

State University of New York Executive Order 88 Operations & Maintenance Plan



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EXECUTIVE SUMMARY

Governor Cuomo's Executive Order 88 (EO88) requires State agencies to reduce overall Energy Use Intensity (EUI) 20% by the year 2020 from the base year of 2010-11. Two years prior, SUNY's Strategic Plan established a 30% energy savings goal, also by the year 2020. While the precise metrics for these two goals are different, the efforts of both the SUNY Strategic Plan and the Governor's Executive Order complement each other as they both recognize utility cost savings, energy security and reduced environmental impact are valuable outcomes of energy reduction programs.

Governor Cuomo assembled a team of energy professionals, the Build Smart Team, to administer the executive order. EO88 and the Build Smart Team particularly recognize the significant impact facilities operations and maintenance (O&M) has on overall energy use. As a result, the order requires each agency to create an operations and maintenance plan that will guide improvement in overall energy use through and beyond the period of the executive order. The O&M plan is required to examine existing practices, current challenges, and provide short and long term recommendations for improvement through the year 2030. While previous energy savings programs have primarily focused on projects to reduce energy, also known as Energy Conservation Measures (ECMs), this order recognizes that actions taken, or not taken, by facilities management staff can quickly undo the savings achieved through ECMs. The order also recognizes that sustained savings are dependent upon good O&M practices and sufficient O&M funding.

The O&M plan for SUNY recognizes that several challenges exist including:

- no energy manager at System Administration;
- facilities staff lacking the skills to maintain modern facilities;
- strained facilities budgets;
- inefficiently managed and catalogued building documentation;
- severely outdated data systems; and
- unpredictable capital funding

Each of these items is discussed in detail followed by short and long term action plans. Achieving the goals of the O&M plan will require commitment from both System Administration and the campuses.

GOVERNOR ANDREW M. CUOMO EXECUTIVE ORDER 88

DIRECTING STATE AGENCIES AND AUTHORITIES TO IMPROVE THE ENERGY EFFICIENCY OF STATE BUILDINGS

WHEREAS, New York is dedicated to the mutually compatible goals of environmental protection, energy security, and economic growth; and

WHEREAS, increasing energy efficiency has been identified as among the most cost-effective methods for reducing greenhouse gas and other environmental pollutant emissions and increasing energy security; and

WHEREAS, increasing energy efficiency can lead to increased jobs and a reduction in building operating expenses; and

WHEREAS, New York is committed to implementing new policies to promote the efficient use of energy and natural resources in the interest of the long-term protection and enhancement of the State's environment, economy and public health;

NOW, THEREFORE, I, Andrew M. Cuomo, Governor of the State of New York, by virtue of the authority vested in me by the Constitution and the Laws of the State of New York, do hereby order as follows:

I. DEFINITIONS

For the purposes of this Executive Order, the following terms are defined as follows:

A. "Affected State Entities" means (i) all agencies and departments over which the Governor has Executive Authority, and (ii) all public-benefit corporations, public authorities and commissions, for which the Governor appoints the Chair, the Chief Executive, or the majority of Board Members, except for the Port Authority of New York and New Jersey.

B. "Average Source Energy Use Intensity" or "average EUI" means the average source energy use per square foot for all state-owned and managed buildings.

C. "Source energy" means all the energy used in delivering energy to a site, including power generation, transmission and distribution losses.

II. ENERGY REDUCTION TARGET

By April 1, 2020, all Affected State Entities shall collectively reduce the average EUI in State-owned and managed buildings by at least 20% from a baseline of the average EUI of such buildings for State fiscal year 2010/2011 ("Target").

III. OBLIGATIONS TO MEET TARGET

A. Central Management and Implementation Team: The New York Power Authority ("NYPA") shall establish a central management and implementation team ("CMIT") to administer this Executive Order.

(1) The CMIT is hereby directed and authorized to:

(a) Take all appropriate measures to ensure that the Target is met;

(b) Direct Affected State Entities to comply with the requirements of this Executive Order;

(c) Create guidelines ("Guidelines") within nine months of the issuance of this Executive Order to assist Affected State Entities in complying with this Executive Order, and thereafter update such Guidelines as necessary;

(d) Provide strategic, technical, and other assistance to each Affected State Entity to support implementation of this Executive Order;

(e) Develop annual milestones for achieving the Target over the next seven years within 12 months of the issuance of this Executive Order;

(f) Develop and implement reporting requirements to document each Affected State Entity's progress toward meeting the Target;

(g) Develop a comprehensive operations and maintenance plan for the State's building portfolio to help achieve no cost and low cost efficiency improvements and ensure that efficiency savings are sustained; and

(h) Submit an annual report to the Governor by January 15th of each year, beginning in 2014, detailing the overall progress Affected State Entities are making toward meeting the Target. Requirements for the annual report shall be contained in the Guidelines.

(2) The Office of General Services and the New York State Energy Research and Development Authority are hereby directed to provide technical assistance to the CMIT and each of the Affected State Entities with respect to complying with and implementing the requirements of this Executive Order and those established by the CMIT pursuant to this Executive Order.

B. Affected State Entities

In addition to the requirements established above, each of the Affected State Entities shall comply with the following:

(1) **Benchmarking.** For each State fiscal year, each Affected State Entity shall measure the energy use in State-owned and managed buildings having an area greater than 20,000 square feet. Buildings on master-metered campuses shall be benchmarked at the campus level until they are sub-metered at the building level, after which point those buildings shall be benchmarked at the building level.

(2) **Audits.** Buildings that receive low benchmark scores, as defined by the Guidelines, shall undergo an American Society of Heating, Refrigeration, and Air-Conditioning Engineers ("ASHRAE") Level II energy audit, or any other comparable audit that the CMIT approves. Campuses that have above-average EUIs or poor benchmark scores, as defined by the Guidelines, or are otherwise prioritized by the Affected State Entities and the CMIT, shall undergo a campus-wide ASHRAE Level II energy audit or any other comparable audit approved by the CMIT. In addition to energy efficiency measures, the audits shall identify opportunities for cost-effective on-site renewable generation and high-efficiency combined heat and power.

(3) **Required Capital Projects and Energy Optimization Measures.** Affected State Entities shall implement a cost-effective portfolio of measures identified and recommended in the audit and shall complete or make substantial progress toward completion of such measures within two years of completion of the audit. A portfolio may include, but shall not be limited to, no- and low-cost operational improvements, retro-commissioning, capital energy efficiency retrofits, on-site renewable and high-efficiency combined heat and power, and other measures identified by the CMIT.

(4) **Submetering.** Affected State Entities shall work with the CMIT to prioritize sub-metering for all relevant energy sources of buildings larger than 100,000 square feet on a master-metered campus to identify ways to finance such sub-metering. All buildings having an area larger than 100,000 square feet on master-metered campuses shall be sub-metered for all fuels and other energy sources by December 31, 2016, to enable individual building benchmarking, unless the Affected State Entity that owns or operates the building can demonstrate to the CMIT that it is not cost-effective or feasible to do so.

(5) **Incorporating Energy Efficiency Analysis in the Capital Planning Process.** As part of the capital planning process, all Affected State Entities shall include an energy efficiency analysis in the design phase of all capital project plans. The capital project should include energy efficient measures or technologies determined to be the most cost-effective, as defined by the Guidelines.

(6) **Credits.** Affected State Entities may receive credit towards the Target for increasing energy efficiency in leased space. In addition, Affected State Entities may receive credit towards meeting the Target for installing on-site renewable generation if the host site for such renewable generation has deployed all cost-effective energy efficiency improvements consistent with the goals of this Executive Order. Affected State Entities shall consult with and apply to the CMIT concerning such credits.

(7) **Reporting.** No later than October 1st of each calendar year, each Affected State Entity shall submit all information requested by the CMIT on all State-owned and managed buildings having an area over

20,000 square feet, as well as any other information related to assessing compliance with this Executive Order.

C. Exemptions

Electric usage attributable to vehicle charging shall not be included in the Target and requirements of this Executive Order. The CMIT is authorized to provide other exemptions for good cause shown pursuant to criteria and procedures established in the Guidelines, including exceptions associated with buildings that have obtained and maintained ENERGY STAR or similar certification, or have benchmark scores placing such buildings in the top quartile of comparable buildings for the particular year at issue. Affected State Entities shall submit requests for annual exemptions to the CMIT. Any such request for exemptions and resulting determination by the CMIT shall be included in the annual report.

IV. REPEAL OF PRIOR EXECUTIVE ORDERS

Executive Order No. 111, promulgated on June 10, 2001, is hereby revoked and superseded by this Executive Order as of the date hereof.

G I V E N under my hand and the Privy Seal of the State in the City of Albany this twenty-eighth day of December in the year two thousand twelve.

BY THE GOVERNOR

Secretary to the Governor

SECTION I. SUNY BACKGROUND

Mission of the State University of New York

The mission of the State University system shall be to provide to the people of New York educational services of the highest quality, with the broadest possible access, fully representative of all segments of the population in a complete range of academic, professional and vocational postsecondary programs, including such additional activities in pursuit of these objectives as are necessary or customary. These services and activities shall be offered through a geographically distributed comprehensive system of diverse campuses which shall have differentiated and designated missions

designed to provide a comprehensive program of higher education, to meet the needs of both traditional and non-traditional students and to address local, regional and state needs and goals. In fulfilling this mission, the state university shall exercise care to develop and maintain a balance of its human and physical resources that:



recognizes the fundamental role of its responsibilities in undergraduate education and provides a full range of graduate and professional education that reflects the opportunity for individual choice and the needs of society;

- establishes tuition which most effectively promotes the university's access goals;
- encourages and facilitates basic and applied research for the purpose of the creation and dissemination of knowledge vital for continued human, scientific, technological and economic advancement;
- strengthens its educational and research programs in the health sciences through the provision of high quality general comprehensive and specialty health care, broadly accessible at reasonable cost, in its hospitals, clinics and related programs and through networks and joint and cooperative relationships with other health care providers and institutions, including those on a regional basis;
- shares the expertise of the State University with the business, agricultural, governmental, labor and nonprofit sectors of the State through a program of public service for the purpose of enhancing the well-being of the people of the State of New York and in protecting our environmental and marine resources;
- encourage, support and participate through facility planning and projects, personnel policies and programs with local governments, school districts, businesses and civic sectors of host communities regarding the health of local economies and quality of life; and
- promotes appropriate program articulation between its State-operated institutions and its community colleges as well as encourage regional networks and cooperative relationships with other educational and cultural institutions for the purpose of better fulfilling its mission of education, research and service.

(NYS Education Law, Section 351)

Buildings Covered by Executive Order 88

While details change from year to year, the following is the base year listing. Twenty-nine (29) of the campuses are State-operated institutions while five are statutory colleges, although for purposes of EO88 Cornell's four statutory colleges are tracked as two campuses (those located in Ithaca and the Geneva Experimental Station). In addition the System Administration office has a small campus in Albany, bringing the total campuses obligated to meet the requirements of EO88 to thirty-three (33) as follows:

Building/Facility Name	Building Type	Total kBtu Usage - Source 2010-11	Source EUI (kBtu/SQFT)	EO88 GSF 2010-11	Total Annual Energy Costs 2010-11	Energy Costs/SQFT
1. SUNY - ALBANY	Shared Meter, Multiple Buildings (Campus)	1,324,856,591	215.24	6,146,342	\$10,525,659	\$1.71
2. SUNY - ALFRED CERAMICS	Shared Meter, Multiple Buildings (Campus)	131,557,647	311.61	421,191	\$1,388,979	\$3.29
3. SUNY - ALFRED TECH	Shared Meter, Multiple Buildings (Campus)	281,358,966	172.74	1,625,937	\$2,019,719	\$1.24
4. SUNY - BINGHAMTON	Shared Meter, Multiple Buildings (Campus)	1,095,626,123	209.22	5,291,777	\$6,336,547	\$1.21
5. SUNY - BROCKPORT	Shared Meter, Multiple Buildings (Campus)	494,291,148	179.21	2,753,971	\$4,054,468	\$1.47
6. SUNY - BROOKLYN HSC (DOWNSTATE)	Shared Meter, Multiple Buildings (Campus)	942,823,283	445.73	2,352,037	\$8,609,026	\$4.07
7. SUNY - BUFFALO COLLEGE	Shared Meter, Multiple Buildings (Campus)	695,669,201	234.74	2,860,495	\$4,682,538	\$1.58

**State University of New York
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Building/Facility Name	Building Type	Total kBtu Usage – Source 2010-11	Source EUI (kBtu/SQFT)	EO88 GSF 2010-11	Total Annual Energy Costs 2010-11	Energy Costs/SQFT
8. SUNY – UNIVERSITY OF BUFFALO	Shared Meter, Multiple Buildings (Campus)	2,985,390,526	285.78	10,386,059	\$19,953,094	\$1.91
9. SUNY - CANTON	Shared Meter, Multiple Buildings (Campus)	182,800,007	222.82	968,915	\$1,443,879	\$1.76
10. SUNY - COBLESKILL	Shared Meter, Multiple Buildings (Campus)	233,891,057	192.38	1,215,656	\$1,920,938	\$1.58
11. SUNY – CORNELL (ITHACA)	Shared Meter, Multiple Buildings (Campus)	1,491,649,872	252.98	5,799,529	\$18,927,055	\$3.21
12. SUNY – CORNELL (GENEVA AES)	Shared Meter, Multiple Buildings (Campus)	176,675,706	279.51	648,968	\$1,068,236	\$1.69
13. SUNY - CORTLAND	Shared Meter, Multiple Buildings (Campus)	492,485,683	204.02	2,436,498	\$4,031,141	\$1.67
14. SUNY - DELHI	Shared Meter, Multiple Buildings (Campus)	193,535,453	187.96	1,040,663	\$2,162,279	\$2.10
15. SUNY - EMPIRE STATE	Shared Meter, Multiple Buildings (Campus)	54,065,315	123.89	405,701	\$554,219	\$1.27
16. SUNY - FARMINGDALE	Shared Meter, Multiple Buildings (Campus)	276,590,385	175.41	1,554,807	\$3,248,215	\$2.06
17. SUNY - FORESTRY	Shared Meter, Multiple Buildings (Campus)	225,960,298	220.15	1,019,596	\$2,648,050	\$2.58
18. SUNY - FREDONIA	Shared Meter, Multiple Buildings (Campus)	414,550,570	201.88	2,090,580	\$3,018,588	\$1.47
19. SUNY - GENESEO	Shared Meter, Multiple Buildings (Campus)	423,984,687	180.81	2,341,397	\$3,024,968	\$1.29
20. SUNY – MARITIME & SHIP	Shared Meter, Multiple Buildings (Campus)	109,738,870	118.41	934,508	\$2,428,053	\$2.62
21. SUNY - MORRISVILLE	Shared Meter, Multiple Buildings (Campus)	269,241,110	160.44	1,712,118	\$2,601,111	\$1.55
22. SUNY - NEW PALTZ	Shared Meter, Multiple Buildings (Campus)	431,498,066	204.77	2,112,108	\$3,793,027	\$1.80
23. SUNY - OLD WESTBURY	Shared Meter, Multiple Buildings (Campus)	223,593,145	171.88	1,300,171	\$1,717,195	\$1.32
24. SUNY - ONEONTA	Shared Meter, Multiple Buildings (Campus)	464,245,349	201.94	2,321,896	\$3,264,487	\$1.42
25. SUNY - OPTOMETRY	Shared Meter, Multiple Buildings (Campus)	66,666,867	223.54	298,000	\$1,151,194	\$3.86
26. SUNY - OSWEGO	Shared Meter, Multiple Buildings (Campus)	689,966,658	200.30	3,450,693	\$5,063,735	\$1.47
27. SUNY - PLATTSBURGH	Shared Meter, Multiple Buildings (Campus)	577,644,349	279.30	2,094,414	\$2,481,812	\$1.20
28. SUNY - POTSDAM	Shared Meter, Multiple Buildings (Campus)	464,189,398	209.42	2,217,433	\$3,679,510	\$1.66
29. SUNY - PURCHASE	Shared Meter, Multiple Buildings (Campus)	519,616,976	213.62	2,437,818	\$5,132,489	\$2.11
30. SUNY - STONY BROOK MAIN & HSC	Shared Meter, Multiple Buildings (Campus)	4,735,492,173	412.24	10,802,279	\$50,314,027	\$4.38
31. SUNY - SYRACUSE HSC	Shared Meter, Multiple Buildings (Campus)	1,223,709,821	442.92	2,981,085	\$10,139,654	\$3.67
32. SUNY - SYSTEM ADMIN.	Shared Meter, Multiple Buildings (Campus)	75,976,782	120.61	401,436	\$787,406	\$1.25
33. SUNY - UTICA/ROME	Shared Meter, Multiple Buildings (Campus)	121,989,285	172.40	754,081	\$1,167,510	\$1.65
TOTALS		22,091,331,367	258.28	85,555,746	\$ 193,338,808	\$2.26

Overview of existing O&M practices

- **Management** – Operations and Maintenance (O&M) management of SUNY facilities is decentralized, with each campus having responsibility for determining the portion of the overall campus budget dedicated to maintenance of the campus assets.

The SUNY System Administration Office for Capital Facilities (OCF) provides tools, training, guidance, oversight and technical expertise to the campuses, in support of management of facilities in accordance with applicable New York State laws, rules and regulations.

- **Policies and Procedures** – SUNY has an extensive online library of policies and procedures. Policies are required to be adopted by the SUNY Board of Trustees, while procedures provide direction for implementation of policies, laws and other facets of running a large university system. The policies and procedures do not get into detail of maintenance of facilities except for establishment of minimum living standards for university residence halls. The Policies and Procedures are further supplemented by Guidance Documents issued by the OCF to provide clarifications for both policies and procedures. Guidance documents may be found on the [OCF website](#). Additionally, campuses may have internal procedures for building maintenance.
- **Staff** – The SUNY System Administration OCF has an Energy Buying Group that purchases electricity directly from the wholesale market (NYISO) for most State-operated campuses and several community colleges. The program has saved SUNY more than \$16.3 million over the past 9 years. In addition, this group helps aggregate natural gas requirements and processes bids for regional contracts, saving campuses additional money. This unit functions as a procurement unit, not an energy management unit. Currently, SUNY does not have an overall Energy Manager position to work with the campuses to advance energy savings projects and programs. Many campuses have an energy or utility manager whose role is to manage energy use as well as to reduce the utility expenditures at the campus through reductions of use and through procurement of Energy Conservation Measures (ECMs). These campus positions vary in their responsibilities and authority, but could significantly benefit from a System Administration position to provide support.
- **Communications and Outreach** – Many campuses have developed programs for educating students, faculty and staff on what they can do to help reduce energy use. These programs vary significantly in sophistication and results. SUNY does not currently collect this information centrally nor consistently share results, success or failures with other campuses due to the lack of an energy manager.
- **Motivation** – State tax support is allocated to campuses by the SUNY Board of Trustees based primarily upon a long established methodology which includes factors related to the educational mission of the campuses and the resultant full time equivalent students. Once the funds are provided to the campus it is the responsibility of each campus to allocate portions of the budget to various functions including the operations and maintenance of the facilities and utility procurement. There is no standardization across SUNY regarding which department has responsibility for utility budgets. Award or recognition programs for energy saving ideas may exist at some campuses, but that information is not collected and therefore cannot be reported by System Administration.
- **Data Tracking and Reporting** – Energy use is tracked centrally by the SUNY OCF through newly implemented EnergyCap software. Prior to the implementation of this program, use was tracked in an excel spreadsheet with monthly data being provided by the campuses. Using EnergyCap, campuses enter monthly invoice data directly, allowing them to instantly audit the data against previous months and eventually against previous year data for the same meters. The program

also provides expanded reporting capabilities including weather normalization, greenhouse gas conversions and much more.

SECTION II. LONG-TERM OPERATIONS & MAINTENANCE VISION



Operations and Maintenance (O&M) at SUNY State-operated institutions is managed and controlled at the campus level. Each campus makes its own decisions on hiring, how many positions are needed, what protocols are used, what supplies and methodologies are used and how to organize O&M. While this approach recognizes the independence of each campus as a distinct hiring authority, as well as campus autonomy in organizational and financial matters, it does lead to inconsistencies across campuses. Many campuses have extremely well-run O&M organizations, while others struggle due to numerous factors. Additionally, SUNY System Administration does not have sufficient staff to perform inspections, review operating protocols or collect and analyze

data related to the sufficiency of O&M.

An ideal O&M program for SUNY in 2030 would include improvements to staff, budget, documentation, data and capital to achieve a greater consistency in facilities condition and energy efficiency. Each of these areas for improvement is described below in greater detail.

Staff Concerns

Facilities personnel possessing capabilities, proper training and at sufficient staffing levels is critical to meet the needs of an effective and efficient maintenance operation. This is especially true for those who monitor and maintain energy-intensive systems. Several factors affect how facilities staff SUNY-wide are able to meet the challenges of systems that are constantly increasing in complexity. These factors influence the ability to achieve success in reducing energy consumption while improving the lifespan of critical capital equipment:

- a. **Position Classifications:** Currently the Plant Utility Engineer (PUE) job series, including the helpers and assistant job titles, present SUNY campuses with several challenges. These titles are designed to work extensively on energy-intensive equipment, however, finding and keeping staff with the required skills is a continual challenge. The positions require civil service testing, though it is apparent from the lack of skills of many high-scoring candidates hired by SUNY campuses that the tests do not adequately focus on computer-intensive controls and data gathering. These skills are essential to maintain 21st-century HVAC and other facilities systems. New PUE series employees do not have some of the basic skills needed despite scoring well on the tests. Promotions are primarily based on longevity within the subset that has scored highest on the tests, which exacerbates the challenge of attracting employees with the right skill set. Additionally, in some parts of the State, once PUE series staff become well-trained, retaining the staff is difficult due to higher paying opportunities outside of State service. This is particularly problematic in the New York City and Long Island regions.

Modifications to the civil service classification and testing system to account for the higher intensity computer technical skills are long overdue. This will require a careful review of all currently available civil service positions and descriptions. Although the use of “parentheticals”¹

¹ Parenthetical job titles are standard titles with a specialty focus such as PUE (Control Systems). This position will require skills that are specific to control systems, while a non parenthetical would not require this specialty.

is a possible remedy to specify required skills, this approach can also backfire by overly narrowing the job description and removing flexibility. Engagement between Human Resources, Civil Service and unions to promulgate change is necessary to match required skills with official job descriptions and assure that testing reflects up-to-date processes and technology.

It is also desirable to remove barriers which restrict the ability to advance staff based on merit and training rather than solely on longevity.

- b. **Training:** Training is a critical, but often ignored component of building maintenance. As plant utility personnel responsibilities evolve to meet the needs of 21st-century buildings, training must become an essential element of facilities O&M. It is imperative that facilities personnel continue to update their training and skills to keep up with advancements in technology. Continuous education for O&M personnel is so important that it should be a job requirement.

Training can involve costly travel, high course fees and time away from performing routine duties. Developing new methods of training staff through virtual training, mentoring programs, job sharing and other creative modalities is crucial to achieving the skill levels needed for maintaining modern buildings.

Maintaining independent training programs at each SUNY institution is inefficient. SUNY's O&M staff training should be collaboratively developed and shared, saving time and money.

- c. **Benchmarking of Staff:** One of SUNY's goals is to explore the potential to establish minimum acceptable staffing levels in the maintenance and operations departments of SUNY campuses. This will be a challenging task due to the notable differences between the size and complexities of the SUNY campuses as well as the different organizational structures.

Before it is possible to establish standards SUNY must first establish a method to benchmark the campuses. Differences in how campuses manage funding sources and individual budgets add a significant challenge to establishing a benchmark methodology. Ideally each campus will be benchmarked regarding staff levels involved with preventative, operational, and corrective maintenance for the actual equipment in each facility. This must also include service contracts which are used to perform some of these tasks. Finally benchmarking must incorporate the differences between the various sectors and also take into consideration differences that exist within a sector. Data from benchmarking will ultimately highlight commonalities and disparities at similar campuses.

Benchmarking will ideally include inspections to assess existing conditions. SUNY System Administration will need additional staffing or a service contract to perform campus assessments. Following benchmarking and inspections, System Administration and campuses will jointly establish realistic minimum standards. Establishment of standards will be based on campus size, campus complexity, current conditions and a catalog of required tasks based on existing equipment.

Using systemwide established benchmark data and minimum staffing standards, facilities staff managers will have data needed to illustrate that budget cuts beyond the minimums will actually result in greater costs to the campus operating and capital budgets. Establishment of minimum standards would help prevent cuts which may initially seem to be a reduction in overall budget, but actually result in increased costs for utilities and capital.

- d. **Building Performance Feedback:** Optimizing facilities and plant systems in 2014 requires remote data gathering and interpretation, as much as carrying a tool belt. Computerized control centers are essential to managing sensors and metered equipment feeding information to a robust Computerized Maintenance Management System (CMMS or MMS). A dedicated "Super User" specializing in system monitoring and data interpretation is needed at the campuses. Currently

this need is being fulfilled by contracts with the equipment manufacturer or by creating United University Professions (UUP) positions requiring specialization in systems monitoring and control. Best practices indicate that, in concert with properly skilled Plant Utility personnel, a specialist concentrating on data interpretation and control optimization would yield substantial O&M performance improvements.

It is likely that not all campuses will be able to afford dedicated monitoring systems and personnel. Sharing some services, such as a 24/7 data center for monitoring of the various data from around the system, could add to the effectiveness of the O&M staff.

The NY Energy Manager program being rolled out by the Build Smart team has the potential to be a major assistance in identifying areas of potential savings by providing this service.

- e. **Building Design:** Maintenance employees have a clear understanding of how building design decisions can create unnecessary maintenance costs. However, this staff is not always consulted during the design process, or – if consulted – their suggestions are not implemented in the final design. Campus O&M staff need to be included as partners in the design process. Developing a stronger relationship between maintenance staff and design teams would help reduce long-term burdens on O&M staff.

SUNY should require that all campuses include maintenance staff as part of the team developing designs for renovations and new facilities to ensure that maintenance considerations are part of the design process. Commissioning and final acceptance of building work and construction should also be subject to maintenance personnel review.

- f. **Incentives:** As State-operated institutions, the ability to incent staff to develop energy saving habits and to recommend modifications that will result in energy savings is difficult to achieve. It is however, building and facilities staff who most intimately know and understand where energy is used and, most critically, where it is wasted. Having the capacity to reward individuals for creativity and initiative will result in energy savings and contribute to higher overall employee satisfaction.
- g. **Oversight:** Staff at the System Administration should be responsible for ensuring all campuses routinely review equipment condition; provide guidelines to assist campuses in developing quality maintenance programs; and that campuses maintain adherence to standards.

System Administration can further assist with review and research of job classifications to provide continuity and commonality throughout the system. It can also provide organizational structure review and serve as System-wide asset for disseminating best practices between campuses through standards and guidance documents. Funding additional positions at System Administration will be a challenge.

Staff Recommendations Conclusion

- SUNY campuses will be benchmarked to ensure sufficient staffing;
- O&M personnel will be properly trained;
- Civil service standards and testing will reflect the needs of modern building maintenance;
- Services will be shared where most logical;
- Employees will be incentivized to develop energy saving habits;
- System Administration will have sufficient staffing to provide the oversight necessary to maintain consistency; and
- Maintenance staff will be consulted as part of the design process.

These recommended improvements related to staff would improve overall building conditions while reducing operating expense and saving utility costs. The relatively small investment in System Administration staff to manage this aspect of facilities management would be saved many times over in the reduction of utility costs and the more efficient use of capital funds.

Budgets Concerns

Funding for State-operated campuses is comprised of two elements: State support and campus-generated revenue (primarily tuition). Since the late 1990s, State support has been based primarily on enrollment levels, discipline mix, research, and other special mission adjustments. State support has remained relatively flat since 2011-12, with adjustments made for campus tuition revenue based on changes in enrollment levels and tuition rates. Campuses have not been directly funded for O&M or utilities in almost 20 years. Each SUNY campus determines how much of the overall budget to allocate to the operations and maintenance of campus facilities.

- a. **Budget Reductions:** Maintenance of facilities is one of the highest non-instructional costs of running a university, yet facilities are generally not recognized to be part of the core mission. As a result, during times of scarce resources, facilities management takes a disproportional cut. Academics and research may also see reductions, though they are usually less severe. When good times return and funding is restored to the academic functions, facilities funding is often not replenished, leaving the department struggling. These cycles repeat, resulting in insufficient staff to manage all facility needs. An area that is particularly impacted by severe budget cuts is preventative maintenance. Yet, preventative maintenance is critical to keeping energy efficient equipment operating properly maintaining the design efficiency. Budget cuts can actually result in increased operating costs for energy due to lack of staff to perform preventative maintenance. Additionally poorly maintained equipment must be replaced prematurely resulting in increased capital costs.

Helping budget officers understand the indirect relationship of cuts to the facilities budgets and resultant increases in utility budgets is important to assisting budget officers to make informed decisions.

- b. **Impact of Facilities on University Mission:** Insufficient facilities maintenance funding has a number of negative effects. Studies have shown that condition and quality of facilities is important to recruitment and retention of students. Poor condition of facilities affects students' abilities to succeed.

A study on the interrelationship between higher education infrastructure and learning outcomes by Gary L. Reynolds (2007) involving 46 institutions and over 16,000 students in the United States and Canada sought to determine if physical facilities have an impact on students' choice of which college or university to attend, and whether higher quality facilities improve an institution's recruitment and retention efforts. The study revealed that while academic issues were at the top of their list when it came to choosing an institution, a significant number of students also indicated that an attractive campus and quality facilities do play a role in their decision process. Many of these students are basing their enrollment decision on whether certain facilities such as residential, instructional, technology, labs and recreation and fitness are missing, inadequate or poorly maintained.²

According to Reynolds, even after students have enrolled, success continued to be strongly correlated with the state of the physical environment. In their survey responses, a significant number of students rated academic facilities in their major, the library, classrooms and

² Gary L. Reynolds, "The impact of **facilities** on recruitment and retention of students," New Directions for Institutional Research. Fall 2007, Vol. 2007 Issue 135, p63-80.

“technology” facilities fairly high in both importance and satisfaction. The study also revealed that students tend to become more critical of the state of their institutions’ facilities as they progress toward completion. This correlation may have an impact on student retention. The study concluded that “facilities are important areas to continue to address in ensuring a higher level of satisfaction ... the built environment is fundamentally related to recruitment and retention; a positive relationship does exist that is profound and interrelated. Campus planning and operations of the built environment should be an integral part of the recruitment and retention strategy.”³

- c. **Impact of Reduced Staff:** Declining budgets can lead to insufficient facilities staff, which results in tasks such as preventative maintenance remaining undone. Ultimately, this negatively affects utility budgets, because poorly maintained equipment does not operate efficiently and has a reduced life-span, resulting in higher capital costs.
- d. **Benchmarking of Budgets:** As part of this plan, SUNY will assess the status of facilities operating budgets as related to building square footage, age, condition, student population and unique factors of the particular campus. Using the 2011 report from the Building Condition Assessment Survey (BCAS), the Facilities Condition Index for each campus will be compared to similar SUNY campuses. Current energy use intensity (EUI) from EO88 reporting will also be examined.

Using this information and similar data from peer institutions both within and outside of SUNY, System Administration will determine if particular campuses are significantly underfunded and coordinate with campus officials to look for ways to address funding concerns. Emphasis will be placed on ensuring that campuses have sufficient staff for preventative maintenance tasks. The review will include assessing that sufficient information has been provided to campus staff to develop appropriate preventative maintenance schedules.

Campuses with the highest EUI per sector will be most closely examined to determine if insufficient facilities budgets are a contributing factor to high energy use. Strong consideration will be given to helping campuses find resources to jump start energy savings projects with the goal of using the resultant energy savings to either repay the initial investments or to invest in additional energy savings projects.

Budget Recommendations Conclusion

- SUNY Campuses will be benchmarked to determine if the level of facilities management funding is appropriate for that specific campus;
- All campuses would have right-sized facilities budgets with appropriate consideration for facility needs;
- The related impacts on student recruitment, student retention, student success, energy use, capital renewal and deferred maintenance will be recognized by campus administrators; and
- Budget officers will have a clearer understanding of the relationship of sufficient facilities staffing and energy costs.

Documentation Concerns

Good documentation of all components of a building is crucial to effective operations and maintenance. This includes building drawings, operations and maintenance manuals, control sequencing, preventative maintenance requirements, parts lists, valve locations, accurate electrical panel documentation and much more.

³ Ibid

- a. **Building construction drawings:** With building stock age averaging over 40 years and some SUNY buildings having been constructed more than 100 years ago, documentation is a concern. The oldest buildings may not have original construction drawings, although most have the basics. However, there have been numerous modifications to buildings throughout the System. Each of these modifications creates another set of building documentation. Eventually, with sufficient changes, no one set of information provides complete documentation of the facilities. This is particularly evident in the lack of accurate documentation of electrical distribution in a building. With electricity being the largest energy cost for the University, having accurate information about the distribution and electrical loads within a building is key to being able to better reduce excessive use.
- b. **Building operations documentation:** In general, building documentation is designed for the construction of a facility, not for the maintenance of that property. Operations and maintenance manuals are provided at the conclusion of a construction job, but are inconsistent in form, content and quality. The development of standards of documentation that would simplify the job of the maintenance staff would ultimately save time, allowing more time to be spent on the actual maintenance tasks.
- c. **Warranty documentation:** New buildings and major renovations come with a one-year guarantee from the general contractor. Beyond that guarantee, specific components or pieces

of equipment have manufacturer warranties that extend beyond the first year. Warranties for roofs and specialty equipment can extend 15-20 years. This warranty information is not provided in a consistent manner, and many facilities departments do not have sufficient staff to properly catalogue the information for later retrieval. This results in many warranty claims never being filed and, ultimately, unnecessary repair and replacement expenses to the campus. Standardizing basic warranty information in a searchable data format to simplify the process of retrieving the information would help save campuses from paying for equipment and material malfunctions that should be covered by the manufacturer.



- d. **Preventative Maintenance (PM) Documentation:** Requirements for routine preventative maintenance of newly installed equipment are generally buried within the binders or electronic files of operations and maintenance manuals turned over at the completion of capital projects. Developing a standard for collecting preventative maintenance information for every type/model of new equipment along with a comprehensive listing of each unit of that type and the location installed in the building would provide the basis for a comprehensive preventative maintenance program. Similar consistency in the documentation of control sequencing would help to ensure that the design parameters would be maintained by the operations staff.
- e. **Documentation retrieval systems:** With the majority of documents in paper form, cataloging and archiving them for easy retrieval is a monumental task. As a result, a lot of time is spent searching for the right documentation and money is often spent recreating documentation, such as base drawings for use in a building renovation. Even with much of the data of the past 10 years coming in digital format, the problems persist. Inconsistencies in format, content and quality, along with ineffective archive and search functions, make finding key digital information difficult. This is exacerbated by a lack of computer skills among some of the facilities workforce.

- f. **Equipment tagging:** Barcode tagging of equipment with accompanying tracking tools would allow for easy data entry of performed preventative maintenance, warranty and other equipment data including malfunction reports, repairs data and parts requests.

Documentation Recommendations Conclusion

- Capital project documentation will be provided timely and in a consistent format to campus staff;
- All essential documents required for facilities maintenance will be available digitally;
- Building documentation, cataloguing and retrieval systems will be well functioning and will provide quick accurate retrieval of key building information;
- Preventative maintenance requirements for building equipment will be shared across the System in a central repository of equipment data, allowing campuses to simply grab the information from the central system to create a preventative maintenance routine for newly installed equipment;
- Warranty data will be provided in an easily retrievable format; and
- Equipment will be bar-coded so that accurate information about each piece can be tracked.

Data Concerns

Facilities data falls into two main categories – management of the facilities and management of capital investment. The following primarily describes data systems that are essential to management of facilities. SUNY’s current array of disparate data systems, which are neither integrated nor capable of providing consistent reporting across the campuses, is a significant obstacle to maintaining buildings in a consistent manner.

- a. **Key base data:** Facilities data begins with the basic data about each building. This base data, called the Building Characteristics Inventory (BCI) at SUNY, contains basic building features including construction date, gross square footage, building construction type, number of elevators, square footage of roofs, building ownership or lease status, unique identifying building number, building name, major building function and other information.

This data is not only essential to facilities managers, but is also key data for the University Controller for tracking of University assets for completion of annual financial statements, and for management of outstanding bonding from capital investment and the related tracking of private use which is increasingly important with the progression of Start-UP NY.

- b. **Supplemental base data:** The BCI is further supplemented by the Physical Space Inventory (PSI), which identifies each and every space in each building and catalogues the size, use type, occupants, ceiling height and many other space features.
- c. **Related Datasets:** The combined BCI/PSI data has the potential to be the base data to many facilities related datasets; however, the current structure does not permit live interfaces with the many systems which should directly tie to the BCI/PSI data. While there are many additional programs that should directly relate to the BCI/PSI such as financial asset management and depreciation data, the following are a subset with energy efficiency implications.
 - i) **CMMS – Computerized Maintenance Management Systems or Work Order Systems –** These are databases which ideally use the PSI as a base for identifying the location of necessary repair work in a building. While the programs may initially use PSI as base data, the lack of dynamic connection creates inaccuracies after time has passed from the initial data load. CMMS (aka MMS) systems not only report where work needs to be performed and what has been done, but also provide data about where maintenance problems are

recurring. Reporting from these systems can help to identify areas of energy waste, identify continual problems with HVAC cold and hot calls and identify other areas that need attention to keep buildings efficient.

ii) **PM – Preventative Maintenance** – This is often a separate module of the CMMS. This provides requirements for maintaining equipment before it breaks in order to prolong its life. Linkage to the PSI is essential because knowing the location of the equipment is needed to perform the work as described in the system. As stated in the discussion of project documentation, one of the most difficult aspects of this database is the challenge of getting information about new equipment into the system. New buildings and large renovations may have hundreds of pieces of equipment which require routine maintenance. Good protocols and systems for gathering data from contractors after construction are not routine. Creating a centralized repository of PM data for standard equipment models for easy uploading to any campus would save time for maintenance staff.

iii) **BMS – Building Management System or Building Management Control Systems** – These systems automatically monitor and control the Heating Ventilation and Air Condition (HVAC) of spaces in the building. Systems may initially use data from the PSI but are rarely directly connected. Neither are updates to the PSI regularly transferred into the BMS system. This can result in wasted staff time in a department already stretched thin.

Having most spaces in a building tied to the BMS system provides numerous opportunities for energy savings and energy management through monitoring and control of the HVAC systems. However, it is essential to not allow staff manipulations to push systems out of balance, which will result in wasted energy consumption. This is best prevented by constant commissioning or monitoring based commissioning.

iv) **Monitoring Based Commissioning** – These programs monitor and analyze the BMS data, searching for anomalies. This information is fed to the CMMS, recommending action to correct problems with the HVAC systems that would otherwise not be apparent. This action can save significant energy by correcting the problems early.

v) **Utility metering and sub-metering** – Metering energy use at the building and even at the floor or wing level is ideal to finding potential energy savings. Metering will identify anomalies in consumption when compared to similar spaces within or across campuses. This requires accurate base data.

Explore Greiner Hall



Counter Measures: Countertops in laundry rooms are crafted from recycled Tide bottles—just one of Greiner Hall’s fun uses of vintage materials.



Bike Racks: Racks outside Greiner Hall include spaces for more than 99 bicycles.



Froggy Faucets: Low-flow shower heads and faucets enable residents to save water.



Plyboo: Some of the building’s walls are made from plyboo, a bamboo plywood material harvested from sustainable forests.



Rain-Catchers: Outside Greiner Hall, man-made detention ponds called bioswales catch rainwater, preventing it from entering an over-burdened sewer system.



Signs in Braille: Signage throughout the building includes descriptions in Braille. Other features that make Greiner Hall a great place to live for students with limited vision include blue LED lights that help residents locate light switches at night, and floors and walls painted in contrasting colors to help people distinguish the dimensions of rooms more easily.



Green Tiles: Floor tiles next to the first-floor Au Bon Pain café are green in every sense of the word. They’re made from recycled Heineken bottles.



Accessible Bathrooms: Amenities like oversized showers and shower heads with adjustable height make in-suite bathrooms comfortable for everyone.



Comfortable Controls: Controls on appliances—including stoves, washers and dryers—are easy to reach for wheelchair users.



Super-Roof: A reflective, ultra-white coating helps keep the building cool.



Creative Irrigation: Greiner Hall’s landscaping irrigation



Flat Entrances: All of the main entrances to Greiner Hall are ground-level, avoiding the need for stairs or ramps that can present barriers to easy access.



Showers for Commuters: To encourage green commuting, staff biking to work at Greiner Hall can take advantage of on-site showers.

- vi) **Utility procurement data** – Currently, SUNY’s State-operated and statutory campuses enter all utility purchasing data into energy management budgeting system (EMBS) software. This program also uses BCI base data, but it lacks a dynamic link. Additionally, some buildings are exempt from inclusion in the energy data reports, but these exemptions are tracked in an excel database instead of being integrated into the BCI.
- vii) **Building Condition Assessment Survey (BCAS)** – Building conditions must be routinely evaluated in order to effectively plan for capital needs including energy efficiency projects, and to document the results of capital investment. This must include detailed tracking of annual renewal needs in addition to deferred renewal (i.e. deferred maintenance). This data ties to the base BCI data and ideally would dynamically update with the input of capital project completion data.
- viii) **Smart Grid technology** – In addition to building sub-metering, campus metering would ideally include technology that would permit tracking of peak vs. off-peak consumption to allow planning for scheduling of high energy use processes at off-peak times to reduce demand consumption.

Data Recommendations Conclusion

- The base BCI/PSI database for total University management will be replaced with a modern relational database that can be customized to meet SUNY’s needs (required almost immediately in order for other actions to occur);
- SUNY campuses will have well-integrated databases, tied to the base BCI/PSI, to manage facilities including CMMS, PM, BMS, and monitoring based commissioning systems installed and dynamically interfaced;
- The integrated System-wide enterprise databases will link computerized maintenance management systems with maintenance work order management, energy management functionality, preventative maintenance functions, predictive maintenance functions, project integration, equipment analytics and equipment and facility condition data; and
- Reporting capabilities will include reporting at the building, complex, campus and system levels;

Sufficient Predictable Capital Concerns

Some might think capital funding is not related to operations and maintenance; however, facilities

without sufficient predictable capital funds require wasteful decisions that will ultimately affect maintenance and operations material, labor and utility budgets.



a. **Capital planning timeframe** – Appropriate capital programs plan for capital needs over five to 10 year periods. This planning is best done on a rolling basis, adding planned capital to the out-year as each current year is funded.

b. **Capital Planning at Campuses** – Project planning on a university campus often requires complex sequencing in order to continue to serve the academic and other needs of the students, faculty and staff. Delays in the first phase of a sequenced project can affect the ability to replace inefficient equipment five years down the road,

causing excessive energy utilization. Additionally, capital projects typically replace older, less efficient equipment with more efficient equipment and controls allowing reduced energy use.

- c. **Retro-commissioning as part of Capital** – Encourage the Fund to include in the development of a capital program a System-wide schedule of retro-commissioning to supplement constant commissioning and ensure that buildings continue to operate at the highest possible efficiency.

Sufficient Predictable Capital Conclusion

- Capital and O&M budgets will be predictable and planned several years in advance through the development of five-to-10-year rolling plans;
- Without this predictability, hoarding capital for emergencies and making project decisions based on the unknown future results in ineffective capital planning and inefficient O&M; and
- Buildings will be reviewed for potential inclusion in future retro-commissioning projects.

SECTION III. CHALLENGES AND OPPORTUNITIES

Challenges:

1. Not having an energy manager in System Administration Office for Capital Facilities to manage the implementation of EO88 reduces the ability of SUNY to be as proactive as desired. Currently, the Director for OCF is handling this role while supervising OCF staff in all other areas of responsibility for the office.
2. Campus data is neither standardized nor routinely shared with System Administration;
3. Campuses have various levels of sophistication of operations and maintenance staff and management.
4. Responsibility for management of utility budgets is rarely vested in the facilities department.
5. Creating an enterprise data system to manage SUNY facilities without limiting competition among the numerous companies that provide these software packages, and potentially restricting future improvements due to the lack of competition
6. Receiving complete and timely Preventative Maintenance requirements after renovation or construction is a continual challenge.
7. Generating buy-in from campus constituents will continue to be a challenge. While attitudes are changing with greater global awareness, there continue to be individuals who do not want to be personally impacted by energy use reductions.

Opportunities:

1. Working with other State entities to create convenient and value-driven contracting options for acquiring necessary services.
2. Creating a best practices repository that is well-organized, catalogued and searchable. Previous attempts have not resulted in usable data. Sharing information among campuses could be one of the best ways of taking advantage of the breadth and depth of the overall maintenance staff.



3. Improvement in electronic data systems for better management of facilities.
4. Addition of sub-meters and monitoring the same to find savings opportunities.

SECTION IV. SHORT-TERM ACTIONS (“Quick Wins”)

<u>Action #</u>	<u>Action Description</u>	<u>Responsible Party</u>	<u>Expected Cost</u>	<u>Next Steps</u>	<u>Milestones</u>	<u>How progress will be measured</u>
1	Hire an Energy Manager using SUNY funds. This step is necessary to achieve all following items.	SUNY Office for Capital Facilities	\$90,000 per year	Get System Administration Budget approval	Fall 2014	If person is actually on-board
2	Help Campus facilities staff to integrate sub meters into NY Energy Manager	Primary - Build Smart Team	unknown	Connect campus staff with Build Smart staff for coordination of data collection	Fall 2014	Having some campus meters with live feeds to NYEM
3	Engage with SUNY System HR and Civil Service regarding qualifications and testing for PUE series	Primary - SUNY Office for Capital Facilities, Secondary - Campus Facilities offices	\$0	Initial thoughts shared with Civil Service June 2014	Fall 2014- Spring 2015	Continued dialog with Civil Service
4	Schedule webinars to share various programs that campuses are using to find potential for sharing services such as Cortland Construction Manager and Brockport Project Manager integration to Building Condition	Primary - SUNY Office for Capital Facilities	\$0	Determine potential programs and begin development	Fall 2014	Successful development of shared services
5	Review existing benchmarking data from other higher education systems	Primary - SUNY Office for Capital Facilities	\$0	Review APPA and other higher institution Data for Facilities Management	Fall 2014	Summarize related data
6	Benchmark current conditions through a survey of campuses for the following items: - CMMS, BMS, staff levels, OTPS ⁴ levels, budget, etc.	Primary - SUNY Office for Capital Facilities, Secondary - Campus budget and facilities offices	\$0	Develop Survey to collect data and share results for the 10/11, 11/12 and 12/13 and 13/14 FYs	Late 2014	Report that all campuses have provided data for the four years
7	Help campuses with establishing financing opportunities including NYPA financing and NYSERDA grants for energy savings projects that will reduce energy use	Primary - SUNY Office for Capital Facilities	\$0	Set meeting with State University Construction Fund, NYPA and DOB to coordinate financing	Spring 2015	Financing methods being used

⁴ OTPS – Other than Personal Service

<u>Action #</u>	<u>Action Description</u>	<u>Responsible Party</u>	<u>Expected Cost</u>	<u>Next Steps</u>	<u>Milestones</u>	<u>How progress will be measured</u>
8	Work with campus budget officers to better understand the relationship between facilities budgets and utilities budgets	Primary - SUNY Office for Capital Facilities	\$0	Develop a presentation and have Webinars with budget officers; provide written materials to campus business officers	Spring 2015	Having reached all campus business and budget officers with training
9	Develop ideal standards for SUNY facilities staffing and budgets	Primary - SUNY Office for Capital Facilities, Secondary - Campus budget offices, Campus Facilities offices	\$0	Use campus survey benchmarking data and established national standards to develop ideal standards for SUNY	Summer 2015	Standards developed
10	Upgrade BCI PSI Database to make it useful for integrating with other facilities space based systems	Primary - SUNY Office for Capital Facilities, Secondary - Campus Facilities offices	\$750,000 initial cost \$100,000 annual cost	Establish a work group to investigate options and process implementation	Summer 2015	A new, operational BCI/PSI database
11	Assist campuses with multiple BMS systems to standardize on a single system, Coordinate this with the Fund, DASNY and OSC	Primary - SUNY Office for Capital Facilities, Secondary - Campus Facilities offices, the Fund, DASNY	\$0	Survey the systems to determine where assistance is needed	Summer 2015	Successful work with OSC

SECTION V. PRIORITIES FOR CHANGE TO ACHIEVE LONG-TERM SUCCESS

<u>Action #</u>	<u>Action Description</u>	<u>Responsible Party</u>	<u>Expected Cost</u>	<u>Next Steps</u>	<u>Milestones</u>	<u>How progress will be measured</u>
1	Implement a program for building condition assessment surveys and to benchmark all campuses	Primary - SUNY Office for Capital Facilities, Secondary - NYSERDA Consultant Services	Included in BCI/PSI action	Establish the needs as part of the BCU/PSI review	Fall 2015	Deployment of a new system
2	Standardize the involvement of maintenance in capital projects	SUNY OCF, SUCF, DASNY	\$0	Establish a protocol for involvement of maintenance staff and a methodology for assuring compliance	Fall 2015	Recording the maintenance staff participation in design development
3	Work with the State University Construction Fund to analyze the value and effectiveness of current commissioning agents and potential to improve overall	Primary - SUNY Office for Capital Facilities	\$0	Meet with the Fund Staff to develop a methodology for review and analysis	Spring 2016	Completion of the report

<u>Action #</u>	<u>Action Description</u>	<u>Responsible Party</u>	<u>Expected Cost</u>	<u>Next Steps</u>	<u>Milestones</u>	<u>How progress will be measured</u>
	services					
4	Standardize data collection for facilities management data and documentation	Primary - SUNY Office for Capital Facilities	\$0	Work with construction agencies and contractors to standardize data	Spring 2016	Established data standardization and success in collection from campuses
5	Develop standardized training for various areas of facilities management	SUNY Office for Capital Facilities, NYPA, NYSERDA	\$40,000	Develop a list of prioritized needs and focus on top 2-3 priorities, forming teams from several campuses to develop syllabus and assist with development of content	Spring 2016	By establishment of training sessions and ultimately number of staff trained
6	Assist campuses with development of a Warranty Database that would be populated by contractors as a requirement of the contracts (language to be developed) to track warranties that extend beyond the one-year contractor warranty	Primary - SUNY Office for Capital Facilities, Secondary - Campus Facilities offices, the Fund, DASNY	\$0	Establish a work group	Spring 2016	Working database functioning