



# Sustainability Master Plan Draft

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## 1.0 EXECUTIVE SUMMARY

Colleges and universities across the nation have embraced sustainability as a tool to enhance student learning and development, reduce costs, increase efficiencies, drive research and innovation and preserve environmental qualities. Motivating students, faculty and staff to integrate sustainability in all aspects of campus creates a “whole school” approach to maximize its benefits.

Sustainability has been an active part of campus life, academics, research and operations at the University of Alaska Fairbanks for many years. In the spring of 2009, UAF students voted in favor of paying a \$20 fee each semester. Originally called the Student Initiative for Sustainable Energy Now (SIREN) Fee, it is now known as the Student Sustainability Fee. These funds have been a catalyst for numerous energy efficiency programs and solar photovoltaic (PV) installations on buildings across campus.

The Review of Infrastructure, Sustainability and Energy (RISE) Board was created in 2009 to review proposals and to evaluate and prioritize projects funded by the fee. The Office of Sustainability was established in 2010 to champion and coordinate sustainability programs. The Office has since initiated and led many programs and provided student employees leadership opportunities. In 2011, with leadership from the Office of Sustainability, UAF submitted its first report to the Association for the Advancement of Sustainability in Higher Education’s (AASHE’s) Sustainability Tracking, Assessment and Rating System (STARS). The University received a Gold rating for its efforts across multiple performance areas including education, energy, water, transportation and waste. Since 2011 UAF has continued to implement a wide range of projects and provide students with rewarding, hands-on engagement opportunities.

This Sustainability Master Plan (SMP) has been developed to further integrate sustainability across campus, as well as to support future improvements in UAF’s scoring and rating under the AASHE STARS program. It is a product of input from across campus – including a Steering Committee, small group interviews, a campus survey and input from a range of subject matter experts.

The SMP includes several recommended metrics for measuring success over time.

The 12 strategies and their associated actions will require investments of time, people and resources, but they will also result in many tangible economic, environmental and social benefits. The following summary table estimates costs and savings associated with the strategies. Taken together, the strategies would result in over \$3.2 million in annual cost savings, with an estimated combined payback across all strategies of approximately 10 years. They would also result in significant reductions in greenhouse gas (GHG) emissions, energy and water use and other resources.

Implementation of this SMP will involve a wide range of departments from across campus, as well as students, faculty and organizations within the Fairbanks community.

#### SUMMARY OF POTENTIAL COSTS AND BENEFITS FROM IMPLEMENTING THE SMP STRATEGIES

CATEGORY	ESTIMATED ANNUAL COSTS & BENEFITS
<b>Greenhouse Gas (GHG) Emissions</b>	Reduction of 18,000 Metric Tons of Carbon Dioxide Equivalent (MTCO <sub>2</sub> E)
<b>Electricity</b>	Savings of 10,000 Megawatt Hours (MWh)
<b>Steam</b>	Savings of 58,000 Thousand Pounds (klbd)
<b>Potable Water</b>	Savings of 12,000 Thousand Gallons (kgals)
<b>Personal Vehicle Miles Traveled</b>	Reduction of 647,000 Miles (mainly from commuting)
<b>Waste</b>	Reduction in 120 Tons
<b>Annual Cost Savings</b>	\$3.25 million
<b>Estimated Overall Simple Payback</b>	10 years



## 2.0 INTRODUCTION AND PURPOSE

The University of Alaska Fairbanks finds itself in a time of rapid change. Current economic challenges and energy and climate concerns in the Circumpolar North paint an uncertain future. These are pushing UAF to seek ways to be more resourceful.

These challenges also provide opportunities for UAF and have prompted the University to become more energy and resource efficient. Beyond this UAF can also seek ways to build on its already successful partnerships and collaborations across campus to further educate and involve University students, faculty and staff in sustainability opportunities. Not only can these and other strategies help reduce UAF's impact on the environment, they can provide many additional benefits, from sustaining a healthy, productive learning and working environment to preparing students for the future. They can also help make UAF an even more attractive destination for the growing community of sustainability-minded students, faculty and researchers.

Funded by UAF's Student Sustainability Fee, this Sustainability Master Plan (SMP) has been developed to take stock of UAF's progress toward sustainability to date and create a cohesive master plan for the University. The SMP creates a road map for UAF and provides an overall framework for sustainability that includes key goals, strategies and actions to support sustainability in University facilities, operations and curriculum.

The SMP provides guidance for further improving UAF's score under the Association for the Advancement of Sustainability in Higher Education's (AASHE) Sustainability Tracking, Assessment & Rating System (STARS). In 2011 UAF completed its first STARS report and received a "Gold" rating for its sustainability performance. Throughout this SMP are references to various components of STARS and their connection to the specific strategies and action steps outlined in the Plan.

This SMP provides an overview of the development process, a snapshot of UAF's current sustainability footprint and practices, and a framework for action to further sustainability. The goals and strategies identified in the SMP have been

### WHAT IS SUSTAINABILITY?

Sustainability at UAF is the integration of cultural, economic, environmental and energy components and supports projects and perspectives that have positive impacts on future resources, ecosystem health and human wellbeing.

Sustainability is not a destination, it is a process. Sustainability is:

- An opportunity to transform/reinvent the community, organization and the world.
- A capacity for an interdisciplinary approach to solving problems.
- Meeting today's needs without compromising future generations' ability to meet their needs.





developed around four focus areas identified by University staff and Steering Committee members

- **Protect Resources:** Energy, Water, Climate, Transportation, Grounds
- **Support the Campus Community (Faculty, Staff, Students):** Human Resources, Curriculum, Processes and Institutions
- **Close Loops and Conserve Materials:** Waste and Procurement
- **Shape Alaska's Future:** Research, Investment, Public Engagement, Community Partnerships

This document presents an approach to implementation that looks at staffing, partnering, funding, measurement and reporting, and avenues for moving beyond University operations to the community as a whole.

For each focus area the SMP includes goals, strategies, action steps with timelines, responsible parties and measures of success. Finally, the SMP presents cross-cutting themes, including the important topic of marketing and communications.

## 2.1 History of Sustainability at UAF

Sustainability has been an active part of campus life, academics, research and operations at UAF for many years. Over 10 years ago the Sustainable Campus Task Force organized the first Annual Sustainable Living Conference at UAF.

In 2008 the Chancellor established a Sustainability Transition Team to assemble a document of recommendations. This planning text addresses goals related to energy, carbon, transportation and other topics.

### 2009-2013: The SIREN Fee as a Catalyst for Sustainability

In the spring of 2009, UAF students voted in favor of paying a \$20 fee each semester called the Student Initiative for Sustainable Energy Now (SIREN) Fee, now known as the Student Sustainability Fee. To date, these funds have been applied to numerous projects including energy efficiency programs and solar photovoltaic (PV) installations on buildings across campus.

The Review of Infrastructure, Sustainability and Energy (RISE) Board was created in 2009 to review proposals and evaluate and prioritize projects funded by the Student Sustainability Fee. From green bikes to student-run recycling and student employment opportunities, the RISE board and Office of Sustainability have made great improvements at UAF.

The Office of Sustainability was established in 2010 to champion and coordinate sustainability programs across campus. The Office has since initiated and led many programs and provided student employees leadership opportunities.

In 2011, with leadership from the Office of Sustainability, UAF submitted its first AASHE STARS report, a transparent, self-reporting process using a framework for colleges and universities to measure their sustainability performance. The University received a Gold rating for its performance across multiple performance areas including education, energy, water, transportation and waste.

In 2013 the RISE board and Office of Sustainability hired a consulting firm to develop this SMP. This planning document builds on the 2008 *Campus Sustainability Recommendations from the Chancellor's Sustainability Transition Team*, which provides a strong foundation for this newer-generation Plan.

#### HISTORY OF SUSTAINABILITY AT UAF

- **2004** – Sustainable Campus Task Force (SCTF) organizes first Annual Sustainable Living Conference.
- **Spring 2008** – Students in NRM 430 class prepare a first draft of a UAF campus sustainability plan.
- **Summer 2008** – Chancellor's Sustainability Transition Team develops recommendations for UAF Campus Sustainability.
- **Spring 2009** – Students vote in favor of \$20/semester SIREN fee.
- **Fall 2009** – Review of Infrastructure, Sustainability and Energy (RISE) Board created to maximize the use of SIREN fee.
- **Spring 2010** – Student Initiative for Sustainable Energy Now (SIREN) fee up and running.
- **Fall 2010** – Office of Sustainability established. First UAF Sustainability Director hired.
- **2011** - STARS report completed.

## 2.2 UAF'S AASHE STARS Scorecard

### UAF AND AASHE STARS

In 2011 UAF participated in AASHE's STARS (Sustainability Tracking, Assessment & Rating System) a transparent, self-reporting framework for colleges and universities to gauge relative progress toward sustainability.

The University received a Gold Rating with a total score of 65.88.



A driving purpose behind this SMP is to help identify opportunities to improve UAF's STARS rating and score – and in the process move the University further toward sustainability in a number of areas.

The STARS system assigns a number of potential points across the broad topics of Education and Research; Operations; Planning, Administration & Engagement; and Innovation. Colleges and universities then submit a report documenting progress for a number of credits across these topic areas, which correlate to a set of points achieved. Points are totaled, and an overall score and level of achievement (Bronze, Silver, Gold, Platinum) is given.

The University is already a high-performing institution with respect to sustainability. It has implemented a number of initiatives related to staffing, communications, sustainability-related programs, curriculum, events and specific projects. The STARS Report Summary of Results for UAF shows that it is highly rated in a number of areas, including but not limited to Co-curricular Education and Research, Dining Services, Grounds, Purchasing, Coordination and Planning and Human Resources. UAF also provides significant opportunities for student involvement through the RISE Board, student positions and other programs. The Student Sustainability fee now funds the Office of Sustainability and an extensive student grant program.

UAF's STARS Report also indicates where there is opportunity to improve its sustainability performance. The SMP addresses many of the gaps found in the 2011 STARS report including opportunities with respect to buildings and energy, transportation, waste, water and investment. Table 1 summarizes UAF's 2011 STARS report card performance.

**TABLE 1: 2011 UAF STARS RESULTS**

<b>TOTAL SCORE</b>	<b>65.88 (GOLD)</b>
<b>EDUCATION &amp; RESEARCH</b>	<b>Points Achieved/ Points Eligible</b>
<b>Co-Curricular Education</b>	18.00 / 18.00
<b>Curriculum</b>	31.55 / 55.00
<b>Research</b>	26.77 / 27.00
<b>OPERATIONS</b>	<b>Points Achieved/ Points Eligible</b>
<b>Buildings</b>	6.13 / 13.00
<b>Climate</b>	2.25 / 16.50
<b>Dining Services</b>	6.70 / 8.50
<b>Energy</b>	3.02 / 16.50
<b>Grounds</b>	3.00 / 3.25
<b>Purchasing</b>	5.07 / 7.50
<b>Transportation</b>	4.63 / 12.00
<b>Waste</b>	5.79 / 12.50
<b>Water</b>	4.87 / 10.25
<b>PLANNING, ADMINISTRATION &amp; ENGAGEMENT</b>	<b>Points Achieved/ Points Eligible</b>
<b>Coordination and Planning</b>	18.00 / 18.00
<b>Diversity and Affordability</b>	13.50 / 13.75
<b>Human Resources</b>	14.75 / 19.75
<b>Investment</b>	0.50 / 16.75
<b>Public Engagement</b>	21.10 / 31.75
<b>INNOVATION</b>	<b>Points Achieved/ Points Eligible</b>
<b>Innovation</b>	4.00/4.00

*The University of Alaska Fairbanks is  
listed as one of the Top 50 Greenest  
Universities in America*

*[http://www.bestcolleges.com/features/  
greenest-universities/](http://www.bestcolleges.com/features/greenest-universities/)*





## 3.0 DEVELOPING THE SMP

### 3.1 Overall Process

This SMP lays the groundwork for moving UAF systematically toward sustainability. It provides an opportunity to implement a comprehensive and coordinated approach that is integrated with standard measures (metrics) of performance. It focuses attention on environmental, economic and social issues at all levels of the University and how these topics relate to University operations and programs. The SMP also helps create efficiencies and consistencies among programs and provides a shared decision-making and problem-solving framework for University staff, faculty and students.

The SMP is intended to be a constantly evolving rather than a static, one-time document. Figure 1 illustrates a proposed cycle of planning and action, including planning, implementing actions, monitoring progress and revising the SMP— all working toward a long-term sustainability vision and mission. Built from the continuous improvement model of “plan-do-check-act,” the SMP starts an ongoing cyclical process aimed at long-term thinking and action for sustainability. As a result, the SMP is meant to be a living document and planning process, with strategies implemented, progress toward goals measured and new strategies and actions added as previous goals are met and strategies completed.

**FIGURE 1. PLAN-DO-CHECK-ACT PROCESS**



## 3.2 SMP Steering Committee and Small Group Interviews

Development of this SMP included collaboration with a Steering Committee consisting of knowledgeable and interested stakeholders from across the University able to validate the inventory process, craft a vision and mission, help document existing University sustainability practices, create focus areas and goals, and develop strategies and implementation steps. The Committee represented a diversity of interest, from facilities and operations to research, student life, and curriculum. Over the course of developing the SMP, the Committee met four times in workshop-style formats to achieve the following:

- Kick off the project and establish a forum for the collaborative tasks ahead;
- Recommend a vision/mission and focus areas for the SMP;
- Craft goals that are uniquely suited to UAF and that will guide forward progress on sustainability; and
- Discuss strategies and actions for reaching established goals.

In addition to the SMP Steering Committee meetings, the consultant team convened several small group interviews spanning across a variety of University departments. These interviews were designed to engage University staff, faculty and students and to give them a forum to discuss good things already happening related to sustainability at UAF as well as opportunities for improved sustainability in their unique areas of work or student life. These small group interviews covered a range of topics including curriculum, human resources, procurement and waste, transportation, buildings and facilities, and finance/investment. The many ideas generating from these interviews were particularly helpful in informing the strategies and implementation steps in the SMP.

### 3.3 Campus Survey

The Office of Sustainability coordinated a campus-wide, two-part web-based survey to identify how the UAF community felt the University was performing with respect to sustainability and to assess current practices related to transportation (primarily commuting) for the SMP's greenhouse gas inventory. Over 700 individuals across campus responded to the survey. Overall, over 90 percent of respondents were willing to help implement this SMP.

Table 2 below presents a brief summary of the survey results. On the key topic of existing practices, survey results both show perceptions of what is “working well” on campus as well as opportunities for enhanced communications around the “don’t know” topics. Full survey results can be found in (Appendix A).

#### THE SMP SURVEY

Over 700 individuals responded to the campus-wide survey, including:

- Over 500 students
- Over 150 staff
- Over 60 faculty members

TABLE 2. SUMMARY OF SURVEY RESULTS

TOPIC	SURVEY RESPONSES
<b>Sustainability Definition:</b> Sustainability at UAF is the integration of cultural, economic, environmental, and energy components and supports projects and perspectives that have positive impacts on future resources, ecosystem health, and human wellbeing.	<ul style="list-style-type: none"> <li>85.2% or 597 participants felt this was an acceptable definition for sustainability.</li> </ul>
<b>Existing Practices:</b> <i>Where is UAF doing well with respect to sustainability?</i>	<ul style="list-style-type: none"> <li><b>Doing well:</b> Curriculum, research, building operations, building design, lighting, grounds, transportation, waste and recycling.</li> <li><b>Don't Know:</b> Co-curricular education, carbon footprint, dining services, renewable energy, energy metering, purchasing.</li> </ul>
<b>Greatest Opportunities:</b> <i>Where are the greatest opportunities to further sustainability at UAF?</i>	<ul style="list-style-type: none"> <li>Develop incentives for staff and/or students to participate.</li> <li>Recognize schools, individuals or departments for accomplishments.</li> <li>Hold competitions between schools or departments to see who can save the most energy/resources.</li> </ul>
<b>Willingness to participate in implementing the SMP</b>	<ul style="list-style-type: none"> <li>91.3% of participants were willing to participate in implementing SMP.</li> </ul>

*As America's arctic research university, the University of Alaska Fairbanks leads the way in conducting climate change research that affects Alaska and the rest of the Circumpolar North.*



## 4.0 BASELINE INVENTORY AND BENCHMARKING

### 4.1 Greenhouse Gas Inventory: Methodology

In 2010, UAF completed a greenhouse gas (GHG) inventory and footprint using Clean Air-Cool Planet's Campus Carbon Calculator, a methodology to calculate GHG (carbon) emissions specifically for colleges and universities. As part of the SMP development process, the consultant team updated UAF's GHG inventory for calendar year 2013.

The University has two unique aspects that differentiate it from many other universities - a combined heat and power (CHP) plant and a water treatment plant. The CHP plant primarily burns coal and has auxiliary boilers that burn oil and natural gas<sup>1</sup>. The CHP plant provides electricity, steam and chilled water to campus buildings<sup>2</sup>. The water treatment plant provides potable domestic water to all campus buildings<sup>3</sup>.

A large portion of UAF's GHG emissions are from the CHP plant, accounting for over 80 percent of total emissions. Student and staff commuting are the next largest sources of GHG emissions, followed by air travel and purchased electricity. These emission sources and amounts were used to forecast GHG emissions for UAF, and to help form the strategies recommended in the SMP.

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<sup>1</sup> <http://www.uaf.edu/heatandpower>

<sup>2</sup> <http://www.uaf.edu/fs/services/utilities>

<sup>3</sup> <http://www.uaf.edu/fs/departments/utilities/water-plant>



Data reviewed to update the GHG inventory included the following:

- CHP plant carbon dioxide (CO<sub>2</sub>) emissions
- Purchased electricity in kilowatt hours (kWh) from Golden Valley Electric Association (GVEA)
- Diesel and gasoline (gallons) used by the UAF vehicle fleet
- Estimated financed air travel miles
- Estimated commuting miles
- Landfilled waste (pounds)
- Recycling, 2011 and 2012
- Water produced by the treatment plant (gallons)
- Wastewater (gallons)
- Fertilizer (pounds)

Data for power plant emissions were obtained from the U.S. Environmental Protection Agency (EPA) Greenhouse Gas Reporting Program's Facility Level Information on GHG Tool (FLIGHT) that collects data from large emitters. Purchased electricity data were provided by the local utility, GVEA. Fleet fuel use was provided by UAF. Air travel miles were estimated based on a survey of 2011 and 2012 travel authorization (TA) forms. Commuting miles were estimated based on responses to UAF's 2013 SMP survey.

Greenhouse gas emissions are typically organized into three "scopes". The purpose of scopes is to prevent double counting emissions between reporting entities. In general, Scope 1 emissions are direct emissions occurring within a designated boundary, Scope 2 emissions are those resulting from energy that is purchased by an entity but generated elsewhere (primarily electricity from power plants, and Scope 3 emissions are other indirect emissions that occur outside of the designated boundary as a result of the activities or demand generated by the entity.

For example, a power plant would report emissions from generating electricity as Scope 1, while consumers using that electricity would report their responsibility to those emissions as Scope 2. By segregating these emissions, they are allocated accurately and not added together.

## 4.2 GHG Baseline Inventory

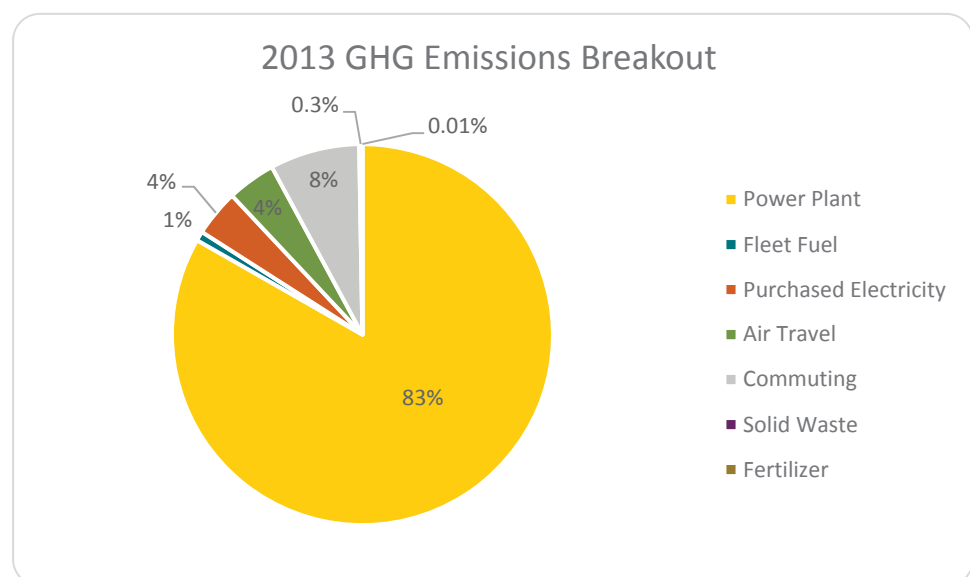
In 2013, UAF's GHG emissions totaled 155,800 metric tons of carbon dioxide equivalent (MT CO<sub>2</sub>e). Table 3 summarizes the emission sources included in the UAF inventory with the scope for each indicated.

Figure 2 illustrates the breakout of each emission source, showing UAF's power plant accounting for over 80 percent of total emissions.

**TABLE 3. 2013 GHG EMISSIONS BY SOURCE**

SECTOR	SCOPE
<b>Built Environment</b>	
Power Plant (electricity, steam, chilled water)	Scope 1
Purchased Electricity	Scope 2
<b>Transportation and Other Mobile Sources</b>	
Fleet	Scope 1
Financed Air Travel	Scope 3
Commuting	Scope 3
<b>Other</b>	
Solid Waste	Scope 3
Fertilizer	Scope 1

**FIGURE 2. 2013 GHG EMISSIONS**

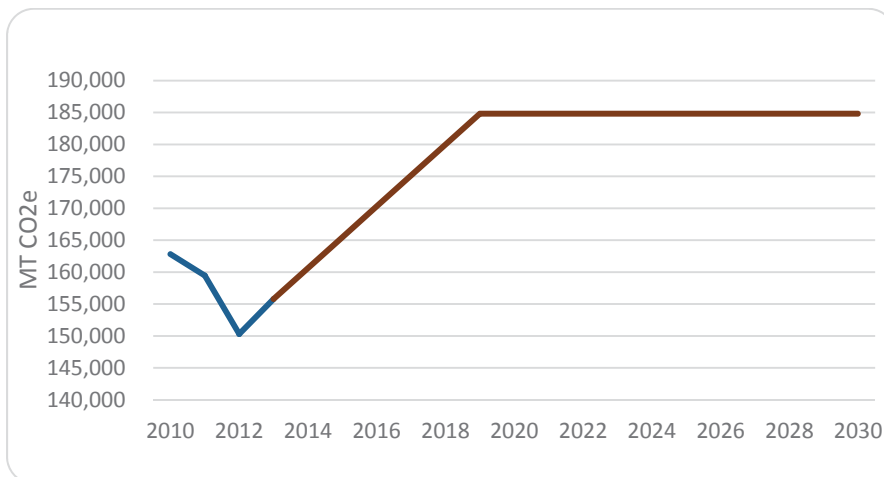




### 4.3 GHG Forecast

In addition to taking stock of UAF's 2013 GHG emissions, the consultant team also developed a forecast of future emissions based on projected campus growth. To do so, the team referenced the most current UAF campus master planning efforts and an ongoing space utilization study, which projects student enrollment increasing by 1,000 students in six years over a 2010 baseline. Actual enrollment has decreased since 2010, but this trend is expected to reverse in the coming years. Figure 3 shows the projected increase in GHG emissions based on enrollment increasing by 1,000 students over the 2010 baseline starting in 2014 and proceeding until 2020. After that time, it is unclear to what degree campus population will continue to increase.

**FIGURE 3: FORECAST GHG EMISSIONS**



### 4.4 Existing Practices

In addition to updating UAF's GHG inventory, the team compiled information on UAF's existing practices related to sustainability, drawing from the 2011 STARS report, the Office of Sustainability web site, interviews and other sources.

It is important to note that UAF is not starting from scratch with respect to its sustainability efforts. These existing practices, further detailed in UAF's full AASHE STARS report<sup>4</sup>, serve as a basis for identifying future opportunities and prioritizing strategies. For example, UAF has undertaken a number of efforts to make its operations more efficient. The University has established the Office of Sustainability, which oversees many sustainability projects and initiatives and

<sup>4</sup> <https://stars.aashe.org/institutions/university-of-alaska-fairbanks-ak/report/2011-08-26/>

communicates results through its website and other communication methods. Table 4 summarizes UAF's existing practices. It should be noted that most of these practices were taken from UAF's 2011 STARS report and may not reflect most recent efforts.

**TABLE 4: SUMMARY OF EXISTING SUSTAINABILITY PRACTICES**

STARS REPORT CATEGORY	SUMMARY OF EXISTING PRACTICES
<b>Education and Research</b>	
<b>Co-curricular Education</b>	<ul style="list-style-type: none"> <li>• There are multiple new student orientation activities, extracurricular events and peer-to-peer outreach activities on campus. New Student Orientation (NSO) incorporates an emphasis on sustainable practices in several ways including "Wilderness Welcome" - a multi-night, leave-no-trace adventure.</li> <li>• The University conducts sustainability outreach and student involvement through multiple outlets including its Office of Sustainability website, newsletters, volunteer opportunities, the Sustainable Campus Action Force (SCAF), Students In Free Enterprise (SIFE) and student Competitions coordinated by the Office of Sustainability.</li> <li>• The student RISE board approves over \$250,000 annually for sustainability related projects and programs.</li> <li>• The University has an Integrated Lucid-backed auditing system. This includes meters in 20 buildings (including dorms and major student hubs) and screens displaying energy and water usage information.</li> <li>• UAF has an extensive trail system and walking maps for students and visitors.</li> <li>• Formerly known as the Sustainable Campus Task Force, the Sustainable Campus Action Force (SCAF) is a grassroots student group focusing on local sustainability issues. The SCAF has been responsible for many initiatives including earth day celebrations, sustainability conferences and engaging students about local food.</li> </ul>
<b>Curriculum</b>	<ul style="list-style-type: none"> <li>• Sustainability in the curriculum addresses the integration of cultural, economic, environmental and energy components. Projects and perspectives that have positive impacts on future resources, ecosystem health and human wellbeing are supported.</li> <li>• The University offers 157 sustainability-focused courses (concentrating on the concept of sustainability) and 654 sustainability-related courses (incorporating sustainability as a course component) across 56 different departments.</li> </ul>

STARS REPORT CATEGORY	SUMMARY OF EXISTING PRACTICES
<b>Research</b>	<ul style="list-style-type: none"> <li>• There are 263 faculty members engaged in sustainability research across 70 departments.</li> <li>• The University's sustainability research themes include the following:               <ul style="list-style-type: none"> <li>○ Climate change and adaptation</li> <li>○ Culture and sustainability</li> <li>○ Ecosystems and natural resources management</li> <li>○ Energy efficiency and renewable and alternative energy</li> <li>○ Food security and agriculture systems</li> <li>○ Water quality and supply</li> </ul> </li> </ul>
<b>Operations</b>	
<b>Buildings</b>	<ul style="list-style-type: none"> <li>• 2,939,076 gross square feet of building space are operated in accordance with sustainable operations and maintenance guidelines.</li> <li>• 2,959,548 square feet of building space are covered by an indoor air quality plan, policy and/or practices that include regular auditing or monitoring and a mechanism for occupants to register complaints.</li> <li>• The University has a strong green building educational program. The Cold Climate Housing Research Center (CCHRC) is a partnership between statewide home builders and UAF.</li> </ul>
<b>Dining Services</b>	<ul style="list-style-type: none"> <li>• Dining Services has sustainability efforts, including posters outlining sustainability-related food service improvements made over the last 5 years such as recycling/composting and local food sourcing.</li> <li>• The University grows organic produce used in Dining Services. Students work in the community garden and gain experience with various organic methods including integrated pest management, vermiculture compost and organic fertilizers. Chemical pesticide use has been banned in greenhouses. The University has a separate integrated pest management plan.</li> <li>• Trayless dining halls reduce the volume of post-consumer waste and water/electricity used for washing. Reusable to-go containers are available.</li> <li>• UAF has a strong local focus with a policy giving advantages to organizations owned by Alaskans as well as non-profits and groups that have strong diversity.</li> <li>• Dining Services has partnered with local mushers to recycle protein scraps to fuel Alaskan sled dogs. Excess unprepared food is donated to the Fairbanks Community Food Bank.</li> </ul>

STARS REPORT CATEGORY	SUMMARY OF EXISTING PRACTICES
<b>Energy</b>	<ul style="list-style-type: none"> <li>• The University has a central Energy Management and Control System (EMCS). Most of UAF's buildings have Direct Digital Control (DDC) systems to provide building automation of Heating, Ventilation, and Air Conditioning (HVAC) and other systems. Each DDC system is centrally managed by the EMCS to provide monitoring, alarming and energy management of the buildings.</li> <li>• The UAF power plant is a CHP facility that provides electricity, domestic water and steam for heating. The plant is also operating a small turbine in place of a pressure relief valve to generate low pressure heating steam in winter.</li> <li>• Variable frequency drives have been routinely installed on projects for over 20 years. Facilities Services and Residence Life offer student, staff and faculty the opportunity to purchase green power from the GVEA Sustainable Natural Alternative Power (SNAP) program.</li> <li>• Utilities meters power generation, electricity and water usage and provides this information in online reports from Facilities Services, accessible to users. This provides the opportunity for future planning and decision-making.</li> <li>• Motion sensors have been installed across campus to reduce unnecessary lighting. Cathode ray tube (CRT) monitors have been replaced with more efficient liquid crystal display (LCD) flat panel monitors and 99 percent of campus lighting has been converted to more efficient fluorescent bulbs (an average 30 percent reduction in energy use). Vending machines have been retrofitted with Vending Miser motion sensor technology.</li> <li>• Facilities Services has begun testing light emitting diode (LED) technologies and converting to LED lighting on campus. Energy efficient products are included in design standards.</li> <li>• Mechanical air handling heating coils are installed in the Elvey building. There is a small solar panel installation at the Nenana parking lot shuttle station.</li> <li>• The University installed a photovoltaic (PV) system at the Sustainable Village as part of the GVEA SNAP program in the summer of 2013.</li> </ul>
<b>Grounds</b>	<ul style="list-style-type: none"> <li>• UAF mulch mows lawns and composts grass clippings and other landscape waste. Composted material is being applied in flower beds (food scraps, fish and bird waste, paper clippings and lawn materials).</li> <li>• Integrated Pest Management (IPM) and organic fertilizers are used in the greenhouse. Chemical pesticides are banned in greenhouses. Soaker hoses and trickle irrigation are used at Georgeson Botanical Garden (GBG) to reduce water usage for irrigation.</li> <li>• Native plants are used in the flower beds on campus to reduce maintenance and replanting.</li> </ul>

STARS REPORT CATEGORY	SUMMARY OF EXISTING PRACTICES
<b>Purchasing</b>	<ul style="list-style-type: none"> <li>• In UAF Procurement Policies and Procedures preference is given to purchasing products from companies that are both environmentally and socially responsible. This includes preference for recycled materials and for companies that are operating locally in a responsible way.</li> <li>• All purchasing at UAF is governed by the University of Alaska (UA) Procurement Policy. Under Section 7 preference is given to businesses in Alaska. The University supports local businesses whenever possible.</li> <li>• The University purchases locally produced coffee, baked goods, ice cream and some organic foods. Dining services uses 90 percent recycled napkins.</li> <li>• The University a member of the Responsible Purchasing Network, which is dedicated to socially and environmentally responsible purchasing.</li> </ul>
<b>Transportation</b>	<ul style="list-style-type: none"> <li>• Five of UAF's fleet vehicles are hybrids.</li> <li>• A fleet of mountain bikes is available for free long-term rental to students throughout the year. Tools and trained mechanics are on hand to help guide students through tuning up their personal bikes during regular office hours.</li> <li>• An 11-person passenger van being converted to electric. Power for heating vehicles is now being cycled to save energy.</li> <li>• All campus shuttles carry GPS trackers; displays in shelters and online show locations. Any UAF campus identification can be used to ride the Metropolitan Area Commuter System (MACS) public bus system for free due to a donation from the Chancellor.</li> <li>• To reduce dependence on personal vehicles on campus, UAF has a shuttle system and campus ride-share program utilizing AlterNetWays, a Certified Green Business.</li> <li>• Anti-idling zones have been established on campus.</li> </ul>

STARS REPORT CATEGORY	SUMMARY OF EXISTING PRACTICES
<b>Waste</b>	<ul style="list-style-type: none"> <li>• UAF's electronic waste is recycled through Interior Alaska Green Star or shipped to Total Reclaim. Total Reclaim recycles electronics and disposes of the hazardous waste in a safe and environmentally friendly way.</li> <li>• In Summer 2010 the UAF library donated several books to Fairbanks Literary Agency, keeping them from landfills.</li> <li>• The University hosts the Really Free Market on Saturdays from May through August. This provides the UAF community the opportunity to exchange materials that would otherwise not be used or thrown away. The left over material, including electronic waste, is then collected and recycled by UAF.</li> <li>• Maintenance is re-using door hardware where appropriate. Facilities Services is re-using old planters in greenhouses. Waste oil from Dining Services is used to make biofuel.</li> <li>• Newsletters and bids also now published electronically.</li> <li>• The University implements many paper-saving practices such as limiting free printing and publishing many materials, such as the UAF course catalog and schedules, online. The University replaced its 100 page hardcopy schedule with a 35-page registration guide. Additionally, UAF prints about 20,000 fewer copies per year than it did previously.</li> <li>• The UAF recycling program includes paper, aluminum, glass, ink, toner cartridges, batteries, clothing, batteries, coal ash and a limited amount of #1 and #2 plastics.</li> <li>• Construction projects are approached with sustainable practices including recycling, donating and recovering materials whenever possible.</li> <li>• The University manages hazardous waste as a large quantity generator, which requires Environmental Health and Safety and Risk Management to ship Resource Conservation and Recovery Act (RCRA) regulated hazardous waste from its facility every 90 days. All hazardous waste and non-regulated waste is removed from UAF every 90 days by a U.S. Environmental Protection Agency permitted disposal contractor.</li> </ul>

STARS REPORT CATEGORY	SUMMARY OF EXISTING PRACTICES
<b>Water</b>	<ul style="list-style-type: none"> <li>• Stormwater policy for new construction follows the Alaska Pollutant Discharge Elimination System General Construction Permit. University policy for existing buildings is governed by Fairbanks stormwater regulations. Combined, these policies attempt to eliminate pollutants such as chemicals and excess sediment in rainwater.</li> <li>• The plumbing shop has tested Sloan touchless water faucets. The GBG uses soaker hoses, trickle irrigation and mulching to reduce water use. Rainwater is captured to water plants. Stormwater is managed at GBG with porous gravel walkways, diversion ditches, directional slopes and paths. A large constructed rain garden at GBG reduces runoff.</li> <li>• The University has switched from chlorine to mixed-oxidant technology to disinfect water.</li> <li>• Building-level water consumption meters monitor where water enters each building. The meters have wire transmitters that send the data back to the water plant.</li> </ul>
<b>Planning, Administration, and Engagement</b>	
<b>Diversity and Affordability</b>	<ul style="list-style-type: none"> <li>• The Office of Multicultural Affairs and Diversity (OMAD), Student and Enrollment Services and International Programs offer support to all students. The OMAD is committed to raising awareness, respect, and understanding while striving for equal opportunities for all underrepresented individuals in UAF's campus community.</li> </ul>
<b>Human Resources</b>	<ul style="list-style-type: none"> <li>• Employee satisfaction surveys are conducted.</li> <li>• Every year on staff appreciation day UAF offers sustainability trainings.</li> <li>• The Early Childhood Lab School at the University of Alaska Fairbanks is committed to providing high-quality, licensed care to children of enrolled university students, faculty and staff, while providing rich observation and practicum experiences for University students studying early childhood education.</li> </ul>

## 4.5 Waste Audit and Findings

As a supplement to this SMP, UAF conducted a waste audit in a targeted subset of 16 campus buildings. Objectives of the waste audit included determining the current percentage of waste being diverted from landfills, identifying barriers to waste reduction and diversion and targeting opportunities for waste reduction and increased diversion. Interviews with building managers and occupants were conducted as well as a walk-through of the 16 buildings to identify current waste, recycling and materials management practices. In 2012, UAF generated 1,970,000 pounds<sup>5</sup> of waste (Figure 4) with a 51 percent diversion rate due to recycling, reuse and composting activities on campus.

Currently, UAF disposes of non-hazardous waste using four primary methods: landfilling, recycling, composting and reuse. The University is taking a number of steps to divert materials from landfill including recycling paper, cardboard, glass, aluminum, tin, ink cartridges and batteries. Additional practices include shipping electronic waste (e-waste) through the Interior Alaska Green Star program to Total Reclaim, where it is responsibly processed and separated into various raw materials such as plastic, glass, steel, copper and aluminum, which are then sold as commodities. Facilities Services recycles scrap metals locally and yard waste and pre-chop scraps from Dining Services are composted on campus.

In addition to recycling and composting UAF offers a number of reuse programs. Property & Central Receiving has established a surplus warehouse for the inter-departmental reutilization of un-needed furniture and electronics. Surplus items that go unused by University employees are periodically auctioned to the public. Residence Life offers on-going student exchanges for clothing and materials. The University holds the Really Free Market, an annual yard-sale style summer event that allows Residence Life, UAF and Fairbanks community members to drop off and pick up items for free. The Athletic Department donates used, functional equipment to local schools and sports teams, and it auctions off old weight machines to the public.

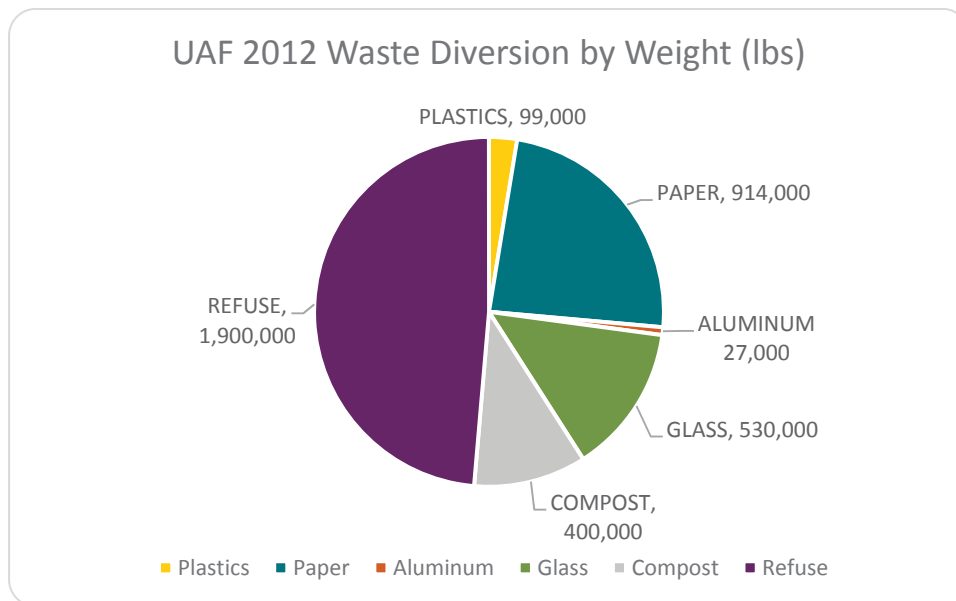
During the audit, opportunities for increased waste diversion and reduction identified included:

- Source reduction
- Centralized waste and recycling collection
- Expanding composting capacity
- Campus education

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<sup>5</sup> The recycling data used for this calculation were collected in 2012.



**FIGURE 4: UAF SOLID WASTE DIVERSION BY WEIGHT**

These opportunities have been integrated into the SMP in waste-related strategies. The full waste audit report is included in Appendix B.

## 4.6 Benchmarking

To provide some context for sustainability performance compared to other institutions of higher education, the consultant team benchmarked UAF to a number of peers for which performance information was available through STARS, the American College and University Presidents Climate Commitment (ACUPCC's) Reporting System<sup>6</sup> or individual college and university websites. Benchmarking included GHG emissions, associated energy use and water consumption.

There are many factors that contribute to an institution's sustainability performance, and therefore benchmarks should be considered with care. The local climate's impact on heating and cooling systems, the available electricity resource mix, age of buildings and the nature of academic and research programs are just a few of the many factors that are largely outside of an institution's direct influence, and that can have a significant impact on performance measures such as GHG emissions. The fact that UAF has a CHP plant and a water treatment plant also contributes to the difficulty of making direct comparisons with other schools.

<sup>6</sup> <http://rs.acupcc.org/>

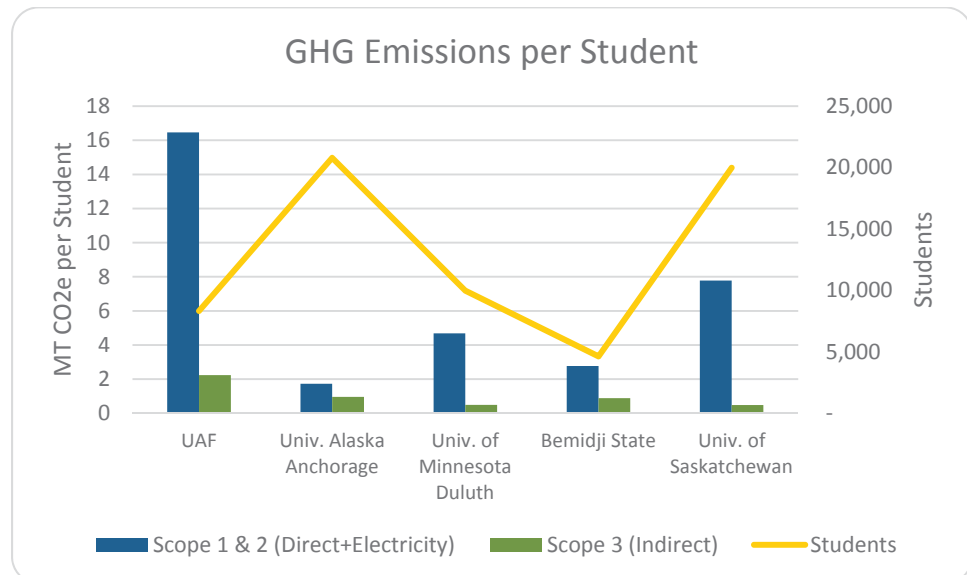
For this GHG report the contractor did not compare research focused building with academic focused buildings. Energy usage in research facilities was not accounted for and may be responsible for the high energy use per student when benchmarked with other universities. We anticipate that water usage in research facilities may also have skewed results.

The varying extent to which indirect emissions, like airline travel, are included in an institution's GHG inventory can also make comparisons difficult. Benchmarks for direct (Scope 1) and indirect electricity (Scope 2) GHG emissions are generally accounted for more consistently and therefore tend to be more comparable than Scope 3 emissions.

As Figure 5 and Figure 6 indicate, UAF's GHG emissions are on the higher end of the range of benchmarked schools on per student and per square foot of floor space bases. This appears to be primarily due to the power plant and associated emissions. The four additional institutions selected for comparison were chosen because of their similar cold climate locations, and/or because they are considered peer schools to UAF.

Based on the lower energy usage and overall carbon intensity of these benchmarked institutions, UAF has the opportunity to continue to reduce the energy intensity of its buildings, and to seek lower carbon energy sources to make progress toward reducing GHG emissions.

**FIGURE 5: SCOPE 1 AND 2 EMISSION INTENSITY PER STUDENT**



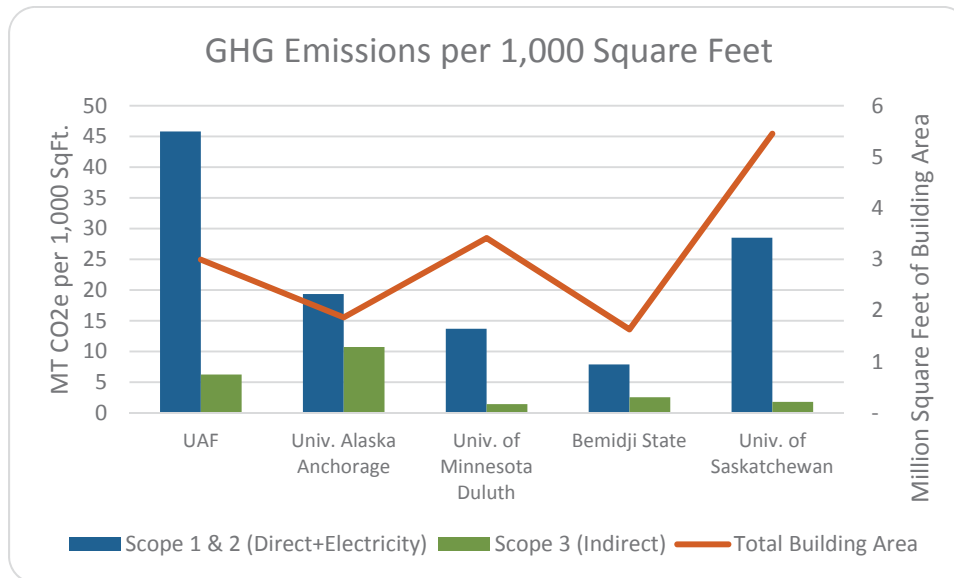
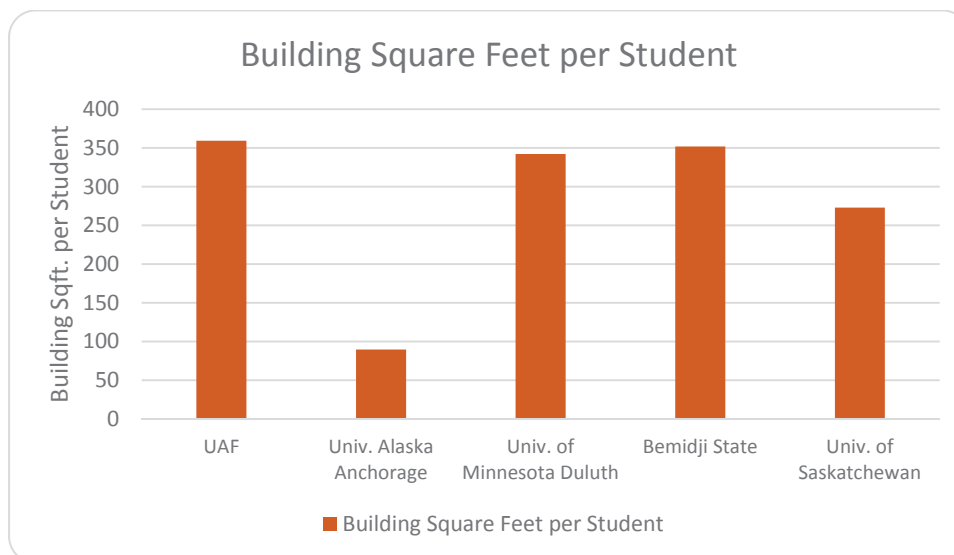
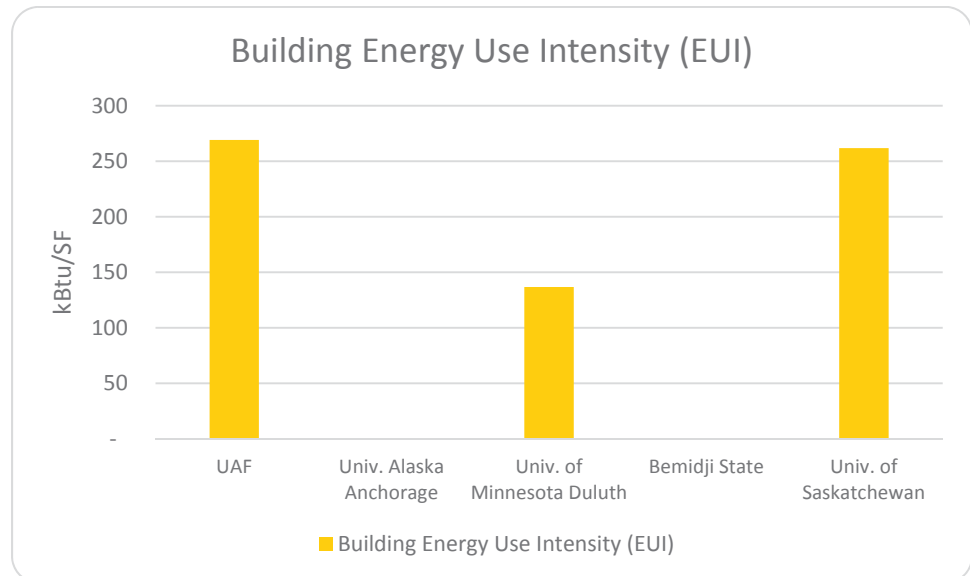
**FIGURE 6: SCOPE 1 AND 2 EMISSION INTENSITY PER 1,000 SQUARE FEET**

Figure 7 shows that UAF has comparable amount of building square footage per student with respect to peers, with the exception of the University of Alaska-Anchorage.

**FIGURE 7: BUILDING SQUARE FEET PER STUDENT**

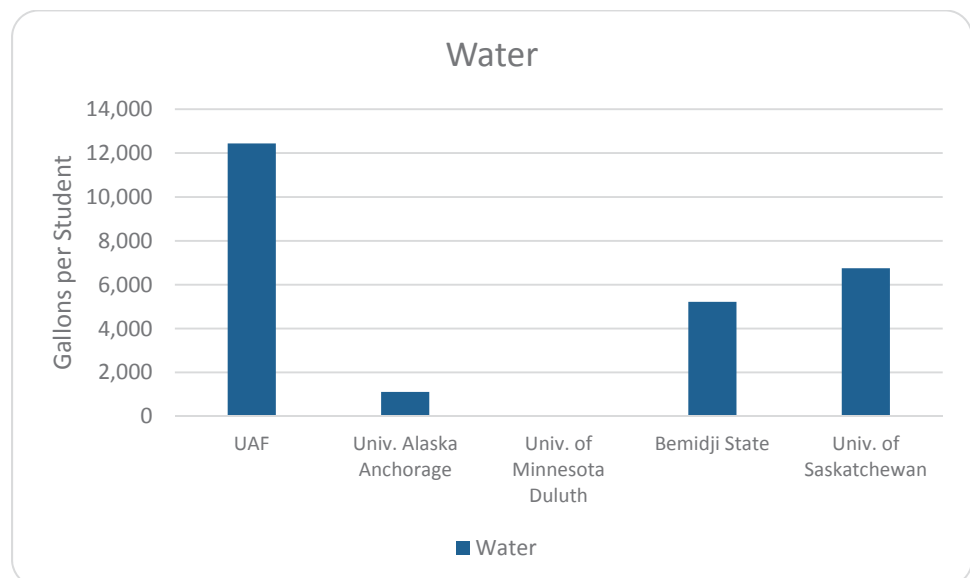
UAF has high building energy use as shown by energy use intensity (EUI) in Figure 8. Data on EUI for the University of Alaska-Anchorage and Bemidji State were not available.

**FIGURE 8: BUILDING ENERGY USE INTENSITY**



UAF also has high water use per student based on water produced at the treatment plant, as shown in Figure 9. Data for the University of Minnesota-Duluth were not available.

**FIGURE 9: WATER USE PER STUDENT**

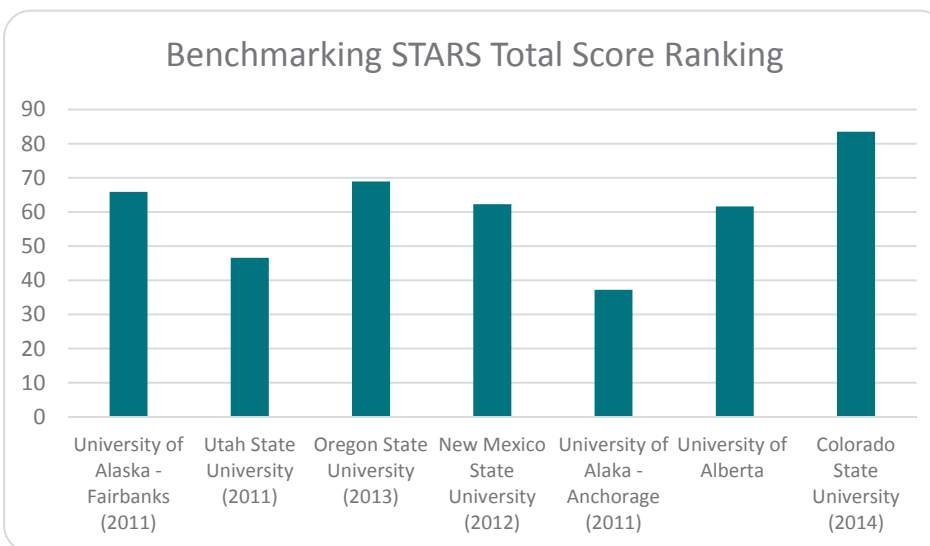


## 4.7 Comparing STARS Scores

To provide some context for UAF's STARS rating and performance compared other institutions of higher education, UAF was benchmarked against a number of peers and best in class institutions reporting to AASHE's STARS initiative.

As illustrated in Figure 10, UAF is a top performer among its peers. With a total of 65.88 points for its 2011 STARS report, the University is just 17.6 points away from the highest ranked institution in the nation, Colorado State University. Within the 18 specific topic areas on which universities are required to report, UAF's curriculum and research programs were especially high performing. Additionally, UAF showed noteworthy performance in building, energy, grounds and public engagement.

**FIGURE 10: STARS BENCHMARKING**



*UAF has converted 99 percent of campus fluorescent lights to higher efficiency bulbs and ballasts, saving an average of 30 percent in energy use.*



## 5.0 SMP VISION, MISSION AND STRUCTURE

### 5.1 Introduction and Terminology

Central to this SMP is the framework, or organization of the Plan, presented on the following pages and in the following chapters. This framework brings together the various SMP components – from its vision and mission to focus areas, goals and supporting strategies – into one cohesive plan for furthering sustainability at UAF.

The following chapters of the SMP are organized around four main “focus areas” that map to a number of AASHE STARS categories and incorporate terminology from other UAF strategic planning efforts: Protecting Resources, Supporting the Campus community, Closing Loops and Conserving Materials, and Shaping Alaska’s Future (Figure 11; note that some STARS categories are addressed under more than one focus area). These were identified through a review of the AASHE STARS categories, a facilitated dialogue with the Steering Committee and a review of other major campus master and strategic plans.

For each of these focus areas the SMP includes a number of goals, followed by detailed strategies and implementation steps to work toward the goals.

#### FRAMEWORK TERMS

The following definitions provide for a common and shared understanding of the framework among University students, faculty, staff and other stakeholders:



**Focus Areas:** Priority areas determined by the SMP Executive Committee as themes under which goals and strategies are organized.

**Goals:** Short-term and long-term outcome statements to serve as “yardsticks” toward sustainability for each focus area.

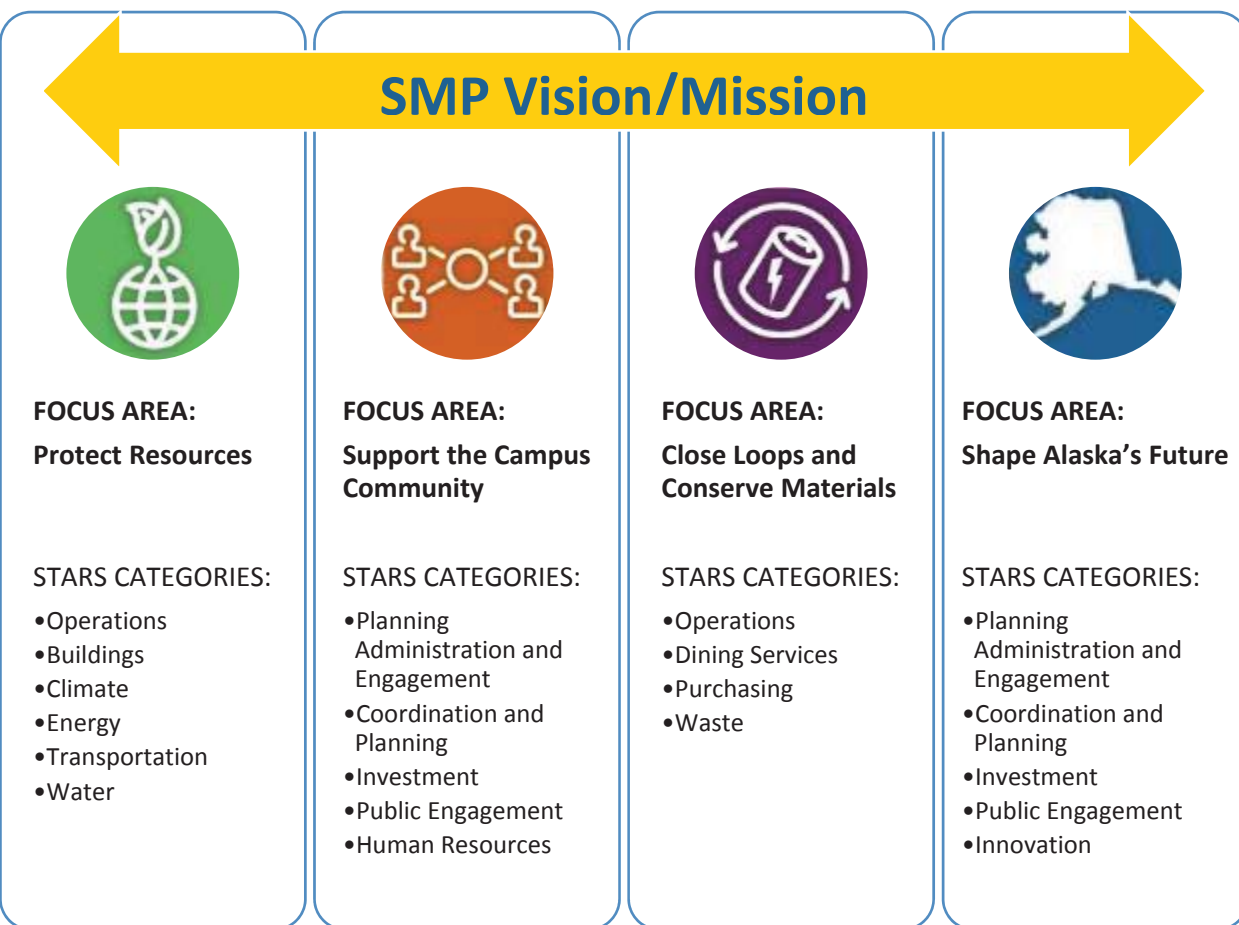
**Strategies:** The main paths for achieving goals – for example, energy efficiency improvements (under the Protect Resources focus area).

**Implementation Steps:** A specific set of steps/action items to complete each strategy.

**Metrics:** Quantitative measures that can be used to track and report progress toward sustainability for specific focus areas, goals and strategies.

**Timeline:** “Fall” refers to the time period between September 1<sup>st</sup> and December 31<sup>st</sup>; “Spring” refers to the time period between January 1<sup>st</sup> and May 31<sup>st</sup>; “Summer” refers to the period between June 1<sup>st</sup> and August 31<sup>st</sup>.

**FIGURE 11. SMP FOCUS AREAS AND STARS CATEGORIES**



## 5.2 Vision and Mission Statements

The highest-level guidance for this SMP is embodied in the Plan's vision and mission statements, provided below. These statements are products of dialogue and deliberation among Steering Committee members, as well as cross-referencing other UAF plans and strategic documents to help align them with past and ongoing efforts.

### Vision

The defining vision for sustainability at UAF supports the SMP effort as well as other University sustainability activities and collaboration with the broader community.

*UAF inspires Alaska's diverse communities with leadership in environmental stewardship, energy and resource management, social justice and fiscal responsibility.*

This vision anchors the remaining components of the SMP and provides direction for developing goals, implementing strategies, creating partnerships and involving the entire University in moving the SMP forward.

### Mission

Crafting a sustainability-specific mission for the University can help ensure the long-term viability of sustainability efforts at UAF, and help engage the entire campus community in working together toward shared outcomes.

*UAF's sustainability mission is to be a model for the Circumpolar North by impacting future resources, ecosystem health and human wellbeing in a positive manner. We will do so by incorporating sustainability into every facet of research, curriculum, operations and campus life; allowing us to thrive now and be resilient in the face of a changing future.*

## 5.2 Goals

Goals are important components of the SMP framework to more specifically articulate intended outcomes for charting progress toward sustainability. Each of the four focus areas contains a number of supporting goals. These goals will serve as yardsticks to which the University will strive, both over the near term as well as into the future, to map its progress toward sustainability and to improve its STARS score.

Goal statements in the SMP embody both short-term and long-term goals. Longer-term goals are intended to keep UAF on a continual path of



improvement toward sustainability, employing new methodologies and technologies as they evolve.

Some of the SMP's short-term goal statements are structured to follow a "SMART" format, ensuring that they contain specific, measurable, achievable, realistic and timely elements. This helps facilitate goals that are actionable, can be achieved over a specific time horizon and for which results can be tracked and measured. The Steering Committee expressed preference for a mix of goal types (SMART and non-SMART formats); as such, some goals in each focus area contain specific targets and timelines, while others are more open ended in nature.

**S = Specific.** Keeping short-term goals specific makes them more likely to be achieved. Identify who (is involved), what (to be accomplished), where (location, if applicable) and why (specific reasons or purpose of short-term goal).

**M = Measurable.** Establish concrete criteria for measuring progress toward each short-term goal. Answer how much, how many and/or how will we know when it is accomplished?

**A = Attainable.** Set short-term goals within reach to garner commitment and to increase the likelihood of success.

**R = Realistic.** Short-term goals should fit with the overall strategy and priorities of the organization, and the tools needed to accomplish the short-term goals should be available.

**T = Time-bound.** Set a time frame for each short-term goal that is measurable, attainable and realistic.

### 5.3 Strategies, Implementation Steps and Metrics

The strategies presented in the following chapters by focus area were developed on the basis of input from the Office of Sustainability, Steering Committee members, small group interview participants and best practices from other universities and organizations. Each focus area contains a number of strategies that align with and support goals.

Where feasible, strategies also include estimates of cost, savings and energy and resource reductions. These estimates were developed using an Excel-based cost evaluation tool that incorporates actual data from UAF, but also includes estimates for elements such as, for example, participation rates in commuting initiatives based on available research and benchmarks from other

organizations. Conservative estimates have been used to avoid overstatement of potential impacts/benefits. Where quantification is not feasible, more qualitative statements of benefits (economic, environmental, social) are provided.

It is important to recall the preceding introductions and descriptions of goals and strategies in this document. In particular, the **goals** represent the **greater desired outcomes** of the SMP, while the **strategies** are **specific programs or initiatives to help reach the goals**. Strategies further contain **specific implementation steps** to complete the intended program or initiative as well as suggested **metrics to measure success**.

Strategies were organized and implementation steps developed using the expertise and input of SMP Steering Committee members, small group interview participants and other subject matter experts across campus. Many opportunities that relate to potential strategies were collected throughout the SMP development process; organization and prioritization was then used to help focus efforts on the most relevant topics. This approach involved taking into consideration the overall mix of strategies and keeping a number of themes in mind such as:

- Cost effectiveness;
- Opportunities to improve UAF's STARS score;
- Existing University goals, practices and sustainability projects; and
- Leveraging existing University partnerships.

## 5.4 Putting the Pieces Together

The following four chapters (Chapters 6.0 through 9.0) present the goals and strategies for each of the SMP's four focus areas, as well as related STARS categories and credits, and metrics to measure success.



*UAF's Office of Sustainability has offered student positions to approximately a dozen students to pursue interests and initiatives in alternative transportation, waste, education, and other topics.*