

**UNC Sustainability Committee  
Report and Policy Recommendations  
March 26, 2009**

***I. Introduction – Why UNC Should Adopt a Policy on Sustainability***

The University of North Carolina has a considerable impact on the communities, environment, and economy of the state. Absent a strategic policy, that strengthens existing measures and adds additional procedures that incorporate these three basic components of sustainability, the University's impact could increase substantially with continued growth.

As a key driver of economic development in North Carolina, it is incumbent upon UNC institutions to make decisions and investments that simultaneously have a positive long-term impact on the state's economic vitality, environmental quality, and social well being. UNC is publicly committed to and North Carolina law mandates, social, economic, and environmental stewardship. There is an evolving state, national and global focus on sustainable development and operations of institutions, businesses and industry and sustainability is a deciding factor in the choices made by students, faculty, staff and society in general.

This policy clarifies expectations related to the facilities and operations practices of member institutions. A separate initiative will address the implementation of sustainability as a core value in the teaching, research, and engagement functions of UNC campuses.

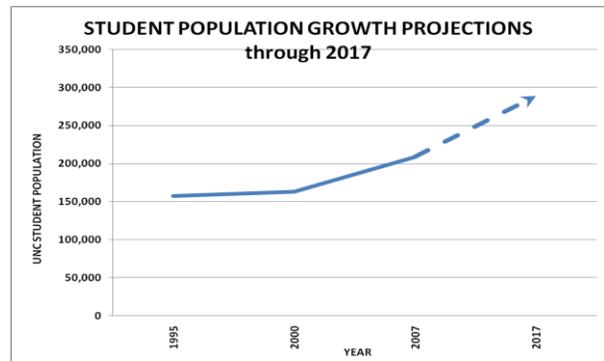
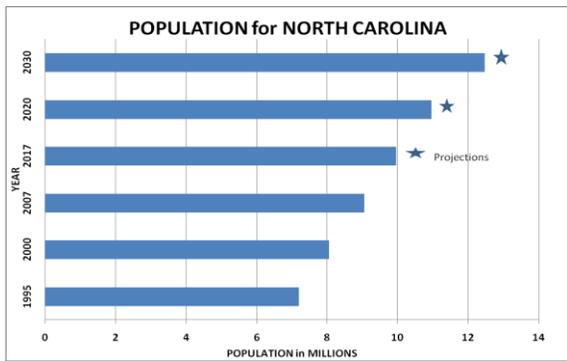
***UNC Directives***

The final report of the PACE Committee in 2006 mandated efficiency and effectiveness of operations throughout the UNC system, including the management of facilities and energy use.

The UNC Tomorrow Commission, in its final report of December 2007, recommended that UNC should provide a leadership role in response to the state's energy and environmental challenges; incorporate sustainable principles as a core value among its institutions; utilize its research expertise to address critical environmental and energy challenges, and increase community awareness of environmental and sustainability issues.

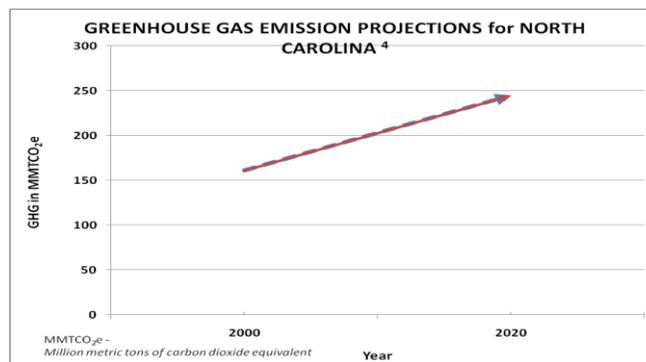
***Projections of Growth for North Carolina***

As the single largest user of electricity and water in state government, the university has an obligation to lead in managing its impact on the environment and natural resources. Substantial enrollment growth projections over the next 10 years for UNC and population growth over the next 20+ years for the state of North Carolina will have a profound effect on the environment.



The student population is expected to increase by 80,000 students<sup>1</sup> through 2017 and the state population is projected to increase by more than 4 million people, becoming the 7th largest in the U.S. by 2030<sup>2</sup>.

Future growth and development will cause substantial demands on the state's land, energy and water supply, transportation infrastructure, built environment, use of materials, generation of waste and consequently, the level of carbon emissions, further impacting climate change. The North Carolina Department of Environment and Natural Resources (DENR) reports that in 2000 North Carolina accounted for 2.6% of U.S. greenhouse gas (GHG) emissions. Nationally, emissions rose by 23% in a ten year period from 1990 to 2000. In contrast, North Carolina's emissions increased by more than 30%, making North Carolina 14<sup>th</sup> among the states in total carbon emissions<sup>3</sup>. The Center for Climate Strategies in Pennsylvania, a nonpartisan, nonprofit organization which assists public officials, private stakeholders, and technical experts develop and implement strategies to reduce greenhouse gas pollution and adapt to a changing climate, estimates that North Carolina's gross GHG emissions will continue to climb steeply to 245 MMTCO<sub>2</sub>E (million metric tons of carbon dioxide equivalent)<sup>4</sup> by 2020. This is a 52% increase from 2000 emission levels. Electricity generation is predicted to be the largest contributor to future emissions growth.



<sup>1</sup> UNC Tomorrow Commission Final Report Section 4.2

<sup>2</sup> <http://www.ncatlasrevisited.org/Population/projpop.htm>

<sup>3</sup> US EPA, States Ranked By Total Carbon Dioxide Emissions

<sup>4</sup> Revised Draft North Carolina Greenhouse Gas Inventory and Reference Case Projections 1990-2020, Center for Climate Strategies under contract to NCDENR

## *Legislative Mandates*

Various levels of sustainable practices have been introduced on UNC campuses since the early part of this decade, driven by Executive Order 156 on Environmental Sustainability (1999). In 2007, the North Carolina General Assembly passed two important pieces of legislation that will require change in capital project planning, design and construction, building utilization, and the management of energy and water infrastructure, for all state agencies including that of UNC institutions. Session Law 2007-546 *Energy Conservation in State Buildings* (Senate Bill 668) established a Sustainable Energy Efficient Buildings Program within the Department of Administration (DOA) under which changes were mandated in the state's planning, design and construction process to establish specific performance criteria and goals for sustainable, energy efficient public buildings for both new construction and renovations. The legislation also requires strategic planning and implementation to result in sequential reductions in water and energy use through 2015, including a 30% reduction in energy consumption. Indirectly related is Session Law 2007-397 *Promote Renewable Energy* (Senate Bill 3) which requires that energy efficiency measures and renewable energy constitute a portion of our state's energy supply.

## *Strategy*

A comprehensive policy and implementation plan is needed to meet the environmental, social and economic challenges the University will face in the next decade and beyond and to comply with the legal mandates outlined above. By strategically managing its growth and impact and by providing vision and direction, the University can provide leadership to the State. To do so, the University system must adopt and implement a sustainability policy that recognizes the available resources, needs, and objectives of each constituent campus. The proposed policy will facilitate a collaborative approach and require a commitment from all stakeholders. A significant part of this initiative will be to instill a cooperative relationship among administrators, faculty, students and campus operations staff in conjunction with providers of goods and services. The University's volume of business can influence the provision of sustainable goods and services that meet the goals of improving the University's economic, environmental and social footprint.

The proposed policy recommends applying the principles of sustainability to eight (8) specific areas:

- **Master Planning**
- **Design and Construction**
- **Operations and Maintenance**
- **Climate Change Mitigation and Renewable Energy**
- **Transportation**
- **Recycling and Waste Management**
- **Environmentally Preferable Purchasing (EPP)**
- **Systematic Integration of Sustainability Principles**

The proposed policy consists of goals and supporting guidelines for implementation. Specific implementation strategies, including timelines, cost estimates, and performance and accountability measures, are being developed to provide guidance to the campuses on ways to successfully meet these goals.

## *II. Committee Process*

The UNC Sustainability Taskforce initially established in 2007, was expanded in April 2008 to include representation from all UNC constituent institutions, students and state agency representation (Governor's Office and State Construction Office). Building on the previous work done by the Taskforce, the expanded UNC Sustainability Committee was charged with developing a proposed sustainability policy for UNC constituent institutions that would guide both UNC's compliance with legislatively mandated sustainability requirements and the goals recommended by the UNC Tomorrow Commission.

Shari Harris, UNC-GA's Associate Vice President for Finance, and Cindy Pollock Shea, Director of the Sustainability Office for UNC Chapel Hill, co-chair the UNC Sustainability Committee. The committee is supported by presidential interns John Noor and Hannah Hawley, and works in cooperation with UNC Tomorrow Executive Director Norma Houston. The list of committee members follows at the end of this section.

The Committee is divided into Sub-Committees specific to the eight (8) areas of proposed sustainability policy recommendations. The Committee and Sub-Committees met via teleconference, videoconference and in person. All members assisted in the development of the proposed recommendations, which are based on research, expertise and consensus. The committee has also developed guidelines for achieving the policy goals, and will begin developing implementation measures for the policy upon final approval by the President and Board of Governors. An assessment of existing and needed resources will be completed simultaneously.

The initial draft of the sustainability policy and guidelines was vetted with the Chancellors, Chief Financial Officers, Associate Vice Chancellors for Operations, UNC Tomorrow campus liaisons, the Faculty Senate, campus presidents of the Association of Student Governments and other campus personnel to obtain feedback and consensus on the proposed policy. Revisions were considered by the Committee and a final proposed policy will be presented to the Chancellors Administrative Council (CAC). Upon incorporating all comments and recommended modifications, the recommended policy will be presented to the UNC Board of Governors for its consideration, first as a policy discussion, and then for Board consideration and adoption. Implementation measures and on-going assessment will follow the Board's decision.

## *Sustainability Committee Members*

**Shari Harris**, Co-Chair, Associate Vice President for Finance – UNC GA  
**Cindy Pollock Shea**, Co-Chair, Director of Sustainability Office – UNC-CH  
**Norma Houston**, Advisor, Executive Director UNC Tomorrow – UNC GA  
**John Noor**: Presidential Intern – UNC GA  
**Hannah Hawley**: Presidential Intern – UNC GA  
**Zack Abegunrin**: Associate Vice Chancellor for Facilities – NCCU  
**Richard Andrews**: Chair, Department of Public Policy – UNC-CH  
**Daniel Arneman**, Subcommittee Chair, Greenhouse Gas Specialist – UNC-CH  
**Bill Bagnell**: Associate Vice Chancellor for Campus Operations- ECU  
**Lindsay Batchelor**: Waste Reduction and Recycling - NCSU  
**Steve Baxley**: Associate Vice Chancellor for Facilities – UNCA  
**Elinor Benami**: Co-Chair, Renewable Energy Special Projects Committee – UNC-CH  
**Lauren Bishop**: Energy Manager, Facilities Management - WCU  
**H. Jay Blausler**: Facility Engineering Specialist – Planning and Construction – FSU  
**Chris Boyd**: Facilities Management – UNCSA  
**Rudy Cardenas**, Subcommittee Chair, Associate Vice Chancellor for Facilities – FSU  
**Jack Colby**: Assistant Vice Chancellor for Facilities Operations – NCSU  
**Garry Covington**: Associate Vice Chancellor for Facilities – NCSSM  
**Tracy Dixon**: Director of Sustainability Office – NCSU  
**Greg Driver**: Director, State Construction Office  
**Rachel Eckert**: Division of Pollution Prevention – NC DENR  
**Carolyn Elfland**: Associate Vice Chancellor for Campus Services – UNC-CH  
**Michael Hughes**: Assistant Director, State Construction Office  
**David Jones**, Subcommittee Chair, Director of Sustainability Office – UNCC  
**Gary Jones**: Associate Professor, Business Communications – WCU  
**Claire Kane**, Subcommittee Chair, Transportation Demand Manager – UNC-CH  
**Yuri Koslen**: Transportation Expert – UNCA  
**Larry Lane**: Transportation Expert – UNCC  
**Elizabeth Linney**: University Program Specialist - ECSU  
**Anna Marshall-Baker**: Associate Professor of Interior Architecture – UNCG  
**W. Steve Martin**: Assistant Vice Chancellor for Facilities Management – UNCP  
**Ged Moody**: Chair of Renewable Energy Initiative – ASU  
**Jenny Paige**: Sustainability Coordinator – UNCG  
**Wayne Place**: Professor of Architecture – NCSU  
**Jorge Quintal**: Associate Vice Chancellor for Facilities – WSSU  
**Steve Sharpe**: Project Manager Architecture, Construction – UNCW  
**Harmohindar Singh**, Subcommittee Chair, Energy Research – NCA&T  
**Stephen Sylvester**: Facilities Management – ECSU  
**Reade Taylor**: Vice Chancellor for Business Affairs – UNCG  
**Jeff Tiller**: Subcommittee Chair, Interim Chair Department of Technology – ASU  
**BJ Tipton**: Program Manager, Office of Waste Reduction and Recycling – UNC-CH  
**Hawley Truax**: Policy Advisor – Governor’s Office  
**Joan Walker**: Director, Student Environmental Center – UNCA  
**William Winner**: Professor, Forestry and Environmental Resources – NCSU

### ***III. Executive Summary of Policy Goals***

*Master Planning:* Each constituent institution shall incorporate into its comprehensive master plan sustainability principles related to infrastructure, natural resources, site development and community impact.

*Design and Construction:* Each constituent institution shall institute a capital project planning process that delivers energy, water, and materials efficient buildings and grounds that minimize the impact on and/or enhance the site and provide good indoor environmental quality for occupants.

*Operations and Maintenance:* Each constituent institution shall operate and maintain its buildings and grounds so as to reduce energy and water use; provide excellent air quality and comfort; improve productivity of faculty, staff and students; and minimize materials use.

Each constituent institution shall actively pursue funding for the installation of high efficiency equipment and facilities as part of an ongoing Sustainability Action Plan following life cycle cost guidelines where applicable.

*Climate Change Mitigation and Renewable Energy:* Each constituent institution shall develop a plan to become carbon neutral as soon as possible and by 2050 at the latest, with an ultimate goal of climate neutrality.

*Transportation:* Each constituent institution shall develop and implement a comprehensive, multimodal transportation plan designed to reduce carbon emissions and dependency on single occupant vehicles.

*Recycling and Waste Management:* Each constituent institution shall develop policies and programs that work toward achieving zero waste.

*Environmentally Preferable Purchasing (EPP):* Each constituent institution shall improve the environmental performance of its supply chain with consideration given to toxicity, recycled content, energy and water efficiency, rapidly renewable resources, and local production.

Each constituent institution shall also improve the social performance of its supply chain with consideration given to working conditions and historically underutilized businesses.

*Systematic Integration of Sustainability Principles:* Each constituent institution shall systematically expand its capacity to advance sustainability throughout the institution by integrating the policy goals into the institution's processes, administration, teaching, research and engagement.

#### *IV. Policy Recommendations and Goals*

*The Policy Recommendations and Goals that follow are the first of three levels of the Sustainability Policy pertaining to facilities and operations. The second level is the Guidelines for policy implementation and the third level, currently under development, is the Implementation Guidance that will contain more specifics related to the execution of the policy. The corresponding and equally important incorporation of sustainability into campus teaching, research, outreach and engagement are addressed at a high level in section H. Systematic Integration of Sustainability Principles, but shall be more specifically addressed by the Academic Affairs Office within General Administration.*

##### **A. Master Planning**

The built environment significantly impacts the well-being of natural systems and future generations. It can enhance or impede achievement of an institution's mission, including imparting existing knowledge and discovering new knowledge. The University will take a leadership role in demonstrating master planning that incorporates sustainable community principles. Natural resources, including wildlife, hydrology, topography, and native plants and trees will be respected. Energy use will be minimized, use of renewable energy sources maximized, and the need for vehicular transportation reduced through mixed use design. Best Management Practices (BMPs) shall be employed in all aspects of storm water management including the implementation of Low Impact Design (LID) strategies. Potable water use will be minimized. Wastewater and rainwater will be reclaimed for reuse. Pedestrian and bicycle circulation will be integrated into the site development plans. Community connections will be emphasized through respect for surrounding neighborhoods, shared use and access to facilities, such as arts and recreation venues, and joint planning for transportation connectivity. A sense of place will be created through incorporation of open space, human scale buildings, incorporation of courtyards and focal landmarks, and an emphasis on the walking experience. By demonstrating the effectiveness of employing these principles, the University will improve the built environment statewide.

**Goal: Each constituent institution shall incorporate into its comprehensive master plan sustainability principles related to infrastructure, natural resources, site development and community impact.**

##### **B. Design and Construction**

Buildings and their occupants account for 40% of the energy and 72% of the electricity used in the United States. They account for 16% of total U.S. water consumption, 40% of all material flows and produce up to 40% of the waste in landfills, depending on the region.<sup>5</sup> In 2007, the North Carolina General Assembly mandated that new state buildings “shall be designed, constructed and certified to at least a thirty percent (30%) greater energy efficiency than the standard under ASHRAE 90.1-2004” as specified in the state

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<sup>5</sup> Rocky Mountain Institute

building code. Legislation also requires that for major renovations, a twenty percent (20%) greater energy efficiency standard...shall be used. In addition, for new construction, the water systems shall be designed and constructed to use a minimum of twenty percent (20%) less potable water than the indoor water use baseline calculated for the building after meeting the fixture performance requirements required by the 2006 North Carolina Plumbing Code. Outdoor potable water or harvested groundwater consumption shall be reduced by a minimum of fifty percent (50%) over that consumed by conventional means through water use efficient landscape materials and irrigation strategies, including water reuse and recycling.” The legislation further requires that state buildings shall be commissioned “in order to verify performance of building components and systems and help ensure that design requirements are met upon completion of construction.” In order to measure energy use and ensure that actual energy use is consistent with energy modeling completed during the design of the building, “building level owner’s meters for electricity, natural gas, fuel oil, and water shall be installed. The public agency shall compare metered data from the first 12 months of building operation with the energy design target(s) and report that performance to the State Construction Office.”<sup>6</sup>

**Goal: Each constituent institution shall institute a capital project planning process that delivers energy, water, and materials efficient buildings and grounds that minimize the impact on and/or enhance the site and provide good indoor environmental air quality for occupants.**

### **C. Operations and Maintenance**

The seventeen campuses in the UNC system total over 65 million square feet of space and collectively are the largest users of energy, water, and materials in state government. In order to conserve resources, reduce the risk of exposure to rising costs, and create a productive work, study and residential environment for students and employees, all UNC campuses will adopt best practices for managing buildings. Operating and maintaining buildings to use energy and water efficiently can reduce utility costs and environmental impacts while improving occupant productivity. In 2007, the North Carolina General Assembly mandated that each State institution of higher learning develop and implement a comprehensive program to manage energy and water 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 institution of higher learning shall update its management plan annually and include strategies for supporting energy consumption reduction.”<sup>7</sup> The legislation further requires that a program of energy conservation measures that includes lighting systems, water systems, a specifications review for heating ventilating and air conditioning (HVAC) systems slated for replacement and the introduction of premium efficiency motors be implemented by December 31, 2009. In addition, state buildings shall achieve “either the elimination of potable water for

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<sup>6</sup> Session Law 2007-546, Section 1.(c)

<sup>7</sup> Session law 2007-546, Section 3.1.(a)

irrigation or the reduction of water consumption in the building by twenty percent (20%) based on water consumption for the 2002-2003 fiscal year.” To monitor progress, state institutions are required to submit Strategic Energy and Water Plans to the State Energy Office annually.

**Goals: Each constituent institution shall operate and maintain its buildings and grounds so as to reduce energy and water use; provide excellent air quality and comfort; improve productivity of faculty, staff and students; and minimize materials use.**

**Each constituent institution shall actively pursue funding for the installation of high efficiency equipment and facilities as part of an ongoing Sustainability Action Plan following life cycle cost guidelines where applicable.**

#### **D. Climate Change Mitigation and Renewable Energy**

In recognition of the unique and daunting challenges that climate change poses to the people of North Carolina, and in fulfillment of its mission to “discover, create, transmit, and apply knowledge to address the needs of individuals and society,” the University of North Carolina will take a leadership role in understanding and managing its greenhouse gas emissions that contribute to global climate change. At present, the state of North Carolina imports the vast majority of the fuel used for heating, cooling, electricity generation and transportation, and the University is among the state’s largest energy consumers. In 2007 the North Carolina General Assembly mandated that all electric utilities and electric membership corporations in the state rely upon renewable energy and energy efficiency to provide at least ten percent (10%) of retail sales by 2018.<sup>8</sup> The energy industry is undergoing a transformation that will feature increased utilization of solar, wind and biofuel technologies. North Carolina has extensive renewable energy resources and the University has expertise in the implementation of renewable energy technologies. Thus, the University of North Carolina should take a leadership role in the implementation of renewable energy and the transformation of the state’s energy industry, thereby securing its energy future and creating an economic benefit for the entire state.

**Goal: Each constituent institution shall develop a plan to become carbon neutral as soon as possible and by 2050 at the latest, with an ultimate goal of climate neutrality.**

#### **E. Transportation**

Transporting students, employees and visitors to and from campus and community destinations currently requires large amounts of land, fuel and infrastructure all of which

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<sup>8</sup> Session Law 2007-397, Section 2 (b)

continue to rise in price and are likely to be limited in quantity. By providing more sustainable transportation networks and access to essential services, campuses can reduce congestion and pollution, improve safety and public health, and enhance the campus experience. UNC campuses shall explore the many tools available to them, including targeted incentives and disincentives, and develop metrics to track progress toward achieving sustainable transportation goals. The University is actively involved in efforts to increase the availability and use of alternative fuels in state vehicles and to develop a strategic plan for expansion of a sustainable biofuels industry in North Carolina.<sup>9</sup> Under federal law, seventy-five percent (75%) of all vehicles purchased by the state must be able to run on alternative fuels.<sup>10</sup> In 2005, the North Carolina General Assembly mandated that the University develop and implement plans to improve the use of alternative fuels, synthetic lubricants and efficient vehicles and achieve a twenty percent (20%) reduction or displacement of petroleum products by January 1, 2010.<sup>11</sup>

**Goal: Each constituent institution shall develop and implement a comprehensive multimodal transportation plan designed to reduce carbon emissions and dependency on single occupant vehicles.**

## **F. Recycling & Waste Management**

Diverting waste from the landfill and recycling as much as possible saves energy and water, reduces pollution and creates jobs. Many materials in North Carolina are banned from landfills, including aluminum cans, yard waste, white goods, whole tires, antifreeze and mercury-containing devices. Effective October 1, 2009, G.S.130A-309.10(f) requires that recyclable rigid plastic containers that have a neck smaller than the body of the container, wooden pallets and motor oil filters will also be banned from landfills in the state.<sup>12</sup> By law all state agencies shall ensure that employees have access to containers for recycling, at a minimum, aluminum cans, newspaper, high-grade office paper, recyclable glass and plastic bottles. All state employees are required to separate identified recyclable materials generated in the course of agency operations and place them in the appropriate recycling containers. Waste reduction reports must be submitted annually to the Division of Pollution Prevention and Environmental Assistance within the Department of Environment and Natural Resources. “It is the goal of this State to reduce the municipal solid waste stream, primarily through source reduction, recycling, and composting by forty percent (40%) on a per capita basis by 30 June 2001.”<sup>13</sup>

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<sup>9</sup> Session law 2006-206, Part III, Section 3.1

<sup>10</sup> *Alternative Fuel Vehicle Acquisition Mandate Schedule*, 10 CFR Part 490.201; 75% requirement was to have been complied with by 2001.

<sup>11</sup> Session law 2005-276, Section 19.5.(a)

<sup>12</sup> Department of Environment and Natural Resources, Division of Pollution Prevention and Environmental Assistance, <http://www.p2pays.org/ref/38/37984.pdf>

<sup>13</sup> N.C. Executive Order 156, *State Government Environmental Sustainability, Reduction of Solid Waste, and Procurement of Environmentally Preferable Products* and N.C. Gen. Stat. 130A-309.14

**Goal: Each constituent institution shall develop policies and programs that work toward achieving zero waste.**

### **G. Environmentally Preferable Purchasing**

The combined purchases of constituent institutions are large enough to positively influence market development for environmentally and socially responsible goods and services. In order to provide leadership, campuses shall seek out products, including food, supplies and equipment, and services from environmentally and socially responsible vendors that contribute to strengthening the North Carolina economy. As mandated by the North Carolina General Assembly, state-funded capital projects shall “establish a priority to use North-Carolina based resources, building materials, products, industries, manufacturers, and businesses to provide economic development to North Carolina.”<sup>14</sup>

**Goals: Each constituent institution shall improve the environmental performance of its supply chain with consideration given to toxicity, recycled content, energy and water efficiency, rapidly renewable resources, and local production.**

**Each constituent institution shall also improve the social performance of its supply chain with consideration given to working conditions and historically underutilized businesses.**

### **H. Systematic Integration of Sustainability Principles**

One of the greatest challenges of our time is to make decisions and investments that simultaneously advance economic vitality, ecological integrity, and social welfare. As a societal leader in advancing knowledge, the University has an obligation to model sustainable practices and to incorporate sustainability into the campus missions of teaching, research, and community engagement.

**Goal: Each constituent institution shall systematically expand its capacity to advance sustainability throughout the institution by integrating the policy goals into the institution’s processes, administration, teaching, research and engagement.**

### ***V. Implementation***

UNC-General Administration will develop, in collaboration with the campuses, an implementation plan for achieving the goals included in this policy. The implementation plan will include timelines, accountability measures and individuals responsible for implementation, and will take into account the capabilities, resources, and capacity of each campus to achieve the sustainability goals and implementation plan. The implementation plan will identify personnel, training, and funding resources needed by campuses, if necessary. Examples of functions that will require dedicated attention include:

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<sup>14</sup> Session Law 2007-546, Section 1.(a)

- Energy management
- Water and storm water management
- Waste management and recycling
- Transportation demand management
- Greenhouse gas mitigation
- Sustainability coordination

#### VI. Other

A more comprehensive approach to incorporating interdisciplinary sustainability into courses, co-curricular educational opportunities, research and outreach will be addressed through Academic Affairs. Campuses suggest the implementation of co-curricular educational opportunities to broaden student, faculty, staff and community exposure to sustainable issues. The promotion and provision of opportunities for faculty and student research and teaching related to sustainability and the engagement of the larger community in sustainability efforts should be encouraged.

UNC-General Administration shall establish, in collaboration with the campuses, a reporting process to track and monitor the execution of the Sustainability Policy and the supporting implementation plan. Mechanisms to share best practices and provide support to smaller institutions will be determined and employed. General Administration will develop funding mechanisms and pursue funding options to enable the institutions to implement this policy.