



UNC Athletics Sustainability Report

This report reviews the University of North Carolina's actions toward more sustainable, environmentally friendly athletic operations. The report is broken into six areas where the Athletic Department has concentrated their efforts – Energy, Water, Recycling, Transportation, Purchasing, and Service.

Table of Contents

| | |
|---------------------------------|-----------|
| LETTER FROM THE DIRECTOR | 3 |
| INTRODUCTION | 4 |
| ENERGY | 4 |
| WATER | 5 |
| RECYCLING | 8 |
| TRANSPORTATION | 10 |
| PURCHASING | 11 |
| SERVICE | 12 |
| CONCLUSION | 12 |

Letter from the Athletic Director

The Department of Athletics believes our true mission is to educate and inspire through athletics. To that end, we have developed four core values. Our values are:

- **Responsibility** – Do what is right.
- **Innovation** – Find a better way.
- **Service** – Put others first.
- **Excellence** – Work hard. Play smart. Win together.

Our commitment to environmental, social, and economic sustainability is a natural extension of these values and this mission. Whether through responsible waste management, community volunteerism, energy efficiency initiatives, alternative fuel vehicles, or reclaimed water infrastructure, we seek to incorporate sustainable practices into our operations and actions.

As any of our student-athletes can attest, Tar Heels strive for excellence on and off the field which takes time, passion, and teamwork. We have made significant strides to becoming a more sustainable organization, but we are not finished yet. Along with campus and community partners, we are determined to improve, innovate, and continue to be a leader in sustainable athletics.

With this inaugural UNC Athletics Sustainability Report, we hope to celebrate our successes, educate about sustainability initiatives, and inspire all Tar Heels through action and example. Go Heels!

Lawrence R. “Bubba” Cunningham
Director of Athletics



Sustainable Athletics at UNC

Introduction

The purpose of this report is to review the University of North Carolina's actions toward more sustainable, environmentally friendly athletic operations. The report is broken into six areas where the Athletic Department has concentrated its efforts:

1. Energy
2. Water
3. Recycling
4. Transportation
5. Purchasing
6. Service

Since fielding the school's first football team in 1888, UNC's Athletic Department has grown immensely. In that time, the Tar Heels have won 39 NCAA team championships and 238 ACC post-season championships.

Today, more than 700 student-athletes compete in 12 venues across campus, and more than 300 employees are a part of the success of these 28 varsity teams.

The following venues are assessed in the report:

- **Loudermilk Center:** Houses a premium seating section for UNC football fans called the Blue Zone, the student athlete academic support center, a strength and conditioning center for Carolina's Olympic sports programs, facilities for men's lacrosse, and a visitor's locker room that can be divided to host high school football championships
- **Eddie Smith Field House:** Houses varsity practices and Indoor Track and Field competitions; Team Camps
- **Kenan Stadium:** Football Stadium
- **Fetzer Field:** Home field for men's and women's soccer, lacrosse, and track
- **Carmichael Arena:** Home for volleyball, gymnastics, wrestling and women's basketball teams
- **Boshamer Stadium:** Baseball stadium
- **Hooker Field:** Intramural fields and practice fields for men's and women's soccer and lacrosse
- **Dean E. Smith Center:** Basketball arena

Energy

The University of North Carolina at Chapel Hill has demonstrated its commitment to energy reduction by pledging to become carbon neutral by 2050. The Athletic Department and related facilities have played a large role in the realization of this goal through changes in lighting, procedures, and technical equipment.

As a part of the American College and University Presidents Climate Commitment (ACUPCC), Chancellor Moeser signed a pledge in January 2007 stating that UNC would work to become carbon neutral as soon as possible. Two years later, UNC submitted its Climate Action Plan to the ACUPCC detailing the school's strategy of becoming carbon neutral by 2050. This plan outlined seven areas of focus for emission reduction – energy supply, engineering changes, green development/buildings, transportation, purchasing and recycling, behavioral changes, and offsets. The Athletic Department at UNC engages in measures that address each of these areas in order to reduce energy usage and harmful emissions.

In 2010, Chancellor Holden Thorp assembled the Energy Task Force that set forth to analyze the University's carbon reduction plans and evaluate its ability to be carbon neutral by 2050. A target for this task force and for energy conservation at UNC is the 32-megawatt cogeneration plant on Cameron Avenue. In addition to being nationally acclaimed for its energy efficiency, the plant is seeking to find alternative fuels that will reduce its reliance on coal.

Many athletic facilities have played a role in reducing energy usage by installing LED (light-emitting diode) light bulbs in various buildings. These light bulbs use at least 75% less energy than incandescent bulbs and last approximately 50 times longer. They also don't generate as much heat, preventing wasted energy. Because LEDs are not made of glass, they are less vulnerable to vibration and breakage, which is essential for sport facilities. In 2009, Kenan Stadium installed these new lights on the field and in the stands to lessen the number of fixtures and reduce energy usage.

The majority of the energy used on campus (roughly 60%) is used in buildings for heating, ventilating, and cooling (HVAC). Often, half of the energy used in a building comes from HVAC, so an emphasis on HVAC efficiency is critical to reduce energy use. All athletic facilities have taken energy reduction steps with regard to their HVAC systems by keeping doors closed to prevent energy from escaping. These facilities are also implementing proper set points – the temperature at which the system aims to keep the building's internal air set. A careful study of outside temperatures and a building's responses to temperature shifts aids in the creation of set points that can reduce energy use. Such a study is currently being conducted in the Eddie Smith Field House.

UNC Facilities Services has taken mechanical steps toward energy efficiency by equipping two air-cooling units at the Eddie Smith Field House with variable speed drivers (VSDs). Electric motors often operate at a constant speed but VSDs allow mechanical systems to change their power usage depending on the energy demand. The use of these devices has been shown to save over 60% of the energy used to run HVAC systems. In addition to installing VSDs, Facilities has begun changing damaged HVAC motors with motors that are more energy efficient. When picking new motors to replace damaged ones, Facilities ensures that the new devices demonstrate an increase in energy efficiency.

UNC is also saving energy through its Energy Management Control System. This dashboard system allows users to monitor current and historical steam, chilled water, and electric usage in 157 buildings on campus. Participating athletic buildings include Carmichael Arena, Boshamer Stadium, Kenan Football Center, the Loudermilk Center for Excellence, Henry Stadium, Eddie Smith Field House, and the Kenan Stadium Guest Box. This system allows for full collection of live data and provides alarms to signify dysfunctional or damaged utility systems, which encourage a fast maintenance response.

Water

Between construction, upkeep, and irrigation of athletic venues, as well as the use of rest rooms within the venues, athletic events require a lot of water. Through campus policies and renovations of venues, UNC Athletics has successfully decreased the demand on the water supply throughout the department.

The Higher Education Bond, which passed in 2000, provided \$10 million for storm water infrastructure at UNC and for the Storm Water Management Plan. One year later, the Town of Chapel Hill's Development Plan laid out regulations for storm water runoff, requiring construction companies to remove a large percentage of dirt and other pollutants from their work sites to prevent them from entering the runoff. Although largely directed at construction sites, this plan has driven outdoor athletic sites, like Boshamer Stadium, to recycle water used for irrigation, preventing fertilizer from being washed downstream.

In 2002, North Carolina suffered the worst drought in recorded history, and the need for water-saving practices and policies became increasingly evident. In the same year, the cistern under Hooker Fields was completed, but it could not be immediately sodded due to the severe drought. Following the drought, the University discussed plans with Orange Water and Sewer Authority (OWASA) to develop a reclaimed water system that would decrease the University's demand on potable water. The system, completed six years later, provides non-potable water to cooling towers, and has expanded to irrigate some athletic fields on campus, including Fetzer Field, Kenan Stadium, and Anderson Stadium. Fetzer Field, Navy Field, and Boshamer Stadium use recaptured water, and Finley Golf Course provides recaptured water for Finley Fields.

After several years of construction, the reclaimed water system became fully functional in April 2009. The system treats reclaimed water just as stringently as drinking water, except for a final purifying step to make it potable. This water can be safely used to irrigate land and flush toilets, but it is significantly cheaper to treat and can therefore be purchased by the University at a much lower rate. It has also resulted in a substantial decrease in the demand on the town's drinking water, making it more accessible for essential needs throughout the Chapel Hill community. The University paid the majority of the cost of the system, which is now worth over \$14 million.

Since the summer of 2010, the University has used reclaimed water in all five chiller plants in Chapel Hill, which account for one quarter of the campus demand. In 2011-12 alone, the University used 250 million gallons of reclaimed water, which decreased the demand on potable water by 30%. In addition, as the system continues to expand, the use of reclaimed water on athletic fields is expected to save 10 million gallons of potable water per year. The current system can meet a peak day demand of 3 million gallons per day (MGD). Currently, the average daily demand is approximately 0.91 MGD.



Another source of non-potable water on campus is the cisterns, located under athletic fields and parking structures, which capture rainwater and runoff from irrigation. These cisterns decrease the amount of water used from OWASA for irrigating athletic fields and flushing toilets in certain buildings on campus. While reclaimed water is available to irrigate all outdoor athletic fields, some venues have also been set up to use harvested rainwater for field irrigation, which allows reclaimed water to be used only as a backup in dry conditions. In addition to decreasing the demand on

potable water, the capture and use of rainwater prevents runoff of fertilizer into streams and storm water drains, which could have negatively impacted the local ecosystem. Infiltration beds also mitigate storm water runoff and erosion by capturing rainwater and releasing it slowly back into the ground.

Cisterns can be found under Hooker Fields, Rams Head plaza, the Global Education Center, Hanes Hall, the Bell Tower parking lot, and the Boshamer parking lot. Additionally, infiltration beds can be found underneath Hooker, Navy, and Ehringhaus Fields. Installation of infiltration beds and cisterns on campus has contributed to more than a 40% decrease in potable water use in the past 10 years. Details of the capacity and service of these structures can be seen below.

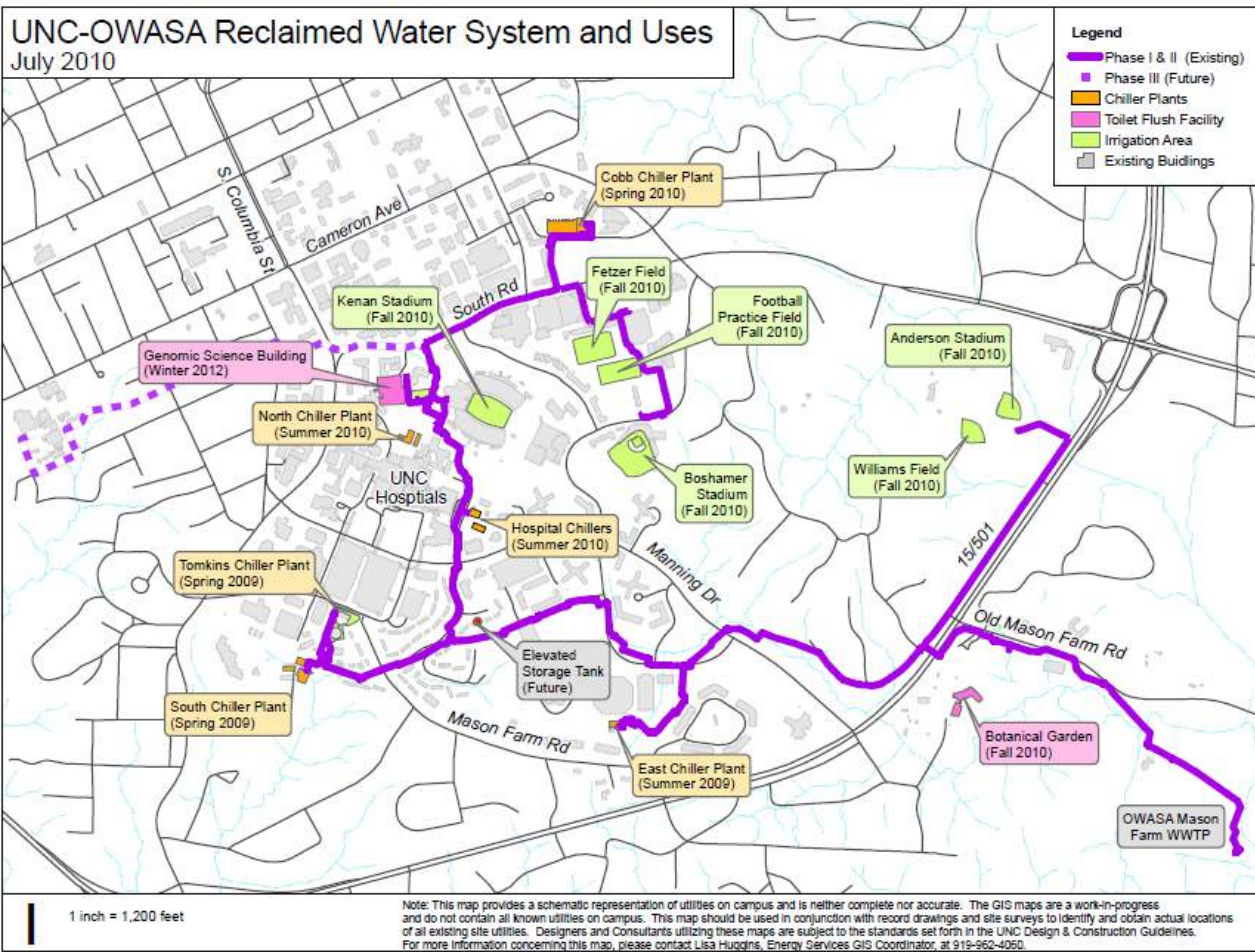
Cisterns:

| Location | Size (gallons) | Year Completed | What it services |
|------------------------|----------------|----------------|--|
| Hooker Fields | 70,000 | 2002 | Irrigates Hooker fields and Fetzer field |
| Rams Head | 56,000 | 2005 | Irrigates plaza lawn |
| Global Ed Center | 54,000 | 2007 | Fills toilets in building |
| Hanes Hall | 60,000 | 2007 | Irrigates campus landscape |
| Bell Tower parking lot | 360,000 | 2008 | Irrigates Kenan Stadium |
| Boshamer parking lot | 80,000 | 2009 | Irrigates Boshamer Stadium |
| Total | 680,000 | | |

Infiltration beds:

| Location | Size (gallons) | Year Completed |
|-------------------|----------------|----------------|
| Hooker Fields | 500,000 | 2002 |
| Ehringhaus Fields | 300,000 | 2006 |
| Total | 800,000 | |

The Athletic Department has also taken other steps to reduce the amount of water used at athletic events, including the replacement of toilets with low-flow versions. These toilets have dual-flush valves that reduce water consumption by up to 0.5 gallons (30%) per flush. In addition, the showers in the football locker room have been retrofitted with low-flow showerheads, which can decrease water consumption by up to 50%. Both of these updates come at a relatively low cost while significantly decreasing the water use in athletic venues.



Recycling

Any event that draws crowds of thousands is bound to produce a lot of waste. UNC values its athletic success and its strong fan base. UNC Athletics has implemented the following programs in order to provide recycling services to vendors and event attendees.

In November 2003, the Office of Waste Reduction and Recycling (OWRR), the Athletic Department, the UNC Sustainability Coalition, the Student Environmental Action Coalition (SEAC), and Student Congress collaborated to approve a resolution that would implement recycling practices into athletic events. Once this resolution passed, recycling at athletic events became a focus at UNC Chapel Hill.

That fall, recycling began in the Chancellor's Box, which was made possible by the OWRR, the Athletic Department, and housekeeping event crews. At the same time, a cardboard recycling initiative began in conjunction with Classic Food Services, the stadium's food service company. SEAC assisted with setting up the containers and educating the vendors and OWRR, who worked after the game with cleanup crews to make these new procedures routine.



In the spring of 2004, two pilot programs took place in order to initiate plastic bottle and cup recycling in Kenan Stadium. The first occurred at the 2004 spring football game with an attendance of approximately 3,000 fans and limited concessions. The second occurred at the 2004 spring graduation with approximately 35,000 attendants and similarly limited concessions. From these events, OWRR learned how to arrange the bins to prevent contamination and make them more accessible to game attendees.

Currently, recycling and trash bins are located in Kenan Stadium along the concourse areas and at gate entrances, and ROTC members sort recyclables during the post-game clean up of seating areas. Vendors are provided with carts for their cardboard, and the Blue Zone catering kitchen and the lemonade stands help out by separating food waste for composting.

What is now known as Rameses Recycles, a tailgater recycling program, was initiated with the help of SEAC. The program further prompted an APPLS course in the fall of 2008 and an Institute for the Environment capstone course in the spring of 2010. Surveys were taken before the 2008 home game against Georgia Tech – fans overwhelmingly responded with demands for recycling availability before, during, and after the game. Volunteers set out to distribute color-coded bags. Clear bags were used for recyclable materials, such as glass and plastic, while the colored bags were used to gather trash. The color-coded bag system decreases the amount of litter at tailgating sites, which makes post game cleanup easier. It also minimizes storm water pollution and keeps campus orderly during home game weekends. To facilitate convenience for participants, tailgating fans simply had to leave the bags in their parking spaces after sorting trash from recycling.



In the spring of 2010, the program took the name Rameses Recycles. A follow-up survey demonstrated that the demand for football recycling had not been met. Using the color-coded bag distribution system, volunteers visit the following sites: Bowles Lot, Stadium Drive, Craige Deck, ACC Lot, Ram's Deck, S11 Lot, Dogwood Deck, and Cardinal Deck. Other sites may also be visited, depending on the number of volunteers available on a given game day. In the fall of 2010, Sport Clubs partnered with Rameses Recycles through its community incentive program. Athletes hand out the color-coded bags in the tailgate lots and decks while earning funds for their respective teams.

In 2011, the Environmental Affairs Committee (EAC), OWRR, and Athletics coordinated to provide recycling bins on the concourse during home basketball games at the Dean E. Smith Center. Previously, recyclables had been separated during the stand cleanup and bins were available at the entrances. Following the addition of concourse bins at basketball games, OWRR developed recycling guidelines for all UNC athletic venues; they are available for review and use on OWRR's website.



In the summer of 2013, OWRR and Athletics secured a sponsorship from Coke for the following fall football season. Coke generously provided new recycling bins in the shape of Coke bottles for Kenan Stadium. They also provided new green recycling bags with the Rameses Recycles logo on them to be distributed to tailgaters. From this sponsorship, OWRR was able to provide \$100 Harris Teeter gift cards to a Rameses Recycling Tailgating Fan of the Week at each home game. An OWRR intern chose the winning fan based on his/her enthusiasm for recycling. The sponsorship was successful and was continued for the 2014 football season.

Since 2010, UNC has competed annually in the Game Day Challenge, a friendly competition between colleges and universities to see who can reduce and recycle the most waste from a single home football game. UNC received a Carolina Recycling Association Award in 2011 for its achievement in the Game Day Challenge. In 2012, fan education and engagement was a priority. EAC and OWRR promoted the event to fans via pre-game public service announcements, Union TV, Twitter, Facebook, a painted cube in the Pit, environmental and sports listservs, classroom announcements, and the Daily Tar Heel and other local newspapers. EAC also organized volunteers for the first “compost sweep,” which picked the compostable items out of the stands before the official ROTC cleanup.

In 2013, UNC participated in the first RecycleMania Basketball Game Day Challenge by performing a waste audit of a basketball game against Florida State University.

In 2014, UNC Athletics secured a partnership with Unifi, a North Carolina-based company that takes recycled plastic bottles and creates Repreve recycled fiber, which can then be manufactured into eco-friendly fabrics.



Transportation

Transportation plays a large role in daily operations on UNC's campus. Grounds workers, bus drivers, and other employees involved in campus motor fleet are turning towards more environmentally friendly methods of transportation.

In 2009, UNC made efforts to eliminate all traditional, unblended gasoline by transitioning to E85 in its buses and motorcar fleet. E85, which is composed of 85% ethanol and 15% gasoline, greatly reduces the amount of greenhouse gases (CO₂) emitted into the environment. With hundreds of employees and staff at UNC who use the motor fleet, this was a great way to tackle excess emissions.

UNC Athletics is consistently becoming more and more sustainable through its changes in transportation. Although many of the athletic teams travel via aircraft, fuel-efficient vehicles are being purchased for transportation to local events, when possible, as well as to and from airports. Utility vehicles, such as mowers, golf carts, and gators, which are operated in all athletic venues, are switching to electricity as budget allows, which drives down costs and prevents harmful emissions.

In March 2013, in an effort to reduce parking problems and traffic congestion during UNC athletic events, the Town of Chapel Hill added 15 new diesel electric hybrid buses to its fleet. These additions were funded through a \$9 million

grant from federal, state, and local agencies, which includes UNC and the towns of Chapel Hill and Carrboro. The new buses replaced some older buses and increased the fuel efficiency by approximately 100% from 2.5 MPG to 5 MPG. To lessen the amount of traffic on game days, as well as reducing the amount of emissions given off on campus, these buses are also used to transport fans from the UNC's nine Park-and-Ride lots to their designated athletic venue.

Purchasing

The UNC Athletic Department strives to incorporate green techniques into the culture of all sports on campus. In order for sustainable actions to be carried out effectively, purchases must be made to reinforce these goals throughout various programs and departments. To a large extent, UNC Athletics has made many contributions to improve sustainability and green efforts on campus.



In both the 2012 and 2013 seasons, the UNC Men's Basketball team purchased Nike "Hyper Elite" uniforms, which offered lightweight performance through recyclable materials. The Hyper Elite jerseys are made from at least 96% recycled polyester while the shorts are made of 100% recycled polyester. Each uniform is constructed from an average of 22 recycled plastic bottles. Using recycled polyester helps reduce dependency on petroleum, allows for less waste production, and reduces toxic emissions from incinerators. It is expected that these purchases by the UNC Men's Basketball team will spread to other teams, allowing athletes to play a role in sustainability while representing the University at games and competitions.



In many of UNC's athletic venues, such as Kenan and Boshamer Stadiums, many of the supplies that are used in offices and stadium facilities are made of recyclable materials. Paper, napkins, and toilet tissue are made of both recycled-content products and post-consumer content, such as cardboard, plastics, and newspaper. The purchase of these recycled materials in UNC facilities ultimately reduces the demand for natural resources, diverts paper from landfills, and creates new jobs in the recycling industry.

Inside Boshamer Stadium, home of UNC Baseball, the grounds workers utilize natural and organic fertilizers into their regular upkeep of the field. The purchase of natural and organic fertilizers is beneficial to the environment because they encourage the growth of beneficial organisms by limiting harmful chemicals that impair root development. Also, the organic material keeps the soil more friable. This improves the health of the grass and field because it is better able to hold in moisture, oxygen, and nutrients. Additionally, hybrid lawnmowers used at Boshamer Stadium reduce greenhouse gases (CO₂) associated with conventional lawnmowers.

Service

Sustainable communities require a balance of the three E's – environment, economy, and social equity. Varsity athletic teams have done a commendable job of developing social equity projects that benefit both the community and the environment.

Varsity athletic teams at UNC take on various service projects throughout the year and many of these have direct or indirect ways of making the community more sustainable. These projects often involve reusing household items and providing time and resources to low-income families in the community. One of the most popular projects that varsity teams participate in is an annual Habitat for Humanity build. Many teams also collect can tops for the Ronald McDonald House, toiletries from road trips for homeless shelters, and gently worn professional clothing for the local women's shelter. Additionally, the men's tennis team collects worn out shoes for repurposing, while the women's tennis team collects shoeboxes and used tennis balls for repurposing at elementary schools and assisted living facilities. In 2010, the field hockey team began their Sun Safety Project, which serves to raise awareness of skin cancer risk factors. The team also collects sunscreen, which is donated to the Inter-Faith Council Community House.

Conclusion

The University of North Carolina has taken tremendous strides toward sustainability in athletics through reducing energy and water use, increasing recycling options, reducing CO₂ emissions, purchasing sustainable products, and serving its community in sustainable ways. UNC maintains the opportunity to improve upon the aforementioned successes and partnerships to continue building a more sustainable future. As venues are renovated, recycling programs expand, and new initiatives become established, UNC Athletics will add another dimension to the Carolina Game Day and everyday experience of its fans and community.

This report was prepared with information gathered by the following people in the UNC Office of Waste Reduction and Recycling:

- Tushar Bulsara, Green Athletics Student Intern
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