

CAMPUS SUSTAINABILITY PLANS: A DESCRIPTIVE ANALYSIS OF
SUSTAINABILITY PLANS FROM INSTITUTIONS OF
HIGHER EDUCATION IN THE
UNITED STATES

by

Robert Freeman Eby, III, B.S., LEED GA

A thesis submitted to the Graduate Council of
Texas State University in partial fulfillment
of the requirements for the degree of
Master of Science
with a Major in Sustainability Studies
August 2020

Committee Members:

Nandhini Rangarajan, Chair

Billy Fields

Patti Giuffre

COPYRIGHT

by

Robert Freeman Eby, III

2020

FAIR USE AND AUTHOR'S PERMISSION STATEMENT

Fair Use

This work is protected by the Copyright Laws of the United States (Public Law 94-553, section 107). Consistent with fair use as defined in the Copyright Laws, brief quotations from this material are allowed with proper acknowledgement. Use of this material for financial gain without the author's express written permission is not allowed.

Duplication Permission

As the copyright holder of this work I, Robert F. Eby, III, authorize duplication of this work, in whole or in part, for educational or scholarly purposes only.

DEDICATION

I dedicate this work to the Texas State University Office of Sustainability. May your future be green and bright.

ACKNOWLEDGEMENTS

First, I would like to thank Jesus Christ for the life I have been given and for being with me every step of the way on the winding path that has led me to this point.

I would like to thank my parents, Ron and Cindy, for giving up so much so that I could have greater opportunities in life.

I would like to thank Dr. Stacey Swearingen White for coming up with the original model of campus sustainability plan analysis and for agreeing to go out of her way to help me with this current study.

I would like to thank Jaime Villarreal who agreed to spend the last semester of his undergraduate studies helping a desperate graduate student pour through countless pages of documents which he has never heard of before.

I would like to thank Dr. Nandhini Rangarajan for initially inspiring this study and encouraging me to take the concept all the way through to completion. Thank you for guiding me in this research process. I look forward to our continued collaboration with the publication of this research.

Finally, I want to give my biggest thanks to my wife, Kelly, who pushed me harder than anyone ever has to pursue my dreams. Thank you for sticking by me in the most difficult of situations.

TABLE OF CONTENTS

	Page
DEDICATION	iv
ACKNOWLEDGEMENTS	v
LIST OF TABLES	ix
LIST OF FIGURES	xi
LIST OF ABBREVIATIONS	xiii
ABSTRACT.....	xiv
CHAPTER	
I. INTRODUCTION	1
The Origins of Sustainability	1
The Growth of Sustainability	3
Campus Planning	7
Campus Sustainability Plans	9
Research Purpose	11
Organization of the Study	11
II. LITERATURE REVIEW.....	13
Chapter Purpose	13
Campus Sustainability	13
Campus Sustainability Planning	17
Plan Evaluation	21
Chapter Summary	25
III. RESEACH METHODS	26
Chapter Purpose	26
Data Collection	26
Coding Development	28
Coding Procedures	31

	Page
Limitations	35
Human Subjects Protection.....	36
Chapter Summary	37
IV. RESULTS	38
Chapter Purpose	38
Demographics	38
Plan Quality	50
Plan Policy	57
Plan Policy Category Averages	68
Chapter Summary	68
V. DISCUSSION	69
Chapter Purpose	69
Demographics	69
Plan Quality	80
Plan Policy	86
Chapter Summary	94
VI. CONCLUSION.....	95
Chapter Purpose	95
Highlighted Results.....	95
Overall Assessment.....	101
Limitations	101
Plan Recommendations.....	102
Future Research	106
Chapter Summary	108
APPENDIX SECTION.....	109
Appendix A. U.S. Institutions with Campus Sustainability Plans.....	109
Appendix B. Sustainability Agreements Signed by U.S. Institutions of Higher Education with Campus Sustainability Plans	116
Appendix C. Campus Coding Sheet Version 1	125
Appendix D. Definitions of Terms to Use While Coding	129
Appendix E. Campus Coding Sheet Version 2.....	131

	Page
Appendix F. Campus Coding Sheet Version 3	136
Appendix G. Alternative Definitions of ‘Sustainability’	141
REFERENCES	145

LIST OF TABLES

Table	Page
3.1. Conceptual Framework Table.....	30
3.2. Inter coder Reliability Ratings	33
4.1. Number of Campus Sustainability Plans by Institution Size and Type	39
4.2. Sustainability Agreement Participation by U.S. Colleges and Universities with Campus Sustainability Plans	43
4.3. Sustainability Agreement Participation by U.S. Colleges and Universities with Campus Sustainability Plans as a Percentage of Total Institutions of the Same Size or Type	45
4.4. Number of Campus Sustainability Plans by Plan Length.....	46
4.5. Length of Campus Sustainability Plans by Institution Size and Type.....	46
4.6. Number of Campus Sustainability Plan Versions.....	47
4.7. Number of Campus Sustainability Plan Versions by Institution Size and Type	48
4.8. Development of Sustainability Plans in Relation to STARS and ACUPCC Commitments.....	50
4.9. Campus Sustainability Plans’ Inclusion of Plan Writers and Engagement of Stakeholders	52
4.10. Campus Sustainability Plans’ Inclusion of SMART Goals	53
4.11. Campus Sustainability Plans’ Inclusion of Document References.....	54
4.12. Campus Sustainability Plans’ Definitions of ‘Sustainability’	56
4.13. Average Scores for Each Category and Elements Among All Campus Sustainability Plans.....	68

Table	Page
5.1. Exemplar Campus Sustainability Plans Based on Total Plan Score.....	94
6.1. Recommendations for Improving Campus Sustainability Plans	104

LIST OF FIGURES

Figure	Page
1.1. Timeline of major sustainability developments in higher education in the United States	7
4.1. Number of U.S. campus sustainability plans distributed by state.....	41
4.2. Number of campus sustainability plans distributed by U.S. Census Bureau geographic region.....	42
4.3. First year institutions with sustainability plans began participating in ACUPCC and STARS	44
4.4. Number of campus sustainability plans by first and last years published	49
4.5. Number of campus sustainability plans by expiration date	49
4.6. The three spheres of sustainability.....	56
4.7. Number of campus sustainability plans that include ‘Operations’	61
4.8. Number of campus sustainability plans that include ‘Academics’	63
4.9. Number of campus sustainability plans that include ‘Planning & Administration’ ...	64
4.10. Number of campus sustainability plans that include ‘Social Equity’	65
4.11. Number of campus sustainability plans that include ‘Research’	66
4.12. Number of campus sustainability plans that include ‘Engagement’	67
5.1. United States population by state, 2015.....	72
5.2. United States party affiliation by state, 2018.....	73
5.3. Comparison of first year campus sustainability plans were written to the first year institutions began participating in ACUPCC and STARS	79

Figure	Page
5.4. Harvard University’s plan creation process	82
5.5. Three silos of planet, people, and payback integrated into a quilted fashion	91
6.1. Relative strength of each plan policy category	100
6.2. Twelve steps to developing a campus sustainability plan	103

LIST OF ABBREVIATIONS

Abbreviation	Description
AASHE	Association for the Advancement of Sustainability in Higher Education
ACAC	American Campuses Act on Climate
ACUPCC	American College & University Presidents' Climate Commitment
AISHE	Auditing Instrument for Sustainability in Higher Education
EMAS	Eco-Management and Audit Scheme
EMS	Environmental Management System
EPA	United States Environmental Protection Agency
IRB	Institutional Review Board
ISO	International Standardization Organization
SAQ	American Sustainability Assessment Questionnaire for Colleges and Universities
SCUP	Society for College and University Planning
SHE	Sustainability in Higher Education
SMART	Specific, Measurable, Accountable, Realistic, Time-bound
SRI	Socially Responsible Investing
STARS	Sustainability Tracking and Rating System
ULSF	University Leaders for a Sustainable Future
UN	United Nations
UNESCO	United Nations Educational, Scientific, and Cultural Organization
U.S.	United States
WCED	World Commission on Environment and Development

ABSTRACT

As the sustainability movement gains traction around the globe, institutions of higher education are increasingly being looked to for leadership. One established method of improving a campus's environmental, economic, and social impact is through the creation of a campus sustainability plan. Very little research has been conducted on the quality and content of these plans. The purpose of this study is to describe the different themes and elements included in campus sustainability plans from colleges and universities across the United States. This was done through a systematic document analysis of 155 U.S. campus sustainability plans. Results of the study indicate that most plans are strong in the environmental sphere of sustainability but lacking in the social and economic spheres. It was also found that the topics of engagement, academics, and operations are more frequently discussed than administration, research, or equity. Finally, suggestions for improving the quality of campus sustainability plans are provided for institutions of higher education wishing to create or update their own plan. These suggestions include the engagement of stakeholders in both the plan creation process and the plan implementation process, buy-in from executive leadership, the inclusion of a publication date and revision history, a description of the plan author(s) and the writing process including stakeholder engagement, a definition of terms, ties to the institutional mission, and the use of SMART goals.

I. INTRODUCTION

“As sustainability becomes a more visible and intentional outcome for institutions of higher education, cities, towns, municipalities, and individuals worldwide, the need arises for sustainability plans to guide this otherwise abstract idea.” – University of Wisconsin, River Falls 2012 Sustainable Campus Community Plan

The Origins of Sustainability

While ‘sustainability’ can mean many different things in many different settings, the Association of University Leaders for a Sustainable Future (ULSF) provides the following definition suitable to institutions of higher education: “‘Sustainability’ implies that the critical activities of a higher education institution are ecologically sound, socially just and economically viable, and that they will continue to be so for future generations” (University Leaders for a Sustainable Future, n.d.-a). The roots of sustainability in academia can be traced as far back as April 22, 1970 – the first Earth Day. Teach-ins were organized on campuses across the nation and thousands of colleges and universities organized protests against environmental degradation (Earth Day Network, n.d.). Following on the heels of this event, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and the United Nations Environment Programme sponsored the International Environmental Education Programme in 1975. The main goals of this organization was to environmental education (International Environmental Education Programme, 1983; Semeraro & Boyd, 2017). However, according to Thiele (2016, p. 22), the idea of sustainability first became a mainstream, global talking point in

1987 when the United Nations' World Commission on Environment and Development (WCED) issued a report titled *Our Common Future*. Also known as the Brundtland Report, *Our Common Future* provides the most popular working definition of 'sustainability' and set the stage for a revolution in how we perceived environmental, economic, and societal problems (Sady et al., 2019).

The Talloires Declaration is the first formal sustainability commitment by colleges and universities. It was created in 1990 at an international conference on sustainable development in higher education (University Leaders for a Sustainable Future, n.d.-b). The ULSF was established as the Secretariat for the signatories of the Talloires Declaration and says this about sustainability in higher education:

In the 1990s, higher education began to recognize the need to reflect the reality that humanity is affecting the environment in ways which are historically unprecedented and which are potentially devastating for both natural ecosystems and ourselves. Since colleges and universities are an integral part of the global economy and since they prepare most of the professionals who develop, manage and teach in society's public, private and non-governmental institutions, they are uniquely positioned to influence the direction we choose to take as a society. As major contributors to the values, health and well being [sic] of society, higher education has a fundamental responsibility to teach, train and do research for sustainability. We believe that the success of higher education in the twenty-first century will be judged by our ability to put forward a bold agenda that makes sustainability and the environment a cornerstone of academic practice. (University Leaders for a Sustainable Future, n.d.-a)

ULSF continues to administer the Talloires Declaration and to promote sustainability as a critical focus in higher education. Since its inception, the Talloires Declaration has been signed by 173 U.S. institutions and 511 institutions worldwide.

The Growth of Sustainability

The idea of sustainability in higher education may have taken root in the 1990s, but it was slow to develop (refer to Figure 1.1 for a timeline). It was not until the mid-2000s that this novel idea began to flourish. The *International Journal of Sustainability in Higher Education*, published by Emerald Publishing, is a peer-reviewed academic journal specifically focused on scholarly work to promote sustainability in higher education. The first edition was published in April 2000 (Emerald Publishing Limited, 2020).

Promoting sustainability had become such a critical idea, that by 2002, the United Nations, under the guidance of UNESCO, declared the years 2005-2014 as the Decade of Education for Sustainable Development (DESD). “The DESD called for [higher education institutions] to engage their students in sustainability learning, be places of research in sustainability education, be leaders by modeling best practices in sustainability management, and to be ‘poles of activity’ for their communities and nations” (Lidstone et al., 2015, p. 726). During these years, UNESCO coordinated “the efforts of governments, educators, and students to integrate the theme of sustainable development into educational systems at all levels” (UNESCO, 2005).

The creation of the Association for the Advancement of Sustainability in Higher Education (AASHE) in 2005 was one of the most significant milestones in the North

American sustainability movement for institutes of higher education. AASHE's mission is: "To inspire and catalyze higher education to lead the global sustainability transformation" (Association for the Advancement of Sustainability in Higher Education, n.d.-a). The organization enables campus administrators to promote and enact sustainability through the provision of training classes, conferences, online resources, networking opportunities, and support. AASHE was the first professional organization for higher education sustainability in North America and currently serves over 900 member institutions worldwide (ibid.).

AASHE, Second Nature, and ecoAmerica helped to create the American College & University Presidents' Climate Commitment (ACUPCC) in 2006 (Association for the Advancement of Sustainability in Higher Education, n.d.-b). Second Nature is a non-profit organization committed to promoting climate action specifically in higher education and currently oversees the ACUPCC, while ecoAmerica is a consulting group that helps build climate leadership across all sectors of society. Signatories to the Climate Commitment pledge to measure and reduce their greenhouse gas emissions while creating a climate action plan to go carbon neutral (Association for the Advancement of Sustainability in Higher Education, n.d.-b). These so-called climate action plans are precursors to the more broad-focused sustainability plans that would be developed in subsequent years. Second Nature updated the ACUPCC in 2015 to form the Presidents' Climate Leadership Commitments. Instead of one single commitment, schools now have a choice between a Carbon Commitment, a Resilience Commitment, and a Climate Commitment which integrates both goals of carbon neutrality and climate resilience (Second Nature, n.d.-a).

Some studies have shown that more than two-thirds of prospective college students use environmental factors to decide which school to attend (Krizek et al., 2012, p. 27). In order to fill this need for information, Sierra Magazine, the official magazine of the Sierra Club, began publishing a Cool Schools list in 2007, an annual ranking of the most planet-minded universities (O'Reilly, 2019). Similarly, The Princeton Review has published its own Guide to Green Colleges annually, since 2010 (The Princeton Review, 2019).

A pivotal development in comprehensive sustainability measurement and planning was realized in 2010 when AASHE released the first iteration of the Sustainability Tracking, Assessment & Rating System (STARS). STARS is currently one of many sustainability assessment tools around the world, but it is possibly the most comprehensive and advantageous of the various options (Alghamdi et al., 2017, p. 108; see also Maragakis & van den Dobbelsteen, 2015, p. 7; Shi & Lai, 2013, p. 61). There are 344 schools rated in STARS as of March 2020 (Association for the Advancement of Sustainability in Higher Education, n.d.-c). It is worth noting that a precursor to STARS was the *College Sustainability Report Card* operated from 2007 – 2011 (Sustainable Endowments Institute, n.d.). The *College Sustainability Report Card*, or *Green Report Card*, was operated by the Sustainable Endowments Institution and was ended in 2012 when the organization refocused its efforts and funding on a large-scale energy efficiency program (Shi & Lai, 2013, p. 61).

In the weeks leading up to the historic Paris Climate Change conference in November 2015, President Barak Obama launched the *American Campuses Act on Climate* (ACAC) initiative to highlight colleges and universities that were committed to

being more sustainable and support an international climate agreement. The event was marked by a White House roundtable to highlight campus sustainability and climate change initiatives with talks by university presidents, students, business leaders, and EPA Administrator Gina McCarthy. The resulting *American Campuses Act on Climate Pledge* did not have any binding agreements, but was a general pledge by schools to “accelerate the transition to low-carbon energy while enhancing sustainable and resilient practices across our campus” (The White House, 2015). The Pledge included 318 colleges and universities as of December 2015.

Most recently, a group of mayors, governors, and business leaders created the *We Are Still In* declaration in June 2017 after President Donald Trump announced that the United States would withdraw its commitment to reduce greenhouse gas pollution agreed upon in the *Paris Climate Agreement* of 2015 (We Are Still In, n.d.). As of March 2020, there are 353 colleges and universities that have signed the *We Are Still In* declaration. Figure 1.1 presents a timeline of the significant developments of sustainability in higher education in the United States. A more comprehensive timeline of global educational sustainability events from 1972 – 2012 can be found in Alghamdi et al. (2017, p. 88).

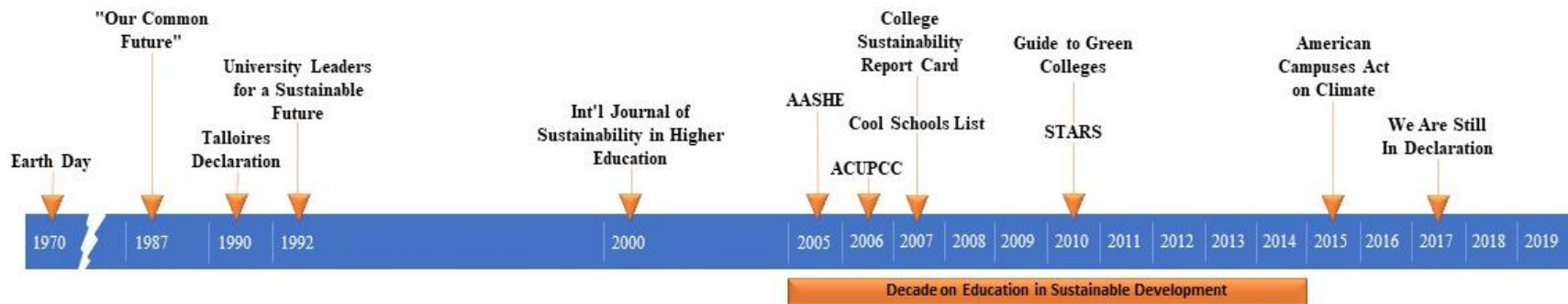


Figure 1.1. Timeline of major sustainability developments in higher education in the United States.

Campus Planning

If the history of sustainable development is measured in decades, then urban planning is measured in centuries. Evidence of urban planning has been found in all the great civilizations of the ancient world. Although efforts at planned development have ebbed and waned through time and space, a conscious effort reemerged during the Industrial Revolution starting in the mid-19th century. Urban planning was one product of the Progressive movement which sought to right the ills that industrialization brought with it.

Zoning laws and master plans began to appear in the early 20th century but did not see widespread use until after World War II (Fainstein, 2020). "Master plans (also known as general plans or comprehensive plans) are planning documents that describe the intention and direction for community development" (Peterson et al., 2018, p. 39). Cities may employ plans for an array of topics and timeframes; they can be combined into one document or presented as many stand-alone plans.

Peterson et al. (2018) found that of the 2,005 US municipalities they studied, 89% had some type of plan and 63.6% had a comprehensive or general plan.

As a city in microcosm, universities have also been built with a plan in mind. In direct opposition to the cloistered and monastic design of quintessential English universities like Oxford, American universities have tended to be open and extroverted. Emerging out of the distinct history of the United States, the American campus has formed an entirely unique architectural form¹ (Turner, 1987). As these forms have become codified into the culture of each campus, they have inevitably been recorded in their respective campus master plans. The Society for College and University Planning (SCUP) defines the campus plan as a “long-term direction of a higher education institution’s physical and built environment” (Society for College and University Planning, n.d.-a). While a master plan may define the physical features of a campus, the strategic plan is utilized to define the institution’s mission, vision, and values. According to SCUP, “[s]trategic planning is a deliberate, disciplined effort to produce fundamental decisions and actions that shape and guide what an institution is, what it does, and why it does it” (Society for College and University Planning, n.d.-b). The STARS Technical Manual (Association for the Advancement of Sustainability in Higher Education, 2019) considers the strategic plan as the highest guiding document for an institution. While other campus planning documents certainly do exist, the campus master plan and the strategic plan are the most dominant. However, with the rise in concern for the environment, colleges and universities have been developing two new types of plans.

¹ Paul Venable Turner’s 1987 book, *Campus: An American Planning Tradition* gives a complete chronological history of the architectural development of American college campuses. The open plan of the American campus was developed in stark contrast to the elitist traditions found in Europe.

These include the Climate Action Plan and the Sustainability Plan.

Second Nature started the ACUPCC in Fall 2006. ACUPCC required all signatories to draft a climate action plan. “A climate action plan is a detailed and strategic framework for measuring, planning, and reducing greenhouse gas emissions and related climatic impacts” (The City of Burlington, n.d.). Second Nature clearly defines what themes are to be addressed in the plans (Second Nature, n.d.-b). These plans tend to be very specific in nature and can be considered a subset of the more general sustainability plans.

Campus Sustainability Plans

A campus sustainability plan is a detailed document that integrates sustainability within an institution of higher education’s operational, academic, and administrative aspects (White, 2014, p. 231). The concept of a ‘sustainability plan’ only emerged in the early 2000’s (Calhoun, 2011; Saha & Paterson, 2008). AASHE STARS now has a credit specifically for institutions that have a formal sustainability plan. The STARS Technical Manual defines these plans as “a published document that outlines how an institution intends to advance its environmental, social, and economic performance” (Association for the Advancement of Sustainability in Higher Education, 2019). Sustainability plans are significantly different from campus master plans because they address economic, equity, and environmental issues as opposed to campus land use (White, 2014, p. 229). Campus sustainability plans do share many elements with city sustainability plans, but they differ with respect to their institution’s community and goals. While a city is concerned with providing services for its citizens, an institution of higher education exists

for the purpose of education and research (Whitehead, 1927, p. 2). Its employees are faculty and staff, while its constituents are students and alumni (Krizek et al., 2012).

Campus planning efforts are aided by the Society for College and University Planning (SCUP) and their publication, *Planning for Higher Education*, as well as APPA and their publication, *Facilities Manager*. In recognition of the growing importance of sustainability, a 2003 special issue of *Planning for Higher Education* was titled, “Sustainability: taking the long view.” Not to be outdone, *Facilities Manager* has had an issue on sustainability almost every year since 2005. In contrast, the *International Journal of Sustainability in Higher Education*, is devoted entirely to the topic of sustainability, but only covers campus planning as a minor discussion. Despite these resources, and five more mentioned in Vaughter et al. (2013, pp. 2254-2255), there remains very little academic literature regarding campus sustainability plans in North America.

There has been a total of three published articles analyzing campus sustainability plans or policies in North America. Lidstone et al. (2015) analyzed campus sustainability plans in Canada while Vaughter et al. (2016) analyzed campus sustainability policies in Canada. The article by White (2014) is the only study in the United States, is the most thorough analysis of campus sustainability plans to date, and lays the groundwork for this present research. White found a total of 27 campus sustainability plans from colleges and universities across the United States during her review in the fall of 2011. In contrast to the sample size in White’s study, a preliminary analysis conducted in the spring of 2019 revealed 138 such plans. Clearly, campus sustainability plans are growing faster than the academic literature discussing them.

Research Purpose

The purpose of this study is to describe the different elements included in campus sustainability plans in colleges and universities across the United States using a systematic document analysis approach. While the present study uses White's (2014) paper as a conceptual foundation, it fills an important gap in the literature on contemporary campus sustainability plans by examining over five times more sustainability plans than were analyzed in White's (2014) study and addresses some of her suggestions for future research. The results of this study have important practical implications for institutions that aspire to craft their first sustainability plan or those that wish to revise their existing plan.

Organization of the Study

Chapter I introduces the origins and history of sustainability and planning in higher education in the United States of America. It also includes a discussion on major higher education sustainability agreements in the United States and defines a campus sustainability plan. The chapter concludes with the research purpose and an outline of the organization of the research paper.

Chapter II provides a review of academic literature regarding campus planning, sustainability plans, and measurements of plan quality. This chapter provides a background of information to set up the research methods described in Chapter III.

Chapter III describes the research methods used to conduct this study. This is a descriptive study using a document analysis approach.

Chapter IV presents the results of the research. The results are organized into three sections: demographics, plan quality, and plan policy. A synthesis of these results is presented in Chapter V.

Chapter V discusses the results. This chapter takes the same format as the previous chapter with the addition of one additional concluding section: demographics, plan quality, plan policy, and an overall assessment.

Chapter VI concludes the study. Included is a summary of the most significant results, a summary of the study limitations, recommendations for writing quality campus sustainability plans, and suggestions for future research.

II. LITERATURE REVIEW

Chapter Purpose

The purpose of this literature review is to examine the scholarly literature surrounding campus sustainability plans. First, this chapter presents an overview of the literature that discusses campus sustainability. The next section narrows the focus to campus sustainability planning. Finally, a brief overview of the articles dedicated to the methods of plan evaluation are discussed as a lead-in to Chapter III, Methods.

Campus Sustainability

The literature discussing campus sustainability is diverse and plentiful. Vaughter et al. (2013, pp. 2254-2256) conducted a meta-analysis of sustainability literature focusing on higher education. The study identified the academic journals that produce the most abundant amount of literature on sustainability in higher education (SHE, henceforth). The top six journals include: *International Journal of Sustainability in Higher Education*, *Environmental Education Research*, *Journal of Education for Sustainable Development*, *Journal of Cleaner Production*, *Planning for Higher Education*, and *Higher Education Policy*. Alba-Hidalgo et al. (2018, p. 453) performed a similar analysis on journals that had articles related to sustainability assessments. Their findings mentioned the same journals as Vaughter et al. (2013) with the addition of *Sustainability: The Journal of Record*.

Most of the literature on SHE focuses on three main areas: enhancing sustainability measures, methods of sustainability assessment, and campus sustainability

planning. The first two topics will be discussed here, while the latter will be covered in a separate section, below.

Enhancing sustainability measures covers a diverse array of topics such as how sustainability starts (Brinkhurst et al., 2011; Krizek et al., 2012), taking a whole systems view of sustainability (Cortese, 2003; Koester et al., 2006), overcoming obstacles to sustainability (Filho et al., 2018; Velazquez et al., 2005), and methods of achieving greater campus sustainability (James & Card, 2012; Kim et al., 2018; Lukman & Glavic, 2007; Posner & Stuart, 2013; Rusinko, 2010; Sady et al., 2019). These studies are most often case studies with a very small ($n=1-5$) sample size (see for example Brinkhurst et al., 2011; Filho et al., 2018; James & Card, 2012; Koester et al., 2006; Krizek et al., 2012; Lukman & Glavic, 2007; Posner & Stuart, 2013). Corcoran et al. (2004) are critical of these case studies for being ineffective and not transparent. “If case-study research is to lead to an improvement in the way universities respond to sustainability in their curriculum, activities, policies and functions then researchers need to address the manner in which they conduct and report their research” (ibid. p. 7). Some of the articles forego any research method and only present a theoretical concept (see for example Cortese, 2003; Rusinko, 2010), while the remainder rely on surveys, literature reviews, or both (see for example Kim et al., 2018; Sady et al., 2019; Vaughter et al., 2013; Velazquez et al., 2005; Velazquez et al., 2006). These findings align with Vaughter et al.’s (2013, p. 2252) observation that “[t]here is a deficit of multi-site studies examining the integration of sustainability in the policies and practices of post-secondary institutions.”

Sustainability assessment is the processes in which an institution assesses, ranks,

or reports its sustainability activities to the public or a governing body. Also known as Environmental Management Systems (EMS) in the international literature, assessment systems have been implemented by companies for a long time, and now universities are following this trend (Disterheft et al., 2012). There have been numerous assessment methods throughout the world since the late 1990s. The seminal article on this topic was published by Shriberg in 2002. Shriberg analyzes 11 institutional assessment tools that were available at the time. Only two of those tools are still in use as of 2020. There has been an abundance of literature evaluating the various benefits and drawbacks of the tools that were available at the time of publication (see for example Alghamdi et al., 2017; Alshuwaikhat & Abubakar, 2008; Disterheft et al., 2012; Fischer et al., 2015; Fonseca et al., 2011; Kamal & Asmuss, 2013; Lozano, 2011; Maragakis & van den Dobbelsteen, 2015; Sassen & Azizi, 2018). The most contemporary article evaluating these assessment tools is by Alba-Hidalgo et al. (2018). They found 11 different tools globally, with each tool having the greatest use within a distinct geographic region. The three tools that were found most often are SAQ, AISHE, and STARS. The oldest tool, which was included in Shriberg's (2002) study, is the American Sustainability Assessment Questionnaire for Colleges and Universities (SAQ) which was developed by the ULSF. The Auditing Instrument for Sustainability in Higher Education (AISHE) is mainly used in Europe and was also included in the review by Shriberg (2002). Thirdly, the Sustainability Tracking, Assessment & Rating System (STARS) is most used in North America, although it has been gaining ground internationally. A noteworthy mention, due to its increasing popularity, is the UI GreenMetric, which was developed by the Universitas Indonesia. There are also two major international environmental

standards, which are widely used in Europe: Eco-Management and Audit Scheme (EMAS) and the International Standardization Organization's ISO 14001. The details of each of these assessment methods is beyond the scope of this review, but Kamal and Asmuss (2013), Maragakis and van den Dobbelsteen (2015), and Shi and Lai (2013) have all reviewed multiple systems and found STARS to be the most comprehensive and useful. However, Lang (2015) and Stough et al. (2018) are both critical of STARS due to its over-emphasis on campus operations and the lack of realizable outcomes.

A third topic that involves campus sustainability, although not covered in as much detail, is how the signing of sustainability declarations affects campus sustainability efforts. Lozano et al. (2013) analyze 11 of the most widely accepted sustainability declarations, only one of which is widely adopted by U.S. institutions. "The Talloires Declaration was signed in October 1990 by twenty university rectors, presidents, and vice chancellors from different parts of the world" (ibid. p. 13). Although there are other sustainability declarations applicable to the United States that have come to prominence since Lozano et al.'s analysis, Bekessy et al. (2007) find that all non-binding declarations fall far short in achieving actual sustainability practices. In their analysis, they found that the positive publicity gained from signing an international agreement is the reward without the work. This is "a violation of the rule of thumb known as 'Grandma's Rule' in which children are not given dessert until they have eaten their vegetables" (ibid. p. 302). Bekessy et al. cite two critical steps that must follow the signing of a commitment: a long-term budget should be assigned, and the institution's progress should be made public.

Campus Sustainability Planning

Campus land-use planning can be traced back as far as the Medieval period (Jamison, 1996, p. 22). The emergence of campus strategic planning began in the 1970s and 1980s during a difficult period of declining enrollment and decreased funding (Hinton, 2012). It was not until the mid-1990s that the idea of a campus sustainability plan was first introduced² (McNamara, 2008). “The growth of campus sustainability ... has created a new kind of campus administrator: one who must plan, and, by the very nature of sustainability, one who must plan across the campus and work with a broad range of constituents” (Calhoun, 2011, p. 49). Due to the relative newness of campus sustainability planning, the earliest related literature is actually about local government comprehensive plans (see for example Burby, 2003; Conroy & Berke, 2004; Laurian, et al., 2004), local sustainable development plans (see for example Saha & Paterson, 2008), business sustainability plans (see for example Hitchcock & Willard, 2008), and campus master plans (see for example Jamison, 1996).

Hitchcock and Willard (2008, p. xx) assert that the decision to create a sustainability plan comes down to two questions: “*Should we pursue sustainability? If so, how?*” In higher education, the answer to the first question usually comes organically from the community. Most sustainability efforts either start from the top administration (a top-down approach), from the advocacy of students (a bottom-up approach), or from the efforts of faculty and staff (the institutional middle) (Brinkhurst et al., 2011). Krizek et al. (2012, pp. 21-23) detail the bottom-up approach as having four stages: grassroots, executive acceptance, visionary campus leader, and the fully self-actualized campus

² McNamara (2008, p. 167) documents a facilities director that claims to have created a sustainability plan in 1995, but the name of the institution is never revealed.

community. The executive acceptance of the business case for sustainability is usually when the answer to the question, *Should we pursue sustainability?* becomes a *Yes*.

Answering the question, *how?* is more challenging.

There are many choices about how to formally pursue campus sustainability. Some campuses choose to integrate their sustainability goals in the master plan or the strategic plan. Signatories of the ACUPCC must create a climate action plan. Other schools have created a sustainability plan. Among the various options, Semeraro and Boyd (2017) found that climate action plans were the best indicator of sustainability outcomes on a campus, although sustainability goals in a strategic plan were closely correlated with education-related sustainability outcomes. They found only a weak correlation between sustainability plans and measured outcomes. This result may be a reflection of higher quality of climate action plans due to the greater number of resources available to guide the creation of these plans as compared to campus sustainability plans (Cox, 2015, p. 93). Both Laurian et al. (2004) and McNamara (2008) have found plan quality to be very important for plan implementation. McNamara (2008, p. 185) goes on to say that “the development of a sustainability plan is an essential step in the initiation and implementation of a sustainability effort.” What, then, are the elements necessary for a high-quality campus sustainability plan?

The most cited method of improving plan quality is by involving stakeholders in the plan creation process (Burby, 2003; Calhoun, 2011; Conroy & Berke, 2004; Cox, 2015; Jamison, 1996; McNamara, 2008). Burby (2003, p. 44) found “strong support for the idea that broad stakeholder involvement contributes to both stronger plans and the implementation of proposals made in plans.” Conroy and Berke (2004, p. 1382) tout the

benefits of a community-based collaborative planning process saying, “[a] collaborative approach is fundamental to the sustainability paradigm and is linked with promoting a sense of community, equity, and empowerment.” Calhoun (2011) calls the collaborative approach to planning “integrated planning” and considers this “horizontal alignment” the solution to the siloed nature of higher education institutions. The stakeholders can be narrowly defined as only those people and organizations responsible for implementing the plan to a broad definition of the campus community, the local community, and the community of alumni. The major limitation on stakeholder involvement is the significant burden the process can take on the planners (Cox, 2015, p. 94). The more stakeholders that are included, the greater amount of time it takes to set up the meetings, conduct the interviews, and process the data. These limitations can be overcome by having a committee of plan writers that share the burden of labor. In studies of campus sustainability plans, White (2014, p. 232) found that 62% of plans involved a participatory process in the United States while Lidstone et al. (2015, p. 741) found 79% of plans involved a participatory process in Canada.

There are also other factors that constitute a high-quality plan that will produce better outcomes. Cox (2015, p. 96) says, “There is no substitute for the backing of leadership. It is essential for plan adoption, support, and serious institutional commitment.” In her U.S. study, White (2014) found that many sustainability planning efforts did start from the top and 30% of the plans included a letter from the President of the institution. McNamara (2008, p. 191) found that high quality plans were formally adopted by their institution and communicated to the entire campus. He also found that the plans included goals, identified responsibilities, and provided a timeline and a

measurement process to assess goal completion. Setting the goals can sometimes be the most challenging part of the plan creation process, but they are the basis of any plan. “Sustainability planning involves setting a strategy, figuring out what you need to work on, and orchestrating a series of projects over the long term to reach sustainability” (Hitchcock & Willard, 2008, p. xix). The process of goal setting is sometimes referred to as “visioning” and can be an excellent opportunity for stakeholder involvement (Conroy & Berke, 2004). It is possible to organize the entire sustainability plan around the goals listed in STARS (Cox, 2015). Huang et al. (2014) have created a mathematical model to objectively select the appropriate STARS credits that would maximize an institution’s overall score in a given period of time. Whether the goals were selected by an individual, through a collaborative process, or with a mathematical model, “[g]ood plans [should] describe the current status of a community, present a vision or direction for the community’s future, and provide concrete policies that ...guide action to achieve the vision” (Conroy & Berke, 2004, p. 1387).

Common themes in campus sustainability plans across North America include waste, buildings, energy use, and climate change (Lidstone et al., 2015; Vaughter et al., 2016; White, 2014). These issues, often included under the umbrella of operations, are all situated in the environmental sphere of sustainability. These three studies found that the other two spheres of sustainability, economics and equity, are much less often included. Even within city sustainable development plans, social equity is largely forgotten (Saha & Paterson, 2008). Because each campus is unique and its ability to set goals will be based on how far along they are into their sustainability journey, there is no one set of goals or a standard format that makes for the best sustainability plan. “The

critical characteristic is that it is broad, inclusive of operations, education, administration, and all campus stakeholders” (Cox, 2015, p. 90). However, a plan will only gather dust on a shelf (Burby, 2003, p. 33) without the hard work and collaboration of the campus leadership, faculty, staff, and students (Cox, 2015, p. 98).

There has been very little research about how well existing campus sustainability plans have been implemented. Sustainability reports are often used by institutions to highlight the achievements of the past, but there were no research articles identified that looked at these reports or the success of campus sustainability plan implementation in general. However, in a study of five international institutions of higher education, Filho et. al. (2018) identified some of the keys to overcoming obstacles to implementing sustainability. “Key to making planning for and implementing sustainability in HEI [higher education institutions] is the acquisition of viable plans, sufficient funding to make those plans a reality and a core group of influential people capable of implementing those plans” (ibid. p. 719).

Plan Evaluation

To evaluate the quality of campus sustainability plans, it is necessary to understand the specific principles of plan evaluation. Despite the prominence of the American Planning Association and the Society for College and University Planning, there is very little literature that discusses document analysis of plans. White (2014, p. 230) observed that “there is limited consensus as to how to evaluate plan quality or plan outcomes.” For this review, there were four sources that provided insight into plan evaluation and there were four studies that applied these evaluation processes.

Baer's (1997) seminal article on the evaluation of plan criteria is largely focused on government-mandated plans, but offers up a series of questions in Figure 3 (Baer, 1997, pp. 338-339) that are useful for evaluating any type of plan. These 60 questions in total are not meant to be asked of every plan but are guides for planners to self-evaluate their own plan's quality. They can also be useful for deriving a framework with which to evaluate campus sustainability plans.

After collecting a series of questions to evaluate a plan, the questions must then be sorted into categories to form a codebook. MacQueen et al. (1998) and Shields and Rangarajan (2013) both offer advice for this method. A codebook is simply a collection of codes. These codes can be used "as an encryption, indexing, or measurement device" (MacQueen et al., 1998, p. 33). In other words, the collection of gathered questions that are used to determine the quality and contents of a plan make up the codebook. Shields and Rangarajan (2013, pp. 71-108) provide a research method for organizing the codes within the codebook. First, a conceptual framework table should be constructed with the preliminary codes in one column and the literature that supports the inclusion of that code in a second column. This allows the researcher to establish categories based on empirical evidence. Once complete, the conceptual framework table can be turned into an operationalization table, whereby the codes remain, but the literature sources are replaced by detailed survey questions. This "operationalizing" (ibid. p. 77) of the conceptual framework table creates what MacQueen et al. (1998) terms the codebook. Norton (2008) adds a score to the codes. A "0" represents an item is not present, a "1" represents an item is only briefly mentioned or suggested, and a "2" represents the item is discussed in detail or mandated by the plan.

Because codebooks and datasets can be quite large, it is common practice to utilize multiple coders because of the time intensive nature of the research (Norton, 2008, p. 435). MacQueen et al. (1998, pp. 35-36) offers the following tips for team-based coding:

1. Assign primary responsibility to one person.
2. Schedule regular meetings.
3. Create a codebook that someone can learn to use within a few hours.
4. Develop a written plan for segmenting text.
5. Establish intercoder agreement measures early in the process.
6. Always state specifically what the code should and should not capture.
7. Throw out codes that don't work.
8. Accept the fact that text will need to be recoded.

The intercoder reliability measures are especially important when relying on more than one coder. “[T]here are two principal sources of bias or threats to assessment reliability, including the use of items requiring subjective interpretation that might be scored differently over time or by different coders, and the potential for a coder to simply err by mis-scoring an item” (Norton, 2008, p. 435). Norton’s solutions to this problem echo MacQueen et al.’s.

Four studies have applied the principles of plan evaluation to sustainability in higher education. One study (Bieler & McKenzie, 2017) evaluated campus strategic plans for elements of sustainability, one study analyzed campus sustainability policies (Vaughter et al., 2016), while the other two (Lidstone et al., 2015; White, 2014) looked at campus sustainability plans. Only White (2014) looked at the United States. Both Bieler

and McKenzie (2017) and Vaughter et al. (2016) used a stratified sampling technique to narrow 220 Canadian post-secondary education institutions down to 50 based on a number of factors including setting, student body size, and budget. All 50 institutions selected were AASHE STARS-rated institutions but not all had plans or policies. In contrast, Lidstone et al. (2015) and White (2014) evaluated all institutions in their respective countries that had a campus sustainability plan. Lidstone et al (2015) identified 14 plans in Canada, while White (2014) identified 27 plans in the United States. Both Lidstone et al. (2015) and White (2014) used one researcher to code the documents while Bieler and McKenzie (2017) used three researchers and Vaughter et al. (2016) used four researchers. Only Vaughter et al. (2016) reports the use of inter-coder reliability checks but does not provide any transparency data.

All four studies divided their codebook differently, but Bieler and McKenzie (2017), Lidstone et al. (2015), and Vaughter et al. (2016) all used various themes of sustainability. Only White (2014) divided her codebook into questions that address both plan quality and plan policy. Bieler and McKenzie (2017) used five categories for their study: governance, education, campus operations, research, and community outreach. Lidstone et al. (2015) divided their research into: research, education, facilities, community engagement, and administration/governance/planning. Vaughter et al. (2016) looked at seven major themes: orientations to sustainability, policy intertextuality, governance, education, operations, research, and community outreach. White's (2014) scoring criteria includes: planning process, use of plan terminology, measurability, implementation details, three E's of sustainability, addresses operations and academics, links to other campus plans, and accessibility. All the studies included basic

demographic data about each of the institutions they included.

Chapter Summary

This chapter began by exploring the literature surrounding the enhancement of campus sustainability and employing assessment programs. There was also a brief discussion about sustainability declarations in higher education. Then, the focus shifted to campus sustainability planning and what has been suggested as factors in increasing plan outcomes. Finally, four sources were reviewed that discuss the theory of plan evaluation and four studies were highlighted that applied plan evaluation theory to campus sustainability plans.

III. RESEARCH METHODS

Chapter Purpose

This chapter describes the methods used to evaluate campus sustainability plans. A document analysis approach was used to systematically determine the characteristics of schools that have prepared a sustainability plan, how well the plans were prepared, and what sustainability concepts were discussed in the plans. Document analysis is a qualitative research method that systematically reviews and evaluates documents “in order to elicit meaning, gain understanding, and develop empirical knowledge” (Bowen, 2009, p. 27). The process used to conduct the document analysis is detailed below, including data collection, coding development, coding procedures, limitations, and a statement on human subject protection. This chapter also includes a conceptual framework table which provides a rationale for each of the categories used to score the sustainability plans (Shields & Rangarajan, 2013).

Data Collection

This study began by collecting sustainability plans from colleges and universities across the USA available as of March 2020. These plans were collected in three ways. First, the AASHE STARS website (<https://reports.aashe.org/institutions/data-displays/2.0/content/>) was used to query for schools that self-identified as having a sustainability plan. The results of this query included 208 schools that either identified as having a sustainability plan or did not provide an answer to that question in the STARS report. The second method of collecting sustainability plans involved utilizing a Google

search with the terms “campus sustainability plan”. This search yielded an additional 24 plans not included in the AASHE list. Third, eight more unique campus sustainability plans were added by reference. This means that either White (2014) included them in her prior study, or they were mentioned in the sustainability plan of another school. The total list of unverified campus sustainability plans was 240.

Next, it was necessary to locate and verify that each of the 240 listed schools did have a true campus sustainability plan. A Google search was conducted with the school name and the term “sustainability plan” (e.g. Duke University sustainability plan). In some cases, the search result brought up the AASHE STARS report that the school had completed. STARS asks a question that allows a school to provide a link to their sustainability plan (Association for the Advancement of Sustainability in Higher Education, n.d.-c). If a Google search did not find the plan, then a search was conducted on the institution’s integrated search engine using the term “sustainability plan”. In most cases, these searches either confirmed or denied the existence of a sustainability plan. However, a few schools specifically mentioned a plan on their website but did not provide access to these plans. In these cases, the designated sustainability manager at the institution was contacted by e-mail to request a copy of the plan. Finally, there were five campus sustainability plans that were part of White’s (2014) analysis that were not accessible. Dr. Stacey Swearingen White was contacted by e-mail who then provided electronic scans for three³ of those five plans she used in her original analysis.

For the purposes of this study, a campus sustainability plan can be defined as *a formal, published document written to provide guidance on future campus sustainability*

³ Two of the plans were inaccessible due to university closure in relation to COVID-19. These plans were for Elmhurst College and Meredith College.

efforts at institutions of higher education in the United States of America. Due to the breadth of diversity in university planning efforts, it is equally important to define what is not included in this analysis of campus sustainability plans. Sustainability policies were not considered. A policy is a brief statement by senior management of an institution's commitment to an idea, while a plan is a lengthier document with a focus on implementation (Lidstone et al., 2015, p. 727; Vaughter et al., 2016, p. 21). Another way to distinguish a plan from a policy is to imagine the plan as a roadmap and the policy as the guide lines on the road (Adhikari, 2017). Also excluded from this study are climate action plans. As discussed earlier, climate action plans give detailed guidance on how to reduce greenhouse gas emissions. Some universities have chosen to incorporate a climate action plan within their sustainability plan, and these comprehensive plans were included. Applying this specific definition of a campus sustainability plan led to a total of 155 plans that are analyzed in this study (Appendix A).

Coding Development

In order to systematically evaluate each plan, a codebook was constructed using concepts from Norton's (2008) article about evaluating local master plans. Norton suggests two areas of measurement: *plan quality* and *plan policy focus*. Plan quality is the way the given plan was prepared, written, and presented to the public. Plan policy focus describes the goals and strategies of the plan. In other words, quality describes the context while policy focus describes the content. A third section was added to the codebook for general demographic information.

Thus, the codebook comprised of three main categories: demographics, plan

quality, and plan policy; each category had several sub-questions. The demographics section is a series of open-ended questions that provide general information about the institution so that comparative data can be analyzed. The answers to some of these questions are also designed to address specific questions raised by White (2014). The section on plan quality is designed to address how and how well the plan was written. Baer (1997, pp. 338-339) lists a multitude of questions to consider with regards to evaluating plan quality. Some of these questions include, “Who was involved in the plan formulation?”, “Is there a time span for plan implementation”, and “Is the plan attractively laid out?”. The section on plan policy specifically describes what is in the plan.

These latter two sections were scored with either a 0, 1, or 2. This allows each item to be scored for both frequency and strength of the specified items. A score of ‘0’ means that the issue was not addressed in the plan at all. A score of ‘1’ means that the issue was mentioned only briefly or brought up as a mere suggestion. A score of ‘2’ means that the issue was discussed in detail or was mandated in the plan (Norton, 2008, p. 433). For example, if a sustainability plan did not address energy conservation, the *Energy* category was scored as ‘0’. If the plan talked about energy usage, but did not provide any goals on reducing usage, *Energy* was scored as ‘1’. Another case where *Energy* would be scored as ‘1’ was if it were only given as a sub-goal within a larger context, such as greenhouse gas reduction or building design. Alternatively, if energy conservation were given an entire section, or distinct goals within a section, *Energy* would be scored as ‘2’. Table 3.1 presents a conceptual framework which contains a list of the descriptive categories used in this study and the literature supporting their

inclusion (Shields & Rangarajan, 2013).

Table 3.1

Conceptual Framework Table

Descriptive Category	Supporting Literature
1.0 Demographics	
1.1 Name	White (2014); Vaughter, McKenzie, Lidstone, & Wright (2016); Lidstone, Wright & Sherren (2015); Jamison (1996)
1.2 State that the institution is in	White (2014); Vaughter, McKenzie, Lidstone, & Wright (2016); Lidstone, Wright & Sherren (2015); Jamison (1996)
1.3 Institution type	White (2014); Jamison (1996)
1.4 Student enrollment	White (2014); Lidstone, Wright & Sherren (2015)
1.5 Plan length	White (2014); Lidstone, Wright & Sherren (2015); Jamison (1996)
1.6 Year plan was originally created	White (2014); Lidstone, Wright & Sherren (2015); Jamison (1996)
1.7 Year(s) plan was updated	White (2014)
1.8 Climate Commitment signatory?	White (2014); Cox (2015)
1.9 STARS participant?	White (2014); Vaughter, McKenzie, Lidstone, & Wright (2016); Lidstone, Wright & Sherren (2015); Cox (2015)
2.0 Plan Quality	Norton, R.K. (2008); White (2014)
2.1 Planning Process	Baer (1997); Burby (2003); Norton, R.K. (2008); White (2014); Lidstone, Wright & Sherren (2015)
2.2 Use of Plan Terminology	Baer (1997); White (2014); Purman (2012); Lidstone, Wright & Sherren (2015)
2.3 Links to other campus plans	Baer (1997); White (2014); Vaughter, McKenzie, Lidstone, & Wright (2016)

Table 3.1. Continued

Descriptive Category	Supporting Literature
2.4 Accessibility	Baer (1997); White (2014); Jamison (1996)
2.5 Definition of ‘Sustainability’	Vaughter, McKenzie, Lidstone, & Wright (2016)
3.0 Plan Policy	Norton (2008)
3.1 Operations	White (2014); Vaughter, McKenzie, Lidstone, & Wright (2016); Walker (2017); Lidstone, Wright, & Sherren (2015); Cox (2015)
3.2 Academics / Education	White (2014); Vaughter, McKenzie, Lidstone, & Wright (2016); Walker (2017); Lidstone, Wright & Sherren (2015); Cox (2015)
3.3 Administration, Governance, and Planning	White (2014); Vaughter, McKenzie, Lidstone, & Wright (2016); Walker (2017); Lidstone, Wright, & Sherren (2015); Cox (2015)
3.5 Equity / Social	White (2014); Wellman & Wilson (2018); Walker (2017); Cox (2015)
3.6 Research	Vaughter, McKenzie, Lidstone, & Wright (2016); Walker (2017); Lidstone, Wright, & Sherren (2015)
3.7 Community Engagement	Vaughter, McKenzie, Lidstone, & Wright (2016); Walker (2017); Lidstone, Wright, & Sherren (2015); Cox (2015)

Coding Procedures

Due to the number of documents that required coding, it was necessary to utilize multiple coders in the process. For this, a request for research assistants was sent to the undergraduate *Research in Public Administration* class (PA 4398). One student volunteered to assist with this research. Utilizing multiple coders is a standard procedure in document analysis due to the time-intensive nature of the work involved (MacQueen et al., 1998, p. 31; Norton, 2008, p. 435; Vaughter et al., 2016, p. 21). A number of

intercoder reliability measures were utilized to ensure consistency in document scoring. Both MacQueen et al. (1998) and Norton (2008) detail measures that should be used to improve consistency in multi-rater document analysis. These measures included precise codebook development, individual pilot coding, regular meetings to refine discrepancies, and intercoder reliability checks.

First, the categories must be “precise in meaning, unambiguous, complete..., and do not overlap or duplicate one another” (Norton, 2008, p. 434). To facilitate precise and complete categories, questions were added to each descriptive category listed in Table 1. These questions, or elements (Shields & Rangarajan, 2013), were ultimately what was scored for each sustainability plan. There were originally 53 elements in the first version of the codebook which is presented in Appendix C.

Next, a meeting was conducted between the lead researcher and the research assistant. The research assistant was trained on the use of the codebook, given a short list of definitions (available in Appendix D), and three randomly selected plans were individually analyzed simultaneously by both researchers. These sustainability plans were from Northern Michigan University, Massachusetts Institute of Technology, and Worcester Polytechnic Institute. After the three plans were individually scored, the researchers discussed challenges and compared their results. This initial round of coding led to a refinement of the codebook. Version 2 of the codebook (available in Appendix E) was developed to clarify the areas that did not agree. The 155 sustainability plans were then divided among the two researchers.

After nine days of scoring plans with codebook version 2, the researchers met again to discuss the process. A few minor changes were made to the codebook after this

meeting. These changes were informed by an inductive reading of the first sustainability plans, known as a feedback loop for revising categories (Vaughter et al., 2013, p. 2256). Version 3 of the codebook can be found in Appendix F. In total, there were 65 elements in this final version of the codebook.

Finally, intercoder reliability checks were performed to assess the reliability and validity of the coded data. This process involves both researchers scoring the same set of plans and evaluating the percent agreeance on the final total. A reliability rating of 70% between the two researchers was established as acceptable, in line with the study performed by Jamison (1996, p. 136). The research assistant scored a total of 63 sustainability plans; 12 of these plans were randomly selected to evaluate for intercoder reliability. This results in 19 percent of the plans being scored by both researchers. The final score for each plan was compared between coders and assigned a percent agreement rating. The percent agreement for the twelve plans ranged from 61.2% - 100%. The average agreement among all twelve plans was 80.2%. This reliability rating exceeded the pre-determined acceptability rating of 70%. These data are presented in Table 3.2.

Table 3.2

Intercoder Reliability Ratings

Institution	Grader	Total Score	% Agreement
Arizona State University	1	55	98.2
	2	54	
California State University, San Marcos	1	76	72.4
	2	55	

Table 3.2. Continued

Institution	Grader	Total Score	% Agreement
Colgate University	1	54	64.8
	2	35	
Colorado College	1	47	97.9
	2	46	
Denison University	1	46	76.1
	2	35	
Indiana State University	1	44	61.4
	2	27	
Monroe Community College	1	11	100
	2	11	
Northern Michigan University	1	39	97.4
	2	38	
Purdue University	1	59	67.8
	2	40	
Southwestern University	1	38	95
	2	40	
University of St. Thomas	1	51	70.6
	2	36	
Utah State University	1	49	61.2
	2	30	

Limitations

The methods used in this study are subject to some limitations. First, every effort was made to identify all the campus sustainability plans that were publicly available as of March 2020. However, it is possible that some plans were not published on the internet. It is known that two sustainability plans included in a prior study were not available to be included in this study. Additionally, any sustainability plan published after this study would not be included.

Second, the term ‘sustainability plan’ was used to identify the campus sustainability plans. Any school that used a different term for their plan (i.e. environmental management plan) may have not been included.

Third, the codebook was developed based on AASHE STARS, prior studies of sustainability & master plans, and a feedback loop from the documents themselves. The categories included in this study are not exhaustive and may not have captured some aspects of what makes a good sustainability plan. For instance, this plan did not look at the religious affiliation of an institution, although there were a number of Catholic schools that have committed to a sustainability pledge unique to Catholic institutions.

Fourth, the results of this study are limited to the data collected. The following results chapter mentions sustainability pledges that are signed by many institutions of higher education. However, because this study only considered institutions with sustainability plans, it is impossible to make conclusions regarding all institutions that sign the pledges. Also, there are many institutions in the United States that are perceived as exemplars of campus sustainability that have not developed a sustainability plan (White, 2014, p. 231). These institutions are not evaluated in a study of campus

sustainability plans.

Fifth, only campus sustainability plans were considered. Sustainability policies, sustainability reports, and climate action plans were intentionally excluded.

Sustainability statements or goals included in a strategic plan or master plan were also excluded. However, if the strategic plan or master plan included an entire chapter on sustainability and described the chapter as a sustainability plan, it was included.

Sixth, this study is limited to the United States of America. Campus sustainability plans are a global phenomenon (Krizek et al., 2012; Lidstone et al., 2015; Vaughter et al., 2016), but this study was designed specifically to look at the United States.

Finally, it must be recognized that this study was conducted by human beings. Although systems were implemented to minimize coding errors, it is possible that some mistakes were made during the document analysis. However, the sample size was such that any non-systematic errors would not skew the results of the study.

Human Subjects Protection

This thesis proposal was submitted to the Texas State Institutional Review Board (IRB) through the IRB Determination Request Form website. Human subjects were not recruited or used in this study. Research Integrity and Compliance concluded that this research does not require IRB review. A formal exemption from full or expedited review was approved on February 3, 2020.

Chapter Summary

This chapter provided information on the methodology used to gather campus sustainability plans and systematically analyze their contents. The next chapter presents the results of the document analysis.

IV. RESULTS

Chapter Purpose

A total of 155 sustainability plans from institutions of higher education in the United States of America were rated on 65 elements. Of these elements, 14 were demographic in nature, 19 related to plan quality, and the remaining 32 dealt with plan policy. This chapter presents the results pertaining to these three sections.

Demographics

In the United States, approximately seven percent of the population is enrolled in higher education. This represents a total enrollment of over 26.4 million students in the 2017-2018 school year. Of that number, approximately 10.8 million are in public 4-year institutions, 6.3 million are in private 4-year institutions, and 8.5 million are in 2-year (or less) public institutions (U.S. Department of Education, 2018).

Student Enrollment

The 155 institutions whose sustainability plans are assessed in this study have about 3.299 million students which represents approximately 12.5% of the entire U.S. higher education student population. The smallest school studied had an enrollment of 626 students while the largest individual school had 68,367 with an average enrollment of 17,049. Four of the 155 plans were written for an entire college or university system. The U.S. Department of Education (2019) defines a system as “[a]n organization of two or more institutions of higher education under the control or supervision of a common

administrative governing body.” These include the California State University System, the State of Iowa University System, the Seattle Colleges District, and The University of California System⁴. These systems were excluded from the maximum and mean student populations. To succinctly summarize the data by student population, the institutions were sorted into three categories. According to CollegeData.com (n.d.) a “small” school is defined as having fewer than 5,000 students, “medium” as having 5,000 to 15,000 students, and “large” as having over 15,000 students. The number of schools in each category is presented in Table 4.1.

Table 4.1

Number of Campus Sustainability Plans by Institution Size and Type

Institution Type	Institution Size			Total
	Small ^a	Medium ^b	Large ^c	
Community College	2	3	6	11
Private	35	18	9	62
Public	3	20	59	82
Total	40	41	74	155

^a Student enrollment of fewer than 5,000. ^b Student enrollment of 5,000 to 15,000. ^c

Student enrollment of greater than 15,000.

Institution Type

In addition to student enrollment, the institutions of higher education were also classified by type. These types include “community college”, “private”, and “public”

⁴ The student enrollment populations for these school systems are presented in Appendix A.

institutions. While some classification systems break these types down further (U.S. Department of Education, 2019), in this study, all public and private schools were 4-year institutions while the community college category represents community colleges, junior colleges, technical colleges, and one city college district. The number of each type of school is presented in Table 4.1.

Geographic Region

Another way to group the institutions with sustainability plans is by geographic region. The state that the institution resided in was recorded for each campus sustainability plan. California had the most campus sustainability plans (n=14) followed by New York (n=12) and Massachusetts (n=9). Twelve states had no campus sustainability plans. The number of campus sustainability plans by state is displayed in Figure 4.1. To summarize these data, it is also possible to group these states by U.S. Census Bureau geographic regions. There are four geographic regions (U.S. Census Bureau, 2013). The Midwest (n=44) and Northeast (n=42) had the most plans. The number of campus sustainability plans by geographic region is displayed in Figure 4.2. No campus sustainability plans were identified at institutions of higher education in U.S. territories.

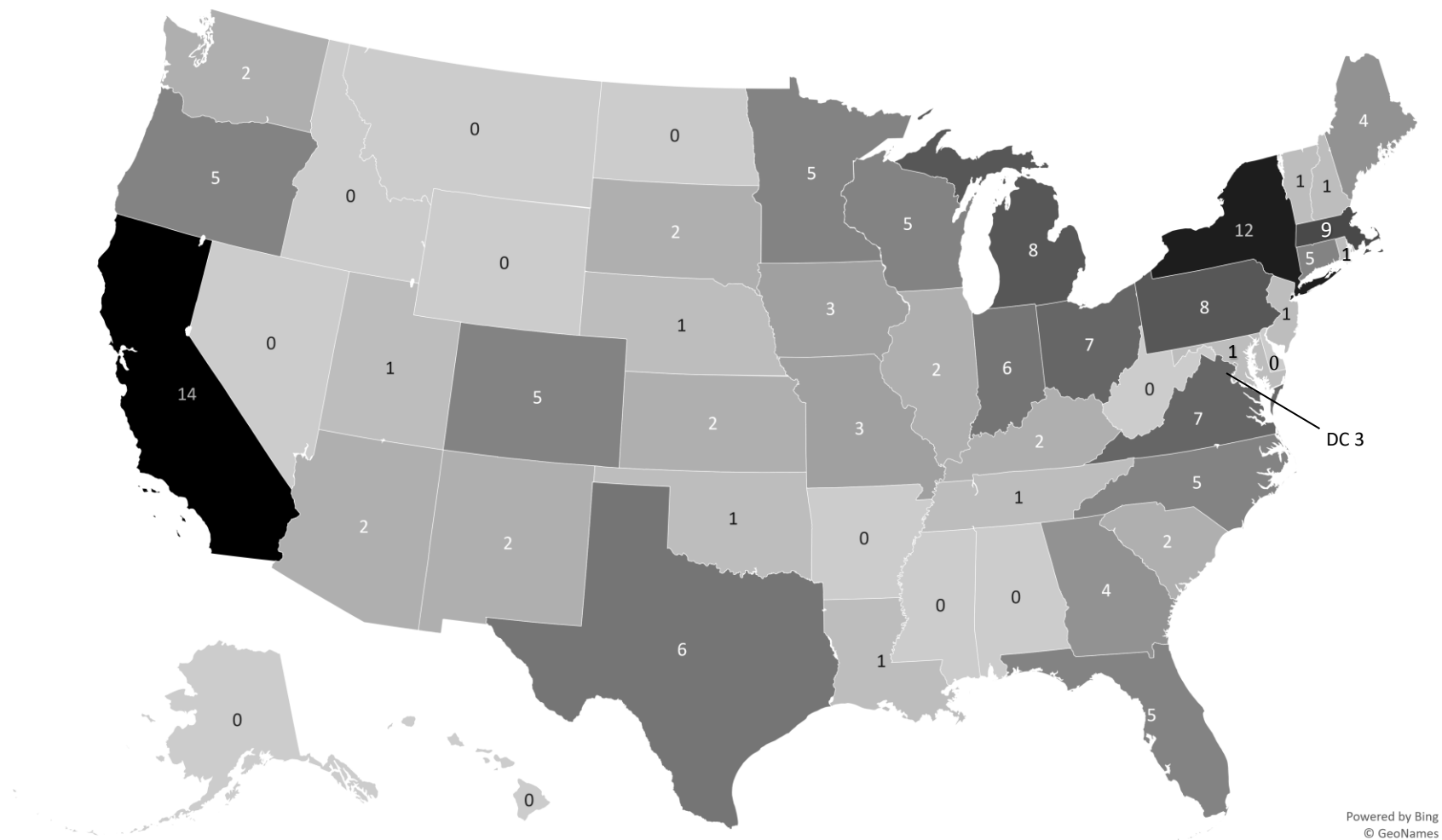


Figure 4.1. Number of U.S. campus sustainability plans distributed by state.

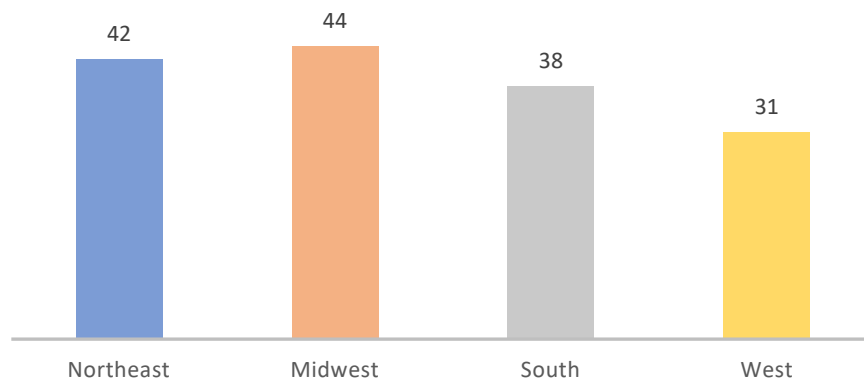


Figure 4.2. Number of campus sustainability plans distributed by U.S. Census Bureau geographic region.

Sustainability Commitments

As discussed in the introduction, there are a number of agreements that an institution may sign or join to demonstrate their commitment to sustainability. In the United States, the major agreements include participation in the *Sustainability Tracking, Assessment & Rating System (STARS)*, *American College and University Presidents' Climate Commitments (ACUPCC)*, the *Talloires Declaration*, the *We Are Still In* pledge, and the *American Campuses Act on Climate (ACAC)* pledge. Table 4 presents the number of institutions participating in each of these agreements that also had formal sustainability plans. Because the agreements are targeted toward individual institutions, the university systems were not eligible to participate, with a few notable exceptions. The Iowa State University System was a signatory to the ACAC pledge, the California State University System is a signatory to the *We Are Still In* pledge, and the University of California System is an ACUPCC and *We Are Still In* pledge signatory. Figure 4.3 depicts how many institutions with sustainability plans began participating in ACUPCC and STARS each year. ACUPCC began in 2006 whereas STARS began in 2010.

Table 4.2

Sustainability Agreement Participation by U.S. Colleges and Universities with Campus Sustainability Plans

Participation	STARS ^a	STARS ^a %	ACUPCC ^b	ACUPCC ^b %	Talloires ^c	Talloires ^c %	We Are Still In	We Are Still In %	ACAC ^d	ACAC ^d %
N/A	4	3	3	2	4	3	2	1	3	2
No	13	8	65	42	113	73	88	57	92	59
Yes	138	89	87	56	38	24	65	42	60	39

Note. Total number of institutions = 155. Four institutions were systems that do not generally participate in agreements as indicated

by the “N/A” row. However, one system has signed the ACUPCC, two systems have signed the We Are Still In pledge, and one system has signed the American Campuses Act on Climate pledge.

^a Sustainability Tracking, Assessment & Rating System ^b American College and University Presidents’ Climate Commitment

^c Talloires Declaration ^d American Campuses Act on Climate

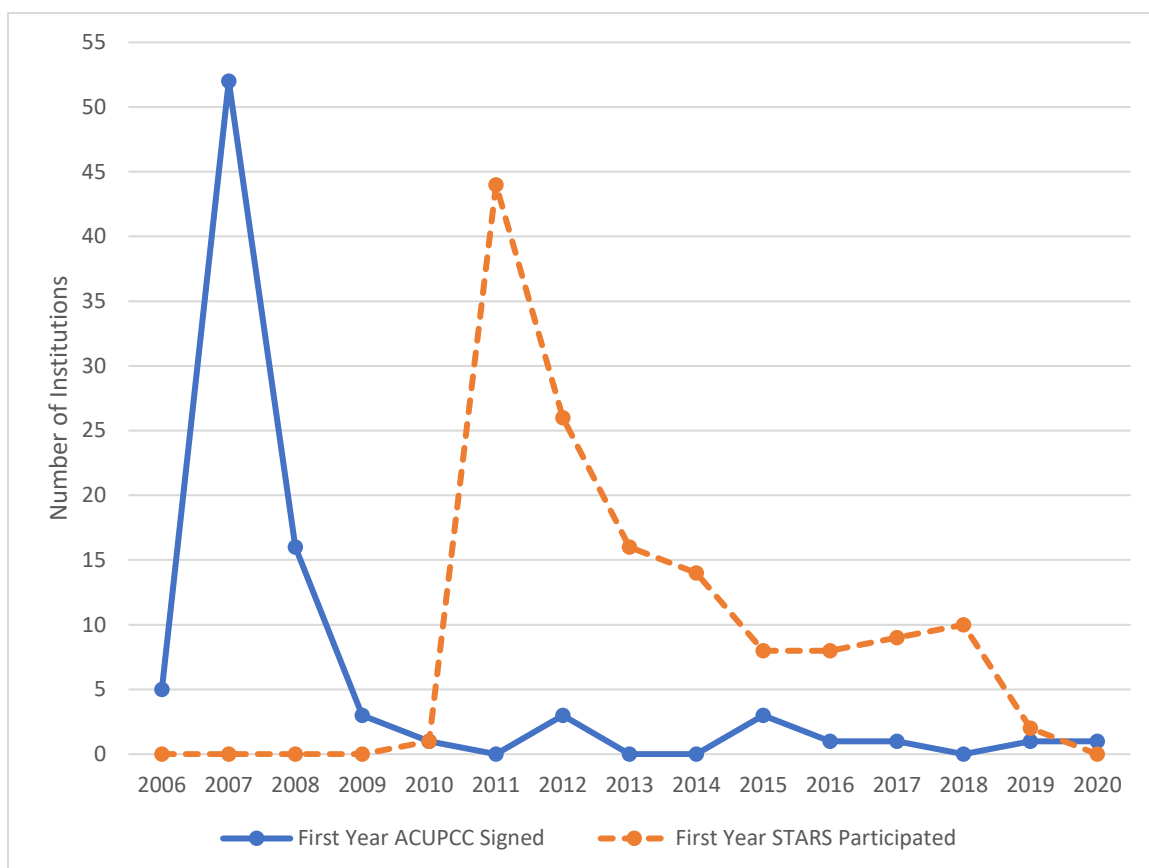


Figure 4.3. First year institutions with sustainability plans began participating in ACUPCC and STARS. ACUPCC institutions = 87. STARS institutions = 138.

To determine what kind of institutions are participating in the various campus agreements, the agreements have been tabulated against institution type and size. Table 4.3 shows how many schools of each size and type have participated in the various sustainability agreements as a percentage of the total number of institutions by the same size or type. It should be noted that there are many more institutions of higher education that participate in these agreements and this study only represents those with sustainability plans. It is possible that these data are not representative of all member institutions for each agreement; that analysis is beyond the scope of this study.

Table 4.3

Sustainability Agreement Participation by U.S. Colleges and Universities with Campus Sustainability Plans as a Percentage of Total Institutions of the Same Size or Type

Institution Characteristic	# of Inst.	% Participation				
		STARS ^a	ACUPCC ^b	Talloires ^c	We Are Still In	ACAC ^d
Small ^e	40	98	75	25	42	39
Medium ^f	41	83	44	17	29	37
Large ^g	74	88	53	27	37	35
Community College	11	64	46	18	18	36
Private	62	92	61	24	60	47
Public	82	90	54	26	32	33

^a Sustainability Tracking, Assessment & Rating System ^b American College and University Presidents' Climate Commitment ^c Talloires Declaration ^d American Campuses Act on Climate ^e Student enrollment of fewer than 5,000. ^f Student enrollment of 5,000 to 15,000. ^g Student enrollment of greater than 15,000.

Plan Length

The last portion of demographic data pertains to the sustainability plans themselves. In particular, the length of the plan and the number of versions that were published are recorded. Plan length was divided into three categories. “Short” plans are those under 11 pages in length, “medium” plans are 11-50 pages long, and “long” plans are over 50 pages. The mean plan length is 38 pages while the median and mode are both

28 pages. Table 4.4 summarizes how many plans were in each category, while Table 4.5 breaks down plan length by institution size and type. The “medium” length plans are most prevalent (n=98) with larger schools tending to write longer plans.

Table 4.4

Number of Campus Sustainability Plans by Plan Length

Plan Length	# of Plans	% of Total
Short ^a	24	16
Medium ^b	98	63
Long ^c	33	21

^a 1 – 10 pages ^b 11 – 50 pages ^c 50 or more pages

Table 4.5

Length of Campus Sustainability Plans by Institution Size and Type

Institution	Plan Length		
Characteristic	Short ^a	Medium ^b	Long ^c
Small ^d	9	25	6
Medium ^e	3	34	4
Large ^f	12	39	23
Community College	2	8	1
Private	9	42	11
Public	13	48	21

^a 1 – 10 pages ^b 11 – 50 pages ^c 50 or more pages ^d Student enrollment of fewer than 5,000. ^e Student enrollment of 5,000 to 15,000. ^f Student enrollment of greater than 15,000.

Number of Plan Versions

Ninety-eight schools have written only one sustainability plan while the others have produced up to six versions of their campus sustainability plan. Subsequent versions tend to be updates to the original plan rather than brand new documents. Table 4.6 summarizes how many versions of sustainability plans institutions have produced, while Table 4.7 breaks down the number of plan versions by institution size and type. Roughly the same proportion of community colleges, private schools, and public schools have produced more than one version. However, as school size increases, there is also a rise in the number of plan versions. Very few schools (10%) have produced more than two versions of a sustainability plan.

Table 4.6

Number of Campus Sustainability Plan Versions

# of Plan Versions	# of Institutions	% of Total
1	98	63
2	41	26
3	12	8
4	3	2
6	1	1

Table 4.7*Number of Campus Sustainability Plan Versions by Institution Size and Type*

Institution	# of Versions				
Characteristic	1	2	3	4	6
Small ^a	28	9	2	1	0
Medium ^b	27	12	2	0	0
Large ^c	43	20	8	2	1
Community College	6	4	1	0	0
Private	40	16	5	1	0
Public	52	21	6	2	1

^a Student enrollment of fewer than 5,000. ^b Student enrollment of 5,000 to 15,000. ^c

Student enrollment of greater than 15,000.

Plan Publication and Expiration Year

The first year that an institution published a sustainability plan was documented to record the development of campus sustainability plan writing over time. Figure 4.4 shows how many sustainability plans were first published each year since the year 2000 as well as how many plans were updated each year. Two campus sustainability plans were published in the year 2000 and are the first identifiable plans of this type. The number gradually rose to its peak of 17 plans in 2009 and has since fluctuated between 10 – 15 plans per year except for 2019, which saw only 3 campus sustainability plans published. Figure 5 also shows that four plans have not been updated since 2005 and a total of 24 plans have not been updated since 2010. Sixty-six plans have indicated an

expiration date as shown in Figure 4.5. Fourteen plans have not been updated since they expired in 2019 or earlier. Eighteen more are due to expire in 2020.

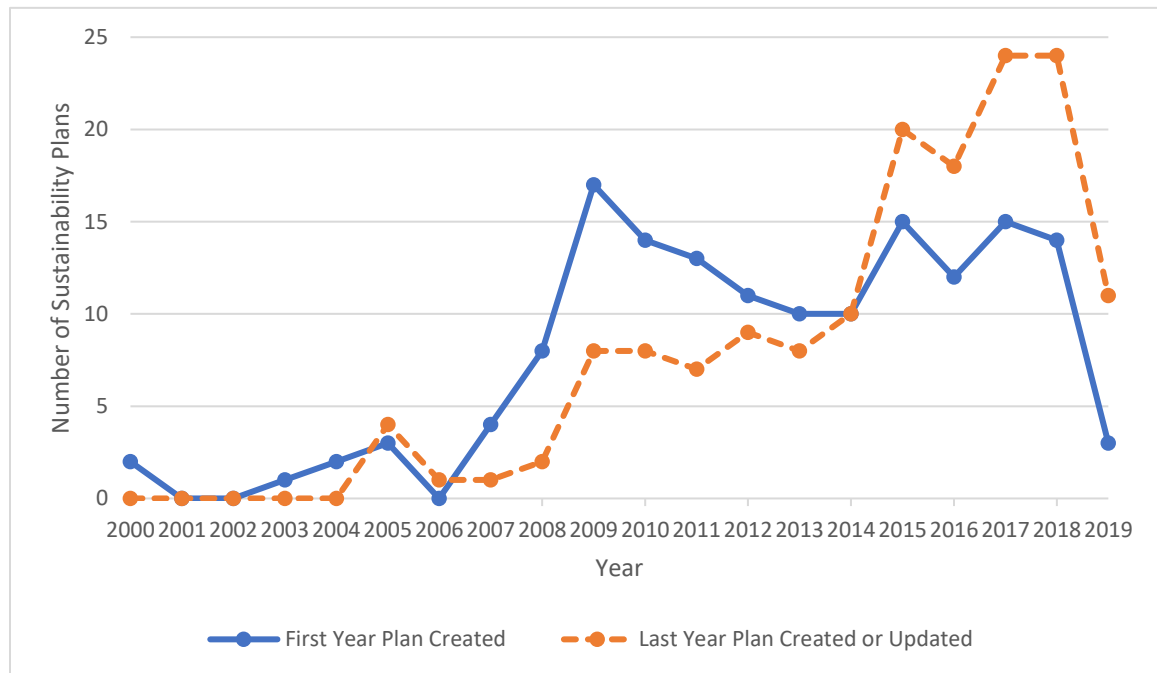


Figure 4.4. Number of campus sustainability plans by first and last years published.

n = 155

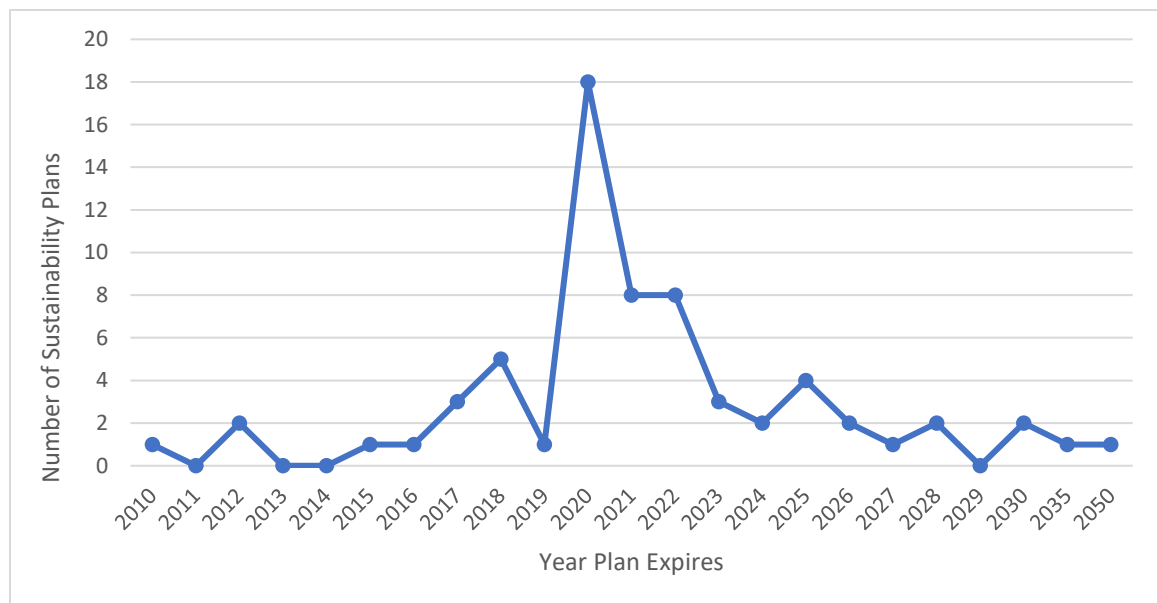


Figure 4.5. Number of campus sustainability plans by expiration date. n = 66

Finally, the first year that an institution published a sustainability plan is compared with the first year that the same institution signed on to STARS and/or ACUPCC. Table 4.8 summarizes these findings. Sixty-two percent (62%) of institutions developed their first sustainability plan before they participated in STARS. Fourteen (9%) eligible institutions had created a sustainability plan without participating in STARS. However, only 19% of institutions had a sustainability plan before signing on to ACUPCC. Sixty-seven (44%) eligible institutions had created a sustainability plan without participating in ACUPCC.

Table 4.8

Development of Sustainability Plans in Relation to STARS and ACUPCC Commitments

Commitment	# of Plans Created Before Participation	# of Plans Created After Participation
STARS ^a	85	52
ACUPCC ^b	16	70

^a Sustainability Tracking, Assessment & Rating System ^b American College and University Presidents' Climate Commitment

Plan Quality

Plan quality deals with the common practices of plan development. As such, any written plan should adhere to a basic set of principles. These include describing the planning process, the use of standard plan terminology, references or links to other plans, accessibility and organization, and definitions of terms. The second section of the codebook specifically evaluated these aspects, and the results are reported below.

Authors and Stakeholders

A transparent plan will describe the process through which the plan was developed, including who wrote the plan and which stakeholders were engaged in the process. For the 155 plans in this study, 78% described the writer(s) to some extent (either a vague reference or detailed description) while 52% mentioned which stakeholders were engaged in the plan development process. Table 4.9 presents these findings. Thirty-one plans did not indicate who wrote the plan, while another 21 mentioned a certain entity but did not describe who was within that entity. The most prevalent plan writers are dedicated campus committees composed of faculty, staff, and students (n=44). Many plans included some combination of faculty, staff, or students, and may have also included contractors or alumni. At least⁵ 20 plans were written strictly by staff alone, three plans were written by faculty alone, and two plans were written by students alone. Eight of the plans were written strictly by an outside consultant with another nine mentioning the use of a consultant as a part of the plan preparation. Seventy-five plans made no mention of stakeholder engagement during the plan preparation, while another nine mentioned some group but did not describe who was within that group. The most prevalent group engaged included faculty, staff, and students (n=59). Other plans included different combinations of faculty, staff, or students, and may have also included the civic community, alumni, public officials, contractors, business leaders, and in one case the Board of Trustees.

⁵ Some of the 21 entities that were not detailed may be solely composed of staff members, such as two instances of “Office of Sustainability”.

Table 4.9*Campus Sustainability Plans' Inclusion of Plan Writers and Engagement of Stakeholders*

Inclusion Variable	# of Plans	
	Describes the Writer	Describes Stakeholder Engagement
No Mention	34	74
Vague Reference	31	23
Detailed Description	90	58

Plan Terminology

The use of standard plan terminology ensures a plan's message is clear. A plan, by definition, should be a roadmap into the future. This study uses the idea of *SMART goals* to measure how well each plan adheres to standard terminology. SMART is an acronym for specific, measurable, accountable, realistic, and time bound (Purman, 2012). Specific refers to providing clear, actionable goals. Almost 87% of plans had specific goals. Measurable refers to having a system in place to measure progress towards a defined end-goal. Nearly 25% of plans had measurable goals. Accountable refers to assigning responsibility to a specific person or entity. Twenty percent (20%) of plans provided accountability for their goals. Realistic refers to providing cost estimates for each goal so that a determination can be made regarding feasibility. Less than five percent (5%) of plans included a detailed cost analysis. Finally, time bound refers to goals being assigned a timeframe or deadline for completion. Thirty-three percent (33%) of plans assigned a timeframe for their goals. Table 4.10 provides detailed results for each of these categories.

Table 4.10*Campus Sustainability Plans' Inclusion of SMART Goals*

Inclusion Variable	# of Plans Including Goals That Are				
	Specific	Measurable	Accountable	Realistic	Time Bound
No Mention	9	104	118	144	86
Vague Reference	12	13	6	4	18
Detailed Description	134	38	31	7	51

References

Another aspect of plan quality is the reference of other plans and documents within the campus sustainability plan. These references could be regarding institutional documents, local & regional documents, or national & international documents. The sustainability plans were scored by how many references to each of these types of documents were included in the plan. Table 4.11 provides complete results for this rating element. Eighty-five percent (85%) of sustainability plans made some degree of reference to other institutional documents, which most often included master plans, strategic plans, and climate action plans. Thirty-eight percent (38%) of sustainability plans made some degree of reference to local or regional documents, which most often included state House and Senate bills, state executive orders, and local transportation plans. Twenty-five percent (25%) of sustainability plans made some degree of reference to national or international documents, which most often included the United Nations' *Brundtland Report*, the United Nations' *Sustainability Development Goals*, the Pope's encyclical *Laudato Si'*, the *Paris Climate Agreement*, and the *We Are Still In* pledge.

Table 4.11*Campus Sustainability Plans' Inclusion of Document References*

Inclusion Variable	# of Plans Including Document References That Are		
	Institutional	Local or Regional	National or International
No Mention	24	96	116
Vague Reference	31	25	18
Detailed Description	100	34	21

Accessibility

Accessibility and organization encompass numerous aspects of how well-organized, readable, and visually appealing a plan is. These components were combined into a single category in the codebook. A plan that was professionally produced with a clear table of contents and page numbers, distinct sections, applicable graphics, and an inviting and easy-to-read format was scored as a '2'. Most often, these documents were compiled by the institution's marketing department or similar entity. Sixty-two plans fell within this category. A plan that was well-organized and easy to read, but not professionally compiled was scored as a '1'. Forty-six plans fell within this category. All other documents were scored as '0'; most of these were produced in a word processing software, such as *Microsoft Word*. Forty-seven plans fell within this category.

Definitions of Sustainability

A definition of important or ambiguous terms is a necessary component of any plan if a wide audience is expected to read the plan. There are many terms that could be defined in campus sustainability plans, but the most critical and common term is the one most often used – *sustainability*. Thiele (2016, p. 2) cites David Owen when he says, “*sustainability* has been called ‘one of the least meaningful and most overused words in the English language.’” Due to the term’s wide usage and variety of meanings in different contexts, *sustainability* deserves a definition in a sustainability plan. Vaughter et al. (2016, p. 22) calls this “orientations to sustainability” and has influenced this study’s method of breaking down the definition into three common categories. The first category is the Brundtland definition as described in the United Nations report *Our Common Future*. “Sustainable development seeks to meet the needs and aspirations of the present without compromising the ability to meet those of the future” (World Commission on Environment and Development, 1987, p. 39). Forty-two campus sustainability plans use the Brundtland definition and another 13 reference it. The second category is the three pillars of sustainability, most often represented as three concentric circles of economy, equity, and environment (see Figure 4.6). These terms may be interchanged with others, such as people, planet, and profit, but all have the same general meaning. Sixty-four campus sustainability plans use the three pillars definition of sustainability while another 16 reference it. The third category captures all other definitions of sustainability that a plan has used. There are 34 alternative definitions which are fully presented in Appendix G. Table 4.12 presents the number of plans using each of the definitions of sustainability. Fifty-one campus sustainability plans provided no definition of sustainability.

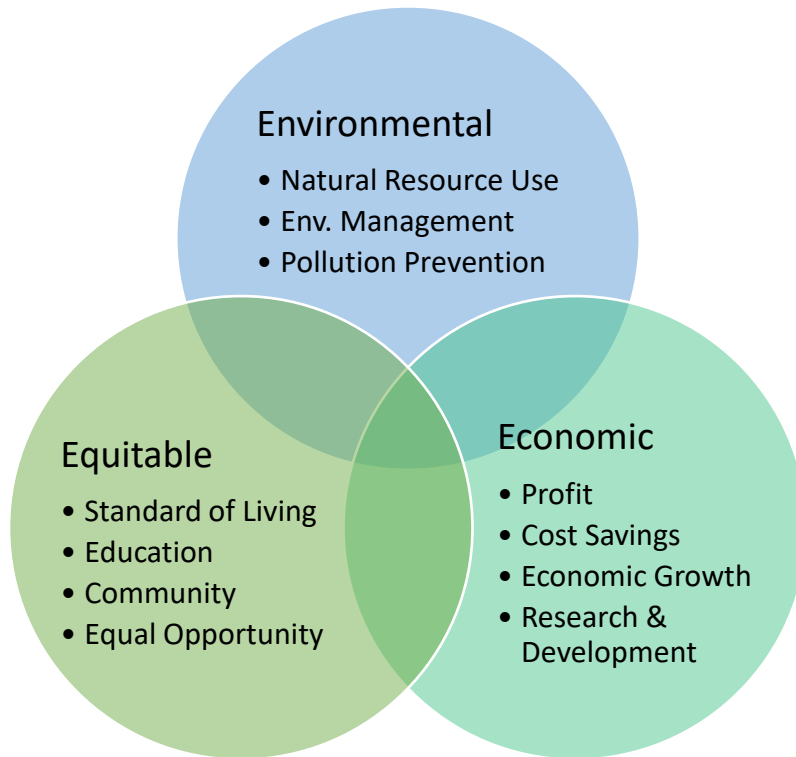


Figure 4.6. The three spheres of sustainability. Adapted from “Clarifying societies’ need for understanding sustainable systems,” by W. Emanuel, C. Dickens, J. Hunter, and M.E. Dawson Jr., 2011, *Journal of Applied Global Research* 2(4), p. 29-39. Copyright 2011 by Intellectbase International Consortium.

Table 4.12

Campus Sustainability Plans’ Definitions of ‘Sustainability’

Inclusion Variable	# of Plans Defining Sustainability As		
	Brundtland ^a	Three Pillars ^b	Other
No Mention	100	75	121
Vague Reference	13	16	3
Detailed Description	42	64	31

^a Sustainable development seeks to meet the needs of the present without compromising

the ability of future generations to meet their own needs ^b Environment, economy, equity

Plan Policy

Plan policy focuses on what elements of sustainability the plan addresses. The categories within this section are loosely based on the organization of the STARS assessment. The six main categories are: Operations, Academics, Planning & Administration, Social Equity, Research, and Engagement. Each of the categories were further divided into elements that more explicitly describe the specific features that occur within that category. These categories and elements were each given an individual score based on how well the sustainability plan addressed that element.

Each of the six major categories were scored on whether the sustainability plan dedicated an entire section to that topic. For example, a school received a score of ‘2’ on the *Operations* category if the sustainability plan included a specific section titled “Operations”. A score of ‘1’ was given for plans that discussed operations in a general sense but did not devote a section with this specific title. A ‘0’ indicates that there was no mention of the category, although the plan may still have included elements within the category. The various elements were scored based on their inclusion anywhere within the sustainability plan. A score of ‘2’ means that the element was discussed in detail or was mandated in the plan. A score of ‘1’ means that the element was mentioned only briefly or brought up as a mere suggestion. A score of ‘0’ means that the element was not addressed in the plan at all. The results are explained below.

Operations

Operations may be described as the day-to-day activities outside of the classroom that enable a school to function. Many of a school's operations occur within the Facilities department or other closely related departments that have direct impacts on environmental quality. All but one sustainability plan included one or more elements of operations. However, only 43% of sustainability plans mentioned the term 'operations' or dedicated a section to the topic. Waste concerns minimizing an institution's trash load and increasing recycling, diversion, and composting. Ninety-six percent (96%) of plans mentioned waste in their text. Energy is how much electricity a campus uses and where it gets the electricity from. Energy is sometimes closely tied with building design, greenhouse gas emissions, and computing & electronics. Ninety-six percent (96%) of plans mentioned a campus's energy use. Transportation involves the methods by which faculty, staff, and students travel to and around campus; it also involves travel off campus for conferences, presentations, and teaching at other schools. Transportation is linked to greenhouse gas emissions. Ninety-two percent (92%) of plans mentioned transportation issues. Building Design is concerned with how efficient campus buildings are designed and maintained. This category most often includes a green rating system such as LEED and is sometimes linked with energy, greenhouse gas emissions, water, and green cleaning. Eighty-four percent (84%) of plans mentioned building design. Greenhouse Gas Emissions are the chemical compounds that exacerbate climate change. While this topic is the sole focus of a climate action plan, 90% of sustainability plans also include discussions of greenhouse gas emissions. Some sustainability plans even include a climate action plan. Water is a multifaceted topic including potable water use,

wastewater, stormwater, and watershed stewardship. Some sustainability plans included their applicable water permits in the discussion. Irrigation water was most often discussed in relation to grounds & landscaping. In all, 88% of plans mentioned some aspect of water. Food also includes several aspects including local and/or organic sourcing, using less meat, farmers markets, managing food vendors & contractors, and food waste reduction & composting. Eighty-one percent (81%) of plans mentioned some aspect of food. Grounds & Landscaping includes how an institution manages the physical land area that the institution sits upon. These discussions may include Tree Campus USA certification, Bee Campus USA certification, forest management plans, landscape management plans, and irrigation water conservation. Seventy-five percent (75%) of plans mentioned grounds maintenance or landscaping. Purchasing / Procurement deals with an institution's resource use. Sometimes referred to as 'green procurement', managing purchasing decisions at an institutional level is often used as a method to reduce campus waste. Some institutions have implemented a 'green office' or 'green labs' program to encourage better purchasing decisions and to reduce waste. Eighty-four percent (84%) of plans mentioned purchasing or procurement. Often included under the purchasing discussion, Computing & Electronics specifically concerns how an institution manages its technology resources. EPEAT and Energy Star are two programs that certify low-energy use electronics. This strategy often involves an institution's Information Technology department. Fifty-nine percent (59%) of plans mention computing or electronics management. A Green Fund is some permanent funding source specifically set up for sustainability projects. Sometimes this is a green revolving fund where savings on one end are used to provide upfront funding for other

projects, and other times this may be a student green fund distributed in a grant-like manner for sustainability projects proposed by students. Thirty-nine percent (39%) of plans mentioned a green fund. Green Cleaning is most often concerned with the use of eco-friendly cleaning products on campus, although some plans mentioned a chemical-free ozone cleaning system. This topic was given its own section in some plans but was most often included in the discussion on purchasing decisions. Forty-three percent (43%) of plans mentioned green cleaning. Finally, Green Investment is concerned with how an institution manages its endowment funds. These investments are often managed by a professional investment manager and are targeted toward socially responsible companies, non-fossil fuel companies, and/or the ‘green industry’. Green investment does *not* include the direct funding of sustainability projects on campus. Thirty percent (30%) of plans mentioned green investments. Figure 4.7 displays the number of sustainability plans that included each of these elements from the *Operations* category.

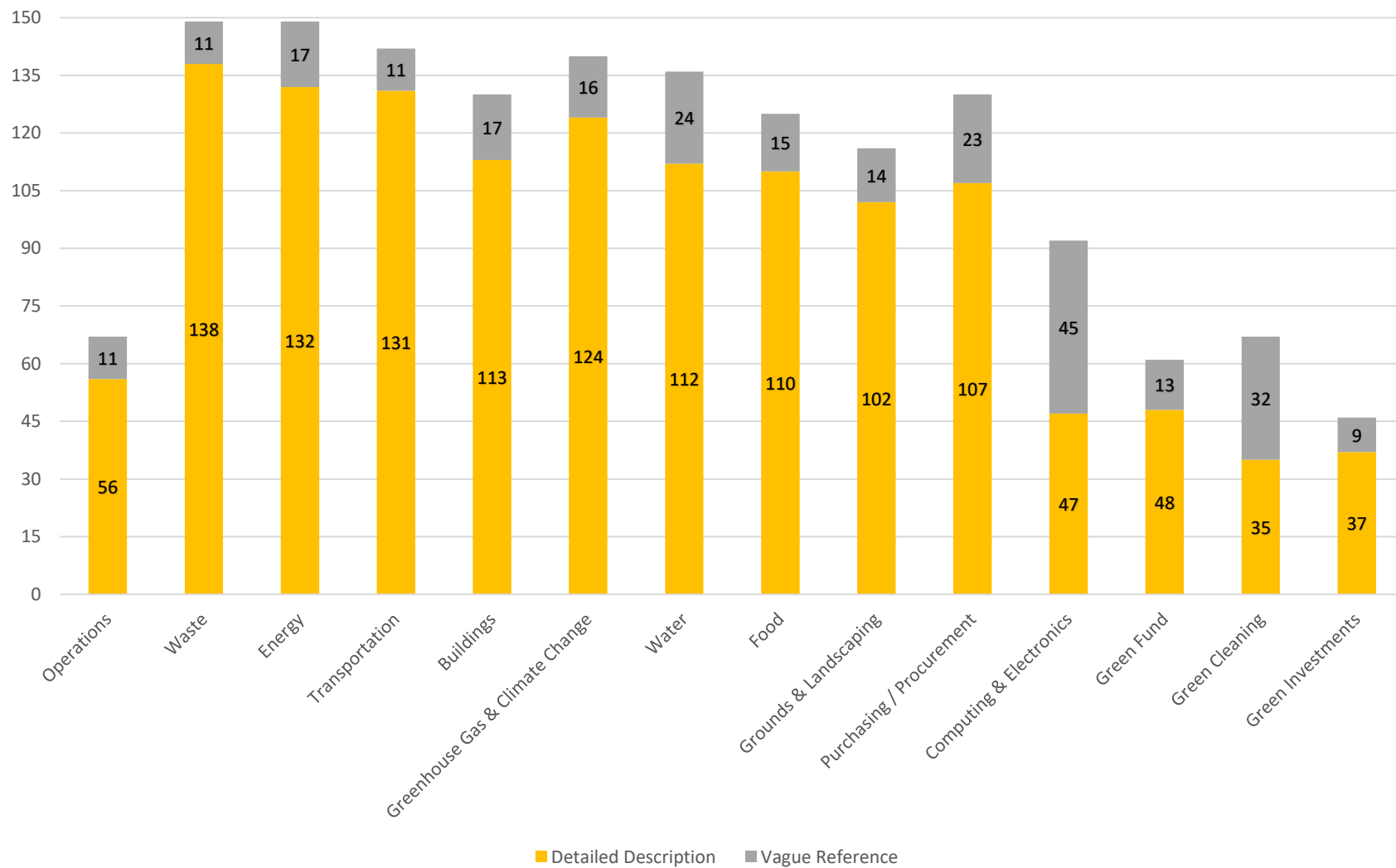


Figure 4.7. Number of campus sustainability plans that include 'Operations'. n = 155

Academics

Academics focuses on curricular and co-curricular activities that make up the primary function of institutions of higher education. Sustainable academics seeks to integrate sustainability concepts into the core mission of colleges and universities. Eighty-one percent (81%) of sustainability plans either mentioned the importance of academics in sustainability or dedicated an entire section to the topic. Curricular activities are those that happen inside the classroom experience. The focus is to incorporate sustainability concepts into the educational curriculum. Eighty-three percent (83%) of sustainability plans mention enhancing the curriculum related to sustainability. Co-curricular activities are educational opportunities that are complimentary to a student's learning experience but are outside of the regular curriculum (Furman University, 2009). Internships, student organizations, conferences, and competitions are some examples of co-curricular activities. Sixty-nine percent (69%) of sustainability plans mention the importance of integrating co-curricular activities to enhance campus sustainability. Using the Campus as a Living Laboratory is an educational concept that uses the campus buildings and grounds as teaching tools. This place-based learning method helps to link theoretical concepts with practical application by teaching in a real-world setting (Hansen & Savage, n.d.). Incorporating the campus as a living laboratory for teaching sustainability can also lead to positive sustainability outcomes and is a method mentioned in 52% of sustainability plans. Figure 4.8 displays the number of sustainability plans that included each of these elements from the Academics category.

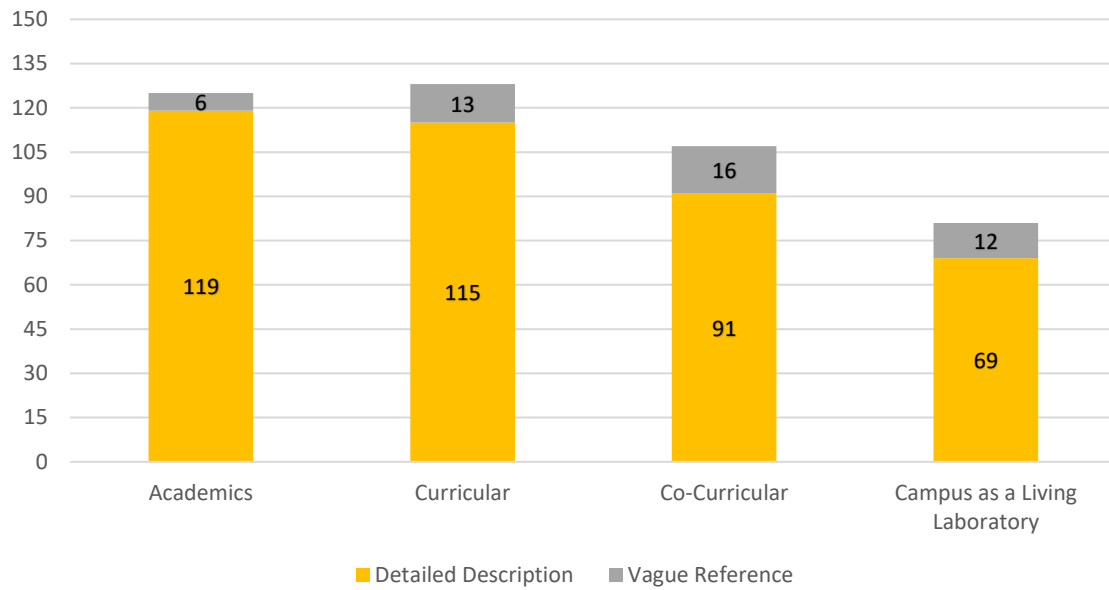


Figure 4.8. Number of campus sustainability plans that include ‘Academics’. n = 155

Planning & Administration

Planning & Administration deals with the governance of an institution. While the other categories mostly deal with what an institution does, governance deals with what an institution says. Planning & administration encompasses the commitments a school makes, the plans and documents a school writes, the staff a school dedicates to sustainability, and the direction the institutional leadership gives. The creation of a sustainability office is frequently cited under the planning & administration section. Forty percent (40%) of sustainability plans included planning, administration, and/or governance in their text. The category that scores how well a plan Ties Sustainability to the Mission is included to provide insight into how well plans articulate their sustainability values into the larger purpose for existing. Seventy percent (70%) of sustainability plans made some effort to describe how sustainability is incorporated in the institution’s mission, vision, values, or traditions. The next element scored if an

institution Describes Themselves as a Leader in sustainability. A school with a deep-seated culture and long history of sustainability is much more likely to self-identify as a leader than a school that has just recently started formal efforts to become more sustainable. Thirty-nine percent (39%) of plans identified the institution as a sustainability leader. Planning efforts are much more likely to succeed if there is a Commitment from the Top Administration. Three distinct commitments were found within the sustainability plans which led to a somewhat narrow scoring of this element. A plan only received a ‘2’ if it included a letter from the president or top administrator of the institution. A plan received a ‘1’ if there was a letter or statement from a vice-president, if personnel from the vice-president level or above was involved with the plan creation, or if the president convened the committee that wrote the sustainability plan. Fifty-three percent (53%) of sustainability plans showed some commitment from the top administration. Figure 4.9 displays the number of sustainability plans that included each of these elements from the Planning & Administration category.

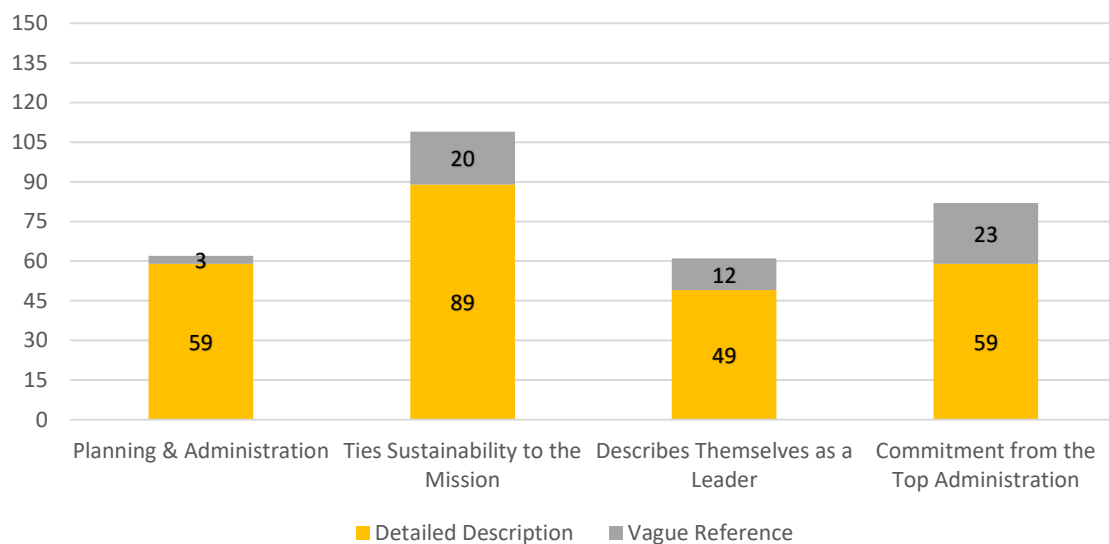


Figure 4.9. Number of campus sustainability plans that include ‘Planning & Administration’. n = 155

Social Equity

Social Equity describes the human element of sustainability. Figure 4.6 illustrates the importance of social equity to the holistic concept of sustainability. Only 15% of sustainability plans included an entire section to social equity. One component of social equity is the Health & Wellness of the people who make up the campus community. This could be from healthy food choice, exercise opportunities, or a wellness plan for employees. Thirty-eight percent (38%) of sustainability plans included some mention of health or wellness. Another component of social equity is the promotion of Diversity & Inclusion which could mean discouraging discrimination or encouraging the enhancement of opportunities for the inclusion of minorities. Thirty-four percent (34%) of sustainability plans mentioned equity, diversity, or inclusion. Affordability is a third component of social equity which could include financial assistance to low-income students or minimum pay standards for employees. Sixteen percent (16%) of sustainability plans mentioned affordability. Figure 4.10 displays the number of sustainability plans that included each of these elements from the Social Equity category.

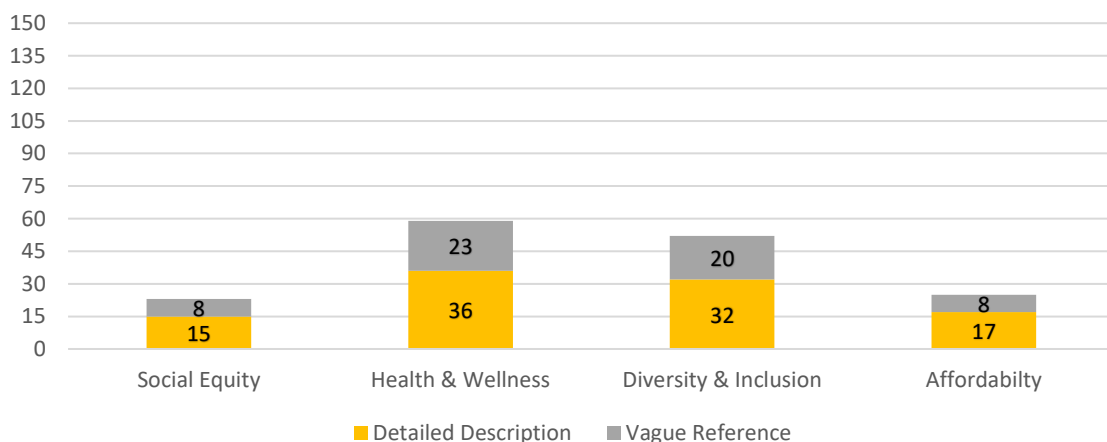


Figure 4.10. Number of campus sustainability plans that include ‘Social Equity’.

n = 155

Research

Research is another core function of some institutions of higher education alongside academics. However, it should be noted that not all institutions of higher education perform research. Many of the 2-year colleges and even some 4-year colleges and universities exist solely for educational purposes. The type of school was not considered when scoring for Research. Among the 155 sustainability plans studied, 47% mentioned research in sustainability. Forty-five percent (45%) of sustainability plans mentioned some type of Incentives for Research of sustainability topics. Aside from incentivizing sustainability research, 32% of sustainability plans mention various ways to share, acknowledge, and Highlight Research related to sustainability. Figure 4.11 displays the number of sustainability plans that included each of these elements from the Research category.

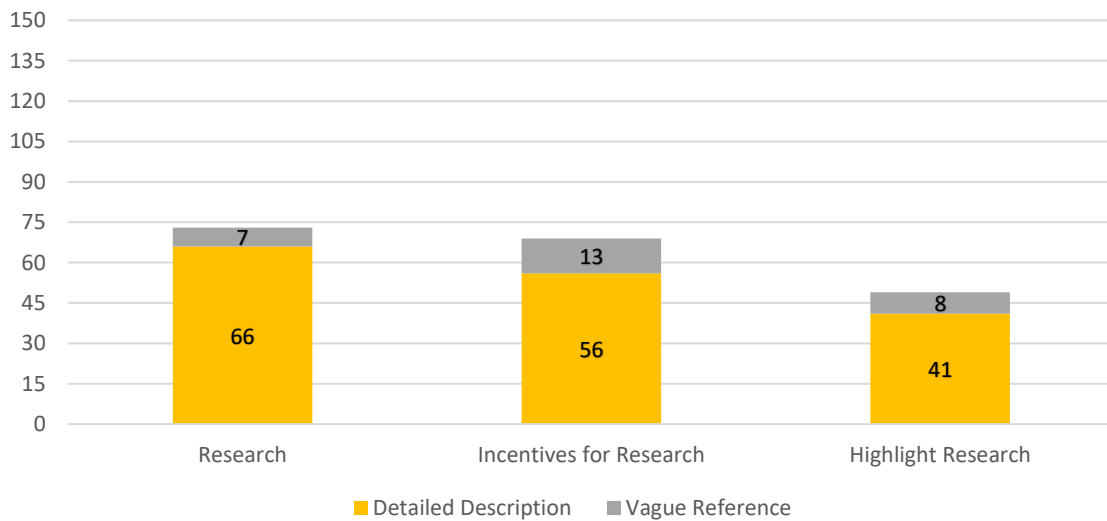


Figure 4.11. Number of campus sustainability plans that include ‘Research’. n = 155

Engagement

The final category of this study is Engagement. Engagement and outreach expands the focus of sustainability efforts from the core group of practitioners to a much wider audience of stakeholders. Community engagement is sometimes given its own section within a sustainability plan, but it is also frequently interwoven with the other sustainability goals throughout the plan. This study only scored Engagement as a ‘2’ if the plan included a dedicated section to the topic. Seventy-five percent (75%) of sustainability plans mentioned engagement or outreach. More specifically, community engagement can refer to the ‘campus community’ or to the ‘local community’. Campus Community Engagement refers to the faculty, staff, and students that live and work on the institution’s campus and is mentioned in 89% of sustainability plans. Local or Regional Community Engagement refers to the city and greater regional area where the institution is situated and is mentioned in 72% of sustainability plans. Figure 4.12 displays the number of sustainability plans that included each of these elements from the *Engagement* category.

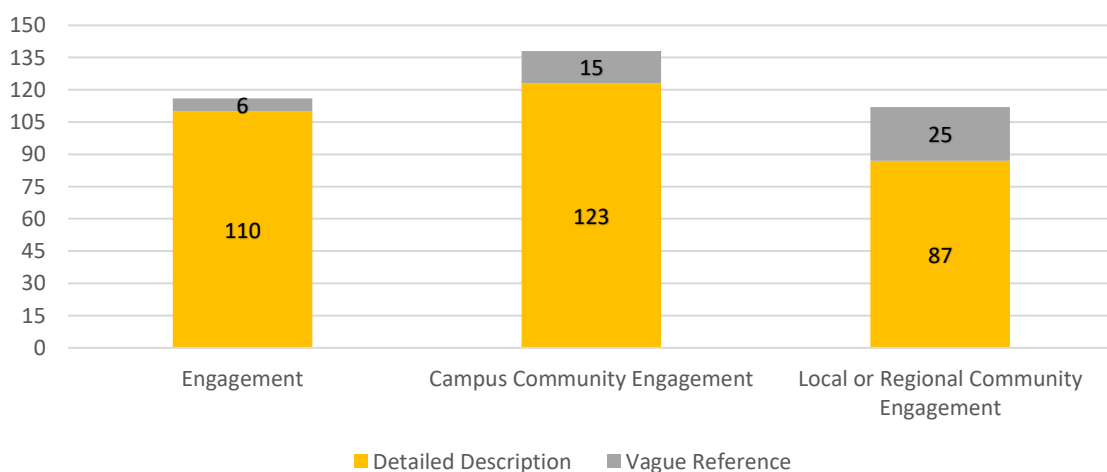


Figure 4.12. Number of campus sustainability plans that include ‘Engagement’.

n = 155

Plan Policy Category Averages

To determine how often a category and its respective elements were included in campus sustainability plans, the average score for each category and its respective elements was calculated for each plan. These category score averages were summed together and divided by the total number of plans (n=155). These overall averages show the relative frequency that each category and its elements appear in all plans. The results are reported in Table 4.13. Due to the rating system, the highest possible score is ‘2’.

Table 4.13

Average Scores for Each Category and Elements Among All Campus Sustainability Plans

Category	Average Score
Operations	1.310
Academics	1.347
Administration	0.919
Equity	0.418
Research	0.761
Engagement	1.475

Chapter Summary

This chapter presented the results of a document analysis of 155 campus sustainability plans. These results included demographic data of the institutions writing the plans, the level of plan quality, and the content presented in the plans. Implications of these findings are discussed in Chapter 5.

V. DISCUSSION

Chapter Purpose

The purpose of this chapter is to interpret the findings of this research and discuss their implications. The results chapter presented three main categories of research: demographics, plan quality, and plan policy. This chapter will follow in the same format with the addition of an overall assessment at the end. Most of the figures and tables mentioned in this discussion refer to those found in Chapter IV Results. This chapter will not discuss every result; only the outstanding results and those deemed most important will be included in the following discussion. The trends highlighted in this discussion will serve to promote, enhance, and refine ongoing and future campus sustainability planning efforts.

Demographics

The production of campus sustainability plans has increased by 574% in the past decade. When White (2014) performed her research in 2011, there were 27 campus sustainability plans across the country; as of March 2020 there were 155. Despite this increase in the number of campus sustainability plans, they still only represent 12.5% of the U.S. higher education student population. A majority of US institutions of higher education have yet to develop a sustainability plan. As sustainability continues to grow in popularity and importance throughout the globe, it is expected that the role of campus sustainability planning will also increase.

It is notable that there were four college or university systems that had

sustainability plans. While in most cases a sustainability plan covers one campus, a system-wide plan sets the minimum standards that an entire group of campuses must adhere. The California State University System has 23 campuses and eight more centers, the Iowa University System includes five campuses, Seattle Colleges is composed of three colleges and five centers, and the University of California System includes 10 campuses, three labs, and numerous centers. Not only do these sustainability plans include more students and more area, but they also come from a higher authority. The highest office at the university level is that of the President. If the institution is a part of a wider system, then the President is subordinate to the Board of Regents and the Chancellor. While only 39% of sustainability plans indicated direct approval by the President (refer to Figure 4.9), all the system sustainability plans were issued by the Board of Regents or the Chancellor. This authority adds gravitas to the documents issued by these entities.

Table 4.1 shows the type and size of the institutions that have sustainability plans. The U.S. Department of Education (2018) lists 769 public 4-year higher education institutions, 1,941 private 4-year institutions, and 1,705 2-year institutions in the United States. This means that nearly 11% of public schools had sustainability plans versus 3% of private schools and less than 1% of community colleges (2-year schools). Public 4-year institutions clearly have felt a greater need to produce sustainability plans than their counterparts. Likewise, larger public and community schools also have a higher tendency to produce sustainability plans, although this trend is reversed among private schools. The greatest number of sustainability plans have been written by large, public institutions followed by small private institutions. The reason for these trends is

unknown.

The geographic distribution of campus sustainability plans is another area that is difficult and complicated to explain. California and New York clearly have the most plans followed by Massachusetts, Pennsylvania, and Michigan. Comparing the sustainability plan map (Figure 4.1) with a population map of the country (Figure 5.1) shows many similarities. There are also some similarities between the sustainability plan map and a political orientation map (Figure 5.2) with a number of exceptions. When considering political orientation, it may be more meaningful to consider which states do not have sustainability plans. Democratic (blue) states such as Hawaii, Nevada, and Delaware have no plans and others have only one or two. There is a stronger correlation between population and the number of campus sustainability plans than there is between political orientation and campus sustainability plans, although this is not a definite conclusion since there may be a disproportionate number of higher education institutions in certain states. Broadening out the view to the regional level, it appears that certain states are outliers within their regions (refer to Figure 4.2). California has the most sustainability plans (n=14) while the Western region has the fewest (n=31). Texas and Colorado also stand out from their surrounding regions. Delaware and West Virginia stand out from their regions because of their lack of plans.

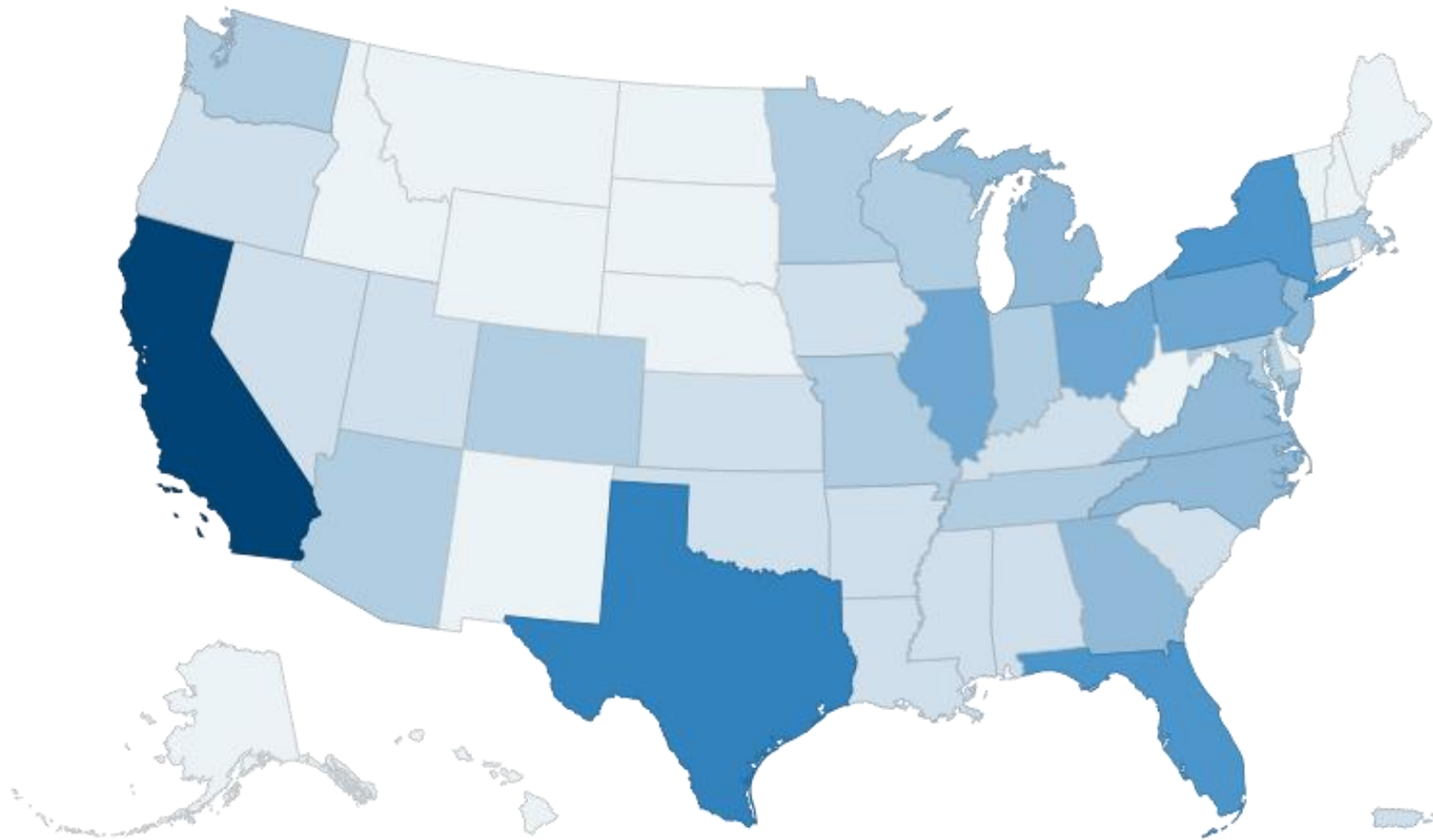


Figure 5.1. United States population by state, 2015. Source: Data USA (2018). *United States Map of Population by State (2015).*

Wikimedia Commons. [https://commons.wikimedia.org/wiki/File:United_States_Map_of_Population_by_State_\(2015\).svg](https://commons.wikimedia.org/wiki/File:United_States_Map_of_Population_by_State_(2015).svg)

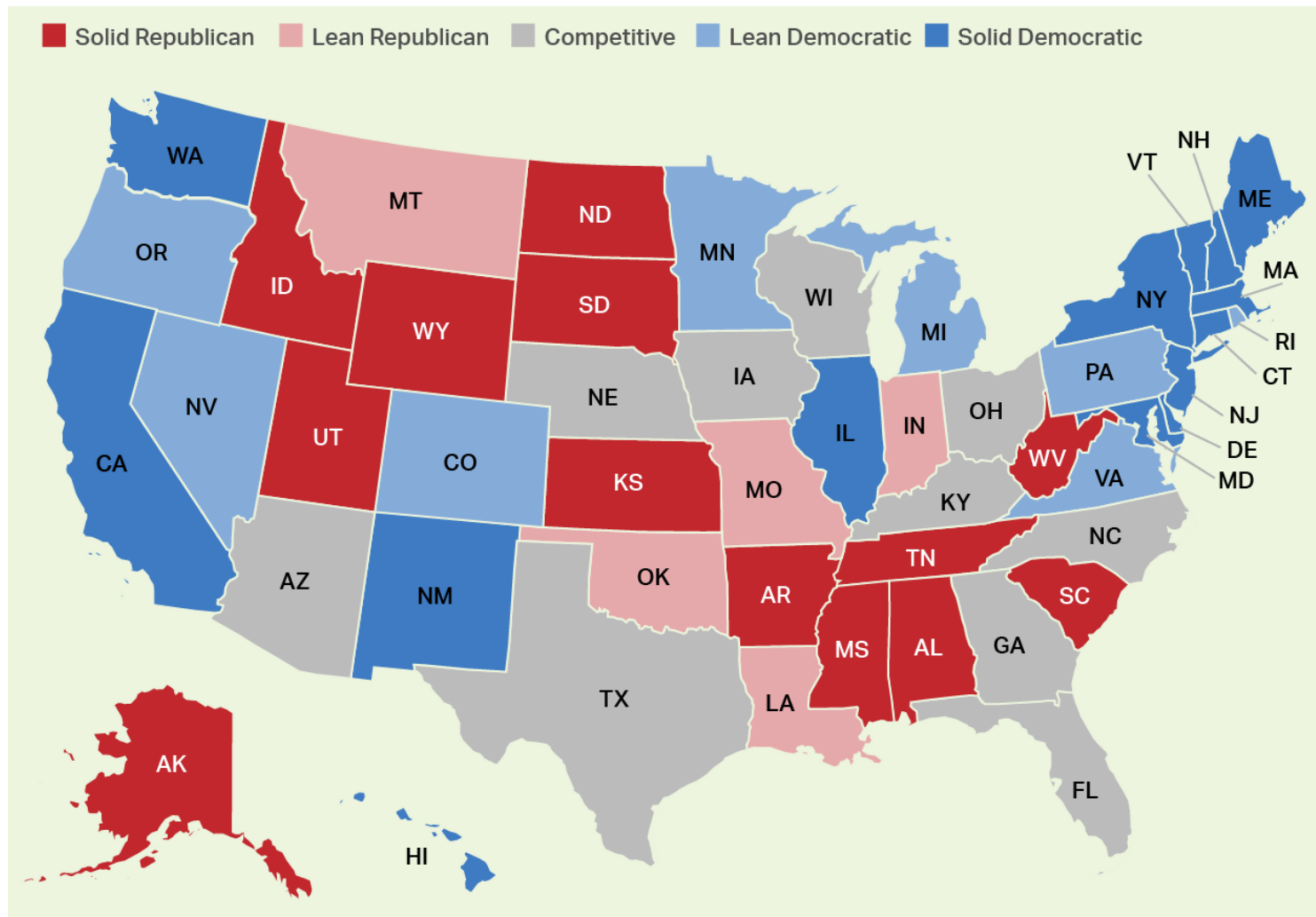


Figure 5.2. United States party affiliation by state, 2018. Source: Jones (2019). *Democratic States Exceed Republican States by Four in 2018.* Gallup. <https://news.gallup.com/poll/247025/democratic-states-exceed-republican-states-four-2018.aspx>

Studying the sustainability agreements that institutions of higher education participate in provides more information about the agreements themselves than it does the institutions. For example, STARS has an 89% participation rate among institutions with sustainability plans while the Talloires Declaration only has a 24% participation rate (Table 4.2). Is this because the institutions that agreed to the Talloires Declaration have a higher commitment to sustainability or is it because STARS is more recent, well-known, and useful? Usefulness seems to be a factor in the commitment to these agreements. STARS (89% participation) and ACUPCC (56% participation) both provide guidance and metrics by which a campus can measure themselves whereas the Talloires Declaration (24% participation), We Are Still In pledge (42% participation), and the American Campus' Act on Climate (39% participation) are simply statements.

Table 4.3 shows that small schools are more likely to participate in all agreements as compared to their medium and large counterparts (except for Talloires where small and large schools are about equal). An argument that small schools have more to gain and less to lose from a sustainability commitment is somewhat negated by the fact that large schools are more likely to participate in an agreement than are medium sized schools. Comparing institution types, community colleges are far behind their counterparts with regard to the commitments. These schools probably have fewer resources to dedicate towards sustainability which is also qualified by the number of community colleges with sustainability plans. Sustainability may also be a lower priority because these schools do not have to compete for students in the way that colleges and universities do.

The mean plan length is 38 pages. Only one plan was over 200 pages long while

another ten were over 100 pages. On the short end, there were two plans that were only one page long and four more less than five pages. Medium sized plans (11-50 pages) are preferable because that length allows enough space to say what the plan needs to say without being overly verbose. Short plans must be highly efficient with their use of space to include the necessary elements of a well-written sustainability plan and long plans tend to have the information they are trying to convey lost in lengthy discussions. A sustainability plan should be a document that provides clear direction, not a persuasive argument.

Sixty-three percent (63%) of institutions have published only one version of their sustainability plan (Table 4.6). There are three potential reasons for these lack of updates. First, campus sustainability plans are relatively new, with the first plan only having been introduced in 2000. Since some institutions make plans for 10, 20, or even 50 years into the future, there may be little need for sustainability plan updates at the point in time. A look at the plans that have given expiration dates indicates that 79% do not expire until 2020 or thereafter (Figure 4.5). Second, many sustainability plans referred to themselves as “living documents”. This phenomenon was not included in this study, so the frequency of occurrence of this term is unknown, but there are examples of what it means to be a “living document”. The College of William & Mary’s Sustainability Plan (2018, p. 4) says, “It is a living document, meant to steer progress and share vision, while allowing us to reflect, refine and innovate along the way.” Furman University’s Sustainable Furman (2009, p. 6) says, “*Sustainable Furman* is a living document – not a static plan. It is intended to provide a flexible blueprint capable of responding to the unpredictable challenges and opportunities of uncertain times and an

unknown future.” Lastly, Purdue University’s Sustainability Strategic Plan (2010, p. 5) says, “As a ‘living document,’ the plan will be revisited and updated regularly to incorporate new voices, set new goals, reflect current best practices, and inspire continual sustainability improvements on campus.” The fact that many institutions regard their plan as a living document which may be updated at any time may reduce the need for subsequent formal revisions to be published. Third, there seems to be a decline in interest in the production of stand-alone campus sustainability plans. Although the data in Figure 4.4 is inconclusive, it shows a reduction in the number of new plans produced per year as compared to the peak (n=17) in 2009. The year 2019 is especially notable as there was a sharp decline in plan production at a level not seen since 2005 (n=3). Figure 4.4 also shows that 16% of sustainability plans have not been updated since 2010, with four of those dating back to 2005. Twenty-one percent (21%) of sustainability plans that gave an expiration date have expired without any updates (Figure 4.5). Cox (2015, p. 97) and Jamison (1996, p. 3) both recommend annual updates or reviews to maintain plan validity. While the exact reasoning behind these lack of updates is likely unique to each institution, it may also show an abandonment of the sustainability planning process altogether or it may show a move to incorporate sustainability goals into other institutional documents. If an institution’s sustainability initiative was spearheaded by a single individual or department, should anything happen to that key player(s), the entire sustainability initiative could potentially fall by the wayside. This was the case with Suffolk University that had sustainability staff around 2012 but has since had a complete turnover and no longer has dedicated sustainability staff or a sustainability office (A. Lindsey, personal communication, March 1, 2020). Institutions may also find a stand-

alone sustainability plan too ineffective and decide to incorporate their sustainability goals within other institutional planning documents. The Randolph College Sustainability Proposal (2009, p. 40) acknowledges there are many decisions an institution must make when considering how to implement sustainability on campus. “This includes where the institution decides to include the sustainability plan; such as within a Master Plan or separately.” Johnson County Community College is one example where they found stand-alone sustainability plans are not very useful and have integrated sustainability into the campus master plan (J. Antle, personal communication, February 28, 2020). Second Nature, the organization that oversees ACUPCC, even realizes there are many plans a college or university must contend with. “The creation of disparate plans often results in lack of awareness and participation in the planning process and outcomes. Plans are often shelved once created and rarely reviewed or updated as implementation progress[es] (if they are implemented at all)” (Second Nature, n.d.-c).

Table 4.8 describes how many sustainability plans were published before and after STARS and ACUPCC. This serves to inform an answer to one of White’s (2014, p. 232) questions regarding the motivation for a campus to develop a sustainability plan. These data do not clearly indicate that sustainability plans were written as a result of a particular commitment. Sixty-two percent (62%) of plans were written prior to their participation in STARS while 19% of sustainability plans were written prior to participation in ACUPCC. While the numbers may indicate a correlation between ACUPCC and sustainability plans, the reasons are not so clear. ACUPCC requires a climate action plan, not a sustainability plan. Some institutions have combined the two documents, but it is not a direct causation that ACUPCC leads to sustainability plans.

The years the commitments were introduced may be significant. Figure 4.3 shows that Participation in ACUPCC and STARS was the strongest immediately after the programs were created. ACUPCC began in 2006 and saw the greatest number of signatories in 2007 (60%). STARS started in 2010 and had the greatest number of participants in 2011 (32%). Sustainability plan production peaked in 2009 (Figure 4.4). Thirty-three percent (33%) of all sustainability plans were first written before STARS was even conceived. Figure 5.3 (below) was produced by combining the data in Figure 4.3 and Figure 4.4. The 2009 peak in campus sustainability plans occurs shortly after ACUPCC was created, and there is no corresponding peak after STARS, but ACUPCC participation has also been nearly zero since 2009 whereas sustainability plan production has been steady. White (2014, p. 238) notes that the institutions writing sustainability plans and participating in sustainability agreements are diverse and their motivations for doing so are equally diverse. Further research will be needed to understand the motivations for creating sustainability plans and participating in sustainability agreements. The article by Lozano et al. (2013) is a good starting point to understanding how various international sustainability declarations influence campus sustainability efforts.

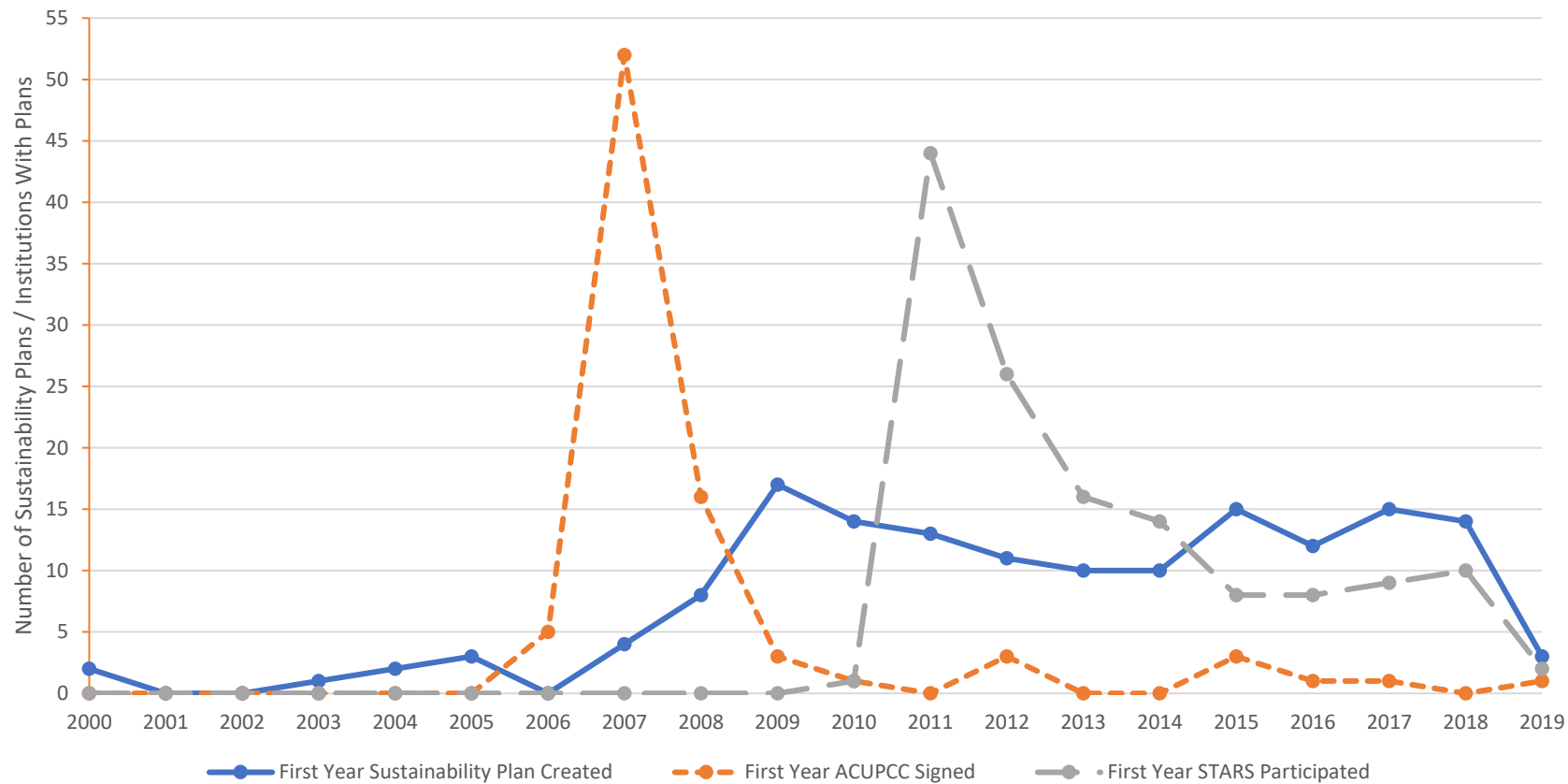


Figure 5.3. Comparison of first year campus sustainability plans were written to the first year institutions began participating in ACUPCC and STARS. Campus sustainability plans = 155. ACUPCC institutions = 87. STARS institutions = 137.

Plan Quality

A transparent plan will describe the process through which the plan was developed, including who wrote the plan. There is no explanation for why 22% of sustainability plans made no reference to the author(s) and another 14% were unclear about the authors. A clear attribution of the person or people who prepared the plan communicates professional competence and is probably the easiest way to enhance plan quality (Baer, 1997). The most common authors of campus sustainability plans are committees of faculty, staff, and students (28%). These committees sometimes include other members such as contractors, consultants, or community members, but all are a diverse cross-section of the whole campus community. This serves to provide a wider array of viewpoints and moderates the content that goes into the final plan. These committees are also usually convened by a higher authority on campus to which the committee is responsible for creating results in a timely manner. In contrast, plans made by a single person (16%) have less diversity of input, less authority from higher administration, and fewer champions of the plan's success. Six of the plans were written by students, sometimes with the help of a faculty member. This is taking a 'campus as a living laboratory' approach to another level and demonstrates how sustainability can be promoted even in the absence of formal administrative support. While these student-created plans may have a harder time being implemented, they save a considerable amount of resources since staff are not taking time out of their other work to create the plans. Although plans created by outside consultants do not divulge the costs to create the plan, a quick review of professional business plan consulting costs puts a complete business plan between \$5,000 and \$50,000 (Clarke, n.d.). This would likely be the most

expensive route to creating a campus sustainability plan, but professional consultants are paid for their expertise and professionalism. Of the 17 sustainability plans that involved consultants, three scored a '1' on plan organization and the other 14 scored a '2'. As will be discussed later in this chapter, each sustainability plan was given an overall score that is a relative comparison between all campus sustainability plans. Consultants were involved in the creation of four of the ten highest ranked plans (40%) and 12 of the top 50 plans (24%). Additionally, the highest ranked sustainability plan was written by a consultant. Considering that only 11% of sustainability plans included a consultant, they do generally seem to provide a quality service.

Including stakeholder engagement is a more challenging process because it requires stakeholder engagement to have occurred. However, this step is crucial and should not be overlooked. Stakeholder involvement not only increases plan quality and the sound formulation of realistic plan policy (Cox, 2015), but it also ensures greater plan success because of a better educated public and the “formation of advocacy coalitions that will work to see that the proposals made in plans are acted upon” (Burby, 2003, p. 44). The most obvious choice for stakeholder engagement is including faculty, staff, and students in the planning process, which many plans did (38%). Other important stakeholders might be on-campus contractors, such as food-service providers, waste haulers, and transportation entities. Some sustainability planners were even more ambitious and included the civic community, alumni, public officials, business leaders, and in one case the Board of Trustees. As shown in Figure 5.4, the Harvard University Sustainability Plan (2014, p. 29) presents a very descriptive six-step model of how they created their plan. First, they start with working groups that prepare baseline reports and

draft goals. Second, they engaged faculty, staff, and students for their insight and comments. Third, the plan writers draft a plan with goals, standards, and commitments based on the feedback. Fourth, a review committee of senior level officials commented on the draft plan. Fifth, community meetings were held for broad stakeholder involvement. Finally, the plan was submitted to the administration for final sign-off. Greater engagement leads to greater plan success, so every effort should be made to produce a campus sustainability plan with as much stakeholder involvement as possible. Engagement opportunities can include roundtables, charettes, working groups, outreach events, surveys, public meetings, private meetings with high-ranking officials, and many other methods. These meetings and methods should be documented in the sustainability plan along with which stakeholders were engaged.



Figure 5.4. Harvard University’s plan creation process. Source: Harvard University (2015). *Harvard University Sustainability Plan: Fiscal Year 2015-2020*. Green Harvard. <https://green.harvard.edu/campaign/our-plan>

SMART goals are a way to ensure the plan is clear and precise. Providing clear goals and assigning measurability, accountability, costs, and deadlines ensures the plan will be executed accordingly. Most plans did provide clear goals (87%) and some (33%) provided a timeframe for their goals (refer to Table 4.10). However, most campus sustainability plans did not provide measurability (25%), accountability (20%), or costs (5%). Measurable goals included either a direct reduction in the use of a particular resource (25% less water), a measurable increase in the occurrence of an activity (5 more sustainability courses offered), or a measurable outcome (10% savings on energy bills). Plans that included accountability directly stated the person or department that was responsible for a goal's progress. In agreeance with White's (2014, p. 234) findings, cost estimates are almost non-existent. While some plans did discuss how financing of the goals would be made available, or commented on the lack of available funds, only seven plans actually estimated what each goal would cost. Cost estimates are helpful to administrators that have to prioritize many different requests with limited funds available. They also help identify the timeframe a goal is realistically achievable. A timeframe was sometimes indicated as a year or date, but often was represented as short, medium, and long-term goals. Target deadlines are easier to determine if there is already an idea about how much an action will cost and where the funding will come from. Plans that do not include SMART goals are more wishful thinking than actual plans.

References to other documents are one way to tie together the "disparate plans" (Second Nature, n.d.-c) that institutions have. These references ground the sustainability plan in other meaningful documents that can result in greater chances of implementation. A plan that does not tie into any other plan or document can easily be forgotten. The

more important and well-known the plan or document, the better grounded the sustainability plan will be. Many plans (85%) did effectively refer to other institutional documents. There are many plans and documents at the institutional level that can tie in to a sustainability plan, such as the master plan, strategic plan, climate action plan, stormwater management plan, forest management plan, integrated pest management plan, landscape plan, power purchase agreement, transportation plan, and still many others. There are far fewer references to plans at the local, regional, national, and international levels. Compared to the 85% of sustainability plans that referenced institutional documents, 38% referenced local or regional documents and only 25% referenced national or international documents. There are fewer relevant documents at these higher levels, but these may add an even greater dimension to the sustainability plan. If a state law affects campus sustainability in some way, it would be worth mentioning. Also, national or global initiatives such as the *We Are Still In* pledge or the United Nations *Sustainability Development Goals* are well-known markers that give a greater sense of importance to a plan. For Catholic institutions, a commitment to the Pope's encyclical *Laudato Si'* is a way to make a statement of both an institution's commitment to its faith background and its commitment to sustainability.

The accessibility and organization of any plan is the first thing readers will see. A sustainability plan may have the widest interested audience of any campus plan. If it is to be taken seriously, it needs to have a polished look. Sustainability is more than reducing the campus carbon footprint; it is also a marketing tool, a teaching opportunity, and a community builder. Forty percent (40%) of the sustainability plans reviewed in this study demonstrated a solid awareness of the importance of accessibility and organization.

These plans were easy to read, easy to understand, easy to follow, and pleasing to look at. Another 30% of the plans scored a ‘1’ in this category demonstrating that they understood the importance of a well-organized plan but may not have had the resources to elevate it to the highest level.

The term *sustainability* has many different meanings in many different contexts. Even among sustainability practitioners, there are different interpretations of the word. A *sustainability plan* needs to define what it means by *sustainability*. However, 33% of sustainability plans did not even attempt to address what this word means to them (Table 4.12). Aside from using the standard Brundtland definition (35% refer to this) and the three pillars definition (52% refer to this), getting to define sustainability is an opportunity to make the term unique and specific to the individual institution. Thirty-four plans (22%) decided to use an alternate definition that suited the uniqueness of their school. Florida Gulf Coast University uses the Earth Charter definition of “Respect for nature, universal human rights, economic justice, and a culture of peace.” Texas A&M University writes their definition “for future generations of Texas Aggies, the Texas A&M University community, and beyond.” Macalester College reimaged the three spheres diagram (refer to Figure 4.6) to put the “environment” as a large circle surrounding the smaller circles of “social justice”, “economics”, and “well-being”. The University of Notre Dame, a faith-based school, incorporated God into its definition. Appendix G presents a storehouse of definitions from institutions that were thinking outside the box.

Plan Policy

Plan policy may be the first thing that comes to mind in relation to campus sustainability plans. The plan policy describes the actual content of the plan. There are many different policies or methods that a campus might employ to enhance sustainability. It was not the intent of this study to identify these different methods. Rather, this study tallied broad groupings of strategies that have been featured in previous sustainability plans. The combination of measures employed are all unique to each campus and their exclusion or inclusion in a plan does not make that plan a success or failure. As technology and trends change over time, some methods may fall out of favor and less used methods may become mainstream. It may be determined that certain sustainability strategies are more, or less, effective over time. These data represent only what has been written in previous sustainability plans.

Operations

All but one campus sustainability plan discussed some element of sustainable operations, but only 36% of plans included a section devoted to the topic (Figure 4.7). This is because many plans gave the individual elements of operations (i.e. water, waste, energy, etc.) its own section instead of lumping them under a single operations section. Taken as a whole, Table 4.13 shows that operations is the third most discussed topic (score=1.310), behind engagement (score=1.475) and academics (score=1.347). This is in contrast to other studies (Lidstone et al., 2015; Vaughter et al., 2016; White, 2014) that found operations to be the most discussed section in campus sustainability plans. This result is due to the incorporation of the lower scoring computing & electronics (59%),

green fund (39%), green cleaning (43%), and green investments (30%) into the operations category. The previous studies on campus sustainability plans did not include these aspects of operations. If these lesser discussed topics were removed, operations would have the top average score of 1.554.

Waste (n=138), energy (n=132), transportation (n=131), and greenhouse gas emissions (n=124) were discussed more often than any other single topic. This is likely because of sustainability's strong association with environmental protection and these activities' perceived benefits for the environment. Climate change has become one of the most pressing issues of the time, and higher education is increasingly looked to for solutions to the problem (Cox, 2015). Furman University's plan states (2009), "This role is not surprising, for colleges have always been catalysts for action and centers for leadership." University sustainability is also highly linked with operations (Vaughter et al., 2013). ACUPCC's required climate action plan is solely focused on institutional operations. AASHE STARS offers more credits in the operations category than any other (Association for the Advancement of Sustainability in Higher Education, 2019).

Green Investments are the lowest scoring element within operations. Green investing is a form of socially responsible investing (SRI) which is a rapidly growing mechanism to invest in companies that have positive social impacts (Chen, 2020). Because of the billions of dollars that institutions of higher education have in endowment funds (U.S. Department of Education, 2019), SRI is a powerful driving force for a greener and more socially responsible society. However, this topic can be politically sensitive, and it is not easy to pull millions of dollars out of one fund and put it into another fund. Still, there is a growing movement by students across the country to

demand SRI (Grady-Benson & Sarathy, 2016).

Academics

Sustainability is not just an activity to be done behind closed doors, but it should be a core function of the educational experience (University Leaders for a Sustainable Future, n.d.-a; Cortese, 2003). Most campus sustainability plans did discuss sustainability in academics, with 77% of plans including a section devoted to the topic (Figure 4.8) and the second highest average score (Table 4.13). Both curricular (n=115) and co-curricular (n=91) activities were considered as a core function of campus sustainability. However, incorporating the campus as a living laboratory (n=69) lagged considerably behind. The living laboratory concept is unique to educational settings (Hansen & Savage, n.d.) and therefore may not be as widely known. This does not diminish the importance of incorporating the campus as a living laboratory because this method not only serves to directly educate students, staff, and campus visitors, but it also employs the concept of service learning project to create positive sustainable outcomes for the campus (Cortese, 2003).

Planning & Administration

Only 59 plans included a section on planning & administration, which is surprising since sustainability plans themselves would fall under this category. Additionally, sustainability offices, personnel, and other environmental policies would be included in a discussion on planning & administration. About half (57%) of the plans successfully tied the message of the sustainability plan with their institution's mission or

purpose. While this element may be only one sentence or one paragraph, some plans tied sustainability to their core strategic plan. These sustainability plans listed the directives stated in the strategic or master plans that supported each sustainability goal. This ability to tie together the goals of each plan enables a much greater impetus to implement the sustainability plan. Only 49 plans (32%) described the institution as a leader in sustainability and another 12 mentioned a leadership role. Despite being a relatively low number, considering that a leader can only account for a small percentage of a population, this number may not be a bad sign. This element has less to do with plan quality or plan policy than most of the other elements analyzed, but self-identifying as a leader shows commitment to the idea sustainability. To requote Furman University (2009), “[C]olleges have always been ... centers for leadership.” A very important measure of plan success is a commitment from the institutional leadership (Bekessy, Samson, & Clarkson, 2007). The higher level the commitment, the better. It is a good sign that 59 of the plans (38%) included correspondence directly from the top office of the institution. As campus sustainability in general and sustainability planning efforts in particular grow in popularity and importance, it should be a priority to achieve buy-in from the highest level of the institution as possible.

Social Equity

Like the findings of White (2014, p. 236), social equity was the least addressed aspect of campus sustainability plans (Table 4.13). It is interesting to note, that despite 52% of plans citing the three pillars definition of sustainability, the two Canadian studies by Lidstone et al. (2015) and Vaughter et al. (2016) did not study the prominence of

social equity in their research. While White noticed a 30% inclusion of social equity among the 27 plans she analyzed, this study only found a 10% inclusion of the topic within the 155 plans (Figure 4.10). Social equity, also termed social justice, seems to be declining in prominence despite being a core component of the three pillars of sustainability. Texas A&M University's Sustainability Master Plan is one of only 15 plans that dedicated a section to social equity and provides some insight into this oversight.

Social sustainability has largely been absent in mainstream sustainability debates as it is the most elusive of the three pillars. However, the conversation is evolving and higher education is investigating better ways to incorporate the topic. Social sustainability encompasses a broad range of ideas, attitudes, and initiatives and cannot be universally prescribed or measured in the same way as many standards for environmental and economic sustainability. (Texas A&M University, 2018, p. 2)

Social progress indicators are still being refined while economic and environmental progress indicators have been around for a much longer time. It appears many institutions of higher education are still struggling with how to incorporate and measure social progress on their campuses. Here, too, Texas A&M's plan provides a potential solution.

Many institutions house an office dedicated to spearheading equality, diversity, and inclusion efforts while a separate office focuses on resource conservation, environmental awareness, and economic payback initiatives. Largely missing in higher education are the rich opportunities that can result from addressing

sustainability in a quilted fashion where environmental, social, and economic issues are integrated into a collaborative fabric in lieu of acting in individual silos.

(Texas A&M University, 2018, p. 3)

The silo effect is an often-cited problem amongst colleges and universities that hinders cooperation between different departments and units (Calhoun, 2011). Several plans did mention that they specifically did not include social equity because it was addressed in a different plan or by their Diversity & Inclusion department. Texas A&M's solution is an integration of the three pillars into a single component as seen in Figure 5.5.

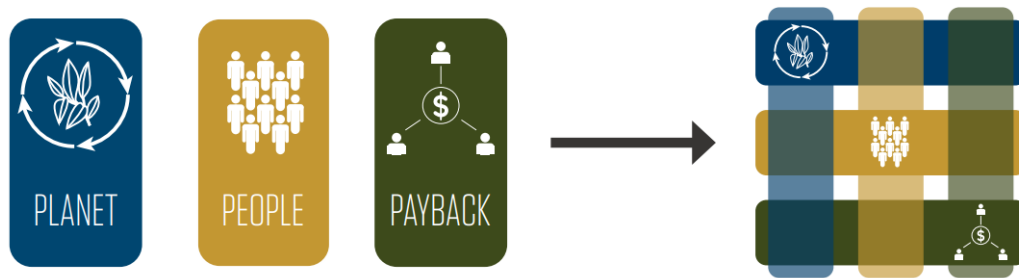


Figure 5.5. Three silos of planet, people, and payback integrated into a quilted fashion.

Source: Texas A&M University (2018). *2018 Sustainability Master Plan*. Texas A&M University Sustainability.

<http://sustainability.tamu.edu/Data/Sites/1/downloads/2018SMP.PDF>

Research

Research is an activity particular to some institutions of higher education but not to others. A distinction was not made between research institutions and non-research institutions. However, 43% of plans dedicated an entire section to the topic. Most of the plans that discussed research included some incentives for promoting research on sustainability topics. What was less often mentioned was highlighting ongoing

sustainability research. Highlighting research includes advertising, sharing, and promoting ongoing and completed sustainability research. It can also help the researcher find new assistants and collaborative opportunities. It is a win-win situation for campus sustainability and for campus research efforts.

Engagement

“[T]he institution must consider the community surrounding it. This includes the level of involvement of the community on campus and influence of campus sustainability initiatives to the outside community” (Randolph College, 2009, p. 40). Engagement was found to be the most included topic among all sustainability plans (Table 4.13). Most plans (89%) included some mention of engaging the campus community (Figure 4.12). These engagements range from promoting one aspect of the plan, such as a zero-waste event, to garnering knowledge and support of the entire sustainability plan. Responsibility for campus sustainability often is put on the shoulders of the individual(s) charged with that function, but this severely limits how widely adopted sustainability can become. Broad, cross-campus engagement of both the plan and the goals within the plan increase the chance that the goals will be implemented. A majority of plans recognize this need and have included it. Less often mentioned, however, is the engagement of the outside community. In 87 of the plans (56%), campuses mentioned engaging with their city officials, the city sustainability department, the local business community, local non-profits and charities, commuters, or other local community members. Some institutions experience what is termed a “town-gown divide” whereby the campus community exists separately from the surrounding local community without opportunities for positive

engagement between the two (Bombyk et al., 2003). Promoting the enhancement of local community engagement adds both notoriety to the sustainability plan and a better image of the institution among the local community.

Overall Assessment

No two campus sustainability plans were alike. Each plan presented certain strengths and weaknesses in its preparation, presentation, and content. There is currently no standard template to use for the construction of a campus sustainability plan, and if there were, it would need to be adaptable enough to fit the unique circumstances of each institution. To objectively identify the best campus sustainability plans, the individual scores for each plan were summed up into one number, termed the ‘Plan Score’. These exemplar plans are presented in Table 5.1. The plan score is relative and subject to the methods and limitations of this study. Not all plans that had a professional presentation were ranked among the top plans and not all the top plans gained a perfect score in the accessibility and organization categories. Rather, the plans presented in Table 5.1 displayed a robustness that encompassed a majority of the ideals of a campus sustainability plan. These plans may be held up as good examples for anyone writing a campus sustainability plan or for the development of a sustainability plan template.

Table 5.1*Exemplar Campus Sustainability Plans Based on Total Plan Score*

Institution	Plan Score	Plan Length	Enrollment ^a
Texas A&M University	77	112	Large
California State University, San Marcos	76	14	Medium
University of Wisconsin, River Falls	74	72	Medium
Missouri State University	72	53	Large
College of William and Mary	69	28	Medium
Haverford College	69	17	Small
Wesleyan University	69	58	Small
Bryant University	68	17	Small
University of Cincinnati	68	144	Large

^a Small = student enrollment of fewer than 5,000. Medium = student enrollment of 5,000 to 15,000. Large = student enrollment of greater than 15,000.

Chapter Summary

This chapter highlighted the outstanding results presented in Chapter IV and discussed why those results may have occurred. The discussion included selected elements of the demographic data, the plan quality data, and the plan policy data. Also presented was an overall assessment of the highest scoring campus sustainability plans. Chapter VI will conclude this study by highlighting the most important research results, providing recommendations for sustainability plan writers, and suggesting questions for further research.

VI. CONCLUSION

Chapter Purpose

A total of 155 campus sustainability plans were analyzed using a document analysis method. The analysis evaluated 65 different elements that included measures of institutional demographics, plan quality, and plan policy. This study is the most comprehensive study of campus sustainability plans to date and provides more contemporary analysis of such plans as compared to the older studies. The purpose of this concluding chapter is to summarize the most important findings of this study, to provide recommendations for campus sustainability plans, and to provide direction for future research.

Highlighted Results

Demographics

There has been a dramatic increase in the number of campus sustainability plans in the past decade. Public 4-year schools are far more likely to write a sustainability plan than are private or 2-year institutions. There are no clear trends related to school size. While most campus sustainability plans have been written for individual colleges or universities, results indicate that several college/university systems have produced overarching plans for all the schools in that system. The distribution of the plans across the United States seems to be relative to the population size of each state.

Most institutions with sustainability plans participate in the STARS program while just over half participate in the ACUPCC commitment. However, fewer than half

of the institutions have chosen to participate in any of the sustainability declarations. STARS and ACUPCC both provide guidance and mechanisms that an institution can apply whereas the declarations are merely statements.

Most sustainability plans are moderate in length with an average page count of 38 pages. A majority of plans have never been updated since they were first published. Plan publication increased dramatically between 2000 and 2009, at which point the number of plans published leveled off to 10-15 plans per year. However, there was a significant drop in plan publications in 2019. Some sustainability plans have a set expiration date, and among those 14 have not been updated since they expired in 2019 or earlier.

To determine the motivations for writing a sustainability plan, the year the plan was created was compared to the year that the institution participated in ACUPCC or STARS. While participation in these programs may have some influence on an institution's decision to write a sustainability plan, there were no clear trends to indicate a direct correlation between participation in either of these programs and sustainability plan creation. There is also no clear trend to indicate sustainability plans lead to participation in these programs.

Plan Quality

Attributing the author of a campus sustainability plan is a sign of professional competence, but there were a few plans that provided no indication of the author(s). Most of the plans that did indicate the authors were written by a campus committee of faculty, staff, and students. Sometimes outside parties such as contractors, consultants, or local community members were also included in the writing process. Prior research has

also identified the importance of including stakeholder involvement during the plan creation process. Engagement included holding open meetings, private meetings, surveys, and outreach events and most often involved faculty, staff, and students.

SMART goals ensure that the plan is clear and precise. SMART goals are Specific, Measurable, Accountable, Realistic, and Time-bound. Most plans did provide specific goals, and some also indicated a deadline for the goals. However, there was a general deficiency of plans that provided measurability, accountability, or cost estimates. Cost estimates was by far the least included category.

Campus sustainability plans often gave references to other institutional documents, such as strategic plans or master plans, but much less often referred to local, national, or international documents. Relevant examples of local documents can include a city sustainability plan, a regional transportation plan, a stormwater management plan or MS4, state laws, legislative bills, and executive orders by the mayor or governor. Relevant examples of national and international documents include EPA initiatives, the *We Are Still In* pledge, presidential executive orders, Congressional bills & laws (i.e. Clean Air Act), the *Sustainable Development Goals*, and the second encyclical of Pope Francis: *Laudato si'*.

Any official document produced by an institution of higher education should be highly accessible. The accessibility attributes of a document reflect on the author, the program, and the institution. This means that the publication should be organized, professional, clear, concise, and edited. Approximately one-third of the sustainability plans reviewed in this study demonstrated a solid awareness of the importance of accessibility and organization. These plans were easy to read, easy to understand, easy to

follow, and pleasing to look at. Another one-third of the plans demonstrated a well-organized plan but may not have had the resources to elevate it to the highest level. The bottom third were either hard to read, poorly organized, too wordy, and/or unprofessional.

Over half of the plans defined *sustainability* using the three pillars of environment, economy, and equity. About a third of the plans used the Brundtland definition, “meeting the needs of the present without compromising the ability of future generations to meet their own needs.” A third group of plans utilized their own definitions of sustainability as presented in Appendix G. Some of the plans went beyond a single definition and mentioned two or more different meanings for *sustainability*.

Plan Policy

Plan policy was divided into six major categories based on function. The categories include operations, academics, planning & administration, social equity, research, and engagement. The average score for each of these categories is presented in Figure 6.1. A holistic understanding of sustainability does not view these six areas as independent silos, but for the sake of planning, each is provided its own section.

Some aspect of campus operations was mentioned in every sustainability plan, but taken as a whole, this category was not as well-covered as academics or engagement. Waste, energy, transportation, and greenhouse gas emissions were the most cited topics in all campus sustainability plans. Some member institutions of ACUPCC decided to combine their climate action plan with the sustainability plan. The least mentioned topics within operations were a campus green fund, green cleaning, and green (or socially

responsible) investments.

Academics was a well-covered topic in campus sustainability plans. Curricular improvements and co-curricular involvement were often included but utilizing the campus as a living laboratory was less frequently cited. The living laboratory concept may be foreign to some outside of academia, but it is one worth considering given its benefits to both students and the campus.

Planning & administration was not often given its own section of a plan, although many plans did incorporate the ideas of planning, administration, and governance. Over one-half of the plans were able to tie sustainability to their institutional mission. About one-third of institutions described themselves as sustainability leaders within their plan. Higher education is often looked to for its leadership, and sustainability should be no exception. About one-third of plans also showed a commitment from the institution's president.

Despite the importance of social equity in the domain of sustainability, social equity was by far the least mentioned topic. Campuses seem to be struggling with how to incorporate social values into a plan mostly about environmental issues. As leaders in society, higher education has a moral impetus to include social equity as a core tenet. Several plans did mention that they specifically did not include social equity because it was addressed in a different plan or by their Diversity & Inclusion department.

Not all institutions of higher education are research institutions and would therefore not include research in their sustainability plan. Among those that do perform research, the topic was sometimes included in the section about academics. Incentivizing new sustainability research with some type of grant or recognition was cited more often

than highlighting ongoing sustainability research.

Engagement was the most discussed topic among all the campus sustainability plans. Both campus community engagement and local community engagement were featured as ways to connect sustainability ideas with the people who could help implement them. Community engagement is seen as a critical role of campus sustainability efforts.

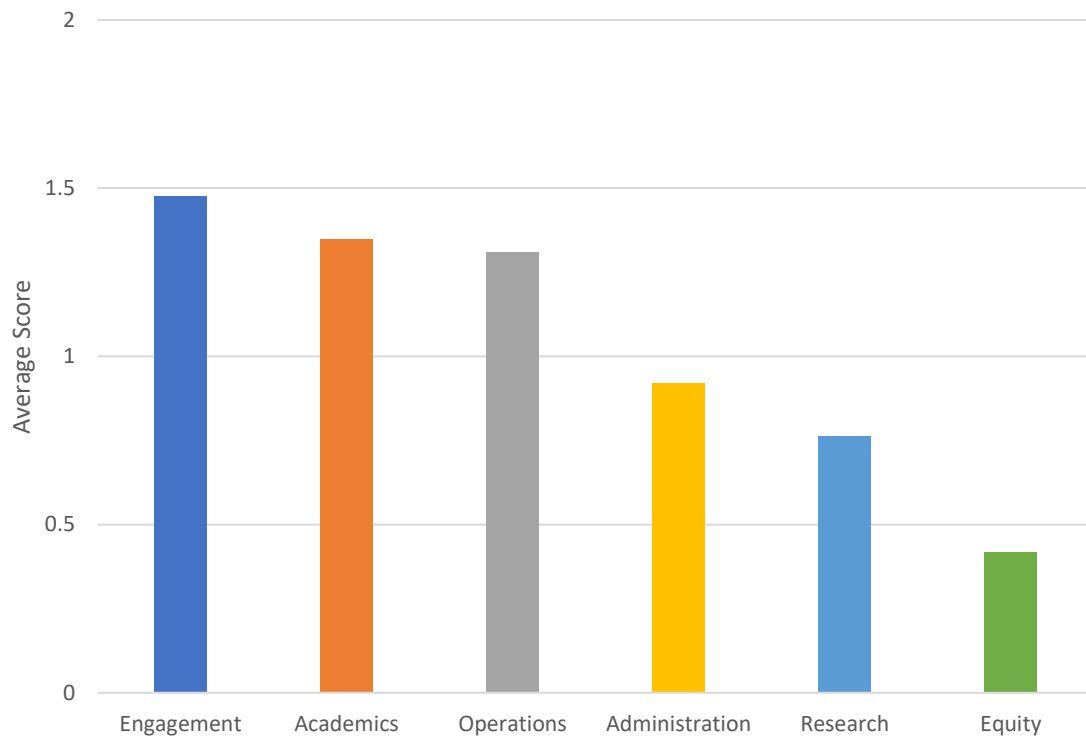


Figure 6.1. Relative strength of each plan policy category. The scoring system is ‘0’ (not included), ‘1’ (partially included), or ‘2’ (fully included). The data represents the average score of the entire category for all 155 campus sustainability plans.

Overall Assessment

As there are no templates for creating or revising a campus sustainability plan, it is helpful to look at some of the existing plans that are good examples. The final scores for all the campus sustainability plans have been compared and nine plans are featured in Table 5.1 as being the exemplar models. The top three of these are Texas A&M's 2018 Sustainability Master Plan, California State University San Marcos' 2018 Revised Sustainability Master Plan, and the University of Wisconsin River Falls' 2012 Sustainable Campus~Community Plan. These plans are not perfect, nor are they similar. However, they displayed a robustness that encompassed a majority of the ideals of a campus sustainability plan.

Limitations

This study used a narrow definition of a campus sustainability plan: *a formal, published document written to provide guidance on future campus sustainability efforts at institutions of higher education in the United States of America*. Any other plans, policies, or documents that do not meet this definition were not considered. Plans outside of the United States of America were not considered.

The data collection for this study concluded in March 2020. Campus sustainability plans published after this date were not part of this study. Also, two campus sustainability plans from a prior study were unavailable to be included in this study. All plans were manually coded by two raters with 80% agreement among them across all 65 elements. While efforts were made to reduce the error due to subjectivity,

there are inherent limitations to human coding.

Plan Recommendations

The study results can be used to inform writers of current and future campus sustainability plans of what past plans have included and where they have fallen short. Because this study has a descriptive research purpose, the recommendations for plan writers are limited to what has been done in previous plans. While this research did not explicitly take a normative approach to provide prescriptions for ideal campus sustainability plans, the results indicate that several aspects of plan writing are important to plan success. These recommendations are in Table 6.1 below. These guidelines were developed specifically for campus sustainability plans but are general enough to use for any type of plan.

The article by Cox (2015), “A model for creating a campus sustainability plan”, is a good resource for understanding the plan development process. Cox details 12 steps to developing an inclusive and comprehensive campus sustainability plan, summarized in Figure 6.2. Including the process developed by Cox and the guidelines listed in Table 6.1 will ensure the highest quality campus sustainability plan.

Since each institution has different features, characteristics, and goals, it is not possible to prescribe the elements that should be included in the policy portion of a plan. Plan writers are encouraged to use campus community feedback and the results of this study to inform the best sustainability practices that will apply to their own campus.

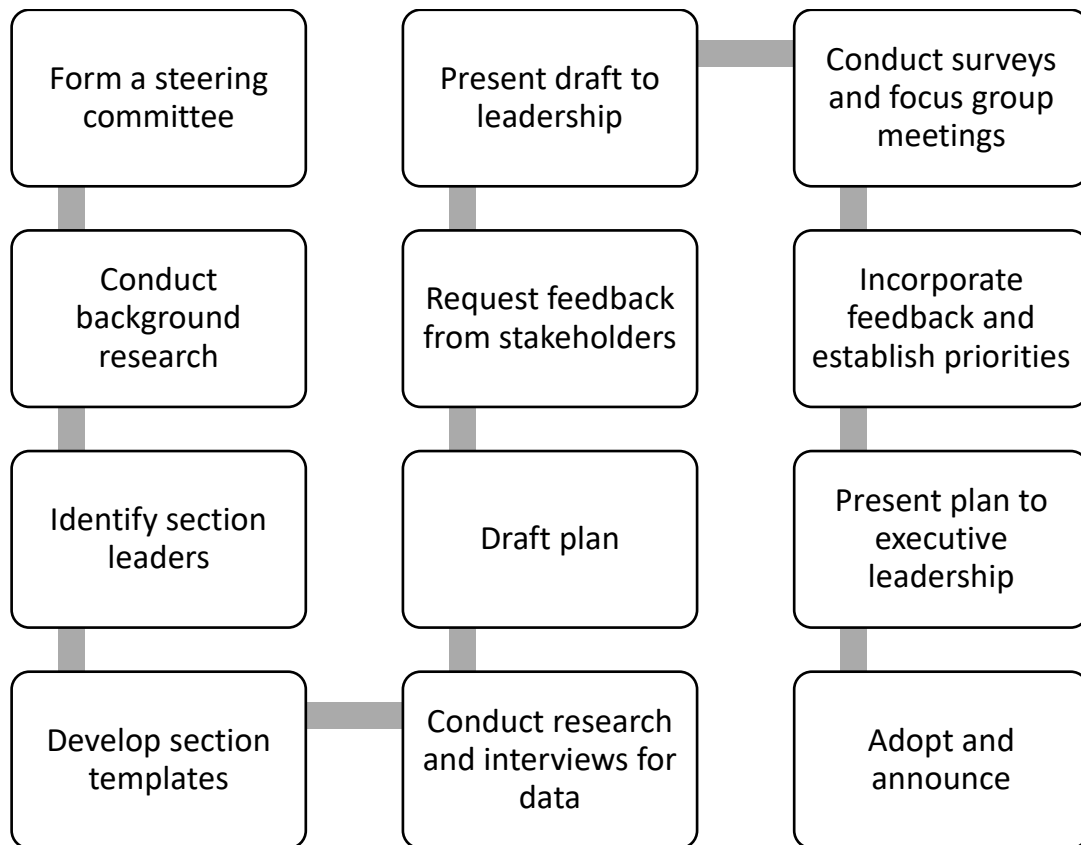


Figure 6.2. Twelve steps to developing a campus sustainability plan. Adapted from “A Model for Creating a Campus Sustainability Plan,” by H. Cox, 2015, *Planning for Higher Education* 44(1), p. 92-93. Copyright 2015 by the Society for College & University Planning.

Table 6.1*Recommendations for Improving Campus Sustainability Plans*

Recommendation	Explanation
Establish a writing process	Create an outline with dates of the steps needed to write the plan. Include time for collecting baseline data, stakeholder engagement, plan writing, administrative review, community review, and final approval.
Include a complete cover page	The cover page should include a title, date, and institution name.
Include a table of contents	Plans longer than one page should include a table of contents, preferably a clickable table of contents that jumps to the desired section when clicked on a computer.
Describe the writing process	Clearly document who wrote the plan, how the plan was written, and which stakeholders were involved during the plan creation.
Give a history of revisions and changes (if applicable)	If the plan has ever been updated, indicate when the previous versions were published and what changes were made.
Define the terms	Give definitions of frequently used or ambiguous terminology. Define any abbreviations used in the text.

Table 6.1. Continued

Recommendation	Explanation
Reference other plans and documents	Tie the plan to other applicable institutional, local, regional, national, and international documents. It is preferable to add a clickable hyperlink to each reference.
Tie into institutional mission	Include the mission statement or other guiding principle and describe how the statement includes sustainability and how sustainability advances the campus mission.
Goals should be specific	Make goals that are clear and specific. Make sure they are easy to read and easy to find within the document.
Goals should be measurable	Provide specific targets that are above or below current conditions and describe how they will be periodically evaluated for completion.
Goals should be accountable	Define who is responsible for accomplishing each goal. The accountable parties need to be aware of their responsibility before the plan is implemented.
Goals should be realistic	Give an estimate about how much the goal is expected to cost or the resources that will be needed to accomplish a goal.

Table 6.1. Continued

Recommendation	Explanation
Goals should be time-bound	Provide a deadline for the goal to be completed by. For longer-term goals, it is good to provide progress benchmarks.
Provide references	If outside sources were used to inform the writing of the plan, provide a references section to list these sources.

Future Research

This study was unable to describe what motivates an institution of higher education to write a sustainability plan. There was no link found between signing a sustainability agreement and creating a sustainability plan.

- What conditions compel a school to create a sustainability plan?
- Are the initiatives demanded at the student level, initiated by administrative staff, or compelled from the highest office?
- Why are institutions with sustainability plans more likely to participate in STARS or ACUPCC than other sustainability agreements?

It was shown that 4-year institutions write more sustainability plans than 2-year institutions.

- Do the 4-year schools have more resources to write sustainability plans, or do they write the plans because competition for new students is greater among 4-year schools?

States with higher populations usually have more sustainability plans.

- Do states with higher populations have more institutions of higher education and therefore by association more sustainability plans?
- Are the institutions in states with higher populations facing greater shortages and see sustainability as a means to conserve resources?

The term “living document” was found in multiple sustainability plans.

- How frequently is this idea used in sustainability plans and in other planning documents?
- Do living documents not receive formal updates because they are continually updated?

Social equity is a fundamental part of campus sustainability; however, this dimension was found to be lacking in campus sustainability plans.

- What are ways in which to measure the progress of social equity indicators?
- How can campus sustainability plans adequately address the concerns raised by social equity?

Finally, what is the future of campus sustainability plans? This is a major issue that was discovered in the research. Several of the plans studied had not been updated in a long time and still others are not even accessible anymore because they were abandoned. Some plans that were evaluated were only accessible through the STARS sustainability report and not available or even mentioned on the institution's website. At least one institution mentioned abandoning their plan in favor of including sustainability goals in their master plan. Additionally, this paper was written in part during the COVID-19 pandemic. This public health pandemic has fundamentally changed the priorities of institutions of higher education around the world.

- Are campus sustainability plans falling out of favor in lieu of more integrated planning?
- What are the outcomes of past sustainability plans? Have they been effective?
- If an institution has had poor success with their past sustainability plan, are they more likely to shelve the plan or even worse, abandon it?
- Is there a downturn in campus sustainability as a whole?
- How has COVID-19 affected campus sustainability efforts? Are current sustainability plans being put on hold due to the epidemic? What will be the implications for sustainability going into the future?

Chapter Summary

This chapter provided a summary of the significant results for the study of campus sustainability plans and the limitations of this study. Also included were suggestions to improve campus sustainability plans and suggestions for future research.

APPENDIX SECTION

Appendix A

U.S. Institutions with Campus Sustainability Plans

Institution Name	State	Type	Enrollment	Most Recent Plan Year	Plan Length in Pages
<i>Agnes Scott College</i>	Georgia	Private	1,030	2018	7
<i>American University</i>	Washington, DC	Private	14,311	2014	24
<i>Arizona State University</i>	Arizona	Public	51,585	2011	46
<i>Austin College</i>	Texas	Private	1,307	2018	15
<i>Babson College</i>	Massachusetts	Private	3,357	2011	44
<i>Bates College</i>	Maine	Private	1,832	2014	6
<i>Bemidji State University</i>	Minnesota	Public	5,136	2017	10
<i>Binghamton University</i>	New York	Public	17,768	2017	3
<i>Black Hills State University</i>	South Dakota	Public	4,035	2017	88
<i>Bryant University</i>	Rhode Island	Private	3,788	2018	17
<i>Bucknell University</i>	Pennsylvania	Private	3,668	2009	226
<i>Butler University</i>	Indiana	Private	5,506	2014	33
<i>California State University System</i>	California	Public	481,929	2014	82
<i>California State University, Chico</i>	California	Public	17,488	2005	32
<i>California State University, Northridge</i>	California	Public	39,569	2013	88
<i>California State University, San Marcos</i>	California	Public	14,504	2018	14
<i>Calvin University</i>	Michigan	Private	3,732	2007	10
<i>Central Michigan University</i>	Michigan	Public	16,432	2010	80
<i>Central New Mexico Community College</i>	New Mexico	Community College	24,442	2009	38

Institution Name	State	Type	Enrollment	Most Recent Plan Year	Plan Length in Pages
<i>Champlain College</i>	Vermont	Private	2,862	2013	38
<i>Clemson University</i>	South Carolina	Public	24,951	2011	40
<i>Colby College</i>	Maine	Private	2,000	2018	24
<i>Colgate University</i>	New York	Private	2,969	2017	48
<i>College of Lake County</i>	Illinois	Public	14,590	2019	29
<i>College of William and Mary</i>	Virginia	Public	8,817	2018	28
<i>Colorado College</i>	Colorado	Private	2,144	2019	37
<i>Colorado State University</i>	Colorado	Public	33,694	2019	20
<i>Columbia University</i>	New York	Private	26,338	2017	56
<i>Connecticut College</i>	Connecticut	Private	1,844	2018	19
<i>Cornell University</i>	New York	Private	23,600	2013	37
<i>CUNY Brooklyn College</i>	New York	Public	18,161	2011	26
<i>CUNY Kingsborough Community College</i>	New York	Community College	15,034	2018	21
<i>Denison University</i>	Ohio	Private	2,285	2015	20
<i>Duke University</i>	North Carolina	Private	16,606	2011	13
<i>Earlham College</i>	Indiana	Private	1,104	2016	32
<i>Eastern Kentucky University</i>	Kentucky	Public	15,816	2015	9
<i>Elon University</i>	North Carolina	Private	6,991	2015	20
<i>Emory University</i>	Georgia	Private	14,459	2016	9
<i>Fairfield University</i>	Connecticut	Private	5,273	2016	36
<i>Florida Gulf Coast University</i>	Florida	Public	15,076	2015	10
<i>Florida State University</i>	Florida	Public	41,005	2018	5
<i>Furman University</i>	South Carolina	Private	2,933	2009	44
<i>Grand Rapids Community College</i>	Michigan	Community College	14,269	2005	13
<i>Grand Valley State University</i>	Michigan	Public	24,677	2016	12

Institution Name	State	Type	Enrollment	Most Recent Plan Year	Plan Length in Pages
<i>Harvard University</i>	Massachusetts	Private	20,739	2015	40
<i>Haverford College</i>	Pennsylvania	Private	1,310	2017	17
<i>Illinois Institute of Technology</i>	Illinois	Private	6,753	2010	33
<i>Indiana State University</i>	Indiana	Public	13,045	2018	12
<i>Indiana University, Bloomington</i>	Indiana	Public	43,503	2010	1
<i>Iowa State University System</i>	Iowa	Public	79,603	2009	9
<i>James Madison University</i>	Virginia	Public	21,787	2016	5
<i>Johnson County Community College</i>	Kansas	Community College	18,638	2010	18
<i>Lehigh University</i>	Pennsylvania	Private	6,849	2016	28
<i>Louisiana State University, Baton Rouge</i>	Louisiana	Public	30,985	2018	11
<i>Luther College</i>	Iowa	Private	2,005	2019	7
<i>Macalester College</i>	Minnesota	Private	2,174	2016	25
<i>Massachusetts Institute of Technology</i>	Massachusetts	Private	11,574	2015	18
<i>Messiah College</i>	Pennsylvania	Private	3,375	2016	6
<i>Minnesota State University, Mankato</i>	Minnesota	Public	14,374	2010	52
<i>Missouri State University</i>	Missouri	Public	23,697	2017	53
<i>Monroe Community College</i>	Michigan	Community College	3,109	2018	3
<i>Mount Holyoke College</i>	Massachusetts	Private	2,335	2017	12
<i>Muhlenberg College</i>	Pennsylvania	Private	2,340	2018	9
<i>New Mexico State University</i>	New Mexico	Public	14,289	2012	13
<i>North Carolina State University</i>	North Carolina	Public	35,479	2017	16
<i>Northern Arizona University</i>	Arizona	Public	31,073	2015	31
<i>Northern Michigan University</i>	Michigan	Public	7,595	2017	24
<i>Oberlin College</i>	Ohio	Private	2,812	2015	34
<i>Ohio University</i>	Ohio	Public	28,446	2012	35

Institution Name	State	Type	Enrollment	Most Recent Plan Year	Plan Length in Pages
<i>Oklahoma State University</i>	Oklahoma	Public	24,649	2016	6
<i>Onodaga Community College</i>	New York	Community College	10,659	2009	24
<i>Orange County Community College</i>	New York	Community College	6,601	2015	20
<i>Oregon Institute of Technology</i>	Oregon	Public	5,341	2008	37
<i>Oregon State University</i>	Oregon	Public	30,986	2005	8
<i>Pacific University</i>	Oregon	Private	3,938	2015	2
<i>Pennsylvania State University</i>	Pennsylvania	Public	46,810	2018	35
<i>Pomona College</i>	California	Private	1,679	2017	114
<i>Portland State University</i>	Oregon	Public	26,379	2013	7
<i>Princeton University</i>	New Jersey	Private	8,374	2019	38
<i>Purdue University</i>	Indiana	Public	43,411	2010	54
<i>Randolph College</i>	Virginia	Private	626	2009	43
<i>Ringling College of Art and Design</i>	Florida	Private	1,561	2012	1
<i>San Francisco State University</i>	California	Public	29,586	2017	33
<i>Santa Clara University</i>	California	Private	8,642	2018	32
<i>Santa Rosa Junior College</i>	California	Community College	20,671	2015	6
<i>Seattle Colleges District</i>	Washington	Community College	46,333	2017	20
<i>Sewanee, The University of the South</i>	Tennessee	Private	1,785	2013	19
<i>Skidmore College</i>	New York	Private	2,613	2015	18
<i>South Dakota State University</i>	South Dakota	Public	12,107	2017	20
<i>Southwestern University</i>	Texas	Private	1,430	2014	37
<i>St. Joseph's College</i>	Maine	Private	2,775	2015	44
<i>State University of New York, New Paltz</i>	New York	Public	7,608	2012	26
<i>State University of New York, Oneonta</i>	New York	Public	6,528	2017	14
<i>Stonehill College</i>	Massachusetts	Private	2,556	2012	19

Institution Name	State	Type	Enrollment	Most Recent Plan Year	Plan Length in Pages
<i>Suffolk University</i>	Massachusetts	Private	7,332	2009	29
<i>Texas A&M University</i>	Texas	Public	68,367	2018	112
<i>The George Washington University</i>	Washington, DC	Private	28,172	2012	56
<i>The Ohio State University, Columbus</i>	Ohio	Public	61,170	2011	120
<i>University at Buffalo, SUNY</i>	New York	Public	31,503	2017	12
<i>University of California System</i>	California	Public	285,216	2019	36
<i>University of California, Berkeley</i>	California	Public	42,501	2013	12
<i>University of California, Merced</i>	California	Public	8,544	2017	28
<i>University of California, Santa Barbara</i>	California	Public	25,976	2018	27
<i>University of California, Santa Cruz</i>	California	Public	19,700	2019	21
<i>University of Cincinnati</i>	Ohio	Public	38,062	2019	144
<i>University of Colorado, Boulder</i>	Colorado	Public	36,548	2006	28
<i>University of Colorado, Colorado Springs</i>	Colorado	Public	12,795	2012	16
<i>University of Connecticut</i>	Connecticut	Public	27,412	2015	32
<i>University of Denver</i>	Colorado	Private	11,952	2014	32
<i>University of Florida</i>	Florida	Public	52,218	2008	64
<i>University of Georgia</i>	Georgia	Public	38,652	2015	48
<i>University of Houston</i>	Texas	Public	46,324	2018	12
<i>University of Iowa</i>	Iowa	Public	31,656	2010	4
<i>University of Kansas</i>	Kansas	Public	27,690	2016	72
<i>University of Kentucky</i>	Kentucky	Public	29,182	2018	34
<i>University of Maryland, College of Behavioral and Social Sciences</i>	Maryland	Public	41,200	2014	12
<i>University of Massachusetts, Amherst</i>	Massachusetts	Public	30,593	2015	67
<i>University of Miami</i>	Florida	Private	17,331	2017	61

Institution Name	State	Type	Enrollment	Most Recent Plan Year	Plan Length in Pages
<i>University of Minnesota, Morris</i>	Minnesota	Public	1,554	2017	28
<i>University of Missouri, Kansas City</i>	Missouri	Public	16,394	2016	76
<i>University of Mount Union</i>	Ohio	Private	2,309	2016	75
<i>University of Nebraska, Omaha</i>	Nebraska	Public	15,431	2018	118
<i>University of New Hampshire</i>	New Hampshire	Public	15,305	2017	17
<i>University of North Carolina, Chapel Hill</i>	North Carolina	Public	30,011	2016	36
<i>University of Notre Dame</i>	Indiana	Private	12,607	2016	24
<i>University of Oregon</i>	Oregon	Public	22,644	2005	25
<i>University of Pennsylvania</i>	Pennsylvania	Private	22,376	2019	42
<i>University of Pittsburgh</i>	Pennsylvania	Public	28,673	2018	28
<i>University of Richmond</i>	Virginia	Private	4,002	2019	44
<i>University of Southern California</i>	California	Private	47,310	2015	24
<i>University of Southern Maine</i>	Maine	Public	8,140	2017	26
<i>University of St. Thomas</i>	Minnesota	Private	10,035	2019	40
<i>University of Texas, Austin</i>	Texas	Public	51,832	2016	92
<i>University of Texas, Rio Grande Valley</i>	Texas	Public	28,644	2009	129
<i>University of the District of Columbia</i>	Washington, DC	Public	4,244	2011	27
<i>University of Virginia</i>	Virginia	Public	24,639	2016	52
<i>University of West Georgia</i>	Georgia	Public	13,733	2018	8
<i>University of Wisconsin, Oshkosh</i>	Wisconsin	Public	14,087	2014	45
<i>University of Wisconsin, Platteville</i>	Wisconsin	Public	8,712	2015	49
<i>University of Wisconsin, River Falls</i>	Wisconsin	Public	6,139	2012	72
<i>University of Wisconsin, Stout</i>	Wisconsin	Public	8,748	2018	40
<i>Utah State University</i>	Utah	Public	27,932	2017	28
<i>Virginia Commonwealth University</i>	Virginia	Public	31,076	2015	22

Institution Name	State	Type	Enrollment	Most Recent Plan Year	Plan Length in Pages
<i>Virginia Tech</i>	Virginia	Public	34,850	2014	133
<i>Wake Forest University</i>	North Carolina	Private	8,401	2012	52
<i>Washington University in St. Louis</i>	Missouri	Private	15,852	2015	84
<i>Washtenaw Community College</i>	Michigan	Community College	20,718	2014	186
<i>Wayne State University</i>	Michigan	Public	27,053	2017	40
<i>Wellesley College</i>	Massachusetts	Private	2,534	2016	86
<i>Wesleyan University</i>	Connecticut	Private	3,217	2016	58
<i>Western Technical College</i>	Wisconsin	Community College	4,108	2018	23
<i>Western Washington University</i>	Washington	Public	16,121	2017	122
<i>Worcester Polytechnic Institute</i>	Massachusetts	Private	6,874	2013	24
<i>Xavier University</i>	Ohio	Private	7,132	2010	111
<i>Yale University</i>	Connecticut	Private	13,433	2016	28

Appendix B

Sustainability Agreements Signed by U.S. Institutions of Higher Education with Campus Sustainability Plans

Institution Name	Year First Plan Written	ACUPCC	First Year Signed	STARS	First Report Year	Talloires	We Are Still In	American Campus Act on Climate
<i>Agnes Scott College</i>	2009	Yes	2007	Yes	2012	No	Yes	Yes
<i>American University</i>	2014	Yes	2008	Yes	2011	Yes	Yes	Yes
<i>Arizona State University</i>	2011	Yes	2007	Yes	2011	No	Yes	No
<i>Austin College</i>	2018	Yes	2008	Yes	2016	No	Yes	No
<i>Babson College</i>	2011	Yes	2008	Yes	2011	Yes	No	No
<i>Bates College</i>	2014	Yes	2007	Yes	2017	No	Yes	No
<i>Bemidji State University</i>	2017	Yes	2008	No	-	Yes	No	No
<i>Binghamton University</i>	2017	No	-	Yes	2018	No	Yes	Yes
<i>Black Hills State University</i>	2017	Yes	2007	Yes	2014	No	No	No
<i>Bryant University</i>	2009	No	-	Yes	2012	No	No	No
<i>Bucknell University</i>	2009	Yes	2008	Yes	2014	No	Yes	No
<i>Butler University</i>	2014	Yes	2012	Yes	2018	No	No	No
<i>California State University System</i>	2014	N/A	-	N/A	-	N/A	Yes	N/A
<i>California State University, Chico</i>	2005	Yes	2007	Yes	2013	Yes	Yes	Yes
<i>California State University, Northridge</i>	2013	Yes	2015	Yes	2016	No	Yes	Yes
<i>California State University, San Marcos</i>	2014	No	-	Yes	2017	No	No	No
<i>Calvin University</i>	2007	Yes	2017	Yes	2016	No	No	No

Institution Name	Year First Plan Written	ACUPCC	First Year Signed	STARS	First Report Year	Talloires	We Are Still In	American Campus Act on Climate
<i>Central Michigan University</i>	2008	No	-	Yes	2017	No	No	No
<i>Central New Mexico Community College</i>	2009	Yes	2007	Yes	2014	No	No	No
<i>Champlain College</i>	2013	No	-	Yes	2016	No	Yes	Yes
<i>Clemson University</i>	2011	Yes	2007	Yes	2018	Yes	No	No
<i>Colby College</i>	2018	Yes	2008	Yes	2013	No	No	Yes
<i>Colgate University</i>	2011	Yes	2008	Yes	2013	No	Yes	Yes
<i>College of Lake County</i>	2012	Yes	2015	Yes	2011	No	No	Yes
<i>College of William and Mary</i>	2018	No	-	Yes	2016	Yes	No	No
<i>Colorado College</i>	2014	Yes	2009	Yes	2014	No	Yes	Yes
<i>Colorado State University</i>	2016	No	-	Yes	2011	Yes	No	Yes
<i>Columbia University</i>	2017	No	-	Yes	2012	No	Yes	Yes
<i>Connecticut College</i>	2013	Yes	2007	Yes	2018	Yes	Yes	No
<i>Cornell University</i>	2009	Yes	2007	Yes	2012	No	No	No
<i>CUNY Brooklyn College</i>	2011	No	-	No	-	No	No	No
<i>CUNY Kingsborough Community College</i>	2010	No	-	No	-	No	Yes	No
<i>Denison University</i>	2012	Yes	2010	Yes	2012	Yes	Yes	Yes
<i>Duke University</i>	2011	Yes	2007	Yes	2011	No	Yes	Yes
<i>Earlham College</i>	2013	Yes	2019	Yes	2011	Yes	No	No
<i>Eastern Kentucky University</i>	2015	Yes	2015	Yes	2018	No	No	No
<i>Elon University</i>	2007	No	-	Yes	2011	No	No	No
<i>Emory University</i>	2016	No	-	Yes	2011	No	No	No

Institution Name	Year First Plan Written	ACUPCC	First Year Signed	STARS	First Report Year	Talloires	We Are Still In	American Campus Act on Climate
<i>Fairfield University</i>	2016	No	-	No	-	No	No	No
<i>Florida Gulf Coast University</i>	2011	Yes	2007	Yes	2011	No	No	Yes
<i>Florida State University</i>	2018	No	-	Yes	2011	No	No	No
<i>Furman University</i>	2009	Yes	2007	Yes	2011	No	Yes	Yes
<i>Grand Rapids Community College</i>	2004	No	-	No	-	Yes	No	No
<i>Grand Valley State University</i>	2016	No	-	Yes	2011	Yes	No	No
<i>Harvard University</i>	2015	No	-	No	-	No	No	Yes
<i>Haverford College</i>	2017	Yes	2007	Yes	2011	No	Yes	Yes
<i>Illinois Institute of Technology</i>	2010	No	-	Yes	2011	No	Yes	No
<i>Indiana State University</i>	2018	Yes	2007	Yes	2013	No	No	No
<i>Indiana University, Bloomington</i>	2010	No	-	Yes	2011	No	No	No
<i>Iowa State University System</i>	2009	N/A	-	N/A	-	N/A	N/A	Yes
<i>James Madison University</i>	2011	No	-	Yes	2013	Yes	No	No
<i>Johnson County Community College</i>	2008	Yes	2008	Yes	2014	No	No	No
<i>Lehigh University</i>	2012	No	-	Yes	2015	No	Yes	No
<i>Louisiana State University, Baton Rouge</i>	2018	No	-	Yes	2012	No	No	No
<i>Luther College</i>	2013	Yes	2007	Yes	2011	No	Yes	No
<i>Macalester College</i>	2009	Yes	2007	Yes	2011	Yes	Yes	Yes

Institution Name	Year First Plan Written	ACUPCC	First Year Signed	STARS	First Report Year	Talloires	We Are Still In	American Campus Act on Climate
<i>Massachusetts Institute of Technology</i>	2015	No	-	Yes	2018	No	Yes	Yes
<i>Messiah College</i>	2016	Yes	2007	Yes	2017	No	No	No
<i>Minnesota State University, Mankato</i>	2010	No	-	No	-	No	No	No
<i>Missouri State University</i>	2017	No	-	Yes	2011	No	No	No
<i>Monroe Community College</i>	2018	No	-	No	-	No	No	Yes
<i>Mount Holyoke College</i>	2017	No	-	Yes	2012	Yes	Yes	No
<i>Muhlenberg College</i>	2018	No	-	Yes	2013	Yes	Yes	No
<i>New Mexico State University</i>	2012	Yes	2007	Yes	2011	Yes	No	No
<i>North Carolina State University</i>	2011	Yes	2008	Yes	2012	No	No	No
<i>Northern Arizona University</i>	2010	Yes	2007	Yes	2011	Yes	No	No
<i>Northern Michigan University</i>	2017	No	-	Yes	2017	No	No	No
<i>Oberlin College</i>	2004	Yes	2006	Yes	2012	Yes	Yes	Yes
<i>Ohio University</i>	2011	Yes	2007	Yes	2015	No	Yes	No
<i>Oklahoma State University</i>	2012	No	-	Yes	2012	No	No	No
<i>Onodaga Community College</i>	2009	Yes	2007	Yes	2012	No	No	Yes
<i>Orange County Community College</i>	2009	No	-	Yes	2011	No	No	Yes
<i>Oregon Institute of Technology</i>	2008	No	-	Yes	2011	No	Yes	No
<i>Oregon State University</i>	2005	Yes	2007	Yes	2011	No	Yes	No
<i>Pacific University</i>	2015	Yes	2012	Yes	2012	Yes	No	Yes

Institution Name	Year First Plan Written	ACUPCC	First Year Signed	STARS	First Report Year	Talloires	We Are Still In	American Campus Act on Climate
<i>Pennsylvania State University</i>	2012	No	-	Yes	2011	No	Yes	No
<i>Pomona College</i>	2010	Yes	2007	Yes	2011	No	Yes	Yes
<i>Portland State University</i>	2013	Yes	2007	Yes	2011	No	Yes	Yes
<i>Princeton University</i>	2008	No	-	Yes	2012	No	No	Yes
<i>Purdue University</i>	2010	No	-	Yes	2013	No	No	No
<i>Randolph College</i>	2009	Yes	2006	Yes	2019	No	Yes	Yes
<i>Ringling College of Art and Design</i>	2012	No	-	Yes	2014	No	No	No
<i>San Francisco State University</i>		Yes	2007	Yes	2017	No	Yes	Yes
<i>Santa Clara University</i>	2018	Yes	2007	Yes	2011	No	Yes	Yes
<i>Santa Rosa Junior College</i>	2015	No	-	Yes	2019	Yes	No	No
<i>Seattle Colleges District</i>	2015	N/A	-	N/A	-	N/A	N/A	N/A
<i>Sewanee, The University of the South</i>	2013	Yes	2007	Yes	2018	Yes	No	No
<i>Skidmore College</i>	2015	No	-	Yes	2017	No	Yes	No
<i>South Dakota State University</i>	2017	No	-	Yes	2016	No	No	No
<i>Southwestern University</i>	2014	Yes	2009	Yes	2015	Yes	No	No
<i>St. Joseph's College</i>	2015	Yes	2009	Yes	2014	No	Yes	No
<i>State University of New York, New Paltz</i>	2012	Yes	2008	Yes	2015	No	Yes	Yes
<i>State University of New York, Oneonta</i>	2016	No	-	Yes	2013	No	No	Yes
<i>Stonehill College</i>	2012	No	-	Yes	2016	No	No	Yes
<i>Suffolk University</i>	2009	No	-	No	-	No	No	Yes

Institution Name	Year First Plan Written	ACUPCC	First Year Signed	STARS	First Report Year	Talloires	We Are Still In	American Campus Act on Climate
<i>Texas A&M University</i>	2010	No	-	Yes	2012	No	No	No
<i>The George Washington University</i>	2008	Yes	2008	Yes	2014	Yes	Yes	Yes
<i>The Ohio State University, Columbus</i>	2011	Yes	2008	Yes	2012	No	No	Yes
<i>University at Buffalo, SUNY</i>	2017	Yes	2007	Yes	2012	Yes	No	Yes
<i>University of California System</i>	2003	Yes	2007	N/A	-	N/A	Yes	N/A
<i>University of California, Berkeley</i>	2009	Yes	2007	Yes	2018	No	Yes	Yes
<i>University of California, Merced</i>	2017	Yes	2007	Yes	2013	No	Yes	Yes
<i>University of California, Santa Barbara</i>	2005	Yes	2007	Yes	2012	Yes	Yes	Yes
<i>University of California, Santa Cruz</i>	2010	Yes	2007	Yes	2015	No	Yes	Yes
<i>University of Cincinnati</i>	2019	Yes	2007	Yes	2014	No	No	No
<i>University of Colorado, Boulder</i>	2000	Yes	2007	Yes	2010	Yes	No	Yes
<i>University of Colorado, Colorado Springs</i>	2007	Yes	2007	Yes	2011	No	No	No
<i>University of Connecticut</i>	2015	Yes	2008	Yes	2013	No	Yes	Yes
<i>University of Denver</i>	2009	Yes	2007	Yes	2011	No	Yes	No

Institution Name	Year First Plan Written	ACUPCC	First Year Signed	STARS	First Report Year	Talloires	We Are Still In	American Campus Act on Climate
<i>University of Florida</i>	2008	Yes	2006	Yes	2011	Yes	No	Yes
<i>University of Georgia</i>	2015	No	-	Yes	2014	Yes	No	No
<i>University of Houston</i>	2018	No	-	Yes	2011	No	No	No
<i>University of Iowa</i>	2010	No	-	Yes	2013	No	Yes	No
<i>University of Kansas</i>	2011	No	-	Yes	2012	No	No	No
<i>University of Kentucky</i>	2018	No	-	Yes	2012	No	No	No
<i>University of Maryland, College of Behavioral and Social Sciences</i>	2014	Yes	2007	Yes	2014	No	Yes	Yes
<i>University of Massachusetts, Amherst</i>	2015	Yes	2007	Yes	2011	No	Yes	Yes
<i>University of Miami</i>	2015	Yes	2007	Yes	2017	Yes	Yes	No
<i>University of Minnesota, Morris</i>	2017	Yes	2007	Yes	2012	No	Yes	Yes
<i>University of Missouri, Kansas City</i>	2008	No	-	Yes	2012	No	No	No
<i>University of Mount Union</i>	2010	Yes	2007	Yes	2011	No	No	No
<i>University of Nebraska, Omaha</i>	2014	No	-	Yes	2014	No	No	No
<i>University of New Hampshire</i>	2017	Yes	2007	Yes	2011	Yes	Yes	Yes
<i>University of North Carolina, Chapel Hill</i>	2016	Yes	2007	Yes	2011	Yes	No	Yes
<i>University of Notre Dame</i>	2016	No	-	Yes	2011	No	No	Yes
<i>University of Oregon</i>	2000	Yes	2007	Yes	2011	No	Yes	No
<i>University of Pennsylvania</i>	2009	Yes	2007	Yes	2014	No	No	Yes

Institution Name	Year First Plan Written	ACUPCC	First Year Signed	STARS	First Report Year	Talloires	We Are Still In	American Campus Act on Climate
<i>University of Pittsburg</i>	2018	Yes	2020	Yes	2014	Yes	No	No
<i>University of Richmond</i>	2019	Yes	2007	Yes	2013	No	Yes	Yes
<i>University of Southern California</i>	2015	No	-	No	-	No	No	No
<i>University of Southern Maine</i>	2017	Yes	2007	No	-	Yes	No	No
<i>University of St. Thomas</i>	2019	Yes	2008	Yes	2018	No	Yes	No
<i>University of Texas, Austin</i>	2016	No	-	Yes	2011	No	No	No
<i>University of Texas, Rio Grande Valley</i>	2009	No	-	Yes	2015	No	No	Yes
<i>University of the District of Columbia</i>	2011	No	-	Yes	2012	No	Yes	No
<i>University of Virginia</i>	2016	No	-	Yes	2012	Yes	No	No
<i>University of West Georgia</i>	2018	No	-	Yes	2015	No	No	No
<i>University of Wisconsin, Oshkosh</i>	2008	Yes	2006	Yes	2012	No	No	Yes
<i>University of Wisconsin, Platteville</i>	2013	No	-	Yes	2016	No	No	No
<i>University of Wisconsin, River Falls</i>	2012	Yes	2006	Yes	2012	No	No	No
<i>University of Wisconsin, Stout</i>	2015	Yes	2007	Yes	2013	No	No	No
<i>Utah State University</i>	2013	Yes	2007	Yes	2013	Yes	No	No
<i>Virginia Commonwealth University</i>	2015	Yes	2008	Yes	2012	Yes	No	No
<i>Virginia Tech</i>	2009	No	-	Yes	2011	No	No	No
<i>Wake Forest University</i>	2012	No	-	Yes	2011	No	Yes	Yes

Institution Name	Year First Plan Written	ACUPCC	First Year Signed	STARS	First Report Year	Talloires	We Are Still In	American Campus Act on Climate
<i>Washington University in St. Louis</i>	2010	No	-	Yes	2011	No	Yes	No
<i>Washtenaw Community College</i>	2014	Yes	2012	Yes	2018	No	No	No
<i>Wayne State University</i>	2007	No	-	No	-	No	No	No
<i>Wellesley College</i>	2016	No	-	Yes	2011	No	Yes	No
<i>Wesleyan University</i>	2016	Yes	2007	Yes	2013	No	Yes	Yes
<i>Western Technical College</i>	2018	Yes	2016	Yes	2017	No	Yes	Yes
<i>Western Washington University</i>	2017	Yes	2007	Yes	2013	No	Yes	No
<i>Worcester Polytechnic Institute</i>	2013	No	-	Yes	2015	No	Yes	No
<i>Xavier University</i>	2010	Yes	2008	No	-	Yes	No	No
<i>Yale University</i>	2010	No	-	Yes	2011	No	No	Yes

Appendix C

Campus Coding Sheet Version 1

Descriptive Category	Element	Response
1.0 Demographics		
1.1 State that the institution is in	1.1 Which state or territory is the institution located in?	
1.2 Institution type	1.2 Is the institution a public, private, or community college?	
1.3 Student enrollment	1.3 What is the student body enrollment count?	
1.4 Plan length	1.4 How many pages are in the plan?	
1.5 Year plan was originally created	1.5 What year was the first sustainability plan published?	
1.6 Year(s) plan was updated	1.6 What year or years was the sustainability plan updated?	
1.7 ACUPCC participant?	1.7 Is the institution a signatory of the American College & University Presidents' Climate Commitment?	
	1.7.5 If yes, what year did the institution sign the ACUPCC?	
1.8 STARS participant?	1.8 Is the institution a participant in the Sustainability Tracking And Rating System?	
	1.8.5 If yes, what year did the institution first participate in STARS?	

Descriptive Category	Element	Response
2.0 Plan Quality		
2.1 Planning Process	2.1.1 Describes who wrote the plan?	0, 1, 2
	2.1.1.5 If yes, who wrote the plan?	
	2.1.2 Describes stakeholder engagement during plan creation?	0, 1, 2
	2.1.2.5 If yes, which stakeholders were included?	
2.2 Use of Plan Terminology	2.2 Provides clear goals and objectives?	0, 1, 2
2.3 Measurability	2.3 Provides a measurement and feedback process to assess goal completion?	0, 1, 2
2.4 Links to other plans	2.4.1 References to other institutional plans or documents?	0, 1, 2
	2.4.1.5 Which documents are referenced?	
	2.4.2 References municipal, provincial, or state plans or documents?	0, 1, 2
	2.4.2.5 Which documents are referenced?	
	2.4.3 References federal or international plans or documents?	0, 1, 2
	2.4.3.5 Which documents are referenced?	
2.5 Accessibility	2.5 Well-organized, readable, and visually appealing?	0, 1, 2

Descriptive Category	Element	Response
2.6 Definition of 'Sustainability'	2.6.1 Brundtland definition	0, 1, 2
	2.6.2 Three pillars definition	0, 1, 2
	2.6.3 Other definition	0, 1, 2
2.7 Clear Timelines	2.7 Assigned timeframe for accomplishing each goal?	0, 1, 2
2.8 Identifies Responsible Party	2.8 Assigned accountability for each goal?	0, 1, 2
2.9 Economics	2.9 Assigned a cost for each goal?	0, 1, 2
3.0 Plan Policy		
3.1 Operations	3.1.1 Waste	0, 1, 2
	3.1.2 Energy	0, 1, 2
	3.1.3 Transportation	0, 1, 2
	3.1.4 Building Design	0, 1, 2
	3.1.5 GHG Emissions / Climate Change	0, 1, 2
	3.1.6 Water	0, 1, 2
	3.1.7 Food	0, 1, 2
	3.1.8 Grounds / Landscaping	0, 1, 2
	3.1.9 Purchasing / Consumption	0, 1, 2
	3.1.10 Technology	0, 1, 2

Descriptive Category	Element	Response
3.2 Academics / Education	3.2.1 Enhance the curriculum related to sustainability	0, 1, 2
	3.2.2 Address the role of co-curricular activities in sustainability	0, 1, 2
3.3 Administration, Governance, and Planning	3.3.1 Ties sustainability to their institutional mission, vision, traditions, and/or overarching purpose for existing	0, 1, 2
	3.3.2 Describes themselves as leaders in sustainability	0, 1, 2
	3.3.3 Demonstrated commitment from top levels of administration	0, 1, 2
3.4 Equity / Social	3.4.1 Voice & influence	0, 1, 2
	3.4.2 Health & wellness	0, 1, 2
	3.4.3 Equity, diversity, and inclusion	0, 1, 2
	3.4.4 Affordability	0, 1, 2
3.5 Research	3.5.1 Incentivize research on sustainability topics	0, 1, 2
	3.5.2 Campus as a living laboratory	0, 1, 2
	3.5.3 Highlight sustainability research topics	0, 1, 2
3.6 Community Engagement	3.6.1 Engagement of the “general public” - the urban community where the institution is sited	0, 1, 2
	3.6.2 Engagement of the “campus community” - students, faculty, staff, and administrators	0, 1, 2

Appendix D

Definitions of Terms to Use While Coding

- **Scoring System:**
 - **0 = Not Addressed**
 - **1 = Briefly Mentioned**
 - **2 = Covered in Depth**
- **ACUPCC:** American College & University Presidents' Climate Commitment - a high-visibility effort to address global warming by creating a network of colleges and universities that have committed to neutralize their greenhouse gas emissions. Second Nature is the main supporting organization of the ACUPCC.
- **Brundtland definition of sustainability:** The term sustainable development was coined in the paper *Our Common Future*, released by the United Nations Brundtland Commission. "Sustainable development is the kind of development that meets the needs of the present without compromising the ability of future generations to meet their own needs."
- **Co-curricular activities:** educational opportunities that are complimentary to students' learning experience but are not part of the regular curriculum.
- **Equity, diversity, and inclusion:** demonstrate and promote a working and learning environment that welcomes, supports, and nurtures everyone's success.
- **GHG Emissions:** the emission into the earth's atmosphere of any gas, especially carbon dioxide, that contributes to the greenhouse effect. These may be calculated in a greenhouse gas inventory.
- **Governance:** overall, institution-wide aims or policy. Governance discussions or documents often highlight institutions' overarching purpose(s), where institutions situate themselves in society and in relation to their peers and how they represent their own cultural and historical identity. They can also include content related to institutional accountability, institutional finance and long-term planning.
- **Health & wellness:** taking care of the body, engaging the mind, and nurturing the spirit to improve their quality of life.

- **Plan(s):** Written account of intended future course of action aimed at achieving specific goal(s) or objective(s) within a specific timeframe. Formal plans should be written, accessible, and final.
- **STARS:** Sustainability Tracking, Assessment & Rating System - a transparent, self-reporting framework for colleges and universities to measure their sustainability performance. STARS is a program of the Association for the Advancement of Sustainability in Higher Education (AASHE).
- **Technology:** the use of innovative technological solutions, green/clean technologies, or efficiency upgrades to solve a sustainability challenge. Includes the involvement of the Information Technology (IT) group with the management of campus computers. Can concern EPEAT certified electronics and e-waste recycling.
- **Three pillars definition of sustainability:** under this approach, institutions look for a balanced approach to long-term social, environmental and economic objectives. Another way to look at this is through the concept of the Triple Bottom Line — People, Planet, and Profit.
- **Voice & influence:** All members of the community have the opportunity to participate in the campus environment, policy planning, and decision making to develop a university that is inclusive of its diverse constituents.

Appendix E

Campus Coding Sheet Version 2

Descriptive Category	Element	Response
1.0 Demographics		
1.1 Name	1.1 What is the name of the institution?	
1.2 State that the institution is in	1.2 Which state or territory is the institution located in?	
1.3 Institution type	1.3 Is the institution a public, private, or community college?	
1.4 Student enrollment	1.4 What is the student body enrollment count?	
1.5 Plan length	1.5 How many pages are in the plan?	
1.6 Year plan was originally created	1.6 What year was the first sustainability plan published?	
	1.6.5 What is the expiration year of the plan?	
1.7 Year(s) plan was updated	1.7 What year or years was the sustainability plan updated?	
	1.7.5 What is the expiration year of the plan?	
1.7 ACUPCC participant?	1.7 Is the institution a signatory of the American College & University Presidents' Climate Commitment?	
	1.7.5 If yes, what year did the institution sign the ACUPCC?	
1.8 STARS participant?	1.8 Is the institution a participant in the Sustainability Tracking And Rating System?	

Descriptive Category	Element	Response
	1.8.5 If yes, what year did the institution first participate in STARS?	
2.0 Plan Quality		
2.1 Planning Process	2.1.1 Describes who wrote the plan?	0, 1, 2
	2.1.1.5 If yes, who wrote the plan?	
	2.1.2 Describes stakeholder engagement during plan creation?	0, 1, 2
	2.1.2.5 If yes, which stakeholders were included?	
2.2 Use of Plan Terminology	2.2.1 Provides clear goals and objectives?	0, 1, 2
	2.2.2 Provides a measurement process to assess goal completion?	0, 1, 2
	2.2.3 Assigned timeframe for accomplishing each goal?	0, 1, 2
	2.2.4 Assigned accountability for each goal?	0, 1, 2
	2.2.5 Assigned a cost for each goal?	0, 1, 2
2.3 Links to other plans	2.3.1 References to other institutional plans or documents?	0, 1, 2
	2.3.1.5 Which documents are referenced?	
	2.3.2 References municipal, provincial, or state plans or documents?	0, 1, 2

Descriptive Category	Element	Response
	2.3.2.5 Which documents are referenced?	
	2.3.3 References federal or international plans or documents?	0, 1, 2
	2.3.3.5 Which documents are referenced?	
2.4 Accessibility	2.4 Well-organized, readable, and visually appealing?	0, 1, 2
2.5 Definition of 'Sustainability'	2.5.1 Brundtland definition	0, 1, 2
	2.5.2 Three pillars definition	0, 1, 2
	2.5.3 Other definition	0, 1, 2
3.0 Plan Policy		
3.1 Operations		0, 1, 2
	3.1.1 Waste	0, 1, 2
	3.1.2 Energy	0, 1, 2
	3.1.3 Transportation	0, 1, 2
	3.1.4 Building Design	0, 1, 2
	3.1.5 GHG Emissions / Climate Change	0, 1, 2
	3.1.6 Water	0, 1, 2
	3.1.7 Food	0, 1, 2
	3.1.8 Grounds / Landscaping	0, 1, 2

Descriptive Category	Element	Response
	3.1.9 Purchasing / Consumption	0, 1, 2
	3.1.10 Technology / IT	0, 1, 2
	3.1.11 Green Fund	0, 1, 2
3.2 Academics / Education		0, 1, 2
	3.2.1 Enhance the curriculum related to sustainability	0, 1, 2
	3.2.2 Address the role of co-curricular activities in sustainability	0, 1, 2
3.3 Administration, Governance, and Planning		0, 1, 2
	3.3.1 Ties sustainability to their institutional mission, vision, traditions, and/or overarching purpose for existing	0, 1, 2
	3.3.2 Describes themselves as leaders in sustainability	0, 1, 2
	3.3.3 Demonstrated commitment from top levels of administration	0, 1, 2
3.4 Equity / Social		0, 1, 2
	3.4.1 Voice & influence	0, 1, 2
	3.4.2 Health & wellness	0, 1, 2
	3.4.3 Equity, diversity, and inclusion	0, 1, 2
	3.4.4 Affordability	0, 1, 2

Descriptive Category	Element	Response
3.5 Research		0, 1, 2
	3.5.1 Incentivize research on sustainability topics	0, 1, 2
	3.5.2 Campus as a living laboratory	0, 1, 2
	3.5.3 Highlight sustainability research topics	0, 1, 2
3.6 Community Engagement		0, 1, 2
	3.6.1 Engagement of the “general public” - the urban community where the institution is sited	0, 1, 2
	3.6.2 Engagement of the “campus community” - students, faculty, staff, and administrators	0, 1, 2

Appendix F

Campus Coding Sheet Version 3

Descriptive Category	Element	Response
1.0 Demographics		
1.1 Name	1.1 What is the name of the institution?	
1.2 State that the institution is in	1.2 Which state or territory is the institution located in?	
1.3 Institution type	1.3 Is the institution a public, private, or community college?	
1.4 Student enrollment	1.4 What is the student body enrollment count?	
1.5 Plan length	1.5 How many pages are in the plan?	
1.6 Year plan was originally created	1.6 What year was the first sustainability plan published?	
	1.6.5 What is the expiration year of the plan?	
1.7 Year(s) plan was updated	1.7 What year or years was the sustainability plan updated?	
	1.7.5 What is the expiration year of the plan?	
1.8 Climate Commitment signatory?	1.8 Is the institution a signatory of the American College & University Presidents' Climate Commitment or the Presidents' Climate Leadership Commitment?	
	1.8.5 If yes, what year did the institution sign the ACUPCC?	

Descriptive Category	Element	Response
1.9 STARS participant?	1.9 Is the institution a participant in the Sustainability Tracking And Rating System?	
	1.9.5 If yes, what year did the institution first participate in STARS?	
1.10 Talloires Declaration signatory?	1.10 Is the institution a signatory of the Talloires Declaration?	
2.0 Plan Quality		
2.1 Planning Process	2.1.1 Describes who wrote the plan?	0, 1, 2
	2.1.1.5 If yes, who wrote the plan?	
	2.1.2 Describes stakeholder engagement during plan creation?	0, 1, 2
	2.1.2.5 If yes, which stakeholders were included?	
2.2 Use of Plan Terminology	2.2.1 Provides clear goals and objectives?	0, 1, 2
	2.2.2 Provides a measurement process to assess goal completion?	0, 1, 2
	2.2.3 Assigned timeframe for accomplishing each goal?	0, 1, 2
	2.2.4 Assigned accountability for each goal?	0, 1, 2
	2.2.5 Assigned a cost for each goal?	0, 1, 2
2.3 Links to other plans	2.3.1 References to other institutional plans or documents?	0, 1, 2

Descriptive Category	Element	Response
	2.3.1.5 Which documents are referenced?	
	2.3.2 References municipal, provincial, or state plans or documents?	0, 1, 2
	2.3.2.5 Which documents are referenced?	
	2.3.3 References federal or international plans or documents?	0, 1, 2
	2.3.3.5 Which documents are referenced?	
2.4 Accessibility	2.4 Well-organized, readable, and visually appealing?	0, 1, 2
2.5 Definition of 'Sustainability'	2.5.1 Brundtland definition	0, 1, 2
	2.5.2 Three pillars definition	0, 1, 2
	2.5.3 Other definition	0, 1, 2
3.0 Plan Policy		
3.1 Operations		0, 1, 2
	3.1.1 Waste	0, 1, 2
	3.1.2 Energy	0, 1, 2
	3.1.3 Transportation	0, 1, 2
	3.1.4 Building Design	0, 1, 2
	3.1.5 GHG Emissions / Climate Change	0, 1, 2
	3.1.6 Water	0, 1, 2
	3.1.7 Food	0, 1, 2

Descriptive Category	Element	Response
	3.1.8 Grounds / Landscaping	0, 1, 2
	3.1.9 Purchasing / Consumption	0, 1, 2
	3.1.10 Technology / IT	0, 1, 2
	3.1.11 Green Fund	0, 1, 2
	3.1.12 Green Cleaning	0, 1, 2
	3.1.13 Sustainable Investments	0, 1, 2
3.2 Academics / Education		0, 1, 2
	3.2.1 Enhance the curriculum related to sustainability	0, 1, 2
	3.2.2 Address the role of co-curricular activities in sustainability	0, 1, 2
	3.2.3 Campus as a living laboratory	0, 1, 2
3.3 Administration, Governance, and Planning		0, 1, 2
	3.3.1 Ties sustainability to their institutional mission, vision, traditions, and/or overarching purpose for existing	0, 1, 2
	3.3.2 Describes themselves as leaders in sustainability	0, 1, 2
	3.3.3 Demonstrated commitment from top levels of administration	0, 1, 2
3.4 Equity / Social		0, 1, 2
	3.4.1 Health & wellness	0, 1, 2

Descriptive Category	Element	Response
	3.4.2 Equity, diversity, and inclusion	0, 1, 2
	3.4.3 Affordability	0, 1, 2
3.5 Research		0, 1, 2
	3.5.1 Incentivize research on sustainability topics	0, 1, 2
	3.5.3 Highlight sustainability research topics	0, 1, 2
3.6 Community Engagement		0, 1, 2
	3.6.1 Engagement of the “general public” - the urban community where the institution is sited	0, 1, 2
	3.6.2 Engagement of the “campus community” - students, faculty, staff, and administrators	0, 1, 2

Appendix G

Alternative Definitions of ‘Sustainability’

Institution Name	Definition of Sustainability
<i>Babson College</i>	Environmental sustainability is the collective and ongoing effort of the Babson College community and its many constituents to routinely act in ways that are consistent with protecting and improving our environment to make it safer for our own and future generations. We recognize that environmental sustainability is closely related to and codependent with social and economic stability.
<i>Bemidji State University</i>	Exemplify and create a culture that can exist indefinitely while in balance with the rest of nature.
<i>Bryant University</i>	The 17 United Nations Sustainable Development Goals (SDGs) illustrate the breadth and depth of sustainability, and the interconnected nature of it - we cannot treat the issues challenging global sustainability as separate, but rather as inextricably linked and filled with opportunity for innovation.
<i>California State University, Chico</i>	A concept and strategy by which communities seek economic development approaches that benefit the local environment and quality of life.
<i>California State University, San Marcos</i>	The collective actions and efforts that create a vibrant economy, a high quality of life, socially just communities, and ecologically sound practices to ultimately meet the needs of current and future generations.
<i>Calvin University</i>	A process that reduces the long-term impact on natural resources and the environment in a cost effective and socially acceptable manner.
<i>Central Michigan University</i>	Three Pillars + 4th Pillar: Energy Conservation & Carbon Footprint Reduction
<i>College of William and Mary</i>	Encompassing the dynamic interactions between society and the environment, both natural and human driven, operating in ways that improve the well-being of all.
<i>CUNY Kingsborough Community College</i>	Seven pillars of sustainability: energy, water, recycling, procurement, food & nutrition, transportation, and outreach & education
<i>Eastern Kentucky University</i>	Cross-generational commitment to environmental stewardship and its economic, political, and social dimensions

Institution Name	Definition of Sustainability
<i>Florida Gulf Coast University</i>	Earth Charter: Respect for nature, universal human rights, economic justice, and a culture of peace.
<i>Furman University</i>	Taking the long view of our actions and their consequences.
<i>Haverford College</i>	A vision for the world in which current and future humans are reasonably healthy; communities and nations are secure, peaceful, and thriving; there is economic opportunity for all; and the integrity of the life-supporting biosphere is restored and sustained at a level necessary to make these goals possible. All four dimensions of sustainability must be addressed to achieve this vision.
<i>Illinois Institute of Technology</i>	Effective resource management, in constant pursuit of serving the Institute's core mission. Continuous reduction of waste and pollutants toward a goal of zero waste. Consideration of immediate and long-term benefits and consequences when making long-term decisions. Giving members of the IIT community the tools to improve their resource management in actions associated with their attendance at, or work for, the university.
<i>Johnson County Community College</i>	A politically neutral way of describing a more ecologically sensitive way of thinking and acting as individuals and as a campus community.
<i>Macalester College</i>	Environment (Social Justice, Economics, Well-Being)
<i>Ohio University</i>	Campus sustainability is the degree to which activities at a particular university or college conserve natural resources, minimize environmental impact, and protect the natural system of the planet through campus operations, research, teaching, and public service.
<i>Sewanee, The University of the South</i>	A vision and a principle of behavior that would allow others - throughout the globe and in future generations - not only to endure, but to enjoy as high a standard of economic security, health, and cultural satisfaction as we enjoy today.
<i>Southwestern University</i>	To utilize components of social, cultural, and biological diversity in a way and rate that does not lead to long-term decline, thereby maintaining the potential to meet the needs and aspirations of present and future generations.
<i>St. Joseph's College</i>	Deep respect for the earth through daily practices, decision making, and stewardship in a healthy and equitable way so that communities now and in the future can thrive.

Institution Name	Definition of Sustainability
<i>Texas A&M University</i>	The efficient, deliberate, and responsible preservation of environmental, social, and economic resources to protect our earth for future generations of Texas Aggies, the Texas A&M University community, and beyond.
<i>The George Washington University</i>	Create resource systems that are healthy and thriving for all.
<i>University of California, Santa Barbara</i>	A better quality of life for everyone, now and for generations to come. It offers a vision of progress that integrates immediate and longer-term needs, local and global needs, and regards social, economic, and environmental needs as inseparable and interdependent components of human progress.
<i>University of Cincinnati</i>	Sustainability is about actively creating communities in which meaning, beauty, and connection are available to everyone, and current and future generations are afforded equal opportunity to thrive.
<i>University of Connecticut</i>	Sustainability refers to how biological systems remain diverse and productive.
<i>University of Kansas</i>	Sustainability is about building healthy, resilient communities where everyone has access to the resources needed to achieve a high quality of life without exceeding the capacity of our natural ecosystems.
<i>University of New Hampshire</i>	A collective commitment to human dignity for all people and ecological integrity in all places.
<i>University of Notre Dame</i>	It equates a respectful stewardship of the environment with the faithful care of God's creation.
<i>University of Richmond</i>	Sustainability is the creation of environmental, social, and economic conditions that foster the health and well-being of people and the natural world in this generation and generations to come. At a minimum, our practices reduce harm on people and the environment; at best, our actions improve the well-being of both.
<i>University of Wisconsin, Oshkosh</i>	Sustainability implies that the critical activities of a higher education institution are (at a minimum) ecologically sound, socially just, and economically viable, and that they will continue to be so for future generations.
<i>University of Wisconsin, Platteville</i>	Meeting the needs of the present while also enhancing the ability of future generations to meet their own needs.

Institution Name	Definition of Sustainability
<i>University of Wisconsin, River Falls</i>	Our local and global responsibility to meet the needs of present and future generations, as demonstrated by an integrated set of ecologic, social, and economic values, principles, and practices that frame how we think, choose, and act in personal, professional, and community life.
<i>Western Technical College</i>	Sustainability is the act of building - through our daily practices and educational programming - a thriving, resilient, and just community now and in the future.
<i>Western Washington University</i>	Protects local and global ecology, upholds social equity, creates economic vitality, and maintains human health.

REFERENCES

- Adhikari, S. (2017, May 26). *Difference between Plans and Policies!* Retrieved from Public Health Notes: <https://www.publichealthnotes.com/plans-vs-policies/>
- Alba-Hidalgo, D., Benayas del Alamo, J., & Gutierrez-Perez, J. (2018). Towards a definition of environmental sustainability evaluation in higher education. *Higher Education Policy* 31, 447-470.
- Alghamdi, N., den Heijer, A., & de Jonge, H. (2017). Assessment tools' indications for sustainability in universities: an analytical overview. *International Journal of Sustainability in Higher Education* 18(1), 84-115.
- Alshuwaikhat, H. M., & Abubakar, I. (2008). An integrated approach to achieving campus sustainability: assessment of the current campus environmental management practices. *Journal of Cleaner Production* 16, 1777-1785.
- Association for the Advancement of Sustainability in Higher Education. (2019, January). STARS Technical Manual, Version 2.2. Philadelphia, PA.
- Association for the Advancement of Sustainability in Higher Education. (n.d.-a). *Mission, Vision & Commitments*. Retrieved from <https://www.aashe.org/about-us/mission-vision-commitments/>
- Association for the Advancement of Sustainability in Higher Education. (n.d.-b). *History of AASHE*. Retrieved from <https://www.aashe.org/about-us/aashe-history/>
- Association for the Advancement of Sustainability in Higher Education. (n.d.-c). *The Sustainability Tracking, Assessment & Rating System*. Retrieved from <https://stars.aashe.org/>
- Baer, W. C. (1997). General Plan Evaluation Criteria: An Approach to. *Journal of the American Planning Association* 63(3), 329-344.
- Bekessy, S. A., Samson, K., & Clarkson, R. E. (2007). The failure of non-binding declarations to achieve university sustainability: a need for accountability. *International Journal of Sustainability in Higher Education*, 301-316.
- Bieler, A., & McKenzie, M. (2017). Strategic planning for sustainability in Canadian higher education. *Sustainability* 9(161), 1-22.
- Bombyk, M., Ohren, J., & Shue, L. (2003). University employees who live locally: bridging the town-gown divide. *Metropolitan Universities* 14(4), 22-28.

- Bowen, G. A. (2009). Document Analysis as a Qualitative. *Qualitative Research Journal* 9(2), 27-40.
- Brinkhurst, M., Rose, P., Maurice, G., & Ackerman, J. D. (2011). Achieving campus sustainability: top-down, bottom-up, or neither? *International Journal of Sustainability in Higher Education* 12(4), 338-354.
- Burby, R. J. (2003). Making plans that matter: citizen involvement and government action. *Journal of the American Planning Association* 69(1), 33-49.
- Calhoun, T. P. (2011). Campus sustainability is creating new planners and a better campus-wide understanding of the need for integrated planning. *Planning for Higher Education* 39(2), 48-50.
- Chen, J. (2020, March 31). *Socially Responsible Investment (SRI)*. Retrieved from Investopedia: <https://www.investopedia.com/terms/s/sri.asp>
- Clarke, A. (n.d.). *Should You Bring In A Consultant To Help Develop Your Business Plan?* Retrieved from Ground Floor Partners Business Growth Consultants: <https://groundfloorpartners.com/should-you-bring-in-a-consultant-to-help-develop-your-business-plan/>
- College of William & Mary. (2018). *Sustainability Plan*. Retrieved from William & Mary Sustainability: <https://www.wm.edu/offices/sustainability/documents/sustainability-plan.pdf>
- CollegeData.com. (n.d.). *College Size: Small, Medium or Large?* Retrieved from CollegeData.com: <https://www.collegedata.com/en/explore-colleges/the-facts-on-fit/features-that-set-colleges-apart/college-size-small-medium-or-large/>
- Conroy, M. M., & Berke, P. R. (2004). What makes a good sustainable development plan? An analysis of factors that influence principles of sustainable development. *Environment and Planning* 36, 1381-1396.
- Corcoran, P. B., Walker, K. E., & Wals, A. E. (2004). Case studies, make-your-case studies, and case stories: a critique of case-study methodology in sustainability in higher education. *Environmental Education Research* 10(1), 7-21.
- Cortese, A. (2003). The critical role of higher education in creating a sustainable future. *Planning for Higher Education* 31(3), 15-22.
- Cox, H. (2015). A model for creating a campus sustainability plan. *Planning for Higher Education*, 89-100.
- Data USA. (2018, January 12). *File:United States Map of Population by State (2015).svg*. Retrieved from Wikimedia Commons: [https://commons.wikimedia.org/wiki/File:United_States_Map_of_Population_by_State_\(2015\).svg](https://commons.wikimedia.org/wiki/File:United_States_Map_of_Population_by_State_(2015).svg)

- Disterheft, A., da Silva Caeiro, S. S., Ramos, M. R., & de Miranda Azeiteiro, U. M. (2012). Environmental Management Systems (EMS) implementation processes and practices in European higher education institutions: top-down versus participatory approaches. *Journal of Cleaner Production* 31, 80-90.
- Earth Day Network. (n.d.). *The history of Earth Day*. Retrieved from EarthDay.org: <https://www.earthday.org/history/>
- Emerald Publishing Limited. (2020). *International Journal of Sustainability in Higher Education*. Retrieved from <https://www.emerald.com/insight/publication/issn/1467-6370>
- Fainstein, S. S. (2020, April 2). *Urban planning*. Retrieved from Britannica: <https://www.britannica.com/topic/urban-planning>
- Filho, W. L., Pallant, E., Enete, A., Richter, B., & Brandli, L. L. (2018). Planning and implementing sustainability in higher education institutions: an overview of the difficulties and potentials. *International Journal of Sustainable Development & World Ecology* 25(8), 713-721.
- Fischer, D., Jenssen, S., & Tappeser, V. (2015). Getting an empirical hold of the sustainable university: a comparative analysis of evaluation frameworks across 12 contemporary sustainability assessment tools. *Assessment & Evaluation in Higher Education* 40(6), 785-800.
- Fonseca, A., Macdonald, A., Dandy, E., & Valenti, P. (2011). The state of sustainability reporting at Canadian universities. *International Journal of Sustainability in Higher Education* 12(1), 22-40.
- Furman University. (2009, November). *Sustainable Furman*. Retrieved from AASHE STARS Reports: <https://reports.aashe.org/media/secure/15/7/679/6090/Sustainable%20Furman.pdf>
- Grady-Benson, J., & Sarathy, B. (2016). Fossil fuel divestment in US higher education: student-led organising for climate justice. *Local Environment* 21(6), 661-681.
- Hansen, S. S., & Savage, C. (n.d.). *Campus Living Laboratory*. Retrieved from Pedagogy in Action: <https://serc.carleton.edu/sp/library/campusbased/index.html>
- Harvard University. (2014, October 21). *Harvard University Sustainability Plan*. Retrieved from Issuu: https://issuu.com/greenharvard/docs/harvard_sustainability_plan-web
- Hinton, K. E. (2012). *A practical guide to strategic planning in higher education*. Society for College and University Planning.

- Hitchcock, D., & Willard, M. (2008). *The step-by-step guide to sustainability planning: how to create and implement sustainability plans in any business or organization*. Sterling, VA: Earthscan.
- Huang, Y.-T., Coelho, V. R., Massoud, J., Briski, S., Toepel, A., & Silva, M. (2014). A mathematical decision-making procedure to assist in the development of sustainability plans based on the STARS framework. *Sustainability Accounting, Management and Policy Journal* 5(3), 292-312.
- International Environmental Education Programme. (1983). *Activities of the Unesco-UNEP International Environmental Education Programme (1975-1983)*. Paris: Boudin.
- James, M., & Card, K. (2012). Factors contributing to institutions achieving environmental sustainability. *International Journal of Sustainability in Higher Education* 13(2), 166-176.
- Jamison, B. A. (1996). *Guidelines for developing a campus master plan document for small colleges and universities*. Dissertation, Andrews University, Berrien Springs, MI. Retrieved from <https://digitalcommons.andrews.edu/dissertations/467>
- Jones, J. M. (2019, February 22). *Democratic States Exceed Republican States by Four in 2018*. Retrieved from Gallup: <https://news.gallup.com/poll/247025/democratic-states-exceed-republican-states-four-2018.aspx>
- Kamal, A. S., & Asmuss, M. (2013). Benchmarking tools for assessing and tracking sustainability in higher educational institutions: identifying an effective tool for the University of Saskatchewan. *International Journal of Sustainability in Higher Education* 14(4), 449-465.
- Kim, A. A., Sadatsafavi, H., Medal, L., & Ostergren, M. J. (2018). Impact of communication sources for achieving campus sustainability. *Resources, Conservation & Recycling* 139, 366-376.
- Koester, R. J., Eflin, J., & Vann, J. (2006). Greening of the campus: a whole-systems approach. *Journal of Cleaner Production* 14, 769-779.
- Krizek, K., Newport, D., White, J., & Townsend, A. R. (2012). Higher education's sustainability imperative: how to practically respond? *International Journal of Sustainability in Higher Education* 13(1), 19-33.
- Lang, T. (2015). Campus sustainability initiatives and performance: do they correlate? *International Journal of Sustainability in Higher Education* 16(4), 474-490.
- Laurian, L., Day, M., Backhurst, M., Berke, P., Ericksen, N., Crawford, J., . . . Chapman, S. (2004). What drives plan implementation? Plans, planning agencies and developers. *Journal of Environmental Planning and Management* 47(4), 555-577.

- Lidstone, L., Wright, T., & Sherren, K. (2015). Canadian STARS-rated campus sustainability plans: priorities, plan creation and design. *Sustainability* 7, 725-746.
- Lozano, R. (2011). The state of sustainability reporting in universities. *International Journal of Sustainability in Higher Education* 12(1), 67-78.
- Lozano, R., Lukman, R., Lozano, F. J., Huisingh, D., & Lambrechts, W. (2013). Declarations for sustainability in higher education: becoming better leaders, through addressing the university system. *Journal of Cleaner Production*, 10-19.
- Lukman, R., & Glavic, P. (2007). What are the key elements of a sustainable university? *Clean Technologies & Environmental Policy* 9, 103-114.
- MacQueen, K., McLellan, E., Milstein, K. K., & Milstein, B. (1998). Codebook development for team-based qualitative analysis. *Cultural Anthropology Methods* 10(2), 31-36.
- Maragakakis, A., & van den Dobbelsteen, A. (2015). Sustainability in higher education: analysis and selection of assessment systems. *Journal of Sustainable Development* 8(3), 1-9.
- McNamara, K. H. (2008). *Fostering sustainability in higher education: a mixed-methods study of transformative leadership and change strategies*. Dissertation, Antioch University, Culver City, CA.
- Norton, R. (2008). Using content analysis to evaluate local master plans and zoning codes. *Land Use Policy* 25, 432-454.
- O'Reilly, K. (2019, September 3). *The Top 20 Coolest Schools 2019*. Retrieved from Sierra: <https://www.sierraclub.org/sierra/2019-5-september-october/cool-schools-2019/top-20-coolest-schools-2019>
- Peterson, E., Carlson, S., Schmid, T., & Brown, D. (2018). Prevalence of master plans supportive of active living in US municipalities. *Preventive Medicine* 115, 39-46.
- Posner, S. M., & Stuart, R. (2013). Understanding and advancing campus sustainability using a systems framework. *International Journal of Sustainability in Higher Education* 14(3), 264-277.
- Purdue University. (2010). *Sustainability Strategic Plan*. Retrieved from Purdue University Sustainability: https://www.purdue.edu/sustainability/documents/sustainability_strategicplan.pdf
- Purman, J. (2012, October). A recipe for success: collaboration and the sustainability master plan process. *AASHE 2012 Conference & Expo*. Los Angeles, CA. Retrieved from <https://hub.aashe.org/browse/presentation/10368/a-recipe-for-success-collaboration-and-the-sustainability-master-plan-process>

- Randolph College. (2009). *A Proposal for Sustainability at Randolph College*. Retrieved from Sustainability at Randolph: http://www.randolphcollege.edu/sustainability/wp-content/uploads/sites/54/2016/04/sustainability_proposal.pdf
- Rusinko, C. A. (2010). Integrating sustainability in higher education: a generic matrix. *International Journal of Sustainability in Higher Education* 11(3), 250-259.
- Sady, M., Zak, A., & Rzepka, K. (2019). The role of universities in sustainability-oriented competencies development: insights from an empirical study on Polish universities. *Administrative Sciences* 9(62), 1-20.
- Saha, D., & Paterson, R. G. (2008). Local government efforts to promote the "three e's" of sustainable development: survey in medium to large cities in the United States. *Journal of Planning Education and Research* 28, 21-37.
- Sassen, R., & Azizi, L. (2018). Assessing sustainability reports of US universities. *International Journal of Sustainability in Higher Education* 19(7), 1158-1184.
- Second Nature. (n.d.-a). *History*. Retrieved from <https://secondnature.org/history/>
- Second Nature. (n.d.-b). *Examples of Climate Action Plan Structures*. Retrieved from <https://secondnature.org/signatory-handbook/examples-of-climate-action-plan-structures/>
- Second Nature. (n.d.-c). *Introduction to Sustainability Planning and Climate Action*. Retrieved from Second Nature: <https://secondnature.org/signatory-handbook/introduction-to-sustainability-planning-and-climate-action/>
- Semeraro, E., & Boyd, N. M. (2017). An empirical assessment of administration and planning activity and their impact on the realization of sustainability-related initiatives and programs in higher education. *International Journal of Sustainability in Higher Education* 18(7), 1311-1330.
- Shi, H., & Lai, E. (2013). An alternative university sustainability rating framework with a structured criteria tree. *Journal of Cleaner Production* 61, 59-69.
- Shields, P. M., & Rangarajan, N. (2013). *A playbook for research methods: integrating conceptual frameworks and project management*. Stillwater, OK: New Forums Press, Inc.
- Shriberg, M. (2002). Institutional assessment tools for sustainability in higher education. *International Journal of Sustainability in Higher Education* 3(3), 254-270.
- Society for College and University Planning. (n.d.-a). *Campus Planning*. Retrieved from <https://www.scup.org/planning-type/campus-planning/>

- Society for College and University Planning. (n.d.-b). *Strategic Planning*. Retrieved from <https://www.scup.org/planning-type/strategic-planning/>
- Stough, T., Ceulemans, K., Lambrechts, W., & Cappuyns, V. (2018). Assessing sustainability in higher education curricula: a critical reflection on validity issues. *Journal of Cleaner Production* 172, 4456-4466.
- Sustainable Endowments Institute. (n.d.). *The College Sustainability Report Card*. Retrieved from <http://www.greenreportcard.org/>
- Texas A&M University. (2018). *Sustainability Master Plan*. Retrieved from Texas A&M University Sustainability: <http://sustainability.tamu.edu/Data/Sites/1/downloads/2018SMP.PDF>
- The City of Burlington. (n.d.). *What is a Climate Action Plan?* Retrieved from The City of Burlington: <https://www.burlingtonvt.gov/Sustainability/CAP?cv=1>
- The Princeton Review. (2019, October 22). *The Princeton Review Guide to Green Colleges: 2019 Edition Press Release*. Retrieved from <https://www.princetonreview.com/press/green-guide/press-release>
- The White House. (2015, December 11). *American Campuses Act on Climate*. Retrieved from Obama White House Archives: <https://obamawhitehouse.archives.gov/the-press-office/2015/12/11/american-campuses-act-climate>
- Thiele, L. P. (2016). *Sustainability*. Malden, MA: Polity Press.
- Turner, P. V. (1987). *Campus: An American Planning Tradition*. Cambridge, MA: MIT Press.
- U.S. Census Bureau. (2013, April 17). *Census Regions and Divisions of the United States*. Retrieved from Census.gov: https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf
- U.S. Department of Education. (2018, Fall). *IPEDS Data Explorer*. Retrieved from National Center for Education Statistics: https://nces.ed.gov/ipeds/Search?query=&query2=&resultType=all&page=1&sortBy=date_desc&overlayTableId=25211
- U.S. Department of Education. (2019). *Fast Facts: Endowments*. Retrieved from National Center for Education Statistics: <https://nces.ed.gov/fastfacts/display.asp?id=73#:~:text=Response%3A,the%20total%20was%20%24544%20billion.>
- U.S. Department of Education. (2019, July 31). *IPEDS Survey Material: Glossary*. Retrieved from National Center for Education Statistics: <https://surveys.nces.ed.gov/ipeds/Downloads/Forms/IPEDSGlossary.pdf>

- UNESCO. (2005). *UNESCO and sustainable development*. Retrieved from <https://unesdoc.unesco.org/ark:/48223/pf0000139369>
- University Leaders for a Sustainable Future. (n.d.-a). *About*. Retrieved from <http://ulsf.org/about/>
- University Leaders for a Sustainable Future. (n.d.-b). *Talloires Declaration*. Retrieved from <http://ulsf.org/talloires-declaration/>
- Vaughter, P., McKenzie, M., Lidstone, L., & Wright, T. (2016). Campus sustainability governance in Canada: a content analysis of post-secondary institutions' sustainability policies. *International Journal of Sustainability in Higher Education* 17(1), 16-39.
- Vaughter, P., Wright, T., McKenzie, M., & Lidstone, L. (2013). Greening the ivory tower: a review of educational research on sustainability in post-secondary education. *Sustainability* 5, 2252-2271.
- Velazquez, L., Munguia, N., & Sanchez, M. (2005). Deterring sustainability in higher education institutions: an appraisal of the factors which influence sustainability in higher education institutions. *International Journal of Sustainability in Higher Education* 6(4), 383-391.
- Velazquez, L., Munguia, N., Platt, A., & Taddei, J. (2006). Sustainable university: what can be the matter? *Journal of Cleaner Production* 14, 810-819.
- Walker, J. (2017, March). Process for UT Austin sustainability master plan. *presented at Texas Regional Alliance for Campus Sustainability (TRACS) Summit*. Commerce, TX.
- We Are Still In. (n.d.). *About*. Retrieved from <https://www.wearestillin.com/about>
- Wellman, K., & Wilson, A. (2018, October). Integrating social equity: Texas A&M's 2018 sustainability master plan. *presented at AASHE 2018 Conference & Expo*. Pittsburgh, PA.
- White, S. S. (2014). Campus sustainability plans in the United States: where, what, and how to evaluate? *International Journal of Sustainability in Higher Education*, 228-241.
- Whitehead, A. N. (1927). Universities and their function. *Address to the American Association of the Collegiate Schools of Business*.
- World Commission on Environment and Development. (1987). *Our Common Future*. Oxford: Oxford University Press. Retrieved from Sustainable Development Goals: <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>