

AMS Lighter Footprint Strategy Consultation Draft – Jan 15, 2008



This is a consultation draft, not the final document. We need your input to make the *AMS Lighter Footprint Strategy* an effective document that reflects the views and desires of UBC students. Please send your comments and suggestions to Sustainability@ams.ubc.ca.

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for the

Student Society of UBC Vancouver (AMS)
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Executive Summary

In January 2007 the AMS approved an Environmental Sustainability Policy designed to make the AMS's well-established environmental actions more effective and consistent. The Policy vision includes the responsibility the AMS has with respect to the current ecological crisis and strongly states our commitment to meeting this obligation:

The AMS recognizes the ecological crisis humanity faces and the special responsibility universities, and university students, have in finding and implementing solutions. We acknowledge our obligations as global citizens and strive to create a sustainable and equitable future for all.

The AMS will be a leader in reducing the university campus' ecological footprint to sustainable levels and in fostering environmental justice in our own operations and through our relationships with the University community and the broader community. The AMS will be an engine for new ideas and innovation, and will be a model for the University and for other student organizations to follow.

The purposes of the Strategy defined in the AMS Environmental Sustainability Policy include:

- To guide the AMS's work to areas where we can have the greatest effect.
- To establish procedures for monitoring and reporting on progress.
- To showcase the AMS's leadership in order to distinguish the AMS and our businesses from the University as a whole.

AMS Accomplishments to Date

Even without a formal environmental strategy, the AMS has long shown leadership in environmentally sound practices by taking actions such as:

- Selling only organic, fair trade coffee.
- Providing discounts for students who bring their own mugs or food containers to AMS outlets
- Supporting the Student Environment Center.

Sphere of Influence

Some of the AMS's most important environmental achievements have involved collaboration with other organizations, and have effects well beyond the UBC campus. For example, the U-Pass program is a cooperative effort between the AMS, TransLink, UBC and Vancity Credit Union. The benefits of U-Pass also extend beyond purely environmental gains:

As a result of the U-pass program, students enjoy a collective transportation cost savings of more than \$3 million per month . . . and greenhouse gas emissions have been reduced by 16,000 tonnes per year.¹

The Lighter Footprint Strategy acknowledges the need for inter-organizational cooperation and facilitates selecting effective actions both on and off campus. While actions internal to the AMS may be easier to implement, actions that require interaction with other campus bodies and external organizations may sometimes be the most effective in reducing environmental impact. The impacts committee will take both the ease of implementation and the overall potential to reduce ecological footprint into account when prioritizing actions.

¹ Nathan Cato - *Social Sustainability of Alternate Transportation Modes at The University of British Columbia*
<http://www.trek.ubc.ca/research/pdf/social%20sustainability%20of%20alternative%20transportation.pdf>

Ecological Footprint

As specified in the AMS Environmental Sustainability Policy, the AMS Lighter Footprint Strategy (LFS) uses the concept of ecological footprint (EF) to guide the AMS's work to areas where we can have the greatest impact.

Ecological footprint is a measure of how much productive land and marine area a group of people requires to produce the resources it consumes and to absorb the waste it produces. According to the Global Footprint Network, humanity's EF is now over 23% higher than sustainable levels.

In other words, it now takes more than one year and two months for the Earth to regenerate what we use in a single year. We maintain this overshoot by liquidating the planet's ecological resources.²

Canadians have much larger footprints than the global average. It would take over four additional earth-like planets to support the world's population if everyone's EF was as big as the average Canadian's.

The main purpose of using ecological footprint is to ensure we are focusing our efforts in on most effective actions, and not misdirecting effort to things that make little difference. Ecological footprinting is a very useful concept for making decisions; however, there are also important factors that are extremely difficult to translate into EF, such as emissions of cancer causing chemicals and environmental justice considerations. Thus although Ecological Footprint is important, it is not the only factor used to decrease the environmental impact of the AMS.

LFS Structure

The **Purposes** defined in the AMS sustainability policy have determined the broad objectives of this strategy. The **Targets** are the more specific desired goals and outcomes. **Action Plans** have been developed to meet these targets.

Targets

The LFS includes targets divided into two broad categories. *Internal targets*, like paper use in the SUB, are areas that the AMS can act on independently. *Interactive targets*, like curriculum, are areas that require cooperation with other campus bodies or external organizations.

General targets specify that action should be taken regarding a specific goal. For example, to increase student awareness of AMS actions taken under the Lighter Footprint Strategy.

Quantitative targets specify the results that are being aimed for by a specific date. For example, reducing electricity consumption by 22%.

Proposed Initial Targets:

Internal Targets

Food & Beverage- Internal:

- *Significantly reduce the average per-serving EF of food and beverages sold by the AMS by October 31, 2011. This includes a focus on local purchasing as well as reducing high impact ingredients like meat and dairy. (General Target)*

Materials – Internal:

- Establish a monitoring system to track the quantities of key materials used in AMS operations, reduce the quantities used, and significantly reduce the ecological footprint per unit of these materials. (General Target)

² Source: Global Footprint Network http://www.footprintnetwork.org/gfn_sub.php?content=footprint_overview

- Decrease use of toxic materials and ensure proper disposal of toxic materials, including E-waste, in compliance with all applicable legislation. (General Target)

Interactive Targets

Building Energy – Interactive:

- Work with UBC Land and Building Services (Sustainability Office) to reduce SUB energy consumption and greenhouse gas emissions by at least 33% by 2020. (Quantitative Target)

Materials – Interactive:

- Work with UBC and lease holders to establish a monitoring system to track the quantities of key materials used in the SUB, reduce quantities used and significantly reduce the ecological footprint of these materials. (General Target)

Food & Beverage - Interactive:

- Work with UBC Food Services and others in the UBC community (e.g. UBC Food System Project³) to encourage a significant reduction in the average per-serving EF of food sold at UBC. (General Target)

Transportation – Interactive

- Work actively with AMS members and other members of the campus community to improve transit service, cycling facilities and on/near campus student housing, with the target of reducing the number of single occupant vehicle trips to campus by 33% below 2007 levels by 2020. (In support of the province's commitment to reduce GHG emissions by 33% by 2020). (Quantitative Target)

Campus Development & Policies – Interactive

- Establish a clear structure to co-ordinate the AMS's involvement in campus development with the AMS Environmental Sustainability Policy. This should include a clear reporting relationship between the Impacts and Campus Development Committees (or a re-vamping of the committee structure to accomplish the same). (General Target)

Curriculum & Learning Spaces

- Work with interested faculty, the UBC Sustainability Office, and others to develop more problem-based learning curriculum aimed at reducing our EF and to make UBC into a more effective ecological learning space. (General Target)
- Work to make the SUB a leading ecological learning space on the UBC campus (General Target)

Action Plans will be developed to meet each target. These action plans include an approximation of EF reduction, potential costs and benefits and a timeline for potential projects. These projects will be focused on feasible means to reduce our EF and on information gathering where more knowledge is needed in order to set quantitative targets.

Monitoring & Implementation

The AMS Lighter Footprint Strategy calls for a significant increase in environmental sustainability actions. However, placing the responsibility for these projects on already over-worked staff members and volunteers will not lead to successful implementation. It is recommended that the AMS allocate resources to hire an Environmental Sustainability Coordinator.

³ The UBC Food Systems Project is a partnership between the AMS food and beverage department, UBC food services, the faculty of Land and Food Systems and the Sustainability office to target local food procurement.

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1.0 Introduction

The University of British Columbia's student society, the Alma Matter Society (AMS), has long been a leader in campus sustainability initiatives, and in January 2007 approved a formal sustainability policy designed to build on this leadership role. The AMS Lighter Footprint Strategy is guided by the following vision and purpose set out in the AMS Environmental Sustainability Policy:

The AMS recognizes the ecological crisis humanity faces and the special responsibility universities, and university students, have in finding and implementing solutions. We acknowledge our obligations as global citizens and strive to create a sustainable and equitable future for all.

The AMS will be a leader in reducing the university campus' ecological footprint to sustainable levels and in fostering environmental justice in our own operations and through our relationships with the University community and the broader community. The AMS will be an engine for new ideas and innovation, and will be a model for the University and for other student organizations to follow.

This vision statement reflects UBC's commitment and vision as a signatory to *the Halifax Declaration* which is quoted in the University's Sustainable Development policy:

"Human demands upon the planet are now of a volume and kind that, unless changed substantially, threaten the future well-being of all living species. Universities are entrusted with the major responsibility to help societies shape their present and future development policies and actions into the sustainable and equitable forms necessary for an environmentally secure and civilized world."⁴

The *Halifax Declaration* emphasizes the interconnection between equity and sustainability, asserting that we have an ethical obligation to address the "intolerable human disparity which lie at the root of environmental unsustainability"⁵.

The AMS Environmental Sustainability Policy clearly sets out the purpose of this strategy and outlines some of the ways the strategy will be implemented:

Purpose

- To work towards environmental sustainability independently and in cooperation with organizations such as UBC, other students' organizations, and relevant governmental bodies.
- To maintain and enhance the AMS's leadership role in promoting environmental sustainability on and off campus.
- To showcase the AMS's leadership in order to distinguish the AMS and our businesses from the University as a whole and other businesses on campus.
- To guide the AMS's work to areas where we can have the greatest effect, directly through AMS operations and through interaction with other organizations.
- To establish the Impacts Committee as the body responsible for overseeing the Sustainability Strategy and presenting an annual progress report, including new or updated targets, to Council by October 30 of each year.

⁴ <http://www.universitycounsel.ubc.ca/policies/policy5.pdf>

⁵ <http://www.iisd.org/educate/declarat/halifax.htm>

- To set a manageable number of goals and timelines (in consultation with staff and other interested parties), and assign responsibilities to pertinent persons and departments for achieving them.
- To establish procedures for monitoring and reporting on progress. Procedures for updating and adjusting targets will also be part of the Strategy.

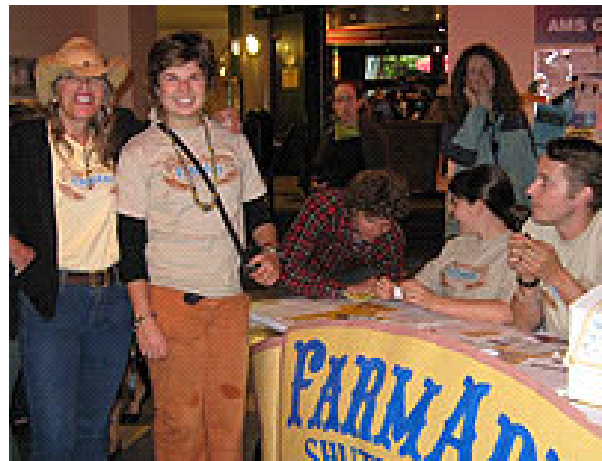
1.1 LFS Structure

The **Purposes** defined in the AMS sustainability policy have determined objectives of this strategy. The **Targets** are the desired goals and outcomes. **Action Plans** have been developed to meet these targets.

2.0 AMS Accomplishments

Even without a formal environmental strategy, the AMS has been a leader in environmentally sound practices at UBC. The AMS has shown leadership independently, with the support of AMS members, by taking actions such as:

- Selling only organic, fair trade coffee.
- Providing discounts for students who bring their own mugs or food containers to AMS outlets
- Reducing paper usage by switching to electronic documents
- Supporting the Student Environment Center.



AMS FarmAde 2007 in Support of UBC Farm

The UBC administration has followed the AMS lead on some of these initiatives, such as selling organic coffee, greatly increasing the environmental benefit. However, some of the AMS's most important environmental achievements have involved working in interaction with other organizations. For example, the U-Pass program is a cooperative effort between the AMS, TransLink, UBC and Vancity Credit Union. The benefits of U-Pass extend beyond purely environmental gains:

The economic and environmental benefits of the student U-Pass program at UBC have been well established and documented. As a result of the U-pass program, students enjoy a collective transportation cost savings of more than \$3 million per month; the need to build 1,500 more parking stalls over the next two years has been deferred, producing a cost-savings of \$20 million; and greenhouse gas emissions have been reduced by 16,000 tonnes per year.⁶

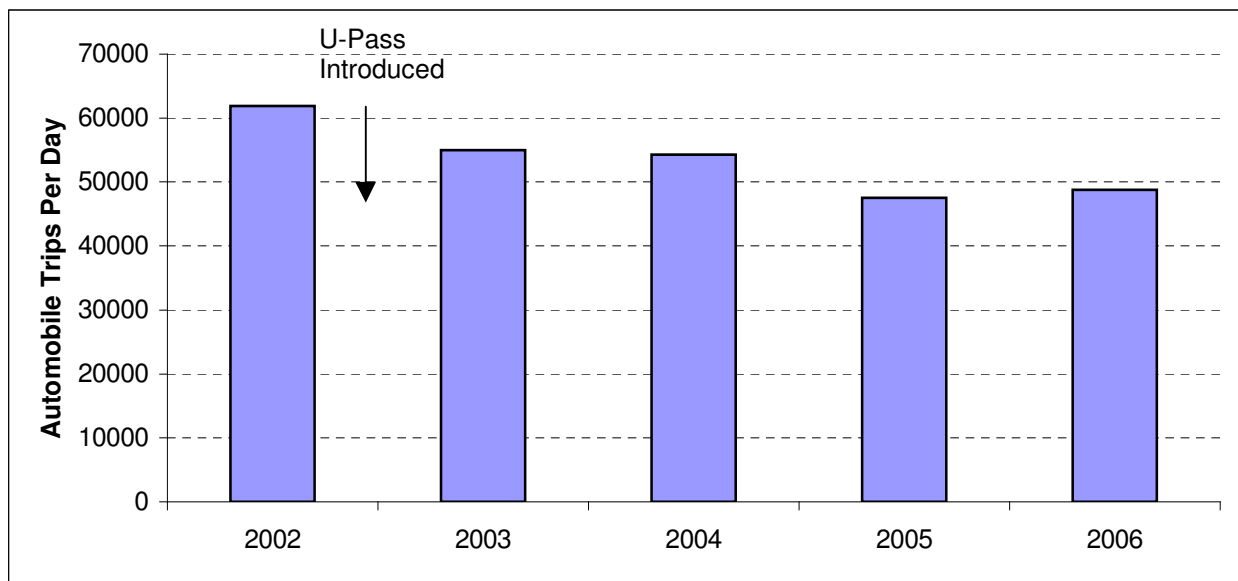
The automobile trip reduction after U-Pass is illustrated below in Figure 2.0.1

⁶ Nathan Cato - *Social Sustainability of Alternate Transportation Modes at The University of British Columbia*
<http://www.trek.ubc.ca/research/pdf/social%20sustainability%20of%20alternative%20transportation.pdf>

Other AMS achievements reached by interacting with other groups include:

- Working with the UBC Farm and the UBC Food Systems Project to purchase organically grown food from within two kilometers of the SUB.
- Establishing the AMS Bike Kitchen and Co-op
- Composting 100% of pre-consumer food waste, and some post consumer food and compostable paper waste, in cooperation with UBC Waste Management.
- Purchasing 30% recycled paper in cooperation with UBC Supply Management
- Reducing SUB electricity consumption by over 1million kWh per year in cooperation with UBC Land and Building Services. This is enough savings to supply 100 typical households.
- Establishing Sprouts, UBC's food cooperative

Figure 2.0.1 After U-Pass Was Introduced Automobile Trips to UBC Dropped by Over 20%: But Severe Overcrowding on Buses Has Stalled Progress⁷



Source: UBC Fall 2006 Transportation Status Report. Figure 3.5

3.0 Ecological Footprint

As specified in the AMS Environmental Sustainability Policy, the AMS Lighter Footprint Strategy uses the concept of ecological footprint (EF) to guide the AMS's work to areas where we can have the greatest impact, directly through AMS operations and through interaction with other organizations.

What is Ecological Footprint?

Ecological footprint analysis is a technique developed by UBC's Dr. William Rees and Mathis Wackernagel. When they published *Our Ecological Footprint* in 1996 it was a new and obscure concept even at UBC. EF analysis is now used around the world and the term *ecological footprint* is one of the most common ways of describing environmental impact. The development of ecological footprint analysis is one of the most significant contributions UBC has made to ecological sustainability.

⁷ Traffic volumes declined by about 23% between 2002 and 2005; but then increased slightly in 2006, apparently due to severe overcrowding on transit buses and the promotion of discounted parking by UBC Parking Services.

Ecological footprint is a measure of how much productive land and marine area a group of people requires to produce the resources it consumes and to absorb the waste it produces. The amount of resources used and wastes produced per person are largely determined by the decisions large organizations such as the AMS, UBC and governments make. But individual behaviour also has a large impact.

According to the Global Footprint Network, humanity's EF is now over 23% higher than sustainable levels.

In other words, it now takes more than one year and two months for the Earth to regenerate what we use in a single year. We maintain this overshoot by liquidating the planet's ecological resources.⁸

The scientists who worked on the United Nations Global Environment Outlook (GEO-4) suggest that overshoot is even worse than this, calculating a global EF almost 40% greater than what is sustainable.⁹

Canadians, at 7.6 hectares per person, have much larger footprints than the global average of 2.2 hectares per person. It would take over four additional earth-like planets to support the world's population if everyone's EF was as big as the average resident of Canada. The average Canadian greenhouse gas footprint alone is over four hectares, more than twice the 1.7 hectare per capita sustainable footprint on a global scale¹⁰.

Figure 3.0.1 Good Planets are Hard to Find



⁸ Source: Global Footprint Network http://www.footprintnetwork.org/gfn_sub.php?content=footprint_overview

⁹ The fourth Global Environment Outlook (GEO-4) was released in October 2007. Note that the UN calculates EF differently from the Global Footprint Network, resulting in higher per capita footprints and productive land area – 21.9 and 15.7 hectares respectively ($21.9/15.7 = 139\%$). <http://www.unep.org/geo/geo4/media/index.asp>

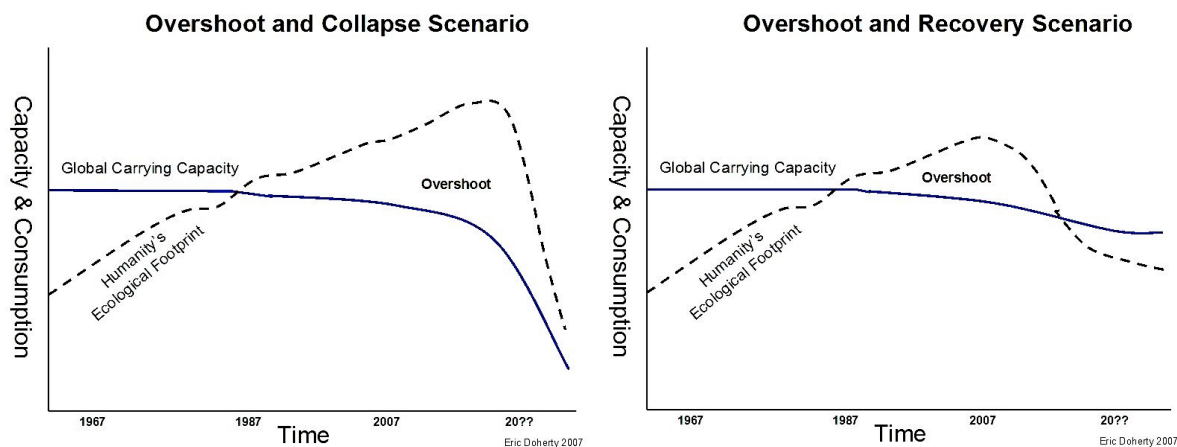
¹⁰ *Ecological Footprint and Biocapacity* (2006 Edition) – Global Footprint Network (GFN) http://www.footprintnetwork.org/gfn_sub.php?content=national_footprints. Note that the GFN calculates footprint differently from the UN and caution must be used when comparing footprint data from different organizations.

"The Ecological Footprint provides a systematic resource accounting tool that can help us plan for a world in which we all live well, within the means of our one planet."¹¹

The danger of consuming more than the earth can sustainably support is that carrying capacity is gradually eroded which will lead to an eventual ecological and economic collapse if EF is not reduced to below carrying capacity, as illustrated the overshoot and collapse scenario in Figure 3.0.2 below. Overshoot does not necessarily cause an immediate crisis. The overshoot and recovery scenario illustrates how the earth's carrying capacity, which has already been reduced, could stabilize if humanity's ecological footprint was quickly reduced to sustainable levels.

Thus the purpose of estimating Ecological Footprints is to enable people to take the most effective personal and collective actions to reduce our impacts to within the means of our planet.

Figure 3.0.2 Collapse or Recovery? Ecological footprint will return to within Earth's carrying capacity, either through societal collapse or deliberate choice



Source for 1961-2007 Ecological Footprint - Global Footprint Network. *October 6th is ecological debt day.* http://www.footprintnetwork.org/gfn_sub.php?content=overshoot Accessed Nov. 29 2007. Post-2007 trends are shown to illustrate the concept and are not intended as quantitative projections.

3.1 Greenhouse gas footprint

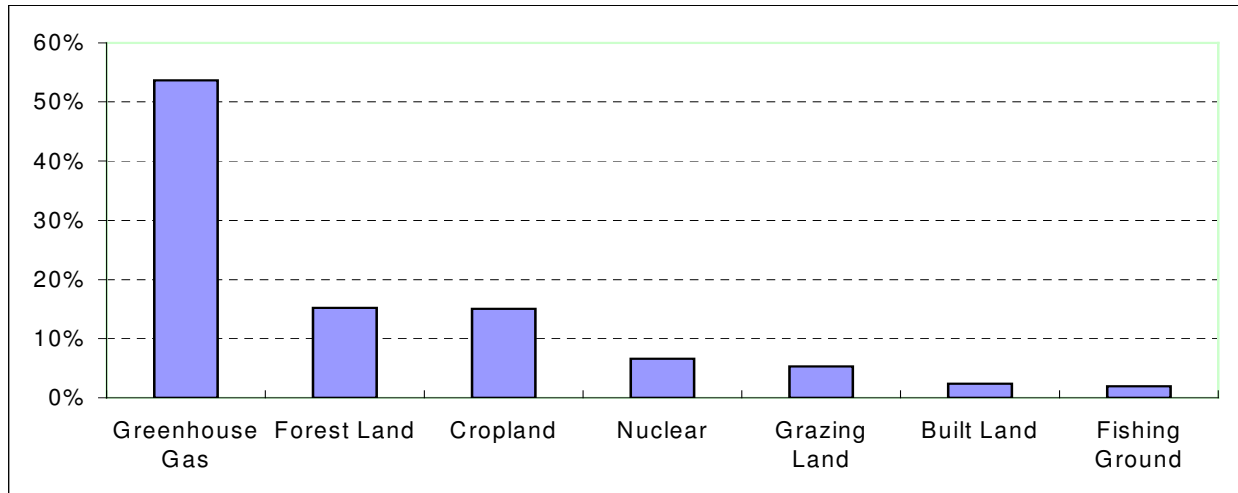
More than half of humanity's EF is due to greenhouse gas emissions, which have grown much faster than other Footprint components¹². Both direct and indirect emissions contribute to GHG footprint (also known as *carbon footprint*¹³ since the vast majority of GHG emissions are carbon dioxide, CO₂). An example of direct emissions is the carbon dioxide emitted by the petroleum gas burned in the UBC steam plant; an example of indirect emissions are the GHG emissions from the manufacturing and transportation of the reinforcing steel used to build the new Thunderbird Parkade. The steel was likely manufactured and shipped from China or Eastern Canada.

¹¹ Global Footprint Network http://www.footprintnetwork.org/gfn_sub.php?content=footprint_overview

¹² http://www.footprintnetwork.org/gfn_sub.php?content=app_carbon_footprint

¹³ http://www.footprintnetwork.org/gfn_sub.php?content=app_carbon_footprint

Figure 3.1.1 Over Half of Canada's Ecological Footprint is Greenhouse Gas Footprint



Source: Ecological Footprint and Biocapacity (2006 Edition) – Global Footprint Network.
http://www.footprintnetwork.org/gfn_sub.php?content=national_footprints

GHG footprint illustrates an important point about EF analysis; it is necessary to reduce every component of EF to sustainable levels, not only the total EF. If GHG pollution is not greatly reduced climate change will greatly decrease the productive capacity of the Earth. This will in turn shrink the sustainable footprint even further. For example, global warming caused by GHG pollution is a great threat to salmon that depend upon cold river water for survival and reproduction. On a global scale, drought-inducing effects of climate change have already reduced agricultural production greatly in the Sahel region of Africa¹⁴.

4.0 Decision Making Using Ecological Footprint Analysis

Ecological Footprint analysis involves measuring the resources used or wastes emitted and then translating each type into land and marine (aquatic) areas. For example, fossil fuel footprints are calculated by estimating the area needed to sequester (absorb) the greenhouse gases (GHG) emitted when the fuel is burned. Figure 4.0.1 below shows the EF proportions by consumption category calculated for the average Canadian; note that education is included in 'Services'.

Measuring consumption and emissions, and then determining the best conversion factor into land area to arrive at a precise value can be a very difficult task. Many of these difficulties, such as having to determine if beer is shipped by truck or rail and the fact that different sources give significantly different figures for the same material, are discussed in *Ecofootprinting the Pendulum Restaurant*.¹⁵ However, the most significant difficulty is the uncertainty inherent in determining the ability of the earth to sequester the greenhouse gas carbon dioxide. For example, one recent study used two alternate values - 7.2 tCO₂/ha/yr and 5.3 tCO₂/ha/yr - which resulted in a variation in the greenhouse gas footprint of about one third¹⁶. In addition, recent research suggests that global GHG assimilation rates are slowing due to global warming, with

¹⁴ NOAA GFDL CLIMATE MODELING RESEARCH HIGHLIGHTS Jan. 2007

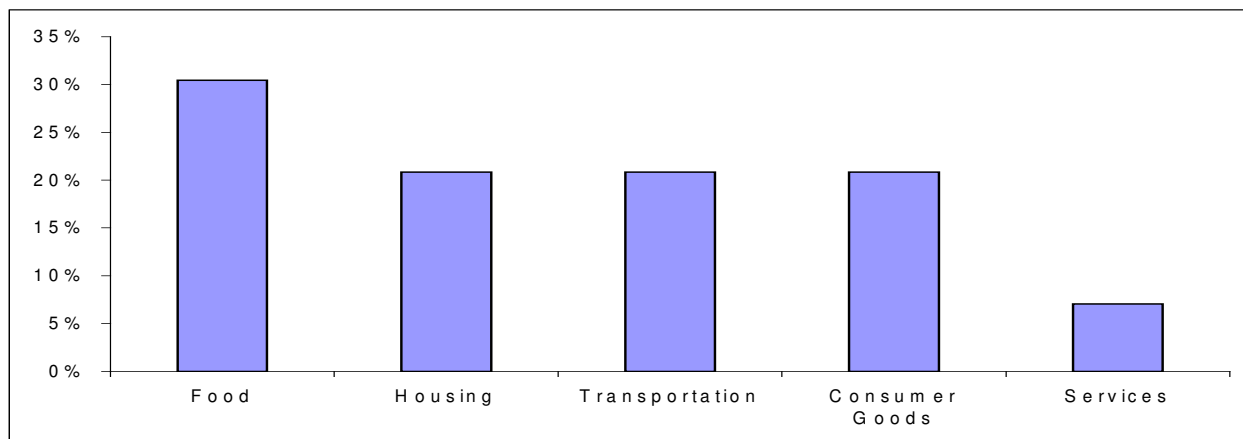
http://www.gfdl.noaa.gov/research/climate/highlights/PDF/GFDLhighlight_Vol1N2.pdf

¹⁵ <http://www.sustain.ubc.ca/seedslibrary/files/Ecofootprinting%20the%20Pendulum%20Restaurant.pdf>

¹⁶ Pacholsky, Jens. (2006) The Ecological Footprint of Berlin (Germany) for the Year 2000, Stirling University, Scotland http://www.gdrc.org/uem/footprints/berlin-eco_footprint.doc

some areas that were once GHG sinks even becoming net sources.¹⁷ However, for many decision-making purposes, high levels of precision are not necessary.

Figure 4.0.1 Average Canadian's Ecological Footprint by Consumption Category



Source: Mathis Wackernagel & William Rees. (1996) *Our Ecological Footprint: Reducing Human Impact on the Earth*. P 82-83.

For the purposes of the AMS *Lighter Footprint Strategy* only rough estimates are needed to identify the most important areas for improvement; more precise measures can be developed over time while we reduce our ecological footprint (EF). **The key question to ask is *would more research be likely to significantly change our decision?*** If the answer is no, then we have a precise enough estimate of ecological footprint for the decision at hand. Even if the answer is yes, lack of precision should not be used as an excuse to delay action. Often, only a subjective description of ecological footprint will be enough to make a decision; for example when deciding between a project that has the potential to reduce EF by a very large amount and one that has the potential to reduce EF by only a small amount. If other factors are equal, our limited resources should be devoted to actions that will lead to greater reductions in EF.

The EF of food and materials is primarily 'upstream', from production, processing and transportation while disposal impacts are significant but usually make up a small percentage of overall impacts. For example, the EF reduction from using a re-usable mug instead of using a paper cup is much greater than the EF reduction of composting a disposable cup rather than throwing it in the garbage. Similarly, there is a greater EF reduction by reducing the amount of paper used by 100 Kg than for diverting 100 kg of paper from the garbage to recycling¹⁸. This does not mean that we can neglect EF reduction of recycling and composting, only that we cannot be effective if we neglect the biggest impacts. For example, an EF audit of the University of Newcastle, Australia, noted that:

The footprint identifies that current actions such as the reduction of waste going to landfill are of limited value in terms of actions for sustainability. Ecological Footprint Analysis identifies the need to refocus action to areas having the greatest impact.¹⁹

¹⁷ e.g. CHRIS D. JONES, PETER M. COX, CHRIS HUNTINGFORD (2006) Climate-carbon cycle feedbacks under stabilization: uncertainty and observational constraints *Tellus B* 58 (5), 603–613.

¹⁸ Recycling paper at UBC likely reduces EF more than composting paper does since 100% post-consumer recycled paper has a much lower EF than virgin paper. E.g.

http://www.co.marin.ca.us/depts/CD/main/pdf/planning/Footprint_Final_Report.pdf

¹⁹ Flint, K. 1999. *Institutional ecological footprint analysis - A case study of the University of Newcastle, Australia*. Department of Geography and Environmental Science, University of Newcastle, New South Wales, Australia.

The ranked list below shows the most important impacts at the University of Newcastle, with the largest impact at the top. Note that the footprint of private transport (automobiles) is estimated to be over 600 times greater than the footprint of waste disposal, and dairy consumption has over ten times the footprint of bus travel:

Ranked List of University of Newcastle's Ecological Footprint Categories (hectares)

- 1 Building Operation 1138.2
- 2 Private Transport 636.6
- 3 Air transport of O'S Students 516
- 4 Building Embodied Energy 432.6
- 5 University Vehicles 353.1
- 6 Dairy Consumption 124.1
- 7 Cleaning 113.3
- 8 Office Paper Use 108.7
- 9 Meat Consumption 90.3
- 10 Alcohol Consumption 34
- 11 Water Consumption 17.6
- 12 Rail Travel 15.2
- 13 Bus Travel 11.5
- 14 Waste Disposal 0.91 (p 87)

This list is based on rough estimates, and there are some important differences between the University of Newcastle and UBC. For example, most electricity in Australia is generated in coal fired plants leading to a much larger footprint per unit of electricity and therefore also for building operations. However, it gives a rough idea of what the larger footprint categories might be at UBC and where we should focus our attention.

Ecological footprinting is a very useful concept for making decisions; however, it is difficult to achieve precision with available data. There are also important factors that are almost impossible to translate into EF, such as emissions of cancer causing chemicals and environmental justice considerations²⁰. Thus Ecological Footprint is not the only important factor in decreasing the environmental impact of the AMS but it is a very important one.

4.1 Key Elements of the AMS Sustainability Policy

The AMS *Environmental Sustainability Policy* sets out the vision and context for decision making. Some key aspects of the Policy to consider include:

- The special responsibility universities, and university students, have in finding and implementing solutions. And the importance of new ideas and innovation.
- Showcasing the AMS's leadership in order to distinguish the AMS and our businesses from the University as a whole.
- Guiding the AMS's work to areas where we can have the greatest effect, directly through AMS operations and through interaction with other organizations.
- Keeping the number of targets and projects manageable, and ensuring that the resources such as money and staff time are available to do the work.

<http://www.eng.newcastle.edu.au/~gevans/CHEE3930-6930/Case%20Study%202/KFlint's%20ecof'print%20-U-N-2000.pdf> p i.

²⁰ The Global Footprint Network report *Measuring Marin County's Ecological Footprint* notes that "human health [is] not within the research domain addressed by the Footprint" (p. 10)

http://www.co.marin.ca.us/depts/CD/main/pdf/planning/Footprint_Final_Report.pdf

- Establishing clear responsibility for actions and for monitoring progress.

EF analysis is important for decision making on target setting as well as for deciding between competing priorities. However the Impacts Committee will have to consider all aspects of [AMS policy](#) in making decisions.

5.0 Initial AMS Footprint Audit & Proposed Initial Targets

The AMS represents over 42,000 UBC students and operates student services, businesses, resource groups and clubs. The AMS also leases space to businesses in the SUB. In addition to offering services to students, such as the Sexual Assault Support Centre, the AMS advocates for student issues to the University Administration, the Provincial and Federal governments, and organizations such as TransLink.

Although the AMS' sphere of influence extends beyond the University's geographical boundary, it is still necessary to have some idea of what the AMS's direct environmental impact is, and what areas of significant environmental impact the AMS has influence over. However, the AMS is not like a country with fixed boundaries where the per capita EF can be calculated reasonably easily. Attempting to do such a calculation for an organization such as the AMS would be very complicated unless an arbitrary definition of our sphere of influence was used. Instead, this audit identifies the major categories of environmental impact that the AMS has influence over.

The judgment of how broadly or narrowly to define the AMS' sphere of influence is subjective; but asking the question '*where and how can the AMS most effectively reduce EF?*' will give a good indication of where the AMS should devote its limited money and time. AMS members have expressed a strong interest in initiatives that allow them to reduce their EF such as the U-Pass program, which suggests that the AMS should at least consider such initiatives as part of the *Lighter Footprint Strategy*.

5.1 Initial Audit Description

In this audit the AMS's sphere of influence is not precisely defined, and it may be counterproductive to do so arbitrarily. And the data on material and energy consumed at UBC and in the SUB is still incomplete; for example, data on food consumed at every outlet on campus has not been collected. Therefore this audit does not attempt to quantify EF precisely, and instead uses the ranked categories of impact *Moderate, High and Very High*.

This audit is based on both quantitative studies done at UBC and other institutions discussed above, and on the incomplete data easily available for UBC and the AMS. The estimated EF for each impact was derived through a subjective analysis, largely based on subjective comparisons between UBC and institutions and areas where quantitative EF estimates are available. For example, the data for Canada in Figures 3.1.1 and 4.0.1 and the data for the University of Newcastle shown in Section 4.0 provided important information for ranking each impact. An early draft of the audit was then circulated for comment and correction by knowledgeable members of the university community.

For the purpose of this audit, the impacts that the AMS has influence over are divided into two broad categories *internal* and *interactive*:

Internal impacts are those that the AMS can act on without the cooperation of external parties, such as changing AMS purchasing policies.

Interactive impacts are those that require interaction with groups such as the UBC administration, TransLink, the City of Vancouver, or student organizations at other universities and colleges. Interaction with other bodies should strive to build cooperative relationships, but

does not exclude active lobbying and campaigning when this is judged to be the most effective strategy.

The results of the initial audit are listed below in sections 5.3 and 5.4 along with the related targets and proposed action plans.

5.2 Setting Targets

As discussed above, targets are divided into two broad categories *internal* and *interactive*. For clarity, targets are further divided into two categories:

General targets specify that action should be taken regarding a specific goal, but do not specify the action to be taken or set a quantitative target to be met by a certain date. For example, increase student awareness of AMS actions taken under the Lighter Footprint Strategy.

Quantitative targets specify the results that are being aimed for by a specific date. For example, reducing electricity consumption by 22%.

The Impacts Committee is responsible for reporting on **every** target in the annual Lighter Footprint progress report. Therefore, the number of targets must be kept to a manageable number.

The impacts committee has the responsibility to set a manageable number of targets (in consultation with staff and other interested parties), and to create action plans for achieving them.

Targets should be selected based on clear criteria, for example:

- There is a significant potential to reduce ecological footprint (EF), even if baseline data doesn't exist or EF is very difficult to calculate precisely.
- Actions will either result in visible cost savings or benefits for the AMS or AMS members (to maintain and build support for the strategy)
- There is support from the staff or others who will have to implement the action plan to reach the targets
- Where the possibility of failure to meet targets might be facilitated by lobbying or securing cooperation of other parties (e.g. failure of TransLink to improve bus service to reduce greenhouse gas emissions)
- If the target involves data collection or research, will this research advance the goals set out in the AMS Environmental Sustainability Strategy?

5.3 Internal Impacts & Targets - (AMS can effectively act independently of other organizations).

5.31 Food & Beverage - Internal: Food and beverages sold in AMS outlets is by far the largest impact that the AMS can act on independently. The AMS runs several very busy food outlets that sell many tonnes of food per year. For example, the AMS's Pie R Squared pizzeria uses about 10 tons of mozzarella cheese every year. The ecological footprint of food is difficult to calculate precisely, but the key factors that determine the ecological impact of food, such as the distance it is transported and the proportion of animal products, are well established. An ecological footprint analysis of the Pendulum Restaurant has already been done²¹. Food is also listed as an interactive impact below.

Estimated EF – High

²¹ <http://www.sustain.ubc.ca/seedslibrary/files/Ecofootprinting%20the%20Pendulum%20Restaurant.pdf>

Target

Significantly reduce the average per-serving EF of food and beverages sold by the AMS by October 31, 2011. This includes a focus on local purchasing as well as reducing high impact ingredients like meat and dairy. (General Target)

Proposed Action Plan

- Actively support and work with AGSCI 450 professor and students on research project. (Winter 2008)
- Based on AGSCI 450 research, have a plan in place by October 31, 2008 to reduce the average per-serving EF of food and/or beverage sold at least one AMS outlet. The plan should include quantitative targets if practical.
- Determine next steps, based on AGSCI 450 research, by October 31, 2008.

5.32 Materials – Internal: The AMS uses a significant amount of materials, such as paper, in the AMS offices. But AMS businesses use a much larger quantity of materials such as paper (CopyRight), disposable cups, plates, napkins, cutlery and water (AMS Food Services). For example, AMS food outlets use over 250,000 paper cups every year. The AMS has already taken important steps to reduce the quantities of these materials consumed, such as giving discounts to students who use reusable coffee mugs. This reduces the upstream impacts such as logging, and greenhouse gas emissions from processing and transport. The downstream impacts of disposable cups, which are far less significant, are also addressed through a composting program.

Estimated EF: Office - Moderate
Businesses – High

Target

Establish a monitoring system to track the quantities of key materials used in AMS operations, reduce the quantities used, and significantly reduce the ecological footprint per unit of these materials. (General Target)

Proposed Action Plan

- Establish a system for tracking and reporting on key materials used.
- Lug-a-Mug project to reduce disposable cup usage (from the present ratio 85% disposable cups to 15% hard mugs). Note that a SEEDS project and some other research has been completed.
- Investigate costs and benefits of offering self-serve scanning at CopyRight.
- Complete stage-2 SUB materials stewardship SEEDS project.
- Research benefits and costs of re-usable vs compostable food containers.
- Investigate costs and benefits of reduced footprint materials such as 80 or 100% recycled content paper.
- Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

Target

Decrease use of toxic materials and ensure proper disposal of toxic materials, including E-waste, in compliance with all applicable legislation. (General Target)

Proposed Action Plan

- Improve waste management to ensure electronic waste from SUB is disposed of properly.

- Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

5.4 Interactive impacts - require interaction with groups such as the UBC administration or TransLink to effectively reduce impact.

5.41 Building Energy - Interactive: The Student Union Building (SUB) is operated cooperatively by the AMS and UBC Building Services. The AMS does not directly pay for the energy used, and until recently did not even have data on energy usage. The amount of energy used is quite high as the SUB was built in the 1960s, and has had only had modest energy efficiency upgrades. For example, 2006 electricity consumption in the SUB was 4 million kWh - enough to power 400 average homes.²² The SUB's heating and hot water is generated by the UBC steam plant which is fired by petroleum gas; a steam meter was installed recently and we do not yet have a full year of consumption data. A smaller quantity of petroleum gas is also used directly in the SUB. The AMS could take some small steps to reduce energy usage independently, but major improvements would require joint action with the UBC administration.

Estimated EF - Very High

Target

- *Work with UBC Land and Building Services (Sustainability Office) to reduce SUB energy consumption and greenhouse gas emissions by at least 33% by 2020. (Quantitative Target)*

Proposed Action Plan

- Monitor and display SUB energy consumption.
- A number of possible short and longer term actions are outlined in the SUB energy audit, ranging from small items such as improving the efficiency of vending machines to major items such as investigating converting to a heat pump to heat the SUB.
- Improvements to the loading dock area are being investigated as short-term measures to reduce energy usage, improve indoor air quality, and reduce cold drafts in the lower level of the SUB.
- Undertake a major energy efficiency upgrade as part of the SUB Renew process.
- Investigate ground source heat pump heating through a district hot water heating system.
- Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

5.42 Building Materials - Interactive: The SUB was built in the 1960s so the impact of initial construction is spread out over decades, but materials are used for operations, maintenance and renovations every year. Major renovations or a replacement of the building may take place fairly soon. A building replacement would require many tonnes of materials such as concrete and steel which result in large quantities of greenhouse gas pollution. Materials used in building operations include the water and cleaning chemicals used on a daily basis in the SUB.

Estimated EF: Normal Year - High

Years of major renovation / replacement - Extremely High

²² The average household in BC Hydro's service area uses about 10,000 kWh per year.
http://www.bchydro.com/rx_files/info/info3519.pdf

Target

Work with UBC and lease holders to establish a monitoring system to track the quantities of key materials used in the SUB, reduce quantities used and significantly reduce the ecological footprint of these materials. (General Target)

Proposed Action Plan

- A second stage materials stewardship (Reduce, Reuse, Recycle) SEEDS project has been submitted.
- An updated waste audit is needed (a project description has been completed).
- A sustainability checklist for SUB renovations has been proposed to ensure materials footprint is minimized during renovations.
- Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

5.43 Food & Beverage - Interactive: Food is one of the largest components of Canada's ecological footprint. Food and drink sold in AMS outlets is listed as an internal impact above; however, the total impact of food on the UBC campus is much larger than that sold at the AMS. The AMS has already shown leadership in food policy, for example by shifting to shade grown organic coffee, a move that UBC food services later followed. The AMS has also been very active in supporting the UBC farm and purchasing locally grown food. The AMS is well positioned to continue showing leadership in food policy and influencing food policy throughout the campus and region.

Target

Work with UBC Food Services and others in the UBC community (e.g. UBC Food System Project²³) to encourage a significant reduction in the average per-serving EF of food sold at UBC. (General Target)

Proposed Action Plan

- Actively support and work with AGSCI 450 professor and students on research project.
- Determine next steps, based on AGSCI 450 research, by October 31, 2008.
- Maintain partnership between AMS and UBC Food Services.
- Report annually on activities and progress.

5.44 Transportation – Interactive: Transportation accounts for as much as half of Canada's greenhouse gas footprint,²⁴ and is therefore one of the largest contributors to Canada's EF. The AMS influences transportation footprint through the U-Pass program, and through other sustainable transportation initiatives such as the Bike Kitchen. The UBC TREK office estimates that U-Pass has reduced *tailpipe* greenhouse gas emissions by 16,000 tonnes per year.²⁵ The AMS represents the largest organized group of transit riders in Metro Vancouver and therefore has significant potential lobbying power on transit issues.

²³ The UBC Food Systems Project is a partnership between the AMS food and beverage department, UBC food services, the faculty of Land and Food Systems and the Sustainability office to target local food procurement.

²⁴ The greenhouse gas footprint is more than just tailpipe emissions from cars, planes and other vehicles. It also includes the emissions from refining transportation fuels, and the emissions from the materials used to build vehicles and transportation infrastructure such as roads and parking structures. Note that this estimate is based only on emissions covered by the Kyoto protocol and is therefore not a complete accounting of GHG footprint. Source: *Greenhouse Gas Emissions from Transportation Options* Hydro Quebec 2006. www.hydroquebec.com/sustainable-development/documentation/pdf/transport_en_2006.pdf

²⁵ Nathan Cato - *Social Sustainability of Alternate Transportation Modes at The University of British Columbia* <http://www.trek.ubc.ca/research/pdf/social%20sustainability%20of%20alternative%20transportation.pdf>

The AMS also pays directly for a significant amount of travel, such as executive members flying or traveling by train to conferences.²⁶ The total amount of travel on UBC related business is much higher. The AMS could both reduce its own long distance travel EF, and encourage the UBC community to do the same.

Estimated EF - Very High

Target

Work actively with AMS members and other members of the campus community to improve transit service, cycling facilities and on/near campus student housing, with the target of reducing the number of single occupant vehicle trips to campus by 33% below 2007 levels by 2020. (In support of the province's commitment to reduce GHG emissions by 33% by 2020). (Quantitative Target)

Proposed Action Plan

- Enhanced transit lobbying campaign, which could include mobilizing AMS members.
- Track transportation-related GHG emissions in co-operation with UBC TREK or others. (Note that UBC TREK supervised SEEDS project was completed on this, but UBC TREK has not yet been able to make the computer program function.)
- Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

5.45 Campus Development & Policies – Interactive: The AMS has some influence over campus development and policies for all of UBC, which has a much larger impact than AMS operations and the SUB. Campus development has an impact on building energy, building materials, transportation, and food as it relates to the UBC Farm and agriculture on campus. University policies determine how high a priority is put on reducing environmental impacts, and where UBC Endowment funds are invested.

Estimated EF - Very High

Target

Establish a clear structure to co-ordinate the AMS's involvement in campus development with the AMS Environmental Sustainability Policy. This should include a clear reporting relationship between the Impacts and Campus Development Committees (or a re-vamping of the committee structure to accomplish the same). (General Target)

Proposed Action Plan

- Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

5.46 Curriculum / Learning Spaces - Interactive: The AMS has some influence over what is taught at UBC, and the lessons the campus itself teaches. Since teaching and research is the primary role of the university, it is likely the area where the university has the biggest influence over EF.²⁷

²⁶ For simplicity, the travel that the AMS controls directly is grouped with the interactive aspects of travel since it is a very small percentage of the total.

²⁷ For example see: *What Is Education For? Six myths about the foundations of modern education, and six new principles to replace them* by David Orr <http://www.context.org/ICLIB/IC27/Orr.htm>

Although the AMS could take some actions to make the SUB an ecological learning space, this would be much more effective if it was a cooperative endeavor focused on making, for example, energy efficiency improvements in the SUB visible to our members.

Estimated EF - Very High

Target

Work with interested faculty, the UBC Sustainability Office, and others to develop more problem-based learning curriculum aimed at reducing our EF and to make UBC into a more effective ecological learning space. (General Target)

Proposed Action Plan

- Expand number of SEEDS and similar research and outreach projects.
- Investigate ways to integrate ecological learning into campus spaces (For example, displaying energy consumption and GHG emission data on campus buildings)
- Work with interested students and faculty to support & promote ecological learning in all UBC faculties.
- Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

Target

Work to make the SUB a leading ecological learning space on the UBC campus (General Target)

Proposed Action Plan

- Integrate into SUB Renew / energy upgrades process.
- Track and Display Utility Use in SUB (Electricity, Steam, Petroleum Gas, and Water).
- Lug-a-Mug project
- SUB Materials Stewardship project
- SUB Waste Audit
- Maximize learning potential of other sustainability projects through displays in SUB, special events, or other means.
- Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

The categories above represent the largest categories of ecological footprint over which the AMS has significant influence. However, not every impact will fit neatly into one of these categories. The AMS can act to reduce some impacts independently, but might be able to accomplish much more by also interacting with other groups. For example, switching to shade grown organic coffee in the AMS had an impact, but when UBC food services followed our lead it had a much larger impact.

There are very important social and environmental impacts that are not quantified in terms of ecological footprint, for example, cancer-causing chemicals and noise pollution. These impacts should be considered in all decision making.

Detailed explanations of each target and more information on proposed actions are included in Appendix A. Annual updates will be posted on the AMS Lighter Footprint Strategy webpage.

6.0 Staffing

Until now, environmental sustainability activities at the AMS have been handled by a combination of elected representatives, staff taking on extra responsibilities, student interns,

volunteers and part-time student employees. The AMS has had some significant success with this model, largely due to volunteer efforts and staff taking on extra responsibilities and working extra hours without compensation.

The AMS Lighter Footprint Strategy (LFS) calls for a very significant increase in environmental sustainability actions, however, the current level of staff resources devoted to the issue is clearly inadequate. It should be noted that there would be significant benefits, such as cost savings, for both the Student Society and its members from many footprint reduction actions. It is recommended that an Environmental Sustainability Coordinator be established as a student coordinator position. This would cost the AMS approximately \$12,000 -18,000 per year.

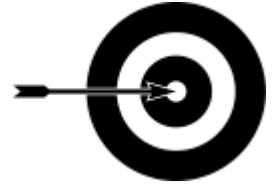
Some of the responsibilities of the position would include:

- Providing support to staff and elected representative in developing and following through on LFS action plans
- Tracking and reporting on progress towards LFS targets, including preparing the *annual progress report* required by the AMS Environmental Sustainability Policy
- Writing grant applications for larger LFS projects
- Coordinating the work of student interns and work-study employees
- Providing support to lobbying efforts on transit service and other sustainability-related issues
- Coordinating with the UBC Sustainability office on SEEDS projects, energy monitoring, and environmental education initiatives.
- Maintaining and updating the AMS sustainability website and displays in the SUB

Appendix A:

AMS Lighter Footprint Strategy: Target Descriptions & Action Plans

Consultation Draft – January 11, 2008



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Target Description & Action Plan:



Reduce AMS Food Ecological Footprint (Food & Beverage – Internal)

Target:

Significantly reduce the average per-serving EF of food and beverages sold by the AMS by October 31, 2011. This includes a focus on local purchasing as well as reducing high impact ingredients such as meat and dairy. (General Target)

Target Description & Assessment Table

Estimated Footprint Reduction	Large
Probability of Success	Moderate to High
Cost to AMS - \$	Low to Moderate (but possible net savings). Could be increased food costs with a shift to organic & local food.
Cost to AMS - Labour (includes volunteer labour)	Moderate for paid staff; Land and Food systems students will likely do much of initial research.
Risks or Disadvantages	Risk that this could be seen as attempting to impose vegetarian eating. Need to focus on providing choice for healthy, low footprint menu options.
Benefits or Savings for AMS - \$ or other	Potential reduced per-serving cost of food with shift to less meat & cheese. Potential increased business with more vegetarian, vegan, local & organic foods.
Benefits or Savings for AMS members - \$ or other	Potential for healthier options, and overall stable prices despite likely increased costs for meat & cheese.
Social and Environmental Justice Implications	Generally Positive as this initiative would support the UBC farm and local producers.
Who is responsible for taking action?	AMS Food & Beverage Manager is already involved in actions aimed towards this general target in cooperation with the AMS Sustainability Coordinator & the UBC food systems project.
Timeline	Substantial progress by October 31 st , 2011
Other Comments	An Agricultural Sciences 450 class will likely complete initial research in Spring 2008.

Action Plan

Actions Completed:

This is an ongoing focus for the AMS; numerous projects have been completed over a period of years.

A proposal for an Agricultural Sciences 450 project focused on reducing the food footprint of AMS operations has been prepared and accepted. Research will likely start in January 2008.

Proposed Actions:

Actively support and work with AGSCI 450 professor and students on research project. (M. Stein & N. Toogood)

Based on AGSCI 450 research, have a plan in place by October 31, 2008 to reduce the average per-serving EF of food and/or beverage sold at least one AMS outlet. The plan should include quantitative targets if practical.

Determine next steps, based on AGSCI 450 research, by October 31, 2008.

Report annually on activities and progress.

Target Description & Action Plan:

Reduce Materials Footprint (Materials – Internal)



Target:

Establish a monitoring system to track the quantities of key materials used in AMS operations, reduce the quantities used, and significantly reduce the ecological footprint per unit of these materials (General Target).

Target Description & Assessment Table

Estimated Footprint Reduction	Moderate
Probability of Success	Good
Cost to AMS - \$	Moderate - may be net savings
Cost to AMS - Labour (includes volunteer labour)	TBD
Risks or Disadvantages	Likely low risk, some lower footprint materials such as 80 or 100% recycled paper may cost more per unit.
Benefits or Savings for AMS - \$ or other	Reduced materials use may result in cost savings.
Benefits or Savings for AMS members - \$ or other	TBD - Cost savings are possible from activities such as PDF scanning at Copy Right.
Social and Environmental Justice Implications	Some positive impacts with cost savings to members.
Who is responsible for taking action?	TBD
Timeline	TBD
Other Comments	

Action Plan

Actions Completed:

This is an ongoing focus for the AMS; for example actions such as switching to electronic documents to reduce paper use, and using 30% recycled paper.

AMS food services offers discounts to people who bring their own re-usable mugs and the re-usable mug ratio is monitored periodically (is about 15%).

A SEEDS project has been completed on ways to increase the use of re-usable mugs (Lug-a-Mug project)

A SEEDS materials stewardship project has been completed on ways of reducing littering and encouraging reducing, reusing and recycling in public spaces in the SUB.

AMS office paper usage is now being tracked.

A SEEDS proposal has been prepared for monitoring SUB water consumption.

Proposed Actions:

Establish a system for tracking and reporting on key materials used.

Lug-a-Mug project to reduce disposable cup usage (from the present 85% disposable 15% hard mug ratio). Note that a SEEDS project and some other research has been completed.

Investigate costs and benefits of offering self-serve scanning at CopyRight.

Complete stage 2 Sub materials stewardship SEEDs project.

Research benefits and costs of re-usable vs compostable food containers.

Investigate costs and benefits of reduced footprint materials such as 80 or 100% recycled content paper.

Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

Target Description & Action Plan:

Reduce Toxic Materials (Materials – Internal)



Target:

Decrease use of toxic materials and ensure proper disposal of toxic materials, including E-waste, in compliance with all applicable legislation (general target)

Target Description & Assessment Table

Estimated Footprint Reduction	N/A – Toxins are not generally quantified in ecological footprint analysis
Probability of Success	High
Cost to AMS - \$	TBD – Likely Low to Moderate
Cost to AMS - Labour (includes volunteer labour)	TBD
Risks or Disadvantages	Low risk
Benefits or Savings for AMS - \$ or other	There could be health and productivity benefits.
Benefits or Savings for AMS members - \$ or other	Health benefits for SUB users.
Social and Environmental Justice Implications	Positive - e.g. Ensures electronic waste is not disposed of illegally in low-income countries.
Who is responsible for taking action?	TDB
Timeline	TDB
Other Comments	Electronic waste is now being accepted free of charge at provincially approved facilities.

Action Plan

Actions Completed:

Sustainability Coordinator has confirmed that most cleaning products used in SUB are Green Seal certified.

Other past actions to be documented.

Proposed Actions:

Improve waste management to ensure electronic waste from SUB is disposed of properly.

Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

Target Description & Action Plan:

**Reduce SUB Energy Use and GHGs 33% by 2020
(Building Energy – Interactive)**



Target: Work with UBC Land and Building Services (Sustainability Office) to reduce SUB energy consumption and greenhouse gas emissions by at least 33% by 2020.
(Quantitative Target)

Target Description & Assessment Table

Estimated Footprint Reduction	Large
Probability of Success	Moderate – depends on cooperation from UBC Administration, likely an AMS referendum to raise fees, and perhaps grants from government agencies.
Cost to AMS - \$	High
Cost to AMS - Labour (includes volunteer labour)	High, but much has already been committed to SUB Renew process.
Risks or Disadvantages	This is an ambitious target with a significant chance of not meeting the target if SUB Renew renovations do not proceed
Benefits or Savings for AMS - \$ or other	Large - SUB renovations could provide a much more pleasant and productive work space; greatly enhanced reputation for AMS as a sustainability leader, and significant cost savings over time.
Benefits or Savings for AMS members - \$ or other	SUB renovations could provide a much more pleasant space for AMS members.
Social and Environmental Justice Implications	If fees are raised to cover costs, there are some negative implications for low-income AMS members. However, there may be net savings over time if the AMS ends up paying for energy used in AMS facilities.
Who is responsible for taking action?	TBD – Impacts, Renovations and SUB Renew committees all have roles to play.
Timeline	Referendum for SUB renew in Winter 2008 will influence the timeline for AMS energy projects
Other Comments	The 33% by 2020 goal is taken from the provincial commitment to reduce GHGs by the same amount and UBC will likely adopt targets based on the same commitment. Some provincial funding has already been announced to upgrade public buildings to help meet this commitment.

Action Plan

Actions Completed:

The AMS commissioned an energy audit of the SUB in 2007, which is available on the AMS website.

The AMS has put the SUB forward as a candidate for the UBC Renew program.

A SEEDS proposal to create an automated energy consumption monitoring and display system for the SUB has been submitted.

Proposed Actions:

Monitor and display SUB energy consumption

A number of possible short and longer term actions are outlined in the SUB energy audit, ranging from small items such as improving the efficiency of vending machines to major items such as investigating converting to a heat pump to heat the SUB:

- Energy Upgrades: Cooling systems
- Energy Upgrades: Solar Hot Water Heating
- Energy Upgrades: upgrade Air Handling Units
- Energy Upgrades: Loading Dock Heating Systems
- Energy Upgrades: Turn out the lights policy, energy efficient light bulbs
- Energy Upgrades: Vending machine energy misers

Improvements to the loading dock area are being investigated as short-term measures to reduce energy usage, improve indoor air quality, and reduce cold drafts in the lower level of the SUB.

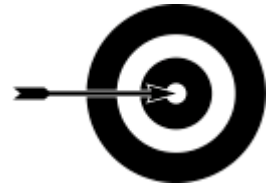
Undertake a major energy efficiency upgrade as part of the SUB Renew process. A sustainability charrette is scheduled for January 2007.

Investigate heat pump heating through a district hot water heating system.

Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

Target Description & Action Plan:

Reduce Materials Footprint in SUB (Materials – Interactive)



Target: Work with UBC and lease holders to establish a monitoring system to track the quantities of key materials used in the SUB, reduce quantities used and significantly reduce the ecological footprint of these materials. (General Target)

Target Description & Assessment Table

Estimated Footprint Reduction	Moderate
Probability of Success	Moderate - Requires cooperation from multiple parties
Cost to AMS - \$	TBD
Cost to AMS - Labour (includes volunteer labour)	TBD
Risks or Disadvantages	Requires cooperation from multiple parties, therefore is more complex to implement than some other targets.
Benefits or Savings for AMS - \$ or other	TBD - Possibility for enhanced reputation and reduced litter in SUB spaces.
Benefits or Savings for AMS members - \$ or other	TBD
Social and Environmental Justice Implications	Positive as related to footprint reduction
Who is responsible for taking action?	TBD
Timeline	TBD
Other Comments	Many materials related decisions in the SUB are controlled by the UBC administration, for example the paper towels in the washrooms are a UBC responsibility.

Action Plan

Actions Completed:

This is an ongoing AMS priority, and many actions have been taken in previous years, including instituting post-consumer composting in the SUB basement.

A 1st stage materials stewardship SEEDS project was completed in 2007 related to litter and recycling in SUB public spaces.

A waste audit was done by a UBC student in 1998.

Proposed Actions:

A second stage materials stewardship (Reduce, Reuse, Recycle) SEEDS project has been submitted.

An updated waste audit is needed (a project description has been completed).

A sustainability checklist for SUB renovations has been proposed to ensure materials footprint is minimized during renovations.

Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

Target Description & Action Plan:

Reduce UBC Food Ecological Footprint (Food & Beverage – Interactive)



Target:

Work with UBC Food Services and others in the UBC community (e.g. UBC Food System Project¹) to encourage a significant reduction in the average per-serving EF of food sold at UBC. (General Target)

Target Description & Assessment Table

Estimated Footprint Reduction	Very Large
Probability of Success	Moderate – depends on cooperation from UBC Food Services and others
Cost to AMS - \$	Low to Moderate
Cost to AMS - Labour (includes volunteer labour)	Unknown, depends on actions chosen
Risks or Disadvantages	Few, the AMS is already well established in this area and AMS members generally support the UBC Farm.
Benefits or Savings for AMS - \$ or other	Enhanced reputation as a leader in sustainability. Closer working relationship with UBC Farm and other food security/sustainability projects at UBC
Benefits or Savings for AMS members - \$ or other	Healthier food, educational opportunities.
Social and Environmental Justice Implications	Generally positive as long as this does not result in any significant price increases for AMS members. Potential for large contracts for local producers.
Who is responsible for taking action?	To be determined / developed by impacts committee
Timeline	Form partnership with Andrew Parr (winter 2008) and determine timeline from there.
Other Comments	This would be a continuation of AMS efforts via the UBC Food Systems Project, not a new initiative.

¹ The UBC Food Systems Project is a partnership between the AMS food and beverage department, UBC food services, the faculty of Land and Food Systems and the Sustainability office to target local food procurement.

Action Plan

Actions Completed:

This is an ongoing focus for the AMS; numerous projects have been completed over a period of years.

A proposal for an Agricultural Sciences 450 project focused on reducing the food footprint at UBC been prepared and accepted. Research will likely start in January 2008.

Proposed Actions:

Actively support and work with AGSCI 450 professor and students on research project. (M. Stein & N. Toogood)

Determine next steps, based on AGSCI 450 research, by October 31, 2008.

Report annually on activities and progress.

Target Description & Action Plan:

Reduce SOV Trips 33% by 2020 (Transportation – Interactive)



Target:

Work actively with AMS members and other members of the campus community to improve transit service, cycling facilities and on/near campus student housing, with the target of reducing the number of single occupant vehicle trips to campus by 33% below 2007 levels by 2020. (In support of the province's commitment to reduce GHG emissions by 33% by 2020). (Quantitative Target)

Target Description & Assessment Table

Estimated Footprint Reduction	Very Large
Probability of Success	Moderate – depends on cooperation from numerous parties. However, TransLink and the Provincial government have both acknowledged the need to more than double transit ridership to meet the 33% by 2020 commitment.
Cost to AMS - \$	TBD – depends on actions chosen
Cost to AMS - Labour (includes volunteer labour)	TDB
Risks or Disadvantages	This is an ambitious target with a significant chance of not meeting the target on time.
Benefits or Savings for AMS - \$ or other	U-Pass and transit service improvements are strongly supported by AMS members.
Benefits or Savings for AMS members - \$ or other	Transit service improvements would be a very significant benefit for members - large \$ and time savings.
Social and Environmental Justice Implications	Very positive. Lower income AMS members and people in general use transit more, and transit is necessary to access education.
Who is responsible for taking action?	TBD – External Commission might take lead role with support from the AMS Sustainability Coordinator.
Timeline	The 33% by 2020 goal is taken from the provincial commitment to reduce GHGs by the same amount and UBC will likely adopt targets based on the same commitment.
Other Comments	

Action Plan

Actions Completed:

This is an ongoing focus for the AMS; the U-Pass program has greatly reduced SOV trips and GHG emissions from commuting to UBC.

The AMS has also supported cycling initiatives such as the AMS Bike Kitchen and has actively campaigned for more on-campus student housing.

The AMS has been active in lobbying for better transit service as a way to reduce GHG emissions, including some work to support community college students' campaign for U-Pass and better transit service.

A multiple accounts evaluation of rapid transit options for the Broadway corridor has been done by Eric Doherty, which could be re-worked into a discussion paper.

Proposed Actions:

Enhanced transit lobbying campaign, which could include mobilizing AMS members.

Track transportation-related GHG emissions in co-operation with UBC Trek or others. (Note that UBC Trek supervised SEEDS project was completed on this, but UBC Trek has not yet been able to make the computer program function.)

Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

Target Description & Action Plan:



**Coordinate Campus Development Activities with the AMS Environmental Sustainability Policy.
(Campus Development & Policies – Interactive)**

Target:

Establish a clear structure to co-ordinate the AMS's involvement in campus development with the AMS Environmental Sustainability Policy. This should include a clear reporting relationship between the Impacts and Campus Development Committees (or a re-vamping of the committee structure to accomplish the same). (General Target)

Target Description & Assessment Table

<i>Estimated Footprint Reduction</i>	No direct impact – But could be large due to better coordination and effectiveness
Probability of Success	High
Cost to AMS - \$	N/A
Cost to AMS - Labour (includes volunteer labour)	Low – Could result in net savings
Risks or Disadvantages	Does this overlap with process of re-vamping the AMS committee structure?
Benefits or Savings for AMS - \$ or other	Better coordination would result in more effective action and likely time savings
Benefits or Savings for AMS members - \$ or other	Likely improved campus development over time.
Social and Environmental Justice Implications	Improved access to the campus development process would likely benefit students in terms of voicing concerns with on campus housing and student space
Who is responsible for taking action?	TBD, but campus development issues are part of the VP Academic profile.
Timeline	TBD
Other Comments	

Action Plan

Actions Completed:

This is an ongoing focus for the AMS's campus development efforts.

Proposed Actions:

Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

Target Description & Action Plan:



UBC as an Ecological Learning Space (Curriculum & Learning Spaces – Interactive)

Target:

Work with interested faculty, the UBC Sustainability Office, and others to develop more problem-based learning curriculum aimed at reducing our ecological footprint and to make UBC into a more effective ecological learning space. (General Target)

Target Description & Assessment Table

Estimated Footprint Reduction	Very Large (but indirect)
Probability of Success	Moderate - High
Cost to AMS - \$	Low
Cost to AMS - Labour (includes volunteer labour)	Moderate – Could result in net savings
Risks or Disadvantages	Need to ensure projects are carefully selected to avoid spending staff time on less useful projects.
Benefits or Savings for AMS - \$ or other	Low-cost sustainability research.
Benefits or Savings for AMS members - \$ or other	Improved relevance and quality of educational experience, practical job-related experience.
Social and Environmental Justice Implications	Curriculum could result in projects that significantly improve the campus' social and ecological function.
Who is responsible for taking action?	TBD, however Academic Quality is part of the VP Academic Portfolio. Partnerships with SEEDS and interested professors will be the key to a successful initiative.
Timeline	TBD
Other Comments	This would be an expansion of the AMS's role, rather than a completely new initiative.

Action Plan

Actions Completed:

This is an ongoing focus for the AMS; and the AMS has been actively working with SEEDS and programs such as Agricultural Sciences to combine applied research with ecological learning opportunities.

Proposed Actions:

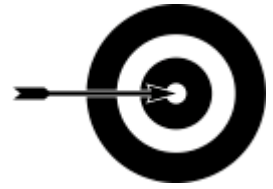
Expand number of SEEDS and similar research and outreach projects.

Investigate ways to integrate ecological learning into campus spaces (For example, displaying energy consumption and GHG emission data on campus buildings)

Work with interested students and faculty to support & promote ecological learning in all UBC faculties.

Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

Target Description & Action Plan:



SUB as an Ecological Learning Space (Curriculum & Learning Spaces – Interactive)

**Target: Work to make the SUB a leading ecological learning space on the UBC campus
(General Target)**

Target Description & Assessment Table

Estimated Footprint Reduction	Large (but indirect)
Probability of Success	High
Cost to AMS - \$	TBD
Cost to AMS - Labour (includes volunteer labour)	TBD
Risks or Disadvantages	Projects must be engaging and visible to members.
Benefits or Savings for AMS - \$ or other	Opportunity to showcase role as a leader in sustainability. Increased awareness of resource consumption and potential solutions.
Benefits or Savings for AMS members - \$ or other	Learning outside the classroom may spark enthusiasm or engagement in the campus community.
Social and Environmental Justice Implications	Providing information in a non-traditional manner could improve the quality of the educational experience at UBC.
Who is responsible for taking action?	Impacts, SUB renew.
Timeline	TBD
Other Comments	This initiative could be as simple as displaying consumption data in the sub or could extend to supporting initiatives like a garden for Our Community Eats.

Action Plan

Actions Completed:

This is an ongoing focus for the AMS; and the AMS has been actively working with SEEDS and programs such as Agricultural Sciences to combine applied research with ecological learning opportunities.

The Student Environment Center, Sprouts, and the Bike Hub all contribute to ecological learning in the SUB.

A SEEDS project to track and display SUB energy usage is scheduled to start in January 2008.

Proposed Actions:

Integrate into SUB Renew / energy upgrades process.

Track and Display Utility Use in SUB (Electricity, Steam, Petroleum Gas, and Water).

Lug-a-Mug project

SUB Materials Stewardship project

SUB Waste Audit

Maximize learning potential of other sustainability projects through displays in SUB, special events, or other means.

Set priorities for coming year by October 31, 2008 & report annually on activities and progress.

Appendix B

Producing the Annual AMS Lighter Footprint Strategy Progress Report Consultation Draft – January 15, 2008

As required by the AMS Environmental Sustainability Policy, the Lighter Footprint Strategy (LFS) is designed to ensure that the AMS's environmental sustainability efforts are effective, and to avoid misdirecting our energies to actions that make little difference. The decision-making rationale is discussed in section 4.0 of the Strategy.

The purposes of the policy include:

- To establish the Impacts Committee as the body responsible for overseeing the Sustainability Strategy and presenting an annual progress report, including new or updated targets, to Council by October 30 of each year.
- To set a manageable number of goals and timelines (in consultation with staff and other interested parties), and assign responsibilities to pertinent persons and departments for achieving them.
- To establish procedures for monitoring and reporting on progress. Procedures for updating and adjusting targets will also be part of the Strategy.¹

The annual report is intended to provide continuity and accountability without being overly time consuming to produce. The basic steps are:

- Review each target and action plan from the previous year, and report on the actions completed from the action plan and progress made (Moving completed actions from proposed to completed). Also note any actions taken that were not anticipated in the action plan. Quantitative data should be included where appropriate.
- For significant projects that fall under more than one target category it may be best to produce a project report and refer to the key conclusions of the report in the relevant action plans.
- Considering the research done and experience gained in the previous year, review the targets and action plans and update as appropriate. When information becomes available, consideration should be given to converting general targets to quantitative targets. New targets and actions should only be added with careful consideration to the resources available and the policy's direction to keep targets to a manageable number (considering that every target needs to be reported on every year). Forward revised or new targets for approval by the Executive and Council.
- Produce a brief summary of the year's activities including significant successes, failures and changes in direction.
- Review the potential LFS projects list and update as necessary (delete projects that have been completed and add new potential projects that have been identified). This may be a good time to make firm decisions on what projects the AMS should proceed with, but project decisions can be made at any time.
- Update the AMS Environmental Sustainability webpage with the annual report and any relevant documents, and check that all links are still current.

Don't get bogged down in endless detail, the report just needs to provide the essential information next year's Impacts Committee members will need. And remember - if it's not fun, it's not sustainable!

¹ http://www.amsubc.ca/index.php/student_government/subpage/category/ams_operations_policies/#sustainability

The following is a hypothetical report on one LFS target from 2006-2007²:

AMS Lighter Footprint Strategy – Annual Report October 1, 2006 – October 1, 2007

Target: Establish a system of regular reporting of SUB energy consumption, and investigate potential measures to reduce energy consumption and greenhouse gas emissions. (General Target)

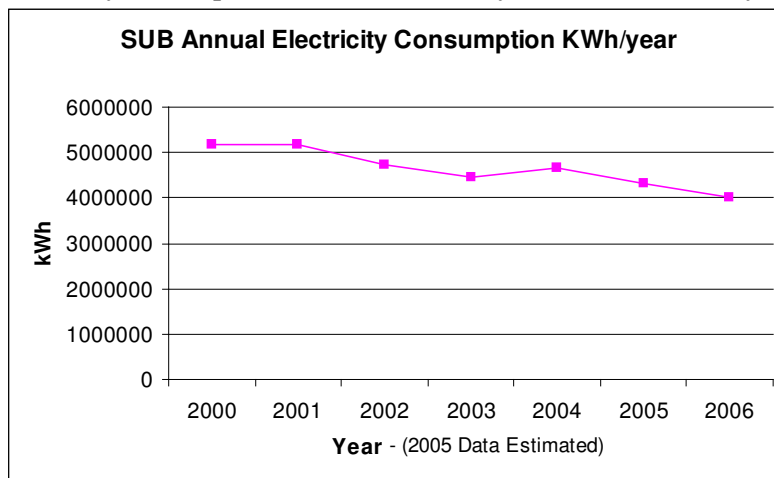
Actions in Action Plan:

- 1) Request past data and regular reports on energy consumption (steam, electricity and petroleum gas) for the SUB from the UBC Sustainability Office.

The Sustainability Office energy manager did not have a system of reporting for SUB energy consumption in place, and a steam meter had only been recently installed. By going directly to the meter reader we were able to produce the multi-year electricity consumption trend shown below. However, only a partial year of steam data was available and we do not have any petroleum gas data yet.

The UBC Sustainability Office energy manager has agreed to participate in a SEEDS project to create an automated energy consumption utility, this SEEDS project will be prepared with the hope that it will be done in the winter 2008 term.

Electricity consumption has been reduced by over 1 million kWh/year, over 22%, since 2001



- 2) Request that the UBC Sustainability Office provide any existing energy efficiency reports on the SUB, and conduct further studies if needed.

The UBC Sustainability Office provided the very limited material they had, but was not in a position to conduct further research. Therefore, the AMS hired a consultant to do an initial energy audit of the SUB. This report identifies a large number of potential measures including:

- Energy Upgrades: Cooling systems
- Energy Upgrades: Solar Hot Water Heating
- Energy Upgrades: upgrade Air Handling Units
- Energy Upgrades: Loading Dock Heating Systems
- Energy Upgrades: Turn out the lights policy, energy efficient light bulbs
- Energy Upgrades: Vending machine energy misers

² This is before the first year of the strategy so no actual targets or action plan exists.

These measures range from low-cost measures with very short pay back times to extremely expensive measures that would best be done in concert with significant building renovations. The full report is available at:
http://www.amsubc.ca/index.php/student_government/subpage/category/ams_lighter_footprint_strategy/SUB_energy_assessment.pdf

Actions Not in Action Plan

This year the SUB became a near-term candidate building for the UBC Renew program, and the AMS started investigating the possibility of major renovations under this program. See http://www.amsubc.ca/index.php/ams/subpage/category/subrenewal_history_background/

Summary

The AMS now has an initial study of potential energy efficiency upgrades and can start to act on these. Getting energy consumption data proved to be more difficult than expected, but there is a good possibility that an automated system will be in place within the coming year.

This was a year of major change, as the possibility of major energy efficiency upgrades to the SUB became a feasible possibility in the near term. The Provincial Government's new commitment to reduce greenhouse gas emissions by 33% by 2020 also adds to the possibilities to get funding for major upgrades.

Given these developments, the proposed target and action plan for 2007 – 2008 has been updated to that below:

Target Description & Action Plan:

Reduce SUB Energy Use and GHGs 33% by 2020 (Building Energy – Interactive)

Target: Work with UBC Land and Building Services (Sustainability Office) to reduce SUB energy consumption and greenhouse gas emissions by at least 33% by 2020. (Quantitative Target)

Target Description & Assessment Table

Estimated Footprint Reduction	Large
Probability of Success	Moderate – depends on cooperation from UBC Administration, likely an AMS referendum to raise fees, and perhaps grants from government agencies.
Cost to AMS - \$	High
Cost to AMS - Labour (includes volunteer labour)	High, but much has already been committed to SUB Renew process.
Risks or Disadvantages	This is an ambitious target with a significant chance of not meeting the target if SUB Renew renovations do not proceed
Benefits or Savings for AMS - \$ or other	Large - SUB renovations could provide a much more pleasant and productive work space; greatly enhanced reputation for AMS as a sustainability leader, and significant cost savings over time.
Benefits or Savings for AMS members - \$ or other	SUB renovations could provide a much more pleasant space for AMS members.

Social and Environmental Justice Implications	If fees are raised to cover costs, there are some negative implications for low-income AMS members. However, there may be net savings over time if the AMS ends up paying for energy used in AMS facilities.
Who is responsible for taking action?	TBD – Impacts, Renovations and SUB Renew committees all have roles to play.
Timeline	Referendum for SUB renew in Winter 2008 will influence the timeline for AMS energy projects
Other Comments	The 33% by 2020 goal is taken from the provincial commitment to reduce GHGs by the same amount and UBC will likely adopt targets based on the same commitment. Some provincial funding has already been announced to upgrade public buildings to help meet this commitment.

Action Plan

Actions Completed:

The AMS commissioned an energy audit of the SUB in 2007, which is available on the AMS website.

The AMS has put the SUB forward as a candidate for the UBC Renew program.

A SEEDS proposal to create an automated energy consumption monitoring and display system for the SUB has been submitted.

Proposed Actions:

Monitor and display SUB energy consumption

A number of possible short and longer term actions are outlined in the SUB energy audit, ranging from small items such as improving the efficiency of vending machines to major items such as investigating converting to a heat pump to heat the SUB:

- Energy Upgrades: Cooling systems
- Energy Upgrades: Solar Hot Water Heating
- Energy Upgrades: upgrade Air Handling Units
- Energy Upgrades: Loading Dock Heating Systems
- Energy Upgrades: Turn out the lights policy, energy efficient light bulbs
- Energy Upgrades: Vending machine energy misers

Improvements to the loading dock area are being investigated as short-term measures to reduce energy usage, improve indoor air quality, and reduce cold drafts in the lower level of the SUB.

Undertake a major energy efficiency upgrade as part of the SUB Renew process. A sustainability charrette is scheduled for January 2007.

Investigate ground-source heat pump heating through a district hot water heating system.

Set priorities for coming year by October 31, 2008 & report annually on activities and progress.