

**Sustainability Strategy Update  
October 2009**



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## **Executive Summary**

In 2007 NAIT completed a rebranding process which allowed for the realignment of its guiding principles and key directions through a strategic visioning process. It was determined through this process that NAIT needed to make a bigger commitment to sustainable practices.

Environmental initiatives have been formally a part of the NAIT culture since the evolution of ecoNAIT (originally the NASA environmental committee) in 2005 and the Respect NAITure committee in 2006. EcoNAIT, founded by Conrad Nobert, is a staff grass roots committee dedicated to promoting environmental awareness and championing new initiatives. The respect NAITure committee's focus has been to inform staff and students of the new Clean Air Policy as well as to promote litter free spaces and a professional atmosphere. Increased awareness for the environment has resulted from the work of both committees.

To help coordinate programs aimed at transforming the Institute into a showcase of sustainability NAIT hired its first Sustainability Officer. In order to achieve such goals a diverse task force was needed to develop a sustainability strategy. The mandate of the sustainability task force is to bring into focus the efforts of various departments, groups and committees on campus. As a result, the task force is composed of representatives from ecoNAIT, Food Services, Health and Safety, NAITSA, School of Resources and Environmental Management, Campus Sport and Wellness Operations, Capital Projects, Materials Management, Maintenance and Operations, Custodial Services, Corporate Communications, Energy Management, AUPE and NASA.

The development and implementation of a sustainability strategy is essential to advancing institutional sustainability. With dialogue on ideas being a key component the sustainability strategy is a project-based strategy and is meant to be a long-term, ongoing, fluid document. The document lists NAIT's current projects and the goals and timelines of these projects, as well as future project ideas to be further investigated. The overall goal of this document is to provide information on the current and future sustainability initiatives at NAIT.

The Sustainability Strategy was designed around the three pillars of sustainability; Social Equity, Ecological Responsibility and Economic Health. Each of the sections contains a working definition, as well as the related project summaries and any future initiatives. Future initiatives are generated from looking at best practices, researching what other post-secondary schools are doing and talking with NAIT faculty and staff. All future initiatives need to be further investigated to determine if they will be implemented at NAIT. A list of current sustainability projects at NAIT can be found in Appendix 1.

### **Next Steps**

In February 2008, NAIT presented highlights of its current corporate social responsibility (CSR) through a widely distributed publication. The purpose of the publication was to initiate dialogue with stakeholders about NAIT's current and future economic, environmental and social footprints. The dialogue began with a short survey and the setup of an email address to receive feedback. In fall 2008, focus groups involving staff, students, donors, alumni and other stakeholders will be conducted. Based on this feedback, NAIT's CSR Steering Committee will recommend the overall direction of CSR at NAIT to Executive Committee.

Baselines and targets will need to be developed in order to assess NAIT's environmental performance. These baselines and targets will then be used to evaluate the strategy on a yearly basis and the strategy will be updated accordingly. Included with the yearly update of the strategy will be any new sustainability projects and new future initiatives. Ideas for future initiatives will be sought by consulting with staff to find out what sustainability issues are important to them.

**Social Equity**

Engage our staff, students and community in improving health and safety while becoming a leader in sustainability.

***Affiliation with other Environmental Groups***

NAIT participates on the following committees/groups:

- AVITIVUT – network of colleges working in the field of urban sustainability.
- World Skills Calgary 2009 Sustainability Task Force
- Association for the Advancement of Sustainability in Higher Education

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Maintain current memberships	Ongoing	Sustainability Officer
Investigate other potential groups	Ongoing	Sustainability Officer

***Bike Racks / Secured Bicycle Storage Compounds***

NAIT strives to provide acceptable quantities of bike racks and fenced bicycle storage compounds for cyclists and considers on-going needs as well as newly created opportunities when constructing new facilities.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Respond to cyclist feedback and campus requirements	Ongoing	Capital Projects & Facilities Operations

***Capstone Applied Research Project***

The Capstone Applied Research Project is a six-credit course requirement with the NAIT Bachelor of Technology in Technology Management Degree Program (BTech) and the Bachelor of Business Administration in Enterprise Management Degree Program (BBA). It is designed to provide students with real-world experiences that integrate their learning in an applied, practical project. Offering there NAIT degree program and the capstone applied research project allows the Institute to address the industry needs of providing more grads with dynamic and multi-faceted skills needed for management and supervisory roles.

There are currently four sponsors for September 2008 to provide challenging projects at the senior level for BTech. All four projects for the BTech Program were confirmed by June '08. The projects will begin in September and will be completed within a six-month period.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Secure sponsors for September 2009, 2010, 2011, 2012 and 2013 to provide challenging projects at the senior student level for BTech. <i>2009 Update:</i> 11 capstone projects are currently underway for the 2009/2010 academic year.	All projects for the BTech Program are to be confirmed by Feb. The projects will begin in September and will be completed within a six-month period.	Chair Capstone Applied Research Project/Dept. of Degree Programs
Secure for sponsors for September 2010, 2011, 2012 and 2013 to provide challenging projects at the senior student level for BBA.	All projects for the BBA Program are to be confirmed by Feb. The projects will begin in September and will be completed within a six-month period.	Chair Capstone Applied Research Project/Dept. of Degree Programs

### ***COOP - Applied & Experiential Learning***

The Co-Op program is designed to provide students who have limited or no work history with a means of acquiring on the job experience prior to graduation to apply their didactic learning. The co-op programs allow the Institute to address the industry needs of providing more grads with dynamic, multi-faceted and hands on skills.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Secure preceptors for May, September & January in 2009, 2010 to provide co-op positions.  Secure preceptors for May 2011, 2012 and 2013 to provide co-op positions.	Four months from the start date.	Chair Capstone Applied Research Project/Dept. of Degree Programs.

### ***Corporate Challenge***

Corporate Challenge is an Olympic style event with fun-filled sporting & non-sporting events to encourage friendly competition between Edmonton and surrounding area organizations. NAIT has been a part of this fun filled function for over 10 years. Corporate Challenge competition takes place for the first two weeks of June.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Compete in all 22 sports <b>2009 Update:</b> Filled all 24 sports this year (2 sports were added).	May 2009	Corporate Challenge Committee
Increase the amount of staff that participate in competition by 10% <b>2009 Update:</b> Exceeded the 10% increase in participation CEO Luncheon increased from 3 in attendance to 8; NAIT Kick-off Event increased from around 35-40 in 2008 to close to 100; Closing ceremonies increased from 30 to over 100 people in attendance.	May 2009 - 2011	Corporate Challenge Committee

#### ***Additional Successes***

- 1<sup>st</sup> place for Team Spirit
- Finished 5<sup>th</sup> overall in competition

### ***Donating Surplus Food to Charities***

Food Services works with the School of Culinary Arts to ensure that food prepared by students in their kitchens does not go to waste. The food that the students produce is either incorporated into one of the daily features for Food Services or it is packaged to be sold in the cafeteria's Gourmet Take Away program. Popular items such as the baked goods and breads usually sell out, but generally every Friday there is some packaged material that is close to expiry. The Executive Chef determines how much product is going to be left over and rounds up volunteers from NAIT staff to take the food to one of the local charities.

During long shut downs such as the Christmas break any food supplies that cannot be preserved or used is donated to food charities.

Target	Timeline	Lead
Continue to donate any unused food to charities	Ongoing	Food Services

### *ecoNAIT*

EcoNait (Environment Committee of NAIT) is a multi-stakeholder committee with representatives from NASA, NAITSA, AUPE and management. The committee represents a grassroots effort by staff to help NAIT become a more environmentally sustainable institution.

Target	Timeline	Lead
Investigate, discover, initiate and seek funding for small- and medium-sized green pilot projects.	Ongoing	EcoNAIT Chair
Offer staff sustainability-oriented volunteer opportunities that enable them to contribute to the NAIT community.	Ongoing	EcoNAIT Chair
Initiate and organize sustainability-oriented educational opportunities for NAIT staff and students.	Ongoing	EcoNAIT Chair
Facilitate the formation and operation of a student eco-club. <i>2009 Update:</i> There was no student interest this year.	December 2008	EcoNAIT Chair

### *Ergonomics at NAIT*

Ergonomic assessments of workstations are available to employees through the NAIT OHS department. Workstation modifications will reduce lost time injuries and improve employee comfort at NAIT. In the 2007-2008 year there were 89 ergonomic assessments completed which was up from 69 in 2006-2007 and 29 in 2005-2006.

Social Equity

Target	Timeline	Lead
Expand the resources and information available on MyHealth & Safety portal. <i>2009 Update:</i> Increased presence of OHS at NAIT through NAITline and events, however the online resources have not yet been expanded due to a shift in priorities.	December 2008	Occupational Health & Safety Department
Increase the number of assessments completed by 10% <i>2009 Update:</i> As of June 2009 100 assessments were completed which exceeds the 10% increase.	September 2009	Occupational Health & Safety Department

***Fair Trade Practices***

Food Services purchases Fair Trade Coffee. Fair Trade ensures that farmers in third world countries are paid a fair and equitable price for their crops.

Target	Timeline	Lead
Continue to serve Fair trade coffee	Ongoing	Food Services

***Feel Great @ NAIT***

Feel Great @ NAIT Wellness Sessions are a series of lunch hour seminars and other special events offered throughout the year to provide educational opportunities on a variety of topic areas pertinent to our personal and professional well being. Sessions are offered at satellite campuses as well and all sessions on main campus are video-taped and are available to watch on our website through the staff portal so that those who cannot attend can view at their own convenience.

## Social Equity

Target	Timeline	Lead
Increase the number and variety of sessions offered in order to appeal to a wider audience. <b>2009 Update:</b> Did not increase the number of sessions nor the variety – Wellness Consultant was on Medical leave for 2.5 months.	May 2009	Department of Athletics & Recreation
Increase the number of staff who access these sessions <b>2009 Update:</b> Number of staff who attended each session offered increased in the 2008/09 year	Sept. 2008- June 2010	Department of Athletics & Recreation
Complete a needs assessment to determine areas of interest. <b>2009 Update:</b> Needs assessment is on-going. After each session is completed, a staff evaluation and needs assessment is sent to all attendees. This directs planning for each subsequent year.	May 2008	Department of Athletics & Recreation

***Fitness Center- Free Access***

The NAIT FWC is committed to providing all users with a safe, clean, accommodating, welcoming, state-of-the art facility to pursue activities related to the improvement of their health and wellness.

Target	Timeline	Lead
Offer FREE Orientations to all users 3x/week at varying times to facilitate user comfort within FWC <b>2009 Update:</b> Orientations were not utilized by facility users, thus orientation opportunities will continue on an appointment only basis.	September 15, 2008	Department of Athletics & Recreation
Staff Fitness & Weight Centre 100% of operating hours <b>2009 Update:</b> completed and staffing will continue throughout 2009/10	October 1, 2008	Department of Athletics & Recreation
Increase user satisfaction with new equipment & equipment maintenance (Cardio + Resistance + Flexibility)	Ongoing	Department of Athletics & Recreation

## Social Equity

Offer innovative classes at nominal cost to all users to encourage participation in pursuits of health & wellness	Ongoing	Department of Athletics & Recreation & certified FWC staff
Offer certified fitness consultations (1 hour only) to all users (at cost) to encourage future business with Personal Training Services to promote expanded services within Athletics & Recreation	Ongoing	Department of Athletics & Recreation
Institute standards of excellence within FWC in regards to: cleanliness, customer service, equipment maintenance & replacement, classes & events as related to health & wellness, partnership within all areas of Athletics & Recreation	Ongoing	Department of Athletics & Recreation

***Fitness Classes***

NAIT Recreation offers Fitness programming that is low cost or no cost and sometimes acts as fundraising for charities within the community. Classes are open to both the NAIT staff and students. The leaders of the classes are specialists within the community as well as NAIT staff and students. Fitness programming is offered early morning, during the lunch break and after work. Classes are offered in the Indoor Cycling room, Arena, Gym, Outdoor Track and Exercise Studio. Classes offered range from Yoga, Pilates, Bootcamp, Belldancing and Group Cycling.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Implement online registration <b>2009 Update:</b> Completed and available	May 2009	Department of Athletics & Recreation
Increase charity opportunities & online registration <b>2009 Update:</b> Completed and ongoing	September 2009 – 2011	Department of Athletics & Recreation
Increase online registration <b>2009 Update:</b> Continued planning for 2009/10 to sustain online registration currently available.	September 2009 – 2011	Department of Athletics & Recreation

***Food Services is 70% Trans fat free***

Two years ago Food Services switched to trans-fat free cooking oil in all of its deep fryers, grills and production kitchens. Other trans-fat free products include muffins; cookies; french fries; salad dressings; sauces; potato chips and other snack foods.

## Social Equity

In addition to trans-fat free products Food Services is trying to build menus based on healthy heart smart ingredients. Light or reduced fat ingredients such as fat free sour cream or light salad dressings have been introduced to our menus. Over 30% of all the food produced in our kitchen is derived from fresh produce.

Target	Timeline	Lead
Ensure 85% trans-fat free <i>2009 Update:</i> currently using low fat or fat free ingredients where possible.	January 2010	Food Services
Continue to investigate cost effective opportunities to use organic produce	Ongoing	Food Services

### *Green Chemistry in the Chemical Technology Program*

There are several projects underway involving staff within the Chemical Technology Program. The majority of the projects involve the reduction of toxic chemicals which increase disposal costs and create a more hazardous environment within the instructional laboratories.

Another initiative has arisen from an applied research project involving new column technology used in gas chromatography. The technology being developed will reduce the energy requirements for temperature control of the column compared to conventional gas chromatographs. A patent for this technology and other benefits incorporated into the column design has been applied for. Continued applied research will be required to perfect the technology.

The Chemical Technology Program is undergoing a program review and plans are being made to alter the course delivery so that a new course explaining the twelve postulates of Green Chemistry may be provided.

Target	Timeline	Lead
Revise analytical chemistry lab courses to reduce the use of heavy metals and chlorinated solvents used. <i>2009 Update:</i> the use of tin and mercury are being replaced with zinc which is less toxic.	Ongoing	Lead instructors in the analytical chemistry courses involving chromatography and spectroscopy

## Social Equity

Revise Quantitative Analysis course to remove the majority of the labs using heavy metals. <b>2009 Update:</b> introduced new labs which use smaller volumes of reagents by incorporating a greater use of micropipettes into analytical procedures thus reducing the amount of waste.	Ongoing Initial changes by January, 2009.	Lead instructor in Quantitative Analysis (CH232L).
Revise experiments in Organic Chemistry labs to reduce reagent toxicity by altering the choice of reactants and catalysts.	Ongoing	Lead instructors in the Organic Chemistry courses.
Incorporate a Green Chemistry course into the curriculum within the Chemical Technology Program. <b>2009 Update:</b> Incorporating concepts of Green Chemistry into all courses instead of having a separate course.	August, 2009	Chair, Chemical Technology

***Improve Transit Access to NAIT***

To increase the number of staff and students utilizing public transportation, NAIT must continue to advocate for improved public transportation routes and access. Three new ETS routes are being added for the NAIT Community: Route 95 – from Southgate to NAIT; Route 97 – from Millwoods to NAIT; and Route 98 – from the West end to NAIT.

Target	Timeline	Lead
Have the LRT come to NAIT, and improve other transit bus routes to NAIT.	<i>TBD</i>	NAITSA Advocacy Director/ NAITSA President

***rejuveNAIT Inservice***

NAIT hosts an institute-wide Inservice that extends for a 4-week period beginning in May each year. ODS is responsible for the event and a committee, comprised of individuals from program and service areas throughout the institute, assist in the planning, implementation, and evaluation of the event.

In alignment with NAIT's three key directions, Inservice will provide a variety of opportunities for all NAIT staff to participate in sessions designed to meet their current and future professional and personal development needs and interests.

## Social Equity

Professional development sessions provide training specific to our staff's ability to better perform their jobs. Personal development sessions are generally focused on physical, emotional, and mental wellness and, as such, support our emphasis on a balance between our staff's professional and personal lives. Recognition of this balance demonstrates our resolve to be "an employer of choice".

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Identify presenters for Metro Campus & Satellite Campus Sessions	Every February	ODS Consultant
Identify presenters for Metro Campus & Satellite Campus Sessions	Every February	Consultant / Northwest Campuses Program Development
Enter sessions into Staff Training Course Catalogue	Every April	ODS Consultant

***Internal communications***

Effective employee communications has a direct correlation with increased job satisfaction and retention, productivity and innovation. Corporate Communications is developing a strategic internal communications plan, which includes conducting an internal communications audit, and is working to raise the profile and value of internal communications as a strategic business tool.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Establish benchmarks by internal communications audit	July 2008 – June 2013	Corporate Communications
Establish interactive staff and student portals and nait.ca website to enhance campus community	TBD	Web Team, ISD & Corporate Communications

***Member of Edmonton Waste Management Centre of Excellence***

NAIT is one of the co-founding members and an active participant in the Edmonton Waste Centre of Excellence (EWMCE). The Centre's mission is to "promote research, development and training to enhance scientific and applied knowledge in all areas of waste management and facilitate transfer of knowledge to contribute to the protection of public health, the sustainable use of environmental resources and the quality of life locally and globally." In addition to representatives on EWMCE's Board of Directors, Educational Committee and Research Committee; NAIT is actively exploring

opportunities for partnerships in the areas of training, demonstration and applied research.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Continue to have representation on the EWMCE Board	Ongoing	Dean, School of Resources and Environmental Management

### *Organic Coffee*

In 2008 Food Services switched all non-franchised coffee blends to Organic coffee which ensures the coffee is not treated with chemicals or additives. The popular flavoured coffee served is organic Fair Trade coffee, however because the beans are artificially enhanced they cannot be certified.

Food services serve shade grown coffee whenever possible. Shade grown coffee means the crop was produced without altering the local ecological environment.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Continue to serve shade grown coffee when possible	Ongoing	Food Services
Continue to serve Organic coffee	Ongoing	Food Services

### *Ride Share Initiative*

Carpool.ca's mandate is to promote responsible and sustainable automobile use through the implementation and promotion of rideshare programs. Carpool.ca uses information based on geographic location, the time of day of the commute, smoking/non-smoking status, membership status and gender data. Carpool.ca is mostly used in Alberta but is also present in B.C, Saskatchewan, Manitoba and Ontario.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
<i>TBD</i>	<i>TBD</i>	<i>NAITSA</i>

***Safe Walk Program***

Safe Walk is free of charge and is available to any member of the campus community - students, staff and faculty. It exists so that access to the NAIT campus and surrounding areas is never compromised for those who do not want to walk alone at night.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Continue to offer Safe Walk to all staff and students	Ongoing	Manager, Security and Parking Services

***Sustainability Officer*****Summary**

The Sustainability Officer is responsible for coordinating the development of energy and environmental strategies in order to assist the Institute in performing more efficiently.

Key activities include:

- Working collaboratively with internal and external stakeholders to identify best practices specific to energy and environmental improvements.
- Planning and coordinating the implementation of sustainable practices for NAIT.
- Being a catalyst for activity and commitment to effective environmental management.
- Developing long-term energy and environmental strategies.
- Benchmarking and reporting performance on initiatives.
- Working collaboratively with ecoNAIT – NAIT’s multi-stakeholder committee committed to transform NAIT into a showcase of environmental performance.
- Leading the promotion of energy efficiency, sustainability and environmental awareness.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Investigate Environmental Best Practices and facilitate implementation	Ongoing	Sustainability Officer
Create Sustainability Strategy <i>2009 Update:</i> Completed and will be updated yearly	September 2009	Sustainability Officer
Implement Computer Shut Off Program <i>2009 Update:</i> Complete. Implemented on	October 2009	Sustainability Officer

Social Equity

lab computers. Still working on development of a program for staff computers.		
Develop Sustainability Website <i>2009 Update:</i> Complete.	September 2009 - 2010	Sustainability Officer
Expand Recycling Program <i>2009 Update:</i> New bins were decided on and the project was split into 5 phases, planned over 5 years. Phase 1 & 2 are implemented!	September 2009 - 2013	Sustainability Officer/Custodial/Food Services

**Wellness Wednesday**

Wellness Wednesday is a weekly article run in NAITline designed to provide awareness and options for living a healthy life. Topics are selected based on the dimensions of wellness.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Increase readership by 10% <i>2009 Update:</i> Readership went up by 45%!!	May 2009	Active Living Program Coordinator
Increase readership by 5% above the 2009 numbers.	June 2010	Active Living Program Coordinator
Highlight staff success with wellness in their own life, monthly <i>2009 Update:</i> Achieved – have changed the focus of Wellness Wednesday in NAITline so each month one feature is dedicated to staff success. This will continue for 2009/10.	September 2009 – 2011	Active Living Program Coordinator
Challenge staff to initiate wellness initiatives in their space of work. <i>2009 Update:</i> Have worked with Kingsway Professional Building staff, School of Health Sciences Admin Support staff and Distribution Centre staff to create wellness teams and plan events. Events	September 2013 and onwards	Active Living Program Coordinator

Social Equity

<p>like Walk Day, Waffle Day, Soccer Baseball Challenge, Sport Central donation week, etc. have been executed. Work with each team is ongoing. Additional teams will be added for 2009/10.</p>		
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**Future Initiatives**

Corporate Social Responsibility Report

Corporate Social Responsibility (CSR) is a way of doing business based on the triple bottom line (economic + environmental + social). An investigation is underway to determine how to incorporate CSR into NAIT’s business planning and processes.

Sustainability Website

The sustainability website will be used to highlight sustainability at NAIT. There will be a project area which will contain information on past and current projects, as well as proposed future projects. There will also be a discussion forum, a copy of the Sustainability Strategy and links to all relating policies, procedures and guidelines as well as both the ecoNAIT and Respect NAITure pages. *2009 Update - Complete*

Subsidized Employee Bus Passes

The City of Edmonton offers a commuter bus pass savings program which will save employees at least 24% off their monthly bus pass, 12% which is discounted and 12% which is paid for by the employer. This program may help to alleviate some of the parking issues at NAIT.

Compressed Work Weeks

A four day work week is becoming increasingly popular due to the energy savings that result. Energy savings are not the only benefit. Studies show that there is increased employee retention due to a better work-life balance, decreased amount of sick leave taken and more people applying for positions. Students will also benefit from having a 4 day school week as this will alleviate some of the stresses that school brings. Students who have part time jobs can work more hours on their extended weekend in order to pay for school. The 4 day schedule will also give students more time to wind down after a stressful week which can lead to better student retention.

Procedure and Guideline Development

New procedures and guidelines will be developed to support the sustainability policy. Some of the proposed topics include: Sustainable Landscaping, Waste Disposal, Recycling and Composting, Water Conservation, Energy Conservation, Green Cleaning and Transportation.

***2009 Update – Sustainable Landscaping & Green Cleaning procedures and guidelines are complete!***

## **Ecological Integrity**

Respecting and limiting our impact on our natural world and its processes.

### ***Asbestos Management***

NAIT has developed a comprehensive asbestos management plan and follows an annual asbestos removal program through the government-funded Infrastructure Maintenance Plan.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Continue to remove asbestos on a priority basis.	Ongoing	Capital Projects

### ***Biodegradable cutlery/plates***

To reduce NAIT's environmental impact Food Services introduced biodegradable packaging. In addition to being constructed from renewable energy sources such as corn or bamboo, the environmental foot print to produce this material is much smaller. Green house emissions are reduced by 70-80%, carbon emissions by 60-70% and the process does not rely on water as part of the production process. The packaging materials will biodegrade in a composting facility within 90 days.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Introduce catering trays constructed from pre consumer recycled paper <b>2009 Update:</b> Implemented.	October 2008	Food Services – Procurement Coordinator
Utilize biodegradable or degradable replacement for the Styrofoam bowls and cups <b>2009 Update:</b> Styrofoam coffee cups were replaces in September 2009 at all sites. Soup bowls will be switched to paper by mid October 2009.	September 2010	Food Services - Procurement Coordinator
*New 2009* Eliminate disposable cups.	September 2014	Food Services - Procurement Coordinator

*New 2009* Remove cutlery, napkins and plastic cups from the server area. <b>2009 Update:</b> Complete	September 2009	Food Services - Procurement Coordinator
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**Other Updates**

- Initiated a program to sell affordable quality travel mugs.

**Bottle Recycling**

Target	Timeline	Lead
Increase bottle capture rate by 10% <b>2009 Update:</b> Secured recycling centres are in place in high traffic areas. Milk containers are also included as of June 2009. *Program transferred to Custodial Services	July 2010	Food Services  Custodial Services as of July 1, 2009.

**Composting**

Food Services is providing raw food waste to the Biology Department to assist in their composting project. Working towards finding alternative energy sources who can use organic waste (i.e. pig farmers)

Target	Timeline	Lead
*New 2009* Provide raw food waste to Biology Department to assist in their composting project.	Ongoing	Food Services
*New 2009* Research alternative sources who can use NAIT's organic waste (i.e. pig farmers etc.)	December 2009	Food Services

### ***Elimination of Single Use Condiments***

In 2008 Food Services began eliminating the use of single service condiment packaging moving to bulk dispensers. Year to date the following single service condiments from the Common Market have been eliminated:

- Ketchup packages-8,000 weekly
- Mustard-800 weekly
- Sugar packages-10,000-12,000 weekly
- Creamers-3800 weekly
- Portioned Sauces (syrup, dipping sauces etc)- 1500 weekly

Some of NAIT's satellite sites will not be able to switch all condiments due to food safety guidelines. Our goal is to have all sites using bulk dispensers where ever possible by the end of the next school year.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Eliminate (where food safety standards allow) all single service condiment use. <b>2009 Update:</b> 85% of single service packaging has been removed from service.	July 2009	Food Services – Procurement Coordinator

### ***FSC Certified Paper***

The Forest Stewardship Council (FSC) is an international organization that regulates the production of wood products (i.e.: paper) by regulating everything from logging companies to the printers using the paper.

FSC certification can be used on any printed material that is being produced by an FSC certified printer. NAIT currently uses external FSC certified printers for the following publications:

- Large run brochures
- Information guides
- Student awards handbooks
- CSR
- CTC Calendar
- Preview book
- Techlife Magazine
- Donor Report
- Viewbook

## Ecological Integrity

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Continue to use FSC certified paper for externally printed sheetfed projects	ongoing	Corporate Communications
Continue to use FSC certified paper for all externally printed full colour web projects.	ongoing	Corporate Communications

***Fuel Cell***

The fuel cell course in Power Engineering Technology provides training in fuel cells to the Power Engineering Technology students. Second year power engineering diploma students are now learning about the fundamentals of the fuel cells and are receiving hands-on experience in polymer exchange membrane (PEM) fuel cells.

The Alberta Association of Colleges and Technical Institutes (AACTI) is funding a project to develop electrolytes for solid oxide fuel cells.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Continue to incorporate fuel cell curriculum in Power Engineering Technology	Ongoing	Power Engineering

***Green Cleaning***

In March 2007 Custodial Services switched to a green line of cleaning products which includes: glass cleaner, degreaser, neutral detergent, strippers, finishes and deodorants and carpet cleaners.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Investigate new green chemicals as they become available	Ongoing	Custodial Services

## Ecological Integrity

Increase green cleaners to include graffiti remover, metal cleaners, neutralizers, bowl cleaners and grout cleaners. <i>2009 Update:</i> No update given	December 2008	Custodial Services
Change all cleaning chemicals to green certified products.	September 2013 and onwards	Custodial Services

***Low Foaming Hand Soaps***

Custodial Services is changing soap dispensers throughout the Institute to low foaming, scent free soaps.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Replace broken dispensers with low foaming soap dispensers	Ongoing	Custodial Services
Replace all dispensers within the Institute <i>2009 Update:</i> No update given	September 2009 – 2011	Custodial Services

***Oxy-Biodegradable Bags***

The bookstore replaced conventional plastic bags with oxo-biodegradable bags made with an additive called TDPA (Totally Degradable Plastics Additives) which is marketed by EPI Environmental Technologies. This additive enables the bag to completely biodegrade into oxygen, water and biomass.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Investigate options to reduce the use of plastic bags on campus.	Ongoing	Bookstore

### ***Paper & Cardboard Recycling***

NAIT recycles about 100,000 kg of newsprint, cardboard and office paper per year collected from office banks, cafeterias and computer labs. New recycling stations are being purchased and will be placed around NAIT to increase the amount of paper that is captured.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Increase collections from hallways with new recycle stations. <b>2009 Update:</b> Phase 1 & 2 of new recycling bins are out. Paper and newsprint are included in recycling centres.	September 2008	Custodial Services
Increase amounts of paper collected by 10%.	September 2009 – 2011	Custodial Services
Add additional compactors at main campus to collect cardboard and office paper	September 2009 – 2011	Custodial Services
Establish recycle site (compactors) throughout the NAIT campuses.	September 2013 and onwards	Custodial Services
Increase amount of paper collected by an additional 10% while maximizing revenues from paper sales.	September 2013 and onwards	Custodial Services

### ***Pool Water Recycling***

In 2006 and 2007 NAIT partnered with the City of Edmonton to reuse the water that was drained from the pool. The water was de-chlorinated and then used for street cleaning as well as tree watering. The pool holds 1.3 million liters of water and approximately 400,000 L have been reused because of this project.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Continue to partner with the City of Edmonton to recycle water for use on city property.	Ongoing – when pool is emptied	Recreation Facilities Supervisor

***Recycling Centres***

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
*New 2009* Recycling centers have been placed in high traffic areas. Units collect newsprint, office paper, bottles, cans and milk containers. The 1 <sup>st</sup> and 2 <sup>nd</sup> phase of a five year plan have been completed.	July 2009 – July 2013	Food Services – Procurement Coordinator

***Recycling Cooking Oil***

Used cooking oil is collected in storage bins and picked up by a processing plant to convert the oil into an alternative fuel source.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Continue to recycle cooking oil	Ongoing	Food Services

**Future Initiatives**

Blue Bin Recycling Program

The Blue Bin recycling program offered through the City of Edmonton will help NAIT decrease the amount of material sent to the landfill. This program will work especially well for Food Services and Culinary Arts allowing them to recycle plastic, metal, paper, and glass containers that are currently disposed of in the regular garbage.

Composting

Implementing a composting program would significantly decrease the amount of waste generated at NAIT. Composting could be implemented in all NAIT kitchens, staff lunch rooms and cafeterias. The City of Edmonton is willing to trial a composting program with NAIT. **2009 Update:** A group of BTech capstone students are working a composting project proposal for NAIT which will provide a recommendation for the future of composting at NAIT.

Ecological Integrity

Bag-less Campus

NAIT will make the shift to using no disposable bags by 2012. In the beginning years of this program NAIT will inform all students, at the start of the school year, that there are no bags given out with any purchases on campus and provide students with a re-usable bag to use instead. After the initial phase NAIT can stop providing re-usable bags to students and instead keep them for sale at the bookstore and tech store.

Tray-less Campus

Eliminating trays used to carry food from the purchase areas to seating areas will save NAIT money. There will be less water and electricity consumption as there will no longer be a need to clean the trays and NAIT will not need to purchase trays that get misplaced which will result in savings.

\*2009 Update – After further investigation we have decided not to pursue this initiative.

Green NAIT events

Making NAIT events more environmentally friendly will help to showcase the Institute's commitment to sustainability.

Alternative Energy sources

Alternative energy sources, such as bio-diesel, wind and solar energy will all be investigated further to determine whether they are good options for NAIT.

Fluorescent light recycling

The fluorescent light bulbs that NAIT uses contain mercury and as such need to be disposed of in an environmentally friendly manor. There are eco-stations in Edmonton that will recycle the bulbs so that the mercury does not leach into the soil.

## **Economic Viability**

Optimize our infrastructure while enhancing our capital asset base and maintaining economic viability.

### ***Central Plant Upgrade***

NAIT's central power plant is in the process of being upgraded with the major focus on replacing the 3000 ton steam absorption central cooling plant along with efficiency improvements to the existing 90,000 lb/hr steam boiler heating plant. During the summer, the absorption chillers are the primary load on the heating system, causing the heating system to run year round. These absorption chillers have a low coefficient of performance (COP) and are extremely inefficient by current standards.

All existing steam chillers will be demolished and replaced with electric high efficiency units in the Power Plant (Building D) along with upgraded chilled water piping and new control systems. The existing cooling tower on Building G will be upgraded and re-used on the roof of the Power Plant. The upgrade of the campus heating system will increase system reliability, efficiency and reduce operating costs. In addition, NAIT is focusing on a sustainable approach to the design that is environmentally and economically viable.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Preliminary design and budgeting for central power plant upgrade, evaluate options approve concept for design development.	Current	Energy Management
Develop construction documents, update budget, pre-tender chillers and tender installation.	March 2009 – September 2009	Energy Management
Construction of cooling plant and heating plant upgrades. Commissioning of all systems for central power plant. <b>2009 Update:</b> Heating plant component has been completed. Cooling plant construction is scheduled to begin at the end of November 2009.	September 2009 – 2010	Energy Management

### ***Other Updates***

- The boiler controls have been upgraded in conjunction with variable speed forced draft fans which will increase boiler efficiency.
- Tunnel chilled water piping with extension to U building is 90% completed.

### ***Computer Shut off Program***

In consultation with Daryl Allenby from ISD, Conrad Nobert and Matt Saunders have been working on a computer shut off program that will put computers into hibernate mode after 20 minutes of inactivity. Having the computers turn off after a certain amount of inactivity is going to save the institute money. Implementing this program on the 4000 lab computers could save NAIT up to \$400/day (based on turning the computer off for 12 more hours a day), or \$146,000/year. Purchasing commercial software instead of writing it in-house would cost approximately \$100, 000 for the 4000 lab computers.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Roll out monitoring program to all labs (except CST and SEET) <i>2009 Update:</i> Complete.	Sept 8 – Oct 4, 2008	ISD/Sustainability Officer
Monitor all lab computer activity <i>2009 Update:</i> Complete.	Oct 6 – Oct 24, 2008	ISD/Sustainability Officer/econoNAIT
Roll out power settings to all lab computers. <i>2009 Update:</i> Complete.	Oct 27 – Nov 21, 2008	ISD/Sustainability Officer
Roll out monitoring program to CST and SEET labs. <i>2009 Update:</i> Complete.	Nov 22, 2008 – Dec 22, 2008	ISD/Sustainability Officer

### ***CRT/LCD Monitors – Energy Efficient***

Replacing existing CRT computer monitors with efficient LCD equivalents will result in a significant reduction in the consumption of electrical energy resulting in a reduction of operational costs and a smaller environmental footprint.

The effort of replacement will take several years of computing capital renewal to replace all examples of CRT displays with LCDs. ISD and TMT began in FY05 and are expect to complete replacement by FY10.

CRTs will be replaced in computer labs, on administrative/instructional desktops and in special purpose computing deployments.

Completion of this will lead to an annual saving of 1,960,400 kWh of electricity and avoidance of 1,179,769 kg of CO<sub>2</sub>.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Replace 4,600 CRTs	End of fiscal year 2009	ISD and TMT jointly
Replace 5,520 CRTs	End of fiscal year 2010	ISD and TMT jointly

***Energy Star Equipment***

Reduce energy usage by purchasing Energy Star equipment and using preventative maintenance programs to keep equipment operating at peak efficiencies.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Purchase Energy Star equipment and use preventative maintenance programs to keep equipment operating at peak efficiencies.	On going	Food Services

***Lighting Retrofits***

Lighting retrofits utilize current high efficiency lighting technology to deliver light to work areas with significantly less energy than conventional fluorescent lamps and ballasts. The modern T8 light fixtures with polished aluminum reflectors significantly reduce the electrical demand load for lighting resulting in lower energy consumption, operating costs and CO<sub>2</sub> emissions. Other benefits beyond reducing electrical consumption are improved lighting quality, colour rendering, visual comfort, and more uniform illumination values. Lighting control systems such as occupancy and/or photocell sensors are incorporated in retrofits when applicable. One of the key objectives of the lighting retrofit is to maintain or increase lighting values while maintaining or improving the comfort level of the building occupants. This supports Energy Management’s goal to reduce energy costs and minimize NAIT’s carbon footprint without sacrificing building comfort and performance. Energy Management also participates in the design process for new buildings and major renovations to ensure the facilities incorporate energy efficient lighting systems that meet LEED Silver standards.

Target	Timeline	Lead
<p>Participate in the design process for new buildings and major renovations to incorporate energy efficient lighting systems that meet LEED Silver standards. Upgrade existing lighting systems to new technology (T8/T5 lamps) with electronic ballasts where feasible.</p> <p><b>2009 Update:</b> Detailed room-by-room lighting system audits were performed on the Activities Center and V-Building to evaluate the existing lighting and the potential for an energy saving retrofit/upgrade.</p>	current	Energy Management
<p>Review existing lighting systems on main campus and identify areas with the highest potential for a lighting retrofit. Review the use of occupancy sensor and/or photocell controls on existing systems. Implement lighting retrofits as funding permits.</p> <p><b>2009 Update:</b> The pool, racquet courts and Link lighting systems in S-Building will be upgraded this year to provide better quality lighting and increase energy efficiency. The library in U-Building will be audited to investigate the feasibility for a lighting upgrade.</p>	September 2009 – 2011	Energy Management
<p>Upgrade all of existing lighting systems on main campus to new technology with high efficiency electronic ballast and T8/T5 lamps.</p> <p><b>2009 Update:</b> A-wing corridors has been upgraded to T-8</p>	September 2013 and onwards	Energy Management

#### *Other Updates*

- P143 Sheet Metal Shop lighting in Patricia campus has been upgraded to energy efficient T5HO high bay fixtures with increased the light levels to meet the space requirements.

### ***Optimizing Building System Automation***

Optimization is an on-going process to incorporate demand based automated control of all campus building systems to maintain a balance of occupant comfort and energy efficiency. System control strategies are implemented based on ASHRAE thermal comfort guidelines and minimize energy use with demand based strategies for temperature reset schedules for heating, ventilation and cooling systems based on time of day and outdoor air temperature. Intelligent multi-platform systems are integrated to enable real-time process control to improve building performance and provide systems monitoring and alarming. Energy efficiency is improved by the integration of HVAC and lighting systems through common occupancy sensor controls for space HVAC equipment and lighting systems. Integrating energy/utility metering into the Building Automation System will be used to monitor NAIT's energy efficiency by creating baselines, tracking real-time building performance and determine individual building intensity factors. Energy Management also participates in the design process for new buildings and major renovations to ensure the facilities incorporate energy efficient systems that meet LEED Silver standards.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Incorporate demand based control of all building systems in new buildings and major renovations that meet LEED Silver standards. Evaluate systems from preliminary design through to installation in conjunction with commissioning process to ensure energy efficient building design and verify system performance.	Current	Energy Management
Integrate existing BAS systems on main campus buildings with the base platform METASYS Building Automation System. Integrate HVAC and lighting systems with common occupancy sensor control for space HVAC equipment and lighting systems where feasible. <b>2009 Update:</b> The existing Honeywell building control system that serves the majority of main campus has been integrated with the Metasys base platform.	September 2009 – 2011	Energy Management
Upgrade existing buildings on main campus with obsolete building automation systems to modern BAS standards.	September 2013 and onwards	Energy Management

Integrate energy/utility metering into BAS to create baselines, track performance and determine individual building intensity factors.		
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***Other Updates***

- The HVAC systems and lighting controls in the NCAT Building / HP Centre have been integrated to enable control of both systems by the room occupancy sensors.

***Preventive Maintenance***

Preventative maintenance is done to prevent the failure of equipment before it actually occurs. It is designed to preserve and enhance equipment reliability by replacing worn components before they actually fail. Preventive maintenance activities include equipment checks, partial or complete overhauls at specified periods, oil changes, lubrication and so on. In addition, workers can record equipment deterioration so they know to replace or repair worn parts before they cause system failure. The ideal preventive maintenance program would prevent all equipment failure before it occurs.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Continue Current-Continuous Preventive Maintenance Program	Ongoing	Facilities Operations and Maintenance

***Productive Donor Relationships***

NAIT’s Stewardship Program is a systematic approach to building and maintaining relationships with our donors. The program is designed to respond to donor interests and needs. It supports NAIT’s long-term fundraising strategies by enhancing our ability to attract new donors and turn current donors into repeat donors.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Recognize all donors in a fair, sincere, consistent and timely manner	Within 5 days	Stewardship team
Create a connection between the donor and students, whenever possible	Ongoing	Stewardship Team

Economic Viability

Account to donors by fulfilling all commitments and communicating information about impacts and outcomes.	Ongoing	Stewardship Team Development Officers
Implement systems and practices to ensure NAIT's future relationship with donors, independent of the individual staff members that manage these systems.	Ongoing	Stewardship Team
Develop the program and deliver in ways that support personalized connections and relationships	Ongoing	Stewardship Team Development Officers
Consider the return on investment when making decisions related to the development and delivery of the stewardship program.	Ongoing	Stewardship Team Development Officers

***Server Virtualization***

Replacing existing physical servers with efficient and flexible virtual equivalents will result in a significant reduction in the consumption of electrical energy resulting in a reduction of operational costs and a smaller environmental footprint.

The effort of replacement will take several years of computing capital renewal to replace all appropriate physical servers with virtual machines. Some physical servers currently deployed will remain physical due to out of scope requirements beyond the scope of this document. Replacement will begin in FY08 and are expected to be completed by FY12.

Completion of this will lead to an annual saving of 316,333.44 kWh of electricity and avoidance of 190,369.46 kg of CO<sub>2</sub>.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Replace 29 physical servers	End of fiscal year 2008	ISD and TMT jointly
Replace 58 physical servers	End of fiscal year 2009	ISD and TMT jointly
Replace 87 physical servers	End of fiscal year 2010	ISD and TMT jointly
Replace 116 physical servers	End of fiscal year 2011	ISD and TMT jointly
Replace 145 physical servers	End of fiscal year 2012	ISD and TMT jointly

### ***Sustainable Building Design***

NAIT strives to incorporate sustainable design and construction practices in new buildings by working with the design consultants and construction team. Although NAIT has not pursued formal certification in the past, the proposed NAIT Centre for Applied Technologies is scheduled to pursue LEED® Silver Certification.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Design and construct new facilities using sustainable building practices where feasible and attain LEED ©Silver Certification for the proposed NAIT Centre for Applied Technologies.	Ongoing	Capital Projects

### ***Upgrading Building Envelope Systems***

NAIT strives to upgrade building envelope systems including exterior doors , exterior windows and glazing systems, roof membranes, and structural components through the government-funded Infrastructure Maintenance Plan.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Continue to upgrade building envelope systems on a priority basis	Ongoing	Capital Projects & Facilities Operations

### ***Waste Reduction Plan***

Custodial Services has begun a dialogue with the company which we sell our recycled paper to be the first company in Edmonton to recycle (and sell) our plastics to them. We are discussing ways to economically collect and deliver the products to them in the most efficient and environmentally friendly way (compactors).

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Continue to sell paper recycling	Ongoing	Custodial Services
Add plastic recycling compactors to various sites throughout the campus	September 2009 – 2011	Custodial Services

Economic Viability

Eliminate most plastics from the waste stream.	September 2013 and onwards	Custodial Services
Continue to seek new cost effective ways to reclaim and recycle waste from the waste stream.	September 2013 and onwards	Custodial Services

***Water Conservation***

NAIT’s objective is to maximize water efficiency within all campus buildings to reduce consumption and the burden on municipal water supply and wastewater systems. Energy Management participates in the design process for new buildings and major renovations to ensure the facilities maximize water efficiency and investigate the feasibility of grey water systems to meet LEED Silver standards. Water consumption is monitored to track usage and investigate facilities with abnormally high water consumption. The new NCAT facility significantly reduced the consumption of domestic water by using re-circulated chilled water for the Instrumentation Program instead of domestic cold water wasted to drain when the Program was located in J-Wing.

Low-flow toilets, urinals, showerheads and faucets are utilized in new construction and major renovations. A program is in place to retrofit overhead flush tanks serving gang urinals with infrared occupancy sensor controls to limit flushing only when used. Presently, automated control of irrigation systems with mechanical timers allow them to operate regardless of weather conditions. The irrigation systems will be upgraded with digital automated controls to disable operation during wet weather conditions.

<b>Target</b>	<b>Timeline</b>	<b>Lead</b>
Participate in the design process to ensure new facilities maximize water efficiency to meet LEED Silver standards. Incorporate low-flow toilets, urinals and investigate the feasibility of grey water systems in new construction and major renovations. Monitor water consumption in all facilities	current	Energy Management
Retrofit overhead flush tanks serving gang urinals with infrared occupancy sensor controls to limit flushing only when in use.	September 2009 – 2011	Energy Management
Upgrade the automated controls for NAIT’s irrigation systems to disable operation during wet weather conditions.	September 2013 and onwards	Energy Management

***Other Updates***

- Excessive water consumption for the NCAT Building / HP Centre was detected and the cause identified as faulty operation of NCAT's steam process boiler. The faulty equipment on the boiler was repaired which reduced the facilities monthly water consumption by 40%.
- Extensive tracking of the water consumption for the main campus is ongoing to monitor expenditures and identify opportunities to reduce costs.

**Future Initiatives**

New construction built to LEED ©Silver

NAIT will pursue LEED ©certification when constructing new facilities.

Sustainability Revolving Fund

A portion of money saved from implementing sustainability initiatives will be placed into the sustainability fund. The dollars will then be used to support other sustainability initiatives requiring funding.

**Current Sustainability Projects at NAIT**

<b>SOCIAL</b>	<b>ECOLOGICAL</b>	<b>ECONOMIC</b>
<ul style="list-style-type: none"> <li>▪ Affiliation with other environmental groups</li> <li>▪ Bike Racks</li> <li>▪ Capstone Research Projects</li> <li>▪ COOP - Applied &amp; Experiential Learning</li> <li>▪ Corporate Challenge</li> <li>▪ Donating surplus food to charities.</li> <li>▪ ecoNAIT</li> <li>▪ Ergonomic Assessments</li> <li>▪ Fair Trade practices</li> <li>▪ Feel Great @ NAIT</li> <li>▪ Fitness Centre</li> <li>▪ Fitness Classes</li> <li>▪ Food Services is 70% trans fat free</li> <li>▪ Green chemistry practices</li> <li>▪ Improve Transit Access to NAIT</li> <li>▪ Inservice</li> <li>▪ Internal communication methods</li> <li>▪ Member of Edmonton Waste Management Centre of Excellence</li> <li>▪ Organic Coffee</li> <li>▪ Ride Share Initiative</li> <li>▪ Safe Walk program</li> <li>▪ Sustainability Officer</li> <li>▪ Wellness Wednesday</li> </ul>	<ul style="list-style-type: none"> <li>▪ Asbestos Management</li> <li>▪ Biodegradable cutlery/plates</li> <li>▪ Bottle Recycling</li> <li>▪ Elimination of single use condiments</li> <li>▪ FSC certified paper</li> <li>▪ Fuel Cell research</li> <li>▪ Green Cleaning</li> <li>▪ Low-foaming hand soaps</li> <li>▪ Oxy-Biodegradable bags at bookstore</li> <li>▪ Paper &amp; Cardboard Recycling</li> <li>▪ Pool water recycling</li> <li>▪ Recycling cooking oil</li> </ul>	<ul style="list-style-type: none"> <li>▪ Central Plant Upgrade</li> <li>▪ Computer Shut-off program</li> <li>▪ CRT/LCD Monitors</li> <li>▪ Lighting retrofits</li> <li>▪ Optimizing building automation systems</li> <li>▪ Preventative maintenance</li> <li>▪ Productive donor relationships</li> <li>▪ Server Virtualization</li> <li>▪ Sustainable Building Design</li> <li>▪ Upgrading building envelope system</li> <li>▪ Waste Reduction Plan</li> <li>▪ Water Conservation</li> </ul>

## **Sustainability Task Force Committee Terms of Reference**

### **Rationale**

The Sustainability Task Force Committee is being established to facilitate the development of NAIT's 2009-2014 Sustainability Strategy. This document will provide the framework for NAIT's sustainability goals and initiatives over the next five years.

### **Expected Outcomes**

- Production of the 2009-2014 Sustainability Strategy as validated by key stakeholders
- A process to review and evaluate sustainable initiative proposals

### **Parameters & Process**

- The committee will meet monthly until the 2009-2014 Sustainability Strategy is completed and then will meet as required at a minimum of four times annually to provide an update on goals and revise the document as required.
- Recommendations for initiatives will be based on analysis which considers impact on people, resources, agreements, legislation and NAIT 20/21.
- Once complete, the 2009-2014 Sustainability Strategy will be presented to Presidents Council and Executive Committee for review and approval.

### **Membership**

- Sustainability Officer (Chair)
- One representative from:
  - Energy Management Team
  - ecoNAIT
  - Custodial Services
  - Food Services
  - Health and Safety
  - NAITSA
  - AUPE Local 38
  - NASA
  - Presidents Council
  - Campus Sport and Wellness
  - Student Life
  - Capital Projects
  - Materials Management
  - Facility Operations
  - Communications

## **NAIT Sustainability Task Force**

### **Vision**

A NAIT community engaged in all things sustainable.

### **Mission**

Sustainable Initiatives throughout NAIT

### **Guiding Principles**

A balance of three principles drives sustainability practices:

**Social** – Engaging our staff, students and community in improving health and safety while becoming a leader in sustainability.

**Economic** – Optimize our infrastructure while enhancing our capital asset base and maintaining economic viability.

**Ecological** – Respecting and limiting our impact on our natural world and its processes.

### **Key Directions**

Conserve resources  
Foster a Sustainable Culture  
Align with NAIT 20/21

### CRT/LCD Monitor Replacement Calculations

CRTs are being replaced because they are more efficient, more ergonomic and are replacing CRTs industry wide. The U.S. Department of energy estimates that LCDs are on average three times as efficient as similar sized CRTs. Further, that the average CRT needs 150 watts of power with the equivalent LCD needing just 50 watts. According to the same source, an average CRT in power saving “sleep” mode uses 30 watts while the LCD uses only 3 watts.

To estimate the savings potential of this project the following simple equation will be used. We assume that there are 6.5 hours in the day the unit is on and 250 working days in the year.

$$\begin{aligned} \text{Saving per LCD in watt hours} &= \left( ( (\text{hours on per day} \times \text{savings in } W) \right. \\ &\quad \left. + (\text{hours sleeping per day} \times \text{savings in } W) \right) \times \text{workingdays in a year} \\ &\quad + \left( (\text{hours sleeping per day} \times \text{savings in } W) \right. \\ &\quad \left. \times \text{nonworking days in a year} \right) \end{aligned}$$

$$\text{Saving per LCD in } Wh = \left( ( (6.5 \times 100) + (17.5 \times 27) \right) \times 250 + \left( (24 \times 27) \times 115 \right)$$

$$\text{Saving per LCD in } Wh = 280625 + 74520 = 355145$$

We now convert this to a more useable form in kilowatt hours (kWh) and find that each CRT replaced will save 355.145 kWh over a year’s operation. The U.S. Environmental Protection Agency (EPA) estimates that there is a cost in CO<sub>2</sub> of .6018 kg for every kWh (on average based on all forms of generation). Edmonton’s power is likely more costly, but we will use this figure as a conservative estimate.

In FY05 NAIT site licensed software for 5500 machines when needing to cover all our desktops so we will assume there are this many CRTs to be replaced. We will ignore the growth in the total number of computers deployed at the institute because we will assume that these will all be deployed with LCD panels and therefore not represent a savings.

Through the efforts of ISD, TMT and the incidental replacement of units over the six years from FY05 to FY10 all 5500 CRTs will be replaced saving NAIT the following per year at conclusion: 1,960,400 kWh of electricity consumption and thereby avoid the introduction of 1,179,769 kg of CO<sub>2</sub> to the environment.

## Server Virtualization

Physical servers are being replaced by virtual ones because they are more efficient, more strategic and capable of satisfying enterprise computing needs. The U.S. Department of energy estimates that a low-end server may consume 300 watts on average. Further, that an average of 20 of these low-end servers can be collocated on a single high performance virtualization server consuming an average of 1000 watts. The virtual server therefore uses only 50 watts of power and is six times as efficient. In the case of servers we also have to consider the heat they generate and the electrical cost required to cool them. The physical law of the conservation of energy tells us that each kilowatt hour consumed will generate 3412 British Thermal Units (BTU) of heat. Modern air conditioners like ones NAIT uses require approximately .33 watts to compensate for each BTU. The relationship therefore between energy used and heat produces is linear.

To estimate the savings potential of this project the following simple equation will be used. We assume that servers run 24 hours a day, 365 days a year.

$$\begin{aligned} & \text{Saving per VM in watt hours} \\ &= (\text{watts saved} \times \text{hours of operation} \times \text{days of operation}) \\ &+ \frac{(\text{watts saved} \times \text{hours of operation} \times \text{days of operation} \times \text{thermal conversion} \times \text{cost of cooling})}{1000} \end{aligned}$$

$$\text{Saving per VM in watt hours} = (250 \times 24 \times 365) + \left( \frac{250 \times 24 \times 365 \times 3142 \times .33}{1000} \right)$$

$$\text{Saving per VM in watt hours} = (2190000) + (6755.76) = 2196755.76$$

We now convert this to a more useable form in kilowatt hours (kWh) and find the each physical server replaced will save 2,196.76 kWh over a year's operation. The U.S. Environmental Protection Agency (EPA) estimates that there is a cost in CO<sub>2</sub> of .6018 kg for every kWh (on average based on all forms of generation). Edmonton's power is likely more costly, but we will use this figure as a conservative estimate.

In FY08 the number of physical servers considered candidates for virtualization sat at 144. This number is derived from the physical count of servers (180) less 20% for those that must remain physical. We will ignore the growth in the total number of servers deployed at the institute because we will assume that these will be deployed as virtual servers and therefore not represent a savings.

Through the efforts of ISD, TMT and the incidental replacement of units over the five years from FY08 to FY12 all 144 physical servers will be replaced saving NAIT the following per year at conclusion: 316,333.44 kWh of electricity consumption and thereby avoid the introduction of 190,369.46 kg of CO<sub>2</sub> to the environment.