

Evaluation of
THE DUKE ENDOWMENT
CAMPUS SUSTAINABILITY INITIATIVE

JANUARY 2013



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THE DUKE ENDOWMENT

SPIRIT OF GENIUS. LEGACY OF HOPE.

Introduction

In May 2008, The Duke Endowment embarked on an initiative to support the efforts of Davidson College, Duke University, Furman University, and Johnson C. Smith University to improve the environmental sustainability of their institutions, with an emphasis on initiatives that would encourage collaboration between the schools. Between 2008 and 2012, as part of the “Campus Sustainability Initiative” or “CSI” the Endowment disbursed \$751,000, 16% of which was used to host summits and meetings pertaining to a variety of sustainability-related themes. The remaining \$628,000 or 84% was divided equally among the schools to support a variety of sustainability projects. Overall, the Endowment provided support for nine separate gatherings and made eighteen individual grants to the schools.

This evaluation was commissioned as a way for the Endowment to catalog the achievements of the CSI, including measurable outcomes and qualitative results and impacts. The Endowment also was interested to know how its efforts to support sustainability among the four schools, particularly collaborative endeavors, could have been improved upon. Finally, the Endowment wished to identify options it could consider should it decide to continue to support the sustainability initiative beyond 2012.

The results are impressive. Over the four-year period the Endowment’s relatively modest investment led to over \$3.85M in new projects – a more than five-fold increase – and can be credited with serving as the impetus for many more sustainability-related projects and initiatives both on the schools’ campuses and in the communities beyond them. As a result of the Endowment’s support, on a combined basis the schools reported that their energy costs will be reduced by \$175,000 annually, that they will generate 2,822 MWh-equivalents of renewable energy, and they will reduce annual emissions of greenhouse gases by more than 7,000 metric tons of carbon dioxide (MTCO₂e).¹ Aside from these measurable outcomes, creating – and sustaining – momentum around sustainability may be the most significant benefit of the CSI, which the Initiative accomplished by outfitting the schools with the expertise and strategic clarity necessary to achieve their sustainability goals and by establishing a network of trusted peers on which to rely and share new information and ideas. All of this combined laid the foundation for collaboration between the schools and with new partners that promises to lead to even bigger returns.

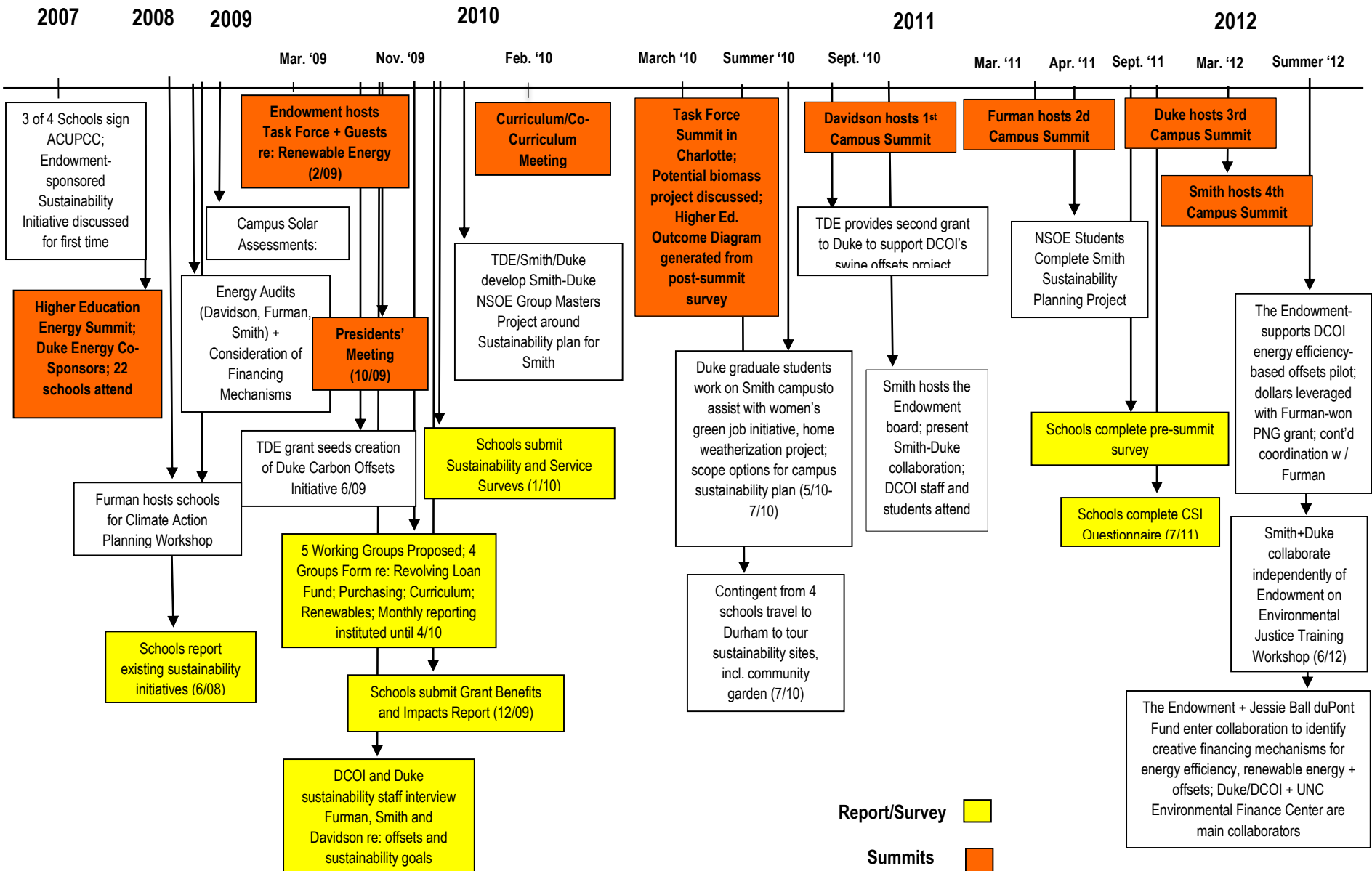
In addition, the evaluation underscores the value of the Endowment’s support of sustainability and reveals a strong desire on the part of the schools for sustainability to remain a focus of the Endowment’s higher education program. The results determined by the evaluation counsel for continuation of the CSI in particular, particularly because of the opportunity to capitalize on the foundation laid by the CSI thus far, which arguably has set the stage for pursuit of more in-depth, ambitious, and collaborative initiatives should the Endowment decide to continue its sustainability work.

What follows is an in-depth report on the results of the evaluation, divided into three main sections, including: (1) Key Outcomes; (2) Impediments and Suggestions for Improvement; and (3) Recommendations and Options for Moving Forward. The timeline below is intended to provide context for the report and depicts items of

¹ Measured in metric tons of carbon dioxide equivalents (MTCO₂e).

significance to the development of the CSI and events and outcomes that occurred over the course of the Initiative, including survey instruments and some project-specific outcomes.

Figure 1. CAMPUS SUSTAINABILITY INITIATIVE TIMELINE



I. KEY OUTCOMES

The outcomes achieved by the CSI can be illustrated in several ways and appeal to different audiences depending on their respective motivations and perspectives. For example, while some pursue sustainability initiatives for their environmental benefits (*e.g.*, clean air, clean water, health and habitat protection), others are interested in sustainability as a way to achieve cost savings. Regardless of one's perspective, the CSI's outcomes are substantial on an individual basis, but considered collectively show that the CSI had a powerful impact.

A. Funding Distribution and Project Outcomes

As illustrated in Figure 2, approximately seventy-five per cent of CSI funding was directed toward energy efficiency, renewable energy, and efforts to reduce greenhouse gas emissions or generate “carbon offsets”. The Initiative's largely energy and climate focus served as a reflection of the the schools' initial goals. The remaining 25% was distributed across a variety of categories including educational opportunities, water conservation, sustainability administration, and community service. Figure 3 shows the distribution of grants by school, illustrating the schools' priorities, which, in turn, affected the overall funding distribution.

Figure 2
Distribution of Funding by Project Category

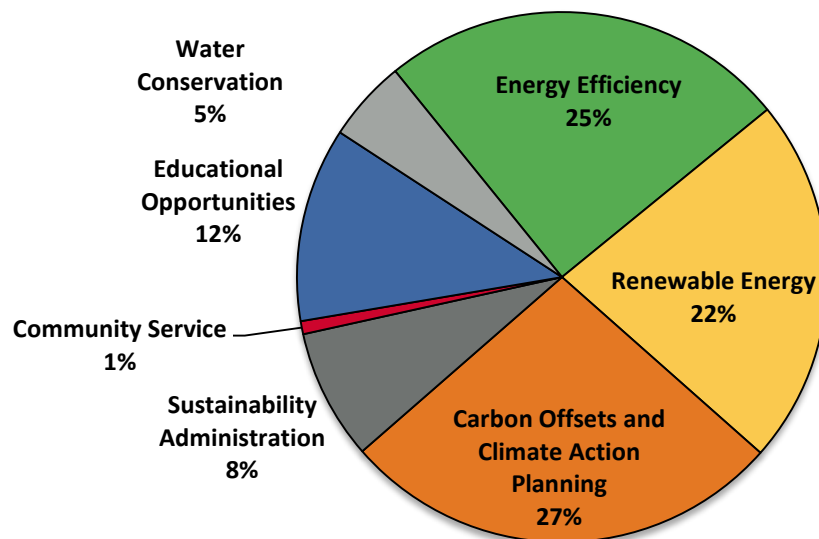
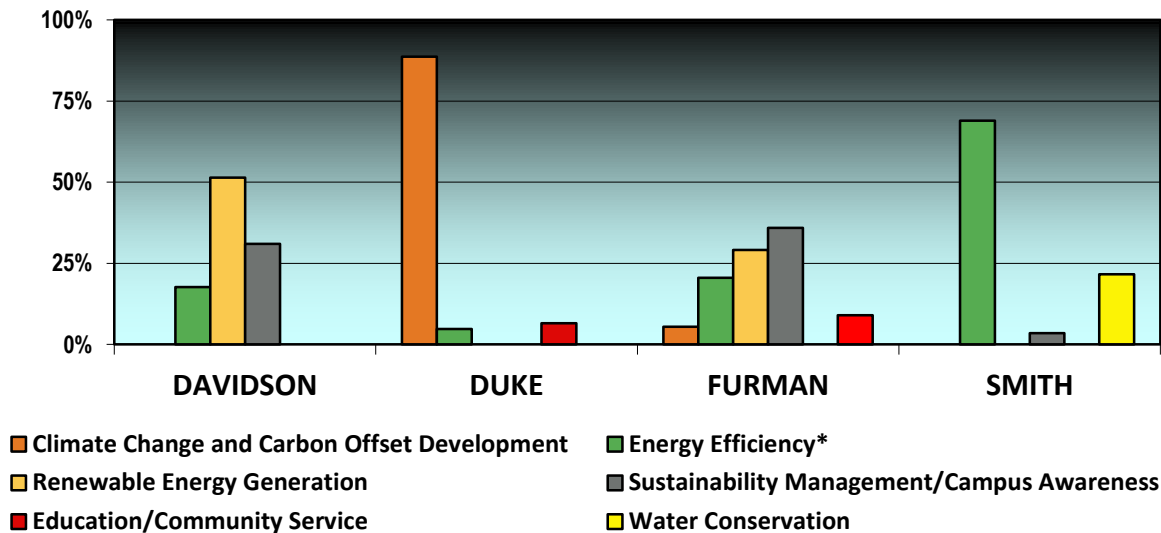


Figure 3
Distribution of Grants Across Schools



The major projects completed during the CSI and their outcomes are described in greater detail (by category) below:

- Energy Audits and Related Energy Efficiency Upgrades:** Energy audits were undertaken at Davidson, Furman and Smith. Based on the audit, Smith sought an additional Endowment grant to implement improvements that reduced Smith's yearly energy costs by \$32,000, at a payback of 1.2 years. Furman's energy audit identified a roof renovation at Riley Hall, which Furman financed and from which Furman will realize \$20,000 in annual savings. While Davidson's audit did not identify new projects or significantly alter the energy conservation plan already developed by Davidson, it nevertheless confirmed for Davidson that it was "on the right track."
- Solar Energy Audits and Related Projects:** Of the four schools, Davidson and Furman pursued solar energy audits (Duke University had already conducted a solar audit while Smith remained focused on energy efficiency efforts). The audits prompted Furman to install a 100-kW project at the Lay Physical Activities Center and Davidson to pursue a combined solar photovoltaic and thermal array at its Baker Sports Complex. The two projects combined are expected to generate the equivalent of 304 MWh of electricity per year, for annual savings of \$10,000 and \$25,000 at Furman and Davidson, respectively.
- North Carolina Solar Center Finance Consultation:** To help the schools understand potential financing options that could help them implement solar projects (either individually or jointly), the Endowment funded a consultation for the schools by the NC Solar Center in 2009. The consultation indicated that a solar project would not be feasible at the time, it proved helpful to Davidson and Furman with respect to identifying funding sources for the solar energy projects installed on their campuses.
- Efforts to Offset Greenhouse Gas Emissions/Generate Carbon Offsets:** Carbon offsets are greenhouse gas emission reductions made by one entity that can be used by another to counteract its emissions. While some entities need carbon offsets to comply with mandatory carbon emission reduction

requirements, other entities – including three of the four Endowment institutions – have made commitments to voluntarily reduce their emissions, in some cases to zero.

Of the four schools, Duke, with an annual emissions baseline of ~333,000 MTCO₂e/year and a voluntary carbon neutrality commitment of 2024 (with only half of its reductions attainable via on-campus efforts), and Furman, with an annual budget of approximately 29,000 MTCO₂e and a neutrality commitment of 2026, are most interested in generating carbon offsets.² The CSI supported and/or led to the following outcomes with respect to carbon offsets, mainly at Duke and Furman, which strive to meet their offset goals through local projects:

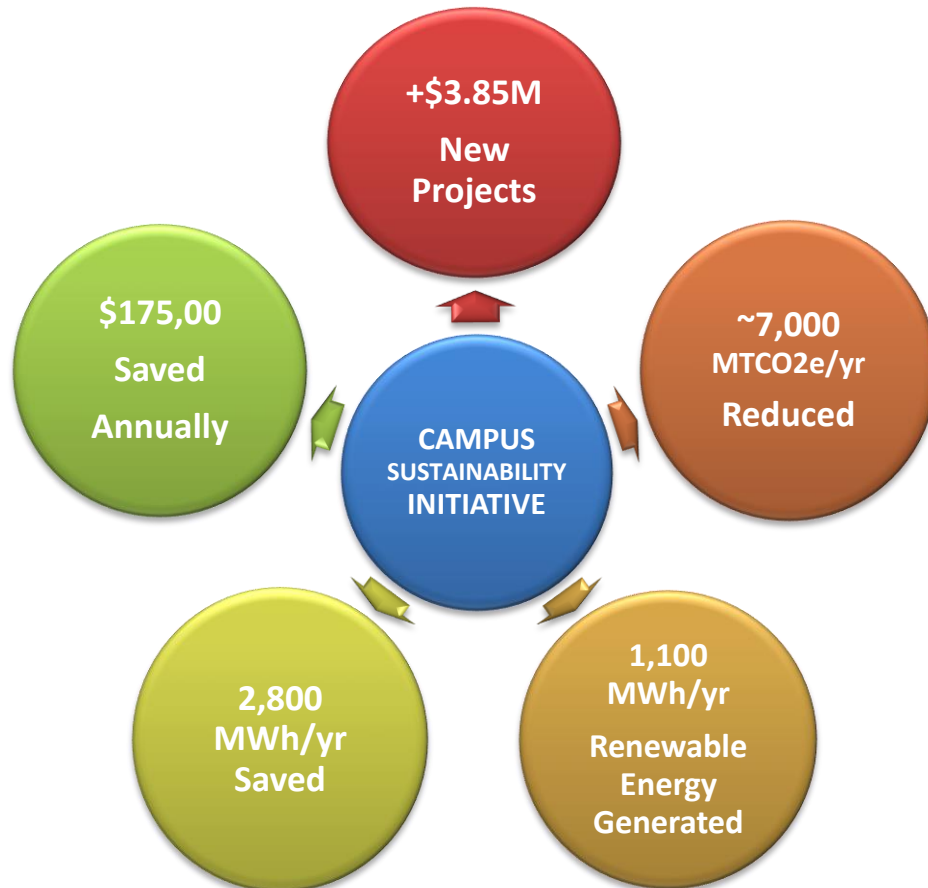
- **Furman Climate Change Planning Workshop:** Furman hosted the Endowment schools in early 2009 at a climate change planning workshop. The workshop helped the schools better define their carbon reduction strategies.
- **Creation of the Duke Carbon Offsets Initiative and Support of Duke's First Full-Scale Carbon Offsets Project:** Duke, with the largest greenhouse gas emissions budget and earliest climate neutrality commitment of the schools, chose to apply its share of Endowment funding in 2009, 2010 and 2012 to the creation of one of the first campus-sponsored carbon offsets program and development of locally-sourced carbon offsets. By 2024 and annually thereafter, Duke will need to bring its net emissions to zero, and it expects that offsets will need to comprise approximately 55 percent (or ~183,000 MTCO₂e) of those reductions. The Endowment's grants led to the establishment of the Duke Carbon Offsets Initiative in 2009, one of the only university-based offset programs in the country; helped the DCOI build a first-of-a-kind waste to energy system, which was developed in partnership with Duke Energy and Google and is expected to yield ~5,000 MTCO₂e/year and ~500 MWh of renewable electricity per year. The project received \$500,000 in state and federal funding and boasts the first innovative waste management system in the state to generate electricity from the cleanest waste management process achievable, significant because of the state's long history of pollution associated with swine farming. The project also provides research and teaching opportunities for Duke, other schools, and the farming, conservation, business and renewable energy communities.
- **Residential Energy Efficiency-Based Carbon Offset Pilot Project:** Support from the Endowment funds an on-going project managed by the DCOI to test the feasibility of achieving carbon reductions from small-scale residential energy efficiency improvements.
- **Smith Chilled Water Plant Assessment:** Smith received funding to assess installation options for a chilled water plant to reduce energy costs and increase water conservation related to campus heating and cooling. Smith relied on its CSI counterparts in choosing a consultant for the scoping process.
- **Sustainability Management:** Understanding the importance of sustainability leadership, Davidson requested and the Endowment will provide inaugural funding for Davidson's first permanent sustainability director, who will report to Davidson's Vice President for Finance and Administration.

² Davidson, with a similar carbon footprint to Furman's, has also committed to climate neutrality but not until 2050. Davidson is interested in focusing first on campus emission reductions and renewable energy generation. Johnson C. Smith has not completed a carbon inventory nor has it committed to climate neutrality.

- **Sustainability Planning & Oversight:** In addition to the Climate Change Planning Workshop, the Endowment supported other efforts to help the schools develop sustainability plans, such as through the 2010-2011 Smith-Duke collaboration that led to the creation of Smith's first sustainability report, released at the March 2012 summit, which will serve as the basis for Smith's sustainability plan. Regarding implementation of sustainability initiatives and oversight of sustainability efforts, the CSI helped to show the schools the value of dedicated sustainability staff to prioritization and achievement of sustainability goals as well as for ensuring consistent and enduring institutional commitments to sustainability.
- **Community Service/Student Internships/Sustainability Awareness:** As part of the Smith-Duke 2010-11 collaboration, two graduate students from the Nicholas School of the Environment assisted Smith's community outreach director with three green-focused residential and jobs-related projects over the summer of 2010. The 2012 carbon offsets energy efficiency pilot (funded at Duke and leveraged against a Furman-led Piedmont Natural Gas grant) also has significant community service and student co-curricular benefits, as did Furman's 2012 Water Walk Fundraiser, which raised awareness about the scarcity of water at the international level. Concrete examples of how the CSI helped the schools increase sustainability awareness include Furman's installation of conservation monitoring dashboards at several key areas on its campus to provide energy and environmental information at high-traffic areas.

B. Measurable Outcomes

Measurable outcomes were calculated for five different categories, including cost savings, energy savings, dollars leveraged, renewable energy generated, and greenhouse gas emissions reduced.



Below is a description of each of the categories of measurable outcomes that were assessed:

- **Cost Savings:** The schools reported projected annual savings of **\$174,126** as a result of five individual projects that will reduce the schools' energy usage and/or generate electricity, the funding or impetus for which can be linked to approximately \$192,000 worth of audits, consultations, or direct funding from the Endowment. Specifically, cost savings were traced to projects that were either directly funded by the Endowment, identified by audits paid for by the Endowment, or catalyzed by meetings coordinated by the Endowment. Notably, energy efficiency measures undertaken at Johnson C. Smith University as a result of a direct grant from the Endowment had an average payback period of **less than 2 years**.
- **Energy Savings:** The schools reported that energy efficiency measures implemented as a result of the Endowment's support will save the campuses approximately **2,800 MWh** of energy per year, equivalent to the amount of electricity used annually by 243 homes.
- **Renewable Energy Generation:** The CSI will help the schools generate **~1,098 MWh** per year from renewable sources. Renewable energy projects directly or indirectly attributable to the CSI include

Davidson's Baker Sports Complex Solar Array (which includes photovoltaic and thermal solar power), Furman's Lay Physical Activities Center solar installation, and Duke's swine waste-to-energy carbon offsets project, which generates electricity from biogas.

- **Greenhouse Gas Emission Reductions:** The CSI is projected to reduce ~2,182 MTCO₂e on all of the campuses annually and ~5,000 MTCO₂e from the Duke swine farm carbon offsets project, for a total of more than **7,000 MTCO₂e** reduced per year.³
- **Leveraged Dollars:** The Endowment's three-quarter million dollar investment spurred projects and investments valued at over \$3.85M, a more than five-fold increase in value.

C. Qualitative Outcomes

Not to be overlooked are those results achieved by the CSI that are difficult to quantify, but nevertheless of equal or greater significance because of the momentum they create around sustainability. Qualitative results include the establishment or improvement of a robust sustainability ethic at the schools and cultivation of partnerships among the schools, which have helped to build a foundation for lasting change. Qualitative outcomes also include increased expertise, establishment of a trusted network of peers, and prioritization of sustainability that should help the schools maintain sustainability as a goal and make it possible for them to pursue even more comprehensive and innovative initiatives.

- **Increased Sustainability Awareness:** Increasing campus awareness about sustainability was a key goal of the Initiative. At Smith, the sustainability planning efforts and momentum created by the CSI have vastly increased awareness about sustainability on Smith's campus, including through a campus "Go Green" effort, a carbon training initiative, and new focus on healthy living. Davidson's Baker Sports Complex serves as a tangible and prominent example of the benefits of renewable energy, Duke's Carbon Offsets Initiative has prompted increased awareness about action to mitigate climate change and innovative ways to produce renewable energy, while Furman's Campus Energy Dashboards and Water Walk Fundraiser raised awareness about campus energy use and international water issues.
- **Summits and Networking Opportunities:** Nine summits started the conversations that set the schools on course to achieve the CSI's results. Davidson, in networking with Furman at an early Campus Sustainability Summit discovered Duke Energy's SmartBuilding Advantage Program, which helped Davidson identify energy efficiency rebates that will save it \$86,000 per year in energy costs at its Baker Sports Complex. Davidson received a 2010 Duke Energy Power Partner award for the project.
- **Educational Opportunities:** The CSI created numerous co-curricular educational opportunities. For example, in summer 2010 and over the 2010-11 academic year, a Smith-Duke partnership brought Nicholas School of the Environment graduate students' expertise to enhance awareness of the importance and benefits of sustainability at Smith, enabling the creation of Smith's first sustainability

³ Greenhouse gas reductions were calculated by multiplying the carbon intensity of Duke Energy-supplied power, which equaled 0.58 tons carbon dioxide per net megawatt-hour of electricity in 2011, by the number of megawatt hours saved. See 2011-12 Duke Energy Sustainability Report, available at <http://www.duke-energy.com/pdfs/11-12-sustainability-report.pdf>.

plan and numerous sustainability community service initiatives in Charlotte's Beatties Ford Road Corridor neighborhoods while giving the students an unparalleled opportunity to work on sustainability planning at the ground level. The Duke Carbon Offsets Initiative, established as a result of Endowment support, provides internship opportunities as well as coordinates with researchers and outside partners on new and innovative offset project types and carbon accounting methods.

In addition to co-curricular benefits, the Endowment also worked to support sustainability-related curricular improvements at the schools. Although few actual curricular changes occurred over the four-year period, the CSI spurred conversations that continue to have an influence on curriculum development through its convening efforts, such as the February 2010 Curricular and Co-Curricular Workshop centered on curricular goals and facilitated curricular-based discussions and outside speakers at the Campus Sustainability Summits. In the words of one respondent, "maintaining a high profile and priority on sustainability has helped to raise the stature of sustainability and the importance of incorporating sustainability into the educational experience."

- **Sustainability-Related Community Service Opportunities:** Without a doubt, the CSI helped the schools increase their community service efforts on sustainability. The Smith-Duke collaboration again serves as a prime example by sending students into the community to assist residents with energy efficiency and raise awareness of the benefits of green practices. Duke and Furman's work on residential energy efficiency programs is expected to inform all the schools on sustainability-oriented community service programs.
- **Establishment of a Trusted Network of Sustainability Experts:** The CSI has helped the schools to establish relationships with each other as well as key public and private experts and organizations that almost certainly will yield lasting benefits for their campuses as well as the communities around them.
- **Development of Independent Collaborations:** Despite early difficulty in establishing collaborative projects between the schools, by the end of the reporting period several collaborative efforts were underway, some of which developed independently of the Endowment's involvement. Examples of such collaborations include a Piedmont Natural Gas-funded project to support energy efficiency-related work at Furman, Duke and Vanderbilt that was spearheaded by Furman faculty Angela Halfacre and Duke's Charlotte Clark. The other involves a project between Duke and Smith to provide environmental justice training to Charlotte area teachers and students. Davidson and Smith have collaborated on a student internship program that places undergraduates in local agencies to assist with sustainability initiatives. Finally, while the schools were not able to develop a joint four-school collaboration with Duke Energy, the CSI helped set the stage for one-to-one collaborations between Duke Energy and each of the schools. As a post-script, the Endowment in 2012-13 provided assistance to a four-school local food and campus farming initiative.
- **Collaboration with Other Funders:** In May 2012, the Endowment and Jessie Ball duPont Fund endeavored to collaborate on a higher education effort to find creative ways to finance campus energy efficiency and renewable energy efforts as well as carbon offsets. The Duke Carbon Offsets Initiative will work with University of North Carolina – Chapel Hill's Environmental Finance Center to test financing mechanisms that will extend investments in offset projects. The results of the collaboration are expected to help the Endowment institutions identify creative techniques for stretching increasingly limited sustainability dollars.

- **Sustainability Leadership:** Through its combined efforts and outcomes, the CSI has helped to establish the schools as leaders in sustainability, with others outside the campuses looking to the Endowment’s tangible examples for guidance.

D. School Outcomes

Assessment of outcomes achieved for each school illustrates the value of the Endowment’s support regarding each institution’s progress towards increased sustainability. A review of the schools’ accomplishments reveals the value of the joint initiative and the collaborations and collaborative spirit it fostered, mostly as a natural outgrowth of the convening opportunities the Endowment created. This section now focuses on the specific outcomes resulting from the CSI’s support at each of the schools.

Certainly, the CSI has succeeded in fulfilling its original mission to help its schools investigate their options for improving sustainability, with nearly half of all grants directed at audits or assessments. These audits and assessments – including three campus energy audits at Davidson, Furman and Smith and two solar energy consultations for Davidson and Furman – have helped the schools prioritize goals and lay the foundation for future projects. Notably, in reviewing the types of grants implemented over the life of the CSI, it is evident that the schools did not stray far from their individual original priorities, with 75 per cent of funds directed at energy efficiency, renewable energy, and climate-focused projects (see Figure 2, “Distribution of Funding by Project Category”).

Each of the four school’s sustainability efforts evinced appreciable improvement over the term of the CSI. The projects completed on the campuses are provided by school in Table 1. Because a great deal of the CSI focused on efforts to mitigate climate change (particularly with respect to efforts to use energy more efficiently and identify renewable energy opportunities) and because an institution’s carbon footprint represents a widely accepted metric for gauging its sustainability, the carbon footprint of each school is provided in the table as one method for putting into perspective the scope and magnitude of each of the school’s sustainability challenges.

Table 1 charts the projects toward which the schools directed Endowment sustainability dollars. The table helps to show the priorities of the schools and how some stayed very focused on specific topics, such as Duke with carbon offsets, Smith with pursuit of energy-related cost savings, and Davidson with reducing reliance on outside energy sources. Furman, at first glance, appears to have spread Endowment dollars across a wide number of project types. However, a closer look reveals a common thread for Furman aimed at sustainability awareness and learning. A comparison of Table 1 and Figure 3 (“Distribution of Grants Across Schools”) illustrates how the schools’ activities comprised each of the major project categories funded by the Endowment. The section below provides an overview of each of the schools and the outcomes each achieved relative to the CSI’s support.

Table 1. Distribution of Projects by School

DAVIDSON	DUKE	FURMAN	SMITH
Energy Audit Campus Solar Feasibility Study Baker Sports Complex Solar Array Inaugural Funding for Sustainability Director (Inaugural funding)	Duke Carbon Offsets Initiative NSOE MEM Summer Internships at Smith Residential Energy Efficiency-Based Offset Pilot Project	Energy Audit Campus Solar Feasibility Study Climate Action Planning Workshop Conservation Dashboards Water Walk Fundraiser	Energy Audit Energy Upgrades NSOE MEM Summer Internships at Smith / Campus Sustainability Planning Strategy Chilled Water Plant Feasibility Study
Carbon Neutrality Goal 23,800 MTCO₂e by 2050	Carbon Neutrality Goal 333,000 MTCO₂e by 2024	Carbon Neutrality Goal 28,708 MTCO₂e by 2026	No Neutrality Goal Estimated Carbon Footprint ~22,500 MTCO₂e
Joint Consultation: NC Solar Center Renewable Energy Financing Overview			

1. Davidson

Davidson divides its sustainability goals into four major categories, including: (1) Operations & Infrastructure, (2) Consumption & Waste, (3) Transportation, and (4) Curriculum, Research, & Student Outreach. Although Davidson committed to becoming climate neutral by signing the American College and University Presidents' Climate Commitment (ACUPCC) in 2007, it extended its climate neutrality commitment deadline to 2050 and will use the time to focus on reducing its emissions baseline as much as possible in the near term, generating renewable energy to reduce its dependency on fossil-fuel-based power and protect against rising fuel costs. It does not plan to actively pursue carbon offset projects in the near-term (present – 2020), except to the extent that it can achieve reductions by supporting community-focused energy efficiency-based offsets.

Over the course of the CSI, Davidson's faculty approved an environmental studies major (in 2010). Until 2012, Davidson did not have a sustainability director, but had created a program to support a two-year fellowship position by which a recent Davidson graduate assists and promotes sustainability issues. Prior to the CSI, as an indication of Davidson's increasing prioritization of sustainability, Davidson applied between \$100,000 and \$150,000 of then-president Ross' Endowment discretionary funds to install a composting system that has

reduced food waste hauled from the dining halls by 74% at a savings of \$10,000-\$15,000 per year and made environmental sustainability the flagship issue of Davidson's annual topics of campus-wide focus.

Over the course of the CSI, the Endowment's grants to Davidson have put it on a path of greater efficiency, introduced renewable energy generation to the campus through the installation of a photovoltaic and thermal solar array on the Baker Sports Complex (one of the most visible structures on its campus), and set the stage for Davidson to team up with Furman and Duke Energy to become one of the utility's award-winning customers through the Smart Building Advantage program (for efficiency improvements to the Baker Sports Complex). Davidson received \$160,000 in grants from the Endowment's CSI, which it parlayed into \$1.3M worth of new projects, primarily related to renewable energy production. The energy efficiency measures and renewable energy projects accomplished as a result of the CSI's support (both monetarily and as a result of networking opportunities) will save Davidson approximately \$110,000 annually from 2011 forward. In terms of guidance on sustainability and institutionalization of sustainability at high levels of the College's administration, Davidson has committed to creating a permanent Sustainability Director position, the inaugural funding for which will be provided by the Endowment.

Davidson's assessment of its solar power opportunities deserves special mention. Using Endowment funding, Davidson was able to complete a comprehensive evaluation of its 107 rooftops for solar panel installations, the basis of which allowed consultants to identify funding to seed the Baker Sports Complex Solar Array project. The Baker Sports Complex Solar Array will produce solar PV-sourced electricity (to be used by the campus) and solar thermal power that will heat water for the pool and showers. The project cost \$670,000 to install, \$50,000 of which was provided by the Endowment and another \$200,000 provided by state grants. Cost savings are estimated to reach as much as \$25,000 per year.

Below are the projects funded at Davidson as part of the CSI and their significant outcomes (Table 2a) followed by a table depicting the origins of the Baker Sports Complex efficiency upgrades (Table 2b).

Table 2a. Davidson Projects and Outcomes

Project	TDE Funding/ Total Project Cost	Projected Annual Cost Savings	Matching Funds	Payback Period (years)	Annual Energy Saved	Annual Carbon Avoided MTCO₂e	Projected Annual Renewable Energy Generation	Other Outcomes/Benefits + Additional Information
NC State <i>Joint Consultation</i>	\$2,500/ \$10,000	see BCSCA*	N/A	0.1	See BCSCA	See BCSCA	See BCSCA	Identified call for proposals that led to BCSCA application & funding
NC Solar Center <i>Joint Consultation</i>	\$ 6,250/ \$25,000	N/A	N/A	N/A	N/A	N/A	N/A	Helped understanding of financing challenges
Solar Assessment	\$24,119/ \$24,119	see BCSCA*	N/A	1.04	See BCSCA	See BCSCA	See BCSCA	Assessed 107 roofs; confirmed Baker Sports Complex as ideal location for solar + identified a funding source (State of NC)
Energy Audit	\$28,500/ \$28,500	N/A	N/A	N/A	N/A	N/A	N/A	Confirmed DA on the right track re: energy efficiency
*Davidson Baker Sports Complex Solar Array - Solar PV ("BCSCA")	\$50,000/ \$670,000	\$25,000	\$620,000 (\$420,000 from Davidson)	26.8	Equals energy generated	82.32	129,000 kWh	Solar PV for on-campus electricity; learned intricacies of state & fed govt projects; high campus visibility of solar power as alternative energy source; cost savings will depend on whether solar PV helps to reduce peak kW consumption on high demand days & on natural gas prices
BCSCA -Solar Thermal						187.03	1,000 MMBTU	Solar Thermal will heat water for pool and showers, reducing natural gas demand.

Table 2b. Other TDE-Derived Outcomes Reported by Davidson

Networking Event	Opportunity Identified	Cost of Project	Annual Cost Savings	Matching Funds	Payback Period (years)	Annual Energy Savings	Annual Carbon Avoided MTCO ₂ e	Other Outcomes/Benefits + Additional Information
Campus Sustainability Summit <i>information from Furman</i>	Duke Energy Smart Building Advantage Program for Baker Sports Complex	\$476,000	\$86,045	\$75,000 (Duke Energy Rebates)	5.53	1,219,232 kWh	778	Developed ways to involve students via classroom projects that examine energy and economics; gained insight into Duke E's strategies re: future costs and measurement; knowledge about program resulted from information provided by Furman at CSI summit
						24,535 therms	459	

Overall, Davidson considered the CSI to be instrumental in helping it shape its sustainability goals. According to Davidson's survey responses and interviews, although it has been committed to sustainability for nearly twenty years, Davidson had been uncoordinated thus far in its commitment. **The CSI, however, enabled Davidson to make sustainability a campus priority and begin to develop a cohesive strategy on sustainability.** In particular, Davidson viewed the CSI as providing the encouragement, support and momentum to keep sustainability issues highly visible on the Davidson campus.

The evaluation revealed that the CSI helped Davidson explore – and in some cases dismiss – opportunities that will help it further hone its sustainability vision. Moreover, the CSI helped Davidson approach projects through a “lens of sustainability benefits” as opposed to approaching projects solely in terms of cost-benefits, which now allows it to understand non-monetized values. Appreciation of the multiple values of sustainability has influenced Davidson to broaden participation in campus sustainability initiatives to a variety of decision-makers in fields unrelated to traditional sustainability issues, which has led to the formation of a Sustainability Committee and an external Sustainability Council at Davidson.

2. Duke

Duke is the largest of the four schools and has the biggest carbon footprint (~333,000 MTCO₂e as of 2007). It also has taken on the most aggressive climate neutrality goal, committing itself to bringing its annual emissions to zero by 2024. Duke expects to achieve climate neutrality first by reducing as much of its emissions as possible on campus, but realizes that it cannot zero out its emissions without finding off-campus reductions, commonly referred to as “carbon offsets”. With a short timeline to neutrality, Duke therefore focused nearly all of its TDE support on developing the University's carbon offsets program, which led to the establishment of the Duke Carbon Offsets Initiative (DCOI) in 2009. Additional CSI-related Endowment funding supported the establishment of the DCOI's first full-scale carbon offsets project. Regarding benefits, Duke reports that it has benefited from information sharing fostered by the Endowment through the CSI. It also has appreciated the opportunities afforded by the CSI to learn from the other schools as well as opportunities to collaborate on projects such as the Smith-Nicholas School of the Environment Beatties Ford Road corridor neighborhood initiative, a Piedmont Natural Gas-funded collaboration with Furman on energy efficiency and offsets, environmental justice work with Smith, and the FY 2013 local food collaboration.

Although Duke is often considered to be the most advanced in terms of implementation of measures to reduce its carbon emissions, it also may have the biggest challenge ahead of its in terms of meeting its climate neutrality goal with a carbon footprint nearly six times that of the other schools and the most aggressive climate neutrality deadline. To address this, Duke directed its CSI funding towards the creation of the Duke Carbon Offsets Initiative (the DCOI). The DCOI – nearly four years old at the time of this writing - is tasked with determining how Duke will achieve 55 percent of its emission reductions, or approximately 183,000 MTCO₂e per year, through local offsets that also yield important environmental, economic, and societal co-benefits. Due to virtually immediate demand from the internal Duke Community, the DCOI also is responsible for supplying members of the Duke community with offsets to counteract current individuals' and departments' greenhouse gas emissions, and has worked with DukeEngage to offer offsets to summer project participants which are intended to counteract emissions owing to air travel to project destinations. The DCOI also will facilitate the Endowment's first offsets purchase, made to counteract travel to and from the Smith summit in March 2012.

In addition to the general work of the DCOI, the Endowment's support led to the installation of the first swine-based livestock methane project in North Carolina, which was also the first to be registered with the Climate Action Reserve. Once established, the DCOI in 2009 was able to secure \$500,000 in grants from the USDA Natural Resources Conservation Service's Cooperative Conservation Partnership Initiative and the NC Lagoon Conversion Program. The funds were leveraged against Duke University, Duke Energy and later Google funding to install the first innovative waste management system in the state to employ an anaerobic digester to generate electricity, which generates carbon offsets for Duke University and Google and helps Duke Energy fulfill the NC Renewable Energy and Energy Efficiency Portfolio Standard (REPS) swine waste set-aside. The project grew out of a partnership between Duke University and Duke Energy, each of which contributed to the capital costs of the system and each of which will support operations and maintenance costs for a period of ten years in return for renewable energy certificates (RECs) and carbon offsets achieved by the project. The system is projected to generate 500 MWh of electricity and 5,000 MTCO_{2e} per year, and in the first year generated 358 MWh of electricity and approximately 2,900 tons of offsets (Duke University will be able to verify approximately half of these emissions under the Climate Action Reserve's livestock methane protocol for its first verified offsets reporting period).

The system became operational in May 2011, and in September 2011 Google Inc., became a partner to Duke University for the generation of carbon offsets. Google's involvement has raised the profile of the project considerably, and the project has been the subject of several media stories since becoming operational, including television, print and web media,⁴ which in turn has garnered considerable attention from the agriculture and renewable energy communities as well as policy makers. The project also will serve as a research and teaching tool, with Google's investment supporting the first year of research into the efficacy of the system and potential for improvements and cost reductions. Tours and training events for students, other schools, farmers, the media and public and private officials occur on nearly a monthly basis, if not more often.

Related to shaping the DCOI's work and as an example of how the CSI has influenced Duke's priorities, the schools' consistent interest in pursuing community-based energy efficiency-based offsets has helped to move the DCOI to use its final Endowment grant to initiate a project to evaluate energy efficiency-based offsets through the installation of electricity monitoring equipment on homes that received simple energy efficiency improvements. The project not only will help in determining the efficacy of energy efficiency-based offsets and their costs, but also provided at least four students with hands-on experience related to sustainability.

Regarding leveraging the Endowment's dollars, the DCOI has used the total of \$150,000 granted to it to build the capacity to spearhead its first carbon offsets project (a \$1.2M-system) while establishing institutional capacity to address many other offset needs and questions. Regarding Duke's swine focus, eventually the project will help to inform efforts to generate electricity from swine waste (in 2013 the DCOI partnered with the Nicholas Institute for Environmental Policy Solutions at Duke to complete a modeling analysis of a network approach to swine waste-to-energy to meet the state's REPS swine requirement)⁵ and is also expected to encourage

⁴ *L.A. Times, Charlotte Observer, Business Times, Raleigh N&O, Rural Heritage Magazine, BioCycle, Winston Salem ABC affiliate, Fox Affiliate, NBC Affiliate, Google Blog spot, WUNC radio.*

⁵ See A Spatial-Economic Optimization Study of Swine-Waste Derived Biogas Infrastructure Design in North Carolina, available at <http://nicholasinstitute.duke.edu/climate/spatial-economic-optimization-study-swine-waste-derived-biogas-infrastructure-design>.

development of systems that solve the pollution problems associated with waste management at swine farms. Considering Duke's own investment in the DCOI and the swine farm waste-to-energy project, the Endowment's investment will leverage well over \$2M.

The DCOI's record of accomplishments evinces how the CSI's support has had a catalytic and leveraging effect and has helped to spur innovation and progress around the topic of greenhouse gas emission reductions. In particular, the DCOI has parlayed the Endowment's support into a nationally recognized carbon offsets program – possibly the only one of its kind in the nation – and built the first and only project in the state to achieve carbon offsets from an innovative swine waste management technology (i.e., systems that achieve substantial reductions of ammonia, nutrients, pathogens, heavy metals and odors and prevent discharge of waste to surface and groundwater) and produce renewable energy in fulfillment of North Carolina's REPS.⁶

The DCOI, more generally, has become a resource on carbon offset development by demonstrating how such projects work and by seeking new partnerships to catalyze new projects and project types. It has also served to increase campus awareness about climate change, especially with respect to how individuals can take steps to counteract it, and has spurred multiple student learning and research opportunities related to exploration of innovative carbon offset project types, such as forestry, coastal habitat restoration, energy efficiency, peatland hydrology restoration and hospital-based offsets, to name a few, all while collaborating with partners within and outside the university.

Regarding outcomes generally, Duke respondents also reported that the CSI had an impact at spurring curricular efforts. Specifically, Duke stated that:

While the CSI has not altered the educational experience, it has helped to bring faculty together to build projects that will provide educational opportunities for students. Duke now may be seeing the beginning of development of faculty development projects and/or initiatives. The offsets initiative has generated internship and volunteer opportunities for over 12 students since its establishment in 2009, and the swine project has brought in dollars that will support research via the Pratt School of Engineering. DCOI staff have been invited as guest speakers to classes while the farm project has hosted field trips from several Duke University groups as well as students from other institutions plus legislators and state and federal officials. The DCOI also serves as a client to individual and group masters projects, and thus far has been involved with four MEM projects, not including the Johnson C. Smith sustainability planning team. DukeEngage also has been a partner of the DCOI, and offers its students the ability to purchase offsets to counteract emissions from air travel.

Regarding incorporating sustainability generally into the curriculum, maintaining a high profile and priority on sustainability has helped to raise the stature of sustainability and the importance of incorporating sustainability into the educational experience. It is not a coincidence that sustainability is being investigated as a certificate program.

⁶ This includes, but is not limited to, the value of the swine farm project and funding provided by Duke University and other partners for operations and maintenance of the project over a ten-year term, plus administrative support for the DCOI provided by Duke University.

3. Furman

Furman takes a broad perspective on sustainability, and, in keeping with its broad perspective listed a wide array of sustainability-related goals for the CSI, including (1) climate action planning, (2) renewable energy options, (3) regional networks, (4) community partnerships, and (5) innovative curricular and co-curricular initiatives. These goals were reflected in the more varied categories of projects the Endowment supported at Furman (see Furman Funding by Project Type, below). Arguably, the Furman-implemented projects touched upon all of these goals, with a common impact of education and increased awareness about sustainability.⁷

Of the schools, Furman has perhaps prioritized and incorporated sustainability into campus life to the greatest extent. Furman has a long-standing and comprehensive commitment to sustainability, documented in *Sustainable Furman*, the sustainability master plan approved unanimously by Furman's Board of Trustees in 2009. In 2003, Furman built the first LEED-certified building in South Carolina and in 2010 became the first private liberal arts institution to offer a B.S. degree in Sustainability Science. Furman's commitment to sustainability extends across its operations, administration, and academic mission, incorporating the entirety of university efforts. By enhancing sustainability in the curriculum, building community partnerships to work towards sustainability both at Furman and regionally, and investing in energy efficiency and renewable energy efforts on campus, Furman has moved toward integrating sustainability as a core value across the university. Regarding campus sustainability features, Furman boasts the David E. Shi Center for Sustainability – a showcase for sustainability education and demonstration projects – an Asian garden, and a replica of Henry David Thoreau's cabin.

Under former president David Shi, Furman signed the American College and University Presidents' Climate Commitment (ACUPCC) in 2007, committing Furman to climate neutrality by 2026 based on a 2007 baseline of 28,708 MTCO₂e. Since 2007, Furman has added significant square footage (notably, the completion of Townes Science Center, which doubled both total square footage and lab square footage from the original Plyler Hall). While total emissions have increased, energy use per square foot has decreased, from .046 MMBtu/sq. ft. to .037 MMBtu/sq. ft., a direct result of efficiency and energy conservation projects undertaken by Furman, many of which were identified through the Endowment's support of Furman's energy audit.

Regarding curriculum, all Furman students are required to take a class focusing on "Humans and the Natural Environment," and in 2009, for the first time, sustainability was included as a topic in the first-year student orientation. Furman has also developed a network of sustainability living/learning laboratories to enhance co-curricular education and research on campus. Furman has been particularly active in faculty sustainability development, holding workshops in which 59 of Furman's ~250 faculty have participated since May 2011.

Regarding staff devoted to sustainability and time spent on implementing sustainability initiatives (including Endowment-funded efforts), Furman has a Sustainability Director on staff (faculty) and noted that it has made no new hires with Endowment funds. Furman does not believe that any more staff are needed but does seek

⁷ Furman reported generally that it made progress on all of the categories it originally listed as goals for the CSI, except for the progress it described on climate action planning through the creation of a plan for achieving climate neutrality, for which it gleaned ideas from the CSI-funded Climate Action Planning Workshop in January 2009.

and advocate for outside expert consultants on as-needed basis. Like Davidson, Furman has had to adjust to a transition in leadership after the retirement of Dr. David Shi. Furman reported that time spent on the Endowment's initiatives and requests, Furman roughly estimates that in any given week approximately 30 people spend 4-8 hours (half to a full workday) on sustainability programs and projects related to Endowment efforts. This includes the average of the 3.5 full time staff in the Shi Center for Sustainability, Facilities staff, faculty members, administrators, and other staff members.

Table 3. Furman Funding By Project with Outcomes

Project	TDE Funding/ Total Project Cost	Projected Annual Cost Savings	Matching Funds	Payback Period (years)	Annual Energy Savings	Annual Carbon Avoided MTCO ₂ e	Projected Annual Renewable Energy Generated	Other Outcomes/Benefits + Additional Information
NC State <i>Joint Consultation</i>	\$2,500/ \$10,000	See Energy Audit	N/A					Comprehensive report of possible energy conservation projects; armed with this information, Furman was able to complete several of the projects identified including the (1) Recommissioning of Riley Hall, (2) New Boiler System for Roe Art Building, and (3) Roof Replacement, McAlister Auditorium
NC Solar Center <i>Joint Consultation</i>	\$6,250/ \$25,000	N/A						Helped to identify funding opportunities and challenges of solar energy projects.
Climate Action Planning Workshop	\$7,500/ \$7,500	N/A						Helped TDE schools in development of climate action plans and strategies for meeting neutrality goals
Energy Audit	\$28,500/ \$28,500	\$ 20,000		10	350,877	224	N/A	Arguably, participation in Duke Energy Smart Building Advantage Program was a result of energy audit plus CSI networking (Duke Energy SBA led to \$20,000 in funds for energy efficiency measures)
Campus Solar Feasibility Study	\$31,792/ \$31,792	\$ 10,337	\$ 340,000	0.00	See Ren. Energy Gen'd	112	175,200 kWh	Solar power/thermal roadmap + key enabler in 100-kW PV solar array on Lay Physical Activities Center; \$340K energy grant from SC
Furman Conservation Monitoring	\$50,000/ \$100,000							Valuable educational, research tool; project expanded scope of Campus Energy Dashboard project to include all buildings on campus; exceptional educational, research opportunities for faculty, staff and students
Water Walk Fundraiser	\$12,500/ \$12,500							Walk built awareness of how water is connected to other sustainability themes, and to raise funds to complete a potable water system for the Guatemalan village of Esperanza San Antonio

In addition to the specific projects funded by the Endowment, for Furman, **the overall benefits of the CSI were four-fold**, including: (1) project identification and prioritization through access to expert resources and information sharing with other schools, (2) maintenance of momentum on sustainability (*i.e.*, by helping to maintain support from its Board of Trustees and other stakeholders); (3) “increased clarity about meeting challenges amidst the economic downturn”; and (4) significant progress in meeting all of its challenges as a result of the Endowment’s sustainability initiative (as stated by a Furman survey respondent, “the Endowment has been a critical driver in maintaining momentum on our campus”).

4. Johnson C. Smith

Related to the Endowment’s support, Smith has been primarily focused on cost savings achievable through energy efficiency, establishment of a sustainability plan for the University (which it completed in March 2012), community outreach on sustainability, and increased campus awareness. Smith over the course of the CSI also became interested in installing a chilled water plant to further energy efficiency-based savings. As of July 2012, Smith had completed a planning exercise for installation of a new chilled water plant.

Smith’s progress on sustainability over the four-year period may be the CSI’s biggest singular accomplishment and best example of how the CSI improved sustainability at the campuses. In Smith’s words, “there would be no sustainability initiative at Smith without the Endowment’s leadership and support.” Smith credited the Endowment’s sustainability initiative’s grants, learning network and “opportunities for the [Endowment] institutions to work collaboratively on key issues regarding sustainability” as the “impetus for all of Johnson C. Smith’s current sustainability work.” Thanks to the CSI, Smith has determined its energy efficiency goals and has begun to think “more comprehensively and strategically about ways to create a sustainable campus and surrounding community,”⁸ with several initiatives underway that have moved sustainability from a “nascent” idea to a multi-faceted and vibrant commitment.

Smith, the most urban of the campuses, admittedly had the least developed sustainability program at the outset of the CSI. Since then, Smith’s primary focus has been on energy efficiency and other efforts to reduce costs and improve facilities. Smith was also interested in finding ways to instill a sustainability ethic in its student body. Having hired a new director of community outreach and armed with a strong reputation in community service and service learning, Smith also sought to build sustainability-related community service projects to improve the sustainability of the neighborhoods around Smith at the same time as it was improving the sustainability of its campus. Although interested in reducing its carbon footprint, Smith is not a signatory to the ACUPCC and had not investigated climate issues in any great detail prior to the CSI.

In terms of Smith’s goals for the CSI, Smith reported that it sought to (1) establish a firm knowledge base of information to create a framework for moving forward with a robust sustainability program; (2) implement at least two pilot programs with an emphasis on sustainability within two years of the Initiative’s launch; (3) integrate sustainability into the overall curriculum of the University, and (4) make sustainability an effort that will become a part of the culture of the campus, which it desires to be spearheaded by student

⁸ Johnson C. Smith Sustainability Report, *available at* <http://www.jcsu.edu/uploads/f9/98/f998a8c293289f0250b97ea81d920fc7/SUSTAINABILITY-REPORT-FINAL.pdf>.

leaders. Over the course of the CSI, Smith has become increasingly interested in local food production and healthy eating as well as renewable energy production.

Smith stayed true to its mission and has made considerable progress towards its overall goals. Outfitted with Advanced Energy's audit of its campus and energy efficiency options, Smith used its Endowment funding to implement \$40,000 worth of energy efficiency measures, which have yielded **approximately \$32,000 in annual cost savings, realizing a payback period of slightly more than one year, and cut its annual campus energy use by nearly five per cent.** Beginning around the summer of 2010, through a Housing and Urban Development (HUD) grant, it included Duke Nicholas School of the Environment graduate student interns into a community outreach effort to raise awareness of sustainability in a women's entrepreneur program, HUD residential renovation program, and neighborhood training sessions.

The student interns in return built a sustainability framework for Smith as part of their 2011 Masters Thesis. In the framework, the students evaluated the benefits of creating a Campus Sustainability Committee at Smith, suggested guidelines for such a committee, and made recommendations related to long-term campus sustainability management (most notable of which being the creation of a Campus Sustainability Director position).⁹ The framework served as the foundation for the 2012 sustainability report and inventory of Smith's sustainability initiatives and programs. Smith is relying on the report to track its progress on sustainability against this inventory and to implement a host of sustainability initiatives.

Although long, the list of benefits reported by Smith as a result of the CSI is worth including in its entirety as it illustrates the broad impact of the Endowment's efforts. Notably, of the four schools, Smith reported the largest number of benefits in the category of curricular development.

Endowment-Related Benefits Reported by Smith

- Sharing of knowledge and ideas among the four schools
- Development of Smith's framework for sustainability
- Availability of funding to undertake or complete needed building retrofits and upgrades
- Increased student interest in sustainability, *e.g.*, students readily participated in a campus-wide survey and exhibited enthusiasm for upcoming sustainability activities; a resident hall competition on energy conservation generated tremendous student involvement.
- Curricular/Co-Curricular Developments
 - Curricular: STEM department: in process of developing a new minor in renewable energy
 - Curricular: Sustainability will also be a part of the curriculum for the new minor in Public Leadership
 - Co-curricular: topic of sustainability included in the leadership development curriculum. D. Co-Curricular: students participating in internships involving energy conservation

⁹ See Fitzgerald, Brent, Katharine Grant and Andrea Lewis, *Framework for Johnson C. Smith University's Sustainability Plan* (May 3, 2011), available at http://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/3735/Smith_MP_Final_Edit_4_29.pdf?sequence=1.

- Community Engagement related to sustainability has increased via collaboration with the City of Charlotte, Queens College, Davidson College, UNC-Charlotte and the work conducted under the student energy internship program
- Improved stature, e.g., development of an international sustainability and community development initiative that has far-reaching implications for [Smith's standing in] the academic community
- Realize that Smith should consider sustainability in everything we do, even if at the time we do not have the necessary funding to implement
- Information from the Endowment activities is expected to help Smith prioritize efforts in the future

Regarding collaborations, Smith collaborated most closely with Duke and Davidson, working with Duke on the NSOE-Smith collaboration on community outreach, which also led to the development of a sustainability framework, and most recently with Duke on an environmental justice workshop for entering freshman of Smith, Charlotte area teachers, and Smith faculty. The environmental justice workshop with Smith was directly coordinated by Sherrill Hampton and Dr. Charlotte Clark, who had worked together earlier on the Smith-NSOE collaboration. Notably, this most recent collaboration was developed independently from the Endowment, proving that the Endowment has helped to establish a strong network around sustainability amongst the schools that has led to organic partnerships. As noted above, Smith also has collaborated with Davidson College through a Student Energy Internship Program funded by the North Carolina State Energy Office. The program matches students to governmental agencies and other entities to assist with energy, environmental and conservation issues. Other participants include the City of Charlotte, UNC-Charlotte, and Queens University.

Table 4 shows grants made to Smith and reported outcomes, both direct and indirect.

Table 4. Johnson C. Smith Funding By Project with Outcomes

Funding Amount & Purpose	Outcomes, Including Indirect	Projected Annual Cost Savings	Matching Funds	Pay-back Period (years)*	Annual Energy Savings (kWh/yr)	Annual Carbon Avoided MTCO _{2e}	School Reported Outcomes
\$ 2,500* NC State Consultation	TBD	TBD	TBD	TBD	TBD	TBD	Shared consultation with all Endowment schools
\$ 6,250* NC Solar Center Consultation	TBD	TBD	TBD	TBD	TBD	TBD	Shared consultation with all Endowment schools
\$ 28,500 Advanced Energy Audit	Energy Mgmt Plan; Smith efficiency upgrades; Grimes Lounge, Smith Hall & Duke Hall renovations	\$32,744	Rebates from Duke E (Value of rebates TBD); Funding for Grimes Lounge & Smith Hall Upgrades**	1.22	533,472	340	Audit led to energy management plan, including a thorough report that outlined all the shortfalls in the campus' energy infrastructure, plus provided data and benchmarks for the University to start the process of creating a strategic plan for energy efficiency.
\$ 40,000 Smith Energy Upgrades	Series of energy efficiency upgrades implemented						Retrofitted lighting fixtures in high usage buildings (e.g., Library) as start to implementing Advanced Energy Audit. All funds exhausted in a strategic manner to achieve energy efficiencies. Energy efficiency work resulted in rebates from Duke Energy. Led to 4.78% reduction in electricity consumption since 2010.
\$ 5,000 Smith's share of DU Summer Internship program	JCSU Sustainability Plan; Community Outreach	N/A	N/A	N/A	N/A	N/A	Interns from the Nichols School at Duke spent time along the Northwest Corridor and on campus to study, and shape programs that will be of benefit to the overall community in terms of energy efficiency, and education of best practices in energy efficiencies in homes.
\$ 62,500 Chilled Water Plant Feasibility Study (Phase I- II)	TBD	TBD	TBD	TBD	TBD	TBD	Completed HVAC study of campus. Results of report will determine steps to install a chilled water plant. Smith issued RFP for study with assistance from TDE colleagues

* Smith's portion of four-school consultation

** Funding received by Smith for upgrades to Grimes Lounge and Smith Hall were not reported during the evaluation, but later research indicates that Smith received \$305,000 from the NC State Energy Office's stimulus funds, which it matched at approximately 50%.

II. IMPEDIMENTS AND SUGGESTIONS FOR IMPROVEMENT

In addition to the benefits reported by the schools, survey respondents also provided useful critiques about the CSI, and in many cases provided suggestions for how to address them. The schools directed their suggestions mainly toward enhancing collaboration amongst the schools and increasing the overall effectiveness of the Initiative. This section focuses on the specific critiques reported by the schools, lessons learned and suggestions for improving the CSI. The schools' critiques were gathered from a qualitative modeling analysis of survey responses and interviews. Suggestions are provided directly after critiques, with more general suggestions at the end of this Section.

A. Reported Critiques and Suggestions for Improvement

The schools' critiques can be grouped into four main categories, including: (1) the existence of barriers to collaboration, (2) lack of focus for projects and initiatives, (3) funding uncertainty, and (4) onerous reporting requests. Detailed responses are provided below, followed by the schools' suggestions for improvement.

1. Barriers to Collaboration

One of the key critiques reported by the schools pertained to the difficulties they encountered when attempting to develop cross-institutional partnerships. They attributed barriers to collaboration to incompatible goals or institutional needs, insufficient support or leadership, and ill-defined goals (*i.e.*, lack of focus or goals that were too broadly defined) for collaborations. The schools also noted the incompatibility between campuses as a stymieing effect on collaboration. For example, one respondent reported that "[w]e have been open to and excited by the idea of collaborations, but it seems that in the instances where we've tried, further investigation and discussions determined that the particular project wouldn't work for one institution or the other, or both." Respondents also noted "directional challenges" pertaining to discussions taking place among peers and faculty members that were not consequently carried to higher levels of the administration or other managerial entities, which thwarted cooperative projects. Lack of focus is discussed in greater detail below.

Other respondents noted that the effort that went into developing collaborative projects among the four institutions was often made without a clear purpose, as in, at times there was no follow-up effort beyond an initial inquiry.¹⁰ It was also reported that significant time and effort were spent on potential collaborations involving such topics as solar, biomass, co-curricular opportunities and carbon offsets that rarely led to an actual collaborative outcomes, except for very facilitated projects. Reasons proffered for why building collaborative projects that were worthwhile for all partners proved so difficult included the nature of the projects considered and the differences between the four schools.

¹⁰ For example, the respondent reported that staff spent time gathering information on service projects related to sustainability but "there never seemed to be any follow-up or particular result from that exercise."

Additional theories offered regarding barriers to collaboration included: (1) the difference in the depth of the schools' individual sustainability programs and resources; (2) the scale of projects that needed to be implemented, primarily due to the size of the institutions; (3) varying focus for sustainability efforts; and (4) geographic differences, such as the differences between state regulatory regimes and between urban and rural settings. Some schools commented that they had difficulty finding collaborative projects to pursue, while others said that time constraints were difficult to overcome.

Suggestions for Addressing Barriers to Collaboration

As a way to successfully implement collaborative projects, one school suggested that "institutions could save a great deal of time and effort, and assess their ability to manage project's strengths and challenges, by first defining and testing their efforts on their own, and then adding the variables of another institution's culture". A further suggestion was that the Endowment could create a defined collaboration program to which all schools would commit in writing, and for which a campus point of contact would be designated. The campus designee would serve as the driver to keep projects moving and share progress reports. To support the commitment of time and resources from campus designees, the suggestion was made that the individual, depending on whether he or she were faculty or staff, could be provided course-release time or a stipend in return for taking on the additional workload. In addition to designees at each campus, the respondent suggested that it would be helpful to have one person responsible for overseeing and managing the collaboration across all four schools, preferably a representative of the Endowment.¹¹

Another school suggested focusing on very specific topics for future collaboration, including "developing local carbon offsets, revisiting renewable energy options as the regulatory environment changes, sustainability-related community service and connections across the four schools," and a coordinated broad-based outreach effort to utility providers in both states. This suggestion may address the critique that initial goals were overly broad and unspecific.

2. Lack of Focus, Especially Regarding Conference Calls and Working Groups

For a time, the schools participated in monthly conference calls and provided periodic written reports on their progress related to topics identified on the calls and at the summits. The CSI also encouraged formation of working groups around specific topics, such as green purchasing and biomass project investigation and development. Some respondents found the monthly calls and working groups very helpful to building projects and appreciated them for helping the schools and individuals become acquainted with one another and providing them insight into the challenges and goals of their counterparts. Many of the respondents, however, found them time consuming and their value limited, and reported that the conference calls and working groups lacked focus. These respondents also believed that uncertainty pertaining to funding of working group ideas left the participants without a

¹¹ It appears that some of these suggestions have already been implemented with respect to the food and farming collaborative project funded by the Endowment in summer 2012.

clear goal to pursue or motivation to devise a concrete plan to implement. The lack of focus of the working groups and conference calls also appears to have been considered a barrier to collaboration.

Some comments are particularly insightful and point again to a perceived lack of leadership as well as a lack of a coordinating campus entity or staff person. For example, one respondent stated that “[w]hile we felt that the groups were generally helpful, especially with regard to knowing our colleagues at the other schools, we cannot point to a particular example that led to an advancement in our efforts. This partly may be because our campus did not have a single point of contact to assimilate all of the ideas discussed in these Groups, shape them into a cohesive plan, and keep the plan moving forward.”

Another respondent stated that the calls included too many participants, and without a clear objective or goal, they often felt unproductive. Also, due to disparities in staff levels, respondents reported that they were often hesitant to speak freely, thereby skewing the direction of the conversation toward the viewpoint of the highest level staff and/or faculty participant.

Suggestions for Improving Working Groups and Other Ways to Increase Focus

Regarding the working groups, suggestions for improvement included providing clear goals or expected outcomes for the working groups (including deadlines) at the outset; providing opportunities for funding working group ideas; and including someone from the Endowment on the working group to direct, lead and/or coordinate the working group. One respondent suggested that the working groups should have been allowed “to form their own agendas based on their own priorities, and let the ideas continue to thrive organically”, while another suggested that working groups only be pursued if a specific goal or objective (e.g., pursuit of a matching grant) is defined and one person or entity is designated to lead the working group. For one respondent, the basic issue was that working groups needed a promise of funding, which in turn would likely lead to the establishment of goals and help to maintain focus.

Most respondents agreed that streamlining survey instruments would prevent fatigue from requests for frequent reporting. Regarding calls, some respondents suggested that they be limited to peers at similar levels of responsibility to prevent awkwardness or inhibition of conversation.

3. Funding Uncertainty

Similar to the cause conveyed regarding the lack of focus for the working groups and conference calls, the schools repeatedly indicated that they were operating under uncertainty with regard to how projects that they were interested in pursuing or encouraged to pursue would be funded. This funding uncertainty led to hesitation and conservative decision-making on the part of the schools.

Suggestions Regarding Funding Uncertainty

To address funding uncertainty, the schools provided several suggestions that could help the Endowment stretch its funding while providing the schools with some certainty that funding could be available to support their projects. One respondent suggested a pilot project fund, through which schools could test projects on-campus to evaluate their benefits before embarking on collaborative

projects. Respondents also suggested that the Endowment provide opportunities for larger-scale funding for institutional priorities related to sustainability.

Other suggestions included a matching grant program or loan to help schools implement short-term improvements, and sponsoring dashboards or other educational outreach methods to reach the student body, staff and faculty about the benefits of sustainability. Another respondent suggested that the Endowment sponsor a small grant competition or provide support for student projects that bring together students from all four schools in order to provide the Sustainability Task Force with information.¹² A grant or revolving loan fund was also supported for energy related projects in particular because “the lack of internal funding [presents] a major barrier to implementing” energy projects. According to the respondent, “the Endowment could play a vital role by establishing” such a fund.

4. Onerous Reporting Requests

The schools reported that surveys and other requests for information were often burdensome to fulfill because they were lengthy, time consuming and could be fairly frequent. Depending on the survey, the schools – to fully comply with requests for information – needed to conduct considerable historical research and data gathering, which diverted them from their regular duties (which in many cases had increased over the period as a result of recession-induced budget cuts and staff reductions). The schools reported that the burdensome nature of the surveys was exacerbated by a lack of articulated purpose for which the information was needed and lack of follow up about how the information was used.

Suggestions for Improving Surveys and Requests for Information

The basic suggestions for improving survey practices included reducing reporting requirements and avoiding requests for information where no clear or specific reason exists to collect the data.

Some schools also reported awkwardness with respect to group reporting. While survey instruments are generally not shared, it may nevertheless be worthwhile to assure respondents that survey results will remain confidential. Where group reporting might be preferred, the Endowment could opt for one-to-one reports to avoid awkwardness for schools with less developed sustainability initiatives or less developed sustainability commitments who do not wish to discuss certain details in an open format.

Other suggestions included the establishment of baselines to determine effectiveness of a project for future evaluation, reduction of the frequency of survey instruments, and adopting a very strategic approach toward establishing metrics to gauge outcomes. Also, informing the schools of why the information is sought and how the information will be used will likely increase reporting results.

¹² Note that Duke University’s DCOI is investigating creative financing mechanisms through a partnership with UNC’s Environmental Finance Center, The Duke Endowment, and the Jessie Ball duPont Fund.

B. General Suggestions for Improving the CSI

The schools offered a variety of suggestions for improving the CSI, which are organized by topic, below. Note that some of the suggestions overlap with certain of the recommendations made by the schools for a future phase of the CSI, and that some suggestions are contradictory.

1. Improving Communication

- Better facilitate information sharing / develop an organized way to share information electronically
- Develop methods for easily gathering and sharing information amongst schools regarding, for instance, building-level efficiency measures for energy, waste, and water, to inform the schools' individual internal project development
- Address the communication challenge required to break through the 'information overload' and make sustainability personal to staff, students and faculty
- Create listserv to enhance communication
- Increase sharing of lessons learned
- Hold semi-annual structured meetings between peers or groups working on related projects to allow for focused and uninhibited discussions on specific projects and to facilitate learning between the participants
- Hold monthly meetings/calls for updates, possibly more frequently for separate projects

2. Improving Meetings

- Limit meetings to one to two meetings per year
- Continue to rotate meetings on the four campuses to highlight campus projects ("It was valuable to move the summits to our different campuses to allow participants to see each other's facilities....")

3. Improving Summits

- Improve focus ("overall the summits were worthwhile but could have been more focused to allow participants to get more into details of issues with their counterparts at the other schools. To address the challenges at summits ... allow more time with peers to facilitate interaction.")

- Higher-level administrators at the sessions impedes open conversation and opinion sharing; limit participation in working groups/working sessions to peers
- Hold an annual summit, rather than a semi-annual one, which rotates through the campuses and includes all of/only the relevant stakeholders

4. Improving Management of the CSI

- Project administration and collaboration could be improved; assign responsibility to one individual or entity per project or program to ensure that forward movement is achieved; moreover, re-visit and re-evaluate goals and modify goals as-needed; recognize university staff constraints (*e.g.*, staff time constraints, especially in light of increased workloads)
- Need strategic thinking to reinforce and focus on mission and prevent “mission drift”
- Each school could serve as the leader in one topic area and could lead a collaboration on that particular topic. *E.g.*, Smith works in the niche of community service
- Either designate a member of the Endowment staff to facilitate the Initiative or chair the Task Force with a representative from each school on some specified rotational basis, such as annually

5. Improving Support of Renewables, Energy Efficiency and Energy Conservation

- Encourage renewable energy generation by periodically discussing on-going research by each of the schools
- Create an Energy Manager for the Endowment who would support all four schools; in the alternative, establish a consulting relationship with an outside Energy Management service provider; jointly hire a re-commissioning team for handling retrofits on all four campuses

6. Improving Campus Sustainability Coordination and Oversight

The schools all recognized that one of the best ways to improve campus sustainability is through staff at high levels which are dedicated to overseeing sustainability initiatives and have the authority to implement them. The schools believed that the Endowment’s actions to encourage the schools to hire dedicated sustainability staff who have direct access to high-level administrators would help to assure much needed prioritization and direction of sustainability initiatives. In addition, dedicated sustainability staff could help to address change in school leadership by better institutionalizing sustainability efforts as opposed to relying on the dedication of the individual administrator.

C. Evolving Priorities and Future Interests

In addition to the general recommendations offered by the schools, it is worthwhile to discuss in this Section how the schools' priorities shifted over time. Essentially, new topics for exploration were added over the life of the CSI as new areas of interest emerged and the schools expanded their awareness and sharpened their understanding of sustainability issues. The primary areas toward which the schools shifted were water conservation, local food, and community service. These priorities already have been reflected in the Endowment's FY 2013 grant cycle, with the Endowment's post-spring 2012 summit ending with a call for proposals to collaborate on a project between all four schools that involves campus farms and local food production.

Notably, as interests expanded, the focus of Task Force members almost simultaneously shifted from an extremely facilities-management perspective to broader – and perhaps less precise or concrete – initiatives such as curriculum development and community outreach. The discussion below chronicles how the schools' perspectives changed over the course of the CSI and their reported priorities as of July 2011.

1. Davidson

Davidson's initial goals for the CSI were to leverage the four schools' combined efforts to achieve some economies of scale regarding the schools' shared goals and objectives (*i.e.*, become more energy efficient, generate renewable energy and reduce purchasing costs for green products). Davidson also hoped to increase momentum related to discussions or progress with partnerships with Duke Energy around campus renewable energy production, energy conservation and energy efficiency efforts as well as purchasing agreements and education of policy makers via leveraging that would be achieved by working with the other Endowment schools.

By 2011, Davidson had an established philosophy that achieving major reductions in its greenhouse gas emissions was largely out of its control because its emissions footprint would always be tied to Duke Energy's reliance on coal. It therefore continued to focus on energy efficiency and alternative energy sources, and was interested in efficiency in particular, primarily as a response to rising utility costs. By 2011, Davidson also communicated that it found it difficult to shift funds away from pressing campus priorities to physical upfits needed to accomplish significant energy savings.

Finally, Davidson recognized in 2011 that its progress on sustainability had been slowed by the change in administration and the lack of a permanent sustainability director at a high level of the administration.¹³

With respect to Davidson's future goals and the gaps it identified in its sustainability efforts, Davidson seized on the need for sizeable gifts to pursue large-scale physical plant retrofits and upfits, local-food initiatives, including on-campus farming, assistance with sub-metering projects to better track energy

¹³ Note that the Endowment has provided inaugural funding for a permanent sustainability director at Davidson.

usage, and travel and professional development funds for the Director of Sustainability, and expanded development of hands-on co-curricular projects.

Davidson listed the following specific priorities in terms of future sustainability efforts or desires:

- Student collaboration
- Curricular and co-curricular development (including “top-down/bottom-up approach”)
- Information sharing¹⁴ on energy conservation efforts and ongoing information sharing generally
- Funding for new projects
- Leveraging buying power
- Training
- Community initiatives

Regarding next steps, Davidson looks forward to receiving support for a sustainability director, which it believes will enable the development of a Comprehensive Sustainability Plan as a “roadmap” for sustainability in years to come.

2. Duke

Duke’s initial goals for the CSI were to build a stronger relationship with Duke Energy to spur campus projects and to address carbon offset needs. Supporting the work of the Carbon Offsets Initiative remains a priority for Duke, including staff to support the DCOI’s expanding mission. In addition, Duke would like to continue to learn from other schools and the Endowment on how to educate students on the importance of sustainability and action to address climate change. Finally, noting that constraints on funding are continuing to increase, Duke named exploration of funding mechanisms to stretch investments in sustainability as a goal.¹⁵

Regarding challenges, Duke identified the following:

- Resource constraints – money, staff, etc., especially regarding capitalizing carbon offset development
- Competing university priorities
- Connecting institutional sustainability efforts to the academic mission of the campus – and then measuring student knowledge or literacy about sustainability to track success of programs
- Developing long term sustainability strategies that then translate to more focused, tactical plans for shorter-term milestones
- Information overload for students, faculty and staff – how to make the sustainability message break through the “noise” and become personal to individuals

¹⁴ Davidson repeatedly listed information sharing as a goal, which comports with Davidson’s philosophy of looking to the other schools and their experiences to inform its decision-making.

¹⁵ Efforts are already underway to explore creative funding mechanisms, particularly for energy efficiency-based measures, through a collaborative effort between The Duke Endowment and the Jessie Ball duPont Fund, as well as Duke University, UNC’s Environmental Finance Center, and a number of the Jessie Ball duPont Fund’s supported schools.

Specific suggestions for future areas of focus included (1) conducting Masters projects at other schools; (2) conducting faculty workshops on sustainability at each of the schools; and (3) student exchanges.

3. Furman

Regarding the evolution of Furman's goals over time, similar to the other schools, Furman did not eliminate any goals but added to them, and in some cases used new information learned through Endowment-supported audits to make them more specific. With respect to new goals, Furman added promotion of sustainability across campus (*i.e.*, "broaden students' understanding of and interest in sustainability"). With respect to better-defined or increased specificity, Furman added several other discrete and specific projects to its goals by mid-term of the CSI, most of which ultimately were funded by another entity, Furman, or made possible by the Endowment, such as a campus energy dashboard. In later surveys, Furman also listed continued faculty, staff, and administration learning from the experiences of the other schools, "which informs the entire curricular and co-curricular experience as it relates to sustainability." In terms of evidence of a shifting focus at Furman, Furman requested funds for a 2012 Water Walk to raise awareness of the need for clean water in third-world countries and provide learning opportunities for students, indicating a substantive shift at Furman into international issues (at least for Endowment-based support) but nevertheless still focusing on education and campus sustainability awareness.

In the last survey administered (July 2011), Furman listed the following as future goals and areas of need. A chart of the schools' listed priorities through time is provided in Section III.F., above.

- Continuing the momentum built by the Endowment
- Development of local carbon offsets
- Revisiting renewable energy options as changes occur in the regulatory environment
- Sustainability-related community service and connections across the four schools
- Broad-based outreach to utilities in both states
- Support for interdisciplinary student-faculty research on Endowment-supported projects to maintain broad buy-in across the campuses and engage faculty and students who may not otherwise engage with the CSI

Finally, Furman identified as its most pressing challenge the achievement of carbon neutrality goals, including the tools needed to achieve it, such as funding, renewable energy, and energy efficiency. Furman wrote that "[i]n terms of GHG emissions, reducing our energy consumption is the most important challenge that we will be facing over the next 5 to 10 years. Adequate funding and the financial/regulatory environment in South Carolina are the major barriers to moving forward in this area." Regarding needs, Furman listed "continued engagement from campus community." Furman also mentioned the effect of the economic downturn on its sustainability initiatives in its responses – that is, that the economic downturn had dampened Furman's ability to fully implement its sustainability objectives.

Furman's one stated future goal for the Initiative was collaborate on sustainability projects, curricular and otherwise.

4. Smith

In terms of Smith's initial goals for the CSI, Smith listed that it sought to (1) establish a firm knowledge base of information to create a framework for moving forward with a robust sustainability program; (2) implement at least two pilot programs with an emphasis on sustainability within two years of the initiative's launch; and (3) integrate sustainability into the overall curriculum of the University (and relatedly, make sustainability an effort that will become a part of the culture of the campus which will eventually be a program that is spearheaded by student leaders). Over the course of the CSI, Smith has become increasingly interested in local food production and healthy eating as well as renewable energy production.

By 2010, Smith reported that it sought to "advance innovative technology and encourage sustainable development on its campus and in the surrounding neighborhoods through the implementation of *energy-efficient techniques, reuse and recycling strategies, conservation and preservation activities, and promotion of behavioral changes for healthier lifestyles for students and residents.*" As of 2010, Smith proposed to undertake work in three program areas: facilities, student life, and the community.

In terms of future goals, Smith plans to focus on campus and community awareness and education, as well as conservation initiatives, building a campus culture of sustainability, continuing to pursue building renovations and, recognizing that building a campus culture is extremely important to long-term sustainability success, will be seeking to enhance conservation and recycling efforts. Further development of new curricula was also a goal as Smith builds its sustainability program. Smith is not interested in carbon offsets at this time, but believes it will be considering them and potentially making a climate neutrality commitment in the future. For now, Smith wants to understand the economic implications of a climate neutrality commitment before recommending that President Carter sign the ACUPCC. Smith, however, would be interested in developing projects on its campus that could serve to provide offsets to others.

Regarding future needs, Smith focused on campus-oriented suggestions, such as hiring a full-time sustainability coordinator, securing assistance for continued retrofitting of building fixtures and tightening building envelopes across campus where necessary, implementing a full recycling program, developing new courses and curriculum, and developing activities to enhance campus awareness.

In addition, Smith's listed needs and suggestions for priorities for a future phase of the CSI included:

- Curricular and extra-curricular initiatives
- Reduction of energy use and waste
- Campus-wide education and behavioral modification activities
- Discussions with Duke Energy

- Collaboration on curricular and co-curricular activities;

5. Topical Areas of Focus and Collaboration

In addition to their campus priorities, the schools provided suggestions for new topics to pursue in a future phase of the CSI, some of which were provided above. They are offered here again for ease of tracking. The designating schools are listed in italics.

- Food systems (*Davidson, Smith, Furman, Duke*)
- Information sharing around energy, water and waste efficiency at the building level (*Duke, Smith*)
- Environmental literacy and sustainability curriculum development for students and the local community (*Duke, Smith*)
- Improvement/providing information that could lead to the establishment of renewable energy portfolio standard(s) in North and South Carolina (*Furman*)
- Sharing the sustainability model developed by the Endowment to other organizations (*Furman*)
- More community outreach (*Furman*)

III. RECOMMENDATIONS AND OPTIONS FOR MOVING FORWARD

The evaluation revealed that the schools' unanimously support the continuation of the CSI. The schools considered the Endowment's funding, coordinating efforts, and attention to the issue of sustainability to be a pivotal driver for creating and maintaining momentum on sustainability. They also viewed the CSI as having provided the clarification and insight necessary to pursue their sustainability goals. The schools would like the CSI to continue in order to realize the benefits of the work completed to date. Moreover, they feared that ending the CSI now may cause them to lose the hard-earned momentum thus far established.

In addition to the suggestions offered by the schools, the Endowment could also consider the following short-term recommendations and longer-term options should it decide to continue into a further phase of the CSI.

A. Additional Short-Term Recommendations to Consider

- Choose a topic for funding with input from the schools and encourage collaboration on the topic by favoring joint proposals.
- Continue to facilitate gatherings, but limit large meetings to once per year. Support smaller meetings, as needed or requested, and other less formal modes of communication.
- Work to standardize data requests to aid in future evaluations by posing the same questions to the same respondents (to the extent possible). Establish baselines at the outset of projects to gauge progress.
- Recognizing that curricular changes can be difficult to implement, while working to achieve them, embrace opportunities to advance co-curricular efforts such as student and faculty exchange programs or joint co-curricular community service-oriented activities.
- Aid communication with the schools and reduce reporting fatigue by designating a single point of contact at each institution to serve as a liaison between the school and the Endowment. Increase quality of feedback and reduce burden of data collection and reporting through well-designed survey instruments and early assessment.

B. Additional Long-Term Areas of Focus to Consider

1. Work to Increase Diversity in Sustainability

The lack of diversity in sustainability-related sectors remains prevalent, most notably as evidenced by the lack of minority representation in faculty and staff positions related to sustainability. Lack of diversity in sustainability sectors also was illustrated by a low awareness of sustainability issues by minority students, which the CSI appeared to make progress toward improving by raising the profile of sustainability at all of the schools and specifically at Smith, a historically black college. Lack of diversity in sustainability fields, and particularly among faculty at the schools, was lamented by CSI participants and could be addressed by programs directed at increasing diversity in sustainability programs at the schools and possibly through a scholarship or post-graduate fellowship program.

2. Institute a Revolving Loan Fund of Other Creative Financing Mechanism(s) for Energy Efficiency, Renewable Energy Production, and Carbon Offset Generation

Other lasting effects could be achieved through the establishment of a revolving loan fund that could invest in efficiency measures, renewable energy production and/or carbon offsets, the cost savings or profits from which could be used to replenish grant pools. Building on the newly established collaboration between the Endowment and the Jessie Ball duPont Fund, the schools could employ tools and strategies developed through the University of Chapel Hill's Environmental Finance Center to creatively extend and leverage grant dollars. Small grants could also be explored to allow schools to test new ideas and initiatives.

3. Student / Faculty Exchanges

The Endowment could consider developing student and faculty exchanges as a way to enhance collaboration between the schools and offer curricular and co-curricular opportunities to students. Exchanges could focus on community service such as training in residential energy efficiency measures, particularly if it is determined that small-scale efficiency measures can achieve greenhouse gas emission reductions reliably in fulfillment of climate neutrality commitments. Specific efforts also could include sponsoring annual training sessions in sustainability or supporting a corps of student volunteers to undertake sustainability-oriented community service projects.

4. Develop a Joint Carbon Offset Project and/or Offsets Purchasing Consortium

The Endowment could consider developing a carbon offsets project or portfolio of projects and/or offsets, which could be drawn upon by the schools or the Endowment to meet immediate or long-term demand. Projects could be pursued on or at one of the campuses, or at a site separate from all of the campuses. Projects could incorporate student and faculty volunteers and be developed with research opportunities in mind.

5. Facilitate Collaboration on an Emerging Topic

Over the course of the CSI, the schools' identified additional topics beyond energy efficiency, renewable energy generation, climate and carbon offsets, such as local food production, increased sustainability-focused curricular offerings, and water conservation. The schools already have begun collaborating on campus and local food production. The Endowment could work to facilitate collaboration around these new areas and encourage joint projects by offering bonus funding.

6. Sponsor an Annual Nicholas School of the Environment Group Masters Project Aimed at an Endowment-based Collaborative Sustainability Project

The Nicholas School of the Environment has been building a program to encourage a team-oriented approach to environmental problems by organizing graduate teams of three to four students to work with clients on a specific issue in fulfillment of their masters' thesis. The Endowment could provide topics on which a team could provide expertise, other schools could serve as clients, or the schools could jointly serve as a client as a collaboration or exploration of a collaborative project. Topics could be nominated and voted on by the schools, and could also involve other Endowment program areas, such as health care and the rural church initiative.

7. Encourage Establishment of Dedicated Sustainability Staff at the Schools to Prioritize, Oversee and Protect against Turnover at High Levels of the Administration

Three of the four schools have some high-level staff or staff that reports to high levels of the administration to guide sustainability efforts, which helps to institutionalize and buoy sustainability efforts. By continuing to support sustainability initiatives and reward collaboration on sustainability efforts, the Endowment would signal the importance of these positions to the individual schools.

8. Build Collaborations with Other Endowment Programs

The Endowment could make an even greater impact regarding sustainability by finding ways for sustainability initiatives to be incorporated into its other program areas, such as health care and the rural church initiative, thereby extending sustainability beyond the academic realm. By developing collaborative projects and partnerships across its program areas, the Endowment could extend the reach of its sustainability work to new areas where sustainability traditionally has had difficulty taking hold, and could focus first on conservation and cost-cutting sustainability measures.