



CASE STUDY: YALE UNIVERSITY, HOME OF THE BULLDOGS

CAMPUS FACTS

LOCATION:
New Haven, Connecticut

FOUNDED:
1701

TYPE:
Private

TOTAL STUDENT POPULATION:
11,906 (5,379 undergraduates)

STAFF:
9,323

PRIMARY ATHLETICS CONFERENCE:
Ivy League

PRIMARY ATHLETICS DIVISION:
NCAA Division 1

NUMBER OF VARSITY TEAMS:
35 (18 women's, 16 men's, 1 co-ed)

NUMBER OF SPORTS FACILITIES:
39 (29 athletic, 10 recreational)

SUSTAINABILITY OFFICE FOUNDED:
2005

AASHE STARS RATING:
Silver, 2011

SPORTS GREENING WORK STARTED:
2008

THE BULLDOGS' GREENING STORY: MOTIVATIONS, CHALLENGES, AND LESSONS

Yale University is home to the nation's first athletics and recreation greening program driven by student-athletes. Since establishing Bulldog Sustainability in 2008, students have motivated Yale's athletics department and many sports teams across campus to improve their environmental performance. The Bulldog Sustainability student team, with support from the Yale athletics department and the Office of Sustainability, helped set greener policies for athletic offices, launched a Green Athletics Team Certification program for all sports teams, and assembled an Athletics Sustainability Action Plan that spans all sports facilities. During the 2013-14 academic year, Bulldog Sustainability will calculate baseline energy metrics for all athletics facilities, reduce athletic transportation impacts, and upgrade the facility-wide recycling program. The Bulldogs' student-led greening approach consists of many small initiatives that together add up to a comprehensive and successful environmental program.

"YALE ATHLETICS IS PLEASED TO PARTNER WITH THE UNIVERSITY'S OVERALL SUSTAINABILITY MISSION," SAYS ATHLETICS DIRECTOR TOM BECKETT. "VIRTUALLY THE ENTIRE CAMPUS COMMUNITY, IN SOME WAY, DIRECTLY OR INDIRECTLY, IS CONNECTED TO OUR TEAMS, PROGRAMS, AND FACILITIES; THEREFORE WE SERVE AN IMPORTANT ROLE IN PROMOTING THE UNIVERSITY MISSION TO REDUCE YALE'S GREENHOUSE GAS EMISSIONS. WE ARE COMMITTED TO THE MISSION OF CULTIVATING A CULTURE OF SUSTAINABILITY BY INTEGRATING ENVIRONMENTAL AND SOCIAL VALUES INTO OUR DAILY OPERATIONS."

WHY IS YALE GREENING SPORTS?

Yale's primary motivation to green sports, according to the Athletics Sustainability Action Plan, is the opportunity to engage thousands of students and spectators in sustainable practices at Yale's sports facilities. "The Yale University athletics department has a unique role on campus in that it reaches a diverse population including students, alumni, faculty, staff, and external fans," says Athletics Sustainability Action Plan coauthor Erin Carter (class of 2012). "Whether it is through the use of our gym, participation on a team, or via spectators at intercollegiate events, the athletics department provides a highly visible outlet to lead the university in its goal of becoming a more sustainable campus."



Barbara Chesler, senior associate athletics director and lead staff liaison for Bulldog Sustainability, emphasizes that the reach of Yale athletics allows the sports greening program to enhance the school's athletic facilities while engaging the community. "Building off the Bulldog Sustainability efforts implemented since its creation in 2008, the Yale athletics department has proven that it can improve its own facilities, while also helping to change the behavior of community members," says Chesler. "The mission of Bulldog Sustainability is to cultivate a culture of sustainability in Yale athletics. We do that by integrating environmental values into internal operations and sporting events."

According to athletics director Tom Beckett, Bulldog Sustainability capitalizes on Yale Athletics' high visibility to influence the culture of the university. "Yale Athletics is pleased to partner with the university's overall sustainability mission. Virtually the entire campus community, in some way, directly or indirectly, is connected to our teams, programs, and facilities; therefore we serve an important role in promoting the university mission to reduce Yale's greenhouse gas emissions," says Beckett. "I am proud of our teams and athletes who have engaged themselves in the many Bulldog Sustainability initiatives, from helping to improve the efficiency of our facilities to the Green Team Certification to their own personal changes in behavior. We are committed to the mission of cultivating a culture of sustainability by integrating environmental and social values into our daily operations."

WHERE DID YALE START?

Bulldog Sustainability started in 2008 when the athletics department and Office of Sustainability hired four students to devise a plan for integrating sustainability into Yale sports operations. An anonymous donor with a strong interest in environmental programs provided the primary funding for the research team and program implementation. This donation helped establish a partnership between the athletics department and the Office of Sustainability just a few years after the Office of Sustainability was established. From the beginning, students provided the passion, research, ideas, and planning to grow Yale's sports greening effort.

SUSTAINABLE ATHLETICS STRATEGIC PLAN

In the fall of 2008, the team of four students created a sustainability plan offering short- and long-term suggestions for environmentally preferable sports operations. This Sustainable Athletics Strategic Plan included green strategies related to energy, water, transportation, waste diversion, paper use, and event concessions.

In January 2009, the NCAA invited Bulldog Sustainability team leader Sara Smiley Smith, a Ph.D. candidate at the Yale School of Forestry and Environmental Studies (class of 2013), to present the plan at the association's annual convention. Yale's ultimate goal, according to Smiley, was "to create a model of sustainable collegiate athletics that is measurable, transferable, and adaptable." This student-driven evaluation of sustainability opportunities in the athletics department and its authors' mission to establish Yale as a national sports greening leader served as a catalyst for broader campus buy-in and involvement.

STANDOUT SPORTS GREENING ACCOMPLISHMENTS

GREENER ATHLETICS AND RECREATION OPERATIONS GOALS:

- All athletics department office paper must contain recycled content. Yale Athletics currently uses office paper with 30 percent postconsumer recycled content.
- The custodial staff must use environmentally preferable cleaning products. Currently, 75 percent of department cleaning products are Green Seal certified.
- Waterless urinals must be installed in all new athletic facility construction projects.
- The athletics department is minimizing paper use by eliminating desk-side printers and copiers in athletics offices, holding paperless staff meetings, and transitioning to electronic operations.
- Energy-saving power settings must be used as defaults on all athletics office computers.

GREENER SPORTS FACILITIES:

- Recycling infrastructure was installed at 100 percent of athletics and recreation facilities (including athletics offices), and upgrades based on student proposals are planned.
- Bike racks have been installed at close to 100 percent of athletics and recreation facilities (including athletics offices).
- Water fountains were installed in almost 100 percent of athletics and recreation facilities (including athletics offices).
- Energy efficiency upgrades have been made in almost 100 percent of athletics and recreation facilities, including enhancements to occupancy sensors, lighting retrofits, and variable-frequency drives for pool pumps. 2013 facility upgrades are projected to save more than \$100,000 in energy costs annually.
- About 80 percent of all leaf waste from athletics fields is mulched for reuse in turf maintenance.
- The Yale Boat House uses organic fertilizers, which are equivalent in cost to conventional pesticide alternatives.

GREENER SPORTS TEAMS AND OUTREACH:

- Bulldog Sustainability's student-athletes created the nation's first collegiate Green Athletics Team Certification program to motivate varsity and club teams to make greener decisions, while educating coaches and athletes about environmentally preferable operations.
- Bulldog Sustainability's student-athletes established a "green team" (sustainability committee) with representatives from more than 12 varsity teams and additional club teams.
- Students created the Bulldog Sustainability brand and outreach program, placing environmental education signs in almost 100 percent of Yale's athletics and recreation facilities.

EIGHT STEPS FOR SPORTS GREENING BRANDING AND OUTREACH

LESSONS FROM BRANDING BULLDOG SUSTAINABILITY

1. **Adapt materials for each audience:** students, staff, fans, alumni, sponsors, and campus partners. Consider their knowledge to date, unique interests, and opportunities for involvement.
2. **Keep outreach positive,** encouraging, active, and forward-looking. This optimistic approach is effective in building an engaged following that is excited about getting involved. Avoid negative messages that might deter fans from long-term commitment. (Say “Do this!” instead of “Don’t do this.”)
3. **Portray the program as a long-term commitment.** Avoid terms like “campaign” or other words that indicate temporary initiatives.
4. **Clearly communicate the program’s mission,** tying all outreach back to the program’s purpose. Specify each outreach objective, such as changing the campus community’s perception of greening, encouraging more sustainable behavior, and building a greener culture and greener campus policies.
5. **Establish a consistent name and logo** for all outreach about program initiatives. This branding builds awareness of program successes and encourages the community to get involved by becoming part of the Bulldog Sustainability team. Consistent messaging and imagery should help remind people of the program goal every time they see it associated with efforts. Capitalize on the brand power of the athletics logo by incorporating it into the sports greening program logo.
6. **Integrate messages** into all existing sports facilities, operations, and outreach. Place signs at decision points around sports facilities (e.g. recycling bins, paper towel dispensers, light switches, and sinks) to remind users of the greener choices they can make. Incorporate green messaging into game announcements, programs, online articles, and social media to fully integrate greening into the athletics brand.
7. **Repeat your message** at every recycling bin, water fountain, and locker room light switch to remind students and fans to take greener action at each opportunity, until simple green actions become habit.
8. **Keep outreach humorous** as well as succinct and informative. Humor can help attract student attention and reinforce the fun atmosphere at sports events.



Today, Bulldog Sustainability is made up of 12 paid and volunteer student-athletes from a mix of varsity and club sports who serve as researchers and analysts in collaboration with staff from the athletics department and Office of Sustainability. “The Office of Sustainability, facilities, media, and public relations are our most important campus partners and play a big role in advancing our ideas,” says Mary Beth Barham, Bulldog Sustainability research assistant, varsity field hockey player, and environmental studies major (class of 2013). “Despite our being an organization sponsored by the athletics department, our success depends primarily on these campus-wide relationships and the willingness of other departments to partner with us to implement projects.”

Bulldog Sustainability students have also collaborated with campus custodial services, the Office of Transportation and Procurement, athletics concession vendors, and grounds maintenance. “We’ve also worked with human resources to help educate staff about the importance of environmental issues and actions related to recycling, our carbon footprint, energy efficiency, and saving water,” says Barham.

BULLDOG SUSTAINABILITY BRAND

During the fall of 2009, an expanded student team assembled to create a clear branding and strategic communications plan. “One of the main goals of this plan was to use sports greening to foster a culture of sustainability at Yale,” says Barham.

The team identified eight important steps they would need to take to reach their goal (see “Eight Steps for Sports Greening Branding and Outreach” sidebar). They also created signs with eco-tips posted at key “decision points” around all athletics facilities. For instance, a sign directing people to the stairs was placed next to elevators; another, encouraging the refilling of water bottles, was posted at water fountains; others were hung in locker rooms to encourage shorter showers.

“We worked to provide environmental information and tips to the many constituencies affiliated with Yale athletics: athletes, coaches, administrators, alumni, campus partners, community members, and fans,” explains Sam Teicher, former club rugby player and Bulldog Sustainability research assistant (class of 2011). “We focused on raising awareness in new ways by using humor and taking advantage of our community’s love of sports.”

STUDENT-ATHLETE-DRIVEN GREENING PROJECTS

The majority of Bulldog Sustainability initiatives begin as student project proposals, which are reviewed and approved by athletics department staff. The students decide what to research according to what they believe will have the most influence on campus culture, will be interesting to students and staff, will reduce the athletics department’s environmental impact, and will be possible to fund. “Bulldog Sustainability’s student-led initiatives are essential to our success; as students develop their own projects, they are passionate and committed to seeing it through to fruition,” says team leader Diana Madson, a M.E.M. candidate at the Yale School of Forestry and Environmental Studies (class of 2014).

Students have investigated a wide range of topics, from improving the water efficiency of Yale’s field hockey turf and transitioning the athletics department’s shuttle buses to biodiesel to upgrading the waste management plan for all athletics facilities by improving recycling bins and adding composting bins. Students have written business proposals for simple athletics office changes such as investing in reusable mugs instead of disposable cups (one student calculated that an average ceramic cup is 60 times less expensive on a per-use basis than paper cups over its lifetime). More complicated initiatives such as upgrading recycling receptacles and mapping their ideal placement were also studied.



These proposals generally address the economic, environmental, and social benefits of these initiatives and identify local procurement options. The proposals also include strategies for how the student team can support implementation. To date, Yale's athletics department has implemented several infrastructure upgrades and operational improvements based on student proposals including greener transportation initiatives, recycling infrastructure upgrades, and athletics office greening efforts. The athletics department has also committed to implementing more proposals during the 2013–2014 academic year, such as transitioning to biodiesel fuel and procuring more local food for team travel.

Students manage the research and planning of all Bulldog Sustainability initiatives and they partner with a variety of campus departments for implementation. This system relieves the pressure on athletics department staff time and includes a system for passing on the work when some students graduate. "We keep projects active by transitioning leadership to another student when members graduate," says Barham. "In

order to do this and keep track of project progress from year to year, each member is responsible for creating a project summary for each initiative they are in charge of."

"Yale Athletics appreciates the great work that all members of our Bulldog Sustainability teams have executed over the past five years," Chesler says. "It is a privilege to work with students who are so committed and demonstrate such a strong passion for improving our environment in athletics and beyond. Their creativity and resourcefulness are an example of how small initiatives can have big impact. It is another reason we are all so proud to be Bulldogs!"

Cardio Machine Charging Stations at Recreation Center

One example of a student sports greening proposal that resulted in a successful and replicable initiative was led by engineering major Henrique Rocha (class of 2009). Rocha's proposal was to install iPod and cell phone chargers that could be powered by cardio machines throughout Yale's Israel Fitness Center, located within the university's main Payne Whitney Gym, used for athletics and recreation. Rocha, in partnership with his senior thesis adviser, associate professor of electrical engineering Hür Köser, devised a mechanism that harnesses the mechanical energy generated by cardio machines during a workout to charge small electronic devices. The devices benefit the environment by replacing some polluting fossil fuel-based energy with self-generated electricity. Yale hopes to use this prototype one day for a larger-scale project to harvest the energy generated by gym users to provide power to the gym building.

Green Athletics Team Certification

In 2011, the Bulldog Sustainability student team created a Green Athletics Team Certification program for use by all sports teams, including varsity, club, and intramural. In an introduction to the certification checklist, the students wrote, "The aim of Green Athletics Team Certification is to encourage, educate, recognize, and celebrate the voluntary, sustainable efforts that athletes and coaches have taken to reduce the environmental, social, and financial costs of their games, practices, travel, and events." The certification recognizes green efforts in transportation, waste, water, energy, food, and community engagement.

GREEN ATHLETICS TEAM CERTIFICATION: SAMPLE ACTION ITEMS FOR ATHLETES

WASTE

- Use reusable athletic training materials (e.g., fabric ankle braces instead of single-use tape).
- Use reusable water bottles at every practice and game.
- Distribute team materials electronically.
- Use reusable dry-erase boards, blackboards, electronic projectors, or personal laptops instead of printed flip charts.
- Reuse, donate, or recycle used sports gear.

ENERGY

- Unplug electronics (e.g., fans, radios, hair dryers, TVs) or switch off power strips when exiting locker rooms.
- Turn off lights when exiting locker rooms if automatic sensors are not installed.

WATER

- Take shorter showers (also saves energy).
- Conserve water by running hoses only when needed and using buckets when assisting with equipment washing.

FOOD

- Go trayless during meals to help minimize food waste (as well as save energy and water).
- Choose more sustainable dining options during team travel (Bulldog Sustainability provides recommendations for varsity teams traveling to competitions throughout the Ivy League).

EDUCATION AND COMMUNITY

- Host a Green Certified Event (as defined by Bulldog Sustainability) with support from Bulldog Sustainability (for example, with "zero waste" infrastructure).
- Display Bulldog Sustainability signage and posters in locker rooms and playing areas.
- Volunteer to be a Bulldog Sustainability Green Team member to support green efforts at Yale sports events.



Photo courtesy of Yale University.

SELECTION OF YALE ATHLETICS 2013-14 SUSTAINABILITY GOALS

ENERGY

- Conduct appliance and light switch audits at all athletics facilities.
- Upgrade lighting with motion sensors and CFL bulbs in all athletics spaces.
- Conduct an audit of all HVAC systems in athletics facilities to ensure efficient operation by 2020.

WASTE

- Upgrade recycling infrastructure with improved signage and consistency.
- Install composting receptacles at athletics venues by fall 2014.

OPERATIONS

- Reduce paper consumption in the athletics department by 25 percent by spring 2014.
- Develop a sustainable dining guide for all Ivy League away competition by fall 2014.

WATER

- Upgrade water fountains to add bottle-refill stations across sports facilities.

TRANSPORTATION

- Contract with a company with biodiesel buses for athletics shuttle services by spring 2014.
- Encourage coaches to use hybrid or fuel-efficient rental vehicles when traveling for recruiting purposes.
- Increase alternative work transportation options for staff by spring of 2014.
- Develop a rideshare program that includes all athletics staff.
- Promote biking to work by increasing bike rack space at Payne Whitney Gym and the Yale Bowl Complex.
- Develop a telecommuting program for athletics staff.
- Offset all air travel by contributing to the Yale Community Carbon Fund. (The Yale Community Carbon Fund is a joint project of the Office of Sustainability and the Center for Business and Environment at Yale to support local carbon mitigation projects that go beyond Yale's immediate campus.)
- Replace gas-powered grounds maintenance crew trucks with a fleet of electric or biofueled carts.

The students created a spreadsheet of green action items that team representatives can download, complete, and submit for recognition. If teams consistently complete more than 18 green actions, they receive Bulldog Sustainability T-shirts and campus-wide recognition from the athletics department and Office of Sustainability. The certification spreadsheet also helps attract new teams to greening by providing a basic guide about how athletes can take sustainable actions (such as those listed in the "Green Athletics Team Certification" sidebar) and obtain certification.

The certification program has been a success. Twelve varsity teams, representing 269 athletes, have achieved certification. These include baseball, women's crew, women's lacrosse, men's lightweight crew, and women's golf, among others. Men's swimming and diving, women's volleyball, and softball are a few of the teams currently working toward certification.

ATHLETICS OFFICE GREENING

In 2011, the Bulldog Sustainability team worked with athletics department staff to help them achieve Green Workplace Certification from the Yale Office of Sustainability. The program covers 10 action areas, including transportation and travel, solid waste management, energy, procurement, kitchens and shared areas, and community engagement.

The athletics offices achieved the top certification level thanks to green initiatives that included placing recycling bins alongside all trash bins, providing extensive bike rack space, holding paperless staff meetings, reducing the number of desk-side printers and copiers, changing all computer default settings to energy-saving modes, and providing reusable cups and plates for meals. These efforts are coupled with greener procurement policies that require the use of paper with recycled content and environmentally preferable cleaning products (see "Standout Sports Greening Accomplishments" sidebar).

VENDOR CONTRACTS

To build on the athletics department's greener procurement policies, during 2013, Bulldog Sustainability integrated environmentally preferable criteria into Yale Athletics' concessions contracts. "Bulldog Sustainability used the Natural Resources Defense Council's Greening Advisor to generate a list of desired changes into our contracts," explains Barham. "It provided helpful guidance on environmentally intelligent food and beverage specifications as well as sample contract language and sample letters to vendors." The NRDC Greening Advisor provides advice on implementing environmental initiatives in a broad range of topic areas, including procurement of food and beverages, serviceware, paper products, apparel and souvenirs, and reusable bags and cups.

Thanks to Bulldog Sustainability research and planning, the athletics department is negotiating for all new concessions contracts to give preference to food obtained from local sources, to eliminate the use of plastic water bottles and polystyrene foam, to replace individual condiment packets with large squirt bottles, to eliminate all food waste (by donating unsold food and by composting scraps), and to give preference to the most energy-efficient food service practices.

CHALLENGES: OVERCOME AND ONGOING

BUY-IN

"Some of our greatest challenges in continuing to progress include funding, staff time, and buy-in from coaches, students, and administrators," says Barham. "Commitment, leadership, and partnerships with other Ivy League institutions are key to helping us overcome these challenges." In 2012, Bulldog Sustainability began working closely with the other Ivy League athletics departments through the league's Ivy Green Initiative to share better practices and learn from others' experiences.



The Ivy League's support for sports greening is reinforcing Yale Athletics' commitment to sustainability and encouraging greater buy-in across the department. As the league hosts greener Ivy League Championships, athletes and coaches are also becoming more exposed to and engaged in conference-wide sports greening efforts.

METRICS

Since 2009, the Bulldog Sustainability team has worked to adopt a systematic approach to measurement. "The database developed for Bulldog Sustainability provides insight to many aspects of the department, including utility costs, transportation statistics, event attendance, chemical use, and greenhouse gas emissions," says Barham. "By providing quantifiable statistics, the metrics highlight areas best suited for efficiency improvements and conservation measures. They allow the project team to track and quantify the effects of sustainability over time."

"Collecting and analyzing metrics are an important part of helping to track the impact of green efficiency initiatives and upgrades within the athletics department," says Chesler. "Bulldog Sustainability recognizes that tracking progress is crucial and hopes to hire a team member who has experience analyzing large amounts of data for the fall of 2013 onward."

ATHLETICS SUSTAINABILITY ACTION PLAN

The Bulldog Sustainability team manages an ongoing action plan that outlines short- and medium-term goals (see "Selection of Yale Athletics 2013-14 Sustainability Goals" sidebar). The current action plan period, as of this report's writing, is fall 2011 to spring 2014; it covers goals related to energy, waste, food, green building, and transportation, among other areas. For example, Bulldog Sustainability plans to reduce paper consumption by 25 percent; audit and upgrade all athletic HVAC systems, appliances, and lighting; transition to biodiesel for athletics shuttle buses; and develop sustainable dining recommendations for all team travel to Ivy games.

These goals build on many existing initiatives related to green building and operations across Yale athletics. For example, 80 percent of all athletics field waste is mulched for reuse in turf maintenance. The athletics department uses organic fertilizers at the Yale Boat House, which are equivalent in cost to conventional pesticide alternatives.

Yale's athletics department also incorporates sustainability into the renovation and construction of facilities, from upgrading waterless urinals at Ingalls Rink to installing motion sensors for lighting and energy-efficient hand dryers across many sports facilities. In early 2012, Yale's golf course was renovated, and it now saves 40,000 gallons of water daily because of upgrades to the irrigation nozzles and new in-ground wireless soil moisture sensors. These efforts will have a payback period of less than four years.

According to Yale's director of energy management, Julie Paquette, a variety of other resource efficiency upgrades underway in 2013 are projected to save more than \$100,000 annually. For example, lighting upgrades at the Cullman-Heyman Tennis Center will save \$58,000 in electricity costs each year. A new variable-frequency-drive pool pump will save 110 kilowatt hours and \$17,000 in electricity costs annually. In Yale's Payne Whitney Gym, Paquette's energy management team is also replacing and adding new occupancy sensors to save \$8,600 (55 kWh) annually and upgrading showerheads to save 800,000 gallons of water and \$6,500 in water costs yearly.

Bulldog Sustainability aims to work with Paquette's team, campus facilities, and the Office of Sustainability, among other departments, to expand on these initiatives and leverage this good work for environmental outreach throughout Yale's athletics community.



Photos courtesy of Yale University.



LESSONS FROM THE FIELD

ENGAGE STUDENTS TO HELP ACCELERATE SPORTS GREENING PROGRAM GROWTH

Yale Athletics staff members minimized the amount of time they would need to spend on sustainability by giving students ownership over researching and planning the initiatives. This approach provides students with professional development opportunities and builds on coursework related to sustainability (for example, some students have used Bulldog Sustainability project proposals for their senior theses).

USE BRANDING TO ENGAGE FANS AND ATTRACT PROGRAM PARTNERS

Branding builds awareness of the sports greening program's successes and encourages the community to support Bulldog Sustainability's mission. Branding can also help attract program partners.

BE PATIENT; SMALL STEPS ADD UP

"We have learned that patience is key when tackling large sustainability projects," says Barham. "Implementing change in small steps and having perseverance are critical to long-term success."

USE POSITIVE MESSAGING

"Be enthusiastic, organized, and persistent when seeking program sponsorship," says Barham. "In our experience, local vendors and sponsors are very supportive of our green initiative and are happy to help for a good cause."

USE SOCIAL MEDIA TO ENHANCE OUTREACH

The Bulldog Sustainability team uses Facebook and Twitter to reach students and fans about events. "We have also found that social media is an excellent way to get the attention of students and fans at sporting events," says Barham. The athletics department also integrated online messaging into its website with a page devoted to Bulldog Sustainability, featuring student testimonials, bios, and resources.



Photos courtesy of Yale University.