$1,145	\$1,682,400	\$640	\$920,151	\$9,202	\$951,223	\$9,512
HVAC Measures [CEP]	\$32,272,439	\$4,293	\$2,020,578	\$269	\$3,051,602	\$30,824	\$127,480	\$1,288
HVAC - Equipment Replacement [NJIT]	\$41,774,492	\$6,383	\$2,265,068	\$346	\$4,289,152	\$44,218	\$341,160	\$3,517
Refrigeration [CEP]	\$7,556,696	\$9,387	\$0	\$0	\$0	\$0	\$0	\$0
Water Control [CEP]	\$4,473,631	\$2,897	\$701,655	\$454	\$0	\$0	\$0	\$0
Motors [CEP]	\$85,760	\$4,764	\$0	\$0	\$0	\$0	\$0	\$0
HVAC Variable Frequency Drives [CEP]	\$24,074	\$3,439	\$1,770	\$253	\$0	\$0	\$0	\$0

Somerset facilities employing a particular type of measure in columns 4-8, and the same data for those LG-PS facilities in the county. If there is a distinction to be made between these two groups it serves to demonstrate that the size of the county facilities appear larger than a typical building in the county as evidenced by average electrical life savings that are several times greater for the LG-PS facilities. Again, we believe this is the size of school facilities skewing the results.

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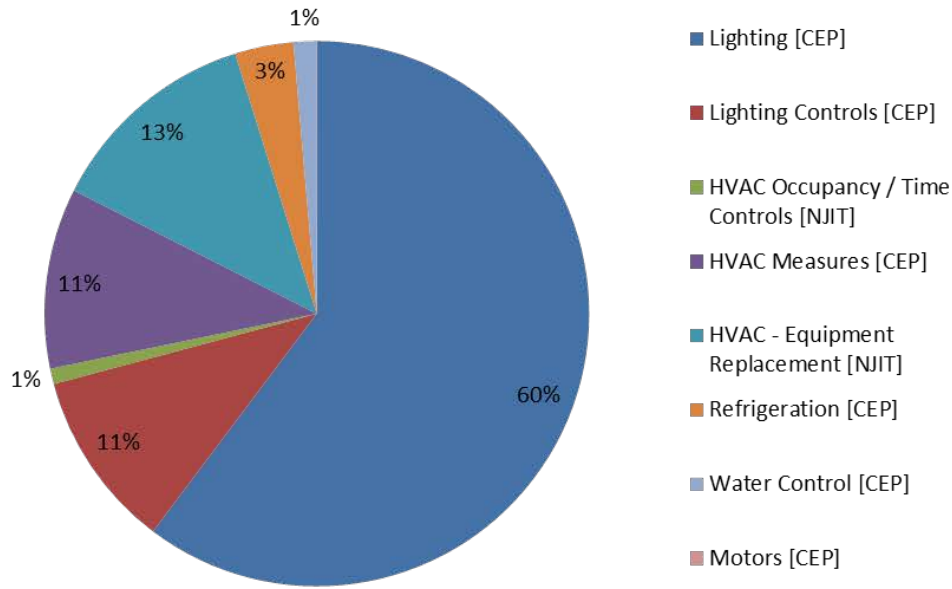
Table 6 – Aggregate and Average Annual and Life Electrical and Natural Gas Savings by Measure Type, 2 of 2

CEP Measure	ESPM 112				ESPM 84			
Annual Savings, Total \$	Annual kWh	Average	Annual Therm	Average	Annual kWh	Average	Annual Therm	Average
NJIT Measure	\$153,389	\$803	\$55,273	\$1,039	\$146,322	\$861	\$27,950	\$631
Lighting [CEP]	\$103,463	\$149	\$0	\$0	\$101,974	\$151	\$0	\$0
Lighting Controls [CEP]	\$21,917	\$49	\$0	\$0	\$18,325	\$50	\$0	\$0
HVAC Occupancy / Time Controls [NJIT]	\$3,442	\$64	\$49,162	\$910	\$3,406	\$76	\$23,042	\$512
HVAC Measures [CEP]	\$11,028	\$193	\$3,488	\$61	\$10,484	\$206	\$2,968	\$58
HVAC - Equipment Replacement [NJIT]	\$13,539	\$347	\$2,623	\$67	\$12,134	\$379	\$1,940	\$61
Refrigeration [CEP]	\$0		\$0		\$0		\$0	
Water Control [CEP]	\$0		\$0		\$0		\$0	
Motors [CEP]	\$0		\$0		\$0		\$0	
HVAC Variable Frequency Drives [CEP]	\$0		\$0		\$0		\$0	

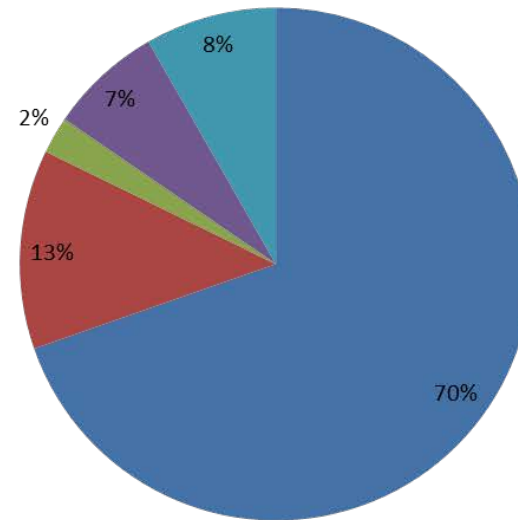
ESPM Use (LG-PS)	ESPM 112				ESPM 84			
Life Savings, Total \$	Life kWh	Average	Life Therm	Average	Life kWh	Average	Life Therm	Average
NJIT Measure	\$4,947,046	\$0	\$830,583	\$0	\$2,196,271	\$0	\$417,320	\$0
Lighting [CEP]	\$3,099,721	\$4,466	\$0	\$0	\$1,529,612	\$2,269	\$0	\$0
Lighting Controls [CEP]	\$732,104	\$1,649	\$0	\$0	\$276,303	\$749	\$0	\$0
HVAC Occupancy / Time Controls [NJIT]	\$124,220	\$2,300	\$737,426	\$13,656	\$51,088	\$1,135	\$345,626	\$7,681
HVAC Measures [CEP]	\$411,966	\$7,227	\$52,322	\$918	\$157,260	\$3,084	\$44,522	\$873
HVAC - Equipment Replacement [NJIT]	\$579,036	\$14,847	\$40,835	\$1,047	\$182,009	\$5,688	\$27,171	\$849
Refrigeration [CEP]	\$0		\$0		\$0		\$0	
Water Control [CEP]	\$0		\$0		\$0		\$0	
Motors [CEP]	\$0		\$0		\$0		\$0	
HVAC Variable Frequency Drives [CEP]	\$0		\$0		\$0		\$0	

While this observation that annual savings attributable to individual measures is consistent but the life savings are greater because of the size of the facility remains consistent amongst the next two groups, ESPM and SCEAP participants a distinction does arise. By example the life savings for a particular lighting measure amounts to \$4,466 nearly 50% greater than the average facility in the county for participants in the ESPM, those participants in the SCEAP accomplish something less than the average. This too requires further analysis.

Chart 12 – Value of Electrical Life Savings by Measure and Group



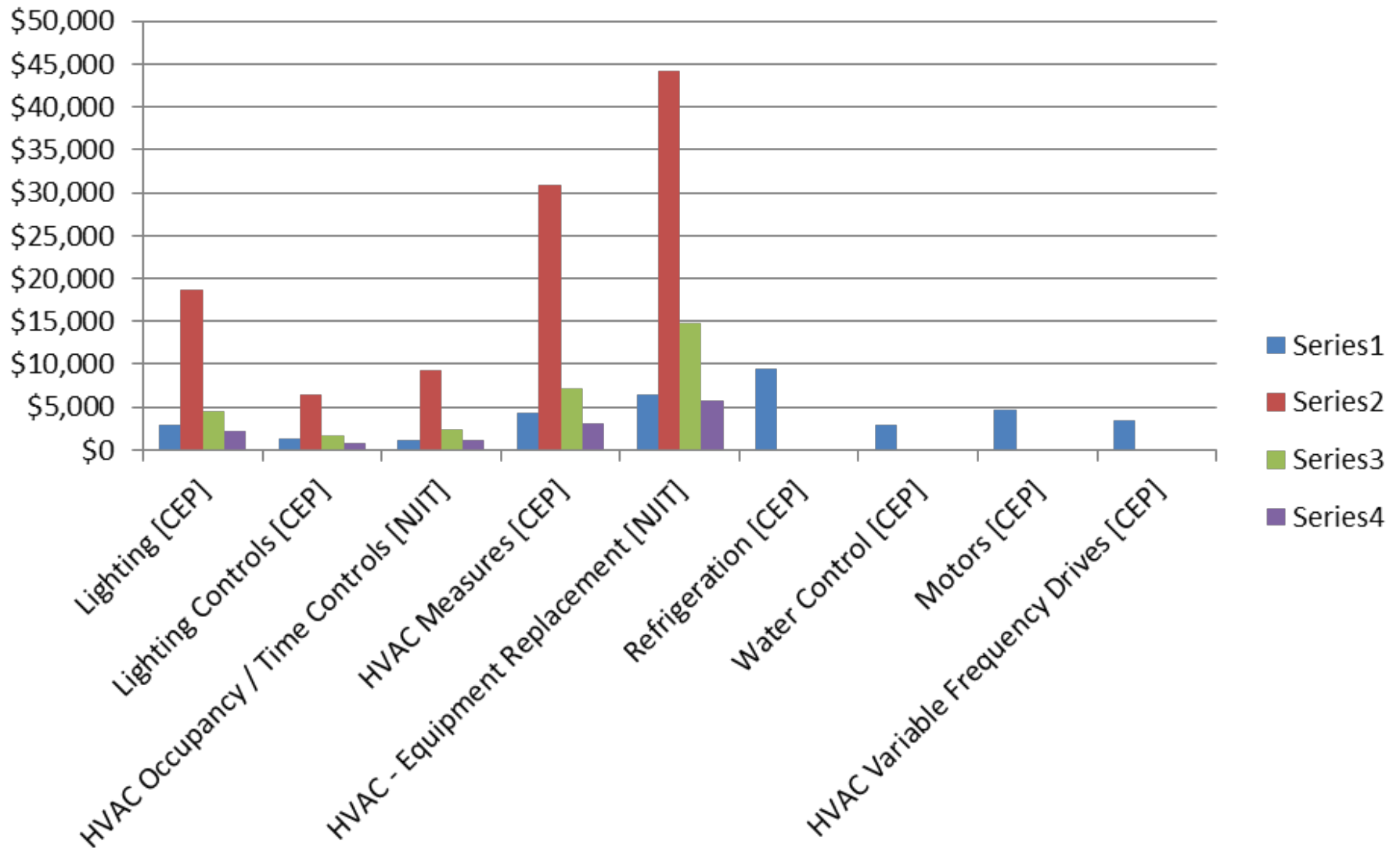
Electrical Life Savings Implemented by All of Somerset County (\$)



Electrical Life Savings Implemented by SCEAP Facilities (%)

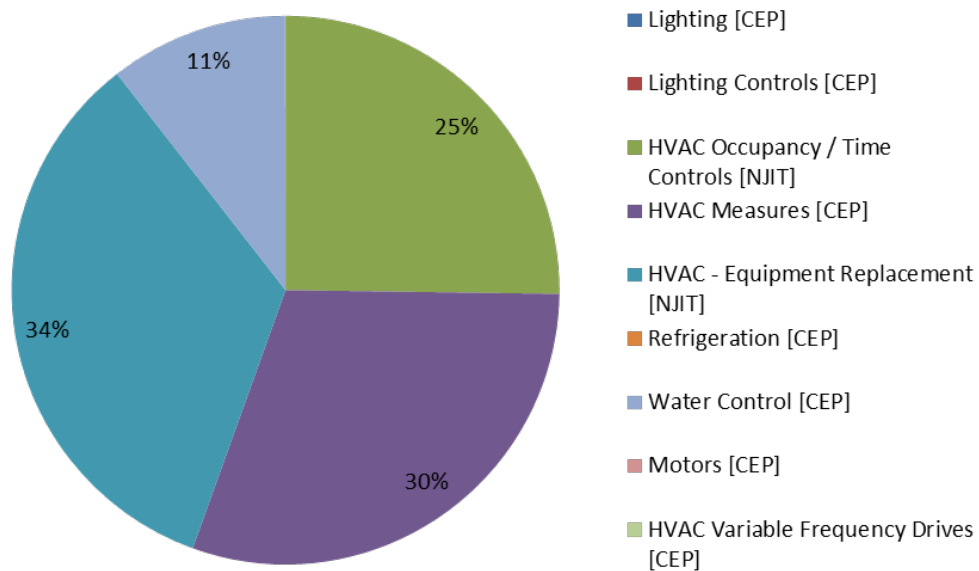
In this chart we can observe the modest increase in savings attributable to a smaller set of measure types in SCEAP facilities. This is likely because of the smaller variation amongst building types amongst LG-PS facilities when compared to all facilities in the county.

Chart 13 – Types of Measures by Value of Electrical Life Savings and Group

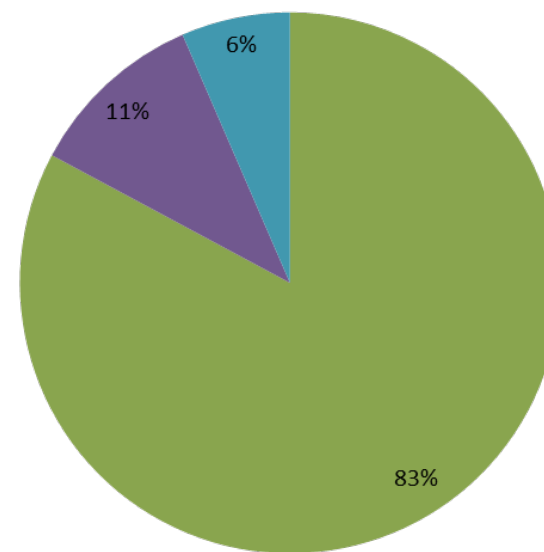


This chart serves to summarize the previous discussion by illustrating the average monetary value of the electrical measures for all four groups; CEP participants in Somerset (All), LG-PS Facilities in Somerset (415), ESPM Participants (112), and SCEAP Participants (83).

Chart 14 – Value of Natural Gas Life Savings by Measure and Group



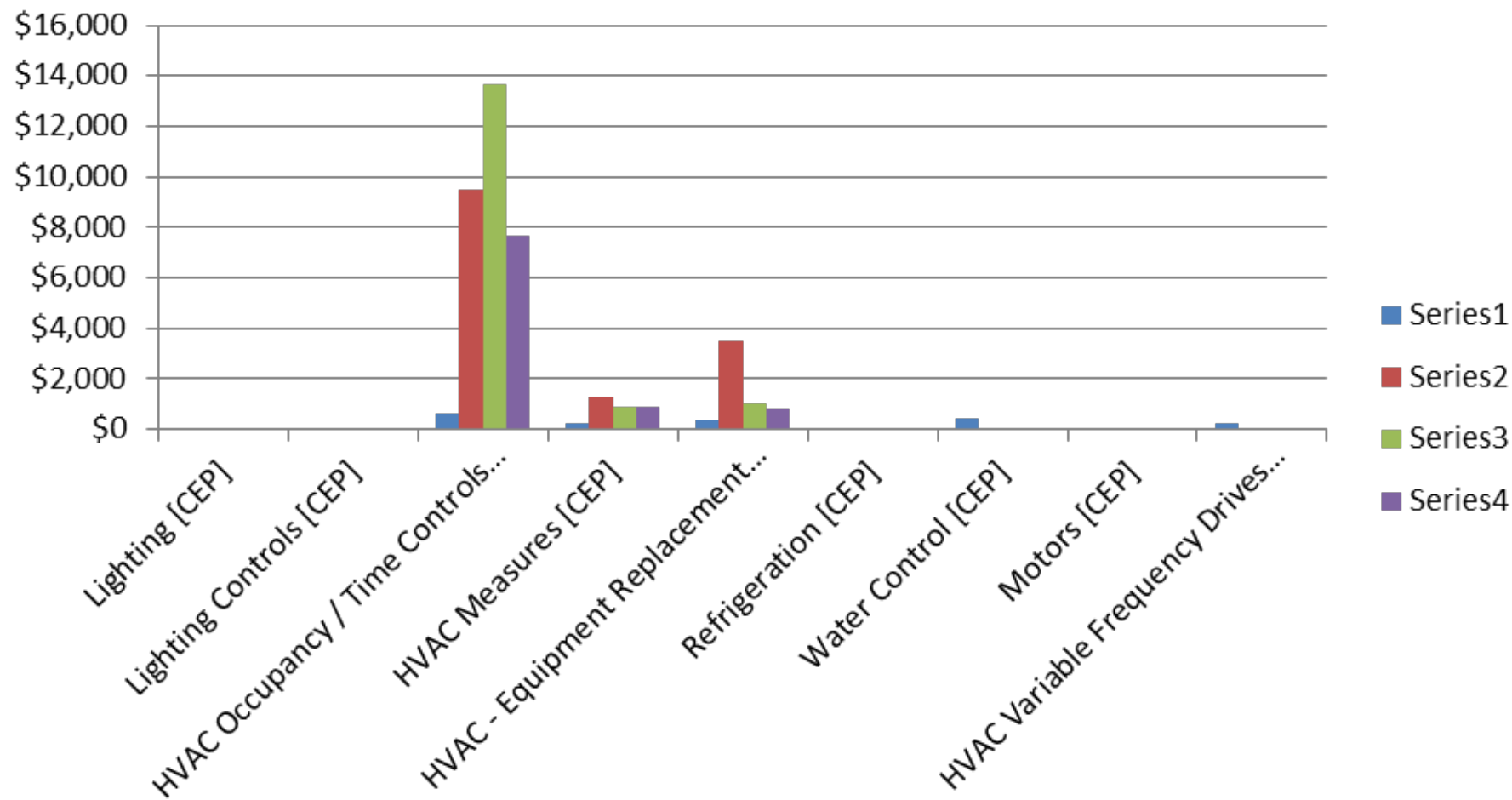
Natural Gas Life Savings Implemented by All of Somerset County (\$)



Natural Gas Life Savings Implemented by Originally Audited Facilities (%)

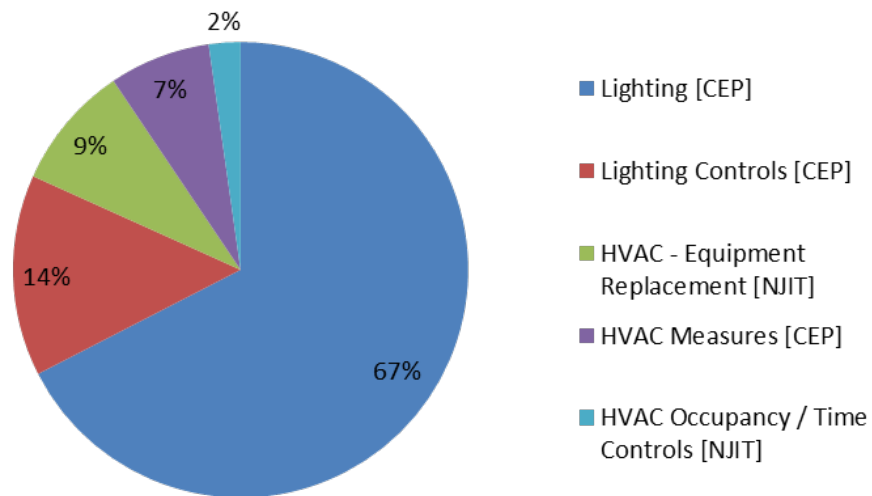
Similar to the electrical savings previously discussed, natural gas savings are attributable to even smaller number of measures and the savings are disproportionately attributable to just one measure amongst SCEAP facilities.

Chart 15 – Types of Measures by Value of Natural Gas Life Savings and Group

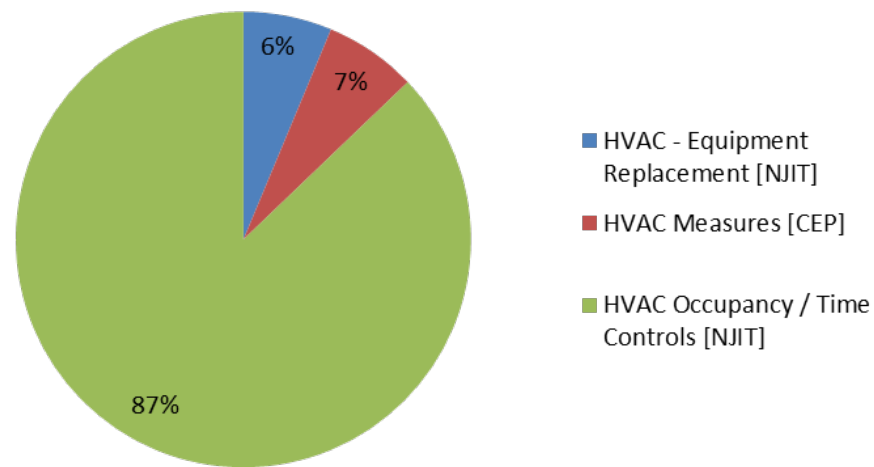


This chart serves to summarize the previous discussion by illustrating the monetary value of the natural gas measures for all four groups; CEP participants in Somerset (All), LG-PS Facilities in Somerset (415), ESPM Participants (112), and SCEAP Participants (83).

Chart 16 – Value of Both Electrical and Natural Gas Annual Savings by Measure for the SCEAP Participants



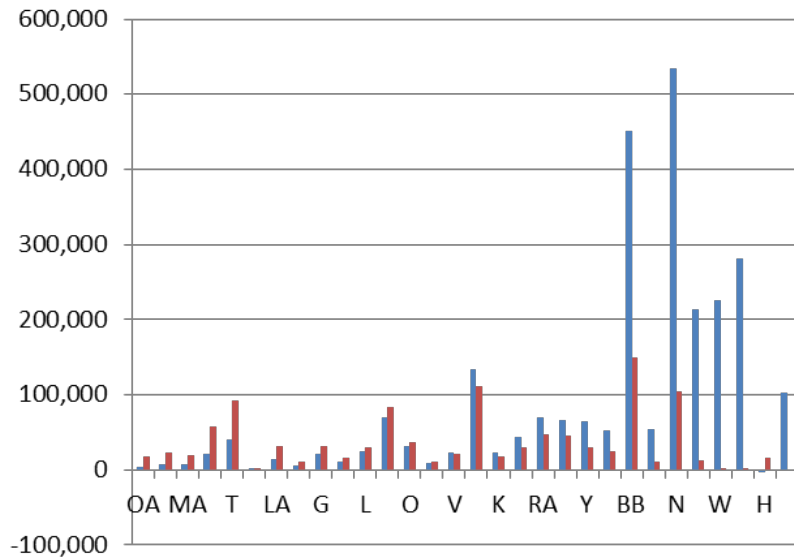
Annual Electrical Deemed Savings by Measure Type (% kWh)



Annual Natural Gas Deemed Savings by Measure Type (% Therm)

These two charts serve as a simple summary of the savings attributable to both electrical and natural gas amongst facilities that had participated in the SCEAP. Just three measures; Lighting, Lighting Controls, and HVAC Controls account for in excess of 80% of both the electrical and natural gas savings that have been accomplished.

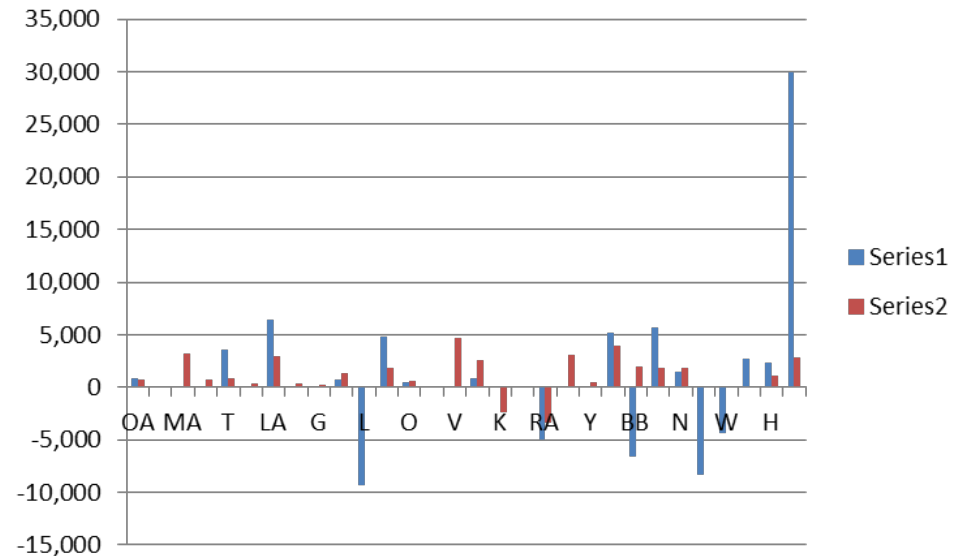
Chart 17 –Savings Attributable to SCEAP Organizations



Electrical Savings Accomplished by SCEAP [35]
(Series 1 - Estimated, Series 2 - Deemed)

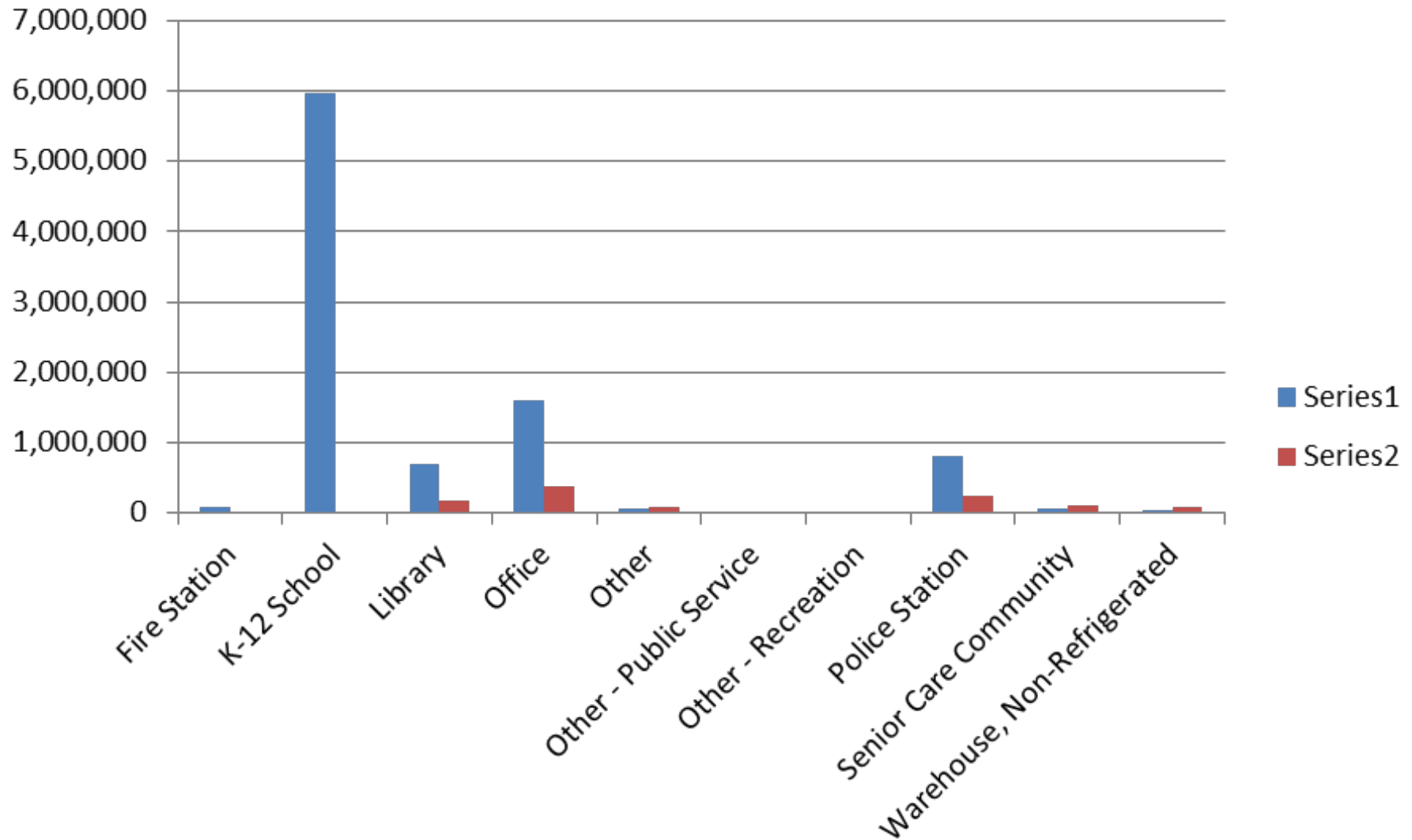
■ Series1
■ Series2

Natural Gas Savings Accomplished by SCEAP [35]
(Series 1 - Estimated, Series 2 - Deemed)



Similar to the observation that relatively few measures contribute the bulk of the savings among SCEAP participants we can observe there is wide variation amongst the savings accomplished amongst the participants and often in relation to the potential identified in the audits. This suggests why most all participants benefited from savings there seems to be little correlation to the potential identified in the audit and a relatively small number of facilities hold the greatest potential.

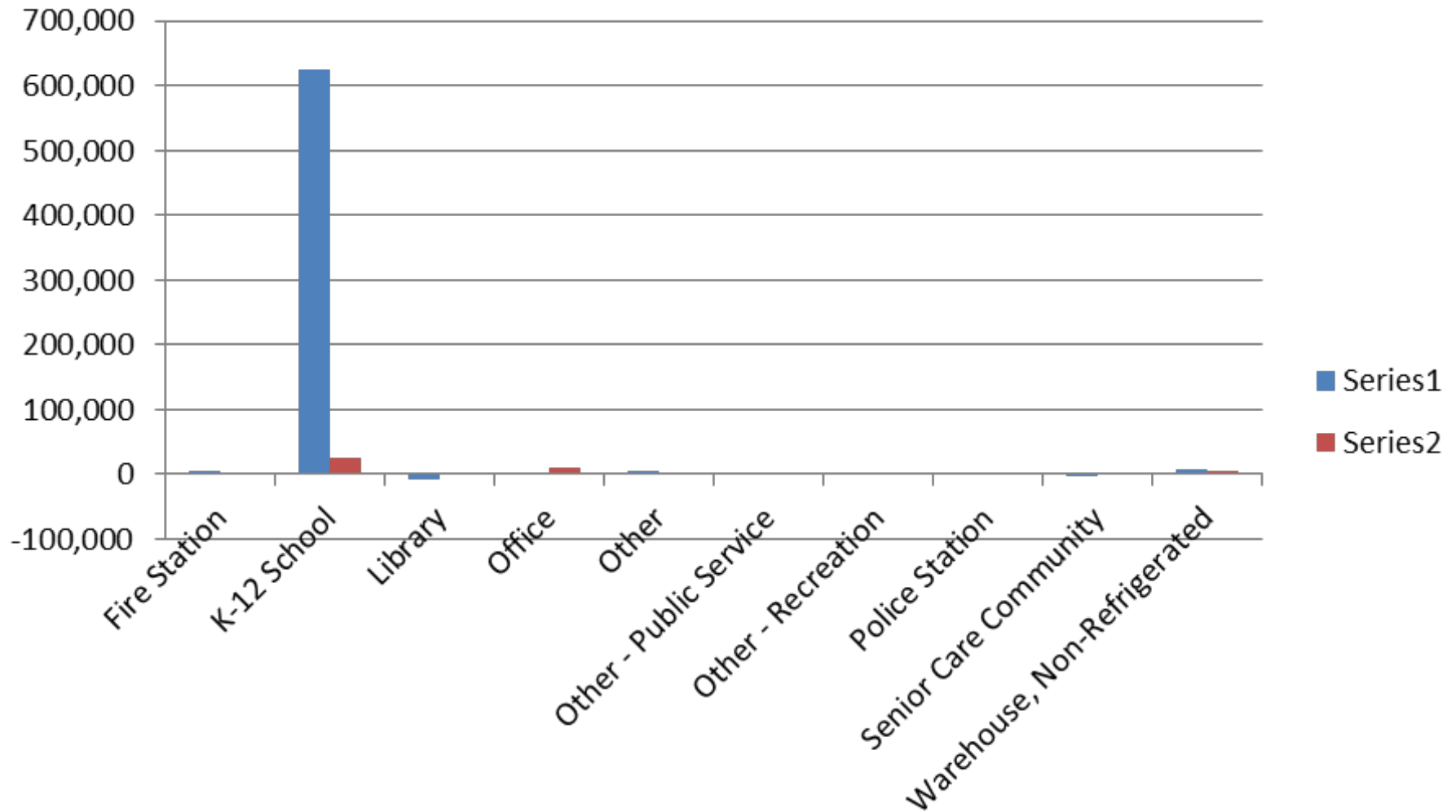
Chart 18 – Total Estimated Electrical Savings in Comparison to Deemed Amongst SCEAP Organizations



Not only do a few measures and a few particular facilities contribute the bulk of the savings accomplished to date but when we compare the potential relative to the deemed schools and offices again stand out as the vast majority of both.

Series 1 – Estimated Savings, Series 2 – Deemed (Accomplished) Savings

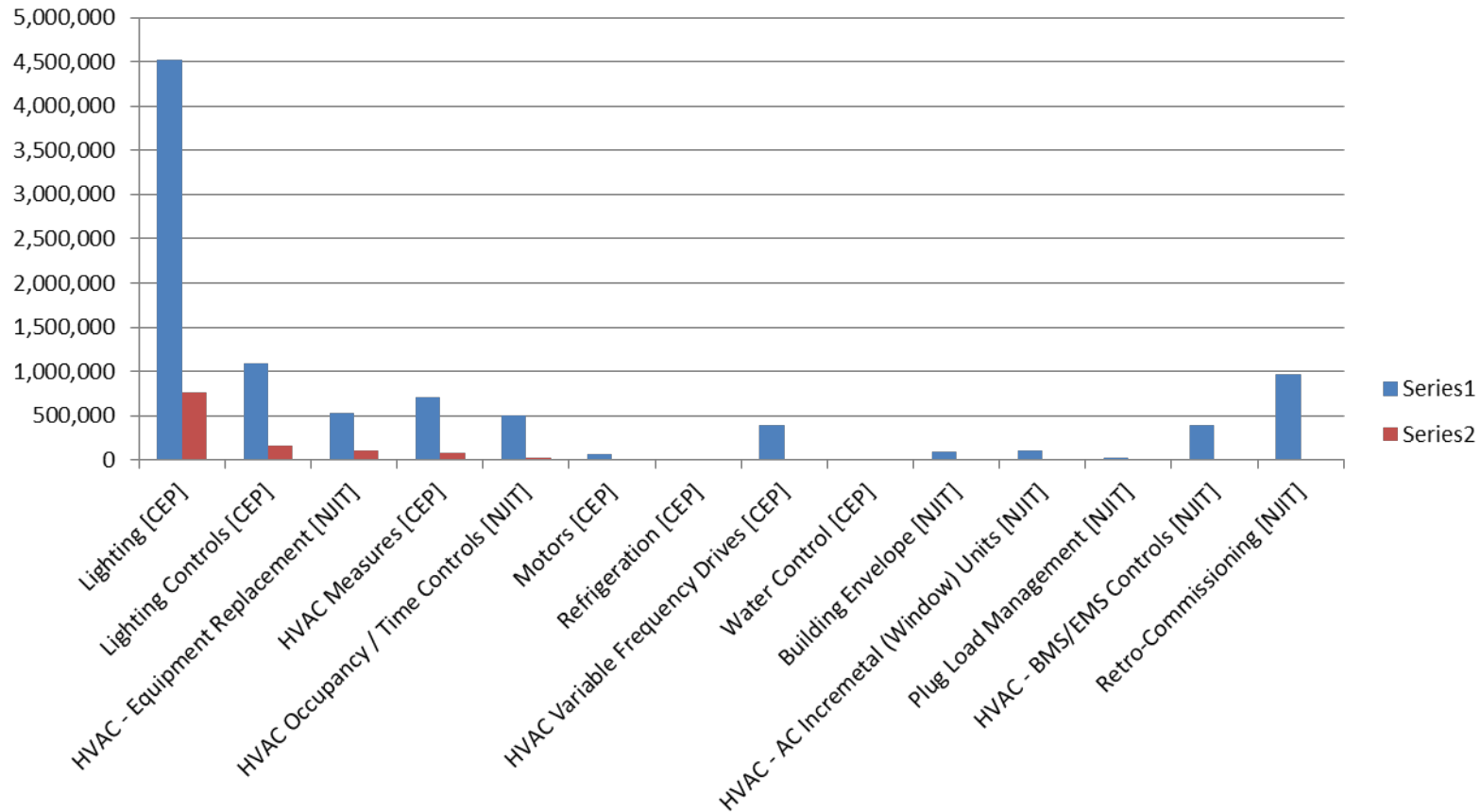
Chart 19 – Total Estimated Natural Gas Savings in Comparison to Deemed Amongst SCEAP Organizations



The same observation made for electrical savings as described on the prior page holds true of natural gas as well.

Series 1 – Estimated Savings, Series 2 – Deemed (Accomplished) Savings

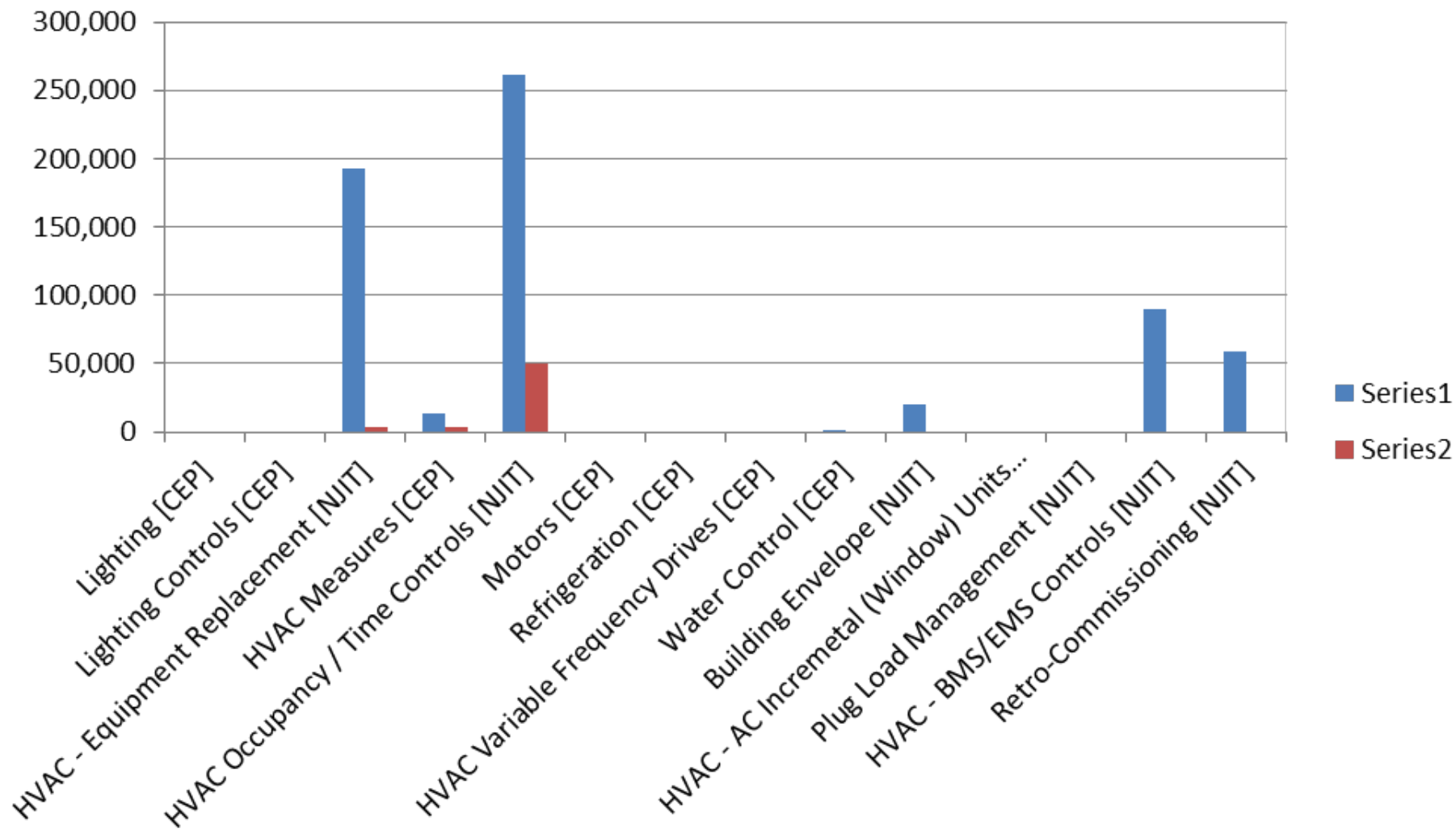
Chart 20 –Annual Electrical Savings by Measure Type, Estimated / Deemed (kWh) Amongst SCEAP Organizations



As described earlier, the vast potential savings is attributable to relatively few measures but as this graph illustrates only a relatively small portion of the estimated savings have been accomplished and several of the measures have not been implemented in any of the facilities.

Series 1 – Estimated Savings, Series 2 – Deemed (Accomplished) Savings

Chart 21 –Annual Natural Gas Savings by Measure Type, Estimated / Deemed (Therm) Amongst SCEAP Organizations



As is true of the potential electrical savings, potential natural gas savings is attributable to relatively few measures but as this graph illustrates only a relatively small portion of the estimated savings have been accomplished and several of the measures have not been implemented in any of the facilities.

Series 1 – Estimated Savings, Series 2 – Deemed (Accomplished) Savings

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Table 7 – Average Annual and Life Electrical and Natural Gas Savings by Use Type Amongst SCEAP Participants

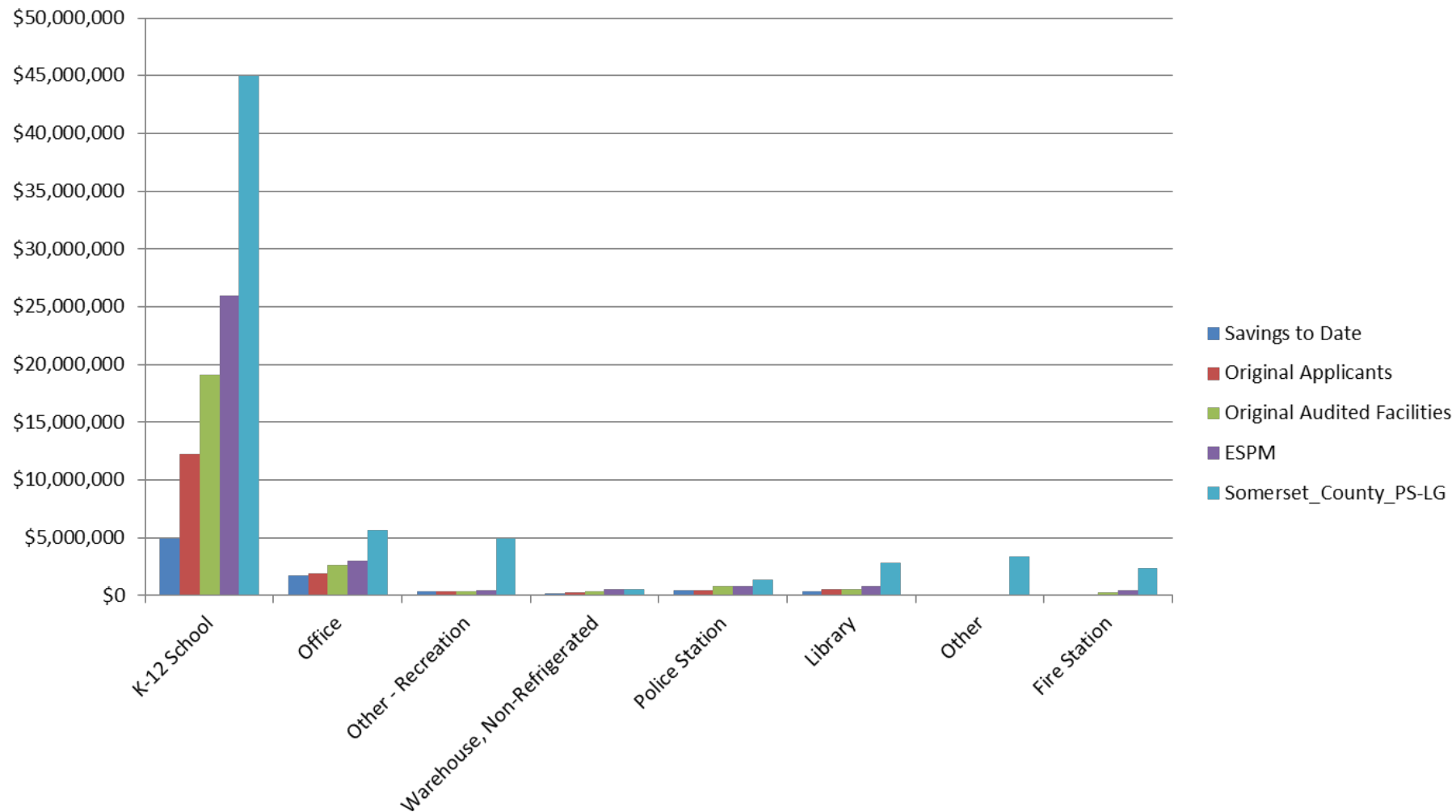
	Square Footage	ESPM USE NJIT Assigned	Average Life Savings by Facility Type (#)	Average Annual Electrical Savings by Facility Type (\$/SF)	Average Life Electrical Savings by Facility Type (\$/SF)	Average Annual Natural Gas Savings by Facility Type (\$/SF)	Average Life Natural Gas Savings by Facility Type (\$/SF)	Average Combined Fuel Annual Savings by Facility Type (\$/SF)	Average Combined Fuel Life Savings by Facility Type (\$/SF)
10	524979	K-12 School	\$489,252	\$0.35	\$5.61	\$0.21	\$3.71	\$0.56	\$9.32
9	109480	Office	\$189,436	\$1.01	\$16.00	-\$0.01	-\$0.42	\$1.00	\$15.57
5	45800	Other - Recreation	\$65,767	\$0.39	\$5.78	\$0.09	\$1.40	\$0.48	\$7.18
4	30674	Warehouse, Non-Refrigerated	\$52,746	\$0.31	\$4.67	\$0.13	\$2.21	\$0.44	\$6.88
3	30000	Police Station	\$140,171	\$0.71	\$10.68	\$0.21	\$3.33	\$0.91	\$14.02
2	38000	Library	\$167,877	\$0.54	\$8.07	\$0.05	\$0.77	\$0.59	\$8.84
1	8000	Other	\$53,213	\$0.26	\$3.88	\$0.17	\$2.77	\$0.42	\$6.65
1	4500	Fire Station	\$53,495	\$0.33	\$4.96	\$0.42	\$6.93	\$0.75	\$11.89

This table serves to summarize the average potential savings attributable to different building uses for both the entire facility and on a square foot basis (AKA Energy Use Intensity). It is apparent that while most all of these uses have the potential for significant savings, the size and intensity vary significantly. By example, a school which on average has a potential savings of \$0.35/SF* is relatively low as a percentage of its total energy consumption but the relatively large size of such facilities and their quantity demonstrate this use type holds by far the greatest potential for savings. Conversely a (municipal) office that on average has \$1.01/SF* potential savings is a relatively large percentage of their customary energy consumption but both the size and quantity are lower. This raises the question as to whether a program might favor the uses with the largest potential premised on square footage or those which represent either the greatest potential percentage savings or motivation to pursue such savings. While not mutually exclusive, this question which may be described as breadth versus depth should inform the decision as to what type of assistance might be provided and how it might vary across building uses.

* 2003 US EIA Consumption and Gross Energy Intensity by Census Region for Sum of Major Fuels for Non-Mall Buildings, 2003, Northeast Energy Intensity (thousands BTU/SF), Education = 101.6, Office = 101.2

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Chart 22 –Aggregate Life Savings Achieved Relative to Potential by Use Type and Participant Group



And finally, this chart serves to identify for each use type how much estimated savings have been accomplished to date in relation to the potential for each group. By example, K-12 schools are estimated to have saved nearly \$5 million (M), which represents the potential savings amongst the original applicants of \$12 +/- M, \$19 M +/- among the SCEAP participants, \$26 M +/- among the ESPM participants, and \$45 M +/- among all public schools and local government facilities throughout the county. This demonstrates the significant such efforts have already contributed to the municipalities but perhaps more importantly the potential for even greater savings.

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Table 8 – Total Life Electrical and Natural Gas Savings by Use Type

ESPM Use (LG-PS Order)	Total savings to Date		Total Savings, 55 (\$)		Total Savings, 84 (\$)		Total Savings, 112 (\$)		Total Savings, 412 (\$)	
TOWNSHIP	\$7,999,238		\$15,866,590		\$24,161,101		\$32,162,491		\$66,211,521	
K-12 School	\$4,892,520	61%	\$12,231,300	77%	\$19,080,828	79%	\$25,930,356	81%	\$45,011,184	68%
Office	\$1,704,924	21%	\$1,894,360	12%	\$2,652,104	11%	\$3,030,976	9%	\$5,683,080	9%
Other - Recreation	\$328,835	4%	\$394,602	2%	\$394,602	2%	\$460,369	1%	\$4,932,525	7%
Warehouse, Non-Refrigerated	\$210,984	3%	\$316,476	2%	\$369,222	2%	\$580,206	2%	\$580,206	1%
Police Station	\$420,513	5%	\$420,513	3%	\$841,026	3%	\$841,026	3%	\$1,401,710	2%
Library	\$335,754	4%	\$503,631	3%	\$503,631	2%	\$839,385	3%	\$2,853,909	4%
Other	\$52,213	1%	\$52,213	0%	\$52,213	0%	\$52,213	0%	\$3,341,632	5%
Fire Station	\$53,495	1%	\$53,495	0%	\$267,475	1%	\$427,960	1%	\$2,407,275	4%

Total savings premised on the average anticipated savings for a particular use types are estimated to be as follows if all facilities throughout the county participated to their full potential:

K-12 Schools	\$45,011,184
Office	\$5,683,080
Other – Recreation	\$4,932,525
Warehouse, Non-Refrigerated	\$580,206
Police Station	\$1,401,710
Library	\$2,853,909
Other	\$3,341,632
Fire Station	\$2,407,275
TOTAL	\$66,211,521

Conclusions

The leadership demonstrated by the Somerset County Energy Audit Program (SCEAP), under the direction of the Freeholders, has resulted in some impressive savings for a diverse array of local units, be it public school or local government entities throughout Somerset County. It is estimated that for every dollar invested in the original facility audits an equal amount or greater was matched by Clean Energy Program incentive dollars serving to reduce the operational utility expenses. This has resulted in nearly half a million dollars annual savings (per the analysis in Table 2) or a total of \$5.8 million over the anticipated service life of the measures installed to the participants. Further, these measures are likely to have reduced operational and maintenance expenses and reduced future capital expenditures, while increasing the comfort of the occupants. At the time this program was initiated by the County it represented a bold demonstration of leadership to raise awareness amongst local governmental units about the opportunities available to them to reduce budgetary costs while improving the quality of our environment. Subsequent to this initiative, the New Jersey Board of Public Utilities Clean Energy Program (CEP) and regulated Investor Owned Utility (IOU) programs have continued to evolve to provide even greater opportunities to encourage such activity.

Amongst the eighty three (83) facilities originally audited through SCEAP fifty five (55) submitted applications to participate and thirty five (35) facilities accomplished savings by means of the CEP programs. As this research effort did not have IOU data available it is likely several additional facilities may have accomplished savings that are not included in the results presented herein. These facilities serve a representative sample of the local units and building types found throughout the county and as such provide us the means by which we may make several general observations that could inform future efforts to accomplish even greater savings.

- ✓ Approximately a third of the facilities originally audited successfully completed one or more CEP program measures resulting in very significant savings to these organizations.
- ✓ Successful implementation is strongly correlated to relatively few organizations that implemented ECM's in multiple facilities. This may be attributable to several factors that will require further investigation such as the size and sophistication of the organization, organizational values, perceived risk, financial ability, and/or the specific type of program they had participated in. These same organizations could potentially serve as models for others throughout the county.
- ✓ While the audits appear to have served their primary purpose of identifying potential savings, there is seemingly little correlation between the type of measures recommended by the audit and those implemented through the CEP program. As such, the initial investment in an audit appears to be more effective at raising awareness and galvanizing action, than at specifying precisely what a participating facility should do or actually does. Taking this into account, future efforts to drive EE savings may wish to focus more on communicating potential benefits of utilizing CEP and IOU programs than on performing audits on each and every facility.
- ✓ The type of energy conservation measures implemented are relatively few in number and are those that likely prove to be the most cost effective and least disruptive to an organization such as the retro-fit of lighting and associated controls as well as controls to regulate existing Heating, Ventilation, and Air Conditioning (HVAC) systems. Measures that serve to accomplish a higher percentage of the identified potential savings such as HVAC equipment replacement and the like were rarely completed.
- ✓ What variation that was evident amongst the measures implemented seemed correlate to the specific building use. While lighting and associated controls are very compelling across all building types, other measures -

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specifically those associated with natural gas - were implemented in buildings in which space conditioning represented a significant share of the energy consumption, such as schools and fire stations.

- ✓ The facilities that accomplished the greatest savings may not necessarily be the best candidates for further effort. While these organizations have gained familiarity with the program and have demonstrated leadership, the savings that have been accomplished may serve to make subsequent efforts less financially rewarding. By example a school facility that has replaced its lighting may only have HVAC measures remaining to be accomplished, but these same measures in isolation now have a longer Simple Payback Period associated with them and do not amount to a project large enough to justify the expense required to develop a comprehensive package best suited for CEP programs such as ESIP or Pay for Performance (P4P).
- ✓ The diversity of organizations and building uses reviewed – combined with the varying levels of ECM implementation observed to date - suggest that no one particular program offer will result in significant savings across all facility types. While the recommended measures themselves are largely consistent within a particular building type, the barriers to implementation are anticipated to be very different depending upon the size of the organization that owns that building and their experience with such efforts.

Recommendations

Apart from evaluating the impact of the Somerset County Energy Audit Program on local governmental units within Somerset County, the primary question posited by the research effort was whether an Energy Savings Improvement Plan (ESIP) might encourage this same cohort of facilities to seek even broader adoption of energy conservation measures. This requires a brief discussion of what an ESIP is and what it is not. As described by the Sustainable Jersey *How to Implement an Energy Savings Improvement Plan* it is simply put “an alternative method for New Jersey local government units to finance implementation of energy conservation measures” in other words a “type of performance contract”. While it affords specific advantages to Local Government Units (LGU) it is important to note it is not a program unto itself, but rather enabling legislation that establishes a method by which the LGU may finance improvements to their facilities on the basis that the savings are greater than the cost of the improvements. While its implementation is supported by subsequent law and the BPU administration, it is not necessarily simple to implement. There are several decisions that must be made throughout the process that will likely require from two to three years of sustained effort before savings will be accomplished.

That said, the benefits are potentially significant as the ESIP legislation allows energy conservation efforts to be financed over a fifteen year duration, and both the debt and risk associated with such an effort is assumed by third parties. Such strategies represent a significant advantage to some organizations, specifically schools, but relatively little to others, like a single autonomous fire house. Therefore each LGU must make its own informed decision premised on its unique circumstances. The Sustainable Jersey guide, as sponsored by the BPU, is a great resource for its purpose. It is important to note that when we invoke ESIP we are solely referring to a contracting method and that to the extent possible contracts implemented through the ESIP process will almost certainly participate in other incentive programs to the fullest extent possible, be they federal or local, to achieve energy conservation.

As the first step in the process of an ESIP is performing an audit of one’s own facility, the efforts of SCEAP have served to set Somerset County LGU’s along the path. Since the ESIP process specifically requires participation in the BPU Local Government Energy Audit program, it is not clear to what extent the county’s prior audits would satisfy the requirement, but it is certainly worth further investigation as the content of both are very similar. Irrespective, the LGEA

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program is now free of charge to participating organizations, so this should not prove an obstacle to participation. Upon completion of whichever audit, each participating organization should have the information required to decide - possibly in consultation with the audit contractor, BPU, and others - whether an ESIP is advantageous to themselves. This is but one of two steps in the process that must be contracted for separately and serve as a check-and-balance in the process so as to maintain the independence of the auditor. The other, if the LGU decides to proceed, is retaining an independent Measurement & Verification contractor so as to document that the savings are ultimately attained.

As the audit is the first step in this process, is provided at no cost to an LGU, and serves to inform this decision it is strongly suggested that all facilities throughout the county be encouraged to participate in the LGEA program. That said, as ESIP's are likely only of benefit to organizations with multiple facilities, such as public school districts, which have yet to perform significant improvements, it will likely only be appropriate for a portion of the savings possible throughout the county. Many facilities and their associated organizations may very well rationally decide that - either because of their size and/or their lack of capacity to manage such a process - that participation in other programs such as the CEP and IOU Direct Install (prescriptive) programs may prove more expedient and serve to capture the majority of savings available. The analysis conducted during this study suggests that either smaller facilities and/or small LGU's may be best served by such an approach; particularly those that have had no prior experience with energy conservation efforts.

Public school districts however stand apart from these building types. Because of both their size and the number of facilities they control, they for great candidates for an EISP program. An ESIP approach is not only likely to encourage even greater savings because of the fifteen year horizon but also permits districts to enter into a contract without need for a referendum or otherwise reducing their debt capacity. This may very well be the greatest incentive to a district to participate in such a program. As such it represents a unique opportunity to go beyond lighting and controls and - when structured optimally - may also serve to finance new central equipment such as boilers and the like. Unfortunately, the districts identified by this study that have recently completed lighting improvements may have precluded themselves from participation since the savings attributable to these earlier measures are no longer available to be included in payback calculations for any additional EE improvements to the facilities. For example, in a school that has already upgraded its lighting; the additional savings of replacing inefficient central equipment may not be sufficiently large to pay back the substantial investment needed for this equipment within the allowable 15-year period. If this equipment had been installed at the same time as the much less expensive lighting upgrades, the aggregated savings could be sufficient to pay off the combined costs of both upgrades. Therefore an ESIP following a prior Direct Install program is not likely to "pencil out," and an alternate program should be considered to accomplish additional savings.

As for LGU facilities, other than schools, the challenge has been that few of the municipalities analyzed had improvements in excess of the \$1.5 M minimum widely regarded in the industry as a threshold for the more comprehensive ESIP program. While an ESIP can hold great potential for large municipalities with multiple facilities or county-owned facilities of significant size (because they not only meet the \$1.5 million threshold but often have the legal and facility knowledge necessary to implement such a complex program), the vast majority of the county's LGU's are too small for this option.

These shared obstacles, one in which schools have already accomplished a portion of their potential and the other in which relatively small LGU's do not have sufficient size or capacity raises yet a third option. Might the ESIP program, if administered jointly amongst LGU's with shared interest, be able to assist each other in addressing these barriers so as to accomplish the greatest potential savings? This third option represents a potentially significant evolution in thinking as it allows for the combination of two previously functionally excluded LGU's - small municipalities and school districts

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that have already implemented some energy savings upgrades - to accomplish deeper savings utilizing the ESIP method. Possible joint agreements could include:

A school district that has previously accomplished energy savings and has demonstrated their leadership but do not have sufficient remaining savings potential to accomplish the replacement of larger central equipment could team with districts in which no work has been done so that in combination the cash flow is positive for the fifteen year period. This would serve to allow the larger more experienced district to “go deeper” and the smaller or less experienced district to accomplish savings with minimal effort.

Similarly, LGU’s with similar facilities such as police stations, libraries, and municipal offices could collaborate so as to meet the minimum financial threshold while possibly attaining economies of scale due to the commonalities amongst these respective building use types. As such, ESIP Requests for Proposal (RFP) could be developed for single building uses so that, for example, a single fire station in a particular municipality could join forces with the other forty four throughout the county to cost effectively accomplish significant savings.

These combined strategies if deemed permissible under the legislation would not only dramatically increase the potential number of facilities that could accomplish significant savings but are also anticipated to accomplish the following additional benefits:

- Potentially lower cost of financing available to larger-scale projects.
- Increased competition amongst Energy Service companies to compete for such work, resulting in potentially lower real costs.
- Establish greater standardization amongst building equipment and controls throughout the county and align shared interest and knowledge amongst operators of similar facilities, which could lead to greater operational efficiency and, potentially, lower O&M costs countywide.

While both the leadership demonstrated by Somerset County and the savings accomplished to date should be applauded, there remains significant additional potential for additional savings throughout the county. We estimate that if all facilities throughout the county accomplished their full potential, it could contribute in excess of \$66 Million in cost-effective operational savings to the taxpayer over the anticipated service life of the conservation measures. Savings which, if nothing is done to capture them, represent an unnecessary cost to the taxpayer for which little if any economic benefit is derived by the county. A decision to not do anything is a decision nonetheless, so we encourage the SCEC and county freeholders to continue to lead the State to a more sustainable, economically competitive future.

Appendices

Appendix 'A' – NJIT List of County Facilities

Appendix 'B' – SCEC Originally Audited Facilities

Appendix 'C' – SCEC Energy Star Portfolio Manager (ESPM) Facilities