University of Alaska Anchorage

Draft

Carbon Emissions Reduction and Monitoring Plan – Anchorage Campus

January 2010

Table of Contents

Introduction and UAA Commitments

The Carbon Emissions Reduction and Monitoring Plan (CERM) is UAA's initial effort to identify actions to reduce its carbon emissions and to also serve as a major component of an integrated and comprehensive Sustainability Plan, which UAA will develop over the next two years.

A major part of sustainability is fiscal implications and ensuring actions are cost effective. Evaluating expenditures through the sustainability lens is causing UAA and many other institutions to consider life-cycle cost effectiveness, not just purchase price. Assessing what the full costs of an item are includes purchase price, maintenance, disposal and replacement. Finding options, best practices and alternatives to reduce costs throughout the life-cycle holds great promise for substantial cost savings.

In conducting projects and events on sustainability over the last several years, we've also learned that technological actions need to be leveraged and complemented with awareness building and motivating the university community in order to move UAA towards sustainable practices that align with newly adopted policies and plans.

The purpose of the CERM Plan is to:
1. Provide the next step towards carbon neutrality and build on baseline data collected
2. Provide a formal way to set UAA carbon emission reduction targets
3. Provide UAA Office of Sustainability, and UAA's major stakeholders – students, faculty, administration and staff—options for reducing carbon emissions
4. Provide recommended actions for UAA to implement
5. Meet UAA's commitment to the ACUPCC
6. Demonstrate leadership in Alaska by providing a model to address this critical issue

In this document we first identify UAA's primary commitments to the American College and University Presidents Climate Commitment (ACUPCC), which UAA signed in 2006. We define what carbon emissions are and then summarize how UAA developed its Carbon Emission Baseline analysis (Baseline), along with the outcomes of the Baseline.

Next, we discuss UAA's campus culture and our greatest challenges to achieving the ambitious goal of neutrality. The heart of the CERM Plan identifies reduction targets and broad strategies, along with recommended actions and targets woven into current and recommended policies. Lastly, monitoring, implementing and setting new goals are addressed.

Meeting ACUPCC Commitments

When UAA signed the ACUPCC agreement, it agreed to immediate actions to display UAA's commitment to curb its carbon emissions, including:

        1) Completing an initial inventory of its greenhouse gas (GHG) emissions, along with

        2) This companion Carbon Emission Reduction and Monitoring Plan (CERM).

Another commitment UAA made by signing the ACUPCC was to achieve carbon emissions neutrality as quickly as possible. By calculating UAA's carbon emissions baseline and developing this complementary reduction plan, UAA now has the ability to identify a viable target date to achieve carbon neutrality, along with the ability to identify interim goals to ensure it reaches this state.

UAA views the Carbon Emission Reduction Plan as a five-step process:

1. Baseline current carbon emissions.
   - Base year is fiscal year 2007 (FY07), or July 1, 2006 – June 30, 2007.
2. Set targets and benchmarks for reductions.
3. Conduct efforts to reduce carbon emissions as outlined in this Plan (July 1, 2007 forward.)
4. Measure progress every three years, with the next carbon analysis conducted on FY10 (July 1, 2009 – June 30, 2010) activities and efforts.
   - The actual analysis will likely not be completed until late in the calendar year 2010.
5. Set new emission reduction targets as part of a revised Carbon Emission Reduction plan by end of calendar year 2010.
   - These targets will be for the next three-year timeframe from FY 11 – FY 13, which would end June 30, 2013.

FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16
Baseline year ending FY 6/30/07	Conduct baseline analysis	Develop CERM Plan	End of first 3-year phase	Conduct 2nd baseline analysis	Revise CERM plan	End of Second 3-year phase	Conduct 3rd baseline analysis	Revise CERM plan	End of 3rd 3-year phase and end of initial 10-year planning horizon
		Report to ACUPCC & UAA Community		Report to ACUPCC & UAA Community			Report to ACUPCC & UAA Community		
Implementation and best practices continually used									
		Monitoring to measure progress							
		Develop and implement Sustainability Plan with carbon emission reduction as a major component							

Carbon Emissions

Understanding Categories of Campus Carbon Emissions

In this CERM Plan we describe recommendations and actions to reduce GHG emissions, which are identified as Scope 1, 2, and 3:

> Scope 1 GHG emissions are those directly occurring "from sources that are owned or controlled by the institution, including: on-campus stationary combustion of fossil fuels; mobile combustion of fossil fuels by institution owned/controlled vehicles; and "fugitive" emissions. Fugitive emissions result from intentional or unintentional releases of GHGs, including the leakage of HFCs from refrigeration and air conditioning equipment as well as the release of CH_4 from institution-owned farm animals." (ACUPCC Implementation Guide p. 11; http://www.presidentsclimatecommitment.org/pdf/ACUPCC_IG_Final.pdf)

> Scope 2 emissions are "indirect emissions generated in the production of electricity consumed by the institution." (ACUPCC Implementation Guide p. 11)

> Scope 3 emissions are all the other indirect emissions that are "a consequence of the activities of the institution, but occur from sources not owned or controlled by the institution" such as commuting, air travel for university activities, waste disposal; embodied emissions from extraction, production, and transportation of purchased goods; outsourced activities; contractor owned- vehicles; and line loss from electricity transmission and distribution." (ACUPCC Implementation Guide p. 11-12)

The carbon emissions baseline is a critical component of the CERM, as it provides the starting point for planned reductions, and a way to monitor tangible results.

Developing UAA Carbon Emissions Baseline

UAA has recently focused and prioritized campus efforts to increase its economic, social, and environmental sustainability. In 2007–08, UAA's Office of Community Partnerships (OCP) received funding from UAA's Strategic Opportunities Fund to assess and document its baseline carbon emissions for FY07 (July 1, 2006–June 30, 2007). Utilizing the internationally recognized World Resources Institute's GHG Model (WRI-GHG), OCP worked with staff from Facilities and Campus Services and the Institute of Social and Economic Research (ISER) to assess the emissions from facilities and energy use on campus (Scope 1 emissions), commuter traffic to and from the campus (Scope 3 emissions), and air travel conducted by staff and students (Scope 3 emissions). Christopher Turletes and Michael Smith at UAA Facilities led the effort to fully document the impact of campus buildings and energy use. With the assistance of Nicholas Szymoniak and Steve Colt at ISER, UAA developed the most comprehensive baselines of travel-related emissions in the state. We can say with assurance that

UAA's carbon emissions baseline is rigorous, thorough, and replicable. It can serve as a model to other institutions.

The Chancellor's Sustainability Council was also invaluable to the development of the baseline, as its chair, Dr. Larry Foster, brought both structure and critical feedback to the effort, making the results both more accurate and more useable than they otherwise might be.

This carbon emissions baseline is the foundation for our efforts to decrease our future emissions and impacts. Although briefly described here, the full baseline report can be found at
http://uaa.alaska.edu/sustainability

CURIOUS ABOUT UAA'S CARBON FOOTPRINT?

- What were the geographic boundaries used to develop UAA's carbon footprint?
- What model did UAA use to measure carbon emissions?
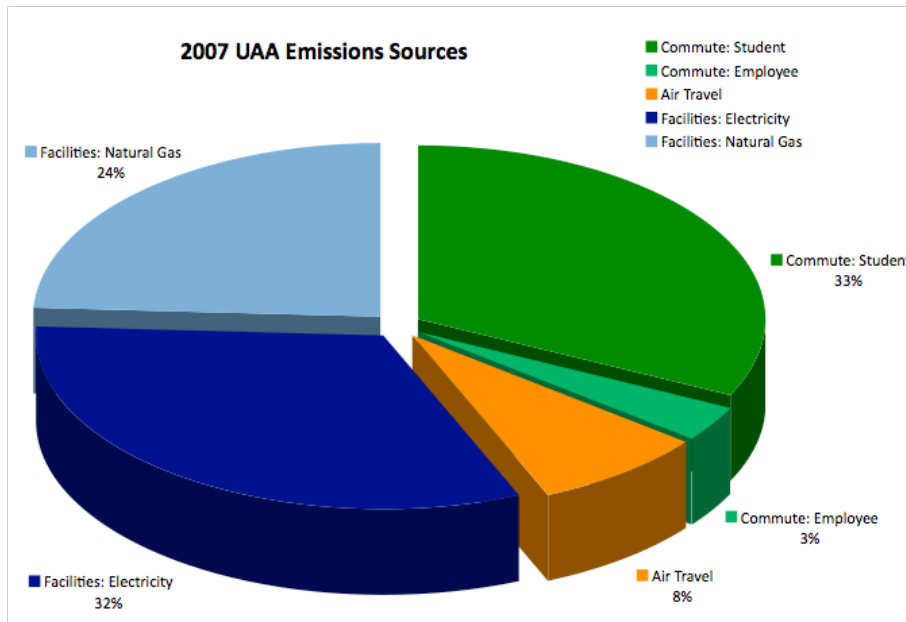
http://uaa.alaska.edu/sustainability

UAA'S CARBON FOOTPRINT: UAA's initial carbon footprint for FY 2007 is estimated at 44,228 metric tons of CO2e (carbon emission equivalent). There are actually 6 principal greenhouse gases documented, but for ease in reporting a single number is used. 2006-2007 now serves as UAA's base year to compare future reductions or changes.

Figure 12—Estimated 2007 UAA CO$_2$e Baseline Emissions

Emissions Sources	Metric Tons CO$_2$e	Percent Total	Percent by Activity
Auto Commuter Emissions from Students (Largest Single Component of Emissions)	14196	32.10%	Commuting by Autos: 35.5%
Auto Commuter Emissions from Employees	1482	3.40%	
Natural Gas—Off Campus	1462	3.30%	Facilities: 56.4%
Natural Gas—Student Housing	2380	5.40%	
Purchased Electricity – Main	10799	24.40%	
Purchased Electricity—Off Campus Facilities owned or leased in Anchorage	1828	4.10%	
Purchased Electricity—Student Housing	1588	3.60%	
Air Travel – paid by UAA	3582	8.10%	Air Travel: 8.1%
Total	44228	Tons CO$_2$e	
Scope 1 & 2 Emissions	24968	Tons CO$_2$e	
Scope 3 Emissions	19260	Tons CO$_2$e	

Student commuting is UAA's largest single emission!

2007 UAA Emissions Sources

Legend:
- Commute: Student
- Commute: Employee
- Air Travel
- Facilities: Electricity
- Facilities: Natural Gas

- Facilities: Natural Gas 24%
- Commute: Student 33%
- Facilities: Electricity 32%
- Commute: Employee 3%
- Air Travel 8%

UAA's Campus Culture

Operations Philosophy

UAA, as any academic institution, needs to inspire and motivate its community members to achieve success.

UAA relies heavily upon facilities and operation managers and staff to ensure the day-to-day functioning of the university, as well as to identify and implement efficiencies throughout the campus. Building awareness of sustainability on campus and providing projects and other learning opportunities to advance sustainability through academic programs can motivate faculty and students, who are the heart of the institution, as well as the staff who support them. Combined, they comprise the UAA Community; and their efforts to help reduce carbon emissions are critical if we are to be successful in meeting our goals.

The Challenge: Who's Responsible?

"It's everyone's responsibility" has long implied "then it's not my responsibility."

This is the fundamental challenge to carbon emission reduction and for the ultimate goal of sustainability. It's fairly well accepted that no single person or administrative unit at UAA can accomplish the numerous goals and targets set out in this Carbon Emission Reduction (CERM) plan. This document identifies those "responsible" for implementation and meeting target goals.

These targets can only be realized by action from each individual in the UAA Community.

By identifying quantifiable targets, and proposing policy changes and programming assistance that support carbon emission reduction, this CERM is a good start. Engaging the UAA Community and the broader Anchorage community is necessary for UAA to be successful.

That sounds big and ambitious, doesn't it? But successful "engagement" is about reaching each person in the UAA Community in a way that causes them to re-think their "programmed response" and take actions that result in less environmental impact. Whether it's walking or taking the bus – rather than driving; or editing a paper online – rather than printing; or video-conferencing – rather than flying.

Each individual's actions matter

That's why, as you read this and consider who's responsible, we pose this question back to you:

What's your responsibility here at UAA, and
how will you change your actions to meet this challenge?

Carbon Emission Reduction and Monitoring Plan

The UAA CERM Plan is the second step in our efforts to achieve sustainable operations in a world increasingly cognizant of climate change and humanity's impact on it. The Plan will be an important guide and component of UAA's new Office of Sustainability, and will serve as a foundation document and an essential element to developing and implementing a Sustainability Plan for UAA.

Setting Reduction Targets

By signing the ACUPCC, UAA agreed to take steps to achieve carbon neutrality as soon as possible – meaning that either UAA does not emit carbon emissions, or if it does, it will offset them by various actions, such as carbon trading, carbon offsets, and increased greening of our landscape. This plan represents a significant step to meeting this aspiration.

Specifically, the ACUPCC Commitment calls for a target goal approach to effectively develop a reduction plan. By identifying reduction target goals – both in terms of dates and quantifiable results—the institution makes a commitment, can establish benchmarks, and can measure progress. UAA presents its Target Reductions in three categories – Facilities, Air Travel and Commuter Travel.

> Target: By 2016 reduce carbon emissions per gross square footage from facilities by 10% from 2007 levels.

RECOMMENDED ACTION: UAA's Chancellor, in consultation with the Chancellor's Cabinet, should set a target goal that inspires and challenges the UAA Community.

Carbon emission reductions for facilities may be greater within five years for UAA Facilities if renewable electricity generation becomes available in the Anchorage area from the proposed citywide wind farm on Fire Island. Reductions may even be higher if additional renewable and alternative energy projects such as a conceptualized co-generation power plant is built near UAA,.

> Global warming is one of those things, not like an earthquake where there's a big bang and you say, "Oh, my God, this has really hit us." It creeps up on you. Half a degree temperature difference from one year to the next, a little bit of rise of the ocean, a little bit of melting of the glaciers, and then all of a sudden it is too late to do something about it.
>
> Governor Arnold Schwarzenegger

> TARGET: By 2016 reduce carbon emissions from air travel by reducing the number of trips by 20% from 2007 levels.

RECOMMENDED ACTION: UAA's Chancellor, in consultation with the Chancellor's Cabinet, should set a target goal that is doable, yet ambitious. It's believed that a good portion of air travel emissions reductions can be managed by administrative actions, including the use of a UAA green tag program. This action excludes athletics, where travel is required to maintain eligibility.

> TARGET: By 2016 reduce per rider mile carbon emissions from commuter by 100% from 2007 levels.

> Recommended Action: USUAA (Union of Students at UAA) and the UAA's Chancellor, in consultation with the Chancellor's Cabinet, should develop a formal UAA green tag(s) program, whereby "green" fees can be added by the governing bodies at UAA to various non-general funded services. This allows UAA to utilize an offset program as a strategy to reduce GHG, and retain the benefits by re-investing funds in UAA's Community. This includes considering student fees, parking permits and other parking fees. The primary purpose is to offset commuting emissions, and increase UAA's commitment by reinvesting these funds in carbon reduction projects and activities at UAA. The University of Colorado-Boulder and other campuses have similar programs in place and should be reviewed as models. (http://sustainability.ucsb.edu/tgif/cases.php)

These proposed goals are appropriate and economically viable for the following reasons:

- Alaska is the state where climate change is having its most visible and profound impact. Necessary and immediate steps are required to reduce the local effects;

- Calling on its own community – students, faculty and staff to do what they can, UAA can meet its reduction goals; and by

- Partnering with others (State and local governments, businesses, and nonprofit agencies) will leverage UAA's ability to achieve these goals by 2016.

Examples of other universities' commitments to reduce carbon emissions are:

- Harvard University: By 2016, reduce carbon emissions by 30% from 2006 baseline

- Yale: By 2020, reduce carbon emissions by 10% below 1990 baseline

- Brown University: By 2020, reduce carbon emissions by 45% below FY 2007 baseline

- 31 New York City Campuses: By 2017, reduce carbon emissions by 30% from FY 2007 baseline

- Middlebury (Vermont) College: By 2016 commits to carbon neutrality

- Alaska Pacific University: Commits to carbon neutrality by 2020

Another target reduction example is from the Western Climate Initiative's (WCI) target to reduce GHG emissions 15% below 2005 levels by 2020. The WCI is the Western Governors Association's effort to address climate change. Alaska is a member of the Western Governors Association.

Supporting Community Campus Efforts

UAA is supporting its Community Campuses to develop their carbon emission baselines and conduct reduction efforts. UAA's five community campus sites (located in Kenai, Homer, Valdez, Mat-Su and Kodiak), and three off-campus instructional centers (located in Fort Richardson, Elmendorf AFB, and Eagle River) were not able to be included in the development of the Anchorage campus carbon

emission baseline. To address this, Anchorage campus sustainability staff will host a videoconfe-rence workshop with the community campuses within the next six months to provide technical as-sistance and guidance in developing their individual campus carbon emission baselines. This will lead to each campus being able to develop and track their own CERM Plan in the future, and it's antic-ipated that they'll be able to complete their CERM Plans by June 30, 2010.

- Completion for community campus workshop: April 30, 2009
- Completion for community campus baselines: June 30, 2009

> RECOMMENDATION: UAA should continue to support community campuses and off-campus centers with their initial carbon baseline and CERM planning activities.

Supporting Efforts to Partner UAA and USUAA

Students are a key to meeting UAA's carbon neutrality goals and commitments. The largest emission component is from student commuting. Anchorage and its surrounding areas do not have the level of public transit that provides viable options for a majority of UAA students. It's likely that without a reasonable offset fee, we will be unable to address the largest emission component at UAA. Explor-ing other potential options besides offset fees, and how this program could work, is why a partner-ship effort between USUAA and UAA Administration and Faculty would provide a focus to address this challenge.

Measuring Progress Towards Carbon Neutrality

Whatever goals are adopted, UAA must develop strategies to meet them by working back from the targeted goals and dates, determine necessary resources and a plan to acquire and utilize those re-sources, and identify mechanisms to track progress to verify carbon reduction. UAA will then need to conduct appropriate analyses to set interim targets and actions for specific units, and ensure ac-countability at all levels of the organization.

> RECOMMENDATION: In order for UAA to evaluate progress towards its ultimate goal of carbon neutrality, carbon emissions should be measured at three-year intervals. From the baseline year of FY07, three years will be at the end of FY 10 (June 30, 2010), and the analysis will be conducted and completed by December 31, 2010.

The following chart reflects potential changes from UAA's baseline year, FY2007 to FY2016, June 30, 2016. The table provides plausible, attainable goals. Funding, authorizations and changes to UAA community members' day-to-day behaviors are all needed if a more ambitious scenario is to be achieved.

	UAA CARBON EMISSION REDUCTION SCENARIO				
Emissions Sources	FY07 Metric Tons CO_2e	FY07 Percent Total	Proposed Percent Reduction	By FY16 Tons Reduced	FY16 CO_2e Emissions
Student Auto Commute	14196	32.10%	100% (FY 11)	14196	0
Auto Commuter Emissions from Employees	1482	3.40%	100% (FY 11)	1482	0
Natural Gas – Main Campus	6911	15.60%	10%	691	6220
Natural Gas—Off Campus	1462	3.30%	10%	146	1316
Natural Gas—Student Housing	2380	5.40%	10%	238	2142
Purchased Electricity – Main	10799	24.40%	10% + 3% in FY12	1090	9709
Purchased Electricity—Off Campus Facilities owned or leased in Anchorage	1828	4.10%	10% + 3% in FY12	235	1593
Purchased Electricity—Student Housing	1588	3.60%	10% + 3% in FY12	203	1385
Air travel-Staff/Admin only paid by UAA	3582	8.10%	20%	716	2866
Total without cogeneration or renewables	44,228	Tons CO2e			
Total with auto green tags and renewables			43%	18,997	25,231
Auto Commuter Emissions reduced using UAA Green Tag Program					
Purchased Electricity Emissions reduced if Fire Island Wind developed					

UAA Campus Philosophy and Recommended Actions and Targets: Reducing Carbon Emissions from Scope 1–3 Emissions

Action Areas

There are several focal areas for reducing UAA carbon emissions:

- UAA Philosophy (To Reduce Scopes 1–3 Emissions): pages 13 - 16
  - Campus-Wide Policies, Commitments and Plans
  - Purchasing and Procurement, including Zero Waste
  - Employee and student work, community engagement, and Residence Life activities
  - UAA's evolution from a carbon emission reduction strategy to a sustainability effort, recognizing that virtually all products and services require energy (carbon) to manufacture and/or deliver
- Facilities
  - Heating, cooling and electricity (To Reduce Scope 1 Emissions): pages 16 – 19 and 21-22
  - Power generation in Southcentral Alaska and the development of alternative energy options (To Reduce Scope 2 Emissions): pages 19-20
- Transportation/Travel: pages 23-26
  - Vehicle and equipment fleet (To Reduce Scope 1 Emissions)
  - Student and employee commuting (To Reduce Scope 3 Emissions)
  - Student and employee air travel (To Reduce Scope 3 Emissions)

UAA Philosophy

UAA-Wide Policies, Commitments, Plans and Policies

In addition to the Carbon Emission Reduction and Monitoring Plan (CERM), there are a number of other policies and commitments that provide a complete picture about the holistic commitment UAA has to sustainability at the Anchorage campus. As the CERM Plan is a precursor to a comprehensive Sustainability Plan, identifying these plans and commitments here will also provide those leading the development of the Sustainability Plan with useful information. Those plans and commitments include:

Energy Policy/Plan	Facilities Master Plan
Talloires Declaration	ACUPCC Commitment
UAA Academic Master Plan	Carbon Emissions Reduction and Monitoring Plan
UAA Strategic Master Plan	U-Med Green District Commitment
	UAA Sustainability Plan

Those commitments and policies are described below. Also described are recommendations to consistently "upgrade" these plans and policies to result in coherence between the plans and improved sustainability and carbon emission reduction practices at UAA.

Facilities Master Plan

UAA buildings and facilities account for more than half of its carbon emissions. The following policies describe UAA's focus on these important assets.

In 2004 UAA adopted its Facilities Master Plan, which includes Sustainability and Stewardship Guidelines. (http://www.uaa.alaska.edu/masterplan/index.cfm). The guidelines having an impact of reducing carbon emissions are:

- Evaluate materials and systems based on life-cycle costs.
- Make consistent use of performance measures to determine the environmental and cost effectiveness of energy reduction and sustainability investments.
- Evaluate systems that use natural ventilation, heating and cooling during certain periods of the year.
- Orient buildings to minimize solar gain and maximize usable daylight.
- Consider placement and eventual size and density of trees planted near buildings in relation to solar gain and natural daylight use.

UAA Energy Policy

Although many of the best practices identified in UAA's Energy Policy had been in practice for some time, a new policy was only recently adopted in early 2008, committing UAA to:

- Sustainable construction in new and renewal projects
- Increase carbon footprint mitigation and increase energy savings by using:
  - Night, weekend and holiday temperature setbacks
  - Improved controls and sensors for lights and building systems
  - Alternative and renewable forms of energy when practical and economic to reduce dependence on fossil fuels

RECOMMENDED ACTION: Compare UAA's Facilities Master Plan and Energy Policy/Plan and other policies with those from universities who are leaders in carbon emission reduction and sustainability, and identify quantifiable benchmarks that support implementation of UAA's Sustainability guidelines. This review should also provide ideas and generate actions to obtain needed resources. Revise UAA's Facilities Master Plan and Energy Policy to include quantifiable benchmarks and targets, and align with the CERM Plan and other related policies that support carbon emission reductions.

RECOMMENDED ACTION: Resources, including continuing education and use of internal and external expertise, should be used to advance the skills of UAA's Administrative Services and Facilities staff to develop efficient carbon reduction strategies and actions.

Green Procurement Policy

TARGET: UAA should transition to a "zero-waste" model of procurement and management by FY16.

RECOMMENDED ACTION: Develop a Green Procurement Policy within the next year. UAA's Vice Chancellor for Administrative Services should establish a workgroup designated with the responsibility to develop a proposed green purchasing policy. This policy should be viewed as a bridge to the "zero-waste" model and the policy should reflect and recommend actions to use University resources to identify and purchase products to minimize up-stream impacts, to use projects efficiently during their product life, recycle effectively if possible, and dispose of in a biodegradable manner. Through this product life-cycle planning, sustainability will be enhanced and practiced with deliberation.

UAA Sustainability Plan

Early in 2009, UAA hired a Director for its new Office of Sustainability. In order to ensure UAA meets its sustainability goals, a Sustainability Plan will need to be linked and utilized to all commitments and resources available at UAA in a comprehensive and integrated fashion.

> TARGET: Develop a Sustainability Plan to include the CERM components by end of FY11.

The Sustainability Plan should also include:

- Identifying quantifiable goals and benchmarks to achieve carbon neutrality and to infuse sustainability into the UAA Community's day-to-day operations and each individual's way of life;
- Linking UAA's numerous policies and commitments; and
- Identifying and clarifying roles and responsibilities for UAA's senior executives, the Sustainability Office and Director, along with others at UAA integral to accomplishing goals. These include student organizations, Residence Life staff and student residents, facilities, dining services, procurement and others.

Awareness Building and Motivating the UAA Community

> TARGET: UAA demonstrates involvement by 20% of staff and students in energy reduction, commuter traffic reduction, or sustainability-related initiatives by the end of FY10, 40% by FY13 and 60% by FY16.

Academic Programs are the key to meeting this goal. With approximately 3,500 faculty and staff members, and 17,000 students a semester, the key is reaching, motivating and engaging students.

The Center for Advancing Faculty Excellence, the Sustainability Office and the Provost should build on the successful 2007 Climate Change Faculty Intensive to develop a programmatic approach to build awareness and instructional capabilities for UAA instructors to integrate carbon emission re-duction exercises and teachings into their curricula. A second faculty intensive is being planned for .

To identify research and service learning opportunities to reduce emissions, UAA should use building upgrades as learning laboratories, along with innovative programs such as the Girdwood Renewable Energy Center. Projects can be infused with research, independent study, curriculum and service-based learning components.

Another academic sustainability goal should be to establish curriculum for each college as well as a new interdisciplinary degree. Establishing a workgroup with the responsibility to identify and make recommendations about high demand training/education needs in renewable energy, and identify-ing what academic programs are needed to support them.

Motivating the UAA Community by developing and supporting the Sustainability Coordinators Network (SCN) will infuse actions that advance both sustainability and reduce carbon emissions. The SCN is a program where UAA staff, faculty, and students work in their own offices to assist their colleagues to take actions that are more sustainable and cost effective. This will help to focus grassroots efforts across the campus to conduct tangible activities to save money and to help reduce carbon emissions.

> RECOMMENDED ACTION: Chancellor's Cabinet, Governance, and Schools and
> Departments should establish the Sustainability Coordinators Network

The Sustainability Coordinators Network (SCN) is a highly successful program at the University of British Columbia (UBC), in which staff, faculty, students and others "donate" two hours per month of their workday to assist their offices and colleges to become more sustainable and efficient. This focused grassroots effort across the UAA campus could create a powerful positive momentum to both save money and help the environment. UBC website:< http://www.sustain.ubc.ca/>

Creating student programs, challenges, and competitions to help reduce carbon emissions and other awareness building opportunities will help to instill sustainability by providing optimistic and empowering opportunities for many members of UAA's community. Providing encouragement and guidance for campus land residence life and student government will also be helpful. Programs could include promoting energy efficiency, such as light bulb amnesty and trading in heaters for UAA sweatshirt/socks. Expanding the Chancellors' Award for Sustainability to the college and department levels, and encouraging competitions to UAA's U-Med neighbors have all been suggested.

Additional thoughts on UAA's Sustainability Plan are on the final page of this document.

UAA Facilities

As stated earlier, electricity, heat and cooling use by facilities account for over 50% of carbon emissions at UAA and warrant a considerable amount of attention in this CERM Plan. We do this by identifying various facets of operations, construction, management and planning in the CERM Plan.

Effective Energy Management: Metering

TARGET: Develop a metering methodology to monitor both carbon emissions and cost savings by the end of FY 13.

To be successful, Facilities needs to develop a cost-effective approach to meter campus buildings or sub-units (several buildings, parking lots, etc.) at an appropriate level to identify the energy consumption per square foot for gas (heating), electricity and water. Facilities staff and facility users can then identify and assess what changes are needed in energy use to meet target goals.

ACCOUNTABILITY: Facilities to develop a cost-effective metering plan including a timeline to install meters to assess electricity use in campus buildings or sub-units by the end of FY13.

Effective Energy Management: Performance Contracting

TARGET: UAA will explore the potential benefits of performance contracting and implement those most appropriate to our facilities by the end of FY 10.

Performance contracting is an agreement with a private energy service company (ESCO). The ESCO will identify and evaluate energy-saving opportunities and then recommend a package of improvements to be paid for through savings. The ESCO will guarantee that savings meet or exceed annual payments to cover all project costs—usually over a contract term of seven to 10 years. If savings don't materialize, the ESCO pays the difference. To ensure savings, the ESCO offers staff training and long-term maintenance services.

UAA will explore the potential benefits of using this mechanism through discussions with the Administrative Vice Chancellor, Sustainability Director and Facilities management and staff, along with Alaska DOT&PF, other universities (such as Boise State) and potential service providers. It will also be important to identify steps and resources needed to develop and implement a performance contract at UAA.

ACCOUNTABILITY: Office of Sustainability and Facilities by the end of FY 10.

Electricity Usage

TARGET: Reduce overall electrical consumption on campus by 10% from FY07 levels by 2016 based on gross square footage.

Electricity Strategy 1: Reduce Electricity Usage through Lighting Upgrades

> **Lighting Tactic 1**: Increase use of high efficiency lighting.
> Complete installation of high-efficiency lighting in all incandescent exit signs, 2 Parking Lots and 3 major projects (lecture halls or offices) by end of FY10. (Note: Major projects cost approximately $100,000 each.)
>
> **ACCOUNTABILITY**: Facilities

> **Lighting Tactic 2**: Develop and implement a light bulb amnesty program whereby employees, faculty and students can trade-in their incandescent bulbs for compact fluorescents or other energy efficient lights.
>
> **ACCOUNTABILITY**: Facilities to structure program; staff, students and faculty to participate

> **Lighting Tactic 3**: Install Motion Sensors
> Continue to install additional motion sensors as renovations are conducted and completed. This includes restrooms, offices and lecture halls. Timeframe is on-going.
>
> **ACCOUNTABILITY**: Facilities for installation
> Faculty, staff, students will need to learn how to effectively utilize this new technology

Electricity Strategy 2: Reduce E-Consumption by Computers and Copiers

> **Computer/Copiers Tactic 1**: All computer labs have electrical upgrades to allow computers and monitors to be turned off by installing and or programming energy savings software.
>
> **ACCOUNTABILITY**: USUAA, IT Services and Facilities by FY 10

> **Computer/Copiers Tactic 2**: Ensure that <u>all</u> new UAA copiers have electronic scanning and duplex capability, along with setting the default for duplex printing to reduce use of copiers and paper.
>
> **ACCOUNTABILITY**: Procurement by FY 10

> Computer/Copiers Tactic 3: Ensure all copy machines and computers are Energy Star rated.
>
> **ACCOUNTABILITY**: General Services & Supplies and Procurement by FY 10

Electricity Strategy 3: Reduce E-Consumption from Appliances and Equipment

Appliances and Equipment Tactic 1: All appliances, equipment, including copiers and printers, will be Energy Star rated if purchased.

Appliances and Equipment Tactic 2: All vending machines, where food safety is not an issue, will have operating energy misers by the end of FY11.

ACCOUNTABILITY: Procurement and General Services & Supplies

Heating and Cooling

TARGET: Reduce the annual consumption of fossil fuels for heating and cooling by 10% by 2016 per gross square foot.

Although heating and cooling are usually identified as major carbon emission sources, at UAA they account for less than 20% of UAA's emissions. New facilities will be coming on line beginning in FY 09, and clarifying how UAA accurately accounts for and reflects emissions from heating and cooling in them is an opportunity to realize savings from the start. Comparing appropriately metered new buildings with UAA's carbon baseline will help to identify strategies, actions and accountability for reducing carbon impacts from fossil fuels.

Heating Strategy 1: Identify accurate accounting to contrast and compare baseline with usages and reductions.

ACCOUNTABILITY: Office of Sustainability and ISER

Heating Strategy 2: During low usage periods (weekends, campus closures, summer) consolidate classroom usage to the most energy efficient buildings that meet course requirements.

Accountability: Enrollment Services begin in FY10

Heating Strategy 3: Convert or replace old/inefficient HVAC and boiler systems throughout the campus.

HVAC/Boiler Tactic: Identify characteristics to determine priority projects and determine priority list. Next identify campus facilities with the highest thermal energy consumption per square foot, and finally implement/replace HVAC systems.

ACCOUNTABILITY: Facilities – ongoing

Heating Strategy 4: Reduce heat loss or heat retention due to inefficient windows.

ACCOUNTABILITY: Facilities to replace windows with high efficiency double or triple pane windows.

Heating Strategy 5: Identify other technologies depending on the particular needs of a building and its users. (e.g., blinds have been identified as needed in the new Consortium Library to reduce heat retention in the summer)

ACCOUNTABILITY: Facilities – on going

Sustainable Energy

TARGET: Maximize the use of all available sources of sustainable energy.

Sustainable energy includes both renewables and co-generation.

Sustainable Energy Strategy 1: UAA should continue working with U-Med neighbors, ML&P, private sector developers and others to finance renewables and/or a co-generation plant in the U-Med District. UAA is committed to providing leadership to reduce carbon emissions, and save money. Likely the most effective way to do this is with a co-generation project in the U-Med District. The efficiency rate for natural gas from conventional power generation is approximately 35%, but by using co-generation technology this rate increases to 85% to 90%.

To accurately assess cogeneration's efficiency it needs to be compared to conventional power generation for heating combined with generating power for electricity. In Anchorage electricity and heat are produced and distributed by different organizations, e.g., ENSTAR produces heat and ML&P or Chugach Electric produce electricity.

ACCOUNTABILITY: Vice-Chancellor for Administrative Services and Facilities

Sustainable Energy Strategy 2: Support state and local policy and funding initiatives that utilize renewable energy sources when UAA can benefit from them in its service areas. Further, explore and identify other public policy decisions that would be beneficial to UAA, and then determine how to support those policies. Some of those issues are: Feed-in tariffs, net metering, and incentives to develop renewable and/or alternative energy.. Some of the public agencies and offices UAA may need to work with are the Regulatory Commission of Alaska, local utilities, state legislators and the Congressional delegation.

The State of Alaska's Energy Authority recently completed a study that recommends 50% of the state's electricity should be from renewable by 2025. UAA should actively support this goal.

Sustainable Energy Tactic 1: UAA should be actively involved and support the Fire Island Wind Project, which would provide renewable power to the primary utilities in the area. It's anticipated that if this project comes on line, UAA could reduce its CO_2 from electricity consumption by a minimum of 2%.

ACCOUNTABILITY: Chancellor and Cabinet, Facilities and Office of Sustainability

Sustainable Energy Tactic 2: The proposed net-metering state policy should be understood better and UAA should determine if it should support this policy before the Legislature.

ACCOUNTABILITY: Chancellor and Cabinet, Facilities and Office of Sustainability. Office of Sustainability should identify projects and policies that have the potential to assist UAA to meet this target and provide this information to Cabinet and Facilities to develop an action strategy.

> What gets measured tends to get done.
> from Reinventing Government

Sustainable Energy Tactic 3: Continue to work with MOA and ML&P to access methane gas to meet power/electricity target goals.

ACCOUNTABILITY: Facilities and Office of Sustainability

Sustainable Energy Strategy 3: Develop a renewable energy strategy for UAA.

Sustainable Energy Tactic 4: Identify where the University owns land in Southcentral Alaska and determine if there is good proximity to proposed geothermal and wind projects. (Work with UA Statewide Lands). Identify building renovations and work with academic programs to determine if renewable energy learning labs should be incorporated.

ACCOUNTABILITY: Office of Sustainability: Identify how a strategy should be developed (e.g. develop a scope of work, identify as a special project at ISER, etc.)

Sustainable Energy Strategy 4: Detail and communicate sustainable energy opportunities, policies, and projects to the UAA Community and others. This includes both the environmental benefits and cost effectiveness of a co-generation power plant for the Anchorage Campus (and U-Med District).

ACCOUNTABILITY: Office of Sustainability in conjunction with UAA Facilities and Cabinet and U Med Energy group

Sustainable Energy Strategy 5: Identify renewable projects that can double as learning laboratories for students at UAA's main campus and its community campuses.

ACCOUNTABILITY: UAA Office of Sustainability, Campus Directors, and Faculty Senate

Planning, Renovation, and Construction

New Construction

UAA currently has three new construction projects underway – Sports Complex, ISB Parking Garage, and Health Sciences Building (Phase 1). These projects will be designed and built to the greatest extent practicable to LEED standards or similar criteria.

New Construction Strategy 1: All new construction currently under way and in the future will be built to a LEED or equivalent standard, to align with the Municipality of Anchorage sustainable buildings ordinance and in keeping with UAA's budgetary considerations.

New Construction Tactic 1: The new Health Sciences Building, opening in Fall 2011 will meet LEED Silver standards.

ACCOUNTABILITY: Facilities

Building Renovation

Building Renovation Strategy: All major renovations will be accomplished with a specific focus on energy efficiency.

ACCOUNTABILITY: Facilities

Facilities Operations

TARGET: All operations and repairs are conducted using best practices.

Facilities Operations Strategy: Use energy as efficiently as possible by:

- Employing best-practice operational procedures to conserve energy and electricity use,
- Conducting prudent monitoring, and
- Investing in energy projects with a payback of eight years or less.

> Facilities Operations Tactic: Monitor at least one renovation project prior to and post construction to track energy efficiency and develop lessons learned. From this, develop a simple reporting system to track carbon emission progress on building upgrades.
>
> > ACCOUNTABILITY: Facilities to implement with help from the Sustainability Office to develop tracking system and document lessons learned by end of FY 10

LED Internal Demonstration Project:

CAS 118 Lecture Hall is now a state-of-the art benchmark for lighting upgrades. Before the upgrade approximately 105 light fixtures were used to light the space, now there are just 47. The LPD (lighting power density or watts per square ft.) was approximately 4.0 and now the maximum is 1.3, which in a range of lighting configurations can be as low as .048.

Transportation and Travel

Commuter and On-Campus Vehicle Use

> TARGET: Reduce carbon emissions from commuter traffic by 100% by 2016 per rider miles.

Based on UAA's carbon baseline, we calculated the average UAA commuter releases between 1.10 and 1.91 metric tons of CO_2, yielding a total of between 11,203 and 19,451 metric tons for the entire university. The results are presented as a range because emissions were estimated under low, medium and high scenarios.

> MAJOR RENOVATIONS: A current major renovation will accommodate the new UAA-UAF joint Clinical-Community Psychology PhD program and will be built to LEED standards. This will be accomplished by improving the internal environment (light, comfort, air quality), save energy, and upgrade building systems, including UAA's first condensing boiler (water heating device designed to recover energy normally discharged to the atmosphere), variable frequency drives on all motors (providing a high level of efficiency), improved controls, and daylight harvesting using effective window placement.

Commuter Strategy 1: For UAA Employees - Establish a telecommuting policy.

Telecommuting could replace daily commutes to UAA campuses via telecommunication and other technologies. In order to be an effective carbon emission reduction strategy, UAA telecommuters would work from home and also make commitments about reducing their driving for each day they are telecommuting – otherwise the objective to reduce carbon will not be realized. A successful telecommuting program will likely require other communication technologies such as PC webcams and E-Live conferencing tools.

> ACCOUNTABILITY: Chancellor's Cabinet by end of FY 10

Commuter Strategy 2: For UAA Students – Purchase Green Tags to offset commuter emissions.

The single largest source of carbon emissions at UAA is student commuting. Anchorage, and Alaska in general, lack public transportation options and due to the cold winter weather – when most students attend classes – purchasing offsets is probably the only viable option to reduce this emission component in any substantial way. Anticipated cost is $5-10 per student per year.

> ACCOUNTABILITY: USUAA with assistance from Sustainability Office and Chancellor.

Commuter Strategy 3: Promote and encourage alternatives.

> **Commuter Tactic 1:** Increase the number of UAA students, staff and faculty members by 10% annually using UPASS to ride free on Anchorage's People Mover bus system.

ACCOUNTABILITY: Parking Services, Student Services, USUAA

Commuter Tactic 2: Expand the variable parking permit structure that encourages alternatives to driving.

An example of this strategy is the reduced cost for parking permits for students in UAA Housing who leave their vehicles parked at Housing and use other forms of transportation options to campus.

ACCOUNTABILITY: Parking Services

Commuter Tactic 3: Initiate and continue discussions with U-Med and other neighbors to utilize already existing parking to accommodate UAA needs.

ACCOUNTABILITY: Parking Services and Facilities

Commuter Tactic 4: Initiate discussions among U-Med institutions along with the Municipality of Anchorage to review and revise the parking spaces-to-building occupancy ordinance with the intent to reduce the number of spaces required.

Commuter Tactic 5: Improve cost-effective lighting on trails from residence halls to campus and between campus buildings to ensure safety for foot, bicycle, and ski traffic.

ACCOUNTABILITY: Parking Services and Facilities

Commuter Tactic 6: Promote use of bicycling and walking to, from and on UAA campus.

ACCOUNTABILITY: Parking Services. Facilities, USUAA and Bike Club

Commuter Tactic 7: Designate convenient parking spaces and explore reduced parking fees for vans and cars used for staff and student car-pooling and van-pooling.

ACCOUNTABILITY: Parking Services

Commuter Tactic 8: Enforce "idle free" parking.

ACCOUNTABILITY: Parking Services

Commuter Tactic 9: Increase the use of UAA's on-campus shuttle system by 10% annually by reducing the shuttle interval/wait time to 7 minutes and continue to find new ways to encourage shuttle system usage.

ACCOUNTABILITY: Transportation Services, Parking and Office of Sustainability

Commuter Tactic 10: Encourage use of elevated enclosed walkways to encourage less driving on campus during winter months.

ACCOUNTABILITY: Individuals with assistance from the Sustainability
Coordinators Network

Commuter Strategy 4: Work with UAA Governance bodies and Faculty committees to support offset green fees for employee parking.

ACCOUNTABILITY: Chancellor's Cabinet, Parking Services and Governance
Leadership

Air Transportation

TARGET: BY FY16 reduce emissions from air travel paid for by UAA by 20% measured by number of trips

The baseline for air travel was calculated by statistically sampling the travel paid for by UAA in FY07, which included administration, faculty, students and sports team travel, and estimating carbon emissions based on length of journey and number of landings/takeoffs (which emit additional carbon).

Air Transportation Strategy 1: Increase use of audio and audio/video conferencing

Air Transportation Tactic 1: Improve capabilities, especially within the UA system and to UAA community campuses.

ACCOUNTABILITY: IT Services by FY 13

Air Transportation Tactic 2: Encourage use of audio/videoconferencing options rather than travel for face-to-face meetings. Deans, Directors, departments/offices and individuals should consistently request the technological services it needs to conduct business effectively, rather than travel to a meeting as a first resort.

ACCOUNTABILITY: Deans, Directors, departments/offices, Sustainability
Coordinators Network, individuals by FY 13

Air Transportation Strategy 2: Use budget tools.

Air Transportation Tactic 3: Adopt internal green tags program to offset air travel emissions.

Air Transportation Tactic 4: Reduce travel budgets.

ACCOUNTABILITY: Chancellor and Cabinet by end of FY 10

RECOMMENDATION: Chancellor's Cabinet should establish a GHG Offset Policy that includes air travel, with contributions to an emissions reduction fund for upgrades to facilities, purchase of telecommunications equipment, or reimbursing those using active transportation to reduce carbon emissions at UAA.

Vehicle Fleet

TARGET: By FY2016 transition UAA's vehicle fleet to reduce the use of gasoline and carbon emissions by 20% based on mileage.

Ground Transportation Strategy 1: Continue the transition of UAA's motor pool to increased efficient vehicles, including hybrids, through annual purchases.

 ACCOUNTABILITY: Facilities and Procurement

Ground Transportation Strategy 2: Convert Shuttle Buses to biodiesel, by utilizing appropriate mix of fuels in summer and winter conditions.

 ACCOUNTABILITY: Facilities

Ground Transportation Strategy 3: Explore expanding the use of used-vegetable oil from UAA's (and U-Med district) dining halls in UAA's bio-diesel vehicles, and recycling truck.

 ACCOUNTABILITY: Facilities

Monitoring Results and Setting New Target Goals

This plan recommends carbon emissions evaluation every three years, making June 30, 2010 the end of the current monitoring period. This timeframe aligns with reporting requirements to ACUPCC and AASHE. Another strategy employed by Harvard University, a substantially larger institution, recommends revising its goals outward for eight years, to provide a longer-term strategic planning horizon. They also recommend such a review should reflect lessons learned as well as new developments from climate-relevant science and from a university's own experiences and research in economics, technologies, policies and science.
<http://www.news.harvard.edu/gazette/2008/07.24/pdfs/GHG_TF_finalreport.pdf> UAA is encouraged to embrace several of these practices as identified in the recommendations below.

RECOMMENDATIONS:

- Establish a three year review cycle for UAA's carbon footprint evaluation
- Establish a continuous 9-year goal setting horizon
    ☐ The review and goal setting should reflect lessons learned from UAA's own experiences including any relevant research in economics, technologies, policies and science, including climate-relevant science
    ☐ Update all relevant UAA plans to include setting target goals for energy consumption and carbon reduction
    ☐ Explore and incorporate how to compute and monitor carbon emissions based on:
        ☐ Increased square footage to UAA's campus to effectively track and compare to FY07 baseline; University of New Hampshire's experience may provide some guidance <http://www.sustainableunh.unh.edu/climate_ed/projects.html>
        ☐ Changes to commuter mileage
    ☐ Develop summary reports to document success and compliance; benchmark against other institutions
    ☐ Achieve Green Star re-certification and work with them to help establish new goals
    ☐ Participate and help coordinate U-Med Green District Partnership
    ☐ Participate in national level campus sustainability report card

CERM Plan Implementation

The Vice Chancellor of Administrative Services is the senior level individual responsible for overseeing the CERM Plan implementation. The Directors of Sustainability and Facilities & Campus Services both have responsibility for day-to-day efforts that will ultimately achieve many of the target goals outlined in this plan.

UAA Governance, including the Faculty Senate, APT and Classified Councils, USUAA, the University Assembly, and the Chancellor's Cabinet, can all play essential roles. Each of the governance bodies could include a standing agenda item to identify actions on carbon emission reduction and sustainability issues, including how the governance bodies, and those UAA Community members they represent, can participate to develop and implement carbon reduction strategies.

Continuing partnerships and new coalitions in the community can leverage UAA's efforts far beyond what it can do on its own. UAA has already identified several partners having the most important influence to reduce carbon emissions:

- UAA neighbors in the U-Med District
- Municipality of Anchorage
- Green Star
- University of Alaska Board of Regents and Statewide Administration
- Providence Health System, Municipal Light & Power and the Alaska Energy Authority as partners to advance renewable and alternative energy projects
- ACUPCC/AASHE joint ventures and information-sharing

UAA recognizes that the context in which it operates includes three primary elements for which it does not have direct control. These elements substantially influence UAA's carbon emissions:

- UAA is part of a statewide university system, and as such priority funding for investments, for example a renewable or alternative energy project, must successfully compete with all other capital needs for university facilities statewide;
- The State of Alaska is only now exploring energy efficiency and renewable energy policies. Without this, UAA is unclear about how to utilize renewables and support policy efforts; and
- UAA is a non-traditional campus demonstrated by:
  - The vast majority of its students are not campus residents, providing a greater challenge to address carbon emissions generated by students;
  - It is an urban campus setting, which eliminates innovative sources of energy such as corn stalks and animal waste;
  - Its location, which is not in the contiguous 48 states, makes UAA dependent on using air travel.

Another element, which is largely in UAA's control, is UAA's projected growth. As the largest post-secondary institution in Alaska, and with market demand for health and biological-science professionals growing, UAA will bring several new facilities on-line over the next five years. UAA will need to explore and incorporate how it can effectively compute and monitor carbon emissions from increased square footage at UAA's main campus.

- As UAA continues its efforts to reduce carbon and advance sustainability, recognizing these issues and finding options to address these challenges will require us to take deliberate steps to focus and find successful methods and programs to achieve our desired outcomes.

CLEAN AIR – COOL PLANET, a leader in identifying and reducing carbon and greenhouse gas emissions, states in its report, A Consumer's Guide to Retail Carbon Offset Providers, that the average rate of $10 per ton of emissions be used to offset carbon emissions (one ton CO2e = ~2,000 miles in air travel).

http://www.cleanaircoolplanet.org/ConsumersGuidetoCarbonOffsets.pdf

Enhancing Sustainability

The CERM Plan is UAA's preliminary effort towards developing an integrated and comprehensive Sustainability Plan, which will identify quantifiable goals and benchmarks to achieve carbon neutrality and infuse sustainability into UAA Community's day-to-day operations and each individual's way of life. Hiring a Director for the Office of Sustainability was a key and very recent step to develop the Sustainability Plan, along with engaging every member of UAA's Community.

Throughout this CERM Plan, references have been made to developing a Sustainability Plan. Some of the items that should also be included in a Sustainability Plan are:

- Curriculum Development
- Composting
- Dining Services
- Fully Engaging Students
- Residence Halls
- Recycling
- Student Activities
- Strategic Partnerships

A key step for UAA to continue its drive toward achieving carbon neutrality is for UAA's Facility staff and management to continue on the successful path they've been on for some time now, which includes continuously identifying and learning about new technologies and benchmarks for facility design, construction, and renovation to reduce our carbon footprint and environmental impacts. Extending this focus to procurement policies, academic planning, and day-to-day operations can move the implementation of this plan forward more quickly.

Another key step is effective and consistent evaluation of intermediate benchmarks with the ultimate goal of carbon neutrality. We now have a comprehensive carbon emission baseline, which is only of value if it is monitored and reassessed periodically to measure UAA's progress toward that goal.