
Climate Action Planning:

A Review of Best Practices, Key Elements, and Common Climate Strategies for Signatories to the American College & University Presidents' Climate Commitment

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Contents

1. Introduction.....	1
2. Climate Action Plans and Their Role in Achieving Carbon Neutrality.....	2
A. Function and Elements of a Climate Action Plan	2
B. Steps for Creating a CAP	3
3. Overview of Emissions Profiles and Carbon Neutrality Goals	4
A. Carbon Footprints.....	4
B. Carbon Emissions Reduction Targets and Dates.....	6
4. Best Practices in CAP Development.....	8
A. Choosing an Appropriate CAP Development Structure.....	8
1. Model A: Find a Champion	9
2. Model B: Multistakeholder Approach.....	9
B. Engaging Stakeholders Early	10
C. Formalizing Staff as CAP Contributors.....	11
D. Senior Leadership Support.....	11
E. Engaging the Community.....	12
F. Selecting a Carbon Neutrality Date.....	12
1. Aspirational Deadline	12
2. “Under-promise and Over-deliver”	13
G. Setting Interim Targets	13
H. Strategies for Curriculum, Research, and Community Engagement.....	14
I. Leveraging All Skills and Resources	15
J. Utilizing Consultants	16
1. Potential Benefits	16
2. Potential Drawbacks	17
K. Prioritizing Strategies	17
L. Planning for Behavioral Changes	18
M. Mapping Out a CAP Development Timeline	18
N. Communicating Achievements to Stakeholders	19
O. The Process Shapes the Product.....	20
5. Best Practices in Writing a CAP.....	20
A. Clear Organization.....	20
B. Including Key Elements.....	21
C. Tailor the CAP to the School	22
D. Transparency in Limitations, Assumptions, and Evaluation Criteria.....	23
E. Make the CAP Comprehensive	24
1. Mitigation.....	24
2. Education	24
3. Research.....	25
4. Outreach.....	25
F. Addressing Scope 3 Emissions	26
G. Identifying Major Players	26
H. Identifying Funding Sources.....	27
I. Mechanisms for Tracking Progress	28
J. Flexibility for the Future	28

6. Common Climate Action Strategies and Potential Metrics	29
A. Common Mitigation Strategies	30
B. Common Education Strategies	34
C. Common Research Strategies.....	37
D. Common Outreach Strategies	38
E. Suggested Metrics for Monitoring and Evaluating Implementation	40
7. Conclusion	42
8. Acknowledgements	43
9. Appendices	44
A. Overview of CAP Selection Process and Methodology	44
1. Completed Projects and/or Programs	47
2. Future/Planned Strategies	47
3. Data Provided in the CAP	47
B. Types of Strategies Identified in CAP Assessment	48
C. Additional Resources	50

Best Practices in Climate Action Planning

1. Introduction

With more than 670 signatories of the American College & University Presidents' Climate Commitment (ACUPCC), efforts to achieve carbon neutrality and educate students to help all of society do the same are becoming common on campuses across the country. To strengthen these efforts, schools are creating Climate Action Plans (CAPs) to guide their present and future campus development toward net-zero greenhouse gas (GHG) emissions.

This report is intended for any administrator, faculty, staff, or student at an institution that is starting to create or update its CAP. It is designed to offer guidance and insight on the procedures and elements that constitute a strong plan. The report is meant to assist schools just starting the CAP development journey by showcasing schools that have already completed their CAP, the lessons they have learned, and the projected impact of their mitigation efforts.

This report summarizes the critical insights gained through careful analysis of 50 CAPs and nearly two dozen interviews with schools' implementation liaisons. Among the topics covered are best practices during the *process* of developing a CAP, best practices in producing the final written *product*, as well as the variety of climate action strategies used by schools seeking carbon neutrality. This document is *not* meant to assess the likelihood that a CAP will achieve a school's carbon neutrality goals, nor is it a step-by-step guide to creating a CAP. Instead, this document seeks to share the major caveats, benefits, challenges, and lessons learned through the initial wave of CAP development.

American College & University's Presidents' Climate Commitment

The ACUPCC, which was initiated in December 2006, requires its signatories to:

1. Create institutional structures to guide the development and implementation of a climate neutrality plan.
2. Complete a comprehensive inventory of all GHG emissions and update the inventory every other year thereafter.
3. Develop an institutional Climate Action Plan for becoming climate neutral, which will include:
 - a. A target date for achieving climate neutrality as soon as possible.
 - b. Interim targets for goals and actions that will lead to climate neutrality.
 - c. Actions to make climate neutrality and sustainability a part of the curriculum and other educational experience for all students.
 - d. Actions to expand research or other efforts necessary to achieve climate neutrality.
 - e. Mechanisms for tracking progress on goals and actions.
4. Take immediate steps to reduce GHG emissions by choosing from a list of short-term actions.
5. Make the Climate Action Plan, inventory and progress reports publicly available.

Academics, research, and community engagement are core elements of comprehensive climate action planning, as are strategies for mitigating GHG emissions. By signing the ACUPCC, institutions are committing to more than just a carbon neutral campus. Rather, a school's commitment acknowledges that its role as an educational institution, a member of the community, and a center of intellectual progress is as important as its built

environment. Signing the ACUPCC is as much about creating a culture of sustainability as it is about balancing carbon emissions. However, the results of this CAP analysis suggest that there are pervasive gaps in academic, research, and outreach discussion in the CAPs submitted by early signatory schools. For instance, many schools neglected to include information on academic or research strategies. In other cases, schools effectively described outreach efforts within the campus community, but left out details about community engagement initiatives beyond the institution's walls. In an effort to promote the creation of more comprehensive CAPs, this document goes beyond mitigation strategies to address gaps in those other areas.

Section 2 discusses the purpose of a CAP and how it fits into the broader ACUPCC reporting process. Section 3 presents an overview of the schools' emissions profiles, interim targets, carbon neutrality dates, and estimated emissions reductions. Section 4 provides the key recommendations for the CAP development process with advice from school representatives about best practices, appropriate strategies, and how to leverage support for carbon neutrality initiatives. Section 5 describes the essential elements found in a well constructed CAP. Section 6 presents the strategies schools pursued in their finalized CAPs for all the core elements of the ACUPCC (mitigation, academics, research, outreach), including a review of the most popular strategies in each core area. The conclusions from this CAP review process are summarized in Section 7.

The appendices provide additional information, including how the CAPs analyzed in this report were chosen and their climate strategies categorized and cataloged (Appendix A), the specific categories used to classify climate action strategies (Appendix B), as well as other resources available to assist in CAP development (Appendix C).

2. Climate Action Plans and Their Role in Achieving Carbon Neutrality

This section presents a brief overview of CAPs and the role that they play in an institution-wide, long-term commitment to neutralize GHG emissions and expand awareness of climate change among students, faculty, staff, and the broader community.

A. Function and Elements of a Climate Action Plan

A Climate Action Plan is a comprehensive, standalone document that schools develop – and routinely recalibrate – to guide their journey down the path to carbon neutrality. It is a tool used to frame a school's current carbon footprint and the challenge ahead, as well as identify strategies to achieve carbon neutrality, expand curricular and educational offerings around climate change and sustainability, promote climate-related research, and engage and educate the surrounding community about climate change issues. Each school's CAP will be unique by addressing its specific situation and needs. Thus, a CAP is not a one-size-fits-all document. However, all good CAPs should accomplish several key tasks. These include:

- Framing the climate commitment in the context of the school's mission and existing initiatives
- Identifying the school's current carbon footprint

- Cataloging the school’s current climate-related efforts
- Setting concrete target dates for carbon neutrality and interim reduction goals
- Identifying short-term and long-term strategies for achieving carbon neutrality and expanding educational, research, and outreach activity
- Selecting metrics that will track and measure progress
- Establishing responsibility for implementation
- Incorporating flexibility for future iterations of the CAP
- Being publicly available

Although a CAP should include the findings of a school’s GHG inventory, it is not simply just the inventory itself. An inventory presents a snapshot of a school’s carbon footprint as it currently exists, whereas a CAP plots out how a school will progress from its current state to carbon neutrality by reducing the specific emissions sources identified in the inventory. Broader sustainability issues, such as water conservation, have a complementary place in a CAP, but should not distract from the discussion of the largest emissions sources.

A CAP is also not a laundry list of ideas on reducing emissions, but rather a plan for how a school will reduce its emissions and ensure that all graduates will have the knowledge and skills to help the rest of society do the same. A CAP should be as specific as possible with clear prioritization of action items. Items proposed for near-term implementation should have explicit details on how they will be implemented. The more concrete your plan is, the more likely it is to be implemented. At the same time, a CAP is a living document that should be revised and updated as a school hits, misses, or exceeds its targets and goals.

Perhaps most importantly, a CAP is not just a description of emissions mitigations strategies and goals, but a tool that serves to rally support and encourage progress. The creation of a CAP can catalyze grassroots activities, develop community support, foster new partnerships, and yield greater financial resources. Thus, a CAP serves not only as a roadmap for achieving carbon neutrality, but works as leverage for even greater support.

B. Steps for Creating a CAP

There is no single unique process by which a school must create a CAP. Most school representatives, however, agreed on these fundamental actions:

- Sign the ACUPCC
- Assemble a climate planning committee
- Identify individual(s) to drive the process
- Issue a statement of support from the president and/or a senior administrator
- Construct a GHG inventory
 - Contact stakeholders across campus for data collection
 - Hire a consultant (optional)
 - Assemble data and input into modeling software
 - Publish inventory

- Create a CAP
 - Analyze inventory to identify emissions sources for priority action
 - Establish subcommittees to address different sources of emissions or themes (mitigation, education, research and outreach)
 - Engage key stakeholders
 - Brainstorm climate strategies
 - Develop evaluation criteria and metrics for climate action strategies
 - Evaluate and prioritize climate action strategies
 - Vet ideas with appropriate stakeholders and broader campus community
 - Write the CAP
 - Obtain senior administrative approval
 - Publish CAP
- Begin implementation
- Periodically update and revise GHG inventory and CAP

There are numerous resources available to help schools create a CAP. We recommend reviewing them early in the process to determine the areas where you will need external support and technical advice. Many of these resources can be found on the ACUPCC website, and additional examples are listed in Appendix C.

3. Overview of Emissions Profiles and Carbon Neutrality Goals

A. Carbon Footprints

The schools whose CAPs were analyzed vary greatly in size, geographic location, campus setting, institutional type, culture, and more. While these factors create variation in specific schools' carbon footprints, several broad trends are apparent. The central purpose of a CAP is to identify appropriate mitigation strategies that effectively address each school's emissions distribution. Schools may wish to focus special attention on addressing their largest sources of emissions.

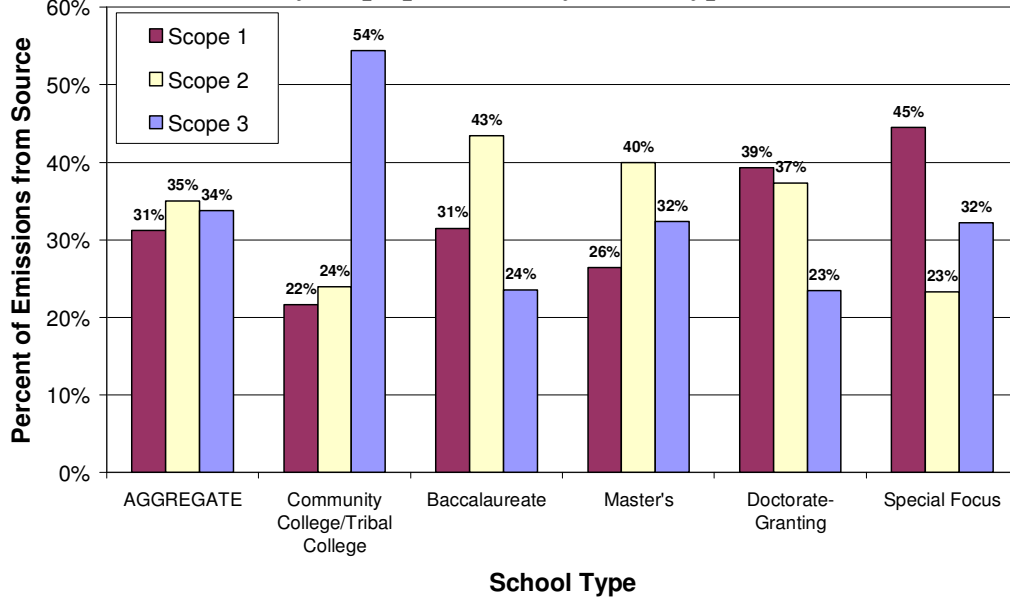
The graph below (Figure 1) illustrates how the GHG emissions of the 50 schools studied break down by scope¹ and school type. The institutions are classified into different school types through use of the Carnegie Classification of Institutions of Higher Learning. This methodology created by the Carnegie Foundation uses information about the instructional programs, school size, setting, and enrollment to categorize the nation's post-secondary institutions.² The classifications include a "Special Focus" category for institutions that award baccalaureate or higher-level degrees where a high concentration of degrees is in a

¹ Greenhouse gas (GHG) emissions are typically divided into different scopes, consistent with the World Resources Institute's *Corporate Accounting Protocol for GHG Emissions*, and classified as Scope 1 (emissions produced on campus), Scope 2 (emissions associated with the purchase of electricity or heat), and Scope 3 (travel-related emissions associated with commuters or work-related trips).

² Source: <http://classifications.carnegiefoundation.org/>

single field or set of related fields. Examples include medical schools, theological seminaries, schools of engineering, schools of law, schools of art, music and design, and business schools.

Figure 1. Emissions by scope presented by school type.



In general, aggregate emissions for all types of schools are evenly distributed across the three scopes. This is not the case, however, when emissions profiles are analyzed for a particular Carnegie class. Community colleges’ emissions are heavily weighted toward Scope 3 sources, primarily student commuting. Consequently, achieving carbon neutrality will entail working with students, faculty, and staff to promote low-carbon modes of transportation and encourage behavior change in commuting habits.

College of Marin is a community college in the California state system, and approximately 65 percent of its emissions come from Scope 3 sources – primarily commuting students in single-occupancy vehicles. Developing a CAP helped Marin understand that the key to achieving carbon neutrality is not energy or recycling – it’s getting people out of their cars. The school has initiated discussions with several local transportation agencies to address this problem.

University of California, San Francisco (UCSF) is a graduate student-only university specializing in health sciences. Its large number of science and research labs contributes to the Scope 1 emissions that constitute 54 percent of its GHG inventory. To address this, UCSF designs all new laboratory buildings to a minimum standard equivalent to a LEED™-NC “Silver” rating and the Laboratories for the 21st Century (Labs21) Environmental Performance Criteria.

In direct contrast to community colleges, doctorate-granting and special focus institutions have a large share of Scope 1 emissions. These classes of institutions tend to have large physical infrastructure and are more likely to have on-campus energy generation facilities (Scope 1) rather than relying exclusively on grid power (Scope 2). In addition, the higher prevalence of research activity and technical facilities on these campuses also contributes to their increased Scope 1 emissions.

Baccalaureate colleges and Master’s-granting universities typically fall somewhere in between. On average, the largest share of their carbon footprint is Scope 2 emissions from purchased electricity, heat, or steam. A CAP can target these emissions by increasing facilities’ energy efficiency as well as using renewable energy through on-site installations or procurement from energy suppliers (e.g., utilities).

Dickinson College’s Scope 2 emissions constitute 60 percent of its overall footprint, so the college decided to purchase renewable energy certificates from wind farms to equal 100 percent of its electricity use. This purchase reduced Dickinson’s GHG emissions by over 9,000 metric tons of CO₂e (relative to 2008 levels).

No one single strategy will achieve carbon neutrality for any ACUPCC school. Each CAP will need to address emissions across all three scopes and will require a portfolio of strategies that accounts for the on-campus (e.g., physical operations, on-site energy generation) and off-campus (e.g., purchased energy usage, commuting travel) emissions sources. The CAPs reviewed here contain strategies that address all three sources, as well as other essential programs that contribute to broader climate awareness. These strategies are described in greater detail in Section 6.

B. Carbon Emissions Reduction Targets and Dates

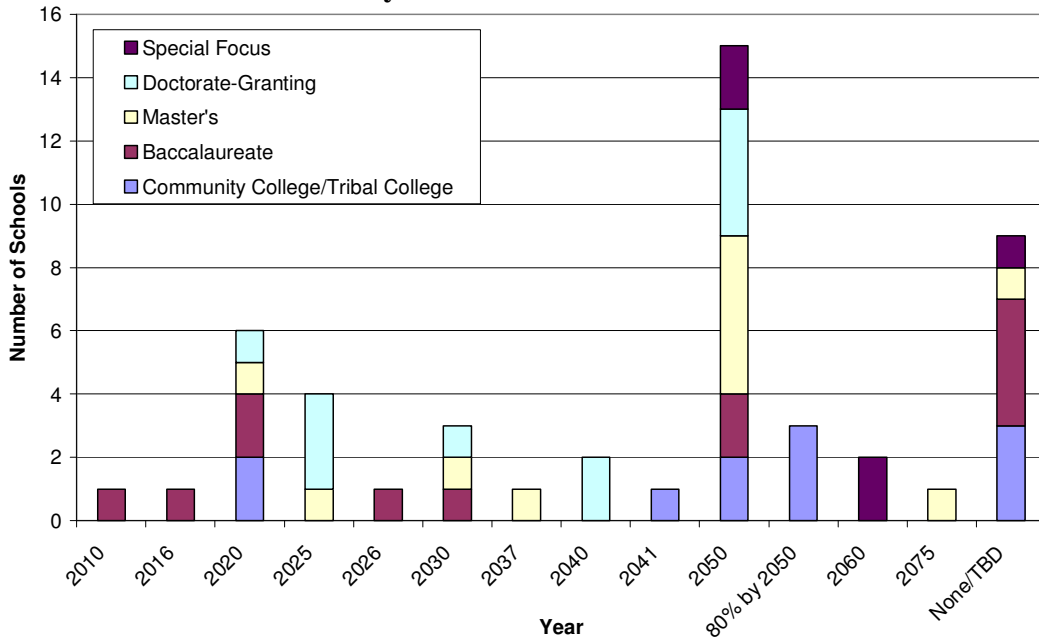
ACUPCC signatories vary in all aspects of their institutions, including extent of their carbon footprints, emissions sources, school size, geographic location, built environment, financial resources, technical expertise, and culture. The schools have all pledged to achieve carbon neutrality “as soon as possible.” Actual target dates range from the near-term (2010) to the distant future (2075). Figure 2 below displays the range of carbon neutrality dates selected by the schools.³ Of the 38 schools with established carbon neutrality dates, the median date is 2040.

American University adopted 2020 as its carbon neutrality date after conducting a thorough review of the carbon mitigation potential on its campus. In 2010, the university began purchasing renewable energy certificates to cover 100 percent of its electricity use, and starting in 2013, it will purchase carbon offsets to address travel and other unavoidable emissions. By 2020, it will offset the remainder of its emissions and hopes to develop local projects to supply these offsets. American will adhere to the ACUPCC Voluntary Carbon Offset Protocol to guide its purchases.

In the most aggressive example, the **University of Minnesota, Morris** has committed to carbon neutrality by the end of 2010. The institution is on track to reach this goal primarily through the use of renewable wind energy and a biomass gasification plant on campus.

³ Note: Figure 2 shows that nine schools have not set a carbon neutrality target and three schools have a goal of reducing emissions by 80 percent by 2050. While schools are required to select a carbon neutrality date, the ACUPCC Reporting System provides flexibility by allowing them to indicate that the date is To Be Determined (TBD) and in that case they must show there is a process in place for continuing to move forward on selecting their carbon neutrality date.

Figure 2. Carbon Neutrality Dates



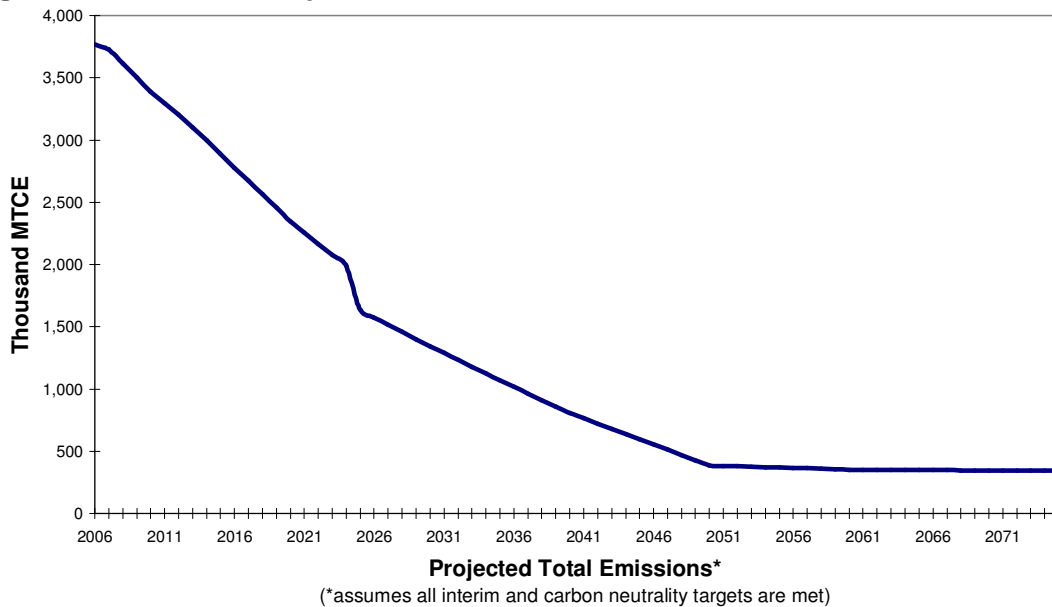
The ACUPCC allows each institution to determine a carbon neutrality date that is suitable for their school, but it urges signatories to embrace the spirit of the commitment by setting aggressive, but attainable, carbon neutrality goals.

The combined efforts of all ACUPCC signatories have the potential to make a considerable impact on the country’s GHG emissions. Figure 3 below illustrates the projected emissions reductions of the 50 schools reviewed, assuming that they meet their stated emissions reduction targets and dates.⁴ The estimated cumulative reductions sum to almost 3.5 million metric tons of CO₂e, equivalent to the annual emissions from 650,000 passenger vehicles or 291,000 homes.⁵

⁴ This figure was constructed using the reported interim targets and carbon neutrality dates of the 50 schools reviewed to estimate annualized emissions reductions between 2006 (the first year of the ACUPCC) and 2075 (the last carbon neutrality date selected by the 50 schools). Some schools neglected to identify interim or ultimate reductions targets, limiting the completeness of this figure. The emissions of schools that did not identify a neutrality date are projected out to their most distant interim target, after which point they are assumed to remain constant. For this reason, the total emissions reductions do not equal zero. Please note that this figure is merely illustrative of potential reductions and should not be used to estimate real reductions under the ACUPCC to date.

⁵ Greenhouse Gas Equivalencies Calculator, *EPA Clean Energy Website*, <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>

Figure 3. Projected total emissions of the 50 schools



4. Best Practices in CAP Development

The climate action planning process (CAP development) and the CAP itself are two distinct but equally important milestones on the road to carbon neutrality. To emphasize the importance of each step, we have chosen to separate them in this report and highlight best practices in each. This section discusses the CAP development process.

These recommendations are informed by official ACUPCC resources, a review of 50 of the more robust plans from the initial wave of CAPs submitted to ACUPCC, and feedback from people integrally involved in their school’s successful CAP development process. The elements discussed below are some of the essential elements for CAP development, but do not encompass all the necessary actions to bring a CAP to fruition. A review of the ACUPCC’s Climate Action Planning wiki (see Appendix C) will provide a more step-by-step approach. A rigorous and comprehensive planning process increases the likelihood of long-term success and the effective participation of key stakeholders.

A. Choosing an Appropriate CAP Development Structure

Climate action planning is an intensive, complex, and challenging process. As soon as an institution’s president signs the ACUPCC, the first task should be to assemble a committee or designate an individual to take responsibility for conducting the GHG inventory and developing the CAP. Nearly all school representatives emphasized that one person should be designated to oversee the process and ensure that other individuals are meeting their obligations. If possible, hire a person to serve in this role or redefine an existing administrative or staff position to include specific CAP development responsibilities in the job description. This change will justify, especially to superiors, the time investment required to manage the process.

As a school's climate team shifts from its initial organization and begins CAP development, it must adopt a coherent structure for the flow of information and communication. In general, the schools observed had two principal structural models that varied depending on a school's size, resource availability, and culture. Both were equally successful.

1. Model A: Find a Champion

One dedicated individual can be enough to write the CAP unassisted, particularly in a smaller school. He or she may rely on a small core of three to five key "helpers," usually drawn from facilities, operations, students, or an interested faculty member in a related field. The "climate champion" can leverage these key personnel to collect energy and emissions data, research potential strategies, and identify the most promising ones for inclusion in the CAP. Once the CAP is written, it is presented to the student body, senior administrators, and broader community to solicit feedback. This approach has been used by both large and small schools, and has the advantage of being centralized and fast. The drawback is that limiting the planning circle to a few key people forfeits the perspective and ideas of other members of the community (e.g., students, faculty experts, senior administrators, governors/trustees, and staff from different departments). Also, the opportunity for early buy-in from key stakeholders not involved in the creation of the CAP is likely to be lost.

The president of **Pomona College** signed the ACUPCC in April 2007, and in the summer of 2008, the college hired a recent graduate to coordinate the development of its CAP as Assistant Director of Facilities and Campus Services. This coordinator was largely responsible for writing the CAP, which was then reviewed, modified, and approved by the President's Advisory Committee on Sustainability before being sent to the President. Her position within Facilities puts the coordinator into close contact with many of the individuals responsible for implementing the CAP, evidence of smart planning and institutional knowledge.

2. Model B: Multistakeholder Approach

A more inclusive, collaborative approach is to create a multistakeholder committee headed by one point person, and (optionally) multiple subcommittees focusing on different areas of GHG mitigation, academic curricular development, community outreach, and institutional research. Interviewees stated that students, in particular, were valued for their enthusiasm, idealism, and energy, and they noted the learning opportunities provided by the project. This multistakeholder structure offers the benefits of distributing the work burden, leveraging the expertise of numerous participants, and fostering buy-in from all the groups on campus. A drawback is that organizing these committees requires significant time and effort, resulting in a lengthier and potentially unwieldy CAP development process.

Fort Lewis College used the following approach to develop its CAP: “Throughout the 2008-09 school year, a committee of students met at the Environmental Center to draft the different sections of [the] plan. Each month a Coordinating Committee reviewed the work of the students and suggested revisions to the goals, objectives, targets, and action steps they had proposed. Each section of the plan then moved on to the Presidents Advisory Council on Environmental Affairs (PACEA) for further review and refinement. In between these sessions, students worked behind the scenes researching programs at other colleges and universities to come up with ideas and cost estimates for the next section of the plan. During the fall of 2009, the Environmental Center presented portions of this draft plan to individuals and groups across campus to bring more people into the conversation and confirm that the targets and action steps were appropriate for the institution. The reaction from the campus was uniformly positive and supportive. In December, PACEA decided on final changes and President Bartel approved the plan.”
– pg. 6, *Fort Lewis College Sustainability Plan*. January 2010.

B. Engaging Stakeholders Early

When starting to assemble a climate action planning team, identify early on the key stakeholders whose support will be needed to create the GHG inventory, research potential strategies, secure funding for implementation, approve the plan, and implement the chosen strategies. Engage these individuals early by inviting them to participate on the committee, or by meeting with them to explain the climate commitment and the ways in which they can contribute. All of the schools interviewed emphasized the importance of engaging key stakeholders: getting buy-in from the beginning allows for easier access to data and resources, as well as a smoother transition to implementation.

These stakeholders should represent a broad spectrum of staff, faculty, students, and senior-level administrators. Some schools choose to drive their process from the operations or facilities side of the institution, whereas others choose to house this effort in strategic planning or the academic side of the institution. The institutional background of the individual(s) leading the effort does not matter as long as they engage the people who have access to GHG inventory data or will be responsible for implementing the CAP. To assemble a diverse group of players, try to include representatives of most, if not all, of the following groups:

- Operations, Facilities, or Utilities
- Procurement/Purchasing
- Budget/Business and Finance
- Advancement/Development
- Provost/Curricular Dean
- Faculty Experts
- Students
- Athletics
- Marketing
- Senior Administration

The more inclusive the group, the more likely the plan will be to obtain broad support when the time comes to approve and implement the CAP. In addition to rank-and-file members of facilities and operations who often have a better sense of reality on the ground, strive to include senior-level faculty and staff. Remember that successful

approval of the CAP often depends on the first impressions people have of the initiative and the strength of the relationships formed during CAP development.

C. Formalizing Staff as CAP Contributors

Align incentives to give key stakeholders justification for committing time to the implementation effort and hold them accountable for achieving results.

An often-iterated piece of advice from interviewees was that incorporating CAP development and implementation duties into staff job descriptions and annual reviews greatly improves the likelihood of successful implementation. Developing and implementing a CAP will be an ongoing process that will require the efforts of multiple stakeholders. In order to get people to fully commit and fulfill their responsibilities, they must be held accountable. Even committee members and staff who are interested and passionate about climate mitigation can be overwhelmed

with preexisting work and find it hard to justify participating in “additional” activities. Do them a favor and institutionalize the commitment by working it into their day-to-day responsibilities so that they can be confident in having the support of their superiors.

D. Senior Leadership Support

Obtaining the support of senior administrators and staff is an essential element that guarantees that the climate commitment is viewed as a priority by the top brass. A President’s signature alone is usually insufficient to mobilize enough support and cooperation among different departments on campus. Even though a president or chancellor might be very enthusiastic and engaged, staff need to know that their immediate superiors are supportive of the effort before they will commit their time to help complete the plan. This is particularly true in large universities where one finds many “silos” or quasi-autonomous communities on campus. It may help to have campus leaders issue a statement of support for the climate planning team and

“To create a strong ‘driver’ behind **Arizona State University’s** climate commitment, the university established Working Group CN – a workgroup of senior-level administrators who meet with the President to report on CAP implementation in their departments. This structure holds high-level personnel accountable for CAP implementation and gives it the valuable senior leadership and drive that the implementation liaison and the President’s signature alone couldn’t achieve in a very large institution like ASU.” – Bonnie Bentzin, Director of Sustainability Practices

request the full cooperation of the entire campus. Schools might also want to involve the senior leadership on the climate planning team and have them report on its progress directly to the president. This approach keeps senior leadership engaged, while helping to sustain institution-wide momentum.



For more ideas on how to engage your institution’s leaders in creating transformational change, please see ACUPCC’s report *Leading Profound Change: A Resource for Presidents and Chancellors*. More information can be found in Appendix C.

E. Engaging the Community

Achieving carbon neutrality on campus is a long-term process and will be more easily and quickly achieved with broad support from the student body, faculty, and staff. With enough enthusiasm, community members will be more accepting down the road when some inevitable tough decisions or changes affect them directly.

“[Dickinson College’s ACUPCC] Working Group sought to keep all stakeholders in the campus community informed throughout the process of creating the Action Plan. Several public presentations were held throughout the 2008-2009 school year, including a special presentation to the Student Senate. In addition, the draft of the Climate Change Action Plan was presented to numerous groups for their input in August and September 2009, including the President’s Staff, the President’s Commission on Environmental Sustainability, the Planning and Budget Committee, Dickinson SAVES, and Student Senate. There was also a public comment meeting, open to all members of the campus community. This meeting provided an opportunity for everyone to share their questions, comments, concerns, and thoughts on the Action Plan.” – pg. 6, *Dickinson College Climate Change Action Plan: Climate Neutral by 2020*. September 2009.

A key method to invest people in the process is by engaging the student body, especially incoming students. By making an existing CAP or ongoing CAP development more visible, incoming students become more aware of these efforts. Showing ongoing activity can encourage students to get involved as well as attract first-year students who actively seek out sustainable schools.

Undergraduate students at **Middlebury College** contributed directly to the CAP through a culminating class project in an environmental economics course. Not only did students advise the report’s creation, but they also developed an economical analysis for the course that worked its way into the final CAP. By engaging with students directly, Middlebury enhanced its document while simultaneously raising its profile among students.

F. Selecting a Carbon Neutrality Date

The selection of a carbon neutrality date is one of the most critical decisions a school will make during its CAP development. Some schools choose to set a target at the beginning of the process and then work backwards from there to identify strategies that will allow them to achieve the goal. Others conduct a thorough review of the mitigation potential on campus before selecting a neutrality deadline. How a school sets a target date can have as much to do with its campus culture as it does with the actual mitigation potential on campus. Clearly delineate the criteria and assumptions used to select the date.

The CAPs examined in this report have identified a wide range of carbon neutrality deadlines. The justifications used to arrive at those dates typically fell into one of two categories:

1. Aspirational Deadline

Many schools set an aggressive, aspirational carbon neutrality deadline in order to galvanize the community and foster creative, out-of-the-box thinking. Their argument is that unless one sets a date relatively near-term, people will not

consider it tangible nor urgent. As one implementation liaison said, “by 2050, some of our staff will be dead! This is as much about the human behavior of stakeholders as it is spreadsheet analysis... You need to set a goal that people will believe in and buy into.” For some schools, this means a target before 2025 – as projecting any further out runs the risk of implicitly permitting delay in the implementation of hard decisions that will be necessary to go carbon neutral. Even if the deadline passes for a given target, the thinking goes, far more progress will have been made in the attempt to meet it than for a less aggressive target decades into the future.

2. “Under-promise and Over-deliver”

Other schools believe that setting an aggressive goal could backfire by intimidating stakeholders and generating defeatism before the effort ever gets off the ground. By the same logic as the quote above, human behavior plays as large a role as new technologies and building retrofits in achieving carbon neutrality, and one might alienate key stakeholders by setting them an impossible task. Senior administrators or a managing Board of Governors may also be reticent about signing an aggressive goal, for fear of giving their school a “black eye” by potentially failing to reach their target. As one interviewee affirmed, CAP planners should “under-promise and over-deliver.” Setting a conservative target date and working to beat it can be just as effective as setting an aspirational goal, and may be more palatable to senior administrators.

There is no “correct” approach. From a scientific perspective, there is a critical need to significantly reduce U.S. GHG emissions as quickly as possible. The ACUPCC is a leadership initiative and aggressive goals are an important element of that leadership. By setting that ultimate goal, campus leaders are able to create a healthy creative tension between the current reality and that desired future. A target date for reaching that goal puts a stake in the ground, but does not set it in stone. CAPs are flexible and iterative plans that can be adjusted based on the evolution of knowledge and circumstances. Such adjustments can include the target dates for carbon neutrality. Schools must reinforce this approach with strong outreach to make this clear to all stakeholders.

G. Setting Interim Targets

It is vitally important that a school also establish interim emissions reductions targets to benchmark progress along the way to its carbon neutrality date. This is particularly important if a neutrality target is fairly distant, such as 2025 or beyond. Projecting future scenarios is more an art than a science; it is crucial that schools have milestones along the way to benchmark their progress and, if necessary, suggest adjustments along the way. These targets should be as specific and concrete as possible; one might consider four-year increments, for example, so that all students who pass through the institution are present for at least one of the

University of Maryland – College Park selected 2050 as its carbon neutrality date and identified the following interim reduction targets (relative to 2005 baseline emissions):

- 15% by 2012
- 25% by 2015
- 50% by 2020
- 60% by 2025
- 100% by 2050

target dates. Short term targets also ensure that the stakeholders who were responsible for determining the school’s carbon neutrality date are also responsible for achieving a portion of the carbon reduction goal. They also provide a psychological benefit because people visualize and commit to short-term targets more easily. Carbon neutrality dates that are far in the future will seem more abstract.

In general, the schools in this study did not make widespread use of multiple interim targets. Although most of the schools (84 percent) selected at least one interim target, only 40 percent of them identified a second interim target, and less than a quarter had three or more interim targets. The appropriateness of interim targets varies depending on the school and its carbon neutrality date, but four-year increments help a school identify a manageable pace to achieve carbon neutrality. For schools with aggressive carbon neutrality dates of 2025 or earlier, it makes sense to select only one or two interim targets. However, any school with a neutrality date beyond 2025 should set multiple interim reduction targets to keep a school on track and to assess future progress.

Half of the schools selected a first interim target on or before 2015. This short-term focus is good. Others, however, do not have any interim targets before 2025, which is more than 15 years away. Much can change in 15 years. Eight of the CAPs did not have any interim targets at all. This can be partially explained by the fact that five of them had dates of 2025 or earlier, but these CAPs could still be improved by selecting at least one interim target between now and 2025. When schools go back to revise their CAPs, this is one area in which they can all be improved.

H. Strategies for Curriculum, Research, and Community Engagement

Warren Wilson College surveyed graduating students to establish a baseline for climate change literacy on campus. Its education strategies are aimed at increasing student awareness of how their actions affect the environment and how they can practice sustainability after graduation.

A CAP is more than a technical how-to guide for campus carbon neutrality. Its added value comes in its ability to facilitate the integration of climate change and sustainability concepts into the curriculum. Including these elements in classes, research, and the broader educational experience for students, equips them to help all of society lessen the impacts of climate disruption. This goal encourages greater awareness of climate change and prepares students for careers in the sustainability field. In this vein, it should also promote

related research and greater understanding of climate change and adaptation methods in the broader community. Furthermore, a CAP can also be used to educate a community, peer institutions, alumni, and prospective students about an institution’s environmental leadership. Consider the CAP as a holistic document that serves all of these purposes and engage stakeholders from the academic, research, and external community during its formation. Solicit their feedback to generate new ideas and identify in advance the reservations that these groups may have. Give them the opportunity to craft the parts of the CAP that directly affect them.

I. Leveraging All Skills and Resources

Some CAP committees lack the expertise or time to create a GHG inventory and an effective CAP without additional help. Fortunately, there are numerous on- and off-campus resources that can be tapped for assistance and technical advice. These include:

- Students, alumni and faculty
- ACUPCC website
- Peer ACUPCC signatories
- Environmental NGOs (e.g., NRDC, Pew Center for Climate Change, World Resources Institute)
- National Renewable Energy Lab
- State energy and environmental agencies
- State university systems
- Regional climate & energy organizations
- Consulting firms

The first V-Anne Chernock heard of the ACUPCC was in July 2007 when the **College of Marin**'s president handed her the signed pledge and asked her to lead the development of a CAP. Faced with this new responsibility and unfamiliar with GHG accounting or carbon mitigation, she turned to the resources on the ACUPCC and AASHE websites for help. Lots of reading and several webinars later, her school succeeded in assembling a climate committee and initiating two Tangible Actions by the November 15th deadline.

Schools should not underestimate the contributions that students can make to their CAP. They are enthusiastic, idealistic, good researchers, and often very well-informed about the current state of climate science. Graduate students may be actively involved in cutting-edge climate research and possess the technical skills to assist with GHG inventory construction and financial modeling. The numerous schools that took advantage of

these willing volunteers were exceedingly pleased with the results and uniformly recommend engaging students in the CAP development process. Identifying a faculty mentor to guide their efforts is a best practice that can assure quality control and continuity across academic years.

When **Columbus State Community College** signed the ACUPCC, staff were initially intimidated by the demands of their commitment. The required reports seemed daunting, especially in light of the poor data collection systems in place at the time. Persevering, they assembled a group of people from the Physical Plant and Enrollment departments to develop a GHG inventory based on the data they were able to gather. But upon starting to compose the CAP itself, they were unsure if they had the in-house technical expertise needed to create a comprehensive plan. To overcome this perceived shortcoming, they reached out to Ohio State University for assistance. CSCC ultimately partnered with a graduate student from Ohio State's Engineering & Environmental Affairs program; his knowledge and enthusiasm about climate change mitigation and sustainability inspired motivation and confidence to CSCC planners. For the next six to seven months he effectively functioned as an adjunct to the school and provided "invaluable" assistance in developing their CAP.

Strategies for Under-resourced Schools

Many smaller ACUPCC signatories do not have access to the institutional resources and funding for their climate action planning and implementation that larger schools and research universities have available to them. During our interviews with representatives of under-resourced schools we heard how they are working to overcome this disadvantage by creatively leveraging all skills and resources at their disposal, whether internal or external. These schools are also focusing heavily on behavior modification policies and education strategies in the near term due to lack of funding for larger infrastructure projects. By working to educate the campus population about climate change, they are laying the groundwork for subsequent mitigation efforts. One recommendation for these types of schools is to pursue projects with rapid returns on investment, such as energy efficiency policies and retrofits, and set the resulting energy savings aside in a dedicated fund for capital-intensive projects down the road. ESCOs are also an attractive option for under-resourced schools because they allow schools to capture low-hanging fruit from energy efficiency without any up-front investment (see Section 6). Similarly, solar power purchase agreements with solar services companies can bring renewables to campus without up-front capital expenditures. For more information on solar power purchase agreements see <http://www.epa.gov/greenpower/buygp/solarpower.htm>

For community colleges, high Scope 3 emissions from a commuting student body represent a particular challenge. Many of them are working with their local government transportation agencies or non-profit institutions to provide alternative transportation and carpooling services for their students and faculty. They are also turning to grants and other sources of funding to finance these projects externally.

J. Utilizing Consultants

Roughly a quarter of the schools reviewed used a consultant, and when they did it was usually for the completion of a GHG inventory. The other 75 percent relied on internal expertise and external resources (such as the Clean Air - Cool Planet Calculator) to do all of the work themselves. The use of a consultant did not seem to have any measurable impact on the quality of a given CAP. However, a consultant may be particularly helpful in conducting data collection and developing a robust GHG inventory. In later stages, a consultant may be better suited to assess the mitigation potential of selected strategies and the feasibility of renewable energy options on campus, as these are not activities schools typically have expertise in undertaking. Consultants can be expensive, however, and each school must determine the value of having outside experts provide input to the process given their financial resources. Nearly all school representatives saw both benefits and drawbacks to hiring an outside consultant:

1. Potential Benefits

Consultants are helpful if a school lacks the in-house expertise necessary to create a GHG inventory or mitigation potential assessment. Achieving carbon neutrality may require significant capital investment. A consultant who can identify the most cost-efficient and highest-potential mitigation strategies for a campus might be worth the cost. In addition, consultants may have the specific

The **University of Minnesota, Morris** hired a consultant to develop a software program to model the school's emissions and the impacts of adopting different energy efficiency and renewable energy technologies. This "Carbon Master Plan" helped the school identify which mix of technologies would work best and also served as an excellent communication tool for educating the campus community and visitors alike.

experience necessary to determine if a school can attempt a specific mitigation strategy. For instance, consultants might be better suited to assess a campus for the installation of renewable energy sources.

2. Potential Drawbacks

Consultants are by nature outsiders who are unlikely to truly understand the operational structure or culture of an institution. They may identify strong technology-based strategies to reduce emissions, but unless these recommendations are approved by key stakeholders, the strategies will never be adopted. Furthermore, developing an inventory and researching mitigation strategies in-house builds institutional capacity. That increased awareness raises the profile of the project among different campus groups. It also gives students a hands-on learning experience that complements the central educational mission of a higher education institution. While consultants might have had prior experience in conducting similar projects, choosing this route relinquishes an opportunity for schools to bring key staff and interested students into the fold—many of whom would likely need to come on board later on in the process.

K. Prioritizing Strategies

A committee's initial brainstorming will likely generate a laundry list of potential strategies across many different areas of the institution. Moving from this stage to presenting strategy recommendations to the president or governing body requires thorough research, rigorous analysis, and a thoughtful evaluation process. Below are some common evaluation criteria to consider when prioritizing and choosing strategies:

- Financial metrics (e.g., ROI)
- GHG reduction potential (e.g., Gross reductions, \$/MTCE)
- Flexible platform for future strategies (e.g. Will one expensive retrofit deplete our resources and prevent us from pursuing subsequent strategies and achieving our neutrality goal? Are too many eggs in one basket or are we boxing ourselves in for future projects?)
- Funding availability (e.g., Do state/institutional funding mechanisms permit the implementation?)
- Synergy with existing curricula/research activity
- Campus enthusiasm (e.g., Will a small, highly-visible effort increase support for more important but less popular projects down the road?)
- Community building (e.g., Will students in a dorm energy competition gain a greater sense of community?)
- Visibility (e.g., Will this generate positive press and recruiting appeal for the school?)
- Brand enhancement (e.g., Will this initiative distinguish us as a leader?)
- Pet projects (e.g., Will this project engage a key stakeholder whose support is vital for overall success?)

Dickinson College prioritized its strategies using the matrix below, which combines environmental, financial, and operational criteria.

	Lower Difficulty (Low Cost/Easier to Implement)	Higher Difficulty (High Cost/Harder to Implement)
Higher Emissions Reduction	Priority 1	Priority 3
Lower Emissions Reduction	Priority 2	Priority 4

Table 5. The four categories for prioritization of mitigation projects.

- pg. 44, *Dickinson College Climate Change Action Plan: Climate Neutral by 2020*. September 2009.

The manner in which a school evaluates its strategies is up to its planners and stakeholders. However, the National Wildlife Federation’s *Guide to Climate Action Planning: Pathways to a Low-Carbon Future* offers some helpful financial evaluation metrics to use as a starting point (see Appendix C).

L. Planning for Behavioral Changes

Energy savings and resource conservation from behavioral change may be difficult to predict and quantify, especially if done in conjunction with simultaneous retrofit projects. However, the potential for noticeable energy savings should not be understated. Schools that engaged in behavior changing programs have reported measurable results from the policies targeted at changing the behavior of their students, faculty, and staff. Behavioral change strategies can be particularly effective at institutions where the student body enthusiastically supports the ACUPCC pledge. These communities are typically more willing to modify their behavior and more aware of the aspects that can lead to less energy-intensive lifestyles. Many CAPs – particularly those of financially constrained institutions – propose behavior change policies as initial measures because they are free to implement and offer energy savings.

Allegheny College plans to hold annual competitions to reduce energy consumption in dorms and academic buildings on campus. These two-week competitions will be accompanied by educational programs and engagement activities to fully involve each member of the campus community. A pilot competition between two campus-owned houses in spring 2009 yielded electricity reductions of 40-55 percent. – pg. 26, *Allegheny College Climate Action Plan*. October 2009.

Behavior change, however, cuts both ways: in one instance the result was an increase in carbon emissions when students in a new LEED-certified dorm stopped turning off their lights, resulting in an increase in energy use. Because they lived in a “green” building, students might have been lulled into a false impression that their consumption habits no longer mattered. This example demonstrates the need for effective educational programs for the campus community alongside any retrofit projects. Such an approach ensures that policies have a positive and beneficial impact towards the school’s goal of carbon neutrality.

M. Mapping Out a CAP Development Timeline

Climate action planning can be a long, complicated process, especially if dozens or even hundreds of individuals across campus are engaged. Most of the schools interviewed needed 18-24 months between signing the ACUPCC and adopting their CAP. To maintain momentum and enthusiasm, specify a target publication date for the CAP and

work backwards to identify interim deadlines to ensure the planning process moves along steadily. Assemble a team and start as quickly as possible after signing – preferably in the first 1-3 months. A GHG inventory is usually completed in the first 9-12 months of work. Then the actual climate planning can begin in earnest. The CAP development process works best if it can be compressed into an academic year. This accelerated schedule is challenging, but confers the following advantages:

- Participants maintain their enthusiasm and momentum
- Constitution of the CAP development team remains more stable – this is particularly an issue for students (interns) who may otherwise graduate if it drags out over multiple academic years
- Faculty members do not have to volunteer unpaid time during the summer months to work on the CAP
- Decreased risk of missing ACUPCC reporting requirement deadlines.

Villanova University's Climate Commitment Committee developed a tracking spreadsheet to keep it on target to meet the ACUPCC's reporting deadlines. This spreadsheet assigned deadlines for tasks needed to advance the larger agenda and helped ensure that they didn't take on too much simultaneously. The short-term deadlines were concrete enough to keep people motivated, yet flexible enough to be revised if necessary.

N. Communicating Achievements to Stakeholders

Cabrillo College created a new school sustainability logo to brand all of its sustainability efforts and increase campus awareness of ACUPCC-related activities and campaigns.



Education and outreach is vital to the overall success of a school's carbon mitigation strategies. When climate action planning ends, implementation begins, and to sustain the movement schools need to motivate stakeholders by keeping them "in the loop". Failure to do so jeopardizes the support and buy-in that a collaborative, inclusive planning process can create. Many schools struggle with this communication, so start thinking now about how to do so. Establishing a sustainability website, connecting into social media networks, and creating an email listserv are all ways in which CAP planners can keep the campus aware of the work they are doing. Make sure to communicate the results of implementation efforts, be they dorm energy competitions, carpooling challenges, research competitions, or anything else.

Cornell University administered a mail survey to 2,200 local property owners to assess the attitudes of the Ithaca community toward the CAP it had just published. Respondents were presented with one of six proposed mitigation strategies and asked for their feedback. The six strategies were: bioenergy, wind power, enhanced geothermal systems, urban park-and-ride, carbon offsets, and forest carbon sequestration. The overall community response to the CAP was positive with a significant "neutral" portion. Attitudes were more positive when the project provided benefits for the entire community or was located solely on Cornell property. Support decreased when the proposed project would be seen during a respondent's daily life or located near his or her residence. The results of this survey were made available online in a 35-page PDF document at:

<http://www.sustainablecampus.cornell.edu/climate/docs/CAP%20report%2011-20-09.pdf>.

When **Warren Wilson College** asked its students what they needed to change their behavior, the overwhelming response from campus was that people needed regular feedback to confirm that their efforts were making a difference. In response, the school established a quarterly monitoring system for building monitors and transportation fuel use to report back to campus. Thanks to this feedback people remained very engaged during the year following the release of the CAP, and as a result campus GHG emissions dropped 10 percent – even as other emissions drivers rose 6 percent!

O. The Process Shapes the Product

As climate action planning begins, try to embrace the challenge. Climate action planners on campuses across the country are embarking on an ambitious journey that has rarely been attempted, blazing a path for others to follow. The journey itself can be a reward, too. Most interviewees stated that the act of convening stakeholder groups and

The ACUPCC is an umbrella under which disparate, piecemeal efforts already underway across campus can be united into a cohesive, synchronized whole.

collaborating with people across campus were some of the most rewarding and informative aspects of their CAP development. Through their outreach, they discovered activities they did not know existed. In addition, the act of reaching out to people helps build consensus and greater awareness of campus sustainability efforts and the school’s climate commitment.

“The ACUPCC is the ultimate community project: it [...] touches all aspects of the campus [and] galvaniz[es] campus action into overarching objectives, and also [diffuses] it to individual responsibility for every person.” – Margo Flood, Warren Wilson College

5. Best Practices in Writing a CAP

Once a school has completed the climate action planning process it is time to write the CAP. This document should reflect everything a school wants readers to know about its climate commitments, existing activities, and how it plans to achieve the requisite emissions reductions. No two CAPs are written the same way, but the best incorporate the following elements:

A. Clear Organization

A structured, well-written document goes a long way in helping a reader understand an institution’s approach to carbon neutrality. Use a table of contents and clearly designate the different portions of the CAP so that a reader can easily find the information he or she is seeking. A strong, readable, concise executive summary can help the reader understand the essence of a school’s climate commitment without getting bogged down in details that pertain to implementation. This is especially true for longer plans.

B. Including Key Elements

Surprisingly, a number of the CAPs reviewed did not state the school's carbon neutrality date or interim reduction targets anywhere in the CAP. Remember that a CAP is supposed to function as a standalone document. As such, it should introduce the school's intended carbon neutrality date up front, along with a brief explanation of how this date and interim targets were chosen. This section is an appropriate place to discuss how the school will monitor its progress and, if necessary, adapt implementation efforts along the way.

Along with carbon neutrality and interim target dates, identify anticipated implementation dates for all proposed strategies. Many schools use a timeline graphic that illustrates planned projects and how they relate to expected emissions reduction targets and institutional benchmarks. Be as concrete and specific as possible in setting these dates. If a particular strategy has a low probability of implementation, identify intermediary steps to advance it to a more assured status.

Equally important among the key elements of a complete CAP is the responsibility each school has to address the education, research, and outreach components of the ACUPCC. The analysis of 50 CAPs revealed that these three elements, which are central to the ACUPCC, received proportionately less discussion than mitigation strategies. In many cases, education strategies were ignored entirely. As institutions of higher learning that have committed to the ACUPCC, signatories have a responsibility to include details about how the climate commitment will be integrated into their central mission as educators.

Arizona State University divided its proposed mitigation strategies into five areas: Energy, Transportation, Other Campus Practices, Recycling and Waste, and Carbon Offsets. Within these areas it categorized the strategies as:

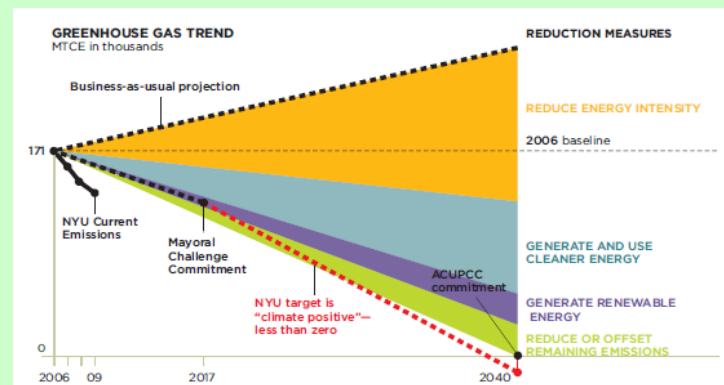
- Policy/Procedure/Purchasing
- Education/Awareness
- Planning & Building Design
- Systems/Infrastructure
- All

Finally, within each of these categories the strategies were classified by implementation date:

- Ongoing
- Near Term (2007-2012)
- Near to Mid-Term
- Mid-Term (2013-2018)
- Mid to Long-Term
- Long-Term (2019-2025)

We found this a very effective organization for identifying the school's activities.

New York University created an excellent graphic to illustrate the estimated emissions reductions of its chosen mitigation strategies, trendlines for business-as-usual emissions versus its ACUPCC neutrality goals, and real emissions reductions to date. While not all schools have the resources to produce this type of graphic, it is a best practice to aim for.



-pg. 40, *New York University Climate Action Plan*. Winter 2009.

C. Tailor the CAP to the School

A CAP is not a one-size-fits-all document. Each one is written to fit a unique situation, context, and culture. Just as the mitigation strategies and other parts of a sustainability initiative should meet the needs of the school, so should the structure of the resulting CAP document. Time and space should be devoted to the most important elements drawn from a school's climate action planning process. In addition, the tone and level of technical detail of a CAP's text should be targeted to the most likely readers. Some CAPs will be written for facilities and operational managers, whereas others will read more like a strategic plan for administrators. The important thing to remember is that it should be tailored in style, technical detail, and content for key target audiences. The goal is to implement the CAP, not frame it: create a functional roadmap that can be embraced by your institution and catalyze real change.

Arizona State University published its CAP with a dual-purpose: guide the school's mitigation efforts and also promote ASU's environmental leadership. It appears to have succeeded in both. The CAP is readable, colorful, and graphically engaging – all of which are key elements in a strong communications document. It also contains a lot of technical content, specificity, and a good balance between the four types of climate action strategies. The CAP has energized the community and planned activities are already being implemented. ASU's document may well serve as a model for other schools of similar size and ambition.

New York University created an innovative CAP that addresses both the ACUPCC and its commitment to the New York City Mayoral Challenge to reduce GHG emissions per square foot by 30% by 2017. The CAP frames the two commitments as complementary components of a cohesive whole, and then identifies different strategies for achieving each goal in the two subsequent sections of the document. The strong resulting CAP is held up as an example for similarly sized schools to emulate.

Most schools create a CAP to fulfill the reporting requirements of the ACUPCC, but it need not be limited to this commitment alone. A growing number of schools, particularly public institutions, must meet state mandates or other climate and sustainability targets. For example, public schools in the State of California must reduce GHG emissions to 1990 levels by 2020; Virginia schools must reach certain carbon emissions reductions compared to “business as usual” models. The CAP is an ideal place to address these commitments and how they fit in to a larger push for carbon neutrality. Different metrics for emissions reductions provide an added layer of complexity. By creating a dual-purpose document, planners can save time and effort, capitalize on synergies between various projects, and give added impetus to the full sweep of

their institutional sustainability initiatives. However, be careful to delineate which climate targets and projects correspond to different mandates or initiatives the school is tackling. This section can also be an opportune time to discuss the evolution of environmental initiatives in the school's community and how the CAP complements those pre-existing activities.

Remember that the best CAP is one that a school will implement! It serves as a principal communication tool and should be crafted with that in mind. An encouraging and inviting writing style, coupled with engaging visual content or layout, can excite supporters and

sway the skeptical. In general, altering the tone, structure, or distribution of the text should be encouraged inasmuch as it helps a plan meet its goals.

D. Transparency in Limitations, Assumptions, and Evaluation Criteria

No CAP is perfect. In particular, a GHG inventory will probably have low confidence margins for some emissions sources, particularly where people have been forced to rely on national emissions factors or extrapolate from limited data samples. Instead of devoting space to explain the 30 percent of the inventory that is tentative, simply acknowledge the uncertainties and invest time in addressing the 70 percent that is better understood. As data collection systems are refined in years to come, the accuracy of the inventory and emissions reduction estimates will improve and can be updated with the CAP.

There will also be uncertainties about the implementation of proposed strategies. CAPs have to take into consideration projected campus growth, future energy prices, new technologies, behavioral changes, and other assumptions. While campus circumstances and the viability of certain projects might change over time, those threats should not discourage authors from explaining how their plans can adapt. Describe the assumptions underlying the selected strategies and how those strategies were prioritized. One useful approach is to classify strategies under different stages of certainty, for example as:

- Completed
- In progress
- Approved (with financing secured)
- Approved (without financing)
- Proposed (high likelihood of being implemented)
- Potential future strategy

This categorization helps readers distinguish between grand aspirations and concrete strategies, and also helps prioritize implementation efforts. Do not discard ideas just because they were not selected during the first planning process; they may be resurrected the next time the CAP is updated as technologies, financing availability, and other factors change. Documenting these unselected strategies in the CAP encourages its use as a living document.

The **University of California, San Francisco** classifies its mitigation strategies as follows: “The UCSF Strategic Energy Plan⁶⁰ directly addresses reducing utility consumption [the primary source of UCSF GHG emissions]. The SEP projects are ranked into different tiers. The tiers are ranked by return on investment payback period to assist the university in getting the most environmental benefit with limited financial resources. Tier 1 projects are those that the University will definitely commit to in the 2009-2011 timeframe. Tier 2 and 3 projects have longer payback periods or greater technological complexity. They may be performed in the 2009-2011 timeframe if additional funds become available, or, they may carry forward to be evaluated during a future funding cycle.” – pg. 46, *University of California, San Francisco Climate Action Plan*. December 2009.

Additionally, every school will evaluate proposed strategies based on its own criteria. The specific criteria are less important than making sure they are well-defined and

transparent. If they are not, it will be more difficult to get buy-in from the people who will be responsible for implementation, but who may not have been a part of planning. Make sure the CAP chronicles the selection process in enough detail to convince a casual reader that the chosen strategies are justified and appropriate for the institution. This description should thoroughly cover the criteria that played a role in selecting all the strategies. For instance, be sure to include the non-financial criteria that were used to evaluate less visible yet valuable benefits, such as:

- Increased academic learning opportunities
- Social benefits to campus culture
- Strategic positioning within the higher education industry
- Influence and impact on the broader community beyond campus

E. Make the CAP Comprehensive

The heart of a school's CAP should address mitigation, education, research, and outreach strategies. Although a GHG inventory informs and justifies the selection of strategies, it is not the "meat and potatoes" of a plan. These four categories of strategies represent the bulk of the work in the future. Accordingly, the CAP's text should address them with an appropriate amount of detail and attention.

1. Mitigation

Identify proposed mitigation strategies as concretely as possible. Do not include too much detail that may be subject to change, but strike a balance between specificity and relevance for implementation efforts. The most effective mitigation strategies will focus on projects that address the major sources of a school's emissions. Lower-impact (but highly visible) projects such as recycling and trayless dining have a place, particularly in developing grassroots support and building momentum for bigger projects. However, these type of projects will not significantly cut carbon emissions and thus do not deserve a disproportionate amount of attention in the CAP. As one interviewee said, "Acknowledge the elephant in the room and tackle it head-on."

2. Education

Every school's CAP should identify strategies to expand curricular offerings and encourage learning opportunities for both students and faculty. A CAP is a good place to publish baseline campus climate literacy and course offerings so that a school can measure future progress against its starting position. Including the following elements in the CAP is recommended:

- List of courses containing content related to climate change & sustainability (be specific in number to create a measurable baseline)
- Number of proposed new courses and degree offerings
- Survey of tools and resources for campus education campaigns
- Living-learning opportunities for students and faculty
- Incentives for students and faculty to encourage climate-related teaching, research, and action
- Climate-related partnerships with other academic institutions

When discussing these existing and planned projects, make sure to include metrics for measuring implementation progress. For specific examples of education strategies and metrics, see Section 6.

3. Research

Many schools have active research scientists or research facilities on campus, and even those that don't can still identify, in their CAP, opportunities to advance the body of knowledge on climate change and the development of methods and technologies to mitigate and adapt to its impacts. The CAP should seek to tap into and expand the existing human capital on campus by encouraging students and faculty to engage in climate-related research, projects, or partnerships. Accordingly, the CAP should identify:

- Existing climate change research projects
- Campus experts and researchers (these faculty and students can also prove valuable in the planning and implementation processes)
- Centers or institutes for climate research
- Funding availability for climate research
- Communication channels to disseminate research results to campus and external audiences
- Research collaboration with other organizations

Cape Cod Community College is fostering research on its campus by collaborating with the Massachusetts Division of Fisheries and Wildlife (MassWildlife) to do a long-term study of the bird and bat mortality rates from wind turbines on Cape Cod. The study represents MassWildlife's first examination of turbine-related mortality in the region, and will allow students the opportunity to participate in primary research on a voluntary basis.

Include metrics for measuring the expansion of these research activities over the course of CAP implementation. For specific examples of research strategies and metrics, see Section 6.

4. Outreach

An institution's climate commitment is also an opportunity to influence others beyond the borders of campus. A CAP should identify ways in which a school can increase awareness of climate change in its local community as well as at the regional and national levels. Engage external stakeholders. Many schools have successfully leveraged partnerships with outside actors to advance their internal implementation efforts, catalyze action in the broader community, and offer students a way to put their studies into practice. These efforts should be tracked or quantified in some way to measure success in expanding these efforts. Specific examples of outreach strategies and metrics can be found in Section 6.

Davidson College is working with Duke Energy to spur the development of renewable energy projects that will help meet the North Carolina Renewable Portfolio Standard of 12.5 percent by 2025. This use of "political capital" demonstrates the important positive impact that institutions of higher education can have beyond their own campuses.

F. Addressing Scope 3 Emissions

Tracking Scope 3 emissions – including those from business travel, commuters, and athletic programs – is a requirement of the ACUPCC and is one of the biggest challenges for schools of any size. Historically, very few data collection systems captured mileage or vehicle type, making it extremely difficult to develop emissions estimates. The resulting uncertainties in an inventory are so frustrating for many schools that they hesitate to include their Scope 3 findings in the CAP, much less identify strategies for mitigating these emissions.

The majority of **College of Marin's** emissions are generated by commuters, but the school did not have a system in place to capture the miles traveled by commuters nor the frequency of trips. Facing time and budget constraints, the school decided to administer an online transportation survey. The results were inputted into the Clean Air - Cool Planet Campus Carbon Calculator to generate emissions estimates. College of Marin's Scope 3 emissions – 65 percent of its total footprint – are high, but similar to the emissions profiles of other community colleges. This baseline comparison gave the school confidence that the numbers were in the right ballpark and allowed the college to start developing strategies to get people out of their cars and onto local public transit.

Nevertheless, it is important to include Scope 3 emissions in the inventory even if they have a very low confidence level. Doing so may trigger changes to those same data collection systems so that the next GHG inventory update will be more accurate. Omitting Scope 3 sources that cannot be measured with confidence skews a school's carbon footprint and may cause planners to neglect emissions-intensive transportation sources. As the adage goes, "You cannot manage what you are unable to measure" – so each school should do its best to estimate these emissions and explain how data collection will be improved in preparation for the next iteration of the GHG inventory.

"Tackling carbon neutrality on a campus [the size of **Arizona State**] is daunting, but you have to start somewhere. [...] There are only so many ways to get to carbon neutrality, and if you waste too much time trying to perfect [your data], you're wasting valuable mitigation time. At the end of the day, what really matters is the action – and the spirit behind this...Be honest [and] track your methodology." – Bonnie Bentzin, Manager of University Sustainability Practices, ASU

G. Identifying Major Players

Assigning responsibilities within the CAP for project implementation to specific individuals or departments will strengthen the CAP tremendously and improve the chances of successful implementation. Identifying specific individuals or departments at the outset creates accountability throughout the institution and distributes the burden from the implementation liaison to a network of key stakeholders. Be explicit in defining their roles and duties, because if it is too vague there may be pushback when it comes to implementation.

In addition to reinforcing implementation activity, listing roles in the CAP allows readers to identify whom they can approach with new ideas or strategies about a particular element of the plan. If authors do not want to identify an individual, list a department or group that has agreed to work on it. Alternatively, the planning team could establish a

generic e-mail address or telephone number that interested campus members can contact for suggestions and comments. Be sure to include a reference to the school’s most pertinent website – be it an expansive online sustainability portal or a subsection of a departmental website.

Fort Lewis College’s CAP included very detailed descriptions of potential projects on campus. For each goal, the student-authors:

- identified potential and chosen metrics for measuring progress,
- described the rationale for the project(s),
- analyzed the existing situation at FLC,
- discussed targets at other schools,
- recommended a target for their school,
- identified action steps needed to achieve the target,
- assigned responsibility for those actions to various parties,
- specified the cost/resources needed, and
- estimated the benefits and payback period.

This level of detail may be too much for some schools, but it guarantees that the extensive background research conducted to prepare the CAP remains available to readers long after the responsible parties graduate or leave the institution.

H. Identifying Funding Sources

Another often overlooked but key aspect of a CAP is the identification of funding sources for implementation *in the document itself*. In cases where a project is “self-funding,” such as many energy efficiency retrofits, include the financial calculations to demonstrate the return on investment. By explicitly addressing financing requirements and proactively identifying potential sources, one increases the likelihood that the CAP will be approved by the institution. It also helps later in the process when people are working to implement the strategies – a pre-identified funding source has the implicit approval of senior-level administrators who signed off on the CAP.



A helpful resource on funding sustainability efforts is *Financing Sustainability on Campus*, published by the National Association of College and University Business Officers. For more information, see Appendix C.

College of Marin devotes two pages at the end of its CAP to identify potential sources of funding for its climate action strategies. These sources include:

- Savings from reduced energy consumption (General Fund)
- General Operating Fund
- Capital Construction (Bond) Programs
- Grants, Loans and Rebates
- Third-Party Financing (ESCOs and PPAs)

Each funding source is followed by a short discussion of the likelihood of obtaining funding from the source and the limitations or constraints on each source. This discussion is useful for readers and implementation coordinators alike.

I. Mechanisms for Tracking Progress

Arizona State University is developing a sophisticated, comprehensive Environmental Indicator Data Management System that will allow real-time and monthly tracking of all data related to its sustainability goals.

Make sure to include metrics for how the institution will monitor and evaluate its CAP implementation through the years. There should be metrics to track progress in all four areas of the CAP – mitigation, education, research, and outreach activity. Incorporating these metrics into the implementation timeline will further strengthen the CAP. For example, planners can set interim targets for climate change awareness on campus, or the level of research activity, or some other desired outcome by using metrics to set goals. A broad array of sample metrics can be found in Section 6E.

This section is also a good place to discuss who will be responsible for obtaining updates from various project managers across campus and tracking overall progress. Finally, do not neglect to mention the frequency and level of detail for the progress reports.

J. Flexibility for the Future

Remember that a CAP is a roadmap and a living document that will be revised and enhanced between now and the day the school achieves carbon neutrality. In the CAP itself, build in a protocol for updating the CAP as the journey to carbon neutrality progresses. Build in room for wrong turns, course correction, and unexpected shortcuts. It is unlikely that emissions will be reduced to zero in the short term, so start with priority areas and plan to revisit the more questionable parts of the CAP in a few years as new technologies emerge and funding sources become available. Make sure the CAP answers the following questions:

- Who is responsible for updating the CAP?
- How frequently will it be updated?
- How will the school improve data collection?
- Who will apply the selected metrics to benchmark the school's progress?

A CAP is a roadmap – a living document that you update periodically. Build in room for wrong turns, scenic detours, and unexpected shortcuts!

Unless these issues are explicitly addressed in the CAP, the plan runs the risk of being a static document that will quickly become outdated and cease to function as a useful guide to carbon neutrality. Building in this flexibility is doubly beneficial. Not only does it give the CAP better odds for success, but it also eases the burden for delegating responsibility for future updates at a time when effort should be primarily directed at implementation.

Cornell University took an innovative approach to its Climate Action Plan: rather than producing a static text document, such as a PDF, it devoted a section of its sustainability website to an interactive electronic CAP. The online presentation of the CAP makes it feel dynamic and accessible, and it also lends itself to modification when Cornell needs to update its GHG inventory (per ACUPCC requirements) or the strategies contained in the CAP. It can be seen at: <http://www.sustainablecampus.cornell.edu/climate/index.cfm>

6. Common Climate Action Strategies and Potential Metrics

This section quantitatively reviews common climate action strategies undertaken or proposed by the schools evaluated in our study and suggests metrics that could be used to track and assess these strategies over time. Each CAP was assessed for the specific strategies implemented by the school within the four thematic areas (mitigation, education, research, and community outreach). For more information about the methodology used, please see Appendix A.

As expected, large schools with big carbon footprints (i.e. Masters- and Doctorate-granting institutions) had plans to implement the widest array of policies and generally addressed all four thematic areas. This is partly due to larger schools having greater resources available, such as discretionary funding, technical expertise, preexisting research centers, and specialized staff, such as energy managers and campus planners. They also have more student groups and research projects, by virtue of their larger and more diverse student body.

The sections below discuss the common strategies within each of the four thematic areas. In particular, each section highlights specific strategies that stood out as being innovative or easily duplicated on other campuses.

EPA's Green Power Partnership

Five of the schools whose CAPs we reviewed are members of the U.S. Environmental Protection Agency's Green Power Partnership (GPP). The GPP is a voluntary program that supports the purchase of green power. Green power is electricity produced from a subset of renewable resources, such as solar, wind, geothermal, biomass, and low-impact hydro. Using green power reduces Scope 2 emissions.

Renewable energy supplied in a utility's standard portfolio offering – i.e., in the basic grid mix or as the result of a Renewable Portfolio Standard (RPS) – does not reduce a school's emissions. Those reductions belong to the energy supplier.

Partnering with EPA can help a college or university identify an appropriate green power purchasing strategy, reduce its carbon footprint, and communicate its leadership to students (both current and prospective), parents, staff, faculty, and others schools in the industry.

Partnership Website: www.epa.gov/greenpower

GPP College and University Challenge:
www.epa.gov/greenpower/initiatives/cu_challenge.htm

Energy Performance Contracting

Schools can hire an energy services company (ESCO) to identify and implement energy efficiency projects that also achieve large emissions reductions. The ESCO absorbs all upfront costs of the project and is paid over time through the energy savings associated with the project. This model is attractive for schools that are cash-strapped or lack the ability to finance a project independently. First, an ESCO performs an energy efficiency audit to identify cost-effective mitigation potential on your campus – essentially the same role as a consultant. By building GHG reduction estimates into the Energy Performance Contract (EPC), a school can ensure that the EPC achieves the desired carbon reductions. The EPC only moves forward if a school is satisfied with the terms, expected costs, and estimated energy and emissions reductions proposed by the ESCO.

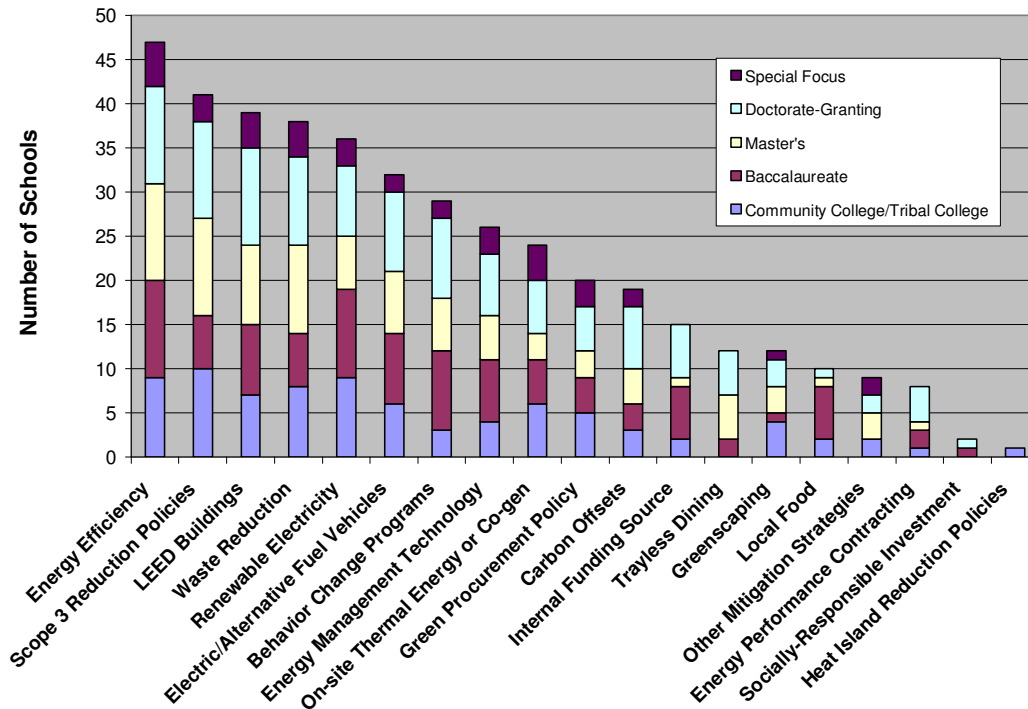
A. Common Mitigation Strategies

Mitigation strategies are the policies, procedures, technological innovations, or capital investments that are utilized to reduce a campus' carbon footprint either directly or indirectly. Since mitigation is the only true option for concretely lowering emissions, it is unsurprising that they were by far the most common type of strategy in the CAPs reviewed. Figure 4 lists the mitigation strategies identified as well as the number of schools in each Carnegie class that adopted a particular strategy. For a complete list of mitigation strategies with examples from each category, see Appendix B.

Overall, we found energy efficiency, Scope 3 transportation emissions reduction policies, LEED certification, waste reduction, and renewable electricity to be the most common mitigation strategies. The fact that energy efficiency is the most common policy is likely due to the rapid payback time of energy efficiency projects and the creation of a new revenue stream (from the energy savings) to possibly fund additional mitigation projects.

Spotlight on Reducing Scope 3 Emissions from Travel
Cape Cod Community College "has reduced its air travel by 40% from 2007 levels by limiting air travel to destinations that are essential to the College mission. In addition, the school's Office of Information Technology has undertaken an initiative to increase online class offerings as well as offering hybrid classes. By doing so, the College can significantly reduce the number of trips students make to the campus. The College has committed to increasing distance learning opportunities and targets a 50% increase in such web-based offerings by 2015".-pg 18, *Cape Cod Community College Climate Action Plan*. January 2010.

Figure 4. Distribution and frequency of common mitigation strategies.



In addition, the types of mitigation strategies implemented differed between Carnegie classifications. For example, 10 of 11 community colleges implemented policies and programs to reduce Scope 3 emissions from commuters. This approach makes sense because of the disproportionately high Scope 3 emissions in these schools' carbon footprints. It indicates that they are prioritizing their strategies appropriately. Conversely, baccalaureate colleges paid much less attention to travel-related emissions, most likely because the vast majority of their students live on campus and do not commute. These schools focused primarily on energy efficiency, renewable electricity, and behavior change programs to reduce energy use – logical choices given that the majority of their emissions are in Scope 2.

It is important to note that while all schools have to set a carbon neutrality date, their actual emissions do not need to be zero in order to hit their target. Instead, schools can purchase green power to address Scope 2 emissions and carbon offsets to address Scope 1 and 3 emissions to achieve net zero emissions, preferably through certified offset suppliers.⁶ In our survey, 16 of the 50 schools planned to purchase offsets or green power to address their remaining Scope 1 and 2 emissions as a last resort to achieve their carbon neutrality goals, and 8 of the 50 planned to purchase offsets for some or all of their Scope 3 emissions (usually institution-sponsored air and other travel rather than commuter emissions).

Spotlight on Green Power and Carbon Offsets

Responding to a student movement on campus, **American University** started purchasing green power in 2006 to cover a portion of its electricity consumption. In 2010, this increased to 100 percent. By 2014, the university expects to supply 100 percent of campus electricity from regional renewable energy projects, and it will offset the remainder of its emissions in 2020 to achieve net-zero emissions across the entire institution. The purchase of these offsets will comply with the ACUPCC's Voluntary Carbon Offset Protocol, and the university hopes to source them from local projects in the Washington, DC-metropolitan region.

Spotlight on Behavior Change Policies and Programs

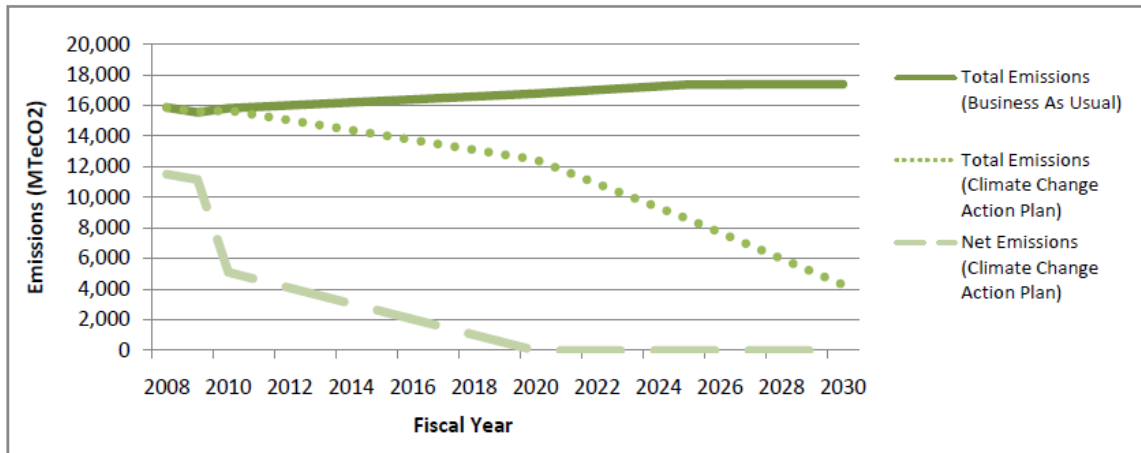
The **University of Illinois at Urbana-Champaign** designated Energy Liaisons for departments, colleges, and other units across campus. The energy efficiency advocates promote energy conservation and share ideas and suggestions among their colleagues. To incentivize energy conservation in each department, the school is shifting to a unit-based energy billing system that transfers responsibility for utility expenses from the campus as a whole to the campus units. –pg. 47, *A Climate Action Plan for the University of Illinois at Urbana-Champaign*. May 2010.

Pomona College organizes annual competitions between residence halls and academic buildings to encourage energy efficiency. To reinforce these initiatives, the school offers laundry drying racks and CFL bulbs to students free of charge. Plans to expand free distribution are under consideration. – pg. 14, *Pomona College Climate Action Plan*. September 2009.

⁶ Adherence to the ACUPCC Voluntary Carbon Offset Protocol was a best practice observed at several schools. The ACUPCC purchasing guidelines are available at: www.presidentsclimatecommitment.org/resources/guidance-documents/offset-protocol

The figure below illustrates how one school, Dickinson College, is planning to achieve net and gross emissions reductions with a combination of mitigation and purchases of green power and offsets.

Figure 5. Total emissions in the "business as usual" scenario compared to total and net emissions by following the Climate Change Action Plan.



Source: p. 13, *Dickinson College Climate Change Action Plan: Climate Neutral by 2020*. September 2009.

The text boxes below contain examples of specific mitigation strategies that we discovered in our CAP review.

Spotlight on Internal Sources of Funding for Mitigation Activities
 Since 2007, [New York University] has committed \$250,000 annually to the Sustainability Fund, which supports seed and pilot project funding for Green Grants [...] and facilitates the implementation of recommendations from NYU’s Sustainability Task Force. Projects include, but are not limited to, capital and infrastructure improvements, innovations in University systems, outreach programming, and public engagement. The Sustainability Fund is not seen as a primary source of funding for the large projects and programs described in this Climate Action Plan, but it may serve to support or extend their reach. –pg. 52, *New York University Climate Action Plan*. Winter 2009.

Spotlight on Reducing Scope 1 Emissions from Vehicles
Furman University has a laboratory that converts dining hall cooking oil into biodiesel fuel for use in university vehicles/ mowers. – pg. 14, *Sustainable Furman*. November 2009.

Spotlight on Reducing Scope 3 Emissions from Travel
 “[At Cabrillo College,] a 2008 student transportation survey was conducted by Student Services in partnership with Ecology Action’s “Go Green Cabrillo” program, confirming transportation’s role as the major Cabrillo carbon offender. Survey results confirm that carpooling is the most desirable alternative to driving alone for students as well as staff and faculty. Existing Cabrillo programs are being expanded and better publicize, to encourage and increase the use of carpooling, bikes and public transportation to meet Cabrillo’s climate commitment to greatly reduce greenhouse gas emissions.”
 - pp. 5-6, *Cabrillo College Climate Action Plan*. February 2010.

Spotlight on Energy Performance Contracting

“[**Arizona State University**] is currently upgrading the University’s utilities infrastructure through an Energy Performance Contract in order to reduce energy consumption in the form of electricity and natural gas, as well as reducing the use of chilled water for cooling. The \$70 million investment in energy efficiency will be executed over two phases. Phase one was completed in 2007 and included: retrofitting lighting systems; replacing motors, chiller and cooling tower; upgrading heating, ventilation and cooling systems; insulating steam pipes; installing a solar photovoltaic parking cover; initiating a boiler blowdown heat recovery system; installing direct digital control systems for new central plant equipment; and installing thermal energy storage controls.

Savings in electricity consumption roughly equates to 53 million kWh per year with a 13 MW demand reduction. Encompassing 80 buildings (6.5 million square feet of space), the environmental benefits resulting from the decrease in electricity use include annual emissions reductions of approximately 110,929,000 pounds of carbon dioxide; 2,014 pounds of volatile organic compounds (VOCs); 221,222 pounds of nitrogen oxide (NOx); 16,748 pounds of carbon monoxide; 153,700 pounds of sulfur dioxide, 12,243 pounds of PM10 particulates; and 689,954 milligrams of mercury every year.

Phase two is currently underway and includes more energy efficiency upgrades across all four campuses.” –pg. 33, Carbon Neutrality Action Plan 2009.

Spotlight on Behavior Change Policies and Programs

Weber State University is pursuing the following behavior-change programs to increase energy efficiency on campus:

- Behavioral modification campaign to teach faculty and staff to turn off computer equipment at night,
- Policy to prohibit use of space heaters and remove all of them from campus,
- Alternative scheduling to maximize efficient use of classrooms and athletic venues and reduce lighting and HVAC requirements, and
- Converting custodial services to daytime to reduce lighting requirements at night. This involves retraining custodians to minimize disturbance to classroom and office occupants and replace old equipment with quieter models.

–pp. 29-33, *Weber State University Climate Action Plan*. October 2009.

Spotlight on Energy Management Technology

Sewanee: The University of the South has a Building Automation System (BAS) which helps HVAC energy-saving control strategies in many parts of the 36 largest campus buildings. The BAS monitors and controls temperature settings, ventilation changes, and hot water supply temperatures. Many of the remaining buildings on campus have programmable thermostats and variable air volume systems. – p. 4, *A Climate Action Plan for Sewanee*.

“**Cornell**[...]has well-integrated building management systems to adjust temperature, lighting, and other indoor environment settings, according to time of day, occupancy, season, and room use. [The school] is also investing in state-of-the art electrical transformers and switchgear across campus, allowing its energy managers to track energy usage in real time. Smart Grid features can build on these resources by adding an additional level of sensors and controls into the electrical distribution systems at the building or equipment level.” – *Cornell Climate Action Plan*.

<http://www.sustainablecampus.cornell.edu/climate/>

Spotlight on Energy Efficiency Retrofits
Eastern Connecticut State University partnered with the Connecticut Light and Power Company in a pilot retro-commissioning project that identified energy saving measures it could take in buildings that have a building controls system. Several projects have been implemented including lighting controls in the Library; air handler control upgrades to Webb Hall, hallway lighting occupancy sensors in two other buildings, lighting upgrades in the sports center gymnasium and a chiller optimization project in the North Residential Village. – pg. A-10, *Eastern Connecticut State Climate Action Plan*. December 2009.

Spotlight on Reducing Emissions from Travel
The **University of California, San Francisco** has a wide variety of programs designed to reduce Scope 3 emissions from commuting students, faculty, and staff, including:

- Providing reasonably priced housing to 1,400 additional members of the campus community by renovating existing apartments and adding 448 new units
- A comprehensive telecommute policy
- Tele- and web-conferencing capabilities for faculty, students and staff
- Flexible work schedules
- Shuttle buses
- Vanpools
- Biking accommodations
- Providing parking spaces for the City Car Share program
- 2 electric vehicle charging stations
- 103 motorcycle parking stalls

UCSF also focuses on reducing the Scope 1 emissions of fleet vehicles by:

- Procuring low-carbon vehicles: 15 percent (42 of 273) of fleet vehicles are alternative fuel, hybrid electric or gas-powered vehicles
- Piloting a program to bundle previously separate mail and central storehouse supply deliveries to departments. Combining these deliveries eliminates unnecessary vehicle trips and associated GHG emissions.

-pp. 32-37, *University of California, San Francisco Climate Action Plan*. December 2009.

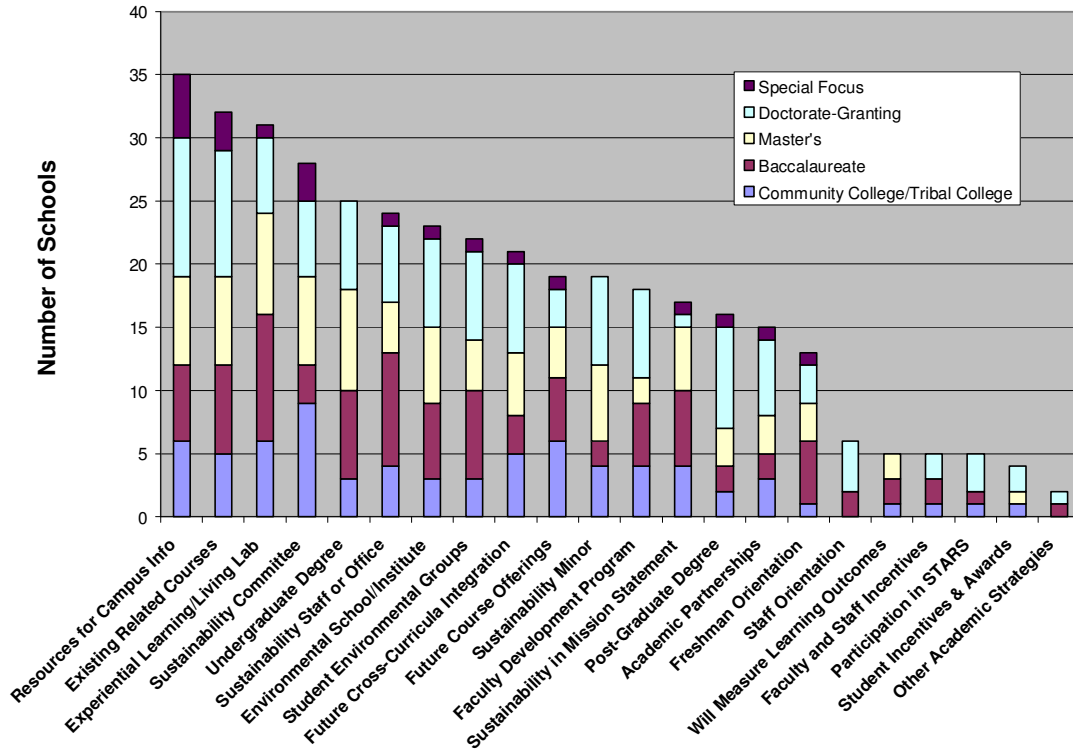
B. Common Education Strategies

Signatories to the ACUPCC have committed to take “actions to make climate neutrality and sustainability a part of the curriculum and other educational experiences for all students”. In this section, we review the actions different schools have undertaken to achieve this objective and provide examples that best illustrate how they did it.

In the CAP review, we identified 22 separate education strategies that schools could implement. The most common education strategy is *Resources for Campus Community Education*, which includes such things as websites, newsletters, and guides related to sustainability or green living. The second most common strategy is, encouragingly, *Sustainability-Related Courses*, closely followed by *Experiential Learning and Living Labs* where students are immersed in a sustainability culture – for example, living in a school’s model eco-house. The next most common strategy is having a *Sustainability Committee*. Figure 6 lists all the education strategies with their frequency by school type. For a complete list of the education strategies with examples from each category, see Appendix B.

One practice that was conspicuously absent in the CAPs we reviewed was a process to measure and track the learning outcomes associated with the education strategies. This gap is unfortunate because schools without monitoring and evaluation plans will not be able to measure the effectiveness of their education strategy implementation as their schools evolve. Part E of this section suggests potential metrics that schools could use to meet this need.

Figure 6. Education strategies commonly employed by the school studied.



The text boxes below contain examples of specific education strategies that we discovered in our CAP review.

Spotlight on Plans to Measure Learning Outcomes
 The **University of Minnesota, Morris** has plans to “survey graduates to understand how the enhanced sustainability offerings in the curriculum impacted their consciousness of climate change, sustainability, and renewables.”
 -pg. 5, *University of Minnesota, Morris Climate Action Plan*. September 2009.

Spotlight on Staff Orientation
Warren Wilson College has a Green Walkabout for all new staff/faculty to introduce them to best practices campus-wide and orient them to the CAP. Website:
http://www.warren-wilson.edu/~ELC/New_ELC_Website_/Green_Walkabout.php

Spotlight on Resources for Campus Community Education

In 2009, **New York University** released its first Environmental Assessment Report, which analyzed FY 2007 data in order to baseline the University's environmental impacts and create benchmarks for future progress toward sustainability. In addition, it created a Sustainability website at <http://www.nyu.edu/sustainability> for students, faculty, staff, alumni, parents, and neighbors. The school also published a Green Map and a New Student's Guide to Sustainability.

The NYU Green Arch Initiative is an e-mail list and user group that connects NYU students, faculty, staff, and community members to information about environmental events; job, internship, and volunteer opportunities; and campaigns and initiatives. It also serves as a place for members to share ideas and thoughts about environmentalism and environmental projects at NYU.

-pg 74, *New York University Climate Action Plan*. Winter 2009.

Spotlight on Faculty Development Programs

Cape Cod Community College has a Professional Development Day devoted to sustainability and offers online training through Ed2Go.

Allegheny College created a Sustainability Liaison program with 50 volunteers from nearly every office and department on campus to assist their office or department in embracing energy efficiency and waste minimization.

"[**American University**]'s Center for Teaching, Research, and Learning offers a Green Teaching Certificate for faculty who adhere to a checklist of course-greening activities, including reducing paper, saving energy, and encouraging student interest and activity in sustainability." -pp. 27, *American University: Carbon Neutral by 2020*. 2010.

Spotlight on Plans to Measure Learning Outcomes

California State Polytechnic University, Pomona adopted the following benchmark in its Climate Action Plan : *Every student is aware of climate change, its potential consequences and actions to mitigate and address its impacts.* It then goes on to propose various strategies for achieving this goal, including:

- integrating climate change material in new student orientation and first year experience programs
- developing an environmental sustainability-themed General Education track
- developing a Minor in Climate Change Analysis and Responses
- developing and adopting new programs on climate change mitigation and adaptation across the campus

The CAP then identifies complementary actions needed to monitor and evaluate its progress in meeting its goal by stating:

"Achieving this benchmark requires the development of assessment protocols that establish baseline literacy of incoming students about climate change causes, consequences, mitigation and adaptation strategies, as well as track the development of awareness during their educational experience at Cal Poly Pomona. Recent surveys such as the Yale F&ES Project on Climate Change may provide a foundation for establishing preliminary baselines of current student literacy." -pp. 23-24, *California State Polytechnic University, Pomona Climate Action Plan*. 2009.

Spotlight on Integrating Sustainability into Staff Orientation

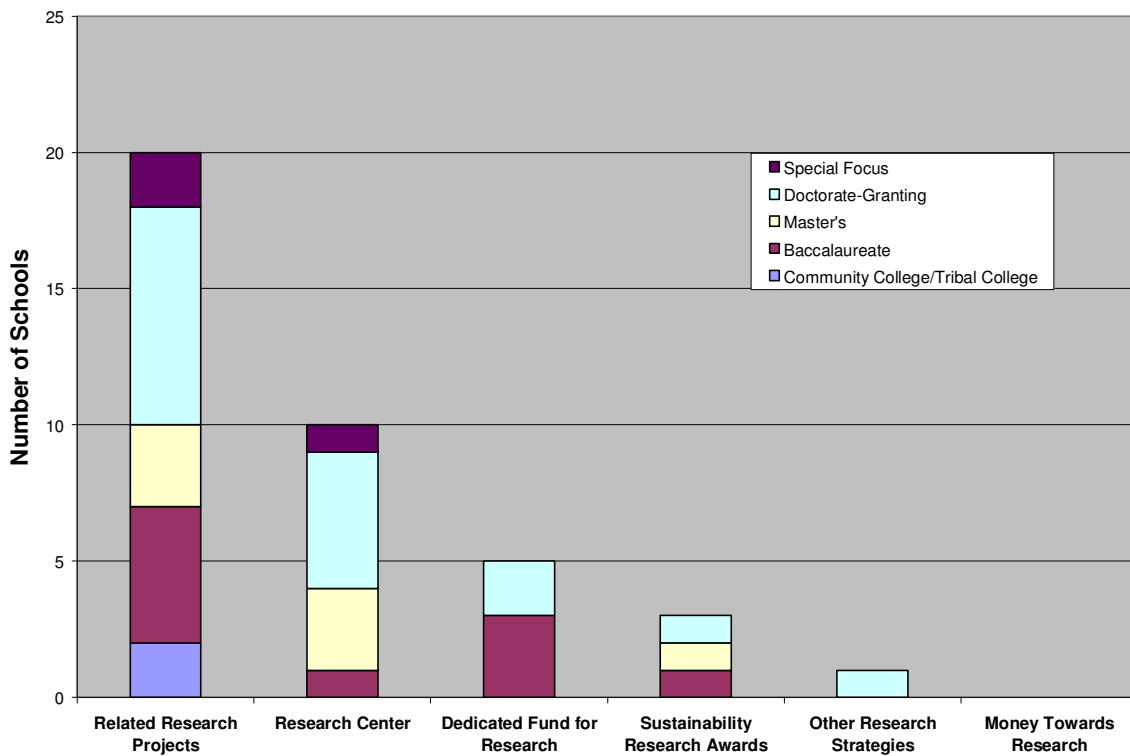
To reinforce its CAP implementation, **Arizona State University** intends to expand education and awareness programs by means of conducting routine interactive presentations with staff and faculty to increase awareness of waste reduction techniques and resources, as well as developing a departmental waste audit process to identify problem areas and work to fix them. -pg. 53, *Carbon Neutrality Action Plan 2009*.

New York University plans to integrate sustainability into new employee training, resident assistant (RA) training, and admissions. - pg. 49, *New York University Climate Action Plan*. Winter 2009.

C. Common Research Strategies

Although the ACUPCC commitment mandates “actions to expand research or other efforts necessary to achieve climate neutrality,” research strategies were less of a focus in the CAPs evaluated compared to mitigation, education, and outreach strategies. In general, schools with a research focus (masters- and doctorate-granting institutions) are the ones most actively pursuing research strategies. Common strategies include *Climate Change and Sustainability-related research projects* and *research centers*. Figure 7 lists the pre-identified research strategies and the number of schools in each Carnegie class adopting a given strategy. For a complete list of the research strategies, see Appendix B.

Figure 7. Research strategies commonly employed by the schools studied.



The text boxes below contain examples of specific research strategies that we discovered in our CAP review.

Spotlight on Research Centers

After it signed the ACUPCC in 2007, the **South Dakota School of Mines and Technology** founded the Black Hills Power Renewable Energy Research Facility through a \$90,000 donation from Black Hills Power. The research center consists of two wind turbines, and three photovoltaic panels, providing modern technology for researching wind and solar energy opportunities. The facility will provide meaningful research experiences for its students and establish collaborative outreach activities for the community and K-12 teachers and students. – pg. 3, *Climate Action Plan 2010*.

Spotlight on Dedicated Funds for Sustainability Research

At **Warren Wilson College** the President's Climate Action Fund offers \$500 for students to design emission reduction projects.

Dickinson College's Environmental Education Fund (EEF) is facilitating and providing incentives for expanded student-faculty research that will advance understanding of sustainability problems and solutions. – g. 40, *Dickinson College Climate Change Action Plan: Climate Neutral by 2020*. September 2009.

D. Common Outreach Strategies

Outreach strategies allow schools to influence their peers and broader community to incorporate sustainability into everyday actions and to address climate change. To that end, many schools are engaged in community-based projects, such as partnerships with local businesses and non-profits or integration with area transit authorities. These projects give students hands-on experience, create community goodwill, and expand understanding of climate change and its impacts in the community. Many schools also hold sustainability events or conferences that are often open to the community as part of their climate action planning. Forming partnerships with outside organizations is another vehicle that schools used in their outreach strategies. Surprisingly, the community colleges reviewed are implementing comparatively fewer community outreach strategies. This trend might result from those schools being more deeply integrated in their local area. Their student bodies tend to draw more directly from the nearby communities. One might consider sustainability projects on campus acting as community outreach by default. Nonetheless, community colleges should still examine their interactions with the community to find ways to promote sustainability further.

Spotlight on Partnerships with Local Schools

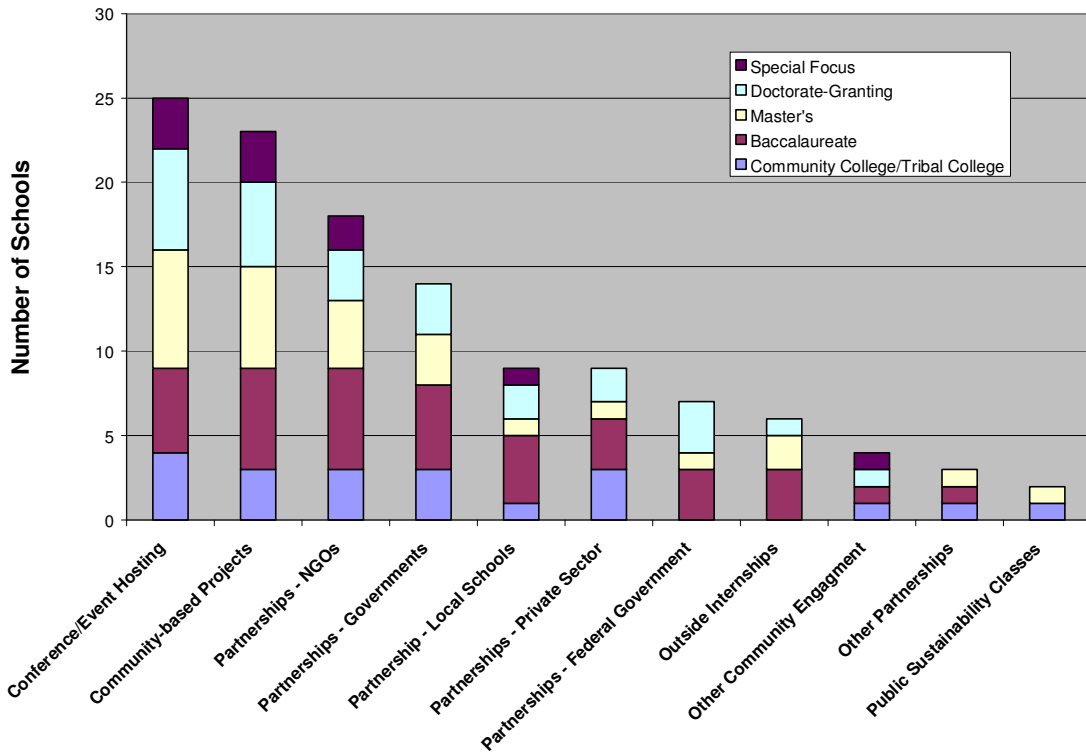
Cape Cod Community College partners with the area's K-12 public education systems to promote sustainability and climate change through the following channels:

- teacher continuing education
- sustainability themes in STEM curriculum development
- hands-on student education/training, especially in the region's technical high schools, where renewable energy installations have been made possible through direct CCCC program involvement and collaboration.

- pg. 16, *Cape Cod Community College Climate Action Plan*. January 2010.

Figure 8 lists the outreach strategies as well as the number of schools in each Carnegie class implementing the strategy. For a complete list of the outreach strategies, see Appendix B.

Figure 8. Outreach strategies commonly employed by the schools studied.



The text boxes below contain examples of specific outreach strategies that we discovered in our CAP review.

Spotlight on Conference & Event Hosting
 The **University of Oregon** hosts four major student-organized sustainability conferences each year, including:

- Sustainable Advantage Conference
- Holistic Options for Planet Earth Sustainability (HOPES)
- Public Interest Environmental Law Conference, and
- the Environmental Justice Conference.

The total funding for sustainability conferences in 2005-06 was \$50,875 (2005 dollars). – pg. 25, *University of Oregon Climate Action Plan*. February 2010.

Spotlight on Community Partnerships
Fort Lewis College's Environmental Center regularly hosts speakers and films throughout the year and puts on an annual Earth Week celebration in the spring. It is also helping to launch Local First, an alliance of locally-owned, independent businesses, the group that created the Be Local Coupon Book. This group is affiliated with the national group BALLE (Business Alliance for Local Living Economies), an organization focused on green economic development strategies. – pg. 130, *Fort Lewis College Sustainability Action Plan: 2010-2015*. January 2010.

Spotlight on Partnerships with Business Groups
“[Through its] Applied Sustainability Center, [the **University of Arkansas**] partnered with **Arizona State University** and Walmart to form the Sustainability Consortium, which will develop a sustainability product index for consumer products that will change the way vendors all over the world produce and distribute consumable and durable products. Since 2007, the Applied Sustainability Center has helped hundreds of area businesses understand how they can operate more efficiently, operate in a manner that is friendlier to local and global environments, and at the same time, sustain local communities.” – pg 13, *University of Arkansas Climate Action Plan*. September 2009.

Spotlight on Community-Based Projects
Luther College has a student internship program that places students in regional congregations to help integrate sustainability principles into each parish. This outreach to the faith-based community complements Luther’s religious mission and dedication to environmental stewardship.
-pg. 8, Transformed by the *Journey: A Climate Action Plan for Luther College*. November 2009.

E. Suggested Metrics for Monitoring and Evaluating Implementation

As can be seen above, the CAPs that were reviewed are full of excellent ideas to reduce GHG emissions, integrate climate change and sustainability into curricula, promote climate-related research activity, and increase awareness of climate change beyond the borders of campus. The next step of the journey is implementation. To do that effectively, schools need to develop metrics to measure and track their progress. Periodic evaluation is crucial because it allows a school to refine, accelerate, or change its chosen strategies as their effectiveness becomes apparent.

The more concrete the metric, the easier it is to track. The CAP research demonstrated that schools have a good handle on how to measure the success of mitigation efforts. Frequently-used metrics include metric tons of carbon dioxide-equivalent (MTCE) avoided, dollars spent, return on investment, and other standard financial metrics. Whatever metric are chosen, make sure they are clearly identified in the CAP and establish a regular assessment schedule to capture change in those metrics over time. This approach applies to education, research, and outreach strategies as well.

Unfortunately, education, research, and outreach activities do not lend themselves as easily to concrete, easily calculated metrics. Consequently, most schools neglected to include them in their CAP – for example, only three schools identified methods to measure learning outcomes. To address this oversight, we have identified some potential metrics below that can help a school measure progress in these areas as well.

Sample Education Activity Metrics

- Percentage of students with basic climate literacy (e.g., grade of 75% or higher on a climate quiz)
- Number of students who have taken a sustainability or climate-related course
- Number of students exposed to climate-change educational resources or tools outside the classroom
- Number of alumni working in climate or sustainability fields

- Number of climate change/sustainability courses offered
- Number of climate change/sustainability degrees offered (and level)
- Number of climate change/sustainability minors/certificates offered
- Number of sustainability staff (part-time and full time)
- Budget of sustainability office (\$)
- Number of staff exposed to CAP training during orientation
- Number of faculty participating in climate-related curricula development programs
- Number of academic partnerships focusing on climate or sustainability

Sample Research Activity Metrics

- Number of climate or sustainability-related research centers
- External research grants received (\$)
- Internal research funding (\$)
- Number of climate/sustainability research awards
- Number of climate/sustainability research projects
- Number of student and faculty researchers
- Size of dedicated fund for climate/sustainability research (\$)
- Number of research partnerships with other institutions
- Number of articles published in peer-reviewed journals
- Number of commercialized technologies incubated at the institution

Sample Outreach Activity Metrics

- Number of partnerships with third-party organizations
- Number of students participating in community engagement projects
- Number of students participating in outside internship programs
- Number of attendees of school-hosted conferences, events, lectures, and classes
- Number of efforts directed at shifting state or federal policy to support climate and sustainability goals
- Number of efforts directed at shifting corporate behavior and policies to support climate and sustainability goals
- Community awareness of institutional carbon neutrality efforts
- Percentage of community with basic climate literacy (e.g., score of 75% or higher on a climate quiz)
- MTCE avoided from attributable community projects and partnerships
- Amount of money spent on climate-related partnerships
- Number of media hits about school's carbon neutrality efforts (e.g. in newspapers, broadcast media, blogs, or industry association newsletters)
- Number of awards won

Regardless of the metrics chosen, take care to explain them in the CAP and establish a regular schedule to apply them and track progress. This section should be explicit enough that someone who reads it 10 years from now can apply the very same metrics and maintain a consistent record of the school's progress across the years.

As stated above, very few of the CAPs we reviewed discussed metrics for tracking education, research, and outreach implementation. We urge all schools to take the opportunity to do so when submitting their next CAP update to the ACUPCC. Schools that have not yet written a CAP can build these in from the beginning, which will allow them to track progress immediately.

7. Conclusion

Climate action planning is a relatively new phenomenon, and when signatories first begin the process of developing their plans many are unprepared and overwhelmed. Formulating a CAP and creating an integrated plan entails meticulous planning, occasional wrong turns, and unexpected successes. Through the analysis of completed plans and interviews with schools, this study offers practical advice and recommendations that any signatory can use to create its first CAP or update an existing one. The findings of this report supplement the various step-by-step guides on climate action planning by offering helpful tips and pointers that other schools learned the hard way. The report also illuminates gaps in the early wave of CAPs submitted to the ACUPCC, primarily the lack of attention paid to academic, research, and outreach strategies. By taking note of these lessons learned, new signatories can smooth their CAP development process and finish with a more refined, comprehensive, and ultimately more successful product.

8. Acknowledgements

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9. Appendices

A. Overview of CAP Selection Process and Methodology

We analyzed CAPs from 50 different colleges and universities that adopted the ACUPCC to identify:

- Best practices in the process of developing a CAP.
- Key elements and components of the finished product itself.
- Common climate strategies being implemented at the schools.

After the review process, representatives from 25 selected schools were invited to participate in brief interviews to discuss their CAP development process and lessons learned.

Selection of Schools for CAP Analysis and Interview

In consultation with Second Nature, the administrative body of ACUPCC, we selected 50 educational institutions that were early adopters of the ACUPCC and whose CAPs were publically available. In making this selection, we made sure to include institutions from diverse geographic locations and from different Carnegie classes (i.e., Community College/Tribal College, Baccalaureate College, Master’s College or University, Doctorate-Granting University, and Special Focus Institution).

After completing our review of the CAPs, we identified 25 schools across the five Carnegie classes whose CAPs were particularly robust and communicated their intended path to carbon neutrality particularly well. Second Nature provided additional recommendations. Together, we compiled a list of schools to invite to participate in individual 30-minute interviews to discuss the processes and procedures used in developing their CAPs. Representatives of 23 schools responded. We then held interviews with these respondents, during which they provided insight into their CAP development process. Discussions touched on many of the topics addressed in this report, including the initiation of their CAP development process, the major players responsible for creating the CAP, lessons learned along the way, and advice for schools following in their footsteps. The information gathered during these interviews has supplemented our CAP analysis and been fully integrated into this report.

A complete list of the schools selected for CAP review and interviews can be seen below in Table 1.

Table 1. Schools selected for CAP review and interview

School	State	Carnegie Classification	Interviewed
Cape Cod Community College	MA	Community College	
Cabrillo College	CA	Community College	Y
College of Marin	CA	Community College	Y
Columbus State Community College	OH	Community College	Y

School	State	Carnegie Classification	Interviewed
Dakota County Technical College	MN	Community College	
Hocking Technical College	OH	Community College	
Kankakee Community College	IL	Community College	
Portland Community College	OR	Community College	
Richland College	TX	Community College	
Santa Fe Community College	NM	Community College	
Wilson Community College	NC	Community College	Y
Allegheny College	PA	Baccalaureate	
Davidson College	NC	Baccalaureate	
Dickinson College	PA	Baccalaureate	
Ft. Lewis College	CO	Baccalaureate	
Furman University	SC	Baccalaureate	Y
Kalamazoo College	MI	Baccalaureate	Y
Luther College	IA	Baccalaureate	
Middlebury College	VT	Baccalaureate	Y
Pomona College	CA	Baccalaureate	Y
Sewanee: The University of the South	TN	Baccalaureate	
University of Minnesota, Morris	MN	Baccalaureate	Y
Warren Wilson College	NC	Baccalaureate	Y
California State Polytechnic University, Pomona	CA	Master's	Y
Chatham University	PA	Master's	
Eastern Connecticut State University	CT	Master's	
Grand Valley State University	MI	Master's	Y
James Madison University	VA	Master's	
Naropa University	CO	Master's	
Pacific Lutheran University	WA	Master's	
Plymouth State University	NH	Master's	
Villanova University	PA	Master's	Y
Weber State University	UT	Master's	Y
William Patterson University of New Jersey	NJ	Master's	
American University	DC	Doctorate-Granting	Y
Arizona State University	AZ	Doctorate-Granting	Y
Clark University	MA	Doctorate-Granting	
Cornell University	NY	Doctorate-Granting	Y
New York University	NY	Doctorate-Granting	
University of Arkansas	AR	Doctorate-Granting	Y
University of Florida	FL	Doctorate-Granting	Y
University of Illinois at Urbana-Champaign	IL	Doctorate-Granting	Y
University of Maryland	MD	Doctorate-Granting	Y
University of Oregon	OR	Doctorate-Granting	

School	State	Carnegie Classification	Interviewed
University of California-San Diego	CA	Doctorate-Granting	Y
Massachusetts College of Art and Design	MA	Special Focus	
South Dakota School of Mines	SD	Special Focus	
University of Maryland Center for Environmental Science	MD	Special Focus	
University of Massachusetts Medical School	MA	Special Focus	
University of California -San Francisco	CA	Special Focus	Y

CAP Analysis Methodology

We conducted a literature analysis of the 50 CAPs selected for review. We read the CAPs for overall quality, reviewing for:

- Document organization and clarity
- Appropriate level of detail and distribution of discussion
- Balance between four types of strategies (mitigation, education, research and outreach)
- Inclusion of contextual background material, discussion of CAP development, and plans for periodic CAP revisions
- Completeness and overall quality

In addition to our qualitative assessment of the CAPs, we conducted a quantitative analysis as shown in Section 6. This analysis identified the strategies to be implemented in each of the following categories:

- GHG mitigation (mitigation)
- Integration of climate change into curricula and expansion of academic offerings (education)
- Climate change-related research activity (research)
- Outreach and educational efforts (outreach)

The ACUPCC identified these four thematic areas were as priority action items that should be addressed in a CAP. Schools that sign the ACUPCC agree to identify, “Interim targets for goals and actions that will lead to climate neutrality...Actions to make climate neutrality and sustainability a part of the curriculum and other educational experience for all students...[and] actions to expand research or other efforts necessary to achieve climate neutrality” (See ACUPCC Sidebox on page 1).

We identified 58 distinct types of strategies across the four categories recommended by ACUPCC (19 Mitigation, 22 Education, 6 Research, and 11 Outreach). The definitions of the strategies were broad enough to encompass the wide variety of programs and policies on 50 unique campuses, yet granular enough to identify specific strategies that are most popular. Appendix B contains a complete list of all 58 categories.

Our intent was not to judge the effectiveness of the strategies in achieving carbon neutrality goals, but rather to identify the variety of approaches that schools are taking and highlight those that are most popular. We counted only actions in the CAPs that were

highly likely to be implemented. We did not assess the size or scale of any one activity, or how it might impact a school's carbon footprint. For example: School A plans to install a 1 megawatt wind turbine to power its entire campus and School B plans to install a much smaller 1 kilowatt demonstration solar project. In our tracking methodology, both projects are considered equal and represent one action item in the Mitigation Strategies' Renewable Electricity Project category.

In reviewing the CAPs, the implementation status of some strategies could be clearly determined (i.e., completed, underway, or approved for implementation); while the implementation status of other strategies was less concrete or seemingly uncertain. We therefore developed evaluation criteria to guide whether or not to count this latter category of strategies in our analysis. The evaluation criteria were also important in maintaining a level of consistency among our team of researchers during the evaluation process. These criteria are described below:

1. Completed Projects and/or Programs

We counted previously completed strategies only if they were implemented relatively recently (i.e., approximately 2006 or later, coinciding with the launch of the ACUPCC). This helped distinguish projects undertaken to promote carbon neutrality from those undertaken for other purposes.

2. Future/Planned Strategies

We counted future strategies (either planned or proposed) only if they had a relatively high assurance of being implemented (e.g., strategies that offered some degree of specificity or were already approved or implemented). We looked for concrete details, such as the size or cost of a proposed project, an implementation timeline, results of a completed feasibility study, or the precise location for installation, if applicable, in order to help assess if a school actually intended to pursue a strategy or was simply mentioning it as meriting further investigation. Evaluating CAPs is inherently a subjective process, our experiences in reviewing them helped inform our recommendations for writing a strong CAP (see Section 5).

3. Data Provided in the CAP

We counted strategies only if they were presented in the CAP. Because the CAP is meant to be a stand-alone document, we did not take into account information if it was available elsewhere (e.g., the ACUPCC website, the school sustainability website) but absent from the CAP. This decision resulted in a conservative estimate of climate-related activity at many schools. For example, some of the CAPs did not include information about the implementation of the seven tangible actions that are a prerequisite for ACUPCC membership, and thus were not credited for them.

Section 6 presents the results of these analyses.

B. Types of Strategies Identified in CAP Assessment

ERG identified 58 distinct types of strategies grouped according to the themes of mitigation, education, research and outreach. We tried to make these categories broad enough to capture diverse projects and policies across 50 disparate institutions, yet granular enough to be useful in a comparative study.

Mitigation Strategies

1. LEED Buildings
2. Energy Efficiency – Energy Star Buildings or Procurement Policy, Energy Efficiency Programs and Retrofits
3. Energy Management Technology
4. Behavior Change Programs/Policies to Reduce Emissions
5. Energy Performance Contracting
6. Carbons Offsets – Scopes 1 and 3
7. Renewable Electricity – On-site or Purchased
8. Transportation Scope 3 Emissions Reduction Policies – Encourage or Provide Access to Public Transportation, Car Sharing Programs, Policies to Reduce Travel Requirements, Encourage Low-Carbon Transportation, Online Classes, Telecommuting Programs, Videoconferencing
9. Transportation Scope 1 Emissions Reduction Policies – School-owned Electric/Alternative Fuel/Fuel Efficient Vehicles, Policies to Reduce Fleet VMT
10. Socially Responsible Investment Policy
11. Waste Reduction – Waste Minimization, RecycleMania, Recycling Program, Composting
12. Internal Source of Funding for Sustainability Projects – Sustainability Funds, Revolving Loan Funds
13. Green Procurement Policy
14. Local/Low-Impact Foods
15. Trayless Dining
16. On-site Thermal Energy/Cogeneration
17. Low-Maintenance Landscaping or “Greenscaping”
18. Heat Island Reduction Policies
19. Other Mitigation Strategies

Education Strategies

1. Sustainability Incorporated into Freshmen Orientation
2. Courses Focused on Sustainability/Climate – Required, Elective, Interdisciplinary
3. Plans to Increase Course Offerings
4. Undergraduate Degree
5. Post-graduate Degree
6. Sustainability Minor
7. Environmental School, Center or Institute
8. Environmental Student Groups
9. Cross-Curricula Integration
10. Plans to Measure Learning Outcomes

11. Experiential Learning/Living Lab
12. Resources for Campus Community Education – Kiosks or Dashboards, New Teaching Technologies
13. Sustainability in Mission Statement/Strategic Planning Documents
14. Sustainability Committee
15. Sustainability Staff/Office
16. Faculty Development Program Focused on Sustainability/Climate Change
17. Faculty/Staff Awards and Incentives
18. Student Awards and Incentives
19. Sustainability/Climate Change Integrated into Staff Orientation
20. Academic Partnerships
21. Participation in STARS (Sustainability Rating, Assessment, and Tracking System)
22. Other Academic/Curricular Strategies

Research Strategies

1. Research Center
2. Money Spent Supporting Climate Change/Sustainability Research
3. Sustainability-related Research Awards
4. Climate Change and Sustainability-related Research Projects
5. Dedicated Funding for Sustainability Research
6. Other Research Strategies

Outreach Strategies

1. Community-based Projects
2. Conference/Event Hosting
3. Sustainability Classes Open to Public
4. External Internships
5. Partnerships with Local Schools
6. Partnerships with Private Sector
7. Partnerships with Local or State Governments
8. Partnerships with Federal Government
9. Partnerships with NGOs and Community Development Groups
10. Other Partnerships
11. Other Community Engagement Strategies

C. Additional Resources

The American College and University Presidents' Climate Commitment Website, ACUPCC. The main website contains a host of information, including links to useful resources, a monthly online newsletter, and reference documents, such as previously submitted CAPs.

www.presidentsclimatecommitment.org

Financing Sustainability on Campus, National Association of Colleges and Universities Business Officers (NACUBO). This pay-to-use report gives financial administrators on campus guidance, suggestions, and direction for how to structure the economics of sustainability efforts.

www.nacubo.org/Products/Publications/Sustainability/Financing_Sustainability_on_Campus.html

Practical Guide to Reducing the Campus Carbon Footprint, APPA. This 35-page report provides guidance and suggestions for suggested sustainability activities and strategies on campus.

www2.presidentsclimatecommitment.org/html/documents/FINAL09APPASustainabilityGuide.pdf

Climate Action Planning Wiki, Association for the Advancement of Sustainability in Higher Education (AASHE). This wiki is a comprehensive how-to guide for your climate action planning. Interactive and collaborative, it also allows the user to provide feedback and advice for other schools going through the process.

www.aashe.org/wiki/climate-planning-guide

Cool Campus! How-To Guide for College and University Climate Action Planning (PDF), AASHE. A PDF version of the Climate Action Planning Wiki described above.

www.aashe.org/files/resources/cool-campus-climate-planning-guide.pdf

Clean Air - Cool Planet Campus Carbon Calculator, Clean Air – Cool Planet.

This tool is designed to aid schools that have completed GHG inventories in developing long-term, comprehensive Climate Action Plans based on those inventories. The newly released version (v.6.4) facilitates analysis of carbon reduction options by determining project payback times, net present value, cost per ton reduced, and other relevant markers. Most of the schools reviewed in this study used the Calculator to inform their climate action planning.

www.cleanair-coolplanet.org/for_campuses.php

Practical Guide to Reducing the Campus Carbon Footprint, APPA. This 35-page report provides guidance and suggestions for suggested sustainability activities and strategies on campus.

www2.presidentsclimatecommitment.org/html/documents/FINAL09APPASustainabilityGuide.pdf

Guide to Climate Action Planning: Pathways to a Low-Carbon Future, *National Wildlife Federation*. This report provides a comprehensive review of mitigation strategies and offers case studies from campuses across the country.

www.nwf.org/Global-Warming/Campus-Solutions/Resources/Reports/Guide-to-Climate-Action-Planning.aspx

Leading Profound Change: A Resource for Presidents and Chancellors, *ACUPCC*.

Developed by the members of the ACUPCC Steering Committee, this report provides an overview of research on select approaches to leading transformational change and examples of successful strategies from ACUPCC campuses to help with the big-picture thinking needed to sustain enthusiasm and implement climate action plans over the long term.

http://www.presidentsclimatecommitment.org/files/documents/Leading_Profound_Change.pdf

Heather Lair, “The University of Maryland Climate Action Planning Process: Lessons Learned and Best Practices for Emission Reduction Strategy Development,” *AASHE*.

This short article contains recommendations for schools that are starting to assemble a climate action planning group and reach out to stakeholders.

www.aashe.org/blog/university-maryland-climate-action-planning-process-lessons-learned-and-best-practices-emission

Climate Neutral Research Campuses Website, *National Renewable Energy Lab (NREL)*. The U.S. Department of Energy’s NREL provides research campuses a five-step process to develop and implement climate action plans. Elsewhere on NREL’s website are models and tools for assessing renewable energy opportunities, market analysis, technical reports, educational materials, and research and development opportunities for renewable technologies.

www.nrel.gov/applying_technologies/Climate_neutral

Green Power Partnership Website, *U.S. Environmental Protection Agency (EPA)*. The U.S. Environmental Protection Agency’s Green Power Partnership is a voluntary program that supports the purchase of green power by leading U.S. organizations. More than 100 colleges and universities are currently partnering with EPA to reduce their carbon footprint.

www.epa.gov/greenpower

Energy Savings Tips, *U.S. Department of Energy (DOE)*. DOE publishes Energy Savings Tips to help homeowners save energy, money, and the environment. While not tailored specifically to dorms or large buildings, these tips can be implemented in various locations around campus and foster greater appreciation of the energy savings opportunities all around us.

www.energy.gov/energytips.htm

Sustainability Curriculum in Higher Education: A Call to Action, *AASHE*. This thirteen-page report presents the major items of discussion from a February 2010 conference organized by AASHE. The conference brought together representatives from a wide variety of academic institutions who discussed how to better integrate sustainability topics into their curricula.

<http://www.aashe.org/highlights/press-releases/aashe-releases-sustainability-curriculum-higher-education-call-action>

Campus Green Builder, *Second Nature*. Produced by Second Nature, this website provides easily accessible information sustainable building on academic campuses. Features include news, events, resources, and contacts in the green building sector.

<http://www.campusgreenbuilder.org/>