

Creighton

UNIVERSITY



CREIGHTON UNIVERSITY

Climate Action Plan

May 2013

Prepared for Creighton University by





ACKNOWLEDGEMENTS

Creighton University would like to acknowledge the following individuals for their time and expertise in contributing to this report:

- The Catholic Coalition on Climate Change
- Rev. John P. Schlegel, S.J.
- Richard Miller, Ph.D.
- Creighton University Sustainability Council

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1 INTRODUCTION AND BACKGROUND

1.1 Sustainability and the Catholic, Jesuit Mission

The Catholic Church has supported environmental stewardship for decades. Pope John Paul II issued a World Day of Peace message, *Ecological Responsibility*, in 1990. The U.S. Bishops wrote *Renewing the Earth: An Invitation to Reflection and Action on Environment in Light of Catholic Social Teaching* in 1991 and followed that with *Global Climate Change: A Plea for Dialogue, Prudence and the Common Good* in 2001.

Building on this, the Catholic Coalition on Climate Change was developed in 2006; it is comprised of over a dozen national Catholic organizations and focuses on exploring issues and faith implications of climate change. According to this group, the Catholic vision “emphasizes the pursuit of the common good, promotion of the virtue of prudence and the protection of the poorest of our brothers and sisters already suffering disproportionate impacts from climate change.”

A group of Catholic Associations, including the Association of Jesuit Colleges and Universities, convened to develop a document to help Catholic colleges and universities integrate their mission with the call for environmental stewardship and concern for the poor. That document, *Sustainability and Higher Education: A Toolkit for Mission Integration*, was released in 2011 and cited Creighton as an example in two instances.

The Jesuits are, of course, a part of the call to preserve the environment, and by extension, the creation and the poorest populations. The 32nd General Congregation of the Society of Jesus ([G.C. 32, Decree 4, #37](#), 1974) maintained that the Jesuits’ mission was not only about the service of faith, but also the promotion of justice. Ecology is now, as a result of the most recent Jesuit Congregation ([G.C. 35, Decree 3, #35, 2008](#)), recognized as integral to this [mission](#), and it is considered of particular importance for Jesuit “universities and research centres”.

In 2010, the Society of Jesus established the Task Force on Jesuit Mission and Ecology. This task force produced a document titled “Healing a Broken World”, which examines the environmental situation through an Ignatian lens and offers concrete suggestions for Jesuit universities to respond to the challenges presented.

1.2 Why Address Climate Change

1.2.1 The Science

Climate change refers to the wide range of impacts resulting from the increase in accumulated concentrations of greenhouse gases (GHG) in the atmosphere as a result of human activity, primarily the combustion of fossil fuels and deforestation.^{1,2} Climate change is one of the most urgent problems for [sustaining earth’s life support system](#).

¹ US National Academy of Science, *Advancing the Science of Climate Change*, 2010, pp. 21-22
http://www.nap.edu/openbook.php?record_id=12782&page=21

A recent synthesis [paper](#) from some of the most distinguished climate and environmental [scientists](#) in the world concluded; “In the face of an absolutely unprecedented emergency, society has no choice but to take dramatic action to avert a collapse of civilization. Either we will change our ways and build an entirely new kind of global society, or they will be changed for us.”

Globally, the impacts of climate change include changes in temperature, precipitation, sea level, ice melt, frequency and severity of storms, and changes to species and habitats, which ultimately affect human health and economies. Specifically, Nebraska and the Omaha region are expected to see increases in temperature, particularly during summer months, as well as moderate increases in spring and winter precipitation as a result of global climate change.

In addition to minimizing the impact of climate change, reducing carbon emissions has many additional benefits. These include, but are not limited to, improved air quality, lower rates of respiratory disorders such as asthma, less susceptibility to volatile energy costs, reduced vulnerability to federal and state energy regulations, and water security. Protecting the climate also minimizes a range of potential impacts, such as extreme weather events, insect outbreaks, climate-sensitive diseases, and agricultural impacts to which response or adaptation could be very costly.

Some GHG Reduction Co-Benefits

- Support local businesses and stimulate economic development
- Reduce government, home, and business energy and operational costs
- Reduce dependence on foreign fuel sources
- Reduce vulnerability to energy price increases and supply volatility
- Diversify energy supply and reduce loads on transmission systems
- Reduce air pollution emissions, including ozone precursors and fine particles
- Improve public health through increased exercise and nutritious foods
- Reduce waste and increase landfill diversion rates
- Reduce vehicle miles traveled and traffic congestion
- Reduce water consumption in the community and impacts on water bodies and riparian habitats
- Provide opportunities for regional, state, and national leadership and recognition
- Improve quality of life through preservation of urban forests, reduced commuting times, and increased access to nature and open space
- Improve educational opportunities

² http://www.nap.edu/openbook.php?record_id=12782&page=2

1.2.2 Justice for All

“At its core, global climate change is not about economic theory or political platforms, nor about partisan advantage or interest group pressures. It is about the future of God’s creation and the one human family.”

-U.S. Bishops

With increases in droughts, floods, and hunger, the world’s poor are likely to be the hardest hit by the impacts of climate change. The Catholic faith demands prudent action to address climate change as a matter of protecting God’s Creation and advocating on behalf of the poor. Included in this plan is guidance for integrating sustainability and action towards climate change into Creighton’s mission as a Catholic institution.

1.2.3 Cost-Effectiveness

Addressing climate change also has an economic benefit. For example, energy efficiency and renewable energy programs typically require an upfront investment but will save energy and/or cost over time. Included in this Climate Action Plan (CAP) is a cost benefit analysis for all proposed strategies as well as the entire CAP package. This analysis includes estimates of savings and costs over the planning horizon to aid in securing financing for implementation as well as prioritizing strategies.

1.3 Creighton’s Commitment to Climate Neutrality and Sustainability

1.3.1 American College and University President’s Climate Commitment

To show its commitment to sustainability and climate change in early 2010, Creighton’s President, Fr. John P. Schlegel, S.J., signed the American College and University President’s Climate Commitment (ACUPCC) along with 20% of the nation’s university and college presidents. Current president, Fr. Timothy Lannon, S.J. has upheld this commitment. As part of this commitment, Creighton has agreed to:

1. Complete an emissions inventory.
2. Within 2 years, set a target date and interim milestones for becoming climate neutral.
3. Take immediate steps to reduce GHG emissions by choosing from a list of short-term actions.
4. Integrate sustainability into the curriculum and make it part of the educational experience.
5. Make the action plan, inventory, and progress reports publicly available.

This report is intended to serve as Creighton’s deliverable for the second action item in the list above. Creighton will be able to use the data presented in this GHG emission inventory to identify critical areas for improvement, develop an action plan to reduce its GHG emissions, and achieve climate neutrality.

1.3.2 Other Sustainability Initiatives

In addition to ACUPCC, which has driven the development of this report, Creighton is involved in other efforts that showcase its commitment to being a national leader in sustainability:

- Host of the Midlands Higher Education Sustainability Forum, involving colleges and universities in the region
- Energy conservation initiatives by the Facilities Management Department
- Expansion of the single stream recycling program on campus
- Green Jays Student Group, National recognition in Green Business Quarterly and The Princeton Review's Guide to 286 Green Colleges
- Participation in Recyclemania!
- Annual Earth Day Celebrations
- Annual St. Francis Day celebrations
- Fair Trade University designation
- Inaugural Tree Campus USA recipient, and every year thereafter
- Small grants, provided by Facilities Management, for sustainability projects
- Ignatian Garden, a community garden for faculty, staff, and students
- Certified Nature Classroom at the Russell Child Development Center
- Participation in the oneShirt clothing drive during Earth Week
- Annual Kripke Lecture on Religion and the Environment
- Inclusion in the Sustainability and Catholic Higher Education: A Toolkit for Mission Integration
- Energy Technology majors
- Sustainability in a wide variety of courses and disciplines

2 THE CLIMATE ACTION PLANNING PROCESS

Greenhouse Gas Inventory

The greenhouse gas inventory is the first step in the climate action planning process and is used to establish a baseline from which to establish a set of emission reduction strategies. This section of the CAP also includes a business-as-usual forecast of emissions through the 2050 planning horizon.

Mission and Vision

To ensure the long-term viability of sustainability efforts at Creighton it has been realized that it will take more than a grassroots effort. This section of the report includes a summary of Creighton's existing mission and vision as well as a summary of how sustainability can be woven through both.

Aligning with the Strategic Plan

Creighton is currently in the process of developing its Strategic Plan and a concerted effort has been made to coordinate that planning effort with the development of this CAP. This section summarizes key goals from the Strategic Plan and how to align the CAP with the identified goals.

Sustainability in the Curriculum

As a higher education institution, integrating sustainability into the curriculum at Creighton is a crucial part of the CAP. This section summarizes existing programs at Creighton that address sustainability in some way as well as programs or projects that are either underway or being proposed as part of this plan to further the integration of sustainability into curriculum at the University.

Emission Reduction Strategies

This section makes up the majority of the content in the CAP. Emission reduction strategies are split into three focus areas: Energy, Transportation, and Other. Each strategy is summarized with the emissions reduction potential, cost savings, and implementation cost estimated. A summary of all reduction strategies and their contribution towards Creighton's goal of climate neutrality are also included in this section.

Implementation and Continuous Improvement

To ensure this CAP is more than a plan sitting on a shelf, this section outlines a plan for implementation. It includes a summary of how to integrate sustainability into the existing organizational structure at Creighton; an approach for continuous improvement including a summary of key players, next steps, and performance indicators for each strategy; and finally a summary of funding needs and various financing options for the plan.

3 GREENHOUSE GAS INVENTORY

3.1 Baseline Results

The total emissions in the Creighton inventory in FY'10 were 81,423 MTCO₂e. Over 95% of the emissions generated at Creighton are indirect, with the majority from consuming purchased energy. When considered by activity, energy consumption and transportation are the primary sources of GHG emissions at the university, with small portions contributed by other sources, such as the embodied emissions in purchased goods. A detailed summary of each emission source can be found in [Creighton's GHG Inventory Report](#).³

Table 1 – FY'10 GHG Emissions

		Scope	eCO ₂ Metric Tons	Percent
Energy	Natural Gas/Propane	1	1,125	1.4%
	Purchased Electricity	2	36,765	45.2%
	Purchased Steam	2	13,745	16.9%
	Purchased Chilled Water	2	6,267	7.7%
Transportation	University Fleet	1	541	0.7%
	Faculty / Staff Commuting	3	4,476	5.5%
	Student Commuting	3	3,767	4.6%
	Directly Financed Air Travel	3	6,080	7.5%
	Other Directly Financed Travel	3	625	0.8%
	Study Abroad Air Travel	3	796	1.0%
Other	Refrigerants & Chemicals	1	479	0.6%
	Agriculture	1	19	0.02%
	Solid Waste	3	-33	-0.04%
	Wastewater	3	36	0.04%
	Paper Purchasing	3	343	0.4%
	Contractor Owned Vehicles	3	12	0.01%
	Electronics Purchases	3	1,477	1.8%
	Office Supply Purchases	3	214	0.3%
	Scope 2 Transmission and Distribution Losses	3	4,689	5.8%
TOTAL			81,423	100.0%

³ The FY'10 GHG emissions summarized here are slightly different than those presented in the 2010 GHG Inventory Report found at the link (88 thousand MT CO₂e total emissions). This is the result of adjustments to the utility data for Creighton as well as updates to assumptions and emissions factors in the most recent version (v6.8) of the Clean Air Cool Planet Carbon Calculator tool.

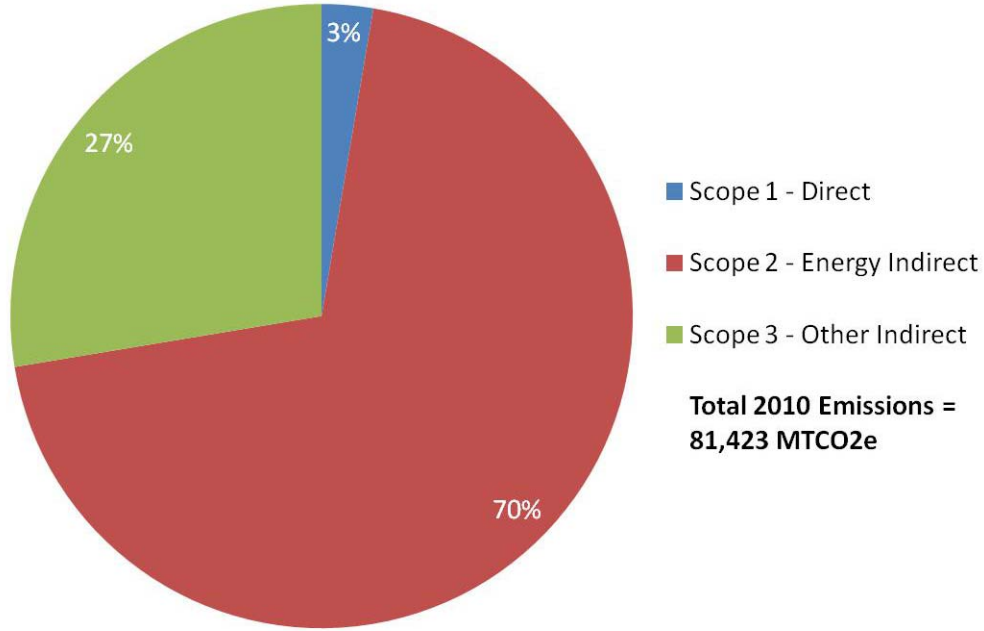


Figure 1 – FY'10 GHG Emissions by Scope

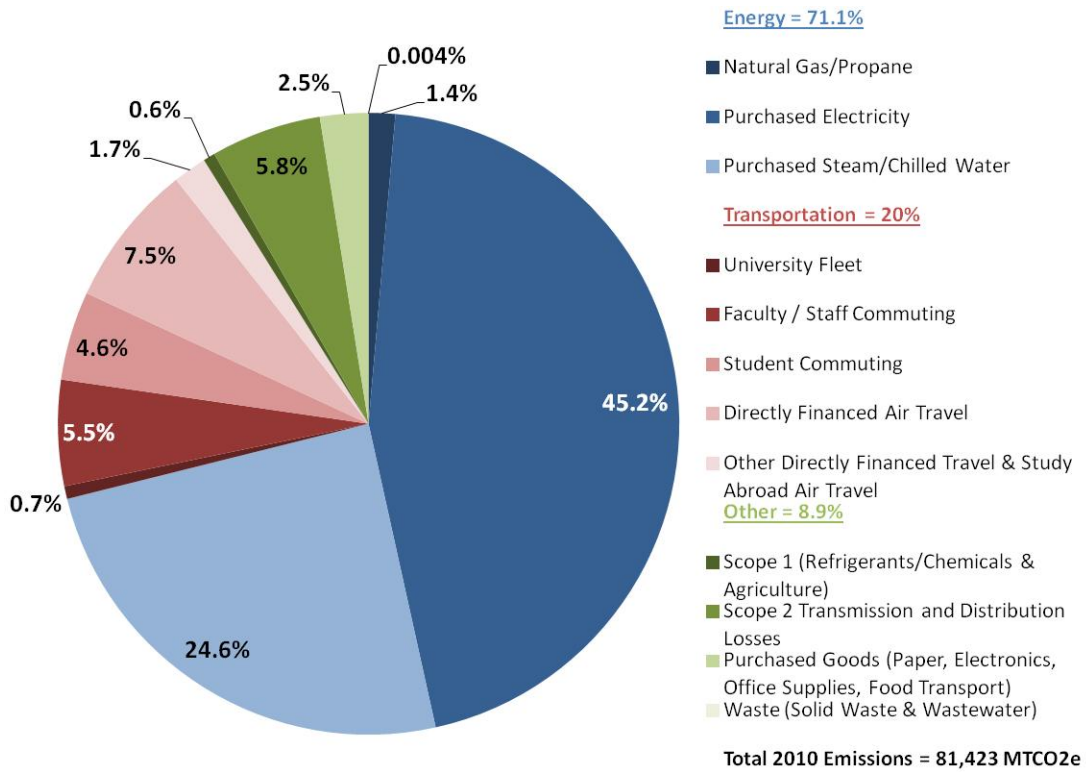


Figure 2 – FY'10 GHG Emissions by Activity

3.2 Forecast

A number of factors are expected to impact Creighton's future GHG emissions including the recent Alegent acquisition, future building construction, and projected changes in student enrollment.

In September 2012, Alegent Health acquired a variety of Creighton operations which has reduced the total GHG emissions for the University. To allow for a more accurate 'apples-to-apples' comparison of annual GHG inventories moving forward, all utility data (natural gas, electricity, steam, and chilled water) associated with facilities no longer associated with Creighton as a result of the acquisition were removed from the FY' 10 baseline inventory resulting in a decrease in Creighton's GHG emissions from 88 thousand MT CO₂e to 81 thousand MT CO₂e. Any other emission sources (fleet fuel, university financed travel, commuting, etc.) were not adjusted but the changes are expected to only minimally impact future GHG inventories.

Additionally, energy use and related emissions were estimated for the new Rasmussen Center that came online in fall 2012 as well as a new athletic practice and training facility that is estimated to come online in spring 2014. Other facilities are expected to be constructed in the future such as additional residence halls, however, the timeline and size of any additional facilities is unknown at this time and therefore were not included in the forecast. The forecast can be updated in the future as additional information is gathered about future additions and renovations on campus.

Student enrollment in the near-term (through 2016) is expected to increase as outlined in the table below and is incorporated in this.

Table 2 – Near-Term Student Enrollment Projections

2014	2015	2016
7,530 students	7,561 students	7,679 students

The figure below includes these projected future changes to Creighton GHG emissions, as well as trending of historical emissions back to 2008. Historically, there was a decrease in emissions between 2008 and 2009, with an increase in 2010, likely the result of the Ryan Center/DJ Sokol Arena coming online. From 2010 through 2012, there has been a steady decrease in emissions. These decreases are likely the result of current efficiency programs already being implemented by the Creighton facilities department.

There is expected to be an increase in emissions in FY' 13 with the Rasmussen Center coming online, another increase in FY' 15 with the athletic practice facility, and a very slight increase through 2015 due to increased student enrollment, after which a flat-line business-as-usual emission forecast is assumed. This forecast will continue to change in future iterations of this plan as additional projects and changes to operations on campus are identified and their impact to the university's GHG emissions understood. As an example, as this CAP was being developed Creighton announced its move to the Big East Conference for all athletics. This will increase University Financed Travel emissions which are not currently included in the projections presented here.

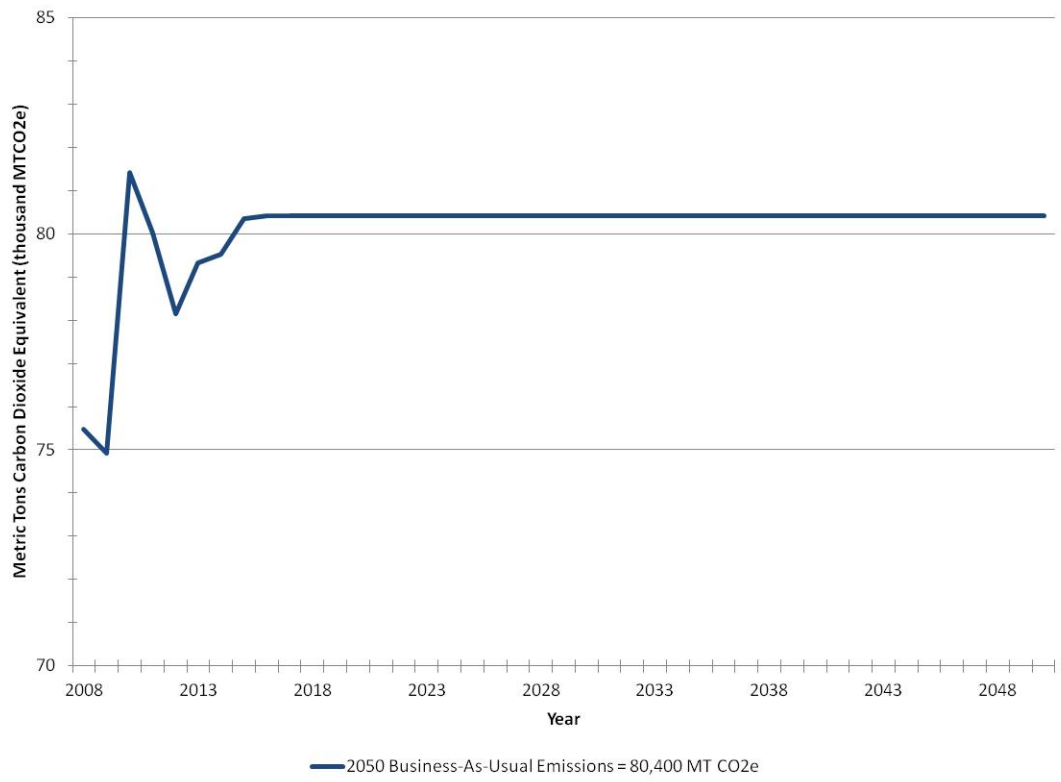


Figure 3 – Creighton Business-As-Usual GHG Emissions Forecast

4 MISSION AND VISION

4.1 Current Mission and Vision

The Creighton University Mission is:

Creighton is a Catholic and Jesuit comprehensive university committed to excellence in its selected undergraduate, graduate and professional programs.

*As **Catholic**, Creighton is dedicated to the pursuit of truth in all its forms and is guided by the living tradition of the Catholic Church.*

*As **Jesuit**, Creighton participates in the tradition of the Society of Jesus which provides an integrating vision of the world that arises out of a knowledge and love of Jesus Christ.*

*As **comprehensive**, Creighton's education embraces several colleges and professional schools and is directed to the intellectual, social, spiritual, physical and recreational aspects of students' lives and to the promotion of justice.*

Creighton exists for students and learning. *Members of the Creighton community are challenged to reflect on transcendent values, including their relationship with God, in an atmosphere of freedom of inquiry, belief and religious worship.*

Service to others, the importance of family life, the inalienable worth of each individual, and appreciation of ethnic and cultural diversity are core values of Creighton.

Creighton faculty members conduct research to enhance teaching, to contribute to the betterment of society, and to discover new knowledge. *Faculty and staff stimulate critical and creative thinking and provide ethical perspectives for dealing with an increasingly complex world.*

4.2 Integrating Sustainability

Integrating sustainability into the mission and vision of the University is one of the most important pieces to ensure the long-term viability of sustainability efforts at Creighton and buy-in by all faculty, staff, and students.

The [Catholic Climate Covenant](#) is a great resource for mission integration. This campaign, led by the Catholic Coalition on Climate Change, is intended to guide the Catholic Church to "take responsibility for our contribution to climate change and do what we do best: be advocates for those who will be left out of the public policy debate on climate change."

The Coalition developed a resource specifically geared towards higher education institution sustainability efforts called [Sustainability and Catholic Higher Education: A Toolkit for Mission Integration](#). This toolkit is organized around the five components of the [St. Francis Pledge to Care for Creation and the Poor](#), and provides guidance on how to identify and implement opportunities in each of the five dimensions on campus and in the larger community.

- **PRAY** and reflect on the duty to care for God's Creation and protect the poor and vulnerable.
- **LEARN** about and educate others on the causes and moral dimensions of climate change.
- **ASSESS** how we - as individuals and in our families, parishes and other affiliations - contribute to climate change by our own energy use, consumption, waste, etc.
- **ACT** to change our choices and behaviors to reduce the ways we contribute to climate change.
- **ADVOCATE** for Catholic principles and priorities in climate change discussions and decisions, especially as they impact those who are poor and vulnerable.

The Society of Jesus convened a task force that applied the "See, Judge, Act" framework of Catholic Social Teaching to the current environmental situation. The result was the document [*Healing a Broken World*](#), which both examines the relationship between "reconciliation with creation" and faith and justice and outlines recommendations to consider at Jesuit institutions.

5 ALIGNING WITH THE STRATEGIC PLAN

Since August 2012, Creighton has been working to prepare its Strategic Plan with a project completion date of June 2013. As the finalization of the Strategic Plan aligns with the CAP development, steps are being taken to align these two efforts. More specifically, sustainability and the CAP have been recognized by the Mission Task Force and the Sustainability Council has been solicited for feedback on how best to integrate sustainability into Creighton's mission.

In addition to mission integration, the Sustainability Council is also identifying other avenues to integrate sustainability and the actions identified in this CAP into the University's Strategic Plan, as outlined below:

- Integrating sustainability into the curriculum across all disciplines at Creighton
- Establishing Creighton as a hub for sustainability research, scholarship, and new technology development
- Utilizing cost savings from many of the strategies identified in this CAP to help ensure the long term financial sustainability of the University

6 SUSTAINABILITY IN THE CURRICULUM

Generally, AASHE notes that higher education has a key role in helping society move to a sustainable future, including the following activities:

- Developing curriculum that examines how we shape a sustainable world
- Preparing learners for living sustainably both professionally and personally
- Explicitly helping the learner deeply understand the interactions, interconnections, and consequences of actions and decisions

Furthermore, AASHE indicates that the role of higher education includes finding new ways to educate students differently – changing the pedagogy by using the campus and community as the context for sustainability education. Thus, curriculum is linked to all aspects in this Plan because the educational experience of students is a function not just of what students are taught and how they are taught; but also how the college conducts research, operates, purchases, designs facilities, invests, and interacts with local communities.

6.1 Current Programs

Creighton already offers a number of programs focusing on sustainability, including:

- Energy Technology majors
- Environmental Science major and minor

- Classes in various disciplines including
 - Chemistry
 - Biology
 - Anthropology
 - Sociology
 - Peace and Justice studies
 - Philosophy
 - Theology
 - Physics
 - Atmospheric Sciences
 - English

6.2 Future Programs

- **Student On-Boarding & Outreach:** Orientation for new students is an important opportunity for student engagement. This is an opportunity to introduce new students to sustainability at Creighton and outline various ways they can get involved.
- **Curriculum:** Student engagement has to be continually reinforced throughout a student's time on campus. There are various opportunities to do this by incorporating sustainability into the curriculum; including RSP/SRP courses and integrating sustainability into core curriculum across all colleges. Faculty is also currently in the process of [developing a humanities/social science major that will complement the current EVS and Energy Technology offerings](#).
- **Research Projects:** Various strategies outlined in this plan could potentially provide opportunities for student participation through research project, program development, implementation, etc. As an example, the Renewable Energy – Thermal strategy is still in the development stages and will require additional research on technology options which could lend itself very well to a research project for the Energy Technology class. As part of the implementation process, strategies should be viewed through this lens to identify opportunities for student participation.
- **Sustainability Institute:** There are discussions at Creighton about starting a sustainability institute on campus which could be charged with organizing sustainability efforts on campus, and providing direction to faculty on integration of the subject into their curriculum. The Institute could also be leveraged to coordinate technology, scholarship, student engagement, and research activities on campus. This approach of organizing all sustainability efforts on campus under one entity has the potential to secure alternative grant funds.

7 EMISSION REDUCTION STRATEGIES

7.1 Results Summary

Table 3 and Figure 4 summarize the results of implementing all of the reduction strategies identified as part of this CAP in order to achieve a target of climate neutrality by 2050 with a 40 percent reduction below baseline emissions by 2028.

Offsets⁴ will only be considered at the end of the planning horizon (starting in 2040) and currently make up just under 15 percent of the reduction efforts by 2050, accounting for those emission sources that are currently difficult to reduce directly. Creighton may consider two different approaches for addressing these emission offsets, purchasing them from a third party or generating the offsets directly through the installation of offsite renewable energy projects. As discussed in the offset write-up below, options will be evaluated in the future to reduce the dependence on offsets.

The average annual implementation costs through the planning horizon for all reduction strategies included in the CAP are approximately \$3 million. The total annual facilities budget at Creighton is \$13 million and capital improvement projects are funded annually that may include efficiency improvements. Implementation of the CAP as proposed will be challenging given the need to prioritize current funding with the deferred maintenance projects and competing program investments. .

Due to their relatively low contribution to emissions reduction, quantified results for the Green Building, Reduced Fleet Fuel Use, and Purchased Goods & Waste Management are not included in the tables or figures below.

⁴ The [World Resources Institute](#) defines a carbon offset as “a unit of carbon dioxide-equivalent (CO₂e) that is reduced, avoided, or sequestered to compensate for emissions occurring elsewhere”.

Table 3 –Preliminary Cost Benefit Analysis

Description	Emission Reduction [MT CO ₂ e]	2050 Cumulative		Simple Payback [years]	Net Present Value		Return on Investment [Net Cost Savings/ Cumulative Cost]	Cost Effectiveness [Net Cost Savings/ Cumulative MTCO ₂ e]
		Implementation Cost [\$]	Cost Savings [\$]		2028	2050		
Energy Conservation Measures	355,000	\$11,986,000	\$92,274,000	7	\$5,717,313	\$20,966,463	670%	\$226
Outreach and Behavior Change	28,000	\$1,950,000	\$3,208,000	<1	\$259,553	\$284,412	65%	\$45
Re-commissioning	216,000	\$12,448,000	\$55,792,000	5	\$3,699,346	\$4,542,192	348%	\$201
Renewable Energy - Electricity	129,000	\$23,019,000	\$20,095,000	>25	\$0	(\$1,664,381)	-13%	(\$23)
Renewable Energy - Thermal	117,000	\$65,766,000	\$1,221,000	>25	\$0	(\$177,897)	-98%	(\$552)
Reduced Commuting	24,000	\$0	\$0	n/a	\$0	\$0	n/a	n/a
Reduced University Financed Travel	70,000	\$50,000	\$26,084,000	n/a	\$2,625,392	\$7,264,200	n/a	n/a
Offsets (Purchased) *	72,500	\$1,087,000	\$0	n/a	\$0	(\$174,971)	-100%	(\$15)
Offsets (Owned) *	72,500	\$34,405,600	\$36,682,000	>25	(\$3,582,104)	(\$2,010,060)	7%	\$31
<i>OPPD Renewable Energy Goals</i>	<i>258,000</i>	<i>\$0</i>	<i>\$0</i>	<i>n/a</i>	<i>\$0</i>	<i>\$0</i>	<i>n/a</i>	<i>n/a</i>
<i>CAFE Standards</i>	<i>178,700</i>	<i>\$0</i>	<i>\$0</i>	<i>n/a</i>	<i>\$0</i>	<i>\$0</i>	<i>n/a</i>	<i>n/a</i>
TOTAL (w/ Purchased Offsets)	1,472,300	\$116,322,700	\$225,552,000	11	\$15,013,639	\$38,116,768	94%	\$74
TOTAL (w/ Owned Offsets)	1,472,300	\$153,061,800	\$265,902,200	15	\$11,073,324	\$36,082,935	74%	\$77

* The university will explore all options in the future based on technological change, engineering advancements, energy source discoveries, etc. before any investment in offsets are considered.

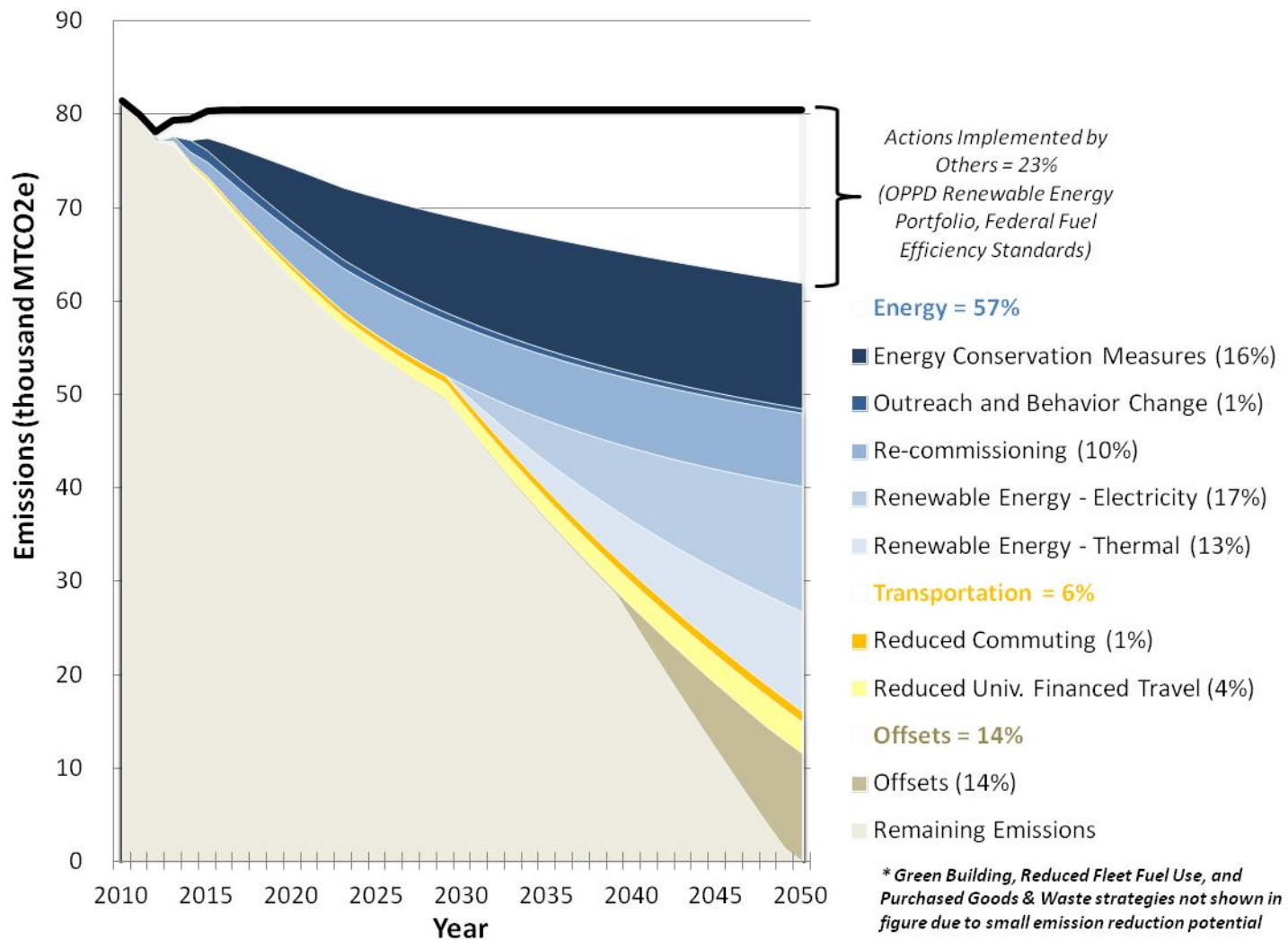


Figure 4 –Emission Reduction Wedge Diagram

7.2 Emission Reduction Strategies

7.2.1 Energy

7.2.1.1 *Green Building and Capital Improvement Projects*

One of the Short-Term Actions adopted by Creighton as part of ACUCPCC is an objective to design all new construction and major renovations to a Leadership in Energy and Environmental Design (LEED) Silver level, which may reduce energy use in new buildings by 30 percent over existing building stock. Applying LEED criteria to future construction projects at Creighton would help to minimize the impact on the campus GHG inventory. Near-term projects that should incorporate green building practices include:

- Varsity practice and training facility
- Renovation of various buildings including the Harper Center, the Eppley Building, Old Gym, and others
- Residence halls (new buildings and/or renovation of existing facilities)

This strategy builds upon the ACUCPCC commitment to LEED Silver status, through the development of a Sustainable Building and Capital Improvements Policy. This policy would require the incorporation of green building practices into the siting, design, construction, remodeling, repair, maintenance, operation, and deconstruction of all campus facilities and would also incorporate a systems approach to planning, decision-making, and design for all capital improvement projects. Such an approach often includes a triple bottom line framework for comparing project options based on consistent environmental, social, and economic metrics. Additionally, this approach would include a more holistic approach to cost accounting, including use of life cycle analysis, examining project costs from pre-construction to decommissioning to factor into decision making considerations such as durability, operation and maintenance costs, and end-of-life project costs.

7.2.1.2 *Preventative Maintenance*

This strategy entails establishing a campus-wide preventative maintenance program and management system to better evaluate replacement/maintenance options. It also includes establishing a dedicated preventative maintenance plan and staff to maintain high performance in existing building systems, save money in utility costs, and delay or prevent costly repair and replacement.

Creighton currently has a detailed deferred maintenance handbook outlining all of maintenance projects on campus, ranked by order of importance/need, and split into various categories. Typically repairs and replacement of equipment in the Services Systems category of the deferred maintenance handbook will have a direct impact on energy reduction and help meet the goals outlined in this CAP.

The added labor and material costs associated with the implementation of a preventative maintenance program will be offset by the savings achieved over the life of the equipment.

According to the U.S. Environmental Protection Agency and U.S. Department of Energy, procedures specifically targeted at energy efficiency in heating, ventilation, and air conditioning (HVAC) equipment and lighting systems, for example, can save 5 to 20 percent on energy bills annually without significant capital investment. Other benefits include increased occupant health and comfort, conservation of resources, and reductions in major repair and replacement of equipment.

7.2.1.3 Energy Conservation Measures

This strategy focuses on opportunities for energy conservation measures (ECMs) in existing buildings. Typical ECMs address building envelope, lighting, HVAC equipment, and domestic hot water. For the purposes of this analysis it was assumed that 10 percent of the square footage on campus would be impacted annually and an average 20 percent energy savings could be realized with an average 5 year payback.

During the development of this plan, walk-throughs were conducted of multiple buildings on campus to identify opportunities for savings. Findings from this effort were coordinated with the Utilities and Energy Management Plan to develop a complete list of ECMs and related costs and savings. Refer to the Utilities and Energy Management Plan for these findings.

Increasing energy efficiency in campus buildings saves both natural resources and money by decreasing electricity and natural gas use and thus reducing environmental consequences. Buildings are the leading energy users in the country, accounting for more than \$280 billion in annual energy costs. Colleges and universities control a large number of buildings, including offices, housing, classrooms, labs, and athletic facilities, and must pay for energy use in all of them. Straightforward retrofits to windows, insulation, electrical, lighting, or heating systems can yield large energy cost savings. Such retrofits not only save money and reduce GHG emissions; they also lead to increased productivity by students, faculty, and staff who use the buildings.

7.2.1.4 Outreach and Behavior Change

Ensuring the successful implementation of this plan requires increasing awareness in the Creighton community and encouraging more conservation minded behaviors on campus. Research indicates that education alone can result in 5 percent to 30 percent energy savings⁵. Based on evaluation of various case studies, an average savings of 7 percent annual savings was assumed for this strategy.

Results like these can be accomplished through various outreach and education campaigns, making the campus community more aware of the energy it uses. One specific opportunity for this strategy is to install web-based portals and other information kiosks in buildings to show students, faculty, and staff real time energy use on campus to help them better understand how

⁵ Doppelt, Bob and Markowitz, Ezra M. (2009) Reducing Greenhouse Gas Emissions through Behavioral Change: An Assessment of Past Research on Energy Use, Transportation and Water Consumption. Climate Leadership Initiative Institute for a Sustainable Environment, University of Oregon, Eugene, OR.

various activities impact campus energy use. Competitions between buildings, particularly student housing, could be quite effective at reducing energy consumption on campus as well.

7.2.1.5 Building Re-commissioning/Tune-Up

Re-commissioning essentially involves optimizing (tuning up) an existing building's mechanical and control systems so they operate efficiently and effectively, resulting in reduced energy use and increased occupant comfort. Activities may include testing energy efficiency and thermal/environmental performance of a building's automatic control, heating, cooling, and refrigeration systems. It can also include lighting and daylighting controls (e.g., sensor calibrations) and building envelope systems. For smaller, less complicated buildings (less than 50,000 square feet) a more streamlined tune-up approach is used for greater cost-effectiveness. A little over half (57%) of the 56 buildings on the Creighton campus are less than 50,000 square feet.

The re-commissioning process can be particularly valuable where internal loads and space layouts have changed but system functionality has not. This may be particularly applicable to the upcoming Harper Center repurposing.

The purpose of testing, adjusting, and rebalancing heating, ventilation, and air conditioning (HVAC) systems is to assure that a system is providing proper airflow with maximum occupant comfort at the lowest energy cost possible. Instrument calibration and reporting can also help to optimize operations that affect energy consumption that might go unnoticed. All savings realized for building re-commissioning are assumed to be over and above what can be realized for steps taken as part of the building energy efficiency strategy discussed above (6.3.1.3).

A 10-year cycle is proposed for re-commissioning efforts at Creighton so that 10 percent of the campus building space is evaluated every year with an estimated 10 percent energy savings. This continuous commissioning model ensures that savings are maintained over the long term and new opportunities are realized as building uses change and equipment ages.

7.2.1.6 Renewable Energy - Electric

Though energy efficiency and conservation should be the top priority for Creighton to reduce emissions associated with building energy consumption, consumption cannot be reduced to zero, therefore on-site energy generation should be considered as a second phase of implementation (starting in 2030). This strategy considers the installation of solar PV arrays (both rooftop and land applications) as well as wind turbines for additional generation. The analysis presented in this plan does not include costs associated with any required land purchases.

The roof-top areas and suitability for installation of solar PV was roughly evaluated using satellite photos. Ground-mounted and/or parking lot canopy solar PV installations are also included in this strategy. Specific locations have not been identified but a total of 250,000 square feet of land/canopy PV installations was assumed. It is likely that this could be done through a combination of existing open space on campus, existing parking lots, as well as the potential acquisition of additional land for a larger solar array.

For wind turbines, most of Omaha is in a less than ideal wind regime for generating power (wind power class 2 or 3 at a height of 50 meters), particularly when the wind shear from buildings, trees and other obstructions is considered. However, outside of the City, in more open areas, the wind potential increases significantly. For the purposes of this CAP, it has been assumed that Creighton would secure access to land off the main campus site to install a larger, utility scale wind farm to offset the remaining electricity consumption on campus after all other strategies are implemented.

7.2.1.7 Renewable Energy - Thermal

Currently, Creighton purchases steam and chilled water from Energy Systems Company (ESC) for the majority of its space heating and cooling. The fuel source for both the steam and chilled water loops is a mixture of natural gas and electricity. A small portion of campus is not on the district system but is instead served by individual heating and cooling units (rooftop units or split furnace/air conditioning units) with natural gas for heating.

There are various options Creighton could consider to reduce the GHG impact of the natural gas as well as steam and chilled water supplied to campus. A number of these identified options are outlined below; additional research will have to be conducted to determine the most appropriate solution for Creighton.

- Improved efficiency of the existing system
- Combined heat and power
- Solar thermal installations
- Biomass generation
- Offset development – installation of additional electricity generation projects (solar PV, wind, etc.) to offset the emissions generated by natural gas, steam, and chilled water consumption

7.2.1.8 Omaha Public Power District Renewable Energy Goals

As outlined in its [2010 Sustainability Report](#), OPPD has set a goal of having 10 percent of its retail electricity sales coming from renewable energy by 2020. In addition, the City of Omaha's Environment Element and Comprehensive Energy Management Plan (CEMP) have a goal of increasing this amount by 10 percent every 10 years thereafter, mainly through utility scale wind and solar projects. Because it is in OPPD's service area, the university would benefit from the reduction emissions associated with its electricity usage. For the purposes of this analysis, a 1 percent reduction in the electricity emissions factor was assumed for Creighton. If the goals outlined above are achieved, the annual percent reduction could be much greater (1.5 to 4 percent annually). However, a more conservative approach was taken because Creighton does not have direct control over this action and it makes up such a large portion of the overall path to climate neutrality for the campus.

7.2.2 Transportation

7.2.2.1 Reduced Fleet Fuel Use

This action involves reducing overall municipal fleet fuel consumption through reduction of non-essential trips and replacing fleet vehicles with more efficient models, including replacement with electric vehicles where applicable and as the carbon intensity of Creighton's electricity supply decreases. Tools and technologies to reduce non-essential trips include:

- Route optimization
- Video and tele-conferencing technologies
- Shuttle services and bus passes
- Ride sharing
- Bicycle infrastructure, including a bike check-out program and additional racks
- Alternative Fuel vehicles (CNG, electric, etc.)

7.2.2.2 Reduced Commuting

Currently transit options in the City of Omaha are limited. Creighton offers a shuttle to and from campus but it only serves targeted areas of town and therefore does not address the needs of all faculty, staff, and students. The City is currently updating its Transportation Master Plan, which will incorporate increased transit options. And additionally, the Environment Element and CEMP have goals to reduce vehicle miles travelled in Omaha, which will have a direct impact on Creighton and available transportation options, including improved bike and pedestrian infrastructure and mass transit, among other things. This strategy focuses on reducing single-occupancy vehicle commuting by the Creighton community with the impact gradually increasing as additional transportation options continue to be made available by the City, reaching a target of 40 percent below the 2010 baseline by 2050.

In addition to taking advantage to the increase in transit services provided by the City, Creighton can take steps directly to improve the use of alternative commuting modes by faculty, staff, and students. Below are a number of ideas that have been recommended by various representatives of the Creighton Sustainability Council:

- Promote car-sharing programs (building off the current Zip Car program), vanpool programs and off-campus carpool programs that provide incentives for student, faculty, and staff to carpool.
- Provide additional priority parking by creating reserved parking spots for carpoolers, provide subsidized or free parking passes, and promote the existing regional ride share program (www.metrorideshare.org). Provide incentives (lower cost/free parking, loan programs) for faculty, staff, and student owners and operators of low-emission vehicles.
- Provide infrastructure and incentives for faculty, staff, and students who bike or walk to campus, such as bike racks and locker facilities.
- Encourage pedestrian and bike traffic when redesigning sites.

- Develop and encourage policies for faculty and staff that encourage telecommuting and teleconferencing when feasible.
- Evaluate options for alternative-schedule workdays for any relevant faculty/staff
- Encourage multi-use buildings around campus (retail on 1st floor with residential on upper floors, etc.)

7.2.2.3 Reduced University Financed Travel

This strategy focuses on opportunities to reduce the emissions associated with travel, specifically airline travel, financed by the university, without restricting faculty and staff from high level performance or going against Creighton's mission as an educational institution. The main approach for addressing this emission source is through increased use of technology and video conferencing capabilities on campus, thereby reducing the need for travel which could also provide an opportunity for Creighton to become a communications technology hub for the region. Secondly, financed travel may be reduced by directly limiting the number of allowable trips per staff/faculty member each year.

7.2.2.4 CAFE Standards

One opportunity over which Creighton does not have direct control but that can have a significant impact on transportation related emissions generated by the university is improved fuel economy standards for passenger vehicles implemented at the federal level. The most recent CAFE (Corporate Average Fuel Economy) standards set a target of 55 miles per gallon by 2025. This opportunity is also recognized in the City's CEMP.

7.2.3 Other

7.2.3.1 Purchased Goods & Waste Management

Recent data from the U.S. Environmental Protection Agency indicates that almost 30 percent of carbon emissions associated with purchased goods can be attributed to the "life cycle" of these goods. These emissions occur at multiple stages of a product's life cycle, from extraction and processing of raw materials to manufacture, distribution, storage and disposal.

Environmentally preferable purchasing and reducing the use and amount of purchased goods can not only save money, but also help reduce energy and water consumption and GHG emissions associated with products.

By world standards, waste in the United States is a large and growing problem. Major facilities and tracts of land are required to accommodate generated waste, and significant resources are needed for the ongoing monitoring and mitigation long after disposal. This strategy focuses on reducing the amount of solid waste generated by the Creighton campus which can reduce GHG emissions⁶, prolong the life of landfills, and reduce disposal costs.

⁶ Creighton's waste currently goes to the Pheasant Point Landfill which has a gas to energy system; therefore reduction in waste sent to the landfill will not decrease emissions.

7.2.3.2 Carbon Offsets

Implementation of the strategies outlined above does not get Creighton to climate neutrality. The remaining emissions are mostly from emission sources that are more difficult to reduce including commuting, University financed travel, and embodied emissions in goods purchased for campus (paper and office products and electronic equipment, specifically⁷). As Creighton continues to update this plan and adjust its strategies, there will likely be additional opportunities to address these emission sources and the requirement for offsets will likely decrease.

Creighton can take two approaches to offset its remaining emissions. It can purchase offsets from a third party or it can invest in offsite renewable energy projects to develop its own offsets. Purchasing offsets require less upfront cost but they are a continuous net cost to the university (no direct return on investment). Alternatively, investment in offsite renewable energy projects require significantly more upfront investment but that investment will eventually have a payback. It will be up to Creighton to select an approach. Initial guidance from the Creighton Sustainability Council is to avoid purchasing offsets unless absolutely necessary. Under current conditions and assumptions, the University will have to determine if it wants to make annual investments in carbon offsets or simply purchase offsets only at the end of the planning horizon to meet its climate neutral goal.

7.2.3.3 Emerging Technologies

As a living document, this plan will undergo regular reviews and updates during which Creighton will evaluate new technologies and consider the addition of strategies to this plan. A myriad of technologies on the horizon may become viable within the timeframe of this plan and alter the course of Creighton's path to climate neutrality.

⁷ Only paper purchases are required for inclusion by ACUPCC; office product and electronic equipment purchases were added by Creighton

8 IMPLEMENTING THE CAP

8.1 Organizational Development

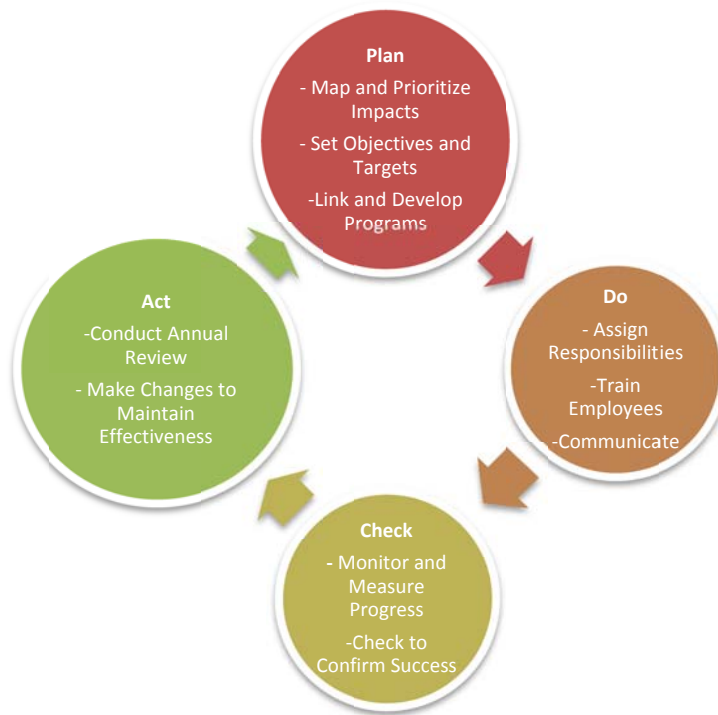
Along with integrating sustainability into the mission and vision at Creighton, an important step to ensuring the long term viability of this CAP and other sustainability efforts on campus is to align the CAP with existing systems across the University, as outlined below. Next steps for each of these systems are summarized in the Implementation and Continuous Improvement section of this plan.

- **Governance** determines how an organization makes decisions and holds itself accountable to those decisions. Sustainability efforts need to tap into these processes, ensuring that management holds the organization accountable for sustainability decisions and plans. Thus leadership and management review mechanisms are critical for success of the CAP.
- **Organizational Structure** determines how roles and responsibilities for implementing sustainability are assigned. This includes a charting of who is responsible for doing what parts of the plan, who needs to be consulted or informed and ultimately who will be held accountable. Ensuring the long term success of this plan requires a central point of contact to oversee all of the various parts and pieces. Based on feedback and input from various Creighton faculty and staff, the following organizational structure is being proposed
 - **Sustainability Director** to oversee all sustainability related efforts. To address the varying needs of the University faculty and staff, a co-director position is also being considered with one staff representative and one faculty representative. This position could potentially be funded through the cost savings realized as a result of implementing this plan.
 - **Sustainability Council** to act as the ‘singular voice’ and central housing station for everything sustainability at Creighton. Volunteer representatives from all facets of the Creighton community (faculty, staff, and students).
 - **Climate Action Plan Working Groups** to implement the CAP. Sustainability Council members will self-assign to working groups based on areas of interest or expertise. Each working group will be responsible for implementing strategies identified in this CAP.
- **Planning** is a key aspect of the long term vision for Creighton. Incorporating sustainability and this CAP into the planning process, whether in the evaluation of future capital improvements or curriculum development at the University will be an important for continuous support for these efforts.
- **Human Resources Management** will play a vital role in the implementation of the CAP. By incorporating sustainability into the school’s mission, programs can be developed to incentivize faculty and staff to participate and integrate sustainability into their everyday activities; providing them with the resources they need to participate will help ensure the success of the CAP and other sustainability efforts on campus.

- **Budget and Financial Management** is crucial to all operations on campus, including the implementation of this plan. To prevent the CAP from sitting on a shelf, it will be important to lay out a targeted approach to financing each of the strategies and incorporating into Creighton’s annual budget process.
- **Communications** will be important for encouraging participation and action, coordinating efforts, and reporting progress.
- **Core Values and Cultural Norms** are important to address to ensure buy-in and participation. One specific core value that has already been discussed and is incorporated throughout this plan is the integration of sustainability with the Jesuit Mission.

8.2 Implementation and Continuous Improvement

This CAP is considered the first iteration of what will be a living document, subject to a continuous “Plan-Do-Check-Act” review and revision process as strategies are implemented, progress is monitored and measured, new strategies are developed, and the CAP is revisited. Employing such a continuous improvement process will ensure the CAP does not remain static or sit idle on a shelf but rather continues to move Creighton toward sustainability year after year.



8.2.1 Plan

The first component of the Plan-Do-Check-Act cycle is planning - embodied by the completion of this first version of the CAP.

8.2.2 Do

The “Do” component of the continuous improvement process entails implementing the CAP’s strategies. For effective implementation, accountability must be established whereby lead and supporting roles are assigned to each strategy and the necessary resources are allocated to implementation, from the management level down to staff, faculty, and students.

Progress is already being made at Creighton. The list below summarizes activities that are currently underway or planned to take place in the next few months.

- Creighton students have asked for and organized a shuttle to/from the airport for breaks
- Course planning for the Fall 2013 semester is integrating the next steps for implementing additional electrical renewable energy on campus
- A work plan has been developed for a CAP communications and marketing strategy
- The Purchasing Department is:
 - Moving more towards “strategic sourcing” and as part of that process has started doing more audits of Creighton’s vendors and suppliers
 - Implementing a new centralized purchasing/ordering/paying software (CUBuyPlus) that is working to reduce the amount of purchased goods. About 85% of campus will be on CUBuyPlus by the end of April 2013.
 - Integrating sustainability into its purchasing/contracting language
- The Sustainability Council will be convening in the summer of 2013 to identify working groups to ramp up implementation of the CAP

Beyond what is already happening on the ground, the following table summarizes strategies and other aspects of the plan, identifies the lead party for each, and outlines the recommended next step to help guide in implementation.

Table 4 – Potential Participating Departments and Next Steps by Strategy

Topic Area	8.2.2.1 Potential Participating Departments	Potential Next Steps (subject to appropriate approvals)
Mission and Vision		
Mission and Vision	Campus Ministry; Theology Department; Jesuit Community; DoIT; Human Resources; Division of Student Life; Marketing and Communications; Office of the President; University Relations	<ol style="list-style-type: none"> 1. Take the St. Francis Pledge to Care for Creation and the Poor as a University 2. Use the toolkit for guidance on how to integrate sustainability into Creighton’s existing mission 3. Convene Strategic Planning group to incorporate sustainability into mission and vision
Sustainability in the Curriculum		
Student On-Boarding &	Green Jays; Welcome Week [staff and students];	<ol style="list-style-type: none"> 1. Develop a sustainability primer for distribution to all new students during orientation, or another time.

Topic Area	8.2.2.1 Potential Participating Departments	Potential Next Steps (subject to appropriate approvals)
Outreach	Division of Student Life	2. Identify other opportunities and programs for introducing incoming students to Creighton's sustainability efforts
Curriculum	Faculty Council; Faculty in various colleges	<ol style="list-style-type: none"> 1. Use outcomes from the sustainability curriculum team retreat (January 2013) to identify opportunities for student engagement in sustainability studies 2. Develop a list of all courses offered by Creighton that relate to sustainability so students have a one-stop shop to identify their options 3. Begin steps to integrate sustainability into the freshman introductory and senior capstone programs 4. Begin discussion of integrating sustainability into core classes in all colleges on campus
Sustainability Institute	Jay Leighter	1. Follow status of institute development and develop a plan for having the institute lead/coordinate all sustainability issues on campus
Emission Reduction Strategies		
Green Building and Capital Improvement Projects	Facilities Management; Campus Planning; University Relations; Energy Technology; Vendors and contractors; Athletics; Residence Life	<ol style="list-style-type: none"> 1. Investigate the feasibility of new gifted buildings being climate neutral or provided an endowment to become so; similar to efforts to fund a maintenance endowment 2. Develop a Creighton Sustainable Building Policy 3. Develop a simple triple bottom line tool to use in evaluating capital projects using environmental, community, and economic factors 4. Apply policy and tool to deferred maintenance project list 5. Develop policy to require a sustainability/energy assessment for all renovations and remodels 6. Develop approach to address the Architecture 2030 Challenge for all buildings on campus. (carbon neutral for all new construction and 50% reduction by 2030)
Preventative Maintenance	Facilities Management; Budget	<ol style="list-style-type: none"> 1. Develop a documented handbook for preventative maintenance 2. Provide any necessary training to facilities staff on the preventative maintenance process and use of the handbook
Energy Conservation Measures	Facilities Management; DoIT; Purchasing	<ol style="list-style-type: none"> 1. Refer to the Utilities and Energy Management Master Plan for more direction on targeted programs and next steps 2. Refer to Sodexo Energy Audit for additional information and guidance on Energy Conservation Measures 3. Utilize new scheduling software to identify when rooms are (un)occupied to refine lighting/HVAC schedules 4. Consider efficiency in all deferred maintenance projects 5. Conduct more detailed energy assessments of each campus facility 6. Prioritize efficiency upgrades based on assessments and building EUIs 7. Set standards for energy conservation (purchasing and use) for computers and peripherals across campus

Topic Area	8.2.2.1 Potential Participating Departments	Potential Next Steps (subject to appropriate approvals)
		8. Enforce EnergySTAR purchasing policies
Outreach and Behavior Change	Sustainability Council; Green Jays; Facilities Management; Creighton Student Union; Graduate Student Government; Inter-Residence Hall Government; Marketing and Communications; DoIT; Finance Department; Student Activities Office; Athletics; Human Resources	<ol style="list-style-type: none"> 1. Develop an on-line sustainability pledge to be rolled out in August 2013 2. Review and evaluate options for reporting energy usage to departments Incentivize departments to participate in energy savings realized by projects or programs 3. Increase the signage around campus to encourage conservation and educate about energy savings (e.g. plug load management) 4. Identify programs to target harder to reach sectors of the Creighton community such as off-campus housing
Re-commissioning and Tune-Up	Facilities Management; Residence Life; Athletics; Budget; School of Medicine	<ol style="list-style-type: none"> 1. Include re-commissioning in the plan for the change of use of the Harper Center 2. Review the deferred maintenance handbook and identify opportunities for incorporating re-commissioning into the identified projects 3. Develop a plan and schedule for conducting re-commissioning/tune-up in all campus facilities
Renewable Energy - Electric	Campus Planning; Facilities Management; Energy Technology Program; Development	<ol style="list-style-type: none"> 1. Identify priority projects for next round of rooftop solar PV installation implementation; integrate this action into the Energy Technology Program course development for Fall 2013 2. The first priority will be to develop projects on campus. Secondly, develop a guide/process for how to consider and evaluate future land donations for renewable energy installations. Current potential opportunities to consider include: <ol style="list-style-type: none"> a. Iowa farm land b. Hospital in Arizona (partner of Creighton's; potential PV site)
Renewable Energy - Thermal	Energy Technology Program	<ol style="list-style-type: none"> 1. Develop research project for Energy Technology students to research this strategy further and evaluate various options 2. Conduct pilot project/prototype in the "county building" in 2013-2014; utilize findings from pilot project to identify additional opportunities
Reduced Fleet Fuel Consumption	Purchasing; Transportation; Development; Facilities Management; Jesuit Community; Athletics; Mail Center; Admissions; Residence Life; Public Safety; Energy Technology	<ol style="list-style-type: none"> 1. Apply for biodiesel/biofuels grant due June 2013 2. Develop policy for new vehicle purchases that considers more efficient options as well as electric or CNG vehicles where applicable 3. Create outreach campaign for faculty and staff to encourage reduced use of fleet vehicles as a means to minimize non-essential trips 4. Learn more about grant proposal in for developing a collaborative biodiesel program between Metro, Iowa Western

Topic Area	8.2.2.1 Potential Participating Departments	Potential Next Steps (subject to appropriate approvals)
		<p>CC, and Creighton with production performed at Iowa Western and waste oil from campuses as the feedstock.</p> <p>5. Identify opportunities to reduce the use of fuel for off-road equipment on campus (e.g. leaf blowers)</p>
Reduced Commuting	<p>Student Life & Human Resources; Transportation; Creighton Student Union; Green Jays; Inter-Residence Hall Government; Graduate Student Government; Finance Department; Public Safety; Metro Bus System; Sustainability Council; Wellness Council; Creighton Office for Online Learning/Center for eLearning and Academic Innovation</p>	<p>1. Participate in the next Metro Commuter Challenge</p> <p>2. Evaluate current shuttle routes and need for additional routes, larger vehicles etc.</p> <p>3. Further evaluate bicycle commuting options</p> <p>4. <i>(Community and Government Relations - Chris Rodgers)</i></p> <p>5. Work with Campus Safety to get campus bike fleet/bike library implemented on campus (bikes already owned)</p> <p>6. Work with other higher education institutions and organizations in Omaha, potentially through a Community Alliance for Climate Action Plans to:</p> <ul style="list-style-type: none"> a. Secure bus passes and better service for all entities b. Support community-wide transportation programs (MAPA bike trail project, Metro light rail grant, etc.) <p>7. Develop communications campaign to educate Creighton community about existing programs (shuttle service, floater vehicle, zip cars, GPS shuttle tracking, etc.)</p> <p>8. Cost/benefit analysis for CNG and/or electric vehicle fueling station(s) on campus</p> <p>9. Take steps to become a Bike Friendly University</p> <p>10. Evaluate options to reduce parking on campus:</p> <ul style="list-style-type: none"> a. Promote alternatives to freshman to avoid bringing a car to campus; alternatively supply them with a bus pass and/or access to a bike b. Examine parking fee structure to incentivize alternative commuting c. Create a “sustainability credits” program where faculty/staff can receive points for taking alternative transportation to work (biking/walking, bus, carpool) to be exchanged for subsidized bus passes, healthy dining dollars, etc. <p>11. Evaluate options to remove Creighton shuttle system and instead increase Metro service to/from campus</p> <p>12. Dedicated motorcycle parking</p> <p>13. Incentivize campus community to drive more sustainable vehicles to campus</p> <p>14. Develop the Virtual Student Concierge to provide students a single point of access to information and potentially support the reduction of student commuting</p>
Reduced University Financed Travel	<p>Creighton Office for Online Learning/Center for eLearning and Academic Innovation –</p>	<p>1. Evaluate options for increasing video conference options on campus</p> <p>2. Set targets to reduce the number of university financed trips by faculty and staff if video/tele-conference options are available;</p>

Topic Area	8.2.2.1 Potential Participating Departments	Potential Next Steps (subject to appropriate approvals)
	Tracy Chapman; DoIT; Purchasing; VP Academic Affairs	offer guidelines and alternatives when the options are identified
Purchased Goods & Waste Management	Purchasing; Facilities Management; DoIT; Division of Student Life; Sodexo; Xerox; Bookstore	<ol style="list-style-type: none"> 1. Purchased Goods <ol style="list-style-type: none"> a. Develop approach for reducing amount of purchased goods (paper, office supplies, electronic equipment). b. Freecycle program c. Purchase more environmentally friendly options to reduced associated GHG emissions d. Local food picnic next fall to promote wellness and local food economy e. Increase the role of gardens on campus to support the local food economy (student gardens, community gardens, etc.) 2. Waste Management <ol style="list-style-type: none"> a. Evaluate options for joining EPA WasteWise b. Increase recycling and compost activities on campus c. Address food waste (reinstate service to distribute leftover food to community and compost remaining food waste) d. Build off reusable bag program at Follett bookstore to reduce plastic bag and other disposable product use on campus e. Identify a role for Sodexo in the implementation of waste management strategies identified in the CAP
OPPD Renewable Energy Goals	Community and Government Relations - Chris Rodgers; Facilities Management; Marketing and Communications	<ol style="list-style-type: none"> 1. Advocate for a Coordinate a Community Alliance group to encourage OPPD to increase the amount of renewable energy in its portfolio and meet the goals it has set
CAFE Standards	Community and Government Relations - Chris Rodgers; Marketing and Communications	<ol style="list-style-type: none"> 1. Continue to track national standards and work with the City to take steps to continue to increase these standards
Carbon Offsets	John Jesse	<ol style="list-style-type: none"> 1. Pursue private investments that invest in sustainable energy projects 2. Determine which approach will be taken to address offsets (purchasing or owning) 3. Identify opportunities to increase green space on campus 4. * Carbon offsets will not be considered for an extended period of time under this plan.
Organizational Development		
Governance	Sustainability Council	Governance determines how an organization makes decisions and holds itself accountable to those decisions. Sustainability efforts need to tap into these processes, ensuring that

Topic Area	8.2.2.1 Potential Participating Departments	Potential Next Steps (subject to appropriate approvals)
		management holds the organization accountable for sustainability decisions and plans. Thus leadership and management review mechanisms are critical for success of the CAP.
Organizational Structure	Sustainability Council	1. Hire full-time sustainability director or co-director position with both faculty and staff representation. This is also a recommendation of the Utilities and Energy Management Master Plan.
Planning	Campus Planning	1. Incorporate sustainability and the CAP into the Creighton Strategic Plan update to be finalized in 2013
Human Resources Management	Human Resources - Jeff Branstetter; Staff Advisory Council	1. Evaluate how sustainability actions and targets can be incorporated into faculty and staff performance expectations 2. Consider incentives for participation
Budget and Financial Management	Finance – Director for Continuous Improvement	1. Incorporate sustainability into funding/financing decision making so that faculty and staff are empowered to make purchasing decisions with sustainability in mind. 2. Include sustainability as a selection criteria or a lens by which to revise current selection criteria as it pertains to funding requests. 3. Develop 5-year budget and financing plan for the CAP 4. Identify an approach for earmarking cost savings from strategy implementation for the implementation of future strategies 5. Review the list of financing options outlined below (Table 6) to develop a portfolio of financing options for Creighton
Communications	Marketing and Communications; Campus Ministry; Participants in Outreach section	1. Identify opportunities to utilize engage.creighton.edu to gather ideas and input from the Creighton community 2. Sustainability 101 Handbook for faculty and staff new hires 3. Incorporate into new staff/faculty orientation 4. Ongoing sustainability training for all faculty and staff – determine frequency and develop a training schedule 5. Communication strategy for sustainability
Core Values and Cultural Norms	Marketing and Communications; Campus Ministry; Participants in Outreach section	1. Develop a targeted approach for continuing to outline the links between sustainability and the Jesuit Mission 2. Leverage the activism of the Green Jays to institutionalize sustainability within the Creighton student body

8.2.3 Check

The “Check” component entails establishing a process to monitor progress toward the CAP’s desired outcomes by establishing an **implementation monitoring** program that tracks progress over time. Implementation can be documented for future reference and shared with the Creighton community. For instance, what was the actual cost of a given implementation step and when was it implemented? Who was involved, and what were their tangible indications of success? This type of information can be used to celebrate success, adjust activities and implementation steps as desired, or introduce new activities and implementation steps.

In addition to implementation monitoring, Creighton can establish a **performance monitoring** program that will track the success of the CAP in achieving measurable benefits in terms of GHG reductions and other outcomes as articulated in the CAP’s strategies. Performance will be monitored by tracking key indicators related to sustainability over time.

Table 5 – Strategy Performance Indicators

Strategy	Performance Indicators
Green Building and Capital Improvement Projects	Green Building standard for all new construction and major renovation projects
Preventative Maintenance	Annual dollars spent on maintenance
Energy Conservation Measures	Building energy use intensity
Outreach and Behavior Change	Building energy use intensity
Re-commissioning and Tune-Up	Building energy use intensity
Renewable Energy - Electric	Percent of energy supplied by renewable energy
Renewable Energy - Thermal	Percent of energy supplied by renewable energy
Reduced Fleet Fuel Consumption	Total gallons of fleet fuel purchased annually
Reduced Commuting	Annual commuting miles
Reduced University Financed Travel	Total number of university financed trips and total miles travelled
OPPD Renewable Energy Goals	Percent of OPPD energy supplied by renewable energy
CAFE Standards	Annual CAFE standard
Solid Waste Management	Annual waste generate per capita
Offsets	Annual offset purchases

8.2.4 Act

The final “Act” component of the process entails taking corrective action for the CAP based on the outcomes of both implementation and performance monitoring. This may include revising or developing new strategies, shifting roles and responsibilities, revisiting implementation time horizons, and other actions. It is anticipated that progress toward strategies will be revisited on an annual basis, with goals being revisited over a longer time horizon.

8.3 Financing the Plan

The figures below show the net annual and cumulative cash flow including all of the strategies included in this plan through 2028. The first figure represents cash flow with purchased offsets while the second figure represents a scenario in which Creighton would own the offsets. The second scenario has a lower cumulative cash flow through 2028 but through the long-term planning horizon (2050), as the purchased offsets begin to payback the net cash flow surpasses that for the first scenario.

This information is intended to aid Creighton in planning efforts to secure the proper funding for implementation and/or adjust its implementation schedule as needed for financing purposes.

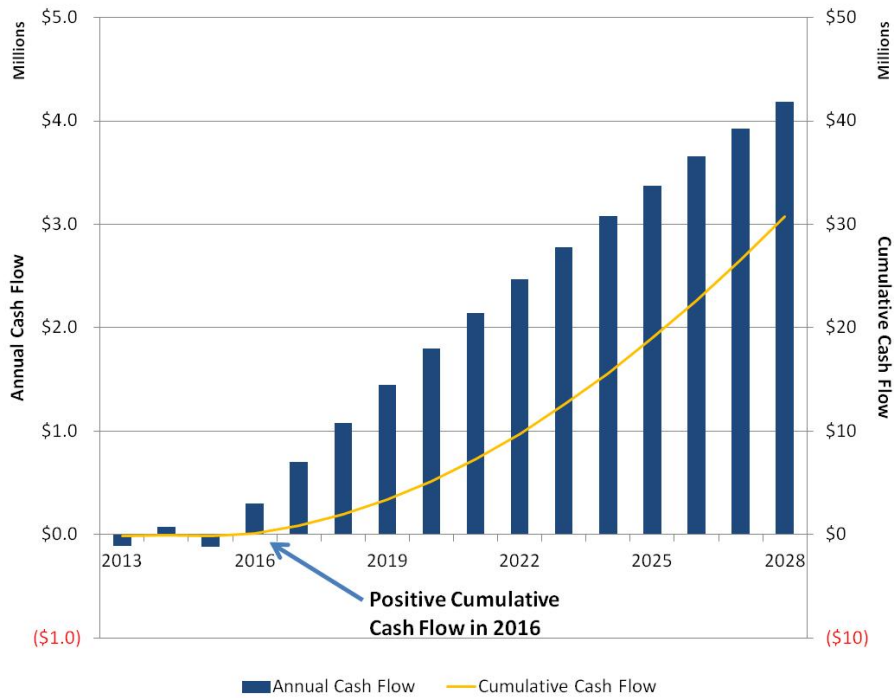


Figure 5. Annual and Cumulative Cash Flow, through 2028 – Purchased Offsets

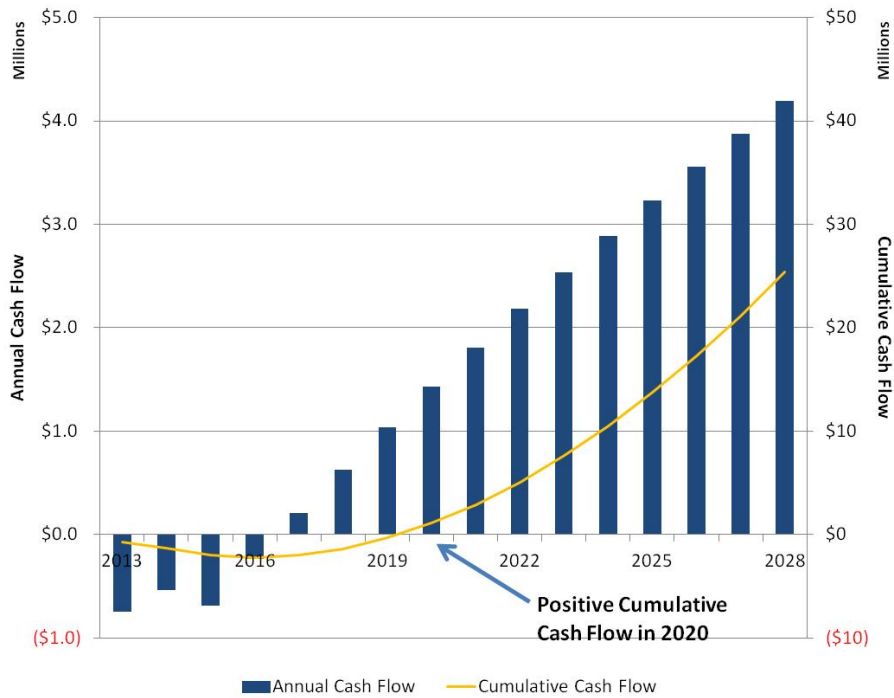


Figure 6. Annual and Cumulative Cash Flow, through 2028 – Owned Offsets

For the purposes of this plan, the costs and savings presented in the table above assume all-cash funding directly by Creighton; however, other financing mechanisms, such as bonding and third-party financing, could be used to reduce the capital requirements associated with climate neutrality and level out the cost of this plan. The table below provides a list of various options available to fund implementation of the plan’s measures, including examples of schools where many of these financing options have been applied as well as additional resources available to Creighton. This table was originally taken from University of Buffalo’s CAP and revised as needed to reflect Creighton’s vision and goals. As Creighton begins to implement its strategies, these case studies can be used to help further develop a specific financing approach. ACUPCC also provides a helpful resource for learning about [financing options for sustainability projects](#) on campus.

As part of the climate action planning effort, Creighton will stay apprised of the latest funding opportunities. This is a fast-changing landscape where legislation, incentives and rebates, and maturing technologies can rapidly improve the financial options around plan strategies.

Table 6. Examples of CAP Financing Options

Financing Strategy	Description (<i>Available Resources</i>)	Example Where Implemented
INTERNAL		
Capturing Efficiency Savings	Begin implementation with a focus on low and no-cost strategies, such as education programs, and those with very favorable paybacks. The recognized savings from these strategies can then be used to help finance the more capital intensive opportunities.	n/a
Revolving Loan Fund	Provides capital for projects that create some level of return or cost savings. Some portion of the return/cost savings is used to repay the fund until the full project cost is repaid. As the fund is replenished, it can finance more projects (ACUPCC).	Macalester College
Performance Contracting	Contractual and financing mechanism through which building owners can undertake comprehensive energy efficiency retrofits with minimal financial exposure and risk (OPPD , ACUPCC).	University of Buffalo
Elective Fees	Voluntary fees collected from students through tuition bill student fees and faculty/staff through opt-in payroll deductions to help fund climate neutrality initiatives.	University of Colorado
Graduating Class Gifts	Donations made by graduating seniors to specific initiatives	Middlebury College
Endowment Investments	Some GHG mitigation strategies have higher returns than typical market investments, providing options for funding strategy implementation while also benefiting the endowment	Harvard University
User Fees and Tariffs	Funding source and mechanism for behavioral change by charging individuals and departments based on resource (energy, transportation, parking) use.	UC Berkeley

Financing Strategy	Description (<i>Available Resources</i>)	Example Where Implemented
Administrative Allocation	Direct funding allocated through budgeting process.	University of Buffalo
Capital Campaigns	Time-limited fund raising efforts to fund a specific project.	None identified
Lease Purchases	Leases structured where the full cost of the project assets is amortized over the lease period and the lessee may take title to the assets upon execution of the agreement (OPPD/Provanta Financing Solutions , ACUPCC).	None identified
Power Purchase Agreements	Third-party financing option for capital investments, like solar PV, in which the infrastructure is owned and operated by a private entity for a specified contract period.	Colorado State University
EXTERNAL		
Utility Rebates	Incentives available through local utilities providing financial support for study and/or implementation (OPPD Programs including Innovative Energy Efficiency Project, Lighting, Heat Pump, and ECO 24/7 incentive programs).	n/a
Federal Grants and Loans	Various types of support including research, pilot programs, and implementation (DOE Energy Efficiency and Renewable Energy).	Mount Wachusett Community College
State Funding	Various types of support including research, pilot programs, and implementation (Nebraska Energy Office Dollar and Energy Saving Loan program).	University of Buffalo
Community Partnerships	Leveraging the strengths of higher education as well as the public and private sector to create financial and environmentally beneficial partnerships (ECOmaha outlines various initiatives in Omaha, including the Comprehensive Energy Management Plan which has a direct impact on some of the emission reduction strategies identified for Creighton).	University of New Hampshire
Foundations and NGOs	There are many organizations committed to climate change mitigation in higher education (National Wildlife Federation Campus Ecology Program , Association for the Advancement of Sustainability in Higher Education).	Colorado State University
Alumni and Corporate Donations	Specific alumni donation funds can be established to support the CAP or specific initiatives related to GHG mitigation and/or sustainability on campus.	University of New Hampshire

APPENDIX A: SUSTAINABILITY COURSES

THL 100 Theology, Cosmology and the Environment

THL 336 Divine providence, Catholic Social Teaching and the problem of Climate Change

ANT 112 Intro to Anthropology – Energy, Culture and Sustainability

ANT 355 Environment and Society

PHL 255 Ethics, Energy and Environment

PHY 157 Energy in Modern Society

ANT/AFS/SOC/EVS 307 Demography: World population Issues

ANT/NAS/SRP/SOC 424 Sustainability and Rural America

ECO/EVS 353 Environmental Economics

BUS 314 Business Planning for Social Entrepreneurs

ENG 381 Literature and the Environment

ENG 440 Introduction to green Cultural Studies

EVS/PLS 333 Environmental Politics and policy

EVS/PHL 354 Environmental Ethics

EVS 374 Management of Environmental Risk

HRS 334 Green Chemistry and Sustainability

SRP 437 Environment, Race, Class and Gender

BIO/EVS 481 Terrestrial Ecology

BIO/EVS 485 Marine and Freshwater Ecology

BIO/EVS 549 Environmental Physiology

COM 152 Civic Engagement Through Public Communication

MHE 606 Theories of Justice

LAW 349 Environmental and Natural Resources Law

LAW 387 Land Use Law

LAW 416 Justice for our neighbors

EVS 390 Environmental Science

EVS 523 Environmental Toxicology

EVS 533 Physical Climatology and Climate Change

EVS 559 Environmental Communication

BA with a Major in Sustainable Energy – ERG courses

Environmental Science Major