

HBCU
SUSTAINABILITY ACTION PLAN
ROADMAP

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INTRODUCTION

The HBCU Sustainability Action Plan Roadmap was developed by a team from the Community Innovators Lab (CoLab) at the Massachusetts Institute of Technology in collaboration with staff from a Historically Black College/University (HBCU). The development of the roadmap was made possible by support from the Institute for Capacity Building at the United Negro College Fund (UNCF) through the Kresge Foundation *Building Green at Minority Serving Institutions Initiative*.

HBCUs are public and private, two- and four-year institutions that were constituted before 1964 to serve a specific educational and cultural purpose in the United States. They have historically played a fundamental role in the development of black leaders, training a new class of black professionals and intellectuals out of the Reconstruction era. While today, only 20% of black undergraduates attend HBCUs, these institutions have generated about half of all black professionals and public school teachers (see the [White House Initiative on Historically Black Colleges and Universities](#).)

Yet despite their importance, HBCUs face steep challenges in moving their campuses toward sustainable practices. They have aging plants that, while historic, are far from energy efficient. School budgets are extremely tight and are continually at risk. With insufficient financial aid and low salaries for faculty and staff, funding sustainability initiatives and investing in physical improvements are an increasingly daunting task.

These challenges, however, also present opportunities. A focus on the sustainability of HBCUs in a comprehensive sense creates an opening to link environmental outcomes with the institution's bottom line. By prioritizing sustainability activities that provide opportunities for cost reduction and revenue generation, beyond traditional environmental gains, HBCUs can work to ensure their continued existence in the long-term. Their role in producing local and national leaders and acting as anchors in surrounding communities is also fundamental, as actions on campus can inspire broad and long-lasting effects.

In this context, the HBCU that participated in the generation of this roadmap document has decided to make it publicly available for use by other institutions and individuals with an interest in pursuing sustainability in its fullest sense. In order to protect the confidentiality of the College, all references to its identity have been removed.

NATIONAL PERSPECTIVE ON CAMPUS SUSTAINABILITY ACTION PLANS

In many parts of the country, as academic institutions face fallout from the economic downturn, as well as increasing costs for energy and other precious resources, institutional leaders are beginning to consider ways to reduce resource consumption and waste, “green” their operations and make them more efficient and cost-effective. The array of options for addressing these issues is overwhelming; just finding an entry point can be daunting. In fact, though widely used, the term *sustainability* has no single definition. Important factors to consider for sustainability include; 1) concern for natural systems, 2) maintenance and improvement of community well being, and 3) attention to social and cultural resources (See Toman, “The Difficulty in Defining Sustainability” (1992)). An additional consideration can be opportunities for income-generation through conservation and resource stewardship.

A growing trend is for institutions to develop a *Sustainability Action Plan (SAP)*. **A SAP is a flexible and dynamic tool that guides an institution in taking major steps toward reducing consumption and costs, improving energy and other resource efficiency, and enhancing well being on campus and beyond.**

There are no magic formulas, quick fixes or one-size-fits-all solutions for a SAP. The key is to develop a planning process, action steps and a communication approach that help the campus move closer to sustainability goals *as defined by the institution itself*.

A successful SAP will be tailored to the specific circumstances facing the particular institution, considering factors such as geographic location, building infrastructure, financial and human resources, and institutional priorities. A successful SAP will result from broad-based buy-in from many stakeholders (e.g. institutional leadership, students, faculty, administration and facilities staff). Finally, a successful SAP requires a **commitment** by the institution’s leadership to advance and support the plan; an **organizational structure** that provides staff capacity to develop and carry out the plan; and an **evaluation system** that can establish and track indicators of success.

What follows is a Roadmap that seeks to assist the College with defining its sustainability goals and identifying short-term action steps. Once the goals are

defined, a detailed SAP will identify strategies, resources, timelines for completion, and metrics for monitoring performance.

Around the nation, campus sustainability efforts vary broadly from low-cost behavior-change campaigns that encourage a reduction of energy use and increase of recycling efforts by students, faculty and staff (See [Brown University Sustainability Dashboard](#)) to deep infrastructure retrofits and new construction that significantly change energy, water, waste and other resource usage patterns on the campus. See [Brown University Sustainability Progress Report 2010](#); [Harvard University Green Report Card 2011](#).

College and university SAPs consider a range of systems and dimensions of the built environment and beyond, including:

- Electrical Energy Management and Conservation
- Campus HVAC systems
- Sustainable Energy
- Fresh Water Conservation
- Storm Water Management
- Facilities Planning, Renovations and Construction
- Transportation
- Purchasing
- Recycling
- Food Services/Food Supply Chain
- Grounds Operations

Within this context, the United Negro College Fund (UNCF), which has provided seed funds for minority-serving institution (MSIs) in their sustainability planning, is working to support The American College and University Presidents Climate Commitment (ACUPCC). The ACUPCC is a national pact signed by 677 college and university presidents pledging to reduce green house gas emissions and move their campuses to climate neutrality. Subject to annual reporting requirements, signatories, agree to:

- Complete an emissions inventory;
- Within two years, set a target date and interim milestones for becoming climate neutral;

- Take immediate steps to reduce greenhouse gas emissions by choosing from a list of short-term actions;
- Integrate sustainability into the curriculum and make it part of the educational experience;
- Make the action plan, inventory and progress reports publicly available.

The College, in this case, has made the decision to define its sustainability goals prior to formalizing a commitment with the ACUPCC, which may be labor intensive, have goals that do not correlate well with the institution's vision or timeframe. For many Historically Black Colleges and Universities (HBCUs), with small staffs responsible for a variety of duties, limited financial resources and an aging physical plant, it may be more effective to prioritize development of self-financing approaches to sustainability. One such approach, described in more detail below, is performance-based contracting for building energy efficiency retrofits.

SUSTAINABILITY ACTION PLANNING FOR HBCUS: A ROADMAP

A successful SAP will be guided by and consistent with institutional vision and values. This articulation of a sustainability plan will meet the objectives set forth in the College's strategic plan.

The SAP identifies opportunities to reduce costs and improve the operational efficiency of campus structures. If effective, such an approach can generate additional revenue to strengthen programs, improve fiscal stability, expand student aid, or reduce debt. In addition, a robust plan will focus on introducing students to the green economy, and spur dialogue that generates a culture of sustainability both within the College and in the surrounding community.

College Sustainability

The College recognizes the importance of integrating sustainability into its culture and practices. Furthermore, the College seeks to position itself as a leader of a sustainability movement that uniquely responds to ensuring that the College remains a leader in a global society. In an ever-changing economic landscape, the College and its sister HBCUs are challenged to develop multi-disciplinary curricula, which is competitive and meets the current needs of today's marketplace. In addition, they must find innovative approaches to operate more efficiently and leverage both financial and human capital. The College plans to address these challenges by approaching sustainability not only in terms of efficiency and carbon reduction but also in terms of resource generation and social inclusion.

The Roadmap

This Roadmap is a working document that provides the College Board of Trustees, President, Cabinet and the Sustainability Steering Committee with recommendations for further exploration and implementation to developing a comprehensive SAP. The Roadmap addresses the following four focus areas:

- Waste Reduction,
- Resource Conservation and Management,
- Environmental Health and Wellness, and
- Curriculum Development.

This Roadmap provides a framework for understanding these key sustainability objectives, technical and behavioral methods to begin addressing them, as well as possible indicators to measure their effectiveness.

BACKGROUND

History

In September of 2010, UNCF distributed a call for proposals that invited MSIs to apply for a series of mini-grants to support campus greening activities. Later that year, the College, in collaboration with the Community Innovators Lab at the Massachusetts Institute of Technology (MIT CoLab) successfully applied for UNCF funding to develop a Sustainability Plan for the College campus.

The first phase of sustainability planning involves research and relationship building, both on and off campus. Staff at the College has begun generating support for the SAP by meeting with interested stakeholders around campus, including students, alumni, faculty, and staff. MIT CoLab team members have conducted research on the technical components of, and actual experiences with, Sustainability Plans on other campuses.

In February of 2011, CoLab and staff of the College met with members of the College community to discuss what “green” and “sustainability” mean for the College. The project team met the President of the College, the Vice President of Facilities, as well as representatives from the Center for Civic Engagement and the Health Center. They also consulted with individual students, student group representatives, and faculty members, as well as businesses that are involved in providing goods and services to the College. From these consultations, the project team collected a set of key priority areas of campus sustainability that will become the focus of subsequent planning efforts.

To continue advancing sustainability throughout campus activities, staff of the College will take the lead in establishing a SAP Steering Committee, tasked with guiding the development of the SAP. The Steering Committee will be the organizational structure that enables stakeholder participation in the full elaboration of the College’s SAP. The College will form this committee from a wide range of stakeholders from the campus community (See Appendix A: Stakeholders). Once formed, this committee will be tasked to organize stakeholder participation and develop an Action Plan specific to each of the College’s priority sustainability areas, as well as benchmarks and indicators of success.

Current Initiatives

Sustainability is underway at the College. Students, faculty and staff have started implementing initiatives that promote resource conservation, waste reduction, and healthy nutrition. Below are several examples of these initiatives:

- The science department has contracted with a private recycling company to pick up recyclables at an academic building. Under this contract, paper and plastic are recycled periodically on the first level of the building at no cost to the College.
- The cafeteria has implemented tray-less dining practices that reduce water consumption and food waste.
- The College has recently started discussions with neighboring community partners to further develop its organic garden, the only one of its kind in the area, to provide a steady supply of fresh fruit and vegetables for the College and its neighboring communities.
- During August 2011, the recently elected student representative of the College conducted a workshop to organize students, faculty and staff to participate in several sustainability activities.
- Under the guidance of staff of the College, an intern from another university has started providing research and coordination capacity to all campus sustainability efforts.

GUIDING PRINCIPLES

Critical sustainability goals for the College embrace the following overarching objectives:

- **Generate Revenue:** reduce usage and costs;
- **Engage Stakeholders:** strengthen the campus and neighboring communities by creating a culture that promotes sustainable practices;
- **Document Lessons:** position the College as a leader in, and a center for knowledge-generation and resource sharing.

Generate Revenue

The College hopes to harness opportunities to transform sustainability practices into income streams that benefit the campus and, through leveraging the College's procurement and other practices, the neighboring communities. Opportunities for revenue creation could include energy conservation, recycling, and co-generation (efficiency practice by which generators installed to provide power also provide hot water and/or heat).

Engage Stakeholders

The creation of an SAP is an intensive process that requires the inclusion of a broad base of campus and community stakeholders. Identifying stakeholders throughout the development and implementation of the plan, and creating effective ways to inform and engage the various stakeholder groups during this process will be a critical part of the process. The ultimate success of the plan will depend on the strength of this involvement because, among other things, behavioral change is a key element of most sustainability efforts. Building on stakeholder relationships, the College may also help to encourage a culture of sustainability both within the College and in the surrounding community that can become a source of pride for the entire area.

Document Lessons

The College will share lessons from the planning process with other institutions interested in greening their campuses, particularly HBCUs. Toward this goal, the process of creating the SAP and consolidating support for its implementation should be thoroughly documented and wherever, relevant, particular lessons for other HBCUs pursuing sustainability efforts noted.

FOCUS AREAS FOR COLLEGE SUSTAINABILITY EFFORTS

The SAP roadmap addresses four focus areas, established during initial consultations with campus stakeholders, that are key to the College's definition of sustainability:

- Waste Reduction;
- Resource Conservation and Management;
- Environmental Health and Wellness; and
- Curriculum Development.

The SAP roadmap will prioritize the development of the focus areas of Waste Reduction and Resources Conservation and Management as a strategy to efficiently utilize the College's internal resources and generate momentum for further development of the areas of Environmental Health and Wellness and Curriculum Development. The roadmap's ultimate goal is for each area to be further developed in an Action Plan specific to the content of that area, with clear timelines, benchmarks, and indicators of success for the various actions included in each.

Waste Reduction

Approach

- Reducing waste saves money
- Methods: technical, behavioral

Waste reduction is a major component of the College's sustainability efforts and will be the first objective, which will be implemented in the Fall 2011 semester. Recycling and the use of recycled materials are of primary importance, as a critical path for reducing the amount of trash produced, and lowering the cost of waste removal. A campus recycling program can provide recycling collection and sale services and use the revenue stream generated from the sale of recyclables to financially sustain its operations. Because it operates within the College, a campus recycling program can incorporate academic activities (classes, project-based research) that inform, expand and improve its operations

Current Conditions

Recycling was highlighted in the College President's 2010 remarks as one step toward creating a healthier living and learning environment. The positive results of the recycling efforts at the College suggest that it can potentially leverage the value of its recyclables to fund campus wide recycling efforts. The College has a longstanding waste removal contract with a specific waste company. However, this contract does not include recycling services. Initial meetings with the company have established: a partnership to support recycling with the donation of ten (10) 96-gallon recyclable containers, and a collaboration with marketing on events leading up to National Recycling week in November, 2011. The College plans to engage the incoming 2011-2012 freshmen in providing capacity and leadership of current and future recycling efforts.

Promising Practices: From Waste Removal To Resource Management: Renegotiating Waste Removal Contracts

Today, the wide variety of successful campus recycling programs nationwide necessarily responds to the unique conditions of each locale. While generalization is difficult, promising approaches include shifting from a waste removal to a resource management focus, while ensuring that recycling programs are financially sustainable

“Because current waste removal contracts compensate based on volume, haulers and landfill operators have an incentive to handle ever-increasing volumes of waste. On the other hand, customers have an incentive to decrease their volumes of waste to reduce fees they pay. These competing incentive structures often impede progress towards waste reduction.” See [Connecticut Department of Environmental Protection: Setting Up a Recycling Program at Your School](#)
Renegotiating the contract to move away from waste removal and toward resource management, shifting the focus to reclaiming valuable recyclables from the waste stream, better aligns financial incentives by creating the potential for a revenue stream through increased recycling while lowering waste removal costs.

Having a clear understanding of the campus waste, the waste removal cost and the market value of the campus recyclables is crucial before renegotiating the contract. These key pieces of information would allow the College to leverage the market value of recyclables to gradually reduce waste removal loads and costs while potentially underwriting the investment in equipment upgrades and

recycling education and awareness that are necessary to accelerating campus recycling efforts.

The development and implementation of a campus recycling program requires long-term (2+ years) commitment of student engagement as well as faculty and administrative support.

Specific Recommendations

Considering the College current contractual relationship with its waste management company and the College's priority for cost reduction, the College should consider renegotiating its waste removal contract to include recycling services. A renegotiated contract importantly will require greater transparency in the company's reporting on waste removal reduction and value recapture due to recyclables. With these provisions, a new contract could potentially leverage the value of the College recyclables to cover costs related to waste removal equipment upgrade and recycling education.

Secondly, given current student recycling efforts and student leadership support for more efficient recycling, the College should consider negotiating opportunities for student engagement in the new contract. A student leader could potentially work with the company representatives to develop recycling initiatives that foment behavioral change toward increasing the recycling rate.

Based on these initial efforts, the College should consider enacting a comprehensive recycling policy that will establish infrastructure for recycling and increase awareness about the benefits associated with reducing waste. An Organic Garden coordinator could work to strengthen existing efforts to compost food waste on campus. If there is a local market for biofuels, waste oils from food services could be separated from the waste stream and sold to processing companies in the area. A more ambitious plan could include working with local businesses to create such an enterprise or, more ambitious still, developing the College's own internal capacity to reprocess food service waste oil as biofuel for campus vehicles and other machinery.

Next Steps

The College will consider the renegotiation of its waste removal contract to include recycling services as a long-term strategy for waste reduction. As a short-

term strategy, the College will raise awareness about waste reduction by developing and implementing recycling activities as well as activities that enable understanding of current waste removal practices on campus. The following represent a sample of the diverse array of activities currently being considered for implementation during the Fall 2011:

- **Participating in National Recycling Week 2011:** [National Recycling Week](#) (NRW), which takes place during the second week of November 2011, aims to bring national focus to waste management practices: recycling, waste reduction and materials resources management. During this week, universities around the U.S. engage in healthy waste reduction competition. At the College, the excitement about participating in NRW 2011 has prompted student leaders to organize activities that promote recycling education and practices. These preparatory activities are providing a platform for students, faculty and staff to learn about recycling practices. The College can bring guidance and coordination to this platform, and as a result, create a work plan for participation in NRW 2011 that successfully raises awareness about waste reduction. Such work plan can be organized around the following areas:
 - Participation: The College can guide the strong leadership of elected student representatives and environmentally oriented student groups to foment broader participation of the College community; in particular the student body. Incorporating recycling activities into the required community service for all students and promoting current initiatives can strongly incentivize student, faculty and staff participation.
 - Education: The College can request that a representative of their waste management company to work directly with elected student representatives and environmentally oriented student groups to ensure the delivery of campus wide recycling education trainings and the production and dissemination of educational materials. Strong campus traditions can become powerful platforms for recycling education.
 - Measurement: Measuring, a crucial technical aspect of recycling, quantifies recyclables and help keep track of waste reduction. The

College's participation in NRW 2011 can be a testing ground for trying different measuring methods and selecting one that fits the College's needs best. An MIT CoLab Waste Management advisor can work with the College to identify available measuring methods.

- **Conducting a Waste Audit:** A waste audit involves the collection, sorting and measurement of the waste production of an organization, including recyclables. A waste audit at the College can involve a three-day collection of waste; sorting of waste into categories (paper, plastic, glass, food waste, etc); and measurement of each category and of the total waste. The results of the audit can provide initial knowledge of the amount and types of recyclables produced on campus. The College can use this knowledge to find out the value of its recyclables in the state markets for recyclables. Furthermore, a campus wide dissemination of the value of the College's recyclables can lead to the creation of campus-based enterprises around capturing the revenue stream from these recyclables.
- **Analyzing Current Waste Removal Contract and Bills:** An analysis of current waste removal contract and bills can enable the College to understand its current waste removal practice. The College's waste removal contract can provide a complete description of removal services and length of contract. In addition, waste removal bills can provide information regarding the amount of waste removed, the unit cost of this amount and the total cost of waste removal for a specific time period. The College's ability to monitor the behavior of its waste removal cost can become an important outcome of the analysis of current waste removal contract and bills.

Development and Implementation

To provide capacity for the development and implementation of the Fall 2011 activities, the College staff will create a Waste Reduction (WR) team composed of:

- A sustainability coordinator;
- A representative from each of the following constituencies at the College:
 - student leaders,
 - facilities management,

- faculty; and
- An MIT CoLab Waste Management advisor

The WR team will work directly with student leaders to develop detailed work plans, which include clear objectives, deliverables and outcomes for each activity. During the development of these work plans the team will pay special attention to opportunities to integrate academic projects that support the creation of the activities' deliverables. The team will also coordinate the activities in a manner that uses resources efficiently and promotes synergy among efforts. Resources for the completion of work plans are provided in Appendix D.

Resource Conservation and Management

Approach

- Reducing energy and water consumption saves money
- Methods: technical, behavioral

Central to any SAP is reducing the use of key resources such as energy and water on campus. By increasing the efficiency of lighting, heating, cooling, and water provision mechanisms in campus buildings, the College can minimize its footprint in the exhaustion of these resources while also reducing their associated costs.

A longer term strategy is for the College to collect sufficient data to create a plan over time to reduce its carbon footprint from gasoline use and commuting patterns. As this area is not just technical, but also intimately related to behavioral change, all infrastructural changes must also be accompanied by efforts to promote learning among a variety of stakeholders on and off campus. See the "Stakeholder Engagement" section for more information about the various groups that the College plans to target.

Current Conditions

Many of the campus buildings were built before 1960, suggesting that a wealth of opportunities exist to increase the efficiency of the campus building envelope. Energy costs undoubtedly are becoming a considerable percentage of the College's operation budget. Through their Strategic Plan, the College is working to secure funds for scholarships and major capital improvements, in an effort to

restore, renovate and build a maintenance endowment for the College's historic buildings. However, facilities management and staff are currently working at full capacity; a challenge will be finding additional capacity to steward these important initiatives.

Promising Practices: Funding Energy Efficiency Retrofits

As with campus recycling programs, the specifics of each campus retrofitting project depend significantly on the particularities of the building stock, so generalization is difficult. Yet, Energy Savings Performance Contracts (ESPCs) are one promising approach that enable an institution to contract with an Energy Services Company (ESCO) to finance and perform deep efficiency retrofits with an agreement to pay back the upfront investment from the efficiency-based savings over time. If an ESPC is not feasible, the College can begin with a pilot effort and gradually implement efficiency retrofits over time.

Funding Energy Efficiency Retrofits with an Energy Savings Performance Contract

An Energy-Savings Performance Contract (ESPC) is a method by which an Energy Services Company (ESCO) finances energy efficiency retrofits and the cost savings generated by the installed conservation measures are used to pay all financing and investment costs for the project. ESPCs are most commonly used when the owner of the building infrastructure has limited budget to upgrade aging equipment, either to maintain performance or to reduce operating costs. Because implementing an energy efficiency retrofit project through an ESPC requires high levels of technical, financial and legal skills, it is common practice for the owner to hire a representative to manage the project. The owner's representative, for example a lawyer or other professional with specialized technical knowledge must negotiate an ESPC that guarantees savings with well-defined measurement and verification of savings services. Without this guarantee, the owner assumes the risk that the cost saving generated may not be sufficient to pay for the cost of the project. The owner's representative can negotiate for the ESPC to fund educational and training initiatives related to the project, such as classes and internships. (Also See Appendix B)

Gradual Implementation of Energy Efficiency Retrofits: Building Upon an Initial Pilot

In contrast to the full-scale up front implementation through an ESPC, energy efficiency retrofits can be implemented gradually by building upon an initial pilot that demonstrates short-term cost savings. The short-term cost savings generated by an initial pilot can be used to gather financial and political support for implementing additional small energy efficiency initiatives. The owner of the building infrastructure covers the financial cost and contracts for the technical capacities needed for the design and implementation of the initial small pilot and subsequent sustainability initiatives. Without these capacities gradual implementation of energy efficiency retrofits may not be feasible.

Specific Recommendations

Given the College's priority of cost reduction and its strategic plans for preservation and upgrading of its building infrastructure, an Energy Savings Performance Contract represents the best course of action to create a revenue stream for funding energy efficiency retrofits. Gradual implementation of energy efficiency retrofits is less desirable because the College has limited financial and technical capacities to design and implement an initial small pilot.

Next Steps

The College will pursue the development and implementation of an Energy Savings Performance Contract (ESPC) that allows the College to own a percentage of the cost savings throughout the entire length of the contract. Under the implementation of a standard ESPC, all cost savings would be used to pay for the cost of the project throughout the entire length of the contract. The College would start owning the cost savings after the project is paid for. Since the contract could be up to 15 years long, the College would not be able to own and allocate these cost savings to academic programs, scholarships, salaries, etc. To ensure ownership of cost savings throughout the entire length of the contract, the College plans to modify the standard ESPC process to: include the development of a financing model; and allow for the performance of an audit before the selection of the Energy Service Company (ESCO). The College's proposed ESPC process will contain the following steps:

- Step 1: Perform a Feasibility Study
- Step 2: Design a Financing Model
- Step 3: Perform an Audit
- Step 4: Select an Energy Service Company (ESCO)

- Step 5: Negotiate the ESPC
- Step 6: Perform Commissioning

Development and Implementation of the College's ESPC Process

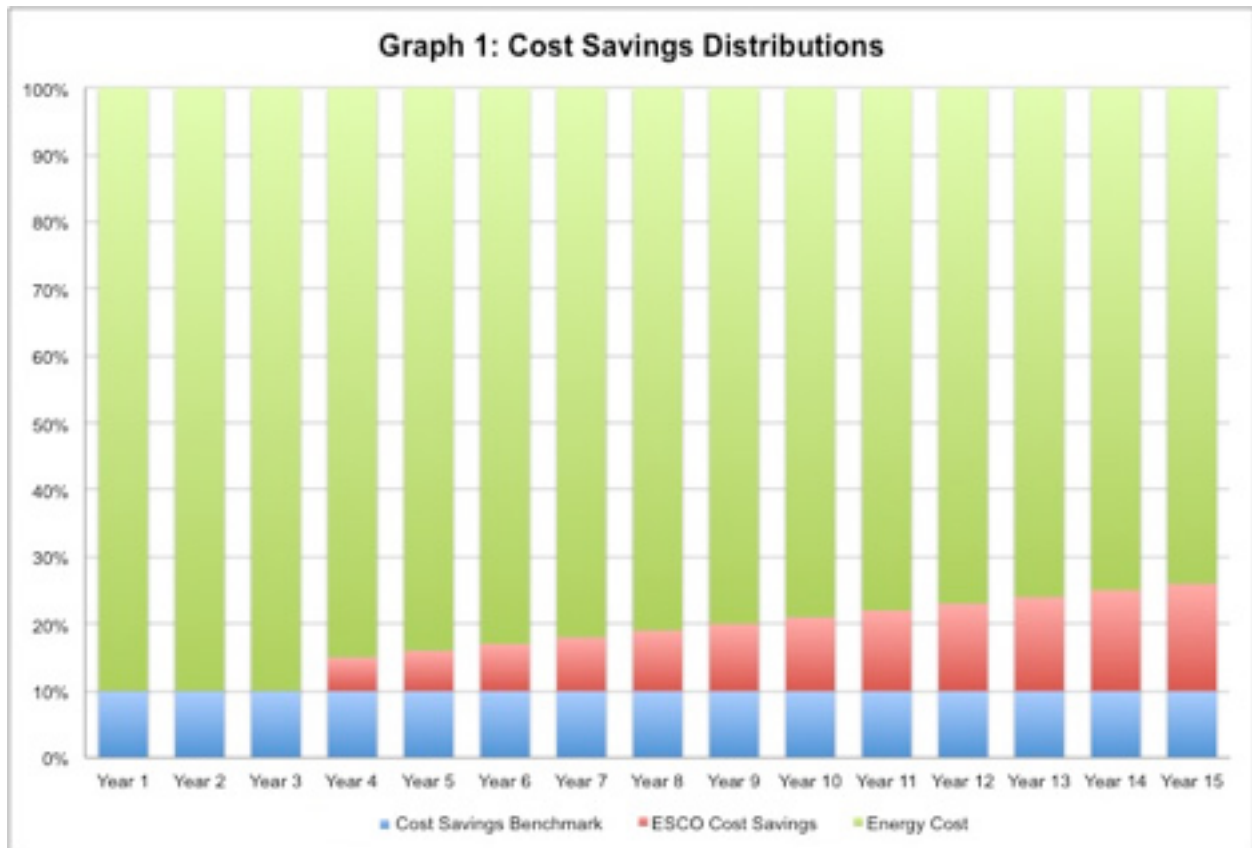
To provide capacity for the development and implementation of a successful ESPC, the College staff will create an Energy Conservation (EC) team composed of:

- A project leader;
- Staff of the College;
- A representative from each of the following constituencies at the College:
 - facilities management,
 - faculty,
 - student;
- An MIT CoLab Energy Efficiency Advisor; and
- An MIT CoLab Financial Advisor;

The EC team's immediate task will be to implement the first step of the ESPC process: Perform a Feasibility Study. A secondary task will be to start the implementation of the second step: Design a Financial Model. The team may continue to develop the subsequent steps, however, these steps will not be able to be implemented in the absence of the completion of the first two steps. What follows is a brief description of each step.

- **Step 1: Perform a Feasibility Study:** The goal of this first step is to determine if the campus is a good candidate for an ESPC. The EC team will collect necessary campus data to identify energy savings opportunities. A viable ESPC will depend on whether there are significant energy savings opportunities to generate sufficient cost savings to pay for the cost of the project. Energy costs, amount and type of buildings, mechanical equipment, etc., are key pieces of information in the successful completion of the feasibility study. The result of this study will determine how the EC team moves forward with the ESPC process. If the results are positive, the team will move forward with the subsequent steps. If the team determines that the cost savings are not sufficient, they may elect a different course of action (e.g. behavioral modifications that lead to reduced energy consumption) to finance energy efficiency on campus.

- Step 2: Design a Financing Model:** This step seeks to design an innovative financial model in which the College owns a percentage of the cost savings throughout the duration of the ESPC. This percentage will be based on the estimated annual cost savings and it will represent both: a fair cost savings benefit for the College and a fair cost savings incentive for the Energy Services Company (ESCO). For instance, if the feasibility study (See Step 1) estimates that energy efficiency interventions would yield an annual costs savings of 20% percent, the College may set a cost savings benchmark of 10% to receive throughout the entire length of the ESPC and let the ESCO capture any additional percentage above 10%. As a result, the estimated additional 10% plus any additional cost savings the ESCO can deliver will go to the ESCO. This additional cost savings can act as an incentive for the ESCO to maximize the value of the energy efficiency interventions. See Graph 1 below.



During this step, the EC team will use the information from the feasibility study (See Step 1) to start the development of the financing model.

However, the financing model will be completed after a comprehensive audit (See Step 3) provides more accurate annual cost savings estimates. It is noteworthy to mention that this model allocates responsibility of the upfront financing to the ESCO.

- **Step 3: Perform an Audit:** The goal of an audit is to identify energy savings opportunities and evaluate their potential. During the audit, the auditor will first inspect the building infrastructure on campus to find out the sources of energy losses. Secondly, the auditor will quantify these energy losses, including their cost. Thirdly, the auditor will prepare a list of interventions that have the potential to generate energy and cost savings. In addition, the auditor will prepare an annual energy consumption baseline for all utilities and fuel types. Finally the auditor will use this consumption baseline to evaluate the potential for these interventions to generate energy and cost savings.

The EC team will work with an auditor from the State Development Authority to conduct and review a comprehensive audit of the College campus. Additionally, the team will ensure the audit provides the total annual cost savings for the proposed interventions, as this information will be critical to finalize the design of the financing model (See Step 2).

- **Step 4: Select an Energy Service Company (ESCO):** This step seeks to ensure the College selects the best-qualified ESCO to perform the ESPC. The selection process will include a request for proposals (RFPs), an evaluation of RFPs and the final selection of the ESCO. During the preparation of the RFPs, the EC team will clearly describe the use of the College's financing model, including its audit results and cost savings benchmark, as criteria for the selection process. Steps 4 and 5 will require the assistance of a contract attorney.
- **Step 5: Negotiate the ESPC:** Once an ESCO has been selected, the goal is to negotiate a contract that meets the College's needs while still being financially viable for the ESCO (i.e., be beneficial to both parties). The assumption is that after the ESCO has developed a full understanding of the College's needs and opportunities, they will be prepared by the contract. Members of the EC team will need to review the contract to ensure that it

adequately meets the College's needs. The contract should take into consideration the fact that the ESCO will be responsible for implementation of the plan. The ESCO will also be responsible—until some agreed upon time—for maintenance and management. After said time has elapsed, the maintenance and management responsibilities will be shifted back to the College. The ESPC should consider a broad range of energy efficiency possibilities from building technologies to behavioral changes, however the expectation is that the ESCO will be primarily responsible for technology related aspects and the College primarily responsible for behavioral aspects.

- **Step 6: Perform Commissioning:** The goal of commissioning is to verify that interventions are working correctly and to measure the savings impact of such interventions. Due to the nature of the financing model's cost savings incentive (See Step 2), the ESCO will perform commissioning and assume management of critical building operations, in particular those operations that maximize energy savings performance. It will be important for the ESCO to outperform the College's cost savings benchmark and a crucial manner to do so will be for the ESCO to perform high quality commissioning to guarantee the top performance of all interventions.

The EC team will work with the ESCO to ensure training of the College's facility staff. This training should be scheduled into the EPSC and may occur at various points throughout the contract. The specifics of how training will occur, who will be trained, and what training will be done should be worked into the contract as well. This training will ensure cost savings continue after the contract expires. The EC team should also develop a plan for preparing the College to take over the financial burdens of the energy saving activities. One other consideration that the EC should include in the contract is the behavioral aspect. The work of behavioral strategies will be done by the College, but may benefit from being developed alongside other strategies, such as building efficiency projects.

Standard professional practice documents to perform an ESPC are available through several government and nonprofit organizations. The Department of Energy (DOE) and the Energy Services Coalition are examples of organizations that provide useful manuals, templates and resources for the development and implementation of ESPCs. The EE team can find these documents under the following links:

- DOE: Federal Energy Management Program
http://www1.eere.energy.gov/femp/financing/espcs_resources.html
- Energy Service Coalition: 5 Steps to Successful Energy Performance Contracting
<http://www.energyservicescoalition.org/espc/tools/practice08/5steps.htm>

The EC team may tailor the above listed documents and in addition prepare additional documents to guide each step. A few samples of these additional documents are provided in Appendix E.

Environmental Health and wellness

For the College to sustain itself as a prominent forward-thinking institution, it is crucial to include health and wellness considerations in any discussion of sustainability. Promoting the well being of the College community requires concrete actions designed to support the health and wellness initiatives for which the College is known, as well as expanding existing programs into new areas. For the College, this means developing plans in two main areas, in addition to continuing ongoing support to health programming: encouraging walking to promote better health via the campus Pedestrian path, and strengthening the organic gardening efforts already underway. By promoting the use of organic and healthy foods and products throughout campus, the College aims to support the campus garden as both a source of healthy food and as a site for outdoor community activity.

Curriculum Development

As part of its sustainability efforts, the College also aims to provide students with opportunities to explore issues around sustainability and prepare them for diverse employment opportunities. The College plans to achieve this by incorporating environmental questions into existing classes and research - both in the hard sciences and in social sciences as well – and by promoting the

development of new, multidisciplinary environmental courses. Furthermore, the College plans to identify learning opportunities in which students are able to apply their academic understandings of these issues to real life problems. In doing so, the College aims to equip its graduates with a solid base in sustainability issues that allows them to excel in graduate programs and be competitive candidates for jobs in the “green” economy.

SUPPORTING THE WORK

The College developed this sustainability Roadmap with grant from the United Negro College Fund. Further elaboration and implementation of the SAP will require significant additional funds and resources, some of which will be recouped through cost-saving benefits such as reduced waste production and energy use. The College is committed to exploring innovative methods of supporting this sustainability work. Some examples of this may include corporate sponsorships and partnerships; developing a new College Green Fund; and seeking support from alumni and other partners such as governmental organizations and foundations.

APPENDICES

Appendix A: Stakeholders

The list of stakeholders involved in the process of developing the College Sustainability Action Plan is likely to evolve and grow over time. Below are some of the key groups that the College staff and CoLab project team will focus on in the preliminary stages of plan elaboration.

Students

At the College, students are known as the drivers of change. As such, the College student body will play a central role in the implementation of the campus sustainability plan. Two students will participate in the Sustainability Steering Committee in order to ensure that the decisions made at this level also reflect the input and perspective of the College student body.

In order to make sustained student engagement feasible, student Sustainability Interns will work in coordination with the College staff to support progress toward the achievement of the College sustainability goals. The Interns will be charged with carrying out research assignments, analyzing input from the many people involved in the formulation of the plan, and documenting the planning process.

Faculty

The College has dedicated professors who will also be central players in the implementation of this plan. As leaders in the design of curricula and student research, faculty are uniquely poised to incorporate issues of sustainability into their courses and research, from the technical aspects of these to broader societal concerns such as environmental justice, as well as to design new spaces to discuss these issues in-depth.

Two faculty members will participate in the Steering Committee.

Staff

As the members of the on-campus community tasked with implementing the daily operations of the College, Staff will be essential in ensuring that sustainable practices are put into action throughout activities at the College.

Alumni

The network of alumni is a critical part of what is considered the College family.

Community

The College is a pillar of the surrounding area, and part of its strength is derived from ongoing relationships with community partners.

Vendors

A large portion of operations involves the many businesses that work with the College in the provision of goods and services. The College is interested in involving these businesses in its greening activities in order to support local sustainability efforts in a comprehensive sense.

Others

As previously described, as sustainability initiatives are developed and implemented, efforts will be made to identify and engage additional groups of stakeholders. These may include: campus leaders; parents; corporate sponsors; donors; volunteers; local, state, and federal government officials; other universities; contractors; regulators; union leaders and members; media contacts; and other interest groups.

Appendix B: Table of Sustainability Efforts among Historically Black Colleges and Universities

Appendix C: Mini-Case Studies of Revenue-Generation-Focused Campus Sustainability Efforts

Below are summarized case studies in sustainability programs focused on revenue generation. Although our researchers sought case studies for HBCUs either in the UNCF network or in the AASHE network (see Appendix B), they were unable to identify any specific case study that dealt with revenue generation either in the context of energy efficiency or for waste management.

In the absence of HBCU case studies, our researchers chose the following colleges and universities:

- **Bridgewater State University** for demonstrating the implementation of a Resource Management Contracts that generated revenue. Other best practices on this issue were borrowed from the Connecticut Department of Environmental Protection.
- **University of Oregon** for a strong example of financially sustainable revenue generation approaches in recycling. Other universities initially identified only emphasized the carbon footprint in their literature.
- **Oak Ridge National Laboratory, MIT** and the **City of Northampton, MA** for energy efficiency retrofits. An interview with Beth Greenblat provides the perspective of an owners' rep in negotiating Energy Savings Performance Contracts.

Recycling

Mini Case Study: Bridgewater State University¹

From Waste Removal To Resource Management: Renegotiating Waste Removal Contracts

Before 2007, Bridgewater State University (BSU) did not receive a revenue share for its recyclables

- Student workers managed the process of material collection, consolidation and pick up

¹ Source: Case Study: Resource Management (RM) Contracting at Bridgewater State University Bridgewater, MA, <http://www.mass.gov/dep/recycle/reduce/bsucase.pdf>

- Reporting on recyclables was inconsistent and did not allow BSU to identify areas in which to improve capture and cost-savings
- Early in 2007, BSU worked with the Massachusetts Department of Environmental Protection to start the process of developing a Resource Management Contract (RMC) to help BSU optimize its solid waste and recycling services on campus. RMCs allow the financial revenue of waste removal, including recyclables, to be shared by both the waster generator and the waste hauler
- BSU identified several focus areas for implementing a Resource Management Contract (RMC) including improved reporting and record-keeping and more efficient paper collection.
- On April 2007 BSU awarded the RMC to Frade's Disposal
- Frade's Disposal worked with BSU recycling coordinator to file reports and schedule pick ups
- RMC compelled Frade to be more accountable:
 - BSU received waste and recycling reports more inclusive of all campus services with greater frequency
 - Transparency in reporting practices allowed BSU to target areas in need of improvement and capture necessary data to show progress
 - BSU upgraded facilities and equipment through the RMC
- In 2010, reduced waste, improved recycling and greater pickup efficiency resulted in nearly \$18,000 in solid waste-related savings and a total of approx. \$8,500 in recycled material revenue has been returned to the school over the last three years

Mini-Case Study: University of Oregon Campus Recycling Program²

Creating a Financially Sustainable Campus Recycling Program

Circumstance

- The University of Oregon Campus Recycling Program originated in 1989 as a grassroots effort to institutionalize recycling on campus
- These efforts were performed mostly by students, working as volunteers and through classes to put in practice sustainability academic concepts

² Source: University of Oregon Campus Recycling Program, <http://pages.uoregon.edu/recycle/>

- In 1990, students worked on the recycling program and operations; conducting a pilot program that showed waste removal savings by recycling paper
- The Campus Recycling Program was institutionalized in March 1991

Sustainability Efforts

- Currently, the program is the in-house provider of waste management services for the University of Oregon. These services include recycling/composting, environmental/sustainability education and operational sustainability strategies
- The program is the main campus hub not only for waste management but also for energy and resource conservation education and resources
- The program is sustained financially by revenue generated through its waste management services
- The program employs ~45 student recyclers, several student interns for academic credit and 6 full time staff

Lessons for the College

- A campus recycling program can provide recycling collection and sale services and use the revenue stream generated from the sale of recyclables to financially sustain its operations
- Because it operates within the College, a campus recycling program can incorporate academic activities (classes, project-based research) that inform, expand and improve its operations
- The development, implementation of a campus recycling program requires long-term (2+ years) commitment of student engagement as well as faculty and administrative support

Energy Efficiency Retrofits

Funding Energy Efficiency Retrofits with an Energy Savings Performance Contract³

Context

- The College has limited or no budget to fund energy efficiency
- The College needs to upgrade aging equipment, either to maintain performance or to reduce operating costs

Sustainability Effort

- The College identifies an Energy Savings Performance Contract (ESPC) as the most suitable method to implement energy efficiency retrofits
- The College hires an owner's representative (energy efficiency expert) to guide the College at every step of the retrofit process:
 - Commercial Agreement for Energy Audit
 - Criteria for selection of Energy Service Company (ESCO), including reviewing Requests For Proposals
 - Negotiation of contract: what is fair for the College, funding, well defined measures and verification (M&V) of savings, etc
 - Inclusion of retrofit efforts as knowledge tools for the College's green curriculum
 - Inclusion of training and/or recruiting of workers from the community
- The energy retrofit is successful. The savings start paying for the cost of the retrofit within the first 3 years. The cost is totally paid within 10 years. The College savings can be used to support other priorities.

³ Sources:

Energy Savings Performance Contracting in the United States: A Report to Tekes, the Finnish Technology Agency, http://www.annex46.de/pdf/bericht_ESCO-CaseStudies.pdf

Interview with Chris Mason, Energy and Sustainability Office, City of Northampton, cmason@northamptonma.gov

Interview with Beth Greenblatt, Managing Director, Beacon Integrated Solutions, bgreenblatt@beacon-llc.com

Lessons for the College

- An Energy-Savings Performance Contract (ESPC) is a method of financing energy efficiency retrofits in which the cost savings generated by the installed conservation measures are used to pay all financing and investment costs for the project.
- ESPCs are most commonly used when the owner of the building infrastructure has limited budget to upgrade aging equipment, either to maintain performance or to reduce operating costs.
- Two main actors play important roles in the implementation of an ESPC: the owner of the building infrastructure and the Energy Service Company (ESCO) that performs the retrofits.
- Because implementing an energy efficiency retrofit project through an ESPC requires high levels of technical, financial and legal skills, it is common practice for the owner to hire a representative to manage the project.
- An important duty of the owner's representative is to negotiate an ESPC that guarantees savings with well-defined measurement and verification of savings services. Without this guarantee, the owner assumes the risk that the cost saving generated may not be sufficient to pay for the cost of the project.
- The owner's representative can negotiate for the ESPC to fund educational and training initiatives related to the project, such as classes and internships.

Building Upon a Small Pilot (MIT)⁴

Circumstance

- Before 2008 energy efficiency at MIT was not a priority
- MIT Department of Facilities (DOF) had a team dedicated to sustainability planning and building management system
- DOF team identified potential of energy efficiency measures with short payback periods (0-3 years)
- DOF did not have the financial resources and labor to implement measures

⁴ Source: MIT/NSTAR Efficiency Forward, Prepared for the MIT Energy Efficiency Strategy Project by Jeff Mekler

- In 2008, MIT launched an institute-wide task force to develop strategies to reduce operating expenses and increase revenues

Sustainability Effort

- DOF harnessed MIT initiatives and design a small pilot to study the impact of replacing steam traps in one dormitory while leaving the existing steam traps in a similar building
- The project has been highly successful. As a result the institute-wide task force to develop strategies included energy efficiency as one of the five major strategies to reduce the 2011 fiscal year budget

Appendix D: Support Documents for Waste Reduction Focus Area

- Waste Reduction Team: Members and Roles
- Work Plan Sample: Participating in National Recycling Week 2011
- Work Plan Sample: Conducting a Waste Audit
- Work Plan Sample: Analyzing Current Waste Removal Contract and Bills

Appendix E: Support Documents for Resource Conservation and Management Focus Area

- Energy Conservation Team: Members and Roles
- Work Plan Sample: Step 1: Perform a Feasibility Study
- Campus Profile Survey
- Work Plan Sample: Step 2: Develop a Financing Model