

# **Report to the North Carolina General Assembly**

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## *Annual Report for the Utility Savings Initiative*

July 1, 2016 – June 30, 2017



**NORTH CAROLINA  
DEPARTMENT OF ENVIRONMENTAL QUALITY**

**<http://portal.ncdenr.org>**

**Annual Report for the Utility Savings Initiative**  
**for**  
**Fiscal Years July 1, 2015 – June 30, 2017**

**Citation of Law or Resolution:** GS: 143-64.12 (j)

**Receiving Entities:**

The Joint Legislative Energy Policy Commission

The Joint Legislative Oversight Committee on Agriculture and Natural and Economic Resources

The Fiscal Research Division

**Submitting Entity:**

Department of Environmental Quality (DEQ) – Utility Savings Initiative (USI)

**Annual Report from the Department of Environmental Quality, Utility Savings Initiative  
for Fiscal Years 2015-2016 and 2016-2017**

**EXECUTIVE SUMMARY:**

The primary responsibility of Utility Savings Initiative is to oversee legislative mandates in NC General Statutes §§ 143-64 Article 3B

<https://files.nc.gov/ncdeq/Environmental%20Assistance%20and%20Customer%20Service/Utility%20Savings%20Initiative/General%20Statutes/Part%201%20Article%203B%20GS%20143-64.pdf> .

USI provides communication and training, preliminary energy audits, data collection and analysis, assistance to participants with annual energy plan, and implementation and oversight of the Energy Performance Contract process. USI services are now available to all public sectors: State agencies, UNC institutions, community colleges, K-12 public schools, and local governments. Under law, UNC institutions, agencies, and community colleges must report utility data to USI.

Since the USI program began in fiscal year 2002-03, a total investment of approximately \$13 million in state appropriated funds has yielded more than \$1.3 billion in avoided utility costs for North Carolina's state agencies and universities. As a result of their energy use reductions, these state facilities avoided emitting an additional 4,478,092 tons of carbon dioxide air emissions as environmental co-benefits. .

Community colleges were included in the reporting requirements beginning in 2007 fiscal year. To date more than \$36 million in avoided utility costs have been realized by North Carolina community colleges. These facilities avoided emitting an additional 285,697 tons of carbon dioxide air emissions as a result of their energy use reductions.

Currently, the state and community colleges pay more than \$988 thousand dollars in utility costs per day. USI efforts ensure continued awareness and compliance in reducing both utility consumption and carbon emissions. Without the Utility Savings Initiative, NC taxpayers would have had to pay an additional \$353 million for state facilities and \$21 million for community colleges' utility bills in the past two fiscal years.

**UTILITY MANAGEMENT COSTS AND TRENDS:**

State agencies and universities were statutorily directed to reduce energy consumption per gross square foot by 30% by 2015 based on consumption in the 2002-03 fiscal year. State facilities exceeded that goal and now report an energy use reduction, based on an energy use per square foot basis, of 35%.

Since the start of the USI program, State agencies and universities have reduced water usage, on a per square foot basis, by 28%. Cumulative avoided water amounts to \$138 million in savings over the program's 15-year history.

Since 2007-08, community colleges reduced energy consumption by 17% and water usage by 38%. Significant increases in campus square footage will be realized over the next few years due to the Bond Issue which will increase the overall cost and consumption numbers for these institutions. However, if

new buildings are designed and constructed with energy efficiency in mind, the community colleges should continue experiencing decreased Btu per square foot values.

State and governmental units employ Energy Saving Performance Contracting, also executed by USI, to achieve energy savings. This year the state invested \$39 million in Performance Contracts, financed through private banks, that upgraded facilities to improve and better manage energy and water use.

#### **Key Performance Indicators (Agencies & UNC System)**

Metric	Baseline 2002-2003	Current 2016-2017	% Change
Gross square feet	71,583,846	137,164,832	92%
Btu per square foot per year	164,532	107,075	-35%
Cost per million Btu	\$12.59	\$20.08	59%
Avoided Energy Costs		\$1,203,585,736	
Water gallons per gsf	49	35	-28%
Water cost per thousand gal	\$3.69	\$10.40	182%
Avoided Water costs		\$138,716,582	
<b>Total Cumulative Avoided Cost</b>		<b>\$1,342,302,318</b>	

#### **Key Performance Indicators (Community Colleges)**

Metric	Baseline 2007-2008	Current 2016-2017	% Change
Gross square feet	22,603,520	29,705,693	31%
Btu per square foot per year	79,688	66,008	-17%
Cost per million Btu	\$19.18	\$19.92	4%
Avoided Energy Costs		\$41,795,374	
Water gallons per gsf	18	11	-38%
Water cost per thousand gal	\$6.59	\$11.70	78%
Avoided Water costs		-\$5,151,316	
<b>Total Cumulative Avoided Cost</b>		<b>\$36,644,057</b>	

#### **Legend:**

Btu = British thermal unit (standard unit of energy)

gsf = gross square foot

#### **PARTICIPANT PERFORMANCE:**

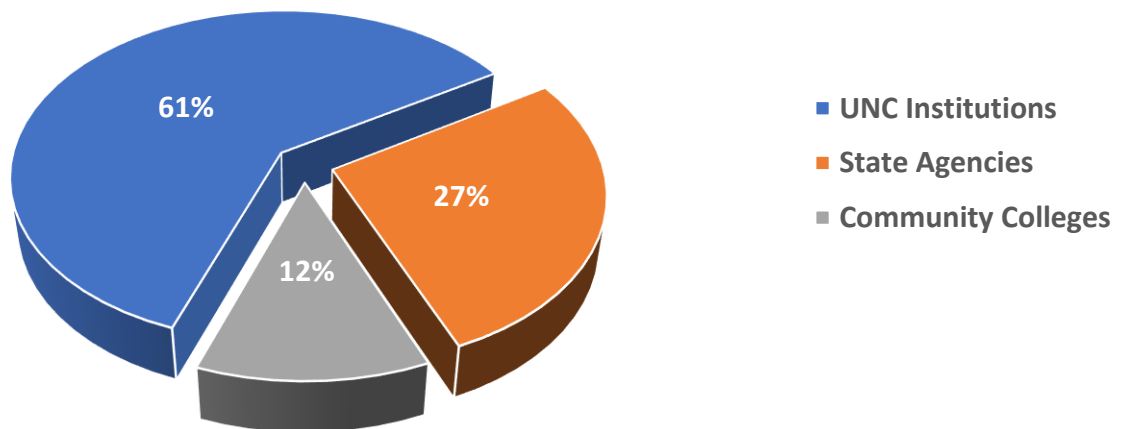
Fourteen state agencies, 21 UNC institutions, and 58 community colleges are required to report their consumption and cost data to USI. All entities are compliant with both this mandate and the continuous improvement of their strategic energy plans.

The UNC institutions are the largest utility consumer, followed by state agencies and community colleges (Chart 1).

**Chart 1**

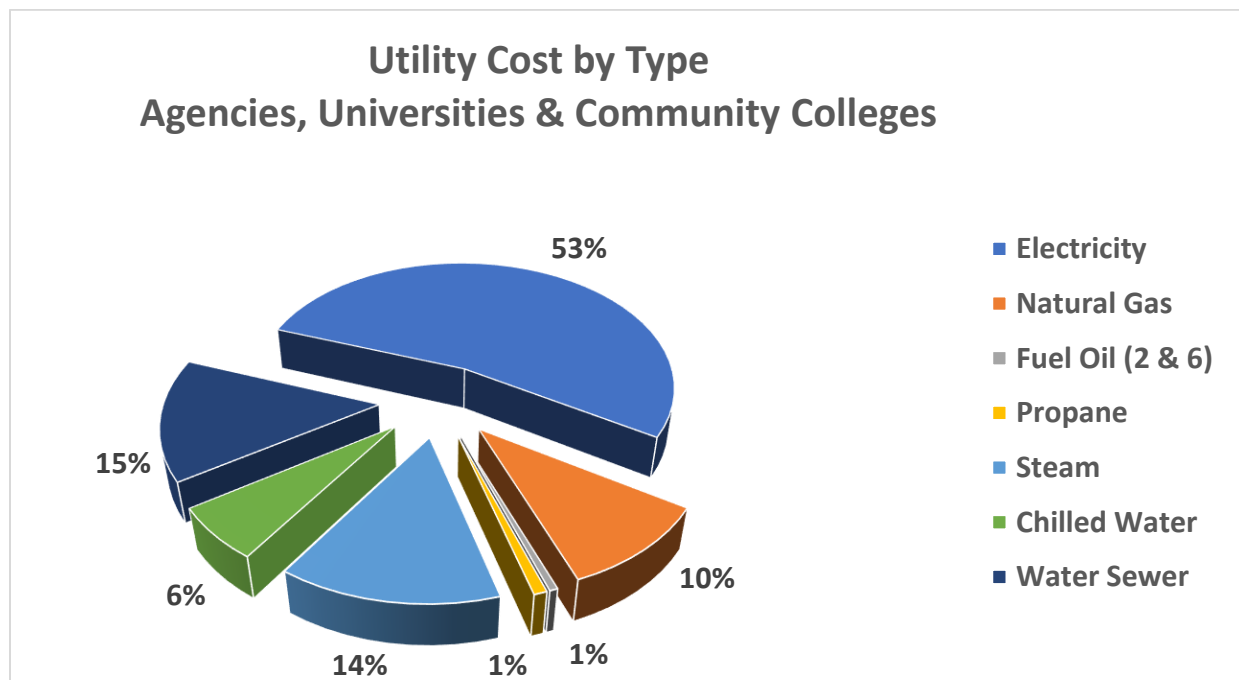
Fiscal Years 2015-2016 & 2016-2017 Combined		
Participant	Amount	Percent
UNC Institutions	\$437,505,672	61%
State Agencies	\$198,016,677	27%
Community Colleges	\$86,170,532	12%
<b>Total Dollars</b>	<b>\$721,692,882</b>	

**Utility Cost by Participant Fiscal Years  
2015-2016 & 2016-2017 Combined**



Over 53 percent of these utility costs are for electricity purchases (Chart 2). Water and steam costs are the second and third highest utility cost categories.

**Chart 2**



Fiscal Years 2015-2016 & 2016-2017 Combined		
Utility	Cost	%
Electricity	\$384,437,312	53%
Natural Gas	\$74,623,981	10%
Fuel Oil (2 & 6)	\$3,815,276	1%
Propane	\$6,039,230	1%
Steam	\$100,605,552	14%
Chilled Water	\$45,647,370	6%
Water Sewer	\$106,580,974	15%
<b>Total</b>	<b>\$721,749,695</b>	

#### **ACTIVITIES OF THE UTILITY SAVINGS INITIATIVE:**

The USI team provides universities, agencies, community colleges, and local governments with comprehensive stakeholder education beginning with no-to-low cost ways to reduce energy and water consumption as well as the complex facilitation and program management of the performance contracting process. This is done by providing technical assistance to allow participants to effectively manage utility consumption. Training provides participants with the skills necessary to identify and implement energy efficiency measures to participants, conducting preliminary energy audits, creating strategic energy plans, data collection and analysis, energy project identification and implementation. technical assistance which includes preliminary energy audits, strategic energy plan creation, data collection and analysis, energy project identification and implementation assistance.

In support of these activities and the assistance provided to other local governmental units, the four member USI team conducted 838 site visits in 71 counties since the last required report.

The following table shows the quantifiable activities of the program staff for the last two fiscal years:

USI Team Activities for 2015-2016 & 2016-17			
Data Management	110	Training	102
Outreach	168	Technical Assistance	108
Performance Contract assistance	350		
Total Site Visits 838			
Total Counties Visited 71			

**Better Buildings Challenge:** In April 2012, USI joined the US Department of Energy's (DOE) Better Buildings Challenge, a voluntary program to improve building energy efficiency. This commitment complements USI objectives and provides a stretch goal for state agencies and university facilities. The program challenges existing buildings to reduce energy consumption 20% from a 2008-09 baseline by 2019-20. State buildings are currently at a 22% reduction as calculated from the DOE baseline of 2008-09.

**Improving Utility Data Management:** To facilitate the collection and analysis of monthly data, rather than just annual information, USI assists any participant who would like technical assistance in data collection and utility bill comprehension and analysis.

**Performance Contracting:** State and governmental units employ Energy Saving Performance Contracting, also executed by USI, to achieve energy savings. This year the state invested \$39 million in Performance Contracts, financed through private banks, that upgraded facilities to improve and better manage energy and water use.

**Energy Policy Council:** USI staff provides technical assistance and support to the Energy Efficiency subcommittee of the Energy Policy Council.

**UNC Energy Leadership Challenge:** The inaugural Appalachian Energy Summit brought representatives from all the UNC institutions and affiliates to attendance. The focus of this event was to foster dialogue and share best practices among participants with an emphasis on meeting statutory requirements and establishing stretch goals that will extend beyond 2015.

The USI team collaborates 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 2017-18:** The Utility Savings Initiative Strategic Energy Plan (found in the Appendix) lays out strategies to meet the 2017-18 legislative requirements and the 2020 Better Buildings Challenge commitment. Specific annual activities are detailed to be employed to accomplish these goals. The key focus area of the plan includes: 1) Communication and Training, 2) Participant Plan Implementation, 3) Performance Contracting Assistance and Oversight and (4) Support of the Energy Efficiency subcommittee of the Energy Policy Council.

#### **RECOMMENDATIONS FOR IMPROVEMENT:**

1. Explore incentive-based strategies to encourage the continual improvement of utility management across all public buildings 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. Investigate instituting a new goal to reduce energy unit intensity an additional 10% to be achieved by 2025.
  - 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. Return to annual data collection from universities, agencies and community colleges.
  - SL 2014-120 changed the annual data reporting to biennial reporting. Annual reporting allows for continuity of plans, ability to trend data, and take corrective measures to any change in data from previous years.
4. Encourage greater use of performance contracting as a means to provide infrastructure upgrades through a public private partnership that finances improvements through utility cost reductions.



## APPENDIX

### THE UTILITY SAVINGS INITIATIVE STRATEGIC ENERGY PLAN FOR 2017-18

#### MISSION:

The mission of the Utility Savings Initiative (USI), within the Department of Environmental Quality (DEQ), 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.

##### **§ 143-64.17 Energy Saving Measures for Governmental Units.**

State and governmental units employ Energy Saving Performance Contracting, also executed by USI, to achieve energy savings. This year the state invested \$39 million in Performance Contracts, financed through private banks, that upgraded facilities to improve and better manage energy and water use.

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.

#### 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. The USI team will also concentrate on maintaining the savings already achieved by all participants. This objective will help the value of the State's infrastructure and increase the cumulative avoided costs to greater than \$3 billion with annual cost reductions exceeding \$200 million by 2025. This strategic plan addresses this need and adjusts activities to continue to provide relevant, beneficial services to participants.

### KEY PERFORMANCE INDICATORS AGENCIES AND UNC ONLY

#### **Key Performance Indicators (Agencies & UNC System)**

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### KEY PERFORMANCE INDICATORS COMMUNITY COLLEGES

#### **Key Performance Indicators (Community Colleges)**

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

- 1) Performance Contracting (PC)** – We will continue to refine the process, disseminate best practices, and promote the use of PC where appropriate. The USI team will 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. The USI team will refine the program for making Performance Contracting cost effective for small projects and continue to improve the traditional Performance Contracting process.

- 2) **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 participant needs and be communicated using relevant media including 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.
- 3) **Data Management** – It is imperative that participants improve data collection and analysis capabilities. USI will continue to facilitate the capture of at least monthly, purchased utility data with minimal manual input required 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 simultaneously 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 participants to use data management systems.
- 4) **Outreach and Technical Support** – USI will continue to provide services and assistance to optimize the performance of public buildings and effectively manage utility consumption. Conducting site visits allows USI team to assess participants needs; which allows USI to formulate plans to identify and implement energy and water management opportunities. strategic plans to identify and implement energy and water management opportunities. USI informs participants 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.