

Comprehensive Program to Manage Energy, Water, and Other Utility Use for State Agencies and State Institutions of Higher Learning

Comprehensive Program Update and Energy Data Report

A Report to
The Governor's Office

Submitted by the Department of Environmental Quality
State Energy Office

Pursuant to Executive Order No. 80, Section 8



February 1, 2019

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I. Executive Summary

The North Carolina Department of Environmental Quality (DEQ) State Energy Office (SEO) supports the North Carolina Comprehensive Program to manage energy, water, and other utility consumption and costs in the public sector pursuant to N.C. G.S.143-64.12(j). In 2007, G.S. 143-64.12(a) expanded DEQ SEO services to include collection, review, and reporting of community colleges' utility consumption and costs. DEQ SEO also assists public schools, county and municipal governments in reducing energy and water consumption. While G.S. 143-64.12 required State agencies and the UNC system combined to meet the goal of a 30% reduction in Btus per square foot by 2015, some participants have not been able to individually reach the 30% reduction objective. In 2016-17, state agencies and universities collectively reached 30% in Btus per square foot. In 2017-18, the percentage declined slightly to 28%.

Executive Order No. 80 (EO 80) issued in 2018 by Governor Cooper aspires state governmental units to strive towards a 40% reduction in Btus per square foot by 2025 from a 2002-03 baseline. Section 8 of EO80 specifically directs cabinet agencies to expand the Comprehensive Program to achieve the 40% reduction goal by 2025, and encourages other agencies and universities to participate in the effort. This Comprehensive Program update and Energy Data Report complies with SEO's reporting requirements pursuant to current law and the newly issued EO80 and outlines the DEQ SEO efforts and plans to align goals of all state governmental units toward a 40% reduction.

DEQ SEO's Comprehensive Program update and utility data report includes collection, review, and reporting of annual utility consumption and cost data as well as university and agency utility management plans. Best practices for energy efficiency, cost estimation and financing options are key components to the Program. Services include communication and training, assistance to participants with utility management plan implementation, preliminary energy audits, and oversight of Guaranteed Energy Savings Contracts (GESCs).

The fiscal year 2017-18 energy consumption and cost data contained in this document support the following key conclusions:

- 1) Nearly all of the 14 affected state agencies and 21 UNC System campuses are reporting the utility usage and building performance data.
- 2) State Governmental Units occupied about 135 million square feet of space.
- 3) State Governmental Units spent over \$317 million in utility costs. About two thirds of this amount is paid by the UNC System.
- 4) Electricity costs represent almost 50% of the total utility costs, followed by water/sewer and steam at 16% and natural gas at 12%.
- 5) Between fiscal year 2003 and fiscal year 2018, State Governmental Units have decreased energy consumption by 28% and avoided \$1.2 billion dollars in utility costs by implementing energy efficiency retrofits or upgrades.
- 6) To reach a 40% energy intensity goal by 2025, the SEO estimates implementation costs to be \$792 million dollars. However energy savings from the measure will avoid \$1.04 billion in utility cost.

II. Purpose & Background

In September 2001, the North Carolina General Assembly enacted legislation requiring each state agency and institution of higher learning to develop and implement an energy management plan. In February 2002, The Governor's Commission to Promote Government Efficiency and Savings on State Spending was created. Flowing out of the work of the commission, in July 2002, an initiative was launched to fulfill the requirements established in G.S.143-64 Article 3B and NCAC 41B.

DEQ SEO's primary responsibility is to coordinate and support the activities of the state agencies and UNC system institutions to manage and reduce energy consumption and cost. In 2007, G.S. 143-64.12(a) expanded DEQ SEO services to include collection, review, and reporting of community colleges' utility consumption and costs. DEQ SEO also assists public schools, county and municipal governments in reducing energy and water consumption. These services include communication and training, and assistance to participants with utility management plan implementation.

In 2010, H.B.1292 codified G.S.116-30.3B allowing universities to use energy savings realized in their credit balance to be carried forward to the next fiscal year to utilize a portion of those savings toward energy conservation measures during the following year. This bill also expanded required annual reporting requirements of universities' management plans in G.S. 143-64.12(a).

EO 80 Section 8 requires further reduction of energy consumption per gross square foot in state buildings, in particular cabinet agencies, consistent with Section 1 of the Executive Order to reduce 2002-03 levels of energy consumption per square foot in state-owned cabinet buildings by at least 40% by 2025.

One strategy used by state units and governmental units to achieve energy savings is through GESCs pursuant to G.S. 143-64.17. The SEO staff provides technical assistance and guidance to public facilities throughout the GESC process. The SEO also provides reviews during contract development and approval process, and provides recommendations to the Council of State, including the Department of State Treasurer and Office of Budget and Management, for GESCs being considered by State Governmental Units.

A. Roles and Responsibilities of Key Entities

Table 1 provides a breakdown of responsibilities that entities involved with the Comprehensive Program are required to perform throughout the process with reference to the corresponding Legislation.

Table 1: Roles & Responsibilities

Entity	Responsibility	Legislation Reference
DEQ SEO	Develop a Comprehensive Program to manage energy, water, and other utilities for state agencies and institutions of higher learning and update annually.	G.S. 143-64.12(a)
	Submit report biennially on the Comprehensive Program to the Joint Legislative Energy Policy Commission, the Joint Legislative Oversight Committee on Agriculture and Natural and Economic Resources, and the Fiscal Research Division.	G.S. 143-64.12(j)
	Develop annual report describing the Comprehensive Program and summarize each cabinet agency’s utility consumption, costs, and achieved reductions, completed by Feb. 1, 2019 and annually beginning Dec. 1, 2019.	EO 80 Section 8(d)
	Review annual 1292 carry forward energy savings by constituent university institutions on the use of funds authorized and report those savings.	HB 1292 (SL 2010-196) G.S. 116-30.3B G.S. 143-64.12
State Agency and State Institutions of higher learning (UNC System)	Develop and implement a Management Plan consistent with the SEO Comprehensive Program, and address findings or recommendations from Dept. of Administration energy audits. Update plan biennially and include supporting strategies to reduce energy per gross square foot by 30% by 2015 with 2002-03 fiscal year baseline.	G.S. 143-64.12(a)
	Carry out construction and renovation to further policy and use of life-cycle cost analyses.	G.S. 143-64.12(a1)
	Implement recommendations from Dept. of Administration and maximize interchangeability and compatibility of energy management equipment components.	G.S. 143-64.12(b)
UNC constituents	Constituent institutions shall submit annual reports on the use of funds authorized as required under G.S. 143-64.12.	G.S. 116-30.3B(c)
Cabinet agencies	Develop and submit an Agency Utility Management Plan to DEQ by Mar. 1, 2019 and biennially thereafter and implement strategies to support goals in Section 1 of EO 80.	EO 80 Section 8(b)
	Submit annual agency utility report by Sept. 1, 2019 to DEQ, with consumption, costs, and progress achieved.	EO 80 Section 8(c)
Community Colleges	Submit to SEO biennial written report of utility consumption and costs.	G.S. 143-64.12(a)
Dept. of Administration	Develop and implement policies, etc., to insure purchasing practices improve efficiency and consider cost over the life of the product; implement Building Energy Design Guidelines and require life cycle cost analysis.	G.S. 143-64.12(b)
	The Facilities Condition and Assessment Program shall identify and recommend low-cost maintenance and operations to reduce energy consumption, and conduct energy audits every five years for agencies and UNC constituents, with copy to SEO,	G.S. 143-64.12(b1), (b2), and (h)

Entity	Responsibility	Legislation Reference
	and identify suitable sites for building commissioning or guaranteed energy savings contracts.	
Agencies, Universities, Community Colleges	Life cycle cost analysis required for design phases for construction or renovation, or replacement of heating, ventilation and air conditioning equipment for buildings larger than 20,000 gross square feet.	G.S. 143-64.15

III. Reporting Requirements G.S. 143-64.12(j) (1)

“(a) The Department of Environmental Quality through the State Energy Office shall develop a comprehensive program to manage energy, water, and other utility use for State agencies and State institutions of higher learning and shall update this program annually.

Each State agency and State institution of higher learning shall develop and implement a management plan that is consistent with the State's comprehensive program under this subsection to manage energy, water, and other utility use, and that addresses any findings or recommendations resulting from the energy audit required by subsection (b1) of this section.”

While G.S. 143-64.12 requires State agencies and the UNC system combined to meet the goal of a 30% reduction in Btus per square foot by 2015, 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. EO 80 established a new objective for State cabinet agencies of a 40% reduction in Btus per square foot from a 2002-03 baseline. Each cabinet agency is to appoint an Energy Manager to oversee the collection and reporting of utility data and development and implementation of the Agency Utility Management Plan. The DEQ SEO will provide an annual Comprehensive Program report to include best practices, training and reporting requirements to reach new targets while working to maintain savings already achieved by all participants. Obtaining these objectives will help improve the value of the State’s infrastructure, increase the cumulative avoided costs and reduce environmental pollution associated with fuel and electrical consumption. This program addresses these needs and adjusts activities to continue to provide relevant, beneficial services to the participants.

A. SEO Services Provided in the Comprehensive Program

Below are the three focus areas of the Comprehensive Program. A detailed list of the program goals and accomplishments can be found in Appendix A.

1) Best Practices & Training

Site visits by the SEO team remain the cornerstone of support to building owners and operators. The SEO provides preliminary audits, project evaluations, and implementation strategy assistance. The SEO also reviews utility bills and encourages

participants to engage in current programs to reduce energy consumption. A core component of the SEO program provides relevant energy efficiency training to state and local governmental building owners. This training includes the Energy Management Diploma series, utility management plan creation, utility bill analysis, and classes on specific building systems and programs. SEO encourages engagement of community user groups and stakeholders and fosters dialogue and sharing of best practices.

2) Cost Estimates & Financial Options

The SEO team assists building owners and operators in developing cost estimates and financial programming of utility management plans. Budget line item assessments often include rebates and possible grant funding. SEO continuously seeks additional resources to expand energy efficiency programs within state and local government buildings. Guaranteed Energy Savings Contracts may be considered a financial option for projects that meet or exceed utility cost savings beyond the financing mechanism term.

3) Reporting Requirements

The SEO team updates and submits reports on the Comprehensive Program, GESC, 1292 carry forward energy savings, and Utility Management Plans annually to stakeholders to provide an update of the progress made each year.

B. State Governmental Units Energy Consumption Data

The following tables provide a collective summary of energy and water reduction progress state agencies and the UNC System. Similar data for each individual agency is provided in Appendix A. Also included is an estimate of avoided greenhouse gas (GHG) emissions as a result of reductions in energy use per square foot of building space. Collectively, state governmental units avoided GHG emissions of 3,166,044 Metric Tons CO₂e from FY03-FY18.

Table 2: State Agency and State Institutions of Higher Learning Efficiency Gains

Participant	2017-18 Gross Square Feet	2002-03 Energy Consumption per gross square foot (Btu/gsf)	2017-18 Energy Consumption per gross square foot (Btu/gsf)	% Reduction 2017-18 vs Baseline
Cabinet Agencies	45,361,897	133,705	100,407	-25%
Other Agencies	5,007,150	52,089	44,671	-14%
UNC System	85,551,857	169,575	118,415	-30%
Total State Governmental Units	135,920,904	151,882	109,689	-28%

Table 3: Fiscal Year 2018 Utility Cost

Participant	2017-18 Cost	% of Total State Governmental Utility Cost
Cabinet Agencies	\$95,953,500	30%
Other Agencies	\$5,390,351	2%
UNC System	\$215,833,034	68%
Total State Governmental Units Utility Cost	\$317,176,885	

Figure 1: Utility Cost Contributions by Participant Type

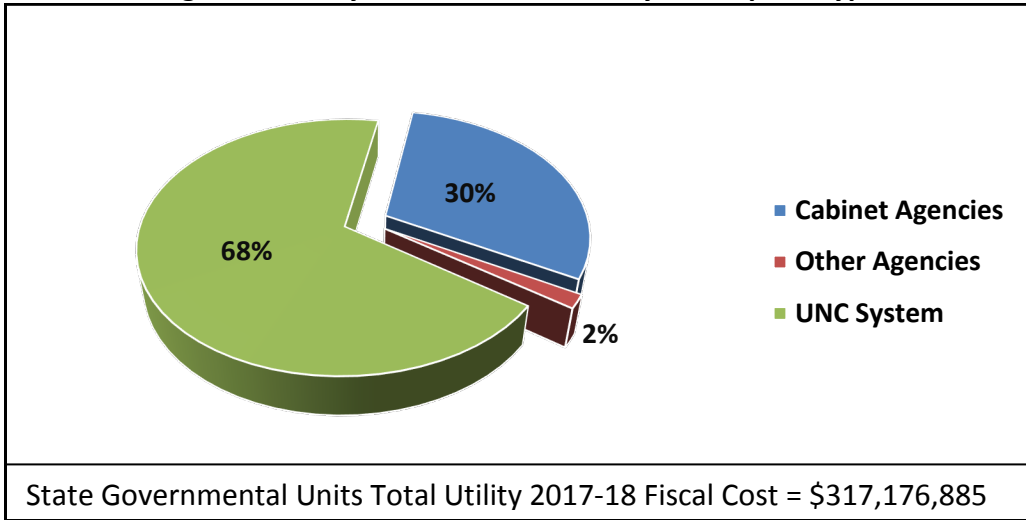


Figure 2: Utility Consumption by Resource Type

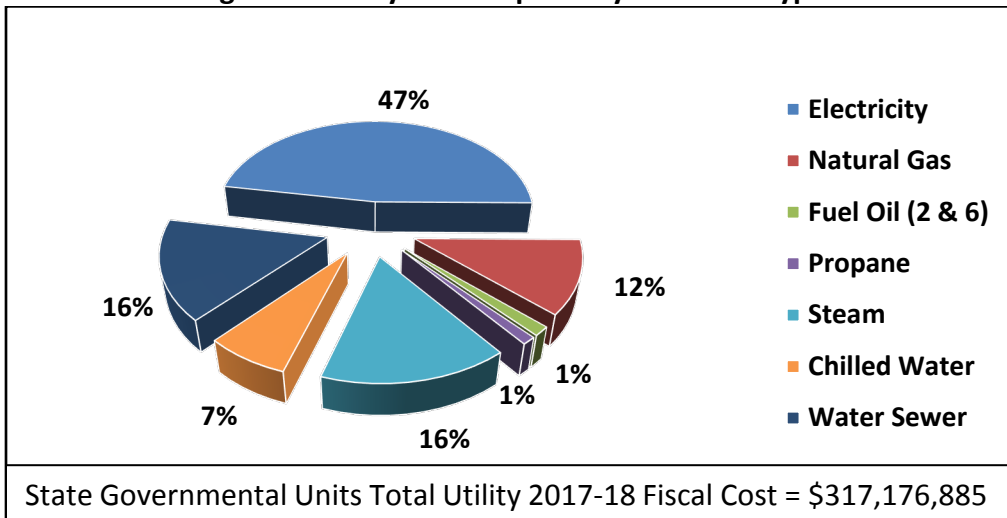
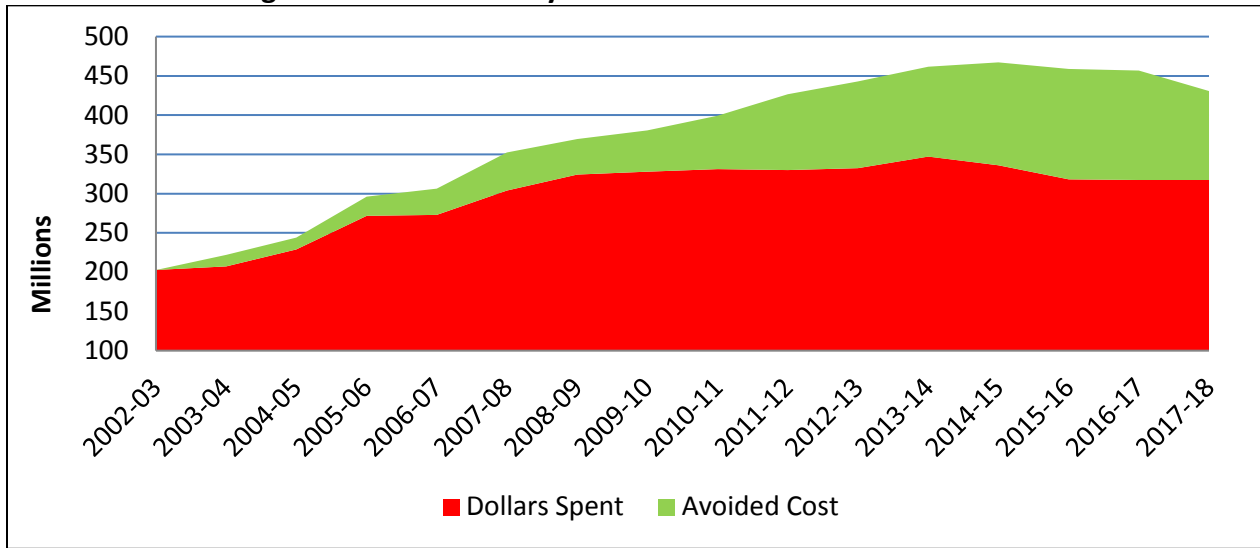


Table 4: Cost Breakdown by Fuel Type

Utility	Cost	% of Total Fiscal State Governmental Unit Cost
Electricity	\$150,288,454	47%
Natural Gas	\$36,686,761	12%
Fuel Oil (2 & 6)	\$4,579,058	1%
Propane	\$3,731,149	1%
Steam	\$49,393,213	16%
Chilled Water	\$22,354,059	7%
Water Sewer	\$50,144,191	16%
Total	\$317,176,885	

Figure 3: Avoided Utility Cost for State Governmental Units



Avoided Utility Costs represent the amount the state agencies and universities would have paid if they had not implemented any energy efficiency retrofits or upgrades.

Table 5: Cabinet Agencies Cost and Consumption Details

Metric	Fiscal Year 2002-03	Fiscal Year 2017-18	% Change
Gross square feet (gsf)	35,122,321	42,529,645	21%
Utility Cost	\$65,957,833	\$95,953,500	45%
Btu per square foot per year	124,513	107,093	-14%
Cost per million Btu	\$12.21	\$15.15	24%
Water gallons per gsf	60	86	43%
Water cost per thousand gal	\$5.96	\$7.38	24%

Table 6: Other Agencies Cost and Consumption Details

Metric	2002-03	2017-18	% Change
Gross square feet (gsf)	3,912,815	5,007,150	28%
Utility Cost	\$3,391,431	\$5,390,351	59%
Btu per square foot per year	52,089	44,671	-14%
Cost per million Btu	\$14.75	\$19.38	31%
Water gallons per gsf	28	13	-52%
Water cost per thousand gal	\$3.51	\$15.69	348%

Table 7: UNC System Cost and Consumption Details

Metric	Baseline 2002-03	Current 2017-18	% Change
Gross square feet (gsf)	55,853,886	85,551,857	53%
Utility Cost	\$133,416,405	\$215,833,034	62%
Btu per square foot per year	169,575	118,415	-30%
Cost per million Btu	\$12.98	\$19.12	47%
Water gallons per gsf	50	28	-44%
Water cost per thousand gal	\$3.79	\$9.38	147%

Table 8: Avoided GHG Emissions (FY03-FY18)

Fuel Source	Cabinet Agencies (MTCO2e)	State Agency Total (MTCO2e)	UNC System (MTCO2e)	All State Government Units (MTCO2e)
Electricity Usage	518,515	494,640	1,229,109	1,723,750
Nat Gas Usage	-6,690	2,803	-207,772	-204,969
Fuel Oil Usage	501,558	496,438	1,059,671	1,556,109
Propane Usage	88,757	87,924	3,230	91,154
Total	1,102,140	1,081,805	2,084,239	3,166,044

Negative numbers mean an increase in emissions.

C. Community Colleges

The following tables provide a summary and detailed breakdown for community colleges on their energy and water reduction progress.

Table 8: Community Colleges Efficiency Gains

Participant	2017-18 Gross Square Feet	2007-08 Energy Consumption per gross square foot (Btu/gsf)	2017-18 Energy Consumption per gross square foot (Btu/gsf)	% Reduction 2017-18 vs Baseline
Community Colleges	27,722,375	79,027	68,087	-14%

Figure 4: Utility Consumption by Resource Type for Community Colleges

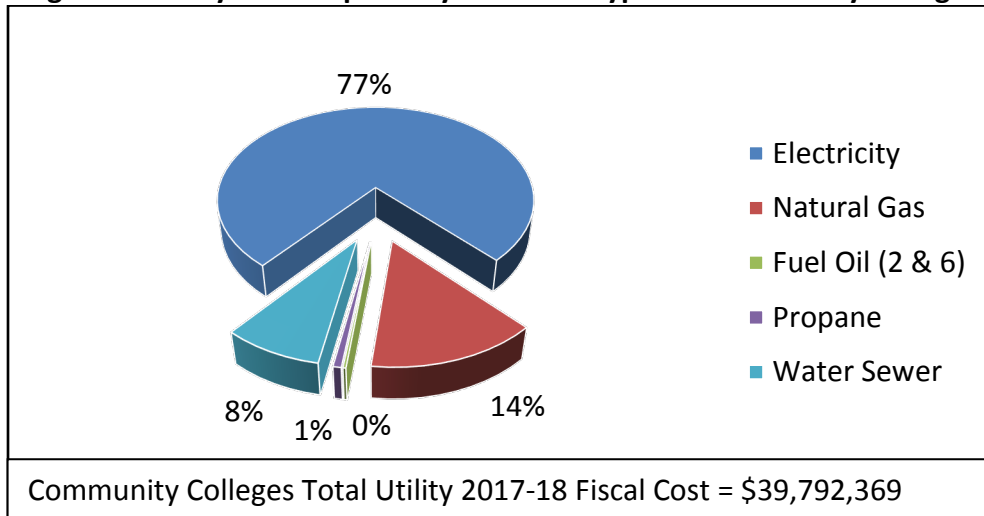
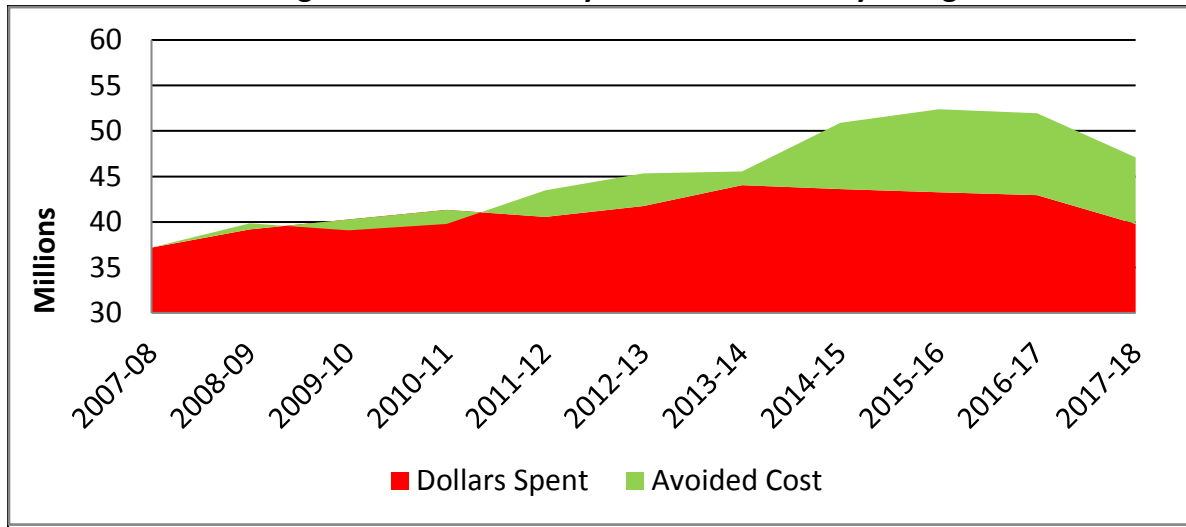


Table 9: Cost Breakdown by Fuel Type for Community Colleges

Utility	Cost	%
Electricity	\$30,508,057	77%
Natural Gas	\$5,625,796	14%
Fuel Oil (2 & 6)	\$97,599	0.2%
Propane	\$271,207	1%
Water Sewer	\$3,289,710	8%
Total	\$39,792,369	

Figure 5: Avoided Utility Cost for Community Colleges



Avoided Utility Costs represent the amount the participating community colleges would have paid if they had not implemented any energy efficiency retrofits, or upgrades.

Table 10: Community Colleges Cost and Consumption Details

Metric	Baseline 2007-08	Current 2017-18	% Change
Gross square feet (gsf)	22,792,520	27,722,375	22%
Utility Cost	\$37,189,830	\$39,792,369	7%
Btu per square foot per year	79,027	68,087	-14%
Cost per million Btu	\$19.18	\$19.34	1%
Water gallons per gsf	15	10	-30%
Water cost per thousand gal	\$7.93	\$11.62	47%

IV. Reporting Requirements G.S. 143-64.12(j) (2)

“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.”

In addition to achieving continued reductions in existing buildings’ energy and water use, as new buildings are added into the total gross square footage, it is essential that new buildings be constructed and operated to be efficient and metered to monitor building performance. The transition to digital controls enables building operators to optimize building operations and

necessitate regular monitoring and commissioning to ensure functionality. There is a continued effort to improve the program by recognizing achievements and promoting best practices through programmatic and legislative means. The following are key areas to be addressed for new measures to be taken.

A. Utility Data Reporting Period

State governmental units reported annually to SEO their total building energy and water cost and usage data until 2014 when the law was changed to biennially. While SEO has continued to request and receive some data annually from entities, a legislative change is needed to align laws for agencies and universities consistent with HB 1292, 116-30.3B and EO80 annual reporting.

B. Utility Data Management

Monthly monitoring of utility data improves facility management of energy and water use. Improved reporting forms to include instructions and a record of annual notes to account for anomalies in data is necessary as well as gross square footage updates matched to reported utility data. The use of third-party bill management should be evaluated by those who do not currently use a system for overall cost savings with ease of web-based data access of all information on the bill, including electric KW demand, peak charges, times, rates, etc.

C. Funding for Measures

Working with Office of State Budget and Management, agencies could investigate a source of energy efficiency funding similar to University HB 1292 (SL 2010-196, G.S. 116-30.3B) funds which allows carry forward of 60% of energy efficiency dollars from one year to the next to enable savings to be used in the next year's energy efficiency plan. This could also include discussion of the need for repair and renovation funding, beyond life-safety issues, to maintain existing energy-consuming equipment.

D. Goals and Recognition

Cost-effective opportunity exists to further reduce energy consumption. An increase in the goal for reduction in building energy (BTU) per square foot for all participants to 40% (requires legislative change) is achievable and may result in significant utility savings. The UNC system has adopted this new goal voluntarily.

E. Building Level Data

The use of building level meters or submeters allows for building benchmarking to identify opportunities for savings. Submeters for new buildings were addressed in SB668, SL 2007-546, but are not required. Guaranteed Energy Savings Performance Contracts measurement and verification benefit by installing submeters and improves the accuracy of the guaranteed savings. A methodology to address buildings that receive district heating and cooling from central boilers and chiller plants without steam or chilled water meters should be determined.

F. Communications

Establish regular meetings with video and/or phone conferencing to share best practices, foster networking, and incorporate training, including use of DOE and EPA programs, tools and training such as Energy Star.

G. Employee Engagement

Commissioning teams should be established to focus on building types of similar load profiles, such as laboratories, hospitals, and prisons to maximize energy efficiency gains by ensuring optimal operation of controls.

V. Reporting Requirements G.S. 143-64.12(j) (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.”

A Utility Management Plan is a roadmap to achieving energy goals in both the near and long term. Utility management plans can be brief documents used to help make informed decisions and assist in utility planning, or they can be detailed guidebooks with goals, implementation plans, measurement and verification procedures, and reporting requirements. Developing a utility management plan will help prepare agencies to build resiliency and to achieve energy efficiency related cost reductions.

DEQ SEO reviews each submitted Utility Management Plan which serves as a guideline for energy conservation efforts at each individual organization. The following energy conservation measures were most frequently mentioned as those that are being implemented in subject facilities.

A. Light Emitting Diode (LED)

LED lighting technology is growing exponentially while costs have decreased. LED area lighting improves safety and dramatically reduces maintenance requirements and costs and has a high return on investment when both are factored into the equation. Maintenance staff are embracing LED lighting technology as it significantly reduces maintenance requirements, with LED fixtures potentially going untouched from 10 to 20 years.

B. Building Automation System (BAS)

BAS improvements or installation continues to be needed in most facilities. Building automation is the centralized control of a building's heating, ventilation, air conditioning, lighting, and other systems. It is controlled by a building management system (BMS) or BAS. The purpose of building automation is to improve occupant comfort, the efficiency of building systems, identify maintenance issues and to reduce energy consumption and operating costs. This also takes the control out of the hands of the occupant which provides improved energy savings and helps prevent 24/7 operation by allowing both occupied and unoccupied setpoints.

C. Equipment Replacement

Energy consuming equipment replacement as it relates to HVAC and water heating (boilers) is increasing, primarily-driven by the age of the equipment. Most facilities have been diligent in trying to maintain existing equipment, but as staff resources dwindle, this only reduces the life expectancy of the affected energy consuming equipment. Many facilities are in need of massive amounts of new equipment and the improvements to aging infrastructure that supports this machinery.

D. Submetering

Metering and the increased ability to measure energy usage of buildings is needed. Building energy metering and environmental monitoring provide valuable information regarding how buildings are performing. While this energy conservation measure does not provide energy savings per se, energy metering can help in identifying cost-cutting opportunities by detecting inefficiencies. It is also required to benchmark each building and to help identify buildings that are out of standard performance range and where excessive energy usage needs to be addressed.

E. Employee Engagement

Energy awareness across campuses continues to be highlighted in almost all plans. Energy awareness helps define an agency's energy mission and goals by establishing a direct relationship between saving energy and success in meeting these goals all while assessing the constraints and opportunities within a facility. Evaluation of energy use patterns based on types of equipment, size of staff, hours of operation, and current levels of energy use allow usage of this information to ensure obtainable goals are delivered and activities well-suited to the organization's planned needs. Upper management support champions and endorses the program's messages while energy awareness uses various communications channels and program capability to produce printed materials, displays, videos, and handouts to drive this awareness.

VI. Reporting Requirements G.S. 143-64.12(j) (4)

"A list of 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."

Utility Management Plans are required to be submitted biennially by state agencies in odd-numbered years, annually by universities, and voluntarily by community colleges (Table 16 summarizes the results). As of 2017, 90% of State agencies and 95% of universities submitted plans. All but one cabinet agency submitted a utility management plan.

Building audits have been conducted by the Department of Administration (DOA) Facilities Condition Assessment Program (FCAP) for mechanical, electrical and envelope areas to note

deficiencies and develop cost estimates for repair and renovation needs. These reports are not currently routinely utilized for identifying energy projects. With Executive Order 80, the need for energy audits per G.S. 143-64.12(b1), (b2) and (h) will be explored in conjunction with DOA, and a list of agencies and institutions of higher learning with FCAP reports could be included in the next update of this report.

Table 16: Utility Management Plans Submitted

State Agency	Submitted Plan	
	Yes	No
Dept. of Environmental Quality*	Yes	
Dept. of Public Safety*	Yes	
Dept. of Administration*	Yes	
Dept. of Commerce (Employment Security) *	Yes	
Dept. of Health & Human Services*	Yes	
Dept. of Natural & Cultural Resources*	Yes	
Dept. of Information Technology*	Yes	
Dept. of Justice	Yes	
Dept. of Agriculture	Yes	
Dept. of Transportation*		No
Dept. of Public Instruction		No
NC Wildlife Resources Commission	Yes	
Dept. of Military & Veterans Affairs* ¹	NA	NA
Dept. of Revenue* ²	NA	NA
UNC System		
Appalachian State University	Yes	
Elizabeth City State University	Yes	
East Carolina University	Yes	
Fayetteville State University	Yes	
NC Agricultural & Technical State University		No
NC Central University	Yes	
NC State University	Yes	
NC School of the Arts	Yes	
NC School of Science and Mathematics	Yes	
The NC Arboretum	Yes	
UNC Asheville	Yes	
UNC Charlotte	Yes	
UNC Chapel Hill	Yes	
UNC Greensboro	Yes	
UNC General Administration	Yes	
UNC Hospitals	Yes	
UNC Pembroke	Yes	

State Agency	Submitted Plan	
	Yes	No
UNCTV	Yes	
UNC Wilmington	Yes	
Western Carolina University	Yes	
Winston Salem State University	Yes	

*Cabinet agencies

¹Military and Veterans Affairs federal buildings are excluded from state plan requirement, with office utilities included as DOA tenant.

²Revenue is a DOA tenant agency (utilities paid by DOA.)

VII. Reporting Requirements G.S. 143-64.12(j) (5)

“Any recommendations on how management plans can be better managed and implemented.”

The quality of the management plans varies greatly, from outstanding annual Energy and Sustainability Plans posted on entity websites with graphs of data and buy-in from upper management, facilities management, maintenance, purchasing, accounting and communications, to minimal information and updates. To facilitate improved planning and ultimately results, a Utility Management Plan template will be provided by the DEQ SEO to address progress toward stated goals. The reports should include:

1. Utility Reports with consumption and costs, and efficiency gains
2. Best practices in building energy efficiency
3. Training of staff
4. Cost estimation methods
5. Financing options

The reports should also include template tables that can be utilized, and updated annually to show progress in the areas of:

1. Data Management,
2. Organization Involvement, including awareness and training and timeline of actions, and
3. Projects and Programs, including funding sources.

In addition, a template signature page should be included, with stated goals and periodic review schedule.

Through DEQ SEO review of the Utility Management Plans and site visits, the following areas of improvement are recognized to help achieve energy related goals:

1. Continued need for additional funding to address the aging infrastructure and equipment.
2. Continued need for adequately staffed and trained maintenance departments that can implement preventive maintenance and retro-commissioning programs which can result in more utility savings.
3. Continued need for more metering of utilities.
4. Continued need for energy awareness materials.

It must be noted that the two most significant needs identified repeatedly by participants to successfully implement their plans are the resources of 1) time (staffing) and 2) money (creative funding and financing mechanisms).

Appendix A
Agency Individual Tables

Cabinet Agencies

Table 1: Department of Administration

Metric	Baseline 2002-03	Current 2017-18	% Change
Gross square feet	4,659,040	6,148,790	32%
Utility Cost	\$8,927,218	\$10,297,001	15%
Btu per square foot per year	149,565	122,668	-18%
Cost per million Btu	\$12.37	\$12.61	2%
Water gallons per gsf	29	10	-65%
Water cost per thousand gal	\$2.23	\$12.34	454%

Table 2: Department of Natural & Cultural Resources

Metric	Baseline 2010-11	Current 2017-18	% Change
Gross square feet	993,148	3,347,792	237%
Utility Cost	\$1,558,130	\$6,200,664	298%
Btu per square foot per year	62,958	63,018	0%
Cost per million Btu	\$22.37	\$24.95	12%
Water gallons per gsf	10	31	206%
Water cost per thousand gal	\$15.85	\$9.00	-43%

Table 3: Department of Environmental Quality

Metric	Baseline 2002-03	Current 2017-18	% Change
Gross square feet	421,664	121,397	-71%
Utility Cost	\$1,787,252	\$340,273	-81%
Btu per square foot per year	227,762	151,839	-33%
Cost per million Btu	\$14.93	\$16.38	10%
Water gallons per gsf	151	23	-85%
Water cost per thousand gal	\$5.56	\$13.86	149%

Table 4: Department of Transportation

Metric	Baseline 2003-04	Current 2017-18	% Change
Gross square feet	8,784,848	9,806,630	12%
Utility Cost	\$9,341,426	\$8,584,119	-8%
Btu per square foot per year	53,296	33,882	-36%
Cost per million Btu	\$17.02	\$21.69	27%
Water gallons per gsf	30	13	-57%
Water cost per thousand gal	\$5.24	\$10.83	107%

Table 5: Department of Public Safety

Metric	Baseline 2003-04	Current 2017-18	% Change
Gross square feet	12,809,935	18,090,092	41%
Utility Cost	\$30,748,579	\$53,614,437	74%
Btu per square foot per year	135,824	117,142	-14%
Cost per million Btu	\$12.43	\$15.15	22%
Water gallons per gsf	97	85.5	-12%
Water cost per thousand gal	\$7.31	\$13.91	90%

Table 6: Department of Commerce Employment Security

Metric	Baseline 2002-03	Current 2017-18	% Change
Gross square feet	261,091	261,091	0%
Utility Cost	\$398,568	\$492,371	24%
Btu per square foot per year	105,532	132,097	25%
Cost per million Btu	\$14.47	\$12.59	-13%
Water gallons per gsf	40	14	-65%
Water cost per thousand gal	\$5.00	\$15.72	214%

Table 7: Department of Information Technology

Metric	Baseline 2002-03	Current 2017-18	% Change
Gross square feet	94,343	163,866	74%
Utility Cost	\$362,255	\$1,248,185	245%
Btu per square foot per year	272,914	352,622	29%
Cost per million Btu	\$13.67	\$19.49	43%
Water gallons per gsf	90	70	-22%
Water cost per thousand gal	\$1.23	\$10.64	767%

Table 8: Department of Health & Human Services

Metric	Baseline 2002-03	Current 2017-18	% Change
Gross square feet	6,381,007	7,422,239	16%
Utility Cost	\$12,834,405	\$15,176,449	18%
Btu per square foot per year	196,898	138,412	-30%
Cost per million Btu	\$9.23	\$12.70	38%
Water gallons per gsf	60	38	-37%
Water cost per thousand gal	\$3.25	\$7.58	133%

Other Agencies

Table 9: Department of Agriculture & Consumer Services

Metric	Baseline 2002-03	Current 2017-18	% Change
Gross square feet	2,995,262	4,364,389	46%
Utility Cost	\$2,374,024	\$4,430,959	87%
Btu per square foot per year	44,985	42,565	-5%
Cost per million Btu	\$15.41	\$18.75	22%
Water gallons per gsf	4	17	275%
Water cost per thousand gal	\$4.47	\$16.77	275%

Table 10: Department of Justice

Metric	Baseline 2002-03	Current 2017-18	% Change
Gross square feet	204,206	298,220	46%
Utility Cost	\$269,833	\$567,501	110%
Btu per square foot per year	83,848	75,362	-10%
Cost per million Btu	\$15.09	\$21.89	45%
Water gallons per gsf	15	32	110%
Water cost per thousand gal	\$3.71	\$7.95	114%

Table 11: Wildlife Resources Commission

Metric	Baseline 2006-07	Current 2017-18	% Change
Gross square feet	161,093	344,541	114%
Utility Cost	\$222,601	\$391,892	76%
Btu per square foot per year	67,939	44,855	-34%
Cost per million Btu	\$20.00	\$23.39	17%
Water gallons per gsf	3	3	15%
Water cost per thousand gal	\$8.18	\$27.04	230%

Appendix B
SEO Comprehensive Plans

2017-18

Focus Area 1: Best Practices & Training SEO			
Strategy 1.	Agencies strive and/or maintain the capture of at least monthly purchased utility data		
Strategy 2.	Visit each university and agency to review utility management plans and annual utility data of individual agencies and universities		
Strategy 3.	Assist state and local governmental units through the Guaranteed Energy Savings Contract (GESC) process		
Strategy 4.	Educate governmental units on energy efficiency and GESC process.		
Strategy 5.	Share best practices, internally and externally, of successful strategies, technologies and solutions that address energy improvements and energy conservation of utilities		
Planned Activities	Expected Measurement	Assigned to	Occurrence
Site visits to assist with developing utility management plans and utility consumptions tracking	At least one site visit to agencies, universities, and community colleges to help develop plans and best tracking for each individual entity	SEO	Ongoing
Train SEO participants how to understand annual consumption reports, and Utility Management Plans	File reports in utility database, site visit database	SEO	Ongoing
Work with stakeholders to improve the GESC process	GESC process improvement and education	SEO, LGC, ESCO, Issuers	As needed
Assist all GESC participants through the process.	Assist with RFPs and IGAs review	SEO, Issuers	As needed
Research alternate funding sources	Grants or funding opportunities identified and shared	SEO	Ongoing
Ensure universities follow procedures to qualify energy savings achieved for carry forward per SL 2010-196	All qualified documented savings carried forward in accordance with legislation	SEO	Annually

Planned Activities	Expected Measurement	Assigned to	Occurrence
Work with participants to develop and implement energy projects listed in their Plans	Determine level of implementation of projects by meetings with staff	SEO	
Work with participants to help promote energy savings practices and policies	Determine level of implementation of practices and policies by meetings with staff	SEO	
Actual Activities	Actual Measurement	Assigned to	Occurrence
Site visits to assist with developing utility management plans and utility consumptions tracking	Several site visits to agencies, universities, and community colleges helping to develop plans and best tracking for utilities	SEO	Ongoing
Train SEO participants' how to understand annual consumption reports, and Utility Management Plans	Site visits to participants reviewing the last fiscal year consumption spreadsheet and progress on plans	SEO	Ongoing
Work with stakeholders to improve the GESC process	Meetings held ESCO, Treasurer Department, and Issuers to review and update template documents	SEO, Treasurer ESCO, Issuers	February -July 2018
Assist all GESC participants through the process.	Assisted several Issuers through the process of requesting a proposal through construction	SEO, Issuers	As needed
Research alternate funding sources	Researched and shared alternate funding to local governments and community colleges	SEO	Ongoing
Ensure universities follow procedures to qualify energy savings achieved for carry forward per SL 2010-196	Assisted universities with the development and review of their 1292 plans	SEO	Ongoing
Work with participants to develop and implement energy projects listed in their Plans	Reviewed and assisted when needed participants prioritize projects to implement	SEO	Ongoing
Work with participants to help promote energy savings practices and policies	Assisted participants to develop ideas to promote energy saving practices	SEO	Ongoing

2017-18

Focus Area 2: Cost Estimation and Financial Options			
Strategy 1.	Work with agencies, UNC universities, community colleges and local governments to develop costs associated with their individual EE (energy efficiency) goals		
Strategy 2.	Work with all Performance Contracts reviewing cost estimations and options.		
Strategy 3.	Investigate and disseminate financial/funding options for governmental units.		
Planned Activities	Expected Measurement	Assigned to	Occurrence
Work with governmental units, energy service companies, and local government commission on GESC reasonable energy conservation measurement costs.	Review of schedules of the investment grade audit within 10% of request for proposals.	SEO	Post acceptance of initial estimates and post investment grade audit.
Review possible grant funding and other options to assist with EE goals.	Disseminate information to appropriate governmental entities	SEO	As available and appropriate
Actual Activities	Actual Measurement	Assigned to	Occurrence
Work with governmental units, energy service companies, and local government commission on GESC reasonable energy conservation measurement costs.	Met with all GESC governmental units and Local Government Commission to discuss reasonable costs of GESC Schedules M & N of project costs.	SEO/LGC	Ongoing
Continue to evaluate potential funding and prioritization of governmental units' commitment to EE funding.	Sent funding options to governmental units	SEO	Ongoing and as appropriate

2017-18

Focus Area 3: Reporting Requirements			
Strategy 1.	Update and review SEO Comprehensive Program		
Strategy 2.	Collaborate with Energy Managers to prepare for reporting requirements.		
Strategy 3.	Submit reports and updated program		
Planned Activities	Expected Measurement	Assigned to	Occurrence
Develop SEO Comprehensive Program	Comprehensive Program Plan	SEO	September 1
Prepare Guaranteed Energy Savings Contract Report update	Legislative Report on Guaranteed Energy Savings Contracts	SEO	Annually by December 1
Work with universities on HB 1292 reporting, submit to Office of State Budget Management	Request participation from 19 UNC system, Request reports annually by March 1	SEO, Universities	Annually to SEO May 1, to OSBM June 1
Collect and review Utility Reports	Receive plans from all agencies, universities, and community colleges	SEO	Annually in September
Request and review Utility Management Plans	Request and review plans for agencies, universities, voluntary by community colleges	SEO, Agencies, Universities	Biennially in September
17-18 Actual Activities	Actual Measurement	Assigned to	Occurrence
Develop SEO Comprehensive Program	Comprehensive Program Plan developed	SEO	September 1
Prepare Guaranteed Energy Savings Contract Report update	Report completed and submitted	SEO	December 1
Collect and review Utility Reports	Collected 14 agency, 21 university, and 58 community college reports	SEO	September - December
Work with universities on HB 1292 reporting, submit to Office of State Budget Management	Received 1292 reports from 11 universities	SEO, Universities	Annually to SEO May 1, to OSBM June 1
Request and review Utility Management Plans	Received and reviewed plans from 10 agencies, 20 universities, and 3 community colleges	SEO, Agencies, Universities	September - December

2018-20

Focus Area 1: Best Practices & Training Agencies			
Strategy 1.	Agencies strive and/or maintain the capture of at least monthly purchased utility data		
Strategy 2.	Evaluation of individual agency Energy Managers to determine the skills and training necessary to optimize the implementation and identification of energy conservation measures		
Strategy 3	Update and revise agency utility management plan, budget and timeline		
Strategy 4.	Educate staff on efficiency improvement goals and utility management plans		
Strategy 5.	Share best practices, internally and externally, of successful strategies, technologies and solutions that address energy improvements and energy conservation of utilities		
Planned Activities	Expected Measurement	Assigned to	Occurrence
State Agencies identify energy managers	Deliver assigned names to DEQ SEO	Agency	1/15/2019
Energy managers and DEQ SEO meet to discuss training and best practices	Advisory in nature and services available from SEO	Agency & SEO	Initially and as needed
Agencies benchmark individual buildings to identify worst performers	Collect data and rank performance	Agency	Annually
Agencies perform energy assessments of facilities to make a prioritized list of ECMs	Assessments ongoing while implementing initial plan	Agency	Ongoing
Agencies update Utility Management Plans to include EO 80 Section 1 and 8	Submit plan to SEO on time	Agency	March 1, 2019 and September 1, 2019
Agencies train staff to build momentum and develop award programs	Recognize and award good behavior and work	Agency	Ongoing
Agencies send annual utility data and utility management plan to NC SEO	SEO sends request for consumption data in July and database sheet and agency sends data back by September 1	Agency & SEO	Annually
Actual Activities	Actual Measurement	Assigned to	Occurrence

2018-20

Focus Area 2: Cost Estimation and Financial Options			
Strategy 1	Work with all agencies, particularly cabinet agencies, to develop costs associated with their EE goals. Assist with universities, community colleges and local government when asked, with their EE costs associated with their EE goals		
Strategy 2	Review performance contract (GESC) budget documents as required by law.		
Strategy 3	Investigate financing/funding options for governmental units and disseminate pertinent information to governmental units		
Planned Activities	Expected Measurement	Assigned to	Occurrence
Work with State and Local governments on budget line items for EE	Estimate costs associated with Utility Management Plan	SEO/ State and Local Governmental Units	Once per year
Work with governmental units, energy service companies, and local government commission on GESC reasonable energy conservation measurement costs.	Review of Schedules of the investment grade audit within 10% of request for proposals.	SEO/Governmental Units/LGC	Post acceptance of initial estimates and post investment grade audit.
Review possible grant funding and other options to assist with EE goals.	Disseminate information to appropriate governmental entities	SEO/ State and Local Governmental Units	Ongoing
Meet with State Construction Office to determine reasonable overhead and cost of doing business percentages of total GESC project costs.	Review current practices and practices of other states	SEO & State Construction Office	By December 2019
Discuss with OSBM possible H.B. 1292 annual EE carryover funds	Meet with OSBM to discuss legislation that now includes University carryover to also include State agencies.	SEO/OSBM	By April 2019
Actual Activities	Actual Measurement	Assigned to	Occurrence

2018-20

Focus Area 3: Reporting Requirements			
Strategy 1.	Update and review SEO Comprehensive Program		
Strategy 2.	Collaborate with Energy Managers to prepare for reporting requirements.		
Strategy 3.	Submit reports and updated program		
2018-2020 Planned Activities	Expected Measurement	Assigned to	Occurrence
Prepare annual Comprehensive Program Report	Comprehensive Program Update and Data Report with cabinet agency summary to Interagency Council	SEO	Feb. 1, 2019, Thereafter annually on Dec 1
Prepare Guaranteed Energy Savings Contract Report	Legislative Report on Guaranteed Energy Savings Contracts	SEO	Annually by Dec. 1
Request and review Utility Management Plans	Request and review plans for state agencies, universities, and voluntary by community colleges	SEO, Agencies, Universities	Annually in September
Collect and review Utility Reports	Receive plans from all agencies, universities, and community colleges	SEO	Annually in September
Work with universities on HB 1292 reporting, submit to Office of State Budget Management	Request participation from 19 UNC system, Request reports annually by March 1	SEO, Universities	Annually to SEO May 1,

Appendix C
Sample Utility Management Plan

2019-20

Comprehensive Plan			
Strategy 1.	Designate Energy Manager as the point of contact for SEO		
Strategy 2.	Edit or create a plan to reflect EE strategy toward 40% reduction in Btu/gsf.		
Strategy 3.	Contact the SEO to assist with review of strategy, budget, training, and timeline.		
Strategy 4.	Develop internal stakeholders to develop behavioral programming and internal team building toward goals		
Strategy 5.	Implement Plan		
2019-2020 Planned Activities	Expected Measurement	Assigned To	Occurrence
Meet with SEO to develop ideas for plan	Discuss training schedule available, current Utility Management Plan and future Management Plan	Energy Manager and SEO staff	Quarterly
Research facilities for potential energy savings projects	Create a list to use for potential projects to be implemented in the Utility Management Plan	Energy Manager and Agency Staff	Monthly
Create a Utility Management Plan	Complete timeline and approvals from agency and submit plan to SEO	Energy Manager and staff	Due March 1, 2019, thereafter October 1 st each year
Attend SEO or other energy conservation training sessions	Discuss lessons learned with staff and how that can enhance your strategy	Agency staff	(add dates of training)
Develop internal stakeholders and internal teams to implement plan	Designate a person or team to implement portions on the plan	Energy Manager and staff	May, 2019
Develop internal marketing and awards/rewards program	Designate person to develop programming and implement program	Energy Manager and staff	May, 2019
Review Utility Management Plan progress	Tweak plan if it is not realizing expected savings	Energy Manager	Quarterly

2019-2020 Planned Activities	Expected Measurement	Assigned To	Occurrence
Track utility data	Record monthly utility data for annual utility report to submit to SEO and trend to catch anomalies early on	Energy Manager	Monthly, September 1 st each year

2019-20

Projects to Implement			
Strategy 1.	Review projects with staff to determine high priority projects to implement		
Strategy 2.	Work with staff to determine the best timeframe to implement projects		
Strategy 3.	Create a schedule for projects to be implement during the fiscal year		
Strategy 4.	Communicate projects to staff		
Strategy 5.	Implement projects		
Planned Activities	Expected Measurement	Assigned To	Occurrence
Lighting Retrofit in Building A	Replace all T-8 fixtures with LED in Building A	Energy Manager	December 1, 2019
Schedule cleaning and repair of air handling units 2-14 in Building C	Units cleaned and repaired with improved efficiency	Energy Manager and Agency Staff	November 22, 2019
Schedule cleaning and repair of air handling units 1-5 in Building B	Units cleaned and repaired with improved efficiency	Energy Manager and Agency Staff	November 22, 2019
Schedule cleaning and repair of cooling towers in Building E	Units cleaned and repaired with improved efficiency	Energy Manager	December 20, 2019
Investigate options for tracking utility data	Determine the best method to track utility data	Energy Manager	February 3, 2020
Schedule boiler repair and retrofit	Repair fire tubes in boiler and install new energy efficient burner	Energy Manager and staff	June 15, 2020
Develop priority list of projects for 2020-21	Develop list of projects and start to schedule implementation for next fiscal year	Energy Manager and staff	June 30, 2020

Appendix D

Article 3B.

Conservation of Energy, Water, and Other Utilities in Government Facilities.

Part 1. Energy Policy and Life-Cycle Cost Analysis.

§ 143-64.10. Findings; policy.

- (a) The General Assembly finds all the following:
- (1) That the State shall take a leadership role in aggressively undertaking the conservation of energy, water, and other utilities in North Carolina.
 - (2) That State facilities and facilities of State institutions of higher learning have a significant impact on the State's consumption of energy, water, and other utilities.
 - (3) That practices to conserve energy, water, and other utilities that are adopted for the design, construction, operation, maintenance, and renovation of these facilities and for the purchase, operation, and maintenance of equipment for these facilities will have a beneficial effect on the State's overall supply of energy, water, and other utilities.
 - (4) That the cost of the energy, water, and other utilities consumed by these facilities and the equipment for these facilities over the life of the facilities shall be considered, in addition to the initial cost.
 - (5) That the cost of energy, water, and other utilities is significant and facility designs shall take into consideration the total life-cycle cost, including the initial construction cost, and the cost, over the economic life of the facility, of the energy, water, and other utilities consumed, and of operation and maintenance of the facility as it affects the consumption of energy, water, or other utilities.
 - (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.
- (b) It is the policy of the State of North Carolina to ensure that practices to conserve energy, water, and other utilities are employed in the design, construction, operation, maintenance, and renovation of State facilities and facilities of the State institutions of higher learning and in the purchase, operation, and maintenance of equipment for these facilities. (1975, c. 434, s. 1; 1993, c. 334, s. 2; 2001-415, s. 1; 2006-190, s. 8; 2007-546, s. 3.1(b).)

§ 143-64.11. Definitions.

For purposes of this Article:

- (1) "Economic life" means the projected or anticipated useful life of a facility.
- (2) "Energy-consumption analysis" means the evaluation of all energy-consuming systems, including systems that consume water or other

utilities, and components of these systems by demand and type of energy or other utility use, including the internal energy load imposed on a facility by its occupants, equipment and components, and the external energy load imposed on the facility by climatic conditions.

(2a) "Energy Office" means the State Energy Office of the Department of Environmental Quality.

(2b) "Energy-consuming system" includes but is not limited to any of the following equipment or measures:

- a. Equipment used to heat, cool, or ventilate the facility;
- b. Equipment used to heat water in the facility;
- c. Lighting systems;
- d. On-site equipment used to generate electricity for the facility;
- e. On-site equipment that uses the sun, wind, oil, natural gas, liquid propane gas, coal, or electricity as a power source; and
- f. Energy conservation measures, as defined in G.S. 143-64.17, in the facility design and construction that decrease the energy, water, or other utility requirements of the facility.

(3) "Facility" means a building or a group of buildings served by a central distribution system for energy, water, or other utility or components of a central distribution system.

(4) "Initial cost" means the required cost necessary to construct or renovate a facility.

(5) "Life-cycle cost analysis" means an analytical technique that considers certain costs of owning, using, and operating a facility over its economic life, including but not limited to:

- a. Initial costs;
- b. System repair and replacement costs;
- c. Maintenance costs;
- d. Operating costs, including energy costs; and
- e. Salvage value.

(6) Repealed by Session Laws 1993, c. 334, s. 3, effective July 13, 1993.

(7) "State agency" means the State of North Carolina or any board, bureau, commission, department, institution, or agency of the State.

(8) "State-assisted facility" means a facility constructed or renovated in whole or in part with State funds or with funds guaranteed or insured by a State agency.

(9) "State facility" means a facility constructed or renovated, by a State agency.

(10) "State institution of higher learning" means any constituent institution of The University of North Carolina. (1975, c. 434, s. 2; 1989, c. 23, s. 1; 1993, c. 334, s. 3; 2001-415, s. 2; 2006-190, ss. 9, 10, 11; 2007-546, s. 3.1(c); 2009-446, s. 1(f); 2013-360, s. 15.22(o); 2015-241, s. 14.30(u).)

§ 143-64.12. Authority and duties of the Department; State agencies and State institutions of higher learning.

(a) The Department of Environmental Quality through the State Energy Office shall develop a comprehensive program to manage energy, water, and other utility use for State agencies and State institutions of higher learning and shall update this program annually.

Each State agency and State institution of higher learning shall develop and implement a management plan that is consistent with the State's comprehensive program under this subsection to manage energy, water, and other utility use, and that addresses any findings or recommendations resulting from the energy audit required by subsection (b1) of this section. The energy consumption per gross square foot for all State buildings in total shall be reduced by twenty percent (20%) by 2010 and thirty percent (30%) by 2015 based on energy consumption for the 2002-2003 fiscal year. Each State agency and State institution of higher learning shall update its management plan biennially and include strategies for supporting the energy consumption reduction requirements under this subsection. Each community college shall submit to the State Energy Office a biennial written report of utility consumption and costs. Management plans submitted biennially by State institutions of higher learning shall include all of the following:

- (1) Estimates of all costs associated with implementing energy conservation measures, including pre-installation and post-installation costs.
- (2) The cost of analyzing the projected energy savings.
- (3) Design costs, engineering costs, pre-installation costs, post-installation costs, debt service, and any costs for converting to an alternative energy source.
- (4) An analysis that identifies projected annual energy savings and estimated payback periods.

(a1) State agencies and State institutions of higher learning shall carry out the construction and renovation of facilities in such a manner as to further the policy set forth under this section and to ensure the use of life-cycle cost analyses and practices to conserve energy, water, and other utilities.

(b) The Department of Administration shall develop and implement policies, procedures, and standards to ensure that State purchasing practices improve efficiency regarding energy, water, and other utility use and take the cost of the product over the economic life of the product into consideration. The Department of Administration shall adopt and implement Building Energy Design Guidelines. These guidelines shall include energy-use goals and standards, economic assumptions for life-cycle cost analysis, and other criteria on building systems and technologies. The Department of Administration shall modify the design criteria for construction and renovation of facilities of State buildings and State institutions of higher learning buildings to require that a life-cycle cost analysis be conducted pursuant to G.S. 143-64.15.

(b1) The Department of Administration, as part of the Facilities Condition and Assessment Program, shall identify and recommend energy conservation maintenance and operating procedures that are designed to reduce energy consumption within the facility of a State agency or a State institution of higher learning and that require no significant expenditure of funds. Every State agency or State institution of higher learning shall implement these recommendations. Where energy management equipment is proposed for any facility of a State agency or of a State institution of higher learning, the maximum

interchangeability and compatibility of equipment components shall be required. As part of the Facilities Condition and Assessment Program under this section, the Department of Administration, in consultation with the State Energy Office, shall develop an energy audit and a procedure for conducting energy audits. Every five years the Department shall conduct an energy audit for each State agency or State institution of higher learning, and the energy audits conducted shall serve as a preliminary energy survey. The State Energy Office shall be responsible for system-level detailed surveys.

(b2) The Department of Administration shall submit a report of the energy audit required by subsection (b1) of this section to the affected State agency or State institution of higher learning and to the State Energy Office. The State Energy Office shall review each audit and, in consultation with the affected State agency or State institution of higher learning, incorporate the audit findings and recommendations into the management plan required by subsection (a) of this section.

(c) through (g) Repealed by Session Laws 1993, c. 334, s. 4.

(h) When conducting a facilities condition and assessment under this section, the Department of Administration shall identify and recommend to the State Energy Office any facility of a State agency or State institution of higher learning as suitable for building commissioning to reduce energy consumption within the facility or as suitable for installing an energy savings measure pursuant to a guaranteed energy savings contract under Part 2 of this Article.

(i) Consistent with G.S. 150B-2(8a)h., the Department of Administration may adopt architectural and engineering standards to implement this section.

(j) The State Energy Office shall submit a report by December 1 of every odd-numbered year to the Joint Legislative Energy Policy Commission, the Joint Legislative Oversight Committee on Agriculture and Natural and Economic Resources, and the Fiscal Research Division 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. (1975, c. 434, s. 3; 1993, c. 334, s. 4; 2000-140, s. 76(f); 2001-415, s. 3; 2006-190, s. 12; 2007-546, s. 3.1(a); 2008-198, s.

11.1; 2009-446, s. 1(e); 2010-31, s. 14.3; 2010-196, s. 2; 2013-360, s.

15.22(p); 2014-120, s. 55; 2015-241, s. 14.30(u); 2017-57, s. 14.1(f.)

§ 143-64.13: Repealed by Session Laws 1993, c. 334, s. 5.

§ 143-64.14: Recodified as § 143-64.16 by Session Laws 1993, c. 334, s. 7.

§ 143-64.15. Life-cycle cost analysis.

- (a) A life-cycle cost analysis shall be commenced at the schematic design phase of the construction or renovation project, shall be updated or amended as needed at the design development phase, and shall be updated or amended again as needed at the construction document phase. A life-cycle cost analysis shall include, but not be limited to, all of the following elements:
- (1) The coordination, orientation, and positioning of the facility on its physical site.
 - (2) The amount and type of fenestration and the potential for daylighting employed in the facility.
 - (3) Thermal characteristics of materials and the amount of insulation incorporated into the facility design.
 - (4) The variable occupancy and operating conditions of the facility, including illumination levels.
 - (5) Architectural features that affect the consumption of energy, water, and other utilities.
- (b) The life-cycle cost analysis performed for any State facility shall, in addition to the requirements set forth in subsection (a) of this section, include, but not be limited to, all of the following:
- (1) An energy-consumption analysis of the facility's energy-consuming systems in accordance with the provisions of subsection (g) of this section.
 - (2) The initial estimated cost of each energy-consuming system being compared and evaluated.
 - (3) The estimated annual operating cost of all utility requirements.
 - (4) The estimated annual cost of maintaining each energy-consuming system.
 - (5) The average estimated replacement cost for each system expressed in annual terms for the economic life of the facility.
- (c) Each entity shall conduct a life-cycle cost analysis pursuant to this section for the construction or the renovation of any State facility or State-assisted facility of 20,000 or more gross square feet. For the replacement of heating, ventilation, and air-conditioning equipment in any State facility or State-assisted facility of 20,000 or more gross square feet, the entity shall conduct a life-cycle cost analysis of the replacement equipment pursuant to this section when the replacement is financed under a guaranteed energy savings contract or financed using repair and renovation funds.
- (d) The life-cycle cost analysis shall be certified by a registered professional engineer or bear the seal of a North Carolina registered architect, or both. The engineer or architect shall be particularly qualified by training and experience for the type of work involved, but shall not be employed directly or indirectly by a fuel provider, utility company, or group supported by

fuel providers or utility funds. Plans and specifications for facilities involving public funds shall be designed in conformance with the provisions of G.S. 133-1.1.

- (e) In order to protect the integrity of historic buildings, no provision of this Article shall be interpreted to require the implementation of measures to conserve energy, water, or other utility use that conflict with respect to any property eligible for, nominated to, or entered on the National Register of Historic Places, pursuant to the National Historic Preservation Act of 1966, P.L. 89-665; any historic building located within an historic district as provided in Chapters 160A or 153A of the General Statutes; any historic building listed, owned, or under the jurisdiction of an historic properties commission as provided in Chapter 160A or 153A; nor any historic property owned by the State or assisted by the State.
- (f) Each State agency shall use the life-cycle cost analysis over the economic life of the facility in selecting the optimum system or combination of systems to be incorporated into the design of the facility.
- (g) The energy-consumption analysis of the operation of energy-consuming systems utilities in a facility shall include, but not be limited to, all of the following:
 - (1) The comparison of two or more system alternatives.
 - (2) The simulation or engineering evaluation of each system over the entire range of operation of the facility for a year's operating period.
 - (3) The engineering evaluation of the consumption of energy, water, and other utilities of component equipment in each system considering the operation of such components at other than full or rated outputs. (1993, c. 334, s. 6; 2001-415, ss. 4, 5; 2006-190, s. 13; 2007-546, s. 4.1.)

§ 143-64.15A. Certification of life-cycle cost analysis.

Each State agency and each State institution of higher learning performing a life-cycle cost analysis for the purpose of constructing or renovating any facility shall, prior to selecting a design option or advertising for bids for construction, submit the life-cycle cost analysis to the Department for certification at the schematic design phase and again when it is updated or amended as needed in accordance with G.S. 143-64.15. The Department shall review the material submitted by the State agency or State institution of higher learning, reserve the right to require an agency or institution to complete additional analysis to comply with certification, perform any additional analysis, as necessary, to comply with G.S. 143-341(11), and require that all construction or renovation conducted by the State agency or State institution of higher learning comply with the certification issued by the Department. (2001-415, s. 6; 2007-546, s. 4.2.)

§ 143-64.16. Application of Part.

The provisions of this Part shall not apply to municipalities or counties, nor to any agency or department of any municipality or county; provided, however, this Part shall apply to any board of a community college. Community college is defined in G.S. 115D-2(2). (1975, c. 434, s. 5; 1989, c. 23, s. 2; 1993, c. 334, s. 7; 1993 (Reg. Sess., 1994), c. 775, s. 2.)

Part 2. Energy Saving Measures for Governmental Units.

§ 143-64.17. Definitions.

As used in this Part:

(1) "Energy conservation measure" means a facility or meter alteration, training, or services related to the operation of the facility or meter, when the alteration, training, or services provide anticipated energy savings or capture lost revenue. Energy conservation measure includes any of the following:

- a. Insulation of the building structure and systems within the building.
- b. Storm windows or doors, caulking, weatherstripping, multiglazed windows or doors, heat-absorbing or heat-reflective glazed or coated window or door systems, additional glazing, reductions in glass area, or other window or door system modifications that reduce energy consumption.
- c. Automatic energy control systems.
- d. Heating, ventilating, or air-conditioning system modifications or replacements.
- e. Replacement or modification of lighting fixtures to increase the energy efficiency of a lighting system without increasing the overall illumination of a facility, unless an increase in illumination is necessary to conform to the applicable State or local building code or is required by the light system after the proposed modifications are made.
- f. Energy recovery systems.
- g. Cogeneration systems that produce steam or forms of energy such as heat, as well as electricity, for use primarily within a building or complex of buildings.
- h. Repealed by Session Laws 2006-190, s. 2, effective August 3, 2006, and applicable to contracts entered into or renewed on or after that date.
- i. Faucets with automatic or metered shut-off valves, leak detection equipment, water meters, water recycling equipment, and wastewater recovery systems.
- j. Other energy conservation measures that conserve energy, water, or other utilities.

(2) "Energy savings" means a measured reduction in fuel costs, energy costs, water costs, stormwater fees, other utility costs, or operating costs, including environmental discharge fees, water and sewer maintenance fees, and increased meter accuracy, created from the implementation of one or more energy conservation measures when compared with an established baseline of previous costs, including captured lost revenues, developed by the governmental unit.

(2a) "Governmental unit" means either a local governmental unit or a State governmental unit.

(3) "Guaranteed energy savings contract" means a contract for the evaluation, recommendation, or implementation of energy conservation measures,

including the design and installation of equipment or the repair or replacement of existing equipment or meters, in which all payments, except obligations on termination of the contract before its expiration, are to be made over time, and in which energy savings are guaranteed to exceed costs.

- (4) "Local governmental unit" means any board or governing body of a political subdivision of the State, including any board of a community college, any school board, or an agency, commission, or authority of a political subdivision of the State.
- (5) "Qualified provider" means a person or business experienced in the design, implementation, and installation of energy conservation measures who has been prequalified by the State Energy Office according to the prequalification criteria established by that Office.
 - (5a) "Qualified reviewer" means an architect or engineer who is (i) licensed in this State and (ii) experienced in the design, implementation, and installation of energy efficiency measures.
- (6) "Request for proposals" means a negotiated procurement initiated by a governmental unit by way of a published notice that includes the following:
 - a. The name and address of the governmental unit.
 - b. The name, address, title, and telephone number of a contact person in the governmental unit.
 - c. Notice indicating that the governmental unit is requesting qualified providers to propose energy conservation measures through a guaranteed energy savings contract.
 - d. The date, time, and place where proposals must be received.
 - e. The evaluation criteria for assessing the proposals.
 - f. A statement reserving the right of the governmental unit to reject any or all the proposals.
 - g. Any other stipulations and clarifications the governmental unit may require.
- (7) "State governmental unit" means the State or a department, an agency, a board, or a commission of the State, including the Board of Governors of The University of North Carolina and its constituent institutions. (1993 (Reg. Sess., 1994), c. 775, s. 3; 1995, c. 295, s. 1; 1999-235, ss. 1, 2; 2002-161, s. 2; 2006-190, s. 2; 2013-396, s. 1.)

§ 143-64.17A. Solicitation of guaranteed energy savings contracts.

- (a) RFP Issuance. – Before entering into a guaranteed energy savings contract, a governmental unit shall issue a request for proposals. Notice of the request shall be published at least 15 days in advance of the time specified for opening of the proposals in at least one newspaper of general circulation in the geographic area for which the local governmental unit is responsible or, in the case of a State governmental unit, in which the facility or facilities are located. No guaranteed energy savings contract shall be awarded by any governmental unit unless at least two proposals have been received from qualified providers. Provided that if

after the publication of the notice of the request for proposals, fewer than two proposals have been received from qualified providers, or fewer than two qualified providers attend the mandatory prebid meeting, the governmental unit may then open the proposals and select a qualified provider even if only one proposal is received.

- (b) Preliminary Proposal Evaluation. – The governmental unit shall evaluate a sealed proposal from any qualified provider. A qualified reviewer shall be required to evaluate the proposals and will provide the governmental unit with a letter report containing both qualitative and quantitative evaluation of the proposals. The report may include a recommendation for selection, but the governmental unit is not obligated to follow it.
- (c) Receipt of Proposals for Unit of Local Government. – In the case of a local governmental unit, proposals received pursuant to this section shall be opened by a member or an employee of the governing body of the local governmental unit at a public opening at which the contents of the proposals shall be announced and recorded in the minutes of the governing body. Proposals shall be evaluated for the local governmental unit by a qualified reviewer on the basis of:

- (1) The information required in subsection (b) of this section; and
- (2) The criteria stated in the request for proposals.

The local governmental unit may require a qualified provider to include in calculating the cost of a proposal for a guaranteed energy savings contract any reasonable fee payable by the local governmental unit for the evaluation of the proposal by a qualified reviewer not employed as a member of the staff of the local governmental unit or the qualified provider.

(c1) Receipt of Proposals for Unit of State Government. – In the case of a State governmental unit, proposals received pursuant to this section shall be opened by a member or an employee of the State governmental unit at a public opening and the contents of the proposals shall be announced at this opening. Proposals shall be evaluated for the State governmental unit by a qualified reviewer who is either privately retained, employed with the Department of Administration, or employed as a member of the staff of the State governmental unit. The proposal shall be evaluated on the basis of the information and report required in subsection (b) of this section and the criteria stated in the request for proposals.

The State governmental unit shall require a qualified provider to include in calculating the cost of a proposal for a guaranteed energy savings contract any reasonable fee payable by the State governmental unit for evaluation of the proposal by a qualified reviewer not employed as a member of the staff of the State governmental unit or the qualified provider. The Department of Administration may charge the State governmental unit a reasonable fee for the evaluation of the proposal if the Department's services are used for the evaluation and the cost paid by the State governmental unit to the Department of Administration shall be calculated in the cost of the proposal under this subsection.

- (d) Criteria for Selection of Provider. – The governmental unit shall select the qualified provider that it determines to best meet the needs of the governmental unit by evaluating all of the following and following the procedures set forth in subsection (d1) of this section:
 - (1),
 - (2) Repealed by Session Laws 2013-396, s. 2, effective August 23, 2013.
 - (3) Quality of the products and energy conservation measures proposed.
 - (4) Repealed by Session Laws 2013-396, s. 2, effective August 23, 2013.

- (5) General reputation and performance capabilities of the qualified providers.
- (6) Substantial conformity with the specifications and other conditions set forth in the request for proposals.
- (7) Time specified in the proposals for the performance of the contract.
- (8) Any other factors the governmental unit deems necessary, which factors shall be made a matter of record.

(d1) Process for Selection of Provider. – The governmental unit shall select a short list of finalists on the basis of its rankings of the written proposals under the criteria set forth in subsection (d) of this section as well as references from past clients. The governmental unit shall have the highest ranked qualified provider prepare a cost-savings analysis for the proposed contract showing at a minimum a comparison of the total estimated project savings to the total estimated project costs for the proposed term. If the governmental unit and the qualified provider cannot negotiate acceptable terms, pricing, and savings estimates, the governmental unit may terminate the process and begin negotiations with the second highest ranked qualified provider. The State Energy Office shall review the selected qualified provider's proposal, cost-benefit analysis, and other relevant documents prior to the governmental unit announcing the award.

- (e) Nothing in this section shall limit the authority of governmental units as set forth in Article 3D of this Chapter. (1993 (Reg. Sess., 1994), c. 775, s. 3; 2002-161, s. 3; 2013-396, s. 2.)

§ 143-64.17B. Guaranteed energy savings contracts.

- (a) A governmental unit may enter into a guaranteed energy savings contract with a qualified provider if all of the following apply:
 - (1) The term of the contract does not exceed 20 years from the date of the installation and acceptance by the governmental unit of the energy conservation measures provided for under the contract.
 - (2) The governmental unit finds that the energy savings resulting from the performance of the contract will equal or exceed the total cost of the contract.
 - (3) The energy conservation measures to be installed under the contract are for an existing building or utility system, or utility consuming device or equipment when the utility cost is paid by the governmental unit.
- (b) Before entering into a guaranteed energy savings contract, the governmental unit shall provide published notice of the time and place or of the meeting at which it proposes to award the contract, the names of the parties to the proposed contract, and the contract's purpose. The notice must be published at least 15 days before the date of the proposed award or meeting.
- (c) A qualified provider entering into a guaranteed energy savings contract under this Part shall provide security to the governmental unit in the form acceptable to the Office of the State Treasurer and in an amount equal to one hundred percent (100%) of the guaranteed savings for the term of the guaranteed energy savings contract to assure the provider's faithful performance. Any bonds required by this subsection shall be subject to the provisions of Article 3 of Chapter 44A of the General Statutes. If the savings resulting from a guaranteed energy savings contract are not as great as projected under the contract and all required

shortfall payments to the governmental unit have not been made, the governmental unit may terminate the contract without incurring any additional obligation to the qualified provider.

- (d) As used in this section, "total cost" shall include, but not be limited to, costs of construction, costs of financing, and costs of maintenance and training during the term of the contract less the application of the utility company, State, or federal incentives, grants, or rebates. "Total cost" does not include any obligations on termination of the contract before its expiration, provided that those obligations are disclosed when the contract is executed.
- (e) A guaranteed energy savings contract may not require the governmental unit to purchase a maintenance contract or other maintenance agreement from the qualified provider who installs energy conservation measures under the contract if the unit of government takes appropriate action to budget for its own forces or another provider to maintain new systems installed and existing systems affected by the guaranteed energy savings contract.
- (f) In the case of a State governmental unit, a qualified provider shall, when feasible, after the acceptance of the proposal of the qualified provider by the State governmental unit, conduct an investment grade audit. During this investment grade audit, the qualified provider shall perform in accordance with Part 1 of this Article a life cycle cost analysis of each energy conservation measure in the final proposal. If the results of the audit are not within ten percent (10%) of both the guaranteed savings contained in the proposal and the total proposal amount, either the State governmental unit or the qualified provider may terminate the project without incurring any additional obligation to the other party. However, if the State governmental unit terminates the project after the audit is conducted and the results of the audit are within ten percent (10%) of both the guaranteed savings contained in the proposal and the total proposal amount, the State governmental unit shall reimburse the qualified provider the reasonable cost incurred in conducting the audit, and the results of the audit shall become the property of the State governmental unit.
- (g) A qualified provider shall provide an annual reconciliation statement based upon the results of the measurement and verification review. The statement shall disclose any shortfalls or surplus between guaranteed energy and operational savings specified in the guaranteed energy savings contract and actual, not stipulated, energy and operational savings incurred during a given guarantee year. Any guaranteed energy and operational savings shall be determined by using one of the measurement and verification methodologies listed in the United States Department of Energy's Measurement and Verification Guidelines for Energy Savings Performance Contracting, the International Performance Measurement and Verification Protocol (IPMVP) maintained by the Efficiency Valuation Organization, or Guideline 14-2002 of the American Society of Heating, Refrigerating, and Air-Conditioning Engineers. If due to existing data limitations or the nonconformance of specific project characteristics, none of the three methodologies listed in this subsection is sufficient for measuring guaranteed savings, the qualified provider shall develop an alternate method that is compatible with one of the three methodologies and mutually agreeable to the governmental unit. The guarantee year shall consist of a 12-month term commencing from the time that the energy conservation measures become fully operational. A qualified provider shall pay the governmental unit or its assignee any shortfall in the guaranteed energy and operational savings after the total year savings have been determined. In the case of a governmental unit, a surplus in any one year shall not be carried forward or applied to

a shortfall in any other year. (1993 (Reg. Sess., 1994), c. 775, s. 3; 1995, c. 295, s. 2; 1999-235, s. 3; 2002-161, s. 4; 2003-138, s. 1; 2006-190, s. 3; 2009-375, s. 2; 2013-396, s. 3; 2014-115, s. 56.7.)

§ 143-64.17C: Repealed by Session Laws 2002, ch. 161, s. 5, effective January 1, 2003, and applicable to contracts entered into on or after that date.

§ 143-64.17D. Contract continuance.

A guaranteed energy savings contract may extend beyond the fiscal year in which it becomes effective. Such a contract shall stipulate that it does not constitute a direct or indirect pledge of the taxing power or full faith and credit of any governmental unit. (1993 (Reg. Sess., 1994), c. 775, s. 3; 2002-161, s. 6.)

§ 143-64.17E. Payments under contract.

A local governmental unit may use any funds, whether operating or capital, that are not otherwise restricted by law for the payment of a guaranteed energy savings contract. State appropriations to any local governmental unit shall not be reduced as a result of energy savings occurring as a result of a guaranteed energy savings contract. (1993 (Reg. Sess., 1994), c. 775, s. 3.)

§ 143-64.17F. State agencies to use contracts when feasible; rules; recommendations.

(a) State governmental units shall evaluate the use of guaranteed energy savings contracts in reducing energy costs and may use those contracts when feasible and practical.

(b) The Department of Administration, in consultation with the Department of Environmental Quality, through the State Energy Office, shall adopt rules for: (i) agency evaluation of guaranteed energy savings contracts; (ii) establishing time periods for consideration of guaranteed energy savings contracts by the Office of State Budget and Management, the Office of the State Treasurer, and the Council of State, and (iii) setting measurements and verification criteria, including review, audit, and precertification. Prior to adopting any rules pursuant to this section, the Department shall consult with and obtain approval of those rules from the State Treasurer. The rules adopted pursuant to this subsection shall not apply to energy conservation measures implemented pursuant to G.S. 143-64.17L.

(c) The Department of Administration, and the Department of Environmental Quality through the State Energy Office, may provide to the Council of State its recommendations concerning any energy savings contracts being considered. (2002-161, s. 7; 2003-138, s. 2; 2009-446, s. 1(d); 2011-145, s. 9.6D(d); 2013-360, s. 15.22(d); 2015-241, s. 14.30(u).)

§ 143-64.17G. Report on guaranteed energy savings contracts entered into by local governmental units.

A local governmental unit that enters into a guaranteed energy savings contract must report the contract and the terms of the contract to the Local Government Commission and the State Energy Office of the Department of Environmental Quality. The Commission shall compile the information and report it biennially to the Joint Commission on Governmental

Operations. In compiling the information, the Local Government Commission shall include information on the energy savings expected to be realized from a contract and, with the assistance of the Office of State Construction and the State Energy Office, shall evaluate whether expected savings have in fact been realized. (1993 (Reg. Sess., 1994), c. 775, s. 9; 2006-190, s. 4; 2009-375, s. 3; 2013-360, s. 15.22(e); 2015-241, s. 14.30(u).)

§ 143-64.17H. Report on guaranteed energy savings contracts entered into by State governmental units.

A State governmental unit that enters into a guaranteed energy savings contract or implements an energy conservation measure pursuant to G.S. 143-64.17L must report either (i) the contract and the terms of the contract or (ii) the implementation of the measure to the State Energy Office of the Department of Environmental Quality within 30 days of the date the contract is entered into or the measure is implemented. In addition, within 60 days after each annual anniversary date of a guaranteed energy savings contract, the State governmental unit must report the status of the contract to the State Energy Office, including any details required by the State Energy Office. The State Energy Office shall compile the information for each fiscal year and report it to the Joint Legislative Oversight Committee on Agriculture and Natural and Economic Resources, the Fiscal Research Division, and the Local Government Commission annually by December 1. In compiling the information, the State Energy Office shall include information on the energy savings expected to be realized from a contract or implementation and shall evaluate whether expected savings have in fact been realized. (2002-161, s. 8; 2006-190, s. 5; 2009-446, s. 1(c); 2011-145, s. 9.6D(e); 2013-360, s. 15.22(f); 2015-241, s. 14.30(u); 2017-57, s. 14.1(g).)

§ 143-64.17I. Installment and lease purchase contracts.

A local governmental unit may provide for the acquisition, installation, or maintenance of energy conservation measures acquired pursuant to this Part by installment or lease purchase contracts in accordance with and subject to the provisions of G.S. 160A-20 and G.S. 160A-19, as applicable. (2002-161, s. 8.)

§ 143-64.17J. Financing by State governmental units.

State governmental units may finance the acquisition, installation, or maintenance of energy conservation measures acquired pursuant to this Part in the manner and to the extent set forth in Article 8 of Chapter 142 of the General Statutes or as otherwise authorized by law. (2002-161, s. 8.)

§ 143-64.17K. Inspection and compliance certification for State governmental units.

The provisions of G.S. 143-341(3) shall not apply to any energy conservation measure for State governmental units provided pursuant to this Part, except as specifically set forth in this section. Except as otherwise exempt under G.S. 116-31.11, the following shall apply to all energy conservation measures provided to State governmental units pursuant to this Part:

- (1) The provisions of G.S. 133-1.1.
- (2) Inspection and certification by:

- a. The applicable local building inspector under Part 4 of Article 18 of Chapter 153A of the General Statutes or Part 5 of Article 19 of Chapter 160A of the General Statutes; or
- b. At the election of the State governmental unit, the Department of Administration under G.S. 143-341(3)d.

The cost of compliance with this section may be included in the cost of the project in accordance with G.S. 143-64.17A(c1) and may be included in the cost financed under Article 8 of Chapter 142 of the General Statutes. (2002-161, s. 8.)

§ 143-64.17L. Board of Governors may authorize energy conservation measures at constituent institutions.

(a) Authority. – Notwithstanding the provisions of this Part to the contrary, the Board of Governors of The University of North Carolina may authorize any constituent institution listed in subsection (e) of this section to implement an energy conservation measure without entering into a guaranteed energy savings contract if both of the following conditions are met:

- (1) The Board of Governors finds that the energy savings resulting from the implementation of the energy conservation measure shall, according to the energy savings analysis received pursuant to G.S. 143-64.17M(a), equal or exceed the total cost of implementing the measure. If the proposed implementation will be financed with debt, then the energy savings analysis must project sufficient energy savings to pay the debt service on any bonds to be issued. As used in this subdivision, the term "total cost" shall have the same meaning as it does in G.S. 143-64.17B(d).
- (2) The energy conservation measure is for an existing building or utility system.

(b) Scope of Authority. – In implementing an energy conservation measure pursuant to subsection (a) of this section, the Board of Governors may undertake or authorize any constituent institution listed in subsection (e) of this section to undertake any action that (i) could be required of a qualified provider under a guaranteed energy savings contract or (ii) is otherwise permissible under this Part.

(c) Projects Consisting of Multiple Energy Conservation Measures. – The Board of Governors may authorize the implementation of multiple energy conservation measures simultaneously as part of a single project. When doing so, the findings required by subsection (a) of this section may be made with respect to the project as a whole and need not be made with respect to individual energy conservation measures. Similarly, the analyses required by G.S. 143-64.17M may be conducted for the project as a whole instead of for individual energy conservation measures.

(d) Continuing Applicability of Part to Contracts. – If the Board of Governors or a constituent institution implements an energy conservation measure through a guaranteed energy savings contract, that contract shall accord in all respects with the requirements of this Part.

(e) The Board of Governors may authorize North Carolina State University and the University of North Carolina at Charlotte to implement an energy conservation measure without entering into a guaranteed energy savings contract pursuant to this section. (2011-145, s. 9.6D(a); 2013-396, s. 4(a).)

§§ 143-64.17L through 143-64.19. Reserved for future codification purposes.

§ 143-64.17M. Energy savings analysis required prior to implementation; post-implementation analyses required.

(a) Energy Savings Analysis Required Prior to Implementation. – Prior to implementing an energy conservation measure pursuant to G.S. 143-64.17L, an energy savings analysis shall be performed to validate the economic assumptions that purportedly support the implementation of the measure. This analysis shall be performed by a third party selected by the constituent institution and shall include an energy consumption analysis to develop a baseline of previous costs of all utilities' energy consumption for the institution on the assumption that the energy conservation measure was not undertaken. The completed analysis shall be submitted to The University of North Carolina System Office and to the State Energy Office.

(b) Post-Implementation Analyses Required. – A constituent institution that implements an energy conservation measure pursuant to G.S. 143-64.17L shall retain a third party to perform an annual measurement and verification of energy savings resulting from the energy conservation measure as compared to the baseline of previous costs set forth in the energy savings analysis required by subsection (a) of this section. The third party shall annually provide a reconciliation statement based upon the results of a preagreed upon measurement, monitoring, and verification protocol which shall disclose any shortfall or surplus between the estimated energy usage and operational savings set forth in the energy savings analysis required by subsection (a) of this section and actual, not stipulated, energy usage and operational savings incurred during a given year.

If a reconciliation statement reveals a shortfall in energy savings for a particular year, the constituent institution shall be responsible for and shall pay the shortfall. However, the institution shall not be held responsible for losses due to natural disasters or other emergencies. Any surplus shall be retained by the institution and may be used in the same manner as any other energy savings. (2011-145, s. 9.6D(b); 2018-12, s. 17.)

Appendix E

Energy conservation savings

§ 116-30.3B. Energy conservation savings.

(a) In addition to the funds carried forward under G.S. 116-30.3, the General Fund current operations appropriations credit balance remaining at the end of each fiscal year for utilities of a constituent institution that is energy savings realized from implementing an energy conservation measure shall be carried forward by the institution to the next fiscal year. Sixty percent (60%) of the energy savings realized shall be utilized for energy conservation measures by that institution. The use of funds under this section shall be limited to onetime capital and operating expenditures that will not impose additional financial obligations on the State. The Director of the Budget, under the authority set forth in G.S. 143C-6-2, shall establish the General Fund current operations credit balance remaining in each budget code of each institution.

(b) It is the intent of the General Assembly that appropriations to the Board of Governors on behalf of a constituent institution not be reduced as a result of the institution's realization of energy savings. Instead, the General Assembly intends that the amount of appropriations be determined as if no energy savings had been realized. The Director of the Budget shall not decrease the recommended base budget requirements for utilities for constituent institutions by the amount of energy savings realized from implementing energy conservation measures, including savings achieved through a guaranteed energy savings contract.

(c) Constituent institutions shall submit annual reports on the use of funds authorized pursuant to this section as required under G.S. 143-64.12.

(d) As used in this section, "energy savings," "guaranteed energy savings contract," and "energy conservation measure" have the same meaning as in G.S. 143-64.17. (2010-196, s. 1; 2011-145, s. 9.6D(c); 2014-100, s. 6.4(e).)

Appendix F

GENERAL ASSEMBLY OF NORTH CAROLINA SESSION
2009

SESSION LAW 2010-196

HOUSE BILL 1292

AN ACT TO PROVIDE THAT ANY ENERGY SAVINGS REALIZED BY CONSTITUENT INSTITUTIONS OF THE UNIVERSITY OF NORTH CAROLINA SHALL REMAIN AVAILABLE TO THE INSTITUTION AND A PORTION OF THOSE ENERGY SAVINGS SHALL BE USED FOR OTHER ENERGY CONSERVATION MEASURES; AND TO EXPAND THE USE OF OPERATIONAL LEASES BY LOCAL BOARDS OF EDUCATION.

The General Assembly of North Carolina enacts:

SECTION 1. Article 1 of Chapter 116 of the General Statutes is amended by adding a new section to read:

"§ 116-30.3B. Energy conservation savings.

(a) In addition to the funds carried forward under G.S. 116-30.3, the General Fund current operations appropriations credit balance remaining at the end of each fiscal year for utilities of a constituent institution that is energy savings realized from implementing an energy conservation measure shall be carried forward by the institution to the next fiscal year. Sixty percent (60%) of the energy savings realized shall be utilized for energy conservation measures by that institution. The use of funds under this section shall be limited to onetime capital and operating expenditures that will not impose additional financial obligations on the State. The Director of the Budget, under the authority set forth in G.S. 143C-6-2, shall establish the General Fund current operations credit balance remaining in each budget code of each institution.

(b) The Director of the Budget shall not decrease the recommended continuation budget requirements for utilities for constituent institutions by the amount of energy savings realized from implementing energy conservation measures, including savings achieved through a guaranteed energy savings contract.

(c) Constituent institutions shall submit annual reports on the use of funds authorized pursuant to this section as required under G.S. 143-64.12.

(d) As used in this section, 'energy savings,' 'guaranteed energy savings contract,' and 'energy conservation measure' have the same meaning as in G.S. 143-64.17."

SECTION 2. G.S. 143-64.12(a) reads as rewritten:

"(a) The Department of Commerce through the State Energy Office shall develop a comprehensive program to manage energy, water, and other utility use for State agencies and State institutions of higher learning and shall update this program annually. Each State agency and State institution of higher learning shall develop and implement a management plan that is consistent with the State's comprehensive program under this subsection to manage energy, water, and other utility use. The energy consumption per gross square foot for all State buildings in total shall be reduced by twenty percent (20%) by 2010 and thirty percent (30%) by 2015 based on energy consumption for the 2002-2003 fiscal year. Each State agency and State institution of higher learning shall update its management plan

annually and include strategies for supporting the energy consumption reduction requirements under this subsection. Each community college shall submit to the State Energy Office an annual written report of utility consumption and costs. Management plans submitted annually by State institutions of higher learning shall include all of the following:

- (1) Estimates of all costs associated with implementing energy conservation measures, including pre-installation and post-installation costs.
- (2) The cost of analyzing the projected energy savings.
- (3) Design costs, engineering costs, pre-installation costs, post-installation costs, debt service, and any costs for converting to an alternative energy source.

H1292-v-6

- (4) An analysis that identifies projected annual energy savings and estimated payback periods."

SECTION 3. G.S. 115C-530 reads as rewritten:

"§ 115C-530. Operational leases of school buildings and school facilities.

- (a) Local boards of education may enter into operational leases of real or personal property for use as school buildings or school facilities. Operational leases for terms of less than three years shall not be subject to the approval of the board of county commissioners. Operational leases for terms of three years or longer, including periods that may be added to the original term through the exercise of options to renew or extend, are permitted if all of the following conditions are met:
 - (1) The budget resolution includes an appropriation authorizing the current fiscal year's portion of the obligation.
 - (2) An unencumbered balance remains in the appropriation sufficient to pay in the current fiscal year the sums obligated by the lease for the current fiscal year.
 - (3) The leases are approved by a resolution adopted by the board of county commissioners. If an operational lease is approved by the board of county commissioners, in each year the county commissioners shall appropriate sufficient funds to meet the amounts to be paid during the fiscal year under the lease.
 - (4) Any construction, repair, or renovation of the property is in compliance with the requirements of G.S. 115C-521(c) relating to energy guidelines. For purposes of this section, an operational lease is defined according to generally accepted accounting principles. principles and may be for new or existing buildings.
- (b) Local boards of education may enter into contracts for the ~~repair~~ construction, repair, or renovation of leased property if (i) the budget resolution includes an appropriation authorizing the obligation, (ii) an unencumbered balance remains in the appropriation sufficient to pay in the current fiscal year the sums obligated by the transaction for the current fiscal year, and (iii) the ~~repair~~ construction, repair, or renovation is in compliance with the requirements of G.S. 115C-521(c) relating to energy guidelines. Construction, repair, or renovation work undertaken or contracted by a private developer is subject to the requirements of Article 8 of Chapter 143 of the General Statutes. Contracts for new construction and renovation that are subject to the bidding requirements of G.S. 143-129(a) and which do not constitute continuing contracts for capital outlay must be approved by the board of county commissioners.

(c) Operational leases and contracts entered into under this section are subject to approval by the Local Government Commission under Article 8 of Chapter 159 of the General Statutes if they meet the standards set out in G.S. 159-148(a)(1), 159-148(a)(2), and 159-148(a)(3). For purposes of determining whether the standards set out in G.S. 159-148(a)(3) have been met, only the five hundred thousand dollar (\$500,000) threshold shall apply."

SECTION 4. This act becomes effective July 1, 2010, and applies to contracts entered into on or after that date.

In the General Assembly read three times and ratified this the 9th day of July, 2010.

s/ Walter H. Dalton President of the Senate

s/ Joe Hackney
Speaker of the House of Representatives

This bill having been presented to the Governor for signature on the 9th day of July, 2010 and the Governor having failed to approve it within the time prescribed by law, the same is hereby declared to have become a law. This 10th day of August, 2010.

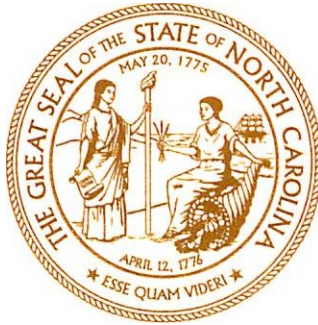
s/ Karen Jenkins Enrolling Clerk

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Appendix G



State of North Carolina

ROY COOPER GOVERNOR

October 29, 2018

EXECUTIVE ORDER NO. 80

NORTH CAROLINA'S COMMITMENT TO ADDRESS CLIMATE CHANGE AND TRANSITION TO A CLEAN ENERGY ECONOMY

WHEREAS, North Carolina residents deserve to be better educated, healthier, and more financially secure so that they may live purposeful and abundant lives; and

WHEREAS, N.C. Const. art. XIV, ss 5 requires the conservation, protection, and preservation of state lands and waters in public trust; and

WHEREAS, North Carolina is well positioned to take advantage of its technology and research and development sectors, along with its skilled workforce, to promote clean energy technology solutions and a modernized electric grid; and

WHEREAS, public-private partnerships in North Carolina foster market innovations and develop clean energy technology solutions that grow the state's economy; and

WHEREAS, the effects of more frequent and intense hurricanes, flooding, extreme temperatures, droughts, saltwater intrusion, and beach erosion have already impacted and will continue to impact North Carolina's economy; and

WHEREAS, climate-related environmental disruptions pose significant health risks to North Carolinians, including waterborne disease outbreaks, compromised drinking water, increases in disease-spreading organisms, and exposure to air pollution, among other issues; and

WHEREAS, to maintain economic growth and development and to provide responsible environmental stewardship, we must build resilient communities and develop strategies to mitigate and prepare for climate-related impacts in North Carolina.

NOW, THEREFORE, by the authority vested in me as Governor by the Constitution and the laws of the State of North Carolina, IT IS ORDERED:

1. The State of North Carolina will support the 2015 Paris Agreement goals and honor the state's commitments to the United States Climate Alliance.

The State of North Carolina will strive to accomplish the following by 2025:

- a. Reduce statewide greenhouse gas emissions to 40% below 2005 levels;
 - b. Increase the number of registered, zero-emission vehicles ("ZEVs"; individually, "ZEV") to at least 80,000;
 - c. Reduce energy consumption per square foot in state-owned buildings by at least 40% from fiscal year 2002-2003 levels.
2. Cabinet agencies shall evaluate the impacts of climate change on their programs and operations and integrate climate change mitigation and adaptation practices into their programs and operations. Council of State members, higher education institutions, local governments, private businesses, and other North Carolina entities are encouraged to address climate change and provide input on climate change mitigation and adaptation measures developed through the implementation of this Executive Order. Consistent with applicable law, cabinet agencies shall actively support such actions.
 3. The Secretary or designee of each cabinet agency and a representative from the Governor's Office shall serve on the North Carolina Climate Change Interagency Council ("Council"), which is hereby established. The Secretary of the North Carolina Department of Environmental Quality, or the Secretary's designee, shall serve as the Council Chair. The North Carolina Department of Environmental Quality shall lead the Council by providing strategic direction, scheduling and planning Council meetings, determining the prioritization of activities, facilitating stakeholder engagement, and assisting in the implementation of pathways to achieve the goals provided in Section 1 of this Executive Order.

The duties of the Council shall include the following:


- a. Recommend new and updated goals and actions to meaningfully address climate change;
 - b. Develop, implement, and evaluate programs and activities that support statewide climate mitigation and adaptation practices;
 - c. Establish workgroups, as appropriate, to assist the Council in its duties;
 - d. Consider stakeholder input when developing recommendations, programs, and other actions and activities;
 - e. Schedule, monitor, and provide input on the preparation and development of the plans and assessments required by this Executive Order;
 - f. Review and submit to the Governor the plans and assessments required by this Executive Order.
4. The North Carolina Department of Environmental Quality ("DEQ") shall develop a North Carolina Clean Energy Plan ("Clean Energy Plan") that fosters and encourages the utilization of clean energy resources, including energy efficiency, solar, wind, energy storage, and other innovative technologies in the public and private sectors, and the integration of those resources to facilitate the development of a modern and resilient electric grid. DEQ shall collaborate with businesses, industries, power providers, technology developers, North Carolina residents, local governments, and other interested stakeholders to increase the utilization of clean energy technologies, energy efficiency measures, and clean transportation solutions. DEQ shall complete the Clean Energy Plan for the Council to submit to the Governor by October 1, 2019.
 5. The North Carolina Department of Transportation ("DOT"), in coordination with DEQ, shall develop a North Carolina ZEV Plan ("ZEV Plan") designed to increase the number of registered ZEVs in the state to at least 80,000 by 2025. The ZEV Plan shall help establish interstate and intrastate ZEV corridors, coordinate and increase the installation of ZEV infrastructure, and incorporate, where appropriate, additional best practices for increasing ZEV adoption. DOT shall complete the ZEV Plan for the Council to submit to the Governor by October 1, 2019.
 6. The North Carolina Department of Commerce ("DOC") and other cabinet agencies shall take actions supporting the expansion of clean energy businesses and service providers, clean technology investment, and companies with a commitment to procuring renewable energy. In addition, DOC shall develop clean energy and clean transportation workforce assessments for the Council to submit to the Governor by October 1, 2019. These assessments shall evaluate the current and projected workforce demands in North Carolina's clean energy and clean transportation sectors, assess the skills and education required for employment in those sectors, and recommend actions to help North Carolinians develop such skills and education.

7. Cabinet agencies shall prioritize ZEVs in the purchase or lease of new vehicles and shall use ZEVs for agency business travel when feasible. When ZEV use is not feasible, cabinet agencies shall prioritize cost-effective, low-emission alternatives. To support implementation of this directive, the North Carolina Department of Administration ("DOA") shall develop a North Carolina Motor Fleet ZEV Plan ("Motor Fleet ZEV Plan") that identifies the types of trips for which a ZEV is feasible, recommends infrastructure necessary to support ZEV use, develops procurement options and strategies to increase the purchase and utilization of ZEVs, and addresses other key topics. DOA shall complete the Motor Fleet ZEV Plan and provide an accounting of each agency's ZEVs and miles driven by vehicle type for the Council to submit to the Governor by October 1, 2019, and annually thereafter.
8. Building on the energy, water, and utility use conservation measures taken pursuant to N.C. Gen. Stat. 143-64.12(a), DEQ shall update and amend, where applicable, a Comprehensive Energy, Water, and Utility Use Conservation Program ("Comprehensive Program") by February 1, 2019, and biennially beginning December 1, 2019, to further reduce energy consumption per gross square foot in state buildings consistent with Section I of this Executive Order. The Comprehensive Program shall include best practices for state government building energy efficiency, training for agency staff, cost estimation methodologies, financing options, and reporting requirements for cabinet agencies. DEQ and cabinet agencies shall encourage and assist, as requested, higher education institutions, K-12 schools, and local governments in reducing energy consumption. To achieve the required energy consumption reductions:
 - a. By January 15, 2019, each cabinet agency shall designate an Agency Energy Manager, who shall serve as the agency point of contact.
 - b. Each cabinet agency shall develop and submit an Agency Utility Management Plan to DEQ by March 1, 2019, and biennially thereafter, and implement strategies to support the energy consumption reduction goal set forth in Section I of this Executive Order. DEQ shall assess the adequacy of these plans and their compliance with this Executive Order.
 - c. By September 1, 2019, and annually thereafter, each cabinet agency shall submit to DEQ an Agency Utility Report detailing its utility consumption, utility costs, and progress in reducing energy consumption.
 - d. DEQ shall develop an annual report that describes the Comprehensive Program and summarizes each cabinet agency's utility consumption, utility costs, and achieved reductions in energy consumption. DEQ shall complete this report for publication on its website and for the Council to submit to the Governor by February 1, 2019, and annually thereafter beginning December 1, 2019.
9. Cabinet agencies shall integrate climate adaptation and resiliency planning into their policies, programs, and operations (i) to support communities and sectors of the economy that are vulnerable to the effects of climate change and (ii) to enhance the agencies' ability to protect

human life and health, property, natural and built infrastructure, cultural resources, and other public and private assets of value to North Carolinians.

- a. DEQ, with the support of cabinet agencies and informed by stakeholder engagement, shall prepare a North Carolina Climate Risk Assessment and Resiliency Plan for the Council to submit to the Governor by March 1, 2020.
 - b. The Council shall support communities that are interested in assessing risks and vulnerabilities to natural and built infrastructure and in developing community-level adaptation and resiliency plans.
10. DEQ shall prepare and manage a publicly accessible Web-based portal detailing the Council's actions and the steps taken to address climate-related impacts in North Carolina. Cabinet agencies shall submit data, information, and status reports as specified by the Council to be published on the portal. In addition, DEQ shall develop, publish on the portal, and periodically update an inventory of the state's greenhouse gas emissions that, among other things, tracks emissions trends statewide by sector and identifies opportunities for additional emissions reductions.
11. By October 15, 2019, and annually thereafter, the Council shall provide to the Governor a status report on the implementation of this Executive Order.
12. This Executive Order is consistent with and does not otherwise abrogate existing state law.
13. This Order is effective October 29, 2018 and shall remain in effect until rescinded or superseded by another applicable Executive Order.

IN WITNESS WHEREOF, I have hereunto signed my name and affixed the Great Seal of the State of North Carolina at the Capitol in the City of Raleigh, this the 29th day of October, in the year of our Lord two thousand eighteen.



Roy Cooper
Governor

ATTEST:



Rodney S. Maddox

