

## Benchmarking Campus Sustainability

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### Introduction

Colleges and Universities have long seen relative rankings against their peers as an important aspect of attracting the best and brightest among prospective students. Today's college applicants are increasingly interested in sustainability issues. There has been a simultaneous surge in the number of campus sustainability rating and ranking systems, providing applicants with essential information in their quest to attend the "greenest" school. To stay on top, colleges and universities are putting more effort into sustainability performance and watching their corresponding rankings more closely.

For institutions embarking on the sustainability journey, these rankings and the criteria behind them also provide a means of selecting peers for comparison and teasing out benchmarking information. Benchmarking is a core component of any comprehensive campus sustainability planning effort and significantly aids in setting realistic goals for specific programs. A comprehensive evaluation of peer sustainability performance and benchmarks provides a solid platform from which administrators, facilities staff, faculty, students and other campus sustainability proponents can develop applicable goals and strategies. Understanding the achievements of comparable institutions is essential to developing a sustainability plan that is realistic, and ultimately successful.

Benchmarking information is relatively straightforward and easily accessible in *corporate* sustainability circles thanks to organizations that promulgate reporting standards, such as the **Global Reporting Initiative**<sup>1</sup>. Unfortunately that is

not the case for *campus* sustainability benchmarks; to date there are no consistent methods for reporting performance. As ranking and rating systems develop, the benchmarks will also evolve; but in the meantime there are no widely communicated, consistent metrics for campus sustainability leaders and planners can use to assess their achievements or formulate strategic goals.

In completing a benchmarking study for a major American university in 2009, Yudelson Associates studied this issue in depth and arrived at a method of developing comparable benchmarks that can serve colleges and universities of varying size, ambition, stage of development, history and budgetary constraints.

### Peer Selection

Most institutions have already developed a process of determining their peers in terms of academic performance, but a different set of factors must be considered when evaluating peers for the purpose of assessing sustainability performance. Careful examination of relevant institutional background information lays the ground work for developing a method of peer selection uniquely suited to individual campuses. When comparing different institutions, important factors to consider include full-time enrollment, percentage of on-campus residential students, geographic location, number of buildings and total square footage, purchasing budgets, and research grants. Some larger institutions will even consider athletic competitors (conference rivals) in selecting peers.

The factors provide much needed and practical information for comparative purposes. For example, large public schools face different financing challenges than elite, but much smaller, private schools with large endowments. Commuter campuses may have an easier time achieving high recycling rates and energy reduction goals than residential campuses. As another example, in evaluating purchasing practices and dining services, one should compare actual budgets to determine percentages of sustainable materials and food purchases. Green building certifications are best evaluated against background information like the number of buildings (perhaps grouped by age) and total square footage.

<sup>1</sup> This website offers both reporting standards and sample reports.

## Evaluation Systems

Eight major campus sustainability rating and ranking systems currently dominate the landscape. Some take a very comprehensive look at campus sustainability while others focus more on specific issues such as waste management, sustainable dining services and greenhouse gas reduction. Table 1 lists the organization responsible for establishing the evaluation criteria and the actual rating or ranking system:

**Table 1. College Sustainability Rating Systems**

Parent Organization	Evaluation System
Association for the Advancement of Sustainability in Higher Education (AASHE)	Sustainability Tracking and Rating System (STARS)
Sustainable Endowments Institute	College Sustainability Report Card or Green Report Card
National Wildlife Federation (NWF) Campus Ecology	Campus Environment 2008
Princeton Review	Green Honor Roll
Sierra Club	Cool Schools
Climate Culture	America’s Greenest Campus
Hobart Center for Foodservice Sustainability (HCFS)	Sustainability Grant
College and University Recycling Council	RecycleMania

AASHE’s STARS is the most comprehensive evaluation system (see table below) and the only system that allows colleges and universities to rate their own sustainability performance. Green Report Card, Campus Environment, Green Honor Roll, and Cool Schools establish rankings by comparing relative performance among institutions. America’s Greenest Campus, the HCFS Sustainability Grant, and RecycleMania are annual competitions that evaluate sustainability performance within limited boundaries. There are 13 basic categories of sustainability that are common across the eight evaluation systems. Table 2 shows the general categories used in these evaluation systems:

**Table 2. Sustainability Categories used in the Evaluation Systems**

Evaluation System	Buildings	Climate	Dining Services	Energy	Grounds	Purchasing	Transportation	Waste	Water	Research & Curriculum	Planning	Administration	Outreach & Engagement
STARS	■	■	■	■	■	■	■	■	■	■	■	■	■
Green Report Card	■	■	■	■			■	■				■	■
Campus Environment				■	■		■	■	■	■	■	■	
Green Honor Roll	■	■	■	■			■	■		■			
Cool Schools			■	■		■	■	■		■		■	
America’s Greenest Campus		■		■									
HCFS Sustainability Grant			■					■					
RecycleMania			■					■					

## Gathering Benchmark Information

Each of these evaluation methods uses different criteria for assessing relative performance. These criteria can be analyzed for useful information, but may not always produce applicable benchmarks. The best benchmarks are percentage reductions against a baseline because these can be compared most easily across various campuses. For example, the University of Colorado established a baseline of 412.5 million gallons of total potable water use in 2001 – 2002. By the 2008 – 2009 school year Colorado had managed to reduce its total potable water use down to 273.2 million gallons, a 66 percent reduction over just seven years<sup>2</sup>. Performance-based benchmarks like these reflect well established rating systems like the **U.S. Green Building Council's Leadership in Energy & Environmental Design® (LEED)**, which also have performance based objectives (as opposed to prescriptive objectives, like using a certain number of water-free urinals or low-flow fixtures).

Establishing baselines is often tricky as it depends on existing monitoring infrastructure and data tracking capabilities. Metering is often done on a campus-wide basis and not building by building, let alone sub-metering for different water systems in a building like fixtures, process water and irrigation. On many campuses, there is a campus-wide steam system or chilled water system, with no metering of individual buildings. The same is often true for electric power supply, which might have a single substation serving an entire campus or major portion thereof. To resolve these issues of the granularity of performance data, there is a growing movement towards improving metering and energy and water use communication, as evidenced by **Arizona State University's Campus Metabolism**, an interactive Web tool for examining real-time energy and water use on campus; data can be displayed by individual building, building type, or the entire campus. Initiated as an ASU student project to influence behavioral change, it has grown into a campus-wide system that attracted an 11-member collaborative design team including the Global Institute of Sustainability, ASU Facilities Management, the student chapter of Engineers Without Borders, and APS Energy Services.

2 [http://www.colorado.edu/facilitiesmanagement/about/conservation/documents/AnnualUtilitiesComparison08\\_09.pdf](http://www.colorado.edu/facilitiesmanagement/about/conservation/documents/AnnualUtilitiesComparison08_09.pdf) accessed on February 5, 2010.

We found that most schools, especially those that haven't invested in extensive metering infrastructure or utility tracking software, just share information on certain activities rather than goals and overall progress. For example, more than 200 institutions have developed campus sustainability websites to share their achievements. AASHE provides a **list of campus sustainability websites**. A brief review of just a few websites will make it clear that the information being shared is highly inconsistent across campuses. Every school has its own unique approach to reporting sustainability achievements.

The eight evaluation systems use more consistent reporting methods, but they often rely on surveys which may not contain complete answers. The Green Report Card posts most survey results online, unless a particular school has requested that their responses be kept private. RecycleMania allows you to download the competition results in a spreadsheet from a **results page**.

Campus sustainability case studies are available from **NWF Campus Ecology** and the **HCFS Sustainability Grant** websites. Another great source for benchmarking information are campus sustainability reports. Some institutions have chosen to report all of their activities and progress in an annual report, like the **University of Michigan** and the **University of Minnesota**.

## Example: Benchmarking Water Use

As an illustration of how benchmarking information can be summarized, let's look at the example of a Big Ten school that wants to assess sustainability progress among its athletic peers. In this case, they decided to focus on water sustainability and selected three peers at varying levels of progress. Table 3 on the following page shows relevant background information and benchmark information.

In this example, the Big Ten school that researched benchmarks and background information as a means of evaluating sustainability performance has not yet tracked the effectiveness of current water conservation measures, and therefore does not have a water reduction percentage. Peer #2 has either not been able to track this information or does not make it available on their website or survey responses. Varying pieces of information are available about fixture efficiency, irrigation, and rainwater or gray water harvesting. They are not consistent, but still give the school doing the comparison some ideas about strategies and best practices.

Table 3. Benchmarking Water Sustainability

		Big Ten School	Big Ten Peer #1	Big Ten Peer #2	Big Ten Peer #3
Background	Total Annual Potable Water Consumption (million gallons)	~ 630	525.3	~ 500	317.2
	Full Time Enrollment (FTE)	44,776	51,614	41,040	29,950
	Annual Gallons per FTE	14,070	10,177	12,183	10,590
Benchmarks	Water Reduction	Unknown	15% compared to a 2003 baseline	Unknown	50% compared to a 1999 baseline
	Efficient Fixtures	All new construction must incorporate low flow faucets	Retrofit goal of 5% per building per year	Replaced 100% of residence hall low flow shower heads	Dual flush toilets, low flow faucets and shower heads
	Irrigation	Native plants in a few areas	Converting to drip irrigation systems	Athletic fields are only irrigated in the early mornings or evenings	Drip irrigation systems are supplied by rainwater cisterns
	Rainwater or Gray Water harvesting	None	Two rain barrels and a rain garden with gray water supply on a demonstration building	None	300,000 gallons of cistern capacity

## Conclusion

Every college and university communicates sustainability achievements in a unique manner. Many schools have dedicated sustainability websites, yet there are no consistent standards for self-reported information, except for those required by various ranking and rating systems. For assisting a campus sustainability planning process, Yudelson Associates developed a rigorous method for selecting an applicable group of sustainability peers and distilled vast amounts of sustainability information available on the web into useful benchmarks. These benchmarks can help colleges and universities develop aggressive sustainability goals and realistic implementation plans. Developing ambitious goals based on comparable peers and consistent benchmarks are essential steps in making our college and university campuses living laboratories of sustainability.

## About Yudelson Associates

Based in Tucson, Arizona, Yudelson Associates provides leading edge consulting, research and training programs in green buildings, green development and sustainability. Recognized as one of the country’s leading experts on green buildings, firm principal Jerry Yudelson has written 12 books on the subject since 2006. Jaimie Galayda holds a PhD in Ecological Economics from Rensselaer Polytechnic Institute and is research director at Yudelson Associates. For more information on the company and its services, go to [www.greenbuildconsult.com](http://www.greenbuildconsult.com).