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Best Practices for Colleges and Universities

As humans we live relatively short lives. We do not often think about the future that will exist when we are gone. We do not always understand or grasp the events of the past, or the effects our actions will have on the future. Yet, this is exactly what sustainability is about. Sustainability is often defined as meeting our current needs without compromising the ability of future generations to meet their own needs. It has become evident that climate change is real and causing severe long term damage to the planet. Actions need to be taken in order to reduce and eventually eliminate greenhouse gas emissions. Colleges and universities have become leaders in the effort to meet the triple bottom line of people, prosperity and planet. Today these efforts can best be reached when schools, businesses and communities collaborate together for research, develop and implementation.

To design a successful sustainability program on a college campus, a comprehensive approach must be taken that factors in all aspects of campus life, and must be integrated into the overall institutional long term strategy. The sustainability action program needs input not only from faculty, but also students, staff and external development partners. Each group must have a “buy in” mentality to the overall strategy to ensure success at all levels. Colleges and universities are not expected to create these types of plans without guidance and knowledge from experts in the field of sustainability. Many programs have been instituted to give schools a framework to measure their progress and success year after year. One such program is the American College & University President's Climate Change Commitment (ACUPCC). The

ACUPCC is an effort to concentrate on global climate change with colleges and universities committing to eliminate greenhouse gas emissions from campus operations, "while promoting the research and educational efforts and to promote the research and educational efforts of higher education to equip society to re-stabilize the earth's climate. Its mission is to accelerate progress towards climate neutrality and sustainability by empowering the higher education sector to educate students, create solutions, and provide leadership-by-example for the rest of society" (presidentsclimatecommitment.org). The ACUPCC provides schools with a framework to help them implement a climate action plan to reduce emissions and support sustainable measures across campus. To date, 419 schools have submitted climate action plans with 673 active signatures (presidentsclimatecommitment.org).

Another resource for schools is the non-profit agency the Association for the Advancement of Sustainability in Higher Education (AASHE). Created in 2005, the goal of AASHE is "to help coordinate and strengthen campus sustainability efforts at regional and national levels, and to serve as the first North American professional association for those interested in advancing campus sustainability" (aashe.org). AASHE provides substantial resources for schools including case studies, research, and a large database. AASHE hosts an annual conference in which students, professors, staff and administrators can showcase their research and campus efforts in sustainability. In addition, AASHE has a separate platform for measuring how sustainable a school campus is. The program entitled STARS, The Sustainability Tracking, Assessment & Rating System "is a transparent, self-reporting framework for colleges and universities to measure their sustainability performance" (aashe.org). The goal of STARS is to engage schools from small community colleges to large research universities in measuring their current sustainability efforts against the best standards known. It allows a school to measure

what they are doing and see what needs to be done to improve. It is an incredible tool and resource for schools. Similar to the LEED certification, STARS is based on a point system in order to achieve a STARS Bronze, Silver, Gold or Platinum rating. The credits awarded in the STARS program are organized into four categories: Academics, Engagement, Operations, and Planning & Administration. The points are awarded for positive efforts. Due to the large amount of data required, participating in STARS demonstrates an institution's commitment to real sustainability efforts on campus (aashe.org). To date, 529 schools have submitted information to the STARS program with 235 currently rated. Only one school has reached the platinum status, Colorado State University in Fort Collins, Colorado. Colorado State University has long been involved in sustainability and is well known for their sustainable campus, and their sustainability curriculum (aashe.org).

Another resource for schools, faculty and students is the Journal of Sustainability Education (JSE). The publication was created in 2010 and “serves as a forum for academics and practitioners to share, critique, and promote research, practices, and initiatives that foster the integration of economic, ecological, and social-cultural dimensions of sustainability within formal and non-formal educational contexts” (journalofsustainabilityeducation.org). The journal is a place for educators to have their research published. In addition, the journal features stories, poems and artwork dealing with nature and sustainability issues. It is a good source of knowledge and a place to publish research specifically about sustainability topics (journalofsustainabilityeducation.org).

The Princeton Review's annual “Green Ratings” issue provides another sustainability measurement tool for colleges and universities. Green Ratings was created in 2007 in conjunction with Eco-America, a non-profit environmental organization. In 2012, the Princeton

Review collaborated with AASHE, Sierra magazine and the Sustainable Endowments Institute (SEI) to create a more streamlined questionnaire to help institutions improve their sustainability tracking in the hopes that more schools will participate in sustainability efforts. (princetonreview.com/college-rankings/green-guide).

With these abundant resources and sustainability leaders at many schools, what are the best practices that leading colleges and universities are doing to eliminate greenhouse gas emissions and promote real sustainability efforts at their institutions? The following examples will highlight some of the best practices in the areas of energy efficiency, green buildings, food, recycling and waste management.

Energy Efficiency

In 2009, Ball State University, located in Muncie, Indiana passed a bold initiative to replace four coal fired boilers with geothermal energy. The new geothermal field and energy system will provide heating and cooling to more than forty buildings when completed. The project is divided into two phases at a total cost of approximately 70 million dollars. Once implemented, the university will save two million dollars a year on heating and cooling costs. In addition, the shutting down of the universities four coal boilers will cut their carbon foot print in half, one of Ball State's goals for achieving ACUPCC Climate Neutrality by 2050 (ISCN Secretariat). "This decision reaffirms Ball State's leadership and commitment to meeting the challenges of the 21st century in an environmentally and fiscally responsible fashion. Once implemented, the reduction of energy costs will be a significant benefit for future budgets," said President Jo Ann M. Gora. The project also offers an opportunity for collaboration between students, faculty and facilities staff to research system performance once implemented (bsu.edu).

Green Buildings

The most popular way to establish sustainability on campus is through green buildings. The most well-known standard for green certification is Leadership in Energy and Environmental Design (LEED). This certification system assesses a building's components, design and performance to receive a sustainability rating. LEED is currently the most widely recognized certification system in the United States. While many colleges and universities have LEED certified buildings, The David H. Koch Institute for Integrative Cancer Research at Massachusetts Institute of Technology (MIT) is unique. It was the first LEED Gold certified research laboratory, as rated by the U.S. Green Building Council, on a campus. The building is a collaboration and shared home for Life Scientists and Biologists battling cancer disease. The goal for the sustainability and engineering design team was to bring next generation research and the highest standards for energy conservation together in a single building. (ISCN Secretariat). The 360,000 GSF building consists of seven floors with six dedicated to laboratories. The building's high-energy performance saves MIT hundreds of thousands of dollars compared to similar sized research facilities. It features variable air volume (VAV) system and right sizing of heating, venting and air conditioning (HVAC) equipment, heat recovery methods incorporated into the HVAC systems, chilled beam HVAC technology in offices, low flow fume hoods to reduce ventilation requirements, a storm water filtration system, low emitting materials including adhesives, sealants, paints and carpets and low velocity duct work to reduce fan energy. It also demonstrates that health, safety and productivity can be achieved when using a collaborative approach to design and construction (web.mit.edu).

Food

Middlebury College founded in 1800, is located in the scenic Champlain Valley in Middlebury Vermont. The small liberal arts college is home to the first undergraduate Environmental Studies (ES) program in the country. Launched in 1965, Middlebury College is celebrating 50 years of growth in the environmental field program (<http://www.middlebury.edu>).

In 2002, Middlebury College opened the Middlebury College Organic Garden. Now called the Middlebury College Organic Farm, the project provides students, staff, faculty, and community members the opportunity to participate in and learn about many agricultural endeavors. The first goal is to provide instruction and hands on learning for students, but the farm also facilitates events and speakers, farm visits by local schools, and other community involvement opportunities. Staff oversee the farm in collaboration with the Middlebury College Organic Farm (MCOF) student organization, in addition to numerous student interns and volunteers from the college and community. The farm provides over \$8000 worth of produce for the college dining halls each year. In addition to utilizing the produce from the farm, Middlebury College is committed to supporting local food efforts. Last year 32% of the college's annual food budget was spent locally at over 50 vendors (<http://www.middlebury.edu>).

In addition to growing their own food and buying locally, Middlebury College is a leader in composting food waste on campus. For the last 20 years, Middlebury College has had an extensive compost system and today composts over 300 tons of food waste. They use horse manure from a local horse farm and their own landscape debris to mix with the food waste. When the compost is ready it is used on campus on the athletic fields, in the landscaping and at the organic farm (<http://www.middlebury.edu>).

Recycling and Waste Management

Arizona State University (ASU) is a large multiple campus university located in one of the driest areas in the country. The university is a leader in the sustainability movement offering an entire school with multiple sustainability degrees. ASU has also committed to achieving zero waste in 2015. This is a bold initiative considering in August of 2013, 560 tons of trash was hauled to the landfill from campus operations. 269 tons of that were recyclable material. The university made a commitment at the point to accelerate their recycling efforts. The campus now has an elaborate recycling system to divert objects from landfills, yet is user friendly in order for students, staff and faculty to easily participate in the program. In addition to the standard recycling of paper, plastic, glass and aluminum that you will find on most campus's, ASU provides every day recycling for a diversity of items such as e-waste materials, make-up containers, bicycle tires and ink cartridges. They also have an extensive composting system to use food waste and the large amounts of food "to-go" containers used at the various campus locations (<https://cfo.asu.edu>).

This zero waste commitment extends not only for regular campus daily life, but also at all ASU special events and athletic events. As a division I school, ASU participates in a large number of sports and has large venues for fans to observe games. Recycling at these events is very important to ASU and they have invested in containers and signage to help fans not familiar with this type of large scale recycling participate and keep items out of the landfill. While many smaller colleges and universities have made similar commitments, none have the sheer amounts of students, staff and faculty that ASU has. The enrollment for 2014 was near 80,000 total

students. Nor do most have the large athletic event attendance that ASU has. This zero waste pledge demonstrates ASU's commitment to sustainability (<https://cfo.asu.edu>).

The schools referenced in this paper are leaders in the sustainability movement. While some are small colleges, others are large universities with multiple campus locations. What they have in common is their dedication to teaching and implementing sustainable practices. While each is highlighted for one particular area, all are striving to improve their overall sustainability practices across campus. However, these schools are not special. What they are doing can be done at any school in the United States. These efforts must be duplicated by more schools. Collaboration between campus and community must continue to grow as well to foster communication, innovation and learning. Sustainability is not a fad. It is the only way that we can begin to curb the damage that has been done to the planet.

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