



**Western Michigan University**  
**Kalamazoo, Michigan**  
**Best Practice Research of Greenhouse Gas Inventories and Climate Action Plans**

**SCHOOL**

Western Michigan University, public 4-year, 25,000 students, Kalamazoo, Michigan.

**ABSTRACT**

Conducting a greenhouse gas (GHG) inventory and developing a climate action plan (CAP) on campus is a daunting, complex, and time consuming task. In an effort to help institutions seeking to initiate or improve upon their existing greenhouse gas tracking and mitigation we created a best practices report on American College and University Climate Commitment (ACUPCC) signatories. The report includes the first 100 campuses that submitted GHG reports and CAPs to the ACUPCC. We assessed a variety of institutions that have implemented successful sustainability projects and initiatives, identified trends and patterns among them, and traced the processes they created to track GHG emissions and meet their climate neutrality and campus sustainability education commitments. Hopefully, our report will help thriving and struggling institutions alike to increase the accuracy of their greenhouse gas reporting and develop more effective and thoughtful climate action plans. We also hope that it will give the ACUPCC several meaningful suggestions for improving their reporting processes and resources too.

**GOALS AND OUTCOMES**

**Goals**

The purpose of our GHG inventory and CAP best practices report was to make reporting more accurate, consistent, and less time consuming for institutions that have signed on to the ACUPCC as well as others that wish to vastly reduce their GHG emissions, but not sign on to the ACUPCC. More specific goals were to identify relationships between overall emissions levels and the quality of the GHG and CAP reporting, to identify a method for accurately estimating emissions with limited data, and to suggest ways for the ACUPCC to increase the availability and accessibility of its vast amount of data. Over the next two to three years we hope to use our research to improve the efficiency of data collection, organization, and analysis on WMU's campus. By streamlining our ACUPCC reporting activities, we will have the opportunity to increase our sustainability efforts in other areas.

**Accomplishments and Outcomes**

Our research did not directly result in the adoption of any new initiatives or policies, but we believe it has the potential to add to the continuous improvement of the ACUPCC reporting process and, possibly more significantly, we believe that it will greatly facilitate improvement of the Climate Action Plan development process. As an example, our research demonstrated that there is tremendous opportunity for improving GHG reporting—only two schools in our entire sample met our four best practice criteria for GHG inventories: (1) Full Scope I, II, III; (2) Provided complete documentation; (3) Presented a thorough discussion of system boundaries; and (4) Incorporated broad stakeholder involvement (see details below). Our best practice review of Climate Action Plans yielded similarly informative data about proposed target years for achieving climate neutrality, interim goals, offset stance, and implementation strategies. In both cases we provided detailed suggestions for how academic institutions can improve their reporting and

CAP processes and how ACUPCC can better support these institutions by improving their reporting process.

Chart below.

Institution	Carnegie Classification	Full Scope I,II,III	Complete Documentation	Discussion of System Boundaries	Breadth of Stakeholder Involvement
Bunker Hill Community College	Assoc/Pub	-	■	-	-
<b>College of Marin</b>	<b>Assoc/Pub</b>	▲	-	-	●
Dakota County Technical College	Assoc/Pub	-	■	-	-
<b>Haywood Community College</b>	<b>Assoc/Pub</b>	▲	-	-	●
McLennan Community College	Assoc/Pub	-	■	-	-
<b>New Mexico State University at Alamogordo</b>	<b>Assoc/Pub</b>	-	-	-	-
New Mexico State University Grants Branch	Assoc/Pub	▲	-	-	-
<b>North Shore Community College</b>	<b>Assoc/Pub</b>	▲	■	-	-
Onondaga Community College	Assoc/Pub	-	-	-	-
<b>Portland Community College</b>	<b>Assoc/Pub</b>	-	-	-	●
Quinsigamond Community College	Assoc/Pub	▲	■	-	●
<b>Richland College</b>	<b>Assoc/Pub</b>	▲	-	-	-
Rio Salado Community College	Assoc/Pub	▲	■	-	-
<b>Santa Fe Community College (NM)</b>	<b>Assoc/Pub</b>	▲	■	-	-
University of Minnesota-Morris	Assoc/Pub	▲	-	-	-
<b>University of South Carolina Salkehatchie</b>	<b>Assoc/Pub</b>	-	-	-	-
University of South Carolina Sumter	Assoc/Pub	-	-	-	-
<b>University of South Carolina Union</b>	<b>Assoc/Pub</b>	-	-	-	●
Victor Valley College	Assoc/Pub	-	-	-	●
<b>Agnes Scott College</b>	<b>Bac/A&amp;S</b>	▲	-	-	●
Allegheny College	Bac/A&S	-	-	-	●
<b>California State University - Monterey Bay</b>	<b>Bac/A&amp;S</b>	▲	-	-	-
Central College	Bac/A&S	▲	-	-	●
<b>College of Saint Benedict</b>	<b>Bac/A&amp;S</b>	▲	■	-	-
College of the Atlantic	Bac/A&S	▲	■	-	-
<b>College of the Holy Cross</b>	<b>Bac/A&amp;S</b>	-	-	-	●
Dickinson College	Bac/A&S	▲	-	-	-
<b>Eckerd College</b>	<b>Bac/A&amp;S</b>	▲	■	-	●
Goshen College	Bac/A&S	▲	-	-	-
<b>Green Mountain College</b>	<b>Bac/A&amp;S</b>	▲	■	-	-
Guildford College	Bac/A&S	▲	-	-	-
<b>Hollins University</b>	<b>Bac/A&amp;S</b>	▲	-	-	●
Lewis & Clark College	Bac/A&S	-	-	◆	-
<b>Macalester College</b>	<b>Bac/A&amp;S</b>	-	■	-	-
Marymount Manhattan College	Bac/A&S	▲	■	-	●
<b>Massachusetts College of Liberal Arts</b>	<b>Bac/A&amp;S</b>	▲	-	-	●
Middlebury	Bac/A&S	▲	-	-	●
<b>Penn State Berks</b>	<b>Bac/A&amp;S</b>	-	-	-	●
Pomona College	Bac/A&S	▲	■	◆	●
<b>Rhodes College</b>	<b>Bac/A&amp;S</b>	▲	-	-	-
Virginia Wesleyan College	Bac/A&S	-	■	-	-
<b>Warren Wilson College</b>	<b>Bac/A&amp;S</b>	▲	■	-	-
Western State College of Colorado	Bac/A&S	-	-	-	-
<b>Paul Smith's College of Arts and Sciences</b>	<b>Bac/Assoc</b>	▲	-	-	●
University of Maine at Augusta	Bac/Assoc	-	-	-	-
<b>Black Hills State University</b>	<b>Bac/Diverse</b>	▲	-	-	●
Keystone College	Bac/Diverse	▲	-	-	-
<b>LaGrange College</b>	<b>Bac/Diverse</b>	▲	■	-	-
University of South Carolina Aiken	Bac/Diverse	-	-	-	-
<b>University of Massachusetts Boston</b>	<b>DRU</b>	-	-	-	-
California State Polytechnic University - Pomona	Master's/L	▲	-	◆	-
<b>Central Connecticut State University</b>	<b>Master's/L</b>	-	■	-	●

College/University	Carnegie Classification	Full Scope I,II,III	Complete Documentation	Discussion of System Boundaries	Breadth of Stakeholder Involvement
Emerson College	Master's/L	–	–	–	–
<b>Frostburg State University</b>	<b>Master's/L</b>	▲	–	–	–
Norfolk State University	Master's/L	▲	–	–	–
<b>Rowan University</b>	<b>Master's/L</b>	▲	■	–	–
State Univ. of NY College at Oswego	Master's/L	▲	–	◆	–
<b>The College of New Jersey</b>	<b>Master's/L</b>	▲	–	–	–
University of Houston-Victoria	Master's/L	–	–	–	–
<b>University of Wisconsin-Stout</b>	<b>Master's/L</b>	–	■	–	–
Wilkes University	Master's/L	▲	■	◆	●
<b>Chatham University</b>	<b>Master's/M</b>	▲	–	–	–
Ithaca College	Master's/M	▲	–	–	●
<b>Mount St. Mary's University</b>	<b>Master's/M</b>	▲	■	–	–
University of Washington-Tacoma	Master's/M	–	–	–	–
<b>Winona State University</b>	<b>Master's/M</b>	–	■	◆	–
Maharishi University of Management	Master's/S	▲	–	–	●
<b>The Evergreen State College</b>	<b>Master's/S</b>	▲	–	–	–
University of Washington Bothell	Master's/S	–	–	◆	–
<b>Central New Mexico Community College</b>	<b>N/A</b>	▲	–	–	●
UC Merced	N/A	–	–	–	–
<b>Florida International University</b>	<b>RU/H</b>	▲	–	–	–
New Mexico State University Main Campus	RU/H	–	–	–	–
<b>State University of New York at Binghamton</b>	<b>RU/H</b>	▲	–	–	●
State Univ. of NY College of Env. Science & Forestry	RU/H	–	–	◆	●
<b>Syracuse University</b>	<b>RU/H</b>	–	■	–	●
University of Arkansas Main Campus	RU/H	▲	–	–	●
<b>University of Maryland Baltimore County</b>	<b>RU/H</b>	▲	–	◆	●
University of New Hampshire	RU/H	–	–	–	●
<b>University of Oklahoma Norman Campus</b>	<b>RU/H</b>	▲	–	–	●
University of Wyoming	RU/H	▲	■	◆	–
<b>Arizona State University</b>	<b>RU/VH</b>	▲	–	–	–
Brandeis University	RU/VH	–	–	–	●
<b>Georgia Institute of Technology</b>	<b>RU/VH</b>	▲	–	–	–
Oregon State University	RU/VH	▲	–	◆	–
<b>UC Berkeley</b>	<b>RU/VH</b>	▲	–	–	●
University of California, Irvine	RU/VH	–	–	–	●
<b>University of California, Santa Barbara</b>	<b>RU/VH</b>	–	–	–	–
University of Cincinnati	RU/VH	▲	–	–	–
<b>U of Florida</b>	<b>RU/VH</b>	▲	–	–	–
University of Illinois at Chicago	RU/VH	–	–	–	●
<b>University of Maryland College Park</b>	<b>RU/VH</b>	▲	–	◆	–
University of North Carolina at Chapel Hill	RU/VH	▲	–	–	–
<b>University of Pennsylvania</b>	<b>RU/VH</b>	▲	–	◆	–
University of South Carolina Columbia	RU/VH	–	–	–	–
<b>University of Washington Seattle</b>	<b>RU/VH</b>	–	–	–	–
Massachusetts College of Art & Design	Spec/Arts	–	■	–	–
<b>Pratt Institute</b>	<b>Spec/Arts</b>	▲	–	–	●

## **Challenges and Responses**

Our most significant challenge was gathering and organizing data. ACUPCC maintains a vast database of information from institutions' GHG and CAP reports, but the data was not in a format that allowed importation into a working database. We manually imported all data into an Excel database, which was a very tedious process susceptible to error.

Many ACUPCC members also submitted incomplete data for their GHG inventories. Supplemental documentation, intended to be linked to the ACUPCC reporting database, was also largely absent. We tried to respond to this by using external sources, but realized this was not possible with our existing resources.

## **Campus Climate Action: Your School's Carbon Footprint**

Our report provides detailed information on how to improve the process of accurately tracking emissions on all college and university campuses. Accurate tracking—and especially base line assessment—is necessary for any campus to become carbon neutral.

## **Commentary and Reflection**

We learned that gathering necessary data for a best practice review is extremely complicated. When variables are not defined or consistent it is difficult to make meaningful conclusions. We encourage anyone who takes on a project like this to be patient, open minded, adaptive, and provide transparent data with necessary contact information.

## **ENGAGEMENT AND SUPPORT**

### **Leaders and Supporters**

Christopher Caprara and Kaitlyn Shields, both undergraduate students in WMU's Environmental Studies Program, were the lead researchers on this project. Dr. Harold Glasser was the faculty advisor and contributed invaluable support, guidance, and feedback. Chris and Kate built upon previous research from Dr. Glasser's ENVS 4100 course, The Campus as a Living Learning Laboratory. Without critical data from the ACUPCC this project would never have been possible.

### **Funding and Resources**

The Wege Foundation provided invaluable financial support for the project in the summer, fall, and spring of 2009, allowing Chris and Kate to engage in paid research.

As mentioned previously, the ACUPCC reporting system was used to access institution's GHG inventories and CAPs. Through this AASHE supported website, ACUPCC members upload various documents that are required by the commitment to be reported. These documents were used to evaluate what other universities and colleges have undertaken to assess their emissions and develop plans to reduce targeted emissions. These two reports provided us with necessary data and systems information in order to develop a series of best practices in reporting.

### **National Wildlife Federation's Campus Ecology Program**

Besides accessing the ACUPCC's data supported on AASHE's website, a number of additional sources were sought. The NWF's Generation E: Students leading for a Sustainable, Clean Energy Future and the Campus Sustainability Case Studies were of particular help. Both of these resources provided additional insight to highlighted campuses from our initial research. Detailed Climate Action Plans that were made available through the internet from individual higher Education campuses were also invaluable. By accessing a number of resources, identifiable trends and patterns were developed between high-quality

GHG reporting and climate action planning and a meaningful and effective campus-wide participation in sustainability.

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