



PAT MCCRORY
Governor

DONALD R. VAN DER VAART
Secretary

TO: The Joint Legislative Energy Policy Commission

FROM: Mathew Dockham
Director of Legislative and Intergovernmental Affairs

SUBJECT: 2015 Utility Savings Initiative Annual Report

DATE: November 1, 2015

Attached for your information is the Department of Environmental Quality report on the Utility Savings Initiative. This report is provided to you pursuant to § 143-64.12., which states:

(j) The State Energy Office shall submit a report by December 1 of every odd-numbered year to the Joint Legislative Energy Policy Commission describing the comprehensive program to manage energy, water, and other utility use for State agencies and State institutions of higher learning required by subsection (a) of this section. The report shall also contain the following:

- (1) A comprehensive overview of how State agencies and State institutions of higher learning are managing energy, water, and other utility use and achieving efficiency gains.
- (2) Any new measures that could be taken by State agencies and State institutions of higher learning to achieve greater efficiency gains, including any changes in general law that might be needed.
- (3) A summary of the State agency and State institutions of higher learning management plans required by subsection (a) of this section and the energy audits required by subsection (b1) of this section.
- (4) A list of the State agencies and State institutions of higher learning that did and did not submit management plans required by subsection (a) of this section and a list of the State agencies and State institutions of higher learning that received an energy audit.
- (5) Any recommendations on how management plans can be better managed and implemented.

The attached study report is submitted to fulfill this requirement. If you have questions or need additional information, please contact me by phone at 919.707.8618 or via e-mail to matthew.dockham@ncdenr.gov.

cc: Donald R. van der Vaart, Secretary, NC DEQ
John C. Evans, Chief Deputy Secretary, NC DEQ
Ted Bush, Director, NC DEQ DEACS
Fred F. Steen, Office of the Governor
State Construction Office



**Annual Report for the Utility Savings Initiative
for
Fiscal Year July 1, 2014 – June 30, 2015**

Citation of Law or Resolution:	GS: 143-64.12
Section Number:	Section J
Due Date:	Dec. 1, 2015
Submission Date:	November 1, 2015

Receiving Entities:

The Joint Legislative Energy Policy Commission

Submitting Entity:

Division of Environmental Assistance and Customer Service – Utility Savings Initiative
Department of Environmental Quality

ANNUAL REPORT FOR THE UTILITY SAVINGS INITIATIVE
FOR FISCAL YEAR 2014-15

EXECUTIVE SUMMARY:

The Utility Savings Initiative (USI) is North Carolina's comprehensive, lead-by-example program to manage **energy and water** consumption and costs in the public sector. For fiscal year 2014-15 total utility expenditures for state agencies and UNC institutions were more than \$335 million dollars. Had the Utility Savings Initiative not been in place, an additional \$166 million would have been needed in the budget for utility expenditures. These state facilities avoided emitting an additional 531,001 tons of carbon dioxide as a result of their energy use reductions.

Cumulatively the state agencies and UNC participants have achieved a 32% reduction in energy use intensity (EUI) from a 2002-03 baseline, generating over \$1 billion in reduced costs. However, some participants have not been able to individually reach the 30% reduction objective and efforts will be aligned to assist them in reaching this goal, while sustaining the savings already achieved by all participants. This objective will help maintain the value of the State's infrastructure and increase the cumulative avoided costs to greater than \$3 billion with annual cost reductions in excess of \$200 million by 2025.

The primary responsibility of the Utility Savings Initiative is to coordinate and support the activities of state agencies, UNC system institutions, community colleges, K-12 public schools, county governments and municipal governments (governmental units) to manage and reduce utility consumption and cost. These services include communication and training, preliminary energy audits, data collection and analysis, assistance to participants with energy plan creation and implementation and overseeing the Energy Performance Contract process.

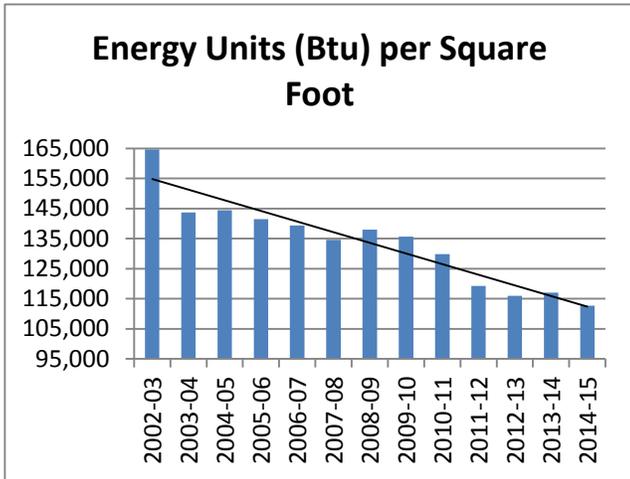
One important strategy used by governmental units to achieve energy savings is through Energy Saving Performance Contracts with oversight by the USI section. This year governmental units including community colleges, schools and local government invested \$43 million in Performance Contracts. These contracts are financed through private banks and paid for with guaranteed energy savings to upgrade facilities to better manage energy use.

Recommendations: Program improvements and legislative recommendations are provided to:

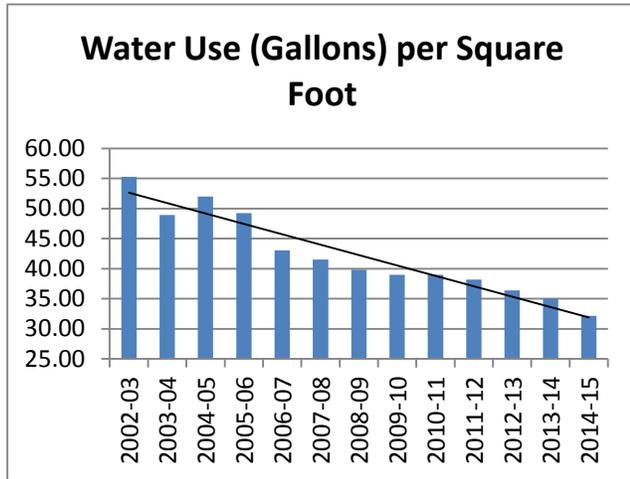
1. Explore incentive-based strategies to encourage the continual improvement of utility management across all public buildings, state and local, to sustain energy saving activities,
2. Establish as new goal of a 40 percent reduction in energy use per gross square foot by 2025 based on the 2002-03 baseline,
3. Encourage greater use of performance contracting as a means to provide infrastructure upgrades through a public private partnership that finances the improvements through utility cost reductions,
4. Continue prioritizing energy saving upgrade projects on the Repair and Renovations project list and seek increasing energy efficiency opportunities in all state facility investment in new construction, renovations and repair.

UTILITY MANAGEMENT COSTS AND TRENDS:

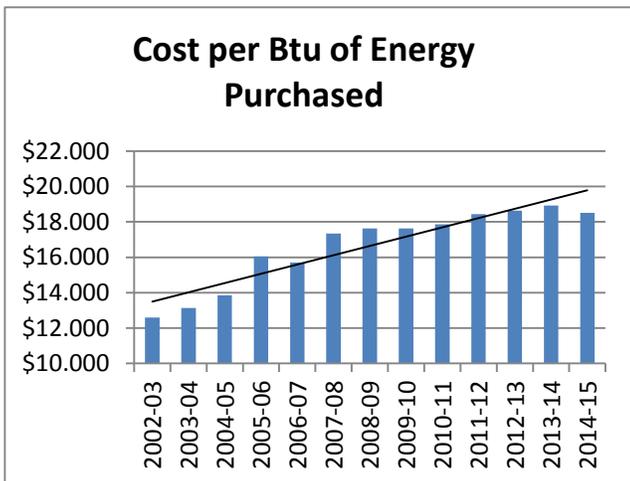
The value of a comprehensive energy efficiency and utility management program has been demonstrated by the results the USI team has achieved. Significant progress has been made in reducing utility consumption and managing site utility costs, resulting in annual avoided costs. Through the application of its core services including performance contracting, the USI team will continue to oversee improvements in the efficient operation of the state’s existing building stock. While little can be done to combat the upward trend in utility costs, the USI team will provide the leadership necessary to maintain the downward trend in utility consumption. Below are charts showing trend analysis of utility reductions and cost increases.



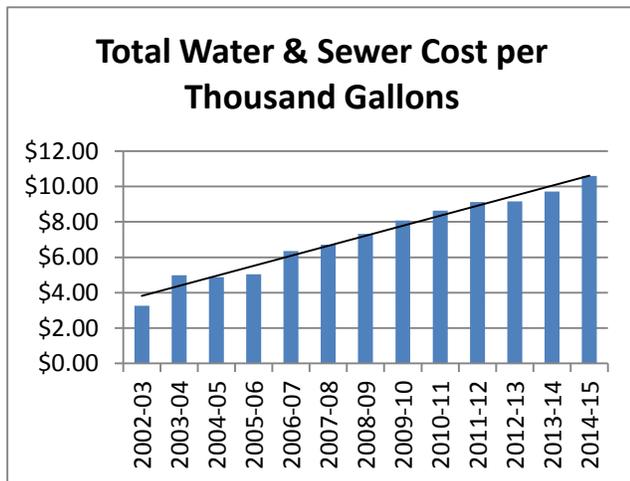
Agencies and UNC institutions had an overall decrease of 32% in Energy Unit Intensity



Agencies and UNC institutions had an overall decrease of 42% in water use

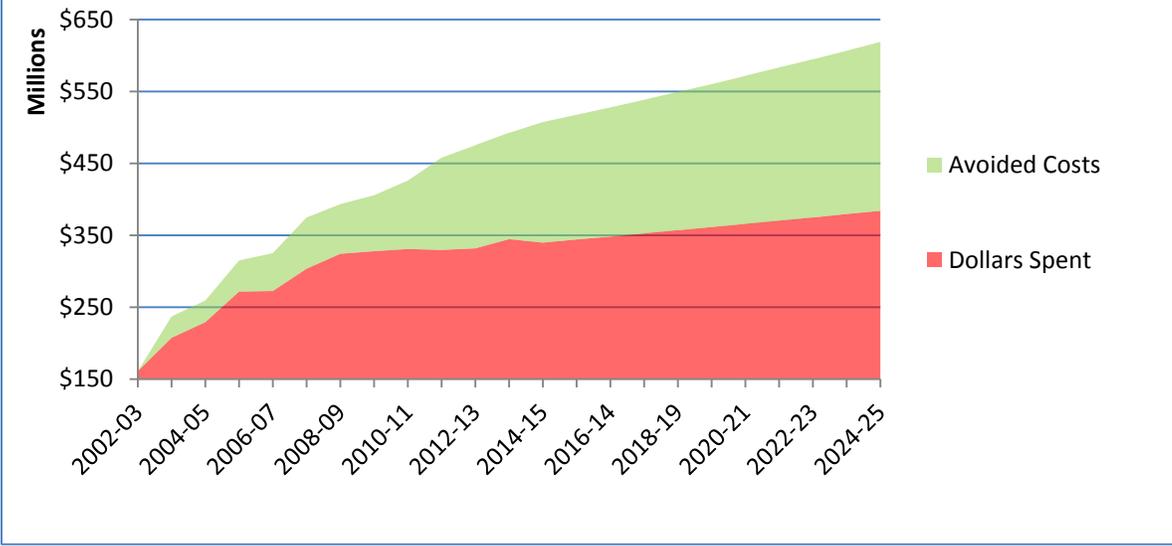


Agencies and UNC institutions had an overall increase of 47% in unit cost of energy



Agencies and UNC institutions had an overall increase of 226% in unit cost of water

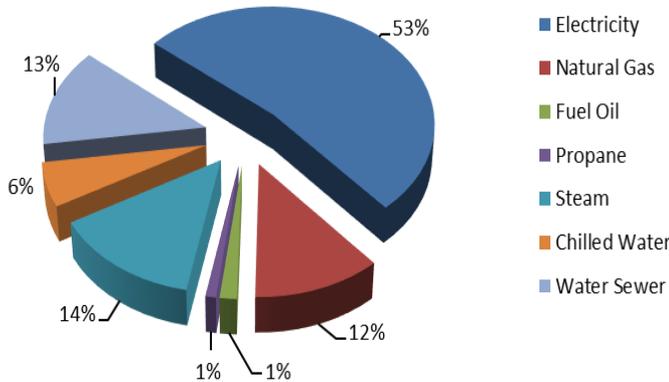
Avoided Utility Costs Through 2025



In FY 2024-25 it is estimated that \$384 million will be spent on utilities. Without the USI program that number would be \$618 million a reduction of \$234 million. Cumulative cost reductions (green shaded area) will be in excess of \$3 billion.

State agencies, UNC institutions and community colleges are required to report their consumption and cost data to USI. Based on this reported data over 50 percent of the utility costs are for electricity purchases. Subsequent reports will show the renewable generation of electricity to overall use. This indicates that to manage utility costs we must manage our use of electricity. See Chart on page 5 for the breakdown of all utilities procured.

Utility Cost by Type
agencies, universities and community colleges



Electricity	\$198,970,955
Natural Gas	\$44,285,036
Fuel Oil	\$5,835,344
Propane	\$3,651,908
Steam	\$52,453,892
Chilled Water	\$22,389,388
Water Sewer	\$50,539,316
TOTAL	\$378,125,839

KEY PERFORMANCE INDICATORS

Based on reported data from the agencies and UNC institutions, USI diligently tracks the performance of the program as indicated in the table below. Three major factors have contributed to these reductions. Operations and behavioral changes, the use of Performance Contracting in existing buildings and the construction of more energy efficient buildings. These numbers provide a concise, comprehensive look at the program's results.

Metric	Baseline 2002-2003	Current 2014-2015	% change
Gross square feet	71,562,179	138,117,715	93%
Energy, Btu per square foot per year	164,581	112,657	-32%
Cost per million Btu	\$12.59	\$18.52	47%
Avoided Energy Costs		\$878,015,880	
Water gallons per gsf	55.26	32.15	-42%
Water cost per kgal	\$3.25	\$10.61	226%
Avoided Water costs		\$178,011,888	
Total Cumulative Avoided Cost		\$1,056,027,768	

Legend:

Btu = British thermal unit (standard unit of energy)

kgal = 1,000 gallons

Water cost includes sewer costs

PARTICIPANT PERFORMANCE:

State Agencies: All state agencies have submitted their utility data for the fiscal year FY2014-15. Properly tracking agency performance has been complicated by movement of divisions between departments. The USI team will continue to work closely with those agencies affected by reorganization to make sure all reporting remains accurate and meets the requirements of the USI program.

Four agencies are investigating the use of a performance contract to help manage their utilities. The Departments of Administration, Environmental Quality and Transportation along with the NC State Ports Authority all have issued Requests for Proposals to start the process. The USI team is providing oversight to each of these agencies to guide them through the process.

Universities: Twenty-one University of North Carolina institutions participate in the Utility Savings Initiative program. All have submitted utility data for FY2014-15. The 21 institutions include the 16 university campuses, UNC Hospital, UNC General Administration, the School of Science and Mathematics, UNC TV and the N.C. Arboretum.

Twelve of the universities applied for energy efficiency project carry forward of utility savings. Over \$8.3 million was documented in utility savings that qualified for carry forward to be invested in new energy conservation measures in the next fiscal year.

Community Colleges: Community colleges are required to submit energy consumption and cost reports to the USI Section. Unlike State Agencies and Universities, Community Colleges do not have the legislated reduction target. This year all 58 community colleges submitted reports. Since their baseline year of 2007-2008 there has been a 15% reduction in energy use intensity. The USI team will continue efforts to assist all community colleges with their energy management and data tracking activities.

The USI team is assisting nine community colleges through the performance contracting process to create even greater reductions. Four of these institutions have completed the RFP process, selected their Energy Service Company (ESCO) and are in the process of performing an Investment Grade Audit.

Local Government Assistance: K-12 Public Schools, County Governments and Municipal Governments have no statutory reporting requirements under the Utility Savings Initiative. However, All USI services are available to assist them with managing their utility consumption and costs, identifying energy conservation measures and implementing performance contracts. An increased number of local governmental units are utilizing performance contracting to fund capital improvements. USI has a statutory requirement to review and comment on all local government performance contracts prior to Local Government Commission approval. The USI team continues to be approached by local governmental units to assess whether or not they are candidates for performance contracting and to assist them through the process.

Eight public school systems, seven county and two municipal governments have requested assistance from the USI staff to investigate performance contracting. All nine are moving forward with the process.

ACTIVITIES OF THE UTILITY SAVINGS INITIATIVE:

The USI staff remains dedicated to educating participants, facilitating the energy management performance contracting process, and providing onsite technical assistance to allow participants to effectively manage their utility consumption. Training will provide the USI program’s participants with the skills necessary to identify and implement energy efficiency measures. Technical assistance includes preliminary energy audits, energy project identification and implementation assistance. Outreach encompasses strategic energy plan creation, team participation in conferences and assistance to participants with awareness programs. Data management looks at data collection and analysis and also involves working with utility providers to make sure participants are on the most economical rate. For the majority of FY 2014-15 the USI team was short one staff person. The following table shows the quantifiable activities of the program staff for the year.

USI Team Activities for 2014-15			
Performance Contract assistance	178	Outreach	102
Training	56	Data Management	93
Technical Assistance	93		
Total Site Visits 522			
Total Counties Served 65			

Better Buildings Challenge: In April of 2012, the NC Energy Office joined the US Department of Energy’s (DOE) Better Buildings Challenge, a voluntary program to improve building energy efficiency. This commitment is complementary to our USI program objectives and provides a stretch goal for state agencies and university facilities. The challenge is for existing buildings to reduce energy consumption 20% from a 2008-09 baseline by the year 2019-20. State buildings are currently at an 18% reduction as calculated from the DOE baseline of 2008-09.

Improving Utility Data Management: At a minimum the collection and analysis of utility data should be done on a monthly basis, rather than just annually. The USI team is providing assistance to any participant that wishes to pursue tracking utility information on a monthly basis.

Performance Contracting: The Federal Department of Energy awarded a competitive grant to the USI program to refine our Performance Contracting process and documents to make the implementation of small contracts practical. The USI team is responsible for the execution of these tasks. Over thirty governmental units have investigated the use of performance contracts to provide the funding, design and implementation of energy efficiency projects. Much of this interest may be traced back to the availability of the technical assistance provided by the grant. Please see separate Annual Report on Performance Contracting attached.

Energy Policy Council: The USI staff will continue to provide technical assistance and support to the Energy Efficiency sub-committee of the Energy Policy Council.

UNC Energy Leadership Challenge: The USI staff participated in the fourth annual Appalachian Energy Summit with representatives from all the UNC System institutions and affiliates along with Community Colleges in attendance. The primary focus of this event was to foster dialogue and share best practices among the UNC participants. The UNC institutions have adopted a voluntary goal of reducing their energy unit intensity 40% from a 2002-2003 baseline by 2025.

The USI team has developed a strong collaboration with UNC General Administration. Through this collaboration USI will continue to support all UNC institutions and affiliates with their efforts to effectively manage their energy consumption and costs.

Utility Savings Initiative Strategic Plan for 2014-15: The Utility Savings Initiative Strategic Energy Plan (found at the end of this report) lays out strategies to reach our 2015 legislative requirements and the 2020 Better Buildings Challenge commitment. Specific annual activities are detailed to accomplish these goals. The key focus area of the plan include: 1) Performance Contracting, 2) Data Management, 3) Outreach Program and 4) Training.

RECOMMENDATIONS FOR IMPROVEMENT:

1. Explore incentive-based strategies to encourage the continual improvement of utility management across all public buildings, state and local, to sustain energy saving activities.
Explanation: The USI program support for state and local government buildings has shown tremendous benefit in controlling utility costs. Most agencies can continue to reduce energy use beyond 30 percent. Continual improvement on energy and water efficiency strategies is further justified by the increasing unit cost of energy, water and sewer costs.
2. Establish an amended goal of a 40 percent reduction in energy use per gross square foot by 2025 based on the 2002-03 baseline,
Explanation: Providing a measurable goal for the program to achieve allows the participants to maintain their focus on managing their energy conservation and efficiency efforts. This will assist in keeping the program on track and delivering continued benefits to the taxpayers.
3. Encourage greater use of performance contracting as a means to provide infrastructure upgrades through a public private partnership that finances the improvements through utility cost reductions.
4. Continue prioritizing energy saving upgrade projects on the Repair and Renovations project list and seek increasing energy efficiency opportunities in all state facility investment in new construction, renovations and repair.

THE UTILITY SAVINGS INITIATIVE STRATEGIC ENERGY PLAN FOR 2015-16

MISSION:

The mission of the Utility Savings Initiative (USI), within the Division of Environmental Assistance and Customer Service (DEACS), is to protect and improve North Carolina's environment and economy through the effective identification and application of energy, water and other utility conservation, efficiency, and cost-saving measures in existing public buildings.

OVERVIEW:

§ 143-64.10. Findings; policy...

(6) That State government shall undertake a program to reduce the use of energy, water, and other utilities in State facilities and facilities of the State institutions of higher learning and equipment in those facilities in order to provide its citizens with an example of energy use, water use, and utility use efficiency.

The USI program supports the activities of all governmental units to manage and reduce utility consumption and cost. The USI services are available to all public sectors: state agencies, UNC institutions, community colleges, K-12 public schools, county governments and municipal governments (participants). An overview of these services is provided on page three of this document.

§ 143-64.17 Energy Saving Measures for Governmental Units.

USI has statutory responsibility for overseeing Performance Contracting in all governmental units. Performance Contracting provides an effective means to design, build and fund energy efficiency projects. USI involvement provides consistency throughout the process for all governmental units desiring to enter into a performance contract.

OBJECTIVE:

Cumulatively the agency and UNC participants have achieved a 32% reduction in energy unit intensity (EUI) from a 2002-03 baseline, generating over \$1 billion in reduced costs. However, some participants have not been able to individually reach the 30% reduction objective and efforts will be aligned to assist them in reaching this goal, **and sustaining the savings already achieved by all participants**. This objective will help maintain the value of the State's infrastructure and increase the cumulative avoided costs to greater than \$3 billion with annual cost reductions in excess of \$200 million by 2025. This plan addresses this need and adjusts activities to continue to provide relevant, beneficial services to participants.

KEY PERFORMANCE INDICATORS AGENCIES AND UNC ONLY

Metric	Baseline 2002-2003	Current 2014-2015	% change
Gross square feet	71,562,179	138,117,715	93%
Energy, Btu per square foot per year	164,581	112,657	-32%
Cost per million Btu	\$12.59	\$18.52	47%
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Water cost per kgal	\$3.25	\$10.61	226%
Avoided Water costs		\$178,011,888	
Total Cumulative Avoided Cost		\$1,056,027,768	

TABLE I

Legend:

Btu = British thermal unit (standard unit of energy)

kgal = Thousands of gallons

KEY FOCUS AREAS OF THE PLAN (5 YEAR LOOK AHEAD):

- 1) **Performance Contracting** – Partnerships will be utilized to continue to refine the process, disseminate best practices, and promote its use where appropriate. The USI team will continue to provide technical assistance and guidance for USI participants through the entire contract process. A new emphasis will be placed on assistance during the Investment Grade Audit, monitoring construction progress and performance guarantee period site visits. To satisfy the terms of the Department of Energy Performance Contract Grant, the USI team and partners will develop a program for making Performance Contracting cost effective for small projects and continue to improve the traditional Performance Contracting process.
- 2) **Data Management** – It is imperative that participants improve their data collection and analysis capabilities. USI will continue to facilitate the capture of at least monthly, purchased utility data with minimal manual input of data by participants. Ultimately program participants should be positioned so that as technology moves toward the “smart grid” data collection systems may seamlessly migrate toward energy management and optimization systems while still providing necessary analytics. Buildings that require sub-meters will be addressed within a Performance Contract as part of the Measurement and Verification process or as other funding is available. Participants will be encouraged to enter monthly billing data into a data collection system to facilitate benchmarking and monitoring to target savings opportunities. Where appropriate USI will encourage the use of a bill data management system by participants.
- 3) **Outreach Program** – USI will continue to provide services and assistance to optimize the performance of public buildings and effectively manage their utility consumption. Through the use of site visits the participant’s needs will be assessed and USI will assist in formulating strategic plans to identify and implement energy and water management opportunities. USI will keep participants informed of latest technologies, best practices, and available state and federal funding. USI will be responsible for managing contracts and funds distributed for the benefit of participants. USI will continue to provide support to the activities of the Energy Policy Council.
- 4) **Training** – Training will provide USI participants with the skills necessary to identify and implement utility efficiency measures. The team will place a renewed effort on providing an array of relevant materials, tools, fact sheets, calculators and educational sessions. Training will be provided using a combination of staff, subject matter experts, industry specialists and professional instructors to develop and present the material. Training will be structured to address the various levels of participant needs and be communicated using relevant media such as webinars, newsletters and workshop sessions. The USI website will continue to evolve to provide timely, accurate and relevant information to assist all commercial building operators in managing their utilities.

FOCUS AREAS (TWO YEAR OBJECTIVES)

FOCUS AREA 1: PERFORMANCE CONTRACTING

2015-2016 Planned Activities

1. USI shall assist all PC participants through the RFP, IGA and ESA process including ESCO selection, IGA report preparation and construction period activities. Site visits shall be conducted as necessary to resolve issues and expedite the process. Site visits shall be conducted annually during guarantee period. With feedback from owners and stakeholders document results into recommended process improvements and best practices.
 - **Responsible:** Len Hoey and USI team members in their assigned areas
 - **Funding Source:** Salary
2. Edit, receive DEQ General Counsel approval, and publish the RFP, IGA, ESA and schedules to accommodate the latest legislative changes.
 - **Responsible:** Len Hoey, Kathy Walters, and DEQ Counsel
 - **Funding Source:** Salary
3. Administer and implement the DOE small PC grant to achieve the goals outlined in the grant application
 - **Responsible:** Administration by Kathy Walters and Len Hoey – Implementation by USI team
 - **Funding source:** Salary and grant funds
4. Report annually as required on the status of all state level Performance contracts
 - **Responsible:** Report preparation by Len Hoey and Terry Albrecht - Data collection by USI team
 - **Funding source:** Salary

FOCUS AREA 2: DATA MANAGEMENT

2015-2016 Planned Activities

1. Contact each reporting governmental unit using Portfolio Manager. If participant is still using Portfolio Manager make sure PM usage reports correlate back to data on USI spreadsheets. This will eliminate the need for those units to manually report to USI.
 - **Responsible:** Kat Stahl and each team member in their area
 - **Funding source:** Salary and grant funds
2. Encourage participants to partner with utility providers to automate collection of monthly utility data, perform rate reviews and explore rebate and incentive programs. This will reduce the need for manual input of data.
 - **Responsible:** Team member in their respective area
 - a. **Funding source:** Salary
3. Conduct a site visit with each reporting participant to review their USI annual data spread sheet. This review should encompass an explanation of what the data means and how they can use it to help manage their utilities. USI will continue to request annual submission of data as part of the USI Energy Plan.
 - **Responsible:** Len Hoey for data analysis – Each team member in their respective area to deliver information
 - **Funding source:** Salary
4. Survey each reporting participant as to the number of utility accounts and meters they have on their site, current method of collecting and storing the data. Verify billed units for water.
 - **Responsible:** Kat Stahl to provide survey form and receive data – each team member to collect data for their area
 - **Funding source:** Salary

FOCUS AREA 3: OUTREACH

2015-2016 Planned Activities

1. Evaluate the opportunity for recognizing exceptional achievements by USI participants. Use an ESI awards type celebration or at an event similar to the Appalachian Energy summit etc. Possibly allow recipients time to describe best practices.
 - **Responsible:** Renee Hutcheson and Kat Stahl
 - **Funding source:** Salary
2. Participate as presenters and/or exhibitors at Association of Community College Facility Officers, Association of Community College Business Officers, NC Public School Maintenance Association, Appalachian Energy Summit (AES), NC League of Municipalities, NC Association of County Commissioners annual conferences and others if relevant.
 - **Responsible:** USI team
 - **Funding source:** Salary
3. Provide onsite technical assistance to participants in the form of assessments, presentations, energy plan creation, ECM identification and implementation as requested
 - **Responsible:** Waste Reduction Partners and USI teams
 - **Funding source:** Salary and Section Grants
4. Make the larger engineering and design communities aware of the USI program and mission and encourage their participation and support for common objectives, such as third-party engineers and owner's representatives for Performance Contracting
 - **Responsible:** Len Hoey
 - **Funding source:** Salary

FOCUS AREA 4: TRAINING

2015-2016 Planned Activities

1. Update Strategic Energy Planning training course
 - **Responsible:** Kat Stahl and Kathy Walters
 - **Funding source:** Salary
2. Create training module for USI team on how to identify when a customer is opted in for Investor Owned Utility incentives. What actions can be taken to opt out and what are the consequences for doing so.
 - **Responsible:** Kat Stahl
 - **Funding source:** Salary
3. Training for ESCO and Third Party Engineering firms
 - **Responsible:** Lyn Martin and Len Hoey
 - **Funding source:** Salary
3. Maintain website content for accuracy, relevance and make sure it is up to date.
 - **Responsible:** Renee Hutcheson
 - **Funding Source:** Salary

ADDITIONAL PLANNED USI ACTIVITIES

2015-2016 Planned Activities

1. Promote the expanded services available to participants now that USI is a part of DEACS. Engage DEACS staff to provide implementation of the expanded services
 - **Responsible:** USI team, WRP team, Environmental Assistance Section, and the Recycling and Materials Management Section
 - **Funding source:** Salary
2. Continue to search out and apply for funding that supports participant initiatives and the USI program and mission
 - **Responsible:** Kathy Walters
 - **Funding source:** Salary