



American University of Sharjah

Case Study for Corporate Heroes of the U.A.E.

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Summary

The American University of Sharjah (AUS) has achieved a twelve percent (12%) reduction of energy and thirty nine percent (39%) reduction in water consumption across campus, over a duration of one year. Energy conservation initiatives were focused on the academic areas and initiated in October 2010. Water conservation initiatives began in November 2010 and were focused on two floors in the Main Building and two sports fields, although measures such as the installation of aerators were taken campus wide. Overall, AUS has succeeded in reducing thirteen percent (13%) of CO₂ over twelve months. With a talented team in the Facilities Department and heavy community engagement initiatives, reductions in consumption were seen campus wide, although project implementations were concentrated in certain areas on campus.

This case study has been written encompassing all initiatives and events that have taken place since the inception of the energy conservation mandate until present, thereby showing the continued progress and relating action towards achieving sustainability as a strategic initiative for the university.

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Abbreviations Used

AC	Air-conditioning
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
AUS	American University of Sharjah
AUSWA	AUS Women's Association
BMS	Building Management System
BREEAM	The Building Research Establishment Environmental Assessment Method
CAAD	College of Architecture, Art and Design <i>Buildings 7 and 8 in Appendix 1</i>
CEN	College of Engineering <i>Buildings 3 and 4 in Appendix 1</i>
CIBSE	Chartered Institution of Building Services Engineers
CO ₂	Carbon Dioxide
DX units	Direct Expansion units
FTE	Full Time Employees
kWh	Kilo Watt Hour
LED	Light Emitting Diode
LEED	Leadership in Energy and Environmental Design
MEP	Mechanical Engineering Plumbing
MFP	Multifunction Printers
NAB	New Academic Building <i>Building 13 in Appendix 1</i>

New SBM	New School of Business and Management <i>Building 14 in Appendix 1</i>
OoS	Office of Sustainability
PC	Personal Computer
PLC	Programmable Logic Controllers
RSL	Residential Student Life
SEWA	Sharjah Electricity and Water Authority
SSC	Sustainability Steering Committee
VRF	Variable Refrigerant Flow

1.0. Profile

American University of Sharjah (AUS) is a leading educational institution of higher education in the Gulf region. Established in 1994, it is an independent, not-for-profit, coeducational institution, serving students from the region and around the world. It offers 25 majors and 52 minors at the undergraduate level, and 14 master's degrees programs.

Areas on campus

Across the 1,266,442m² campus, AUS can be categorized into three main areas: academic area, student residential housing (dorms) and faculty/staff housing (also known as housing area). AUS's urban design comes with roads with extensive green landscaping, centered with the domed colleges, schools and support buildings. The AUS community comprises of students, staff, faculty and their families. The community is a melting pot of various cultures and age groups; further, with each area on campus operating in a manner specific to its functionality makes AUS unique.



Figure 1: View of campus from the main gate



Figure 2: Aerial view of campus taken 2007

The academic area comprises of:

- 91,201m² area



Figure 3: Snapshot of academic area

- Ten buildings dedicated to the various colleges and schools
- One student center
- One food court with various restaurants, coffee shops and a mini-mart
- One library
- A mosque
- One administration building, also known as Main Building. The Main Building has various offices, two lecture halls (capacity of 416 people combined), a large auditorium that can seat approximately 930 people and various training rooms
- A sports complex with the following amenities:
 - Three outdoor soccer fields



Figure 4: Soccer field – angle a



Figure 5: Soccer field – angle b

- One outdoor cricket field



Figure 6: Outdoor cricket field

- One outdoor baseball pitch
- Two outdoor basketball courts
- Two outdoor volleyball courts
- Five outdoor tennis courts
- Two indoor multipurpose courts
- Two indoor squash courts
- A gymnasium
- Two gyms with exercise equipment

- One indoor Olympic sized pool



Figure 7: Indoor swimming pool

The housing area comprises of

- 58,113 m2 area



Figure 8: Snapshot of faculty housing

- Four hundred and fifteen (415) housing units ranging from studio, one and two bedroom apartments to two, three and four bedroom villas
- Day care for staff and faculty children
- A Leisure Center having a gym and pools
- A Wellness Center where the Wellness Program conducts fitness classes

Dorms area comprises of

- 84,186 m² area



Figure 9: Snapshot of dorms

- Eight dorms for men
- Four dorms for women
- Over two thousand rooms ranging from private (single occupancy), semi private (shared kitchenette and bathroom) and shared rooms
- Local supermarket
- A welcome center
- Other facilities in each dorm include:
 - Laundry rooms
 - Computer labs
 - Fitness rooms

Appendix 1 contains a map of the campus. More information on AUS can be retrieved from www.aus.edu.

Strategic goal

AUS lists having a sustainability plan as part of its goals for strategic direction in institutional effectiveness.

Resources

AUS has an in-house Facilities Department and Sustainability Department. Campus Development, a department in charge of the architectural related developments, have a certified BREEAM Assessor on their team. There are faculty (PhDs) that are heavily involved in sustainability efforts and dedicate a lot of their research time to sustainability related issues in architecture, construction and environment.

Expansions

AUS is expanding its infrastructure to include a Customer Service Center for various service related departments such as the Operations Director's Office, the Facilities Department, Campus Development and the Office of Sustainability (OoS). The center is currently under construction and is expected to come online during 2012. A youth center is also under construction and will cater to providing recreational facilities to the children of faculty and staff that reside on campus. This facility is scheduled to open in September 2012.

AUS and utility billing

Currently, the campus is metered and billed by the local utility company, the Sharjah Electricity and Water Authority (SEWA). AUS is located in University City, along with several other universities. The overall maintenance for streetlights and irrigation for landscapes on campus is provided by University City, through the local municipality.

AUS records, which were tallied with the records from the municipality, showed that there were 229 consumer numbers listed under AUS up until 31 January. These consumer numbers reflect consumption readings from water and energy meters. A given consumer number can either have water only, energy only or water and energy consumption figures. At AUS, these consumer numbers are categorized in the following manner:

- 91 water only consumer numbers
- 64 energy only consumer numbers
- 72 water and energy consumer numbers

These consumer numbers measure consumption in the three areas (academic, housing, dorms) on campus.

Water sources

Water is fed to AUS from two mains. SEWA supplies AUS with drinking water that is used in taps. Initially for irrigating the landscape, the municipality used a combination of well water and drinking water (to counter balance the saltiness of well water). Water from the two sources were collected in a tank that had two inlet valves each dedicated to one source. However, a reduced pressure of drinking water would lead to a back flow of well water into the drinking water pipe, which was causing corrosion in pipes carrying drinking water. This system has been discontinued; landscaping is being irrigated by well water only, with the exception of two football fields that have been converted to artificial turf.

2.0. Conservation Measures

In 2009, the Chancellor of AUS set a mandate to reduce energy consumption by 30% over a course of three years, in academic areas commencing October 2010. The baseline for this initiative was set to be twelve months starting October 2009. Reduction of energy consumption was in precedence mainly because of the higher cost per unit of energy use when compared to that of water. Nevertheless, consumption conservation pilots for water have been practiced in visible locations to further proliferate the underlying message of resource conservation and the inherent CO₂ reduction.

Standards such as the Chartered Institution of Building Services Engineers (CIBSE), the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) are used for the various conservation and maintenance works performed on campus. The new building for the School of Business and Management, which came online in 2010, was built as per the Leadership in Energy and Environmental Design (LEED) standard. Currently, the Campus Development team shall assess all future buildings and projects at AUS from a sustainability best practice perspective with the assistance of their certified BREEAM Assessor.

AUS has also invested many human as well as monetary resources to promote more environmentally friendly projects like recycling. Twenty (20) indoor three stream recycle bins have been strategically located within buildings in the academic areas. Recycling bins are located in pantries and provided to on campus residents with no additional cost, in order to assist in preliminary recycle waste sorting. AUS has also partnered with Bee'ah in placing tractor bins on campus along with three stream pedestrian recycle bins. All materials collected via the recycling schemes available on campus is processed by Bee'ah.

Scope of conservation

Due to the massive size of the university, conservation measures have had to be channeled into smaller regions. Because of the bigger consumption size, energy conservation measures have been focused upon academic areas. It is worth mentioning that the New School of Business and Management (New SBM) is not included in the scope of reduction because the building was in its initial construction stage at the time of the mandate however, consumption trends of this building are tracked. Although campus wide installation of water aerators has taken place, water conservation pilots have been focused on two floors of the Main Building and on two sport fields. Awareness, education initiatives and community engagement has been practiced campus wide. Further steps of the conservation initiatives have been illustrated in detail in this chapter. The figure on the next page identifies the area of focus of water, energy and awareness (community engagement).



Figure 10: 3D campus map illustrating various scopes of conservation and awareness

Office of Sustainability interaction flow for implementing sustainability project(s)/ endeavors

To performing campus wide initiatives of more focused sustainability projects, resources are pooled in from various departments. The illustration in Figure 11 depicts the various departments that are in frequent collaboration with OoS in the various sustainability related endeavors.

General notes about this chapter

This chapter has been written with the intention to encompass all sustainability related initiatives performed as part of the energy reduction mandate, as well as the water reduction pledge. The projects illustrated herein provide an overall view of the university's sustainability strategy.

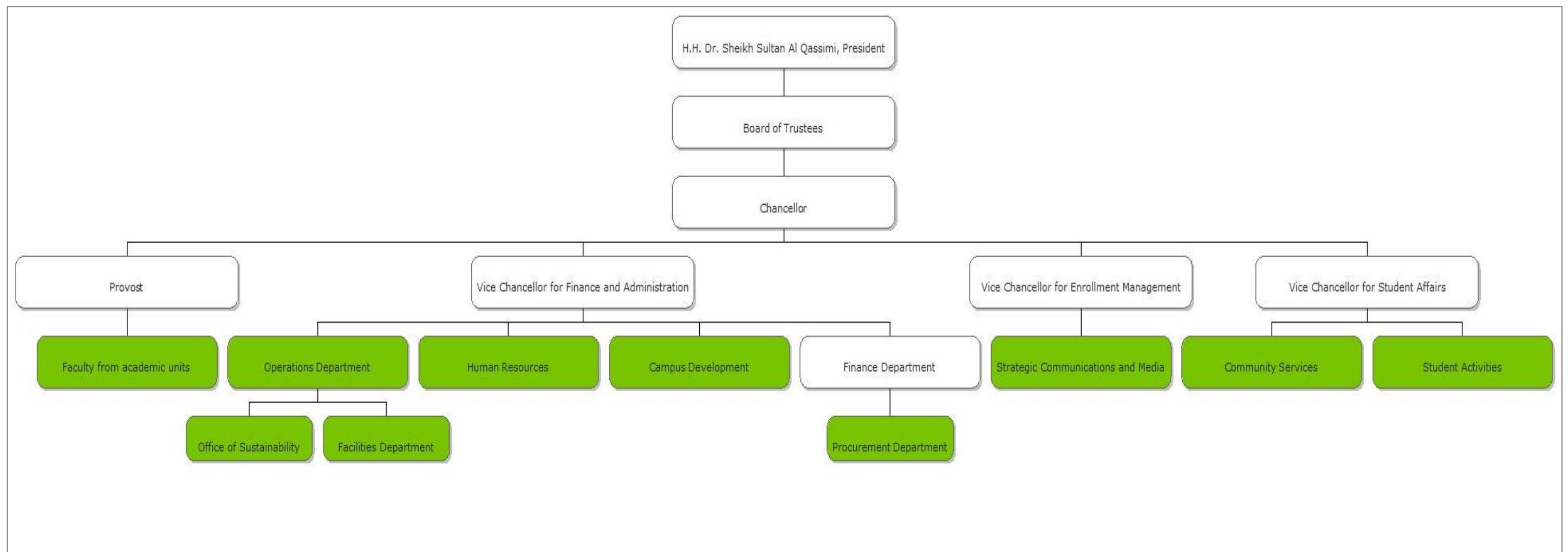


Figure 11: Office of Sustainability interaction flow

OoS deals with various departments across the university. Dealings with these departments are in terms of utilizing resources, or in terms of attaining required approvals. Departments that are frequently dealt with have been highlighted in green, in the figure above. From left to right, the workings with the identified departments are listed below:

- Faculty from academic units: Some faculty are present on the Sustainability Steering Committee (SSC, to be explained later in this case study). OoS is also invited to give presentations/talks to classes.
- Facilities Department: OoS works hand in hand with the engineering team from the Facilities Department in sustainability related (technical) projects.
- Operations Department: OoS deals with the Director of Operations to attain budgetary approval on projects. The Director may take matters to the Vice Chancellor for Finance and Administration. Project proposals with significant monetary value have to be approved by the Board of Trustees. Note: H.H. Dr. Sheikh Sultan Al Qassimi and the Chancellor are members of the Board of Trustees. The Director of Operations is also a member of the SSC.
- Human Resources: All staff orientations have to be done through the Human Resource Department.
- Campus Development: Dealings with Campus Development are project based. While placing any additional recycle bins on campus, Campus Development assists on locating strategic areas. Similarly, they are also in charge of developing the renovation plan and will be working closely on the House of the Future project (to be discussed later in this case study).
- Procurement Department: Purchases for the various initiatives are handled by this department.
- Strategic Communications and Media: Provides graphic designing assistance to all awareness related projects. A representative from this department is a member of the SSC.
- Community Services: Provides OoS with volunteers to help in the various booths and drives organized by OoS. A representative from Community Services is a member of the SSC.
- Student Activities: Re-, the environmental club for students falls under this department. OoS collaborates with them when requested. Re- is also a member of the SSC.

2.1. Energy

Energy conservation measures have been focused in academic areas on campus as this area has the largest energy consumption compared to the other areas. However, some initiatives have been spread across campus, such as air-conditioning (AC) maintenance, due to cost effective benefits. The measures indicated below overviews all initiatives performed from the beginning of the energy reduction mandate to date.

Note: The color gradient of the boxes below fall in line with Heroes of the UAE Guide 2. The increase level of gradients illustrates easy implementation to harder implementation. The sequence of items is not chronological.

2.1.1 Air-conditioning

Summary

The AC system at AUS comprises of:

- Air cooled systems

This is the Chiller Yard that serves the Main Building and the New Academic Building (NAB). The Library and College of Architecture, Art and Design (CAAD) are served by separate air cooled systems.

- Water cool systems

The New SBM building has a water cooled system.

- Direct Expansion (DX) type units

The remaining academic areas, housing and dorms have DX type units.

- Variable Refrigerant Flow (VRF)

A relatively new addition to the overall AC system at AUS, one of the houses on campus as well as a new dorm block have a VRF system in place.

Conservation methods

Reducing AC Need

1. Reduction in the number of active chillers from nine (9) to four (4)

The chiller yard present on campus serves the AC requirements of the Main Building and the New Academic Building (NAB). ACs in the Main Building were working twenty-four hours a day – seven days a week. Furthermore, due to the over cooling of the interiors, condensation droplets were forming on windows. Investigations led to shutting off five (5) of the chillers.

2. Reducing set point

Set point has been adjusted to 23 – 24 degrees Celsius.

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3. Solar Window films placed in Main Building

Windows in academic buildings located in offices and classrooms, have blinds that serve as primary heat protection. In addition, some windows in academic buildings have mashrabiya that are not only architecturally aesthetic but also provide a sense of shade by reducing direct sunlight. In the Main Building, some common areas such as corridors sharing the main façade of the building, the faculty/staff dining room and some offices are not sheltered by mashrabiya neither do these windows have blinds. Such windows were flitted with heat reducing films.

Amount of film used: 194 m²

4. Installing controllers & regulating AC

Controllers installed in the Chiller Yard serving the Main Building and NAB. These controllers allow the shut off of the chillers during the night time following an occupancy schedule. With the help of these controllers, ACs in these buildings are now switched off between 10:00p.m. and 5:00a.m. (next morning). The chillers serving CAAD are also controlled.

Number of controllers placed: 2

Regularly maintaining AC

1. Improved maintenance

AUS outsources its AC maintenance. This company would initially perform reactive maintenance on units. Since 2009, the contract with this company has been revised to include regular preventive maintenance in the academic, dorms as well as housing areas.

Improve efficiency of AC

1. Replacement of condensers for selected DX units

Condensers were visually checked for any damages and discharge pressure ensured to be within required tolerance.

Number of condensers replaced: 54

More conservation measures listed on the following page.

Upgrade your AC system

1. Introducing PLCs on DX units in Academic Buildings – *in progress*

A pilot project involving the placement of two (2) controllers, in the Engineering Buildings, has been completed and has achieved favorable results. The pilot project has followed installation of controllers in the Chemistry Building and Student Center. Currently controllers are being installed in the Engineering Buildings.



Figure 12: PLC on DX units

Number of controllers placed so far: 11 controllers

Other information: 12 controllers being worked on. 12 controllers remaining

2. Upgrade BMS in Main Building

The BMS system of the Main Building has been upgraded to a system that would be compatible with the new controllers installed. With this upgrade, access to monitor the chillers in the Chiller Yard is now possible. BMS upgrades for other academic buildings will fall in line with the renovation plan of the campus. With this BMS in place, AC shut down during unoccupied times is possible. More information of AC shut down is under point four (4) in Reducing AC need.



Figure 13: BMS screen shot

2.1.2 Lighting

Summary

Offices, class rooms and pantries are fitted with linear fluorescent tubes. Toilets have a mixture of linear fluorescent bulbs and compact fluorescent lamps (CFLs). Corridors are now fitted with CFLs. The corridors linking to the entrances of the Main Building are fitted with decorative low voltage halogens. Induction lamps are used to light the various domes on the academic buildings. The outside corridors, between buildings, have special outdoor CFLs recessed on the floor to provide illumination at night. Other light fixtures present are floodlights in the sports fields and outdoor courts, halogen lights for swimming pools. Exact numbers of these fixtures and their corresponding locations are not available.

Conservation methods

Staff use of lighting

Please refer to Section 3.2. Community Engagement.

Reducing Lighting Needs

1. Switching off lights in day time and during non-class sessions like summer break

Decorative lights used in the Ground Floor of the Main Building have been switched off (manual switch off) during the day time, with the help of custodial service staff. Furthermore, during summer and winter breaks, when classes are not in use, custodial services have been instructed keep the lights off.

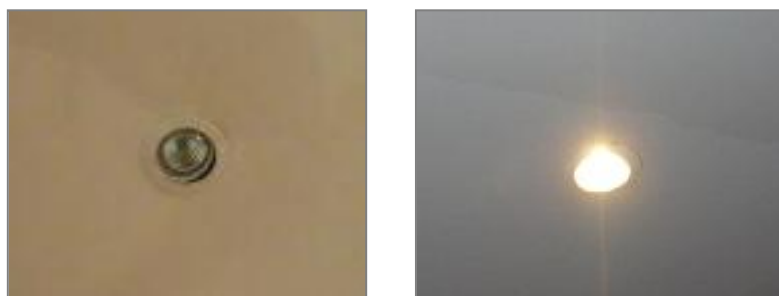


Figure 14: Decorative Lights - (left) lights turned off, (right) lights turned on

Types of lights: Low voltage halogen bulbs

Number of lights switched off: 22

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More conservation measures listed on the following page.

2. Removing lights in 'over lit' areas

Lux levels in areas have been modified (reduced) to confer with CIBSE standards in corridors and common areas. Currently removal of lighting is in progress in the Main Building. All other academic buildings have had this task completed with the exception of the College of Art Architecture and Design (CAAD), as it was renovated in the summer of 2010.

Types of lights removed: Fluorescent type

No. of light fixtures removed: 500 numbers

Figure 15: A corridor after the removal of extra light fixtures



3. Replacement of existing fixtures – *in progress*

Existing linear fluorescent lamps have been replaced by compact fluorescent lamps in common areas in all buildings except for the Student Center. Replacements were made with old light fittings that were available. Corridors and common areas were chosen as the lux levels required in such areas are low as, compared to occupied areas, such as offices and classrooms.



Types of lights removed: Linear fluorescent lamps

Number lamps replaced: 200 numbers

Figure 16: Existing linear fluorescent lamps located in common areas

Maintenance for Existing Lighting Systems

1. Reactive maintenance is done with light fixtures

Fused bulbs are replaced in line with lux levels. The system used is similar to the one described in item (1) under Repair Leaks Promptly in Section 2.2

Smart Lighting Controls

1. Remote lighting control for Sport Field lighting

The system involves controlling the sports fields lights via software that is synchronized with the booking schedule of the field. This software can be accessed remotely and is enhanced in conjunction with a switch that can prevent use if there are any failed attendances in prior bookings. The entire system is operational with the exception of the switch. The switch is currently in the process of being procured.



Figure 17: Field light controls

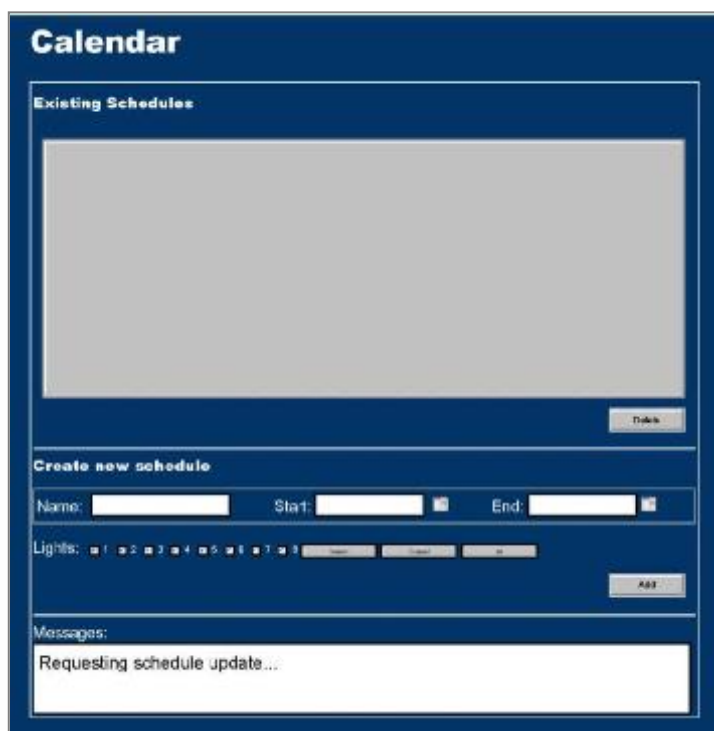


Figure 18: Graphic interface for scheduling software

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2. Tennis court lighting control

The system introducing lighting controls the existing pole/field/pathway lights as per the seasonal timing required.



Figure 19: Tennis court lighting control

3. Introducing timers on dome lights – *in progress*

Existing timers in dome lights have been fined tuned to operate as per required specifications.

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More conservation measures listed on the following page.

4. Activation of inbuilt lighting automation system

When CAAD was renovated during the summer of 2010, light fixtures were categorized in zones and were placed in line with an automated system. These zones encompass large areas, therefore whenever possible, most likely during long holidays and with the consent of the occupants, lights are switched off accordingly using this automated system.

5. Introducing timer control with occupancy sensor in classrooms, laboratories and offices

– in progress

A pilot project in one class room has been completed. This project is scheduled to be implemented in other areas within the next 18 months.



Figure 20: Occupancy sensor



Figure 21: Lighting control

Upgrade / Refurbish Lighting System

1. Replacement of corridor lighting

Existing 120W lights replaced energy efficient lights.

Number of replacements: 200



Figure 22: Energy efficient light

continued on following page ...

2. Replacement of dome lights

Dome lights located in academic buildings replaced with induction based lamps.



Figure 23: Dome light

Number of replacements completed: 80

3. Replacement of swimming pool underwater lights with energy efficient luminaries – in progress

The swimming pool uses 300W halogen underwater lights. Currently there are two types of luminaries that are being evaluated to replace the existing lights.

Number of replacements required: 36

2.1.3 Office equipment

Summary

There are 3349 PCs, 973 printers and 76 paper shredders on campus. In addition, there are lab equipment and machines located in various colleges and schools that are used for research and teaching purposes.

Conservation method

Switch off equipment at the end of office hours

1. More information in Section 2.3. Community Engagement.

2. Introducing energy efficient configurations on PCs – *in progress*

A pilot test configuring PC monitors to switch off after a period of inactivity, and processors to go into standby after an extended period of inactivity has been performed. Results show that power consumption can be reduced by 50%. Currently office PCs are being migrated to Windows 7 – default power settings of standby after 30 minutes. Report is under higher management review.

Keeping Appliances Regularly Maintained

1. Multifunction Printers (MFP)

MFPs are printers that are connected to the network and can be used by multiple users. These machines are able to print, scan, fax and email documents. At the time of purchase, there is an agreement of free maintenance (done by the company) for five years. At the end of the fifth year, the maintenance contract is renewed annually at no additional cost.

Number of MFPs on campus: 74

2.2. Water

Water conservation initiatives have been focused on two floors in the Main Building and on two sports fields. Aerators have been placed campus wide. These initiatives will be implemented in other buildings as part of the renovation plan of the academic campus.

Summary

Washrooms in the academic areas are fitted with manual taps, automatic taps, long flush and dual flush. Male toilets have the provision of urinals. The inventory of various water fixtures installed on campus is not available.

Conservation method

Staff Use of Water

Please refer to Section 2.3. Community Engagement.

Repair Leaks Promptly

1. Reporting system

Leaks and faults around campus can be reported to the Call Center, whose agents place in requests on the new CMMS system. Foremen in-charge delegate work orders accordingly and ensure repairs are promptly fixed.

Installation of Water Efficient Fixtures

1. Automatic water mixers

Automatic water mixers have replaced manual ones in all restrooms in the Main Building.



Figure 24: An automated water mixer

Number replaced: 146

continued on following page ...

2. Dual flush

Dual flush have been installed in washrooms located on the first and second floor in the Main Building.

Numbers replaced: 17



Figure 25: Dual flush button (illustration)

3. Aerators

Aerators have been placed in the remaining manual mixers located on campus.

Numbers installed: 300



Figure 26: An aerator

4. Urinal (pilot)

One sample urinal installed in a washroom located in the Main Building in order to assess feasibility. This urinal is sensor driven.

Numbers installed: 1



Figure 27: Pilot urinal

Institute best practice in Landscaping

1. Sports Turf

Irrigation to two of the campus soccer fields had a mixture of the salty well water and drinking water, to combat the salinity of well water. The tank from which the irrigation water would be taken from had two inlets, one from each source. Each inlet would have flow valves to ensure continuous flow into the tank. These sports fields, covering about 17,500 m² of land have been converted to artificial turf since September 2011. With the artificial sports turf in place, 40,000 liters* of water is saved per day as no watering is required.



Figure 28: Soccer field, artificial soccer turf (left to right)

* cited from AUS Football Fields Turf Proposal 2011, as submitted to the Vice Chancellor for Finance and Administration on April 2011.

2.3. Community Engagement

OoS has constructed a calendar of events. This calendar has been included in Appendix 2 and it lists out all the events and publications over the course of one year. This document is continually updated to include world days and events on campus. A part of the community engagement comes in line with collaboration with various departments on campus. OoS has collaborated with the Day Care Center, Wellness Program, University Health Center, Community Services, AUS Woman's Association and Student Residential Life.

Awareness

1. Stickers and handouts

'Turn off the light' stickers are placed in pantries to remind users to switch the lights off when they exit the pantry. These stickers have been given to staff to place them in their offices and homes too. Similarly, waste bins dedicated for recyclable items that are placed in pantries and those provided to residents have stickers that have a list of recyclable items, as shown in the figure below. Furthermore, during the various events held on campus, handouts are carefully chosen to ensure further awareness. 'Turn off the light' stickers, bookmarks, pens made from recycled materials are some items that have been distributed to the general public.



Figure 29: Book mark with conservation tips, Pen and highlighter in recycled body, Please Recycle sticker, Turn off the Light sticker (clockwise from left to right)

2. Recognition of World Days and presence of booths

Any event recognized by OoS involves informing the community using social media like Twitter and Facebook, eflyers, emails and posters. Examples of days that have been recognized are Clean up the World Weekend, World Carfree Day, World Water Day and Earth Hour.

The department has also had booths, in addition to the above methods of awareness, such as for World Food Day, where over AED 15,000 was raised and donated to Sharjah Charity International. The figures below provide a show case of these events. Appendix 3 illustrates various eflyers and posters designed. Resources from the Department of Strategic Communications and Media are used in terms of designing posters and flyers, in addition to informing the community via social media.



Figure 30: Posters designed for various events

3. Courses on Environment

The university has an Environmental Science Department. We also have several faculty members whose research topics related to sustainability. Students have had their final design projects under the guidance of this faculty. A list of courses is available in Appendix 4. These course can also be taken by staff if certain requirements are met.

4. Tip of the Month

The 'Tip of the Month' scheme provides the community with one tip on sustainability per month. These tips are distributed by email to the community, echoed in the monthly newsletter (more information below), uploaded on the department website and pasted on selected poster boards on campus. A sample of the last three 'Tip of the Month' can be viewed in Appendix 3, a snap shot has been included below. These tips are designed to be unique and to the point.

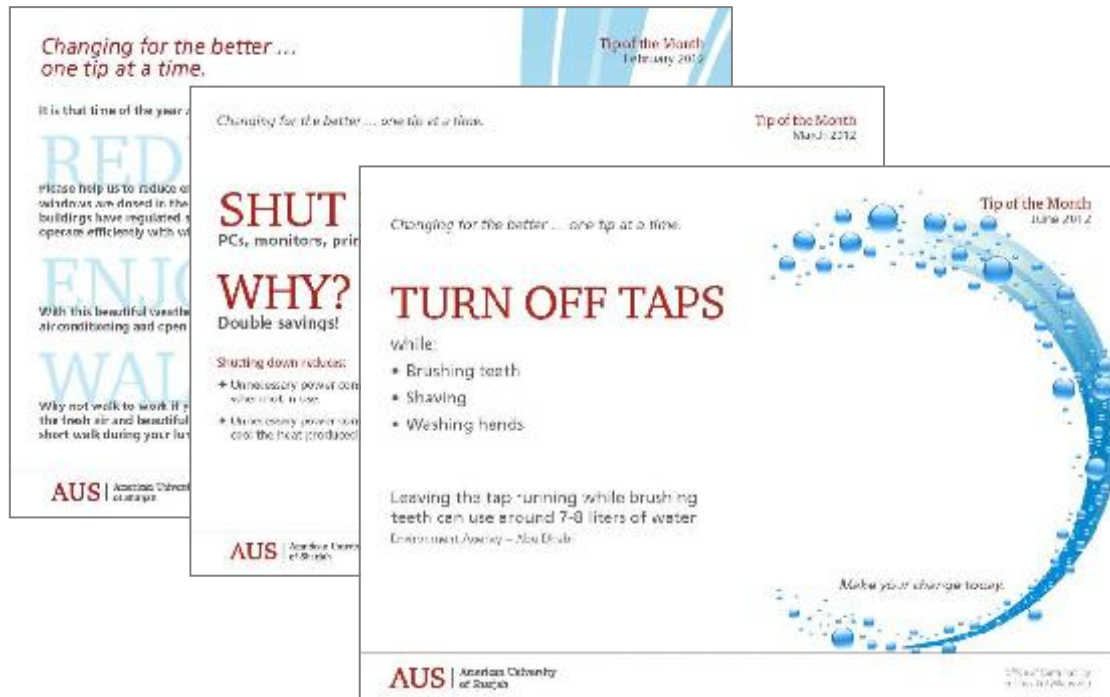


Figure 31:Tip of the Month illustrations

5. Social Media

With the help of the Department of Strategic Communications and Media, social media such as Twitter and Facebook is used to inform followers of upcoming events, world days and the like.

6. Monthly newsletter

The Office of Sustainability prepares a newsletter on a monthly basis. The newsletter covers various topics ranging from world days that fall in the month, sustainability related activities, a kids corner, the Tip of the Month and other general information. The newsletter is distributed to community members residing on campus through the community group; AUS Women's Association (AUSWA). A copy of this newsletter is also sent to staff and faculty by email, in addition to it being uploaded on the department's website. Sample newsletters are available in Appendix 5.

Collaboration with community and other departments

1. Sustainability Steering Committee (SSC)

The SSC has been established since the initiation of the energy reduction mandate and has transformed over the years. This committee meets on a monthly basis and has faculty from CAAD, the Colleges of Art and Sciences and Engineering, the student environment group, Re-, Community Services Department, Strategic Communications and Media Department and the Operations Department. The SSC convenes to discuss sustainability related issues on campus and provides assistance in delivering messages to the segmented communities of staff, faculty and students. Technical/commercial issues that arise from these meeting are then shared with the technical MEP team for action.

2. Other departments

Since the reduction mandate was put into action, the office has collaborated with various departments on campus such as the Day Care Center, Student Residential Life and Community Services. OoS has even worked with the student group Re- as judges in one of their competitions. The various departments of collaboration can be seen on the next page.

Orientations and Trainings

1. Student Orientation

OoS has had a presence at student orientations. Working off of the zeal of freshmen students, a flyer specifically designed to have tips on how to reduce individual carbon foot prints whilst studying on campus has been produced. Plans are in place to provide presentations to new students as opposed to having a booth during the orientation, as the latter is skewed to the administrative aspect of enrollment.

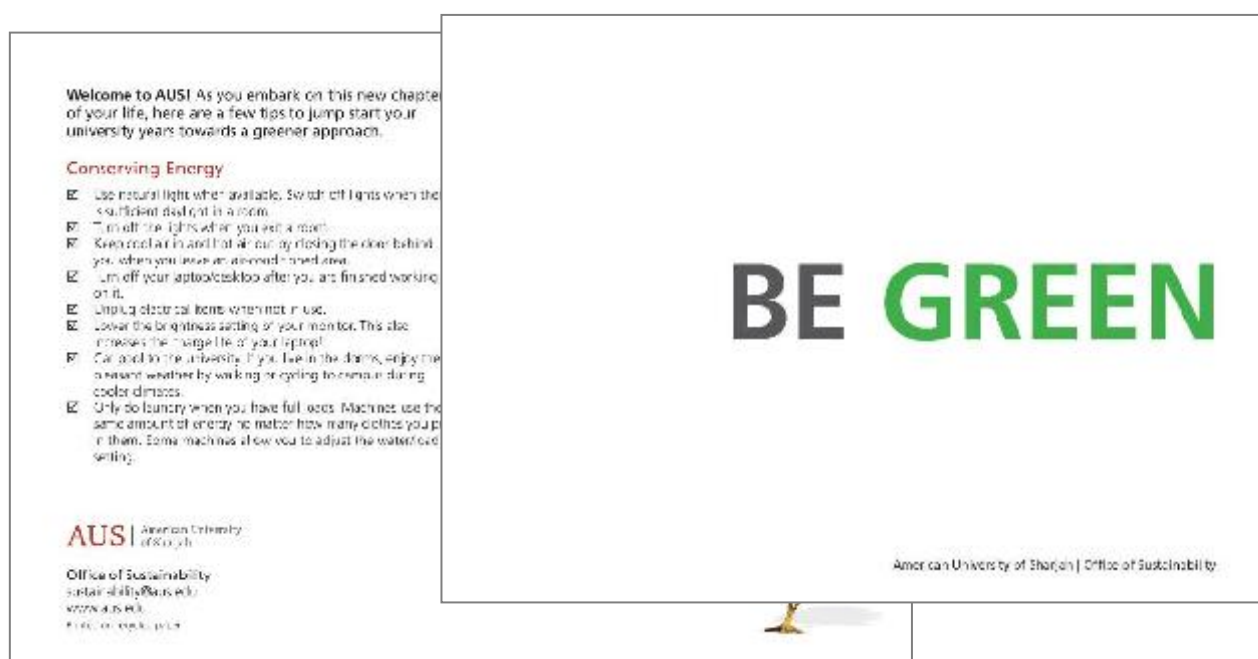


Figure 32:Flyer made for student orientation

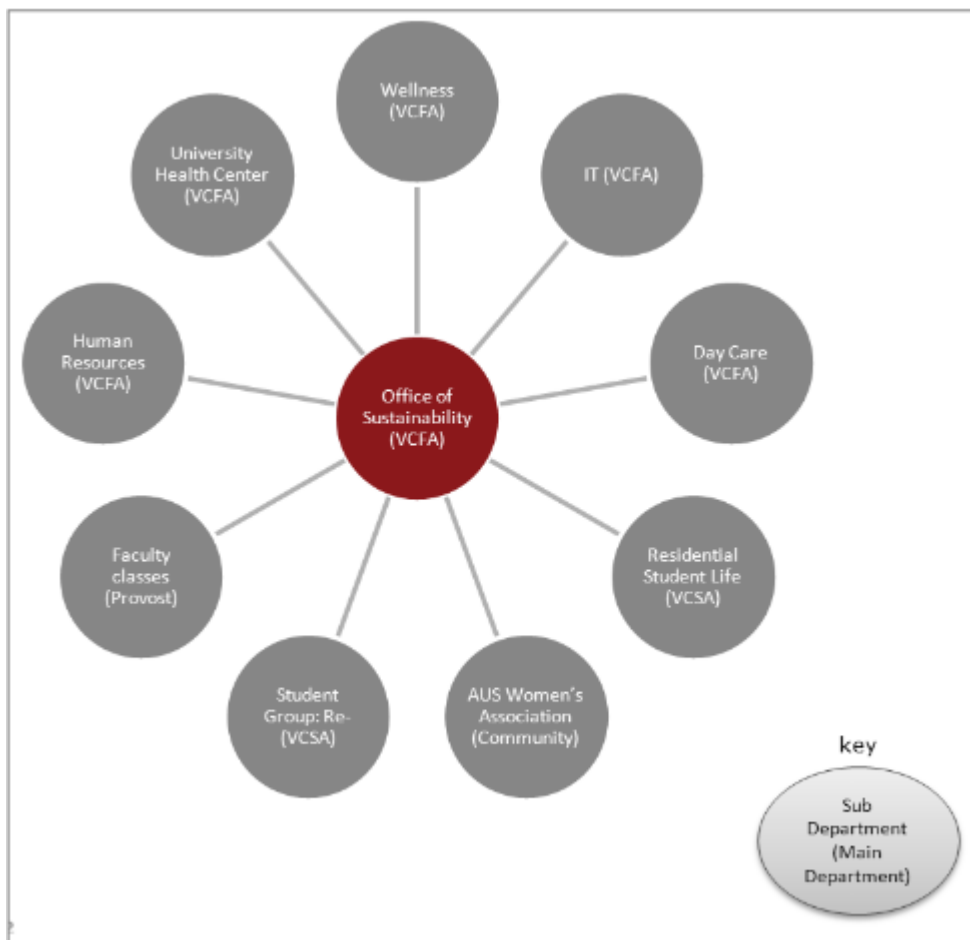
continued on following page ...

2. Collaboration with Residential Student Life (RSL) (student on campus housing/dorms)

An animated video is currently uploaded on to the RSL's television channel. Similar to the flyer made for freshmen, this video reminds students of how to approach university life in a more sustainable way. Screen shots from this presentation can be viewed in Appendix 6.

3. Faculty & Staff Orientation

A presentation is given to faculty and staff as part of the initial phase of the education program (more information in Section 5.0). These presentations aim to educate the community about sustainability, related facilities available on campus and to urge them to participate in reducing our global impact. Staff orientations are administered with the assistance of the Human Resource Department during their procedural orientation of new staff recruits. The orientation covers a summary of work done on campus in terms of installation of consumption efficient water fixtures and available recycling facilities, in addition to other energy related initiatives. An overview of current energy consumption and associated energy savings is given to members for their motivation. The orientation ends with a request to utilize facilities available on campus. A copy of a recently delivered staff orientation is illustrated in Appendix 7.



The adjacent illustration shows the various departments with which OoS has collaborated with in order to implement sustainability related awareness drives/ projects.

Through collaboration, OoS is able use these departments as a medium to disseminate awareness towards specific audiences.

Figure 33: Collaboration with various departments

3.0. Results

Considering the cost saving benefit of energy over water conservation, energy initiatives were given a precedence. As mentioned in Section 2.0, the baseline for the energy reduction initiative has been set to encompass twelve months starting October 2009, in academic areas only. However, several pilot projects for reducing water consumption have been incorporated as part of the overall awareness strategy. These projects were concentrated on two floors of the Main Building and two sport (soccer) fields.

The table below illustrates the list of data used for calculating the various indicators.

Energy	
Workplace data	
Area (<i>energy conservation initiative</i>)	91,201 m ²
Number of employees ¹ at baseline and implementation year	6,157 ²
Electricity	
Annual consumption in baseline year (October 2009 – September 2010) ³	73,538,058 kWh
Annual consumption after implementation (October 2010 – September 2010)	64,477,013 kWh
Grid Emission Factor for electricity	0.00042 tCO ₂ /kWh
Water	
Annual consumption in baseline year (November 2009 – October 2010) ⁴	7,119,388 IG
Annual consumption after implementation (November 2010 – October 2011)	4,327,620 IG
Grid Emission Factor for water	0.000105 tCO ₂ /kWh

Table 1: Various indicators

¹ The number of employees include students, faculty and staff at AUS. Staff present in non-academic areas are limited in number and are thus ignored.

² The difference in the number of employees at baseline and implementation year falls between a tolerance of $\pm 5\%$ is therefore ignored. The average of both numbers is considered.

³ Although efforts for energy reduction were concentrated on academic areas only, reduction of energy was seen throughout the campus. Consumption figures indicated for energy consumption reflect that of the whole campus.

⁴ Constructed water consumption for baseline and implementation year. Consumption considered is focused within the defined scope of conservation implementation.

3.1. Indicators

Note: Alphabets of the indicators are in correlation to the indicators mentioned in Heroes of the UAE Guide 2

The summary table below illustrates the various parameters calculated.

Reference	Indicator Calculations	
A	Percentage of reduced electricity consumption over a year	12.32%
B	Percentage of reduced water consumption over a year	39.21%
C ₁	Yearly tones of CO ₂ savings for electricity	3,805.64t
C ₂	Yearly tones of CO ₂ savings for water	293.14t
C ₃	Total tones of CO ₂ savings	4,098.78t
D ₁	Percentage of CO ₂ reduced over a year for energy	12.32%
D ₂	Percentage of CO ₂ reduced over a year for water	39.21%
D ₃	Percentage of CO ₂ reduced over a year	12.96%

Table 2: Indicator calculations

4.0. Lessons Learnt

4.1. Challenges campaigns

Diversity on campus

Diversity on campus is not only limited to the variety in the community, but also in the variation of building ages and operations of each building/area. Since 1997, the campus has expanded in stages with the construction of new buildings and extension of existing buildings. Furthermore, each college and school has different operating hours, temperature limits (for chemical storage, for instance) and other environment requirements. Therefore, a task such as setting a universal temperature limit on (academic) campus would entail several steps that include meeting with each Dean, discussing exceptions of controlled temperature, investigate and implement measures to ensure the maintenance of a different set point for special cases (such as chemical storage). Because of the age of the buildings, and lack of structural/MEP drawings, installing equipment could take time.

Lack of water baseline

Focus at this time had been placed on energy reduction, therefore consumption trends for water were not verified/investigated. Therefore, there are no accurate consumption figures for water consumption at present. Data projecting water consumptions within the scope of interest for the baseline and implementation year have been constructed using LEED calculations.

Lack of drawings

AUS was established in 1997 and has exponentially mushroomed since then. Many of the older buildings lack records of MEP drawings. A lot time and effort has been spent in retracing single line diagrams. Furthermore, employee turnover makes record and information location difficult, which may lead to the repetition of work.

Community resistance

As common in many projects, user resistance and change management always plays a role in the commissioning phase. Prior to implementing any change a pilot study and management buy in is sought, when appropriate. For instance, maintaining the temperature in a particular college building would involve talking to the Dean of the building and discussion of implementation plans, options, restrictions and other issues. These discussions may be finalized over the course of several meetings. There is always community resistance to any change. However, by building relations and by using awareness drives, these resistances can be potentially tackled.

Readiness of new technologies

There are many fantastic green technologies available in the market, however these technologies still require developing. For instance, the new LED lighting technology does not emanate the same level of lux for a similar rating CFL bulb. More so because of the way light beams disburse into the ambiance. LED fixtures have a more channeled disbursement as compared to CFL bulbs. Similarly, solar technology, though very noble, has a low feasibility option here because of the frequent accumulation of dust on the panes. Being relatively recent deployments in this market, the return of investment is also considerably low when analyzed because of high capital costs. News and savings for these technologies are well known, however because in its initial stages of development, applications for these technologies are restrictive at present.

Vendors

There are vendors available in the market that supply greener alternatives. However, these vendors market such products because of the sustainability drive that is worldwide. Therefore, they supply products but do not provide relevant support in maintenance and guarantee. It is rare to find products that can be implemented with suppliers willing to provide related services.

4.2. Avoiding Mistakes

Management support

Fortunately, for AUS, the Chancellor introduced the mandate of the sustainability initiative. Therefore, management support has been present. However, if this were not the case, obtaining management support would go a long way, in achieving our goals.

Involve all stakeholders

The Office of Sustainability has a monthly meeting with the SSC. This committee was formed by the Chancellor to develop a strategy for integration of sustainability goals into the strategic direction of AUS. The committee also is involved in integrating and communicating sustainability activities and requirements between administration, faculty and students. This committee has representation from administration, faculty and students and is chaired by OoS. More information on the workings of the SSC is available in Section 2.3.

Build relations

In order to ensure a smoother implementation of initiative it is necessary to build relations with members involved in the implementation. Members involved could include colleagues who are working directly in applying the initiative, as well as those who are the end recipients of the change. Collaboration in initiatives is also very effective.

Funding

Since the sustainability initiative has been mandated by higher management, funding has been made available for sustainability related projects. However, to ensure the effective utilization of funds and to vindicate expectations, projects geared towards the *lower hanging fruit* were prioritized. Furthermore, projects that had a visual effect on the audience were also embarked upon, such as installation of automated water mixers and light efficient fixtures, to create awareness and highlight corporate responsibility.

4.3. Innovative Ideas

Break the norm

When it comes to creating awareness and community involvement, convincing others to reduce their carbon footprint is not limited to chants of switching lights off when exiting a room, shutting down PCs after use or reducing temperature settings. The Office of Sustainability has joined forces with other departments and community entities like the Wellness Department, AUS Woman's Association and AUS Day Care to have fun runs, donation drives and plays put on by children. In doing so, we build relations and support by conveying the message of CO₂ reduction in various ways to sundry groups.

Less is more

The Office of Sustainability has implemented the 'Tip of the Month' scheme (see Section 2.3 for more details). Every month, an e-flyer is sent to the community a tip that could be easily adopted by individuals. Attention is given to the appearance and wordings in order to convey the message as simply as possible – without cluttering the readers mind with unnecessary wording. The Strategic Communications and Media Department assists us in this scheme to ensure that each flyer is aesthetically pleasing, and the message is conveyed with an impact on our audience.

Greener activities and advertising

During an event in which the department participates, a lot of effort is put into planning and ensuring that there are fun activities for visitors. The objective here is to encourage an individual to continue resource conservative approaches on campus and in their homes, through the enjoyment brought about by the activity. Activities could range from pledges to quizzes, visual models and games. Whenever possible, the various facilities available on campus are advertised. For instance, in one of the booths, a recycling game was organized to familiarize participants with recyclables and non-recyclable items. As part of the props for this game, the indoor three stream recycle bins were used. For example, for one of the booths that OoS set up, as part of the interaction with the public, there was a recycle game that featured the newly installed recycle bins. Similarly, for another booth, there was a showcase of the various energy and water conservation fixtures used on campus.

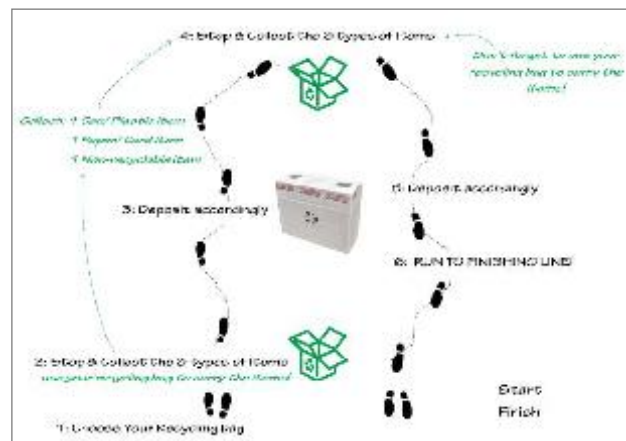


Figure 34: Recycle game used at one of the booths



Figure 35: Booth showcasing the various conservation fixtures implemented on campus

4.4. Best Practices

Synergy and repetition in messages

All publications delivered by the OoS have a similar message at a given point in time. For instance, the message conveyed during the 'Tip of the Month' is echoed in the newsletter. This synergy of information ensures repetition and hopefully subsequent compliance. With repetition, synergy, and short messages such as the 'Tip of the Month', unique information is channeled towards the public, hopefully attaining the desired effect.

5.0. Strategy Moving Forward

The mandate of reducing energy consumption by 30% and the efforts taken to reduce water consumption does not stop in 2013. The strategies of continuing the reduction of resource usage is illustrated below.

Medium term

Education program

The education program uses elements of sustainability awareness and transforms it into a means of education in order to achieve change management. Currently in its initial stages, the education program breaks down elements from the community and looks at the educational aspect for these. The education program is aimed to be more interactive in terms of fun competitions, personalized comic strips and even suggested buy in from vendors like Starbucks, where discount rates are given to customers with their own mug. A snap shot of the education program is in Figure 39. The education program also focuses on Custodial Services and could aim at improving cleaning products used on campus.

Remote metering solution

With the prevailing discrepancies of utility billing on campus, the Board of Trustees has approved a proposal for a remote metering program. This metering solution will allow the accurate and remote measure of electricity usage, thus providing crucial planning options. With this metering scheme in place, one would be able to track energy consumptions for academic and housing areas. Currently, utility metering in the housing blocks does not cater to metering an individual home, the metering scheme for older blocks (pre 2008) is limited to measuring consumption at the block level. With this metering project implemented, individual homes will be metered. Furthermore, as vendors on campus currently pay a flat fee for their resource consumption, meters will be installed to allow the option of direct billing of vendor outlets.

Action in dorms

AC upgrade (to VRF systems) for two dorms has been approved by the Board of Trustees.

House of the Future

Faculty housing on campus is equipped with washing machines, televisions, dishwashers and other household items. The concept behind the House of the Future initiative is to meter an average house and implement greener technologies. By implementing such technologies (on a small scale), we would be able to obtain user feedback and investigate vendor support and service. Once the more efficient appliances succeed in this initial phase of testing, these appliances will be rolled out in other areas of the campus, where applicable.

Renovation plan

Various areas on campus, since its establishment, require renovation. As of now the renovation plan is being worked on by Campus Development. During the renovation of these buildings water efficient fixtures will be installed, in addition to a BMS upgrade where applicable.

Long term

Over the longer term, there are plans to perform the following:

- Carbon footprint analysis
- An environmental policy
- Environment management system
- Mixed environment computing and the use of thin client technology
- Having a green IT policy
- Energy audit plan

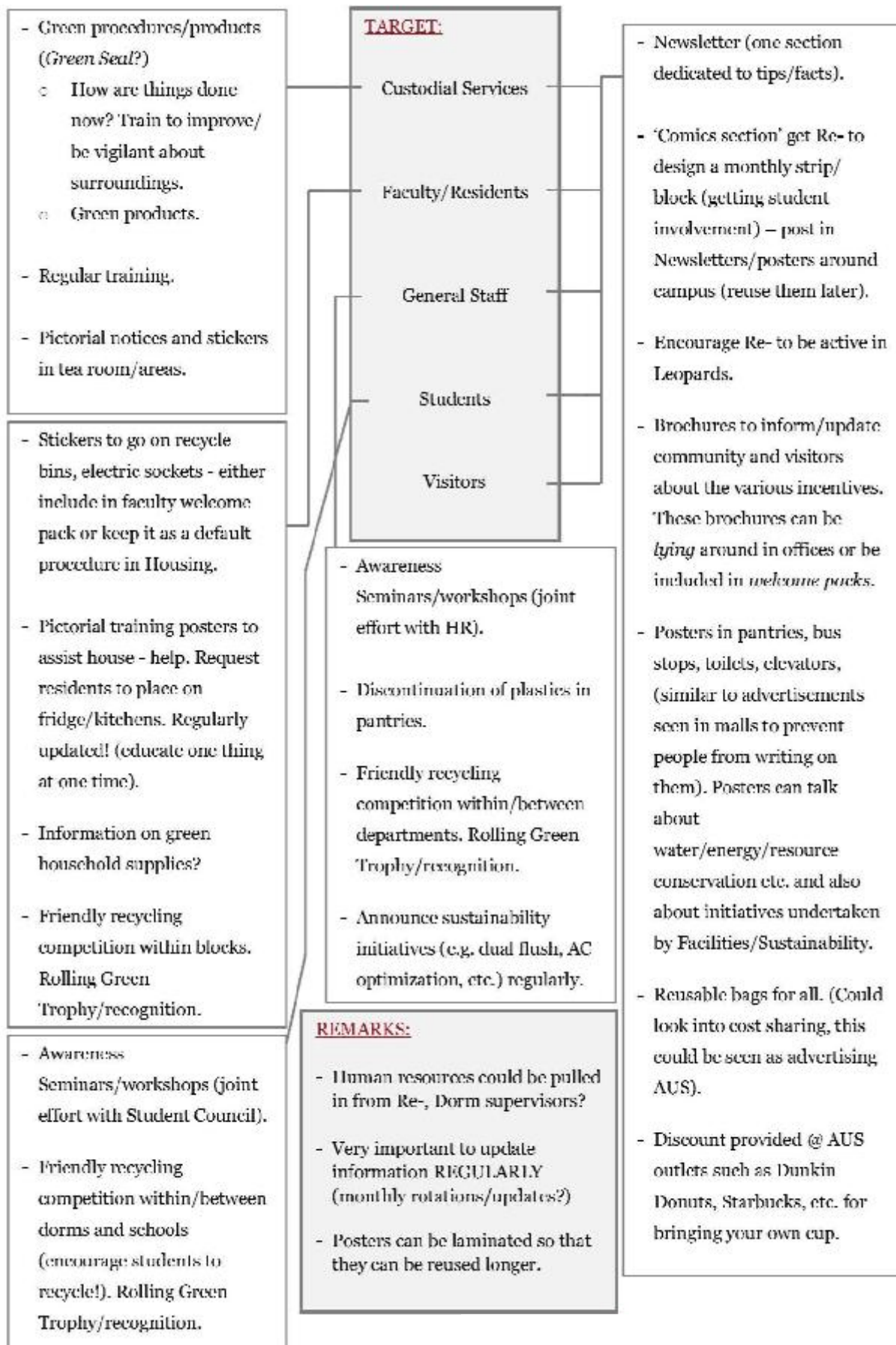
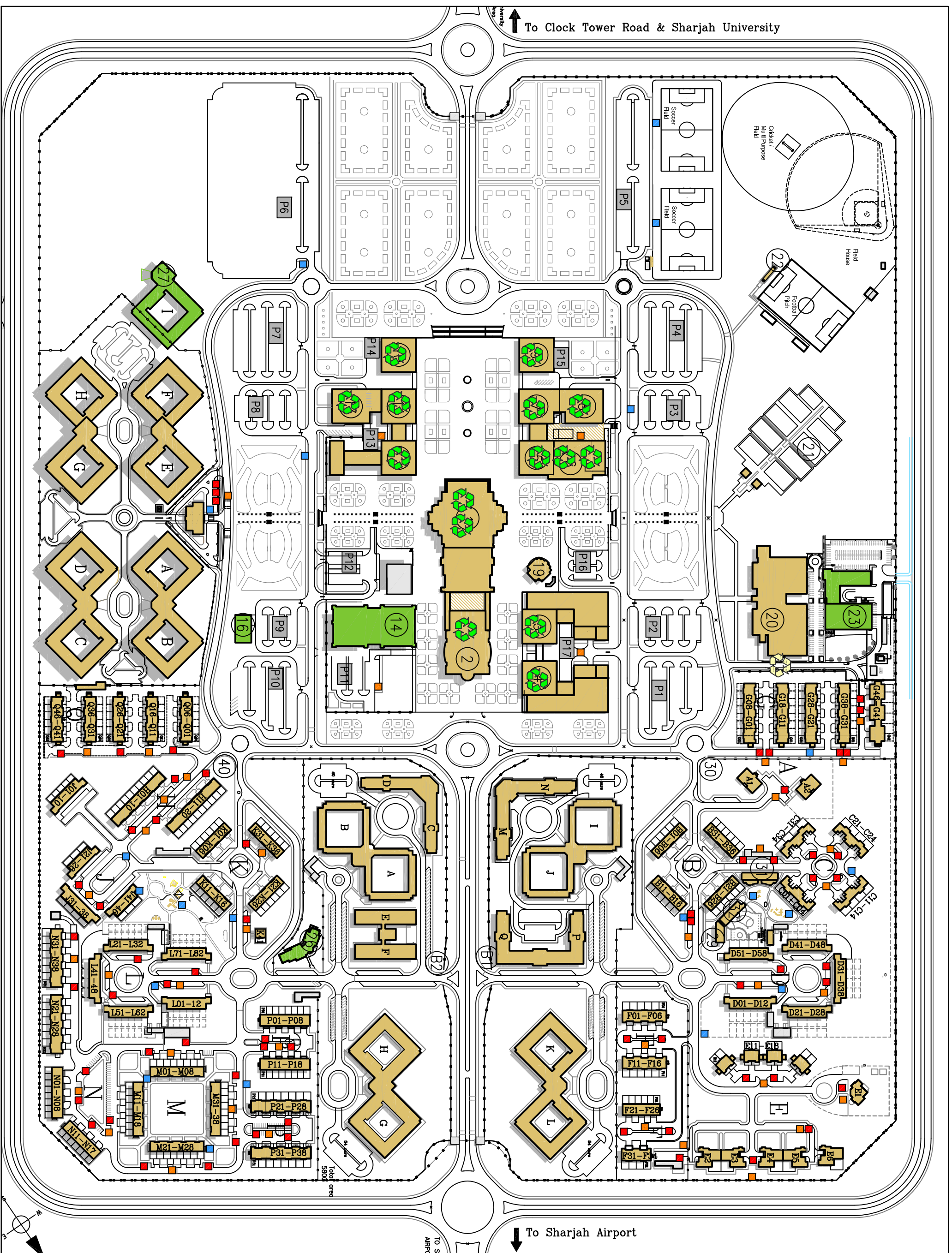


Figure 36: A snapshot of the education program

Appendix 1 | Campus map
















The campus map is on the following page.






















Appendix 2 | Sustainability calendar of events

The sustainability calendar is a working document that lists out all world days and other events that OoS could commemorate. This calendar ensures that the office performs at least one community related awareness scheme in a month. A copy of the Sustainability Calendar of Events is included on the following page.

Office of Sustainability | Events
February 2012 - December 2012
21 February 2012 (Vr 6)_ by TZA

February	1		Sustainability Flyer Reducing energy wastage by having air conditioning turned on and windows closed.
	4		UAE National Environmental Day <i>Theme: Living Desert</i>
	8		SSC Meeting Sustainability Steering Committee's kickoff meeting for Spring 2011.
March	25		Sustainability Newsletter This is a monthly publication that is a part of the awareness program.
			Tree Planting Tree planting event for the kids attending Day Care.
	1		Sustainability Flyer PC shutdown after use.
	6		AUS Awareness Day
	7		SSC Meeting
	11 - 17		Groundwater Awareness Week
			Aimed at spreading awareness about groundwater. This annual awareness campaign is sponsored by the National Ground Water Association- USA. (http://www.ngwa.org/Events-Education/awareness/Pages/default.aspx)
			Education Program An induction program for the AUS community.
	22		World Water Day This is an annual event that is coordinated by the Food and Agriculture Organization of the United Nations. The UN World Water Day revolves around water and food security. (http://www.unwater.org/worldwaterday/)
	25		Sustainability Newsletter This is a monthly publication that is a part of the awareness program.
April	31		Earth Hour
			Organized by the World Wildlife Fund, Earth hour is marked at 8:30pm (GMT?) on 31 March every year. Earth Hour aims at sending a message for action on climate change. (http://www.earthhour.org/)
			New Employees' Orientation
	1		Sustainability Flyer Recycle old magazines and newspapers.
	4		SSC Meeting
May	22		Earth Day Celebrated annually on 22 April. This year, Earth Day marks its 42nd anniversary and will focus on building the environmental movement on engaging new environmental activist around the globe. To many, this day is celebrated to bring attention the Earth and to the effects our lifestyle is having on the planet in general. (http://www.earthday.org/earth-day-2012 , http://earthday2012.net/)
	26		AUS Environment Day
	25		Sustainability Newsletter This is a monthly publication that is a part of the awareness program.
	1		Sustainability Flyer Discontinue usage of plastic bags - use reuseable bags.

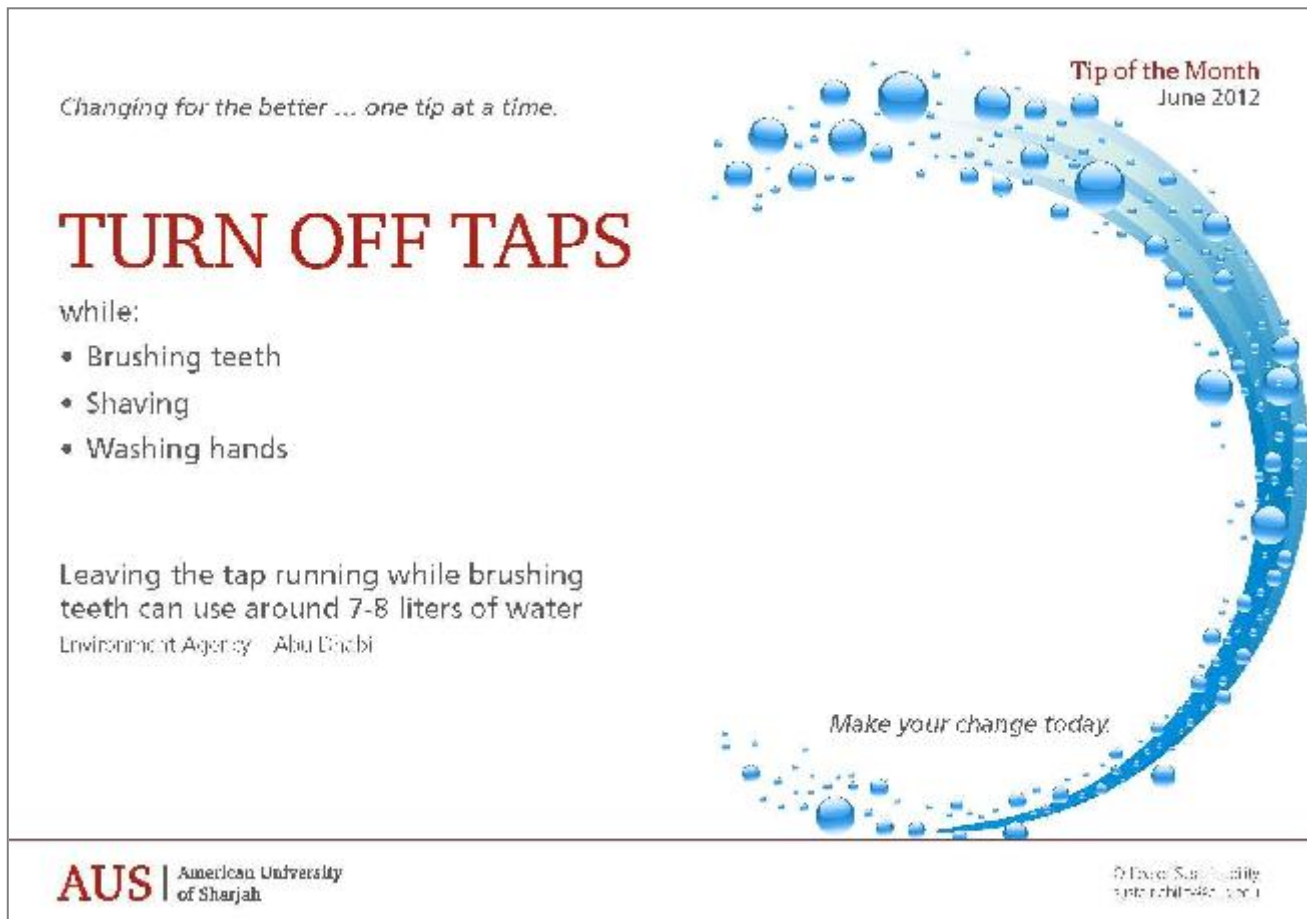
June	2	 SSC Meeting
	22	International Day for Biological Diversity
		Proclaimed by the United Nations, the International Day for Biological Diversity aims at increasing understanding and awareness of biodiversity issues. This year's theme is marine biodiversity. (http://www.cbd.int/idb/ , http://www.cbd.int/idb/2012/)
	25	Sustainability Newsletter
		This is a monthly publication that is a part of the awareness program.
	3	 Sustainability Flyer
July		Unplug electric devices from sockets.
	5	World Environmental Day
		"Through World Environmental Day, the UN Environmental Programme is able to personalize environmental issues and enable everyone to realize not only their responsibility, but also their power to become agents for change in support of sustainable and equitable development." (http://www.unep.org/wed/about/)
	5	Plant for the Planet - The Billion Tree Campaign
		There is no particular date for this event, however, the United Nations Environment Programme lists this event on the 5th of June. (http://www.unep.org/ecalendar/contents/inner_annual.asp).
	6	 SSC Meeting
August	8	 World Oceans Day
		This day is geared to celebrate and honor oceans for its benefits. (http://worldoceansday.org/)
	17	World Day to Combat Desertification
		The aim of the United Nations in designating a day of observance is to sensitize the public and policy makers to the increasing dangers of desertification, land degradation and drought for the international community. The observance events are designed to get everyone to undertake at least one action that year to help minimize the threat highlighted. (http://www.unccd.int/publicinfo/june17/2012/menu.php)
		Education Program
		An induction program for the AUS community.
September	1	 Sustainability Flyer
		Use natural light whenever possible
		New Employees' Orientation
	25	 Sustainability Newsletter
		This is a monthly publication that is a part of the awareness program.
	1	 Sustainability Flyer
October		Switch off electric appliances (like TVs, PCs) when leaving home for vacation.
		New Students' Orientation
	25	 Sustainability Newsletter
		This is a monthly publication that is a part of the awareness program.
	2	 Sustainability Flyer
		Opt for donating used textbooks to charity/ selling them to others.
November		New Employees' Orientation
	14-16	Clean up the World Weekend
		 Clean Up the World Weekend is an international event that is held over the third weekend of September. This event illustrates ways you can make a positive contribution towards making the world a cleaner and healthier place. (http://www.cleanuptheworld.org/en/)
December	22	World Carfree Day
		 The World Car Free day aims at persuading the public to limit the use of automobiles by attracting them to more sustainable means of transportation such as walking, bicycling, using the public transport, carpooling and the sort. This day provides a city, neighborhood or community with the feel of how the world would be with fewer cars and cleaner transportation. (http://www.worldcarfree.net/wcfd/)

October		<div>Education Program</div> <div>An induction program for the AUS community.</div>
	25	<div></div> <div>Sustainability Newsletter</div> <div>This is a monthly publication that is a part of the awareness program.</div>
	1	<div></div> <div>Sustainability Flyer</div> <div>Do not heap your plate with food. It is ok to go for seconds. Reduce wastage of food.</div>
	16	<div>World Food Day</div> <div>This day aims to heighten public awareness of the world food problem and strengthen solidarity in the struggle against hunger, malnutrition and poverty. (www.fao.org)</div>
November	25	<div></div> <div>Sustainability Newsletter</div> <div>This is a monthly publication that is a part of the awareness program.</div>
	1	<div></div> <div>Sustainability Flyer</div> <div>Carpool to destinations.</div>
		<div>International Conference on Water, Energy and Environment</div> <div>Dates not decided. Venue is in AUS. In 2011, the conference was held on 14 - 17 November.</div>
	25	<div></div> <div>Sustainability Newsletter</div> <div>This is a monthly publication that is a part of the awareness program.</div>
December	2	<div></div> <div>Sustainability Flyer</div> <div>Switch off water heaters onces done with shower.</div>
		<div>Education Program</div> <div>An induction program for the AUS community.</div>
	25	<div></div> <div>Sustainability Newsletter</div> <div>This is a monthly publication that is a part of the awareness program.</div>

NOTE: This timeline currently illustrates events/ days that may or may not be publicized by the Office of Sustainability. Dates and events may be shifted based on new information received and availability of resources.

Appendix 3 | Eflyers and posters

Any awareness campaign involves using eflyers and posters. Usually, the poster is converted to an eflyer format. The 'Tip of the Month' initiative is an example of the eflyer distribution. The following images are those of the recent eflyers sent to the community. Following this are some randomly selected posters for various campaigns/drives done on campus.



Please turn over ...

Changing for the better ... one tip at a time.

Tip of the Month
May 2012

UNPLUG

when not in use

- ✦ Personal computers
- ✦ Non-essential electronic devices
- ✦ Chargers
- ✦ Other phantom loads

It is estimated that in the average home, 40% of all electricity used to power home electronics is consumed while the devices are turned off.

Source—DOE

Make your change today.



AUS | American University
of Sharjah

The Office of Sustainability
sustainability@aus.edu

Changing for the better ... one tip at a time.

Tip of the Month
April 2012

RECYCLE

Magazines, Newspapers, Plastics,
Cardboard boxes...

DONATE

Text Books, Novels, Clothes...




Make your change today.



AUS | American University
of Sharjah

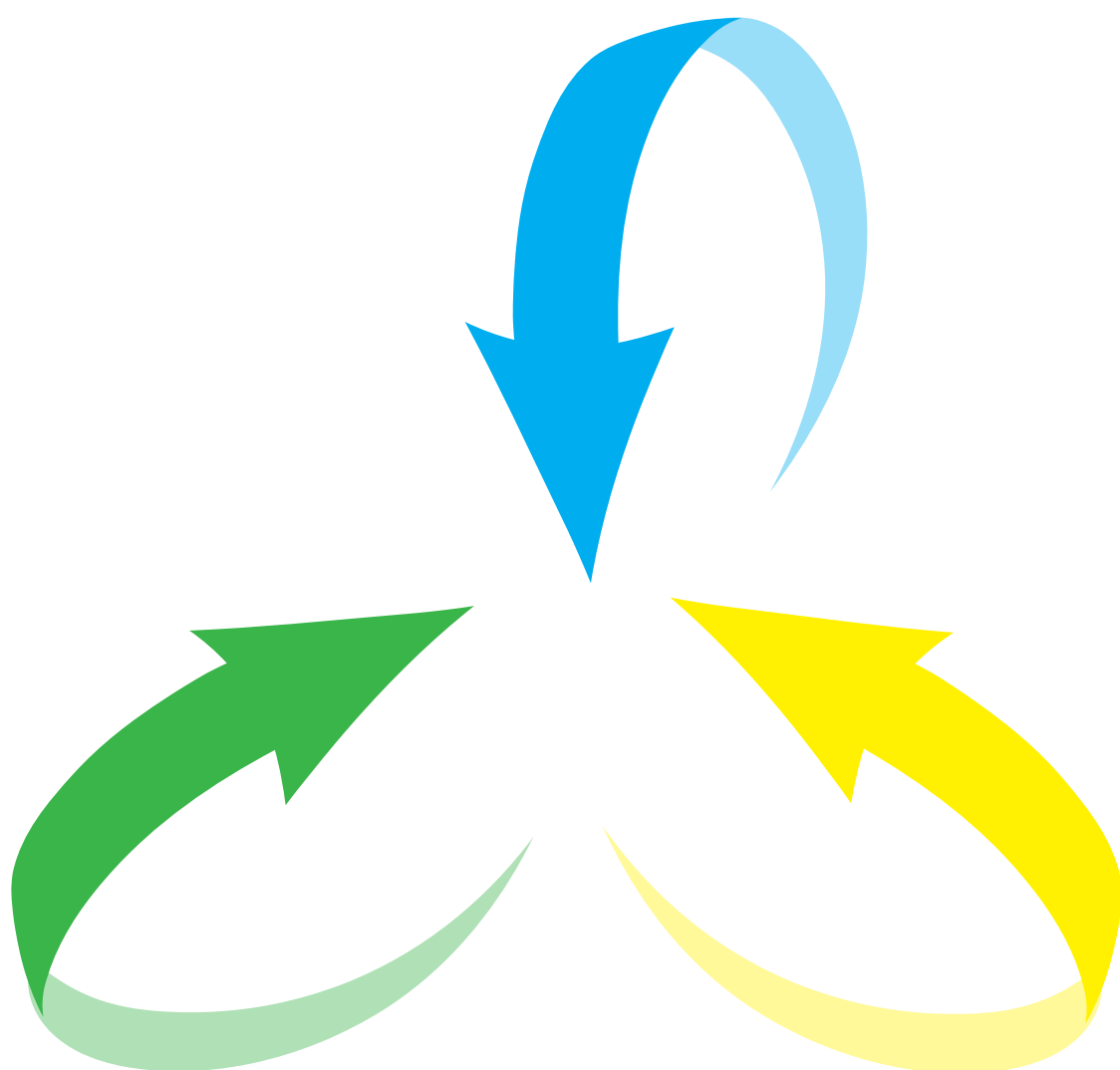
The Office of Sustainability
sustainability@aus.edu

Conserve

-  Conserve water
-  Conserve energy
-  Conserve our environment

Visit the Office of Sustainability awareness booth set up in the grass area between the Main Building and the Student Center.

November 15–16, 2011
10:00 a.m. to 4:00 p.m.



AUS is Switching Off

Shut down...Switch off...Unplug...Turn off

Join AUS for Earth Hour by:

- ✦ Shutting down your computer.
- ✦ Switching off non-essential equipment.
- ✦ Unplugging phantom loads.
- ✦ Turning off lights.

Saturday, March 31, 2012
8:30 p.m.–9:30 p.m.

Organized by Office of Sustainability
For more information please contact:
sustainability@aus.edu



Proudly committed to:



Appendix 4 | Sustainability, the environment and academia

Below is a list of courses provided at the university (page #s for 2009-2010 Catalog):

- ARC322 (Global Issues in Architecture, p. 193),
- ARC354 (Environmental Energies and Building Form, p. 193)
- ARC374 (Environmentally Sustainable Design, p. 193)
- ARC 455 (Environmental Control Systems, p. 193)
- BIO—various (14 courses, pp. 152-3),
- CHM—various (p.153)
 - CHM105 (Chemistry and the Environment, p. 153-4),
- CVE304 (Environmental and Water Engineering Laboratory, p. 182)
- CVE351 (Environmental Engineering, p. 182-3),
- CVE 450 (Physical and Chemical Processes in Environmental Engineering, p. 183),
- ECO404 (Economics of Environmental and Natural Resources, p. 204),
- ECO410 (Urban and Regional Economics, p. 204),
- ENV—various (16 courses, pp. 157-8)
 - ENV 100 Principles of Environmental Science
 - ENV 201 Fundamentals of Environmental Science
 - ENV 411 Environmental Assessment & Management
 - ENV 412 Concepts and Models in Env'l Management Systems
 - ENV 451 Waste Treatment
- IDE374 (Environmentally Sustainable Design, p. 198),
- INS301 (Globalization, p. 160),
- MCM360 (Public Relations Writing, p. 162),
- MGT360 (Business Ethics and Social Responsibility, p. 206),
- PHI309 (Ethics and the Environment, p. 167),
- PHY105 (Physics for Environmental Sciences, p. 168)
- PHY105L (Physics for Environmental Sciences Laboratory, p. 168)
- PHY251 (Meteorology, p. 169)
- PHY301 (Energy Sources, p. 169) ,
- PHY304 (Issues in Environmental Physics, p. 169),
- SOC302 (Environmental Sociology, p. 171),
- SOC380 (Urban Sociology, p. 171),
- THM310 (Social Science Analysis of Environmental Issues I, p. 172),
- THM311 (Social Science Analysis of Environmental Issues II, p. 172),
- WST250 (Women's Voices Across Cultures, p. 173)

Degrees:

- Bachelor of Science in Environmental Science
- Master of Science in Urban Planning

Minors:

- Environmental Policy
- Environmental Science
- Urban Planning

Many courses have a project, where the students can choose a sustainability project, like WRI 101, WRI 102, ENG 203 and 204, MCM—various

Appendix 5 | Monthly newsletter

The following pages are copies of the monthly newsletter distributed over the last three months. The newsletter is distributed to on campus residents via the community newsletter Al Nakhla. In addition, an ecopy of the newsletter is set to all employees.

Office of Sustainability Newsletter

March 2012

Think before you throw!

Welcome! For those of you who are new to AUS, you should have a blue bin in your home, please use this bin only for recyclable materials. Here are a few examples:



Cans, plastics, paper and card all go in this bin:
(Please make sure you flatten your cardboard)



Styrofoam, food waste and glass CANNOT be recycled.

When you have filled up your blue bin, please empty the contents into the large BLUE bin outside:

Please let's all help to protect our environment by recycling what we can and leave our Campus looking clean and tidy.



If you require a blue bin, please email: sustainability@aus.edu. Thank you.

Tip of the Month

The Office of Sustainability are providing tips each month on how people on campus can become more sustainable and help to conserve energy and water supplies. This month we are looking at conserving energy.

SHUTDOWN

PCs, monitors, printers...

WHY?

Double savings!

Shutting down reduces:

- Unnecessary power consumption by equipment when not in use
- Unnecessary power consumed by air conditioning to cool the heat produced by this unused equipment

Interesting Environmental Articles

A boy living in Abu Dhabi makes paper bags from old Gulf newspapers.
www.gulfnews.com/news/gulf/uae/environment. (Page 5) "Paper bags that changed an Abu Dhabi neighborhood"



Sharjah residents living in villas are now able to segregate their waste easily.
www.gulfnews.com/news/gulf/uae/environment (page 3). "Sharjah residents to benefit from recycling initiative".

Ministerial Service Council in Abu Dhabi has banned the export of groundwater.
www.gulfnews.com/news/gulf/uae/government "UAE bans export of groundwater".

World Water Day!

Look out for World Water Day on 22nd March. Please visit our Office of Sustainability stand outside the Main building. There will be quizzes, prizes, games and experiments!

There is a major water crisis in the UAE and Abu Dhabi Government is trying to persuade their customers to use less water by changing the way they bill their customers. From March they will be showing an 'ideal-average' and an 'above ideal average' on the bills. If the customer has used above average they will get a red 'exclamation' symbol - '!' . If they are using an ideal-average amount they will get a green tick '✓'.

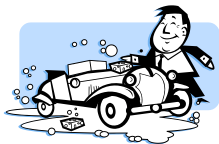
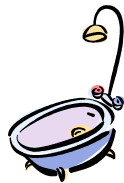
You can help to conserve our water; here are a few tips:

Fix a leaking tap; this can waste 20 gallons (75 liters) per day!



Turn off the tap while brushing your teeth, this can save 30 liters per day!

Have a shower instead of a bath, a full bath tub requires about 265 liters, while a 5-minute shower uses between 45-57 liters.



Please don't wash your car every day, this is not necessary and uses far too much water. Once a week is plenty, or even better, get it washed at the mall by the waterless car wash company.

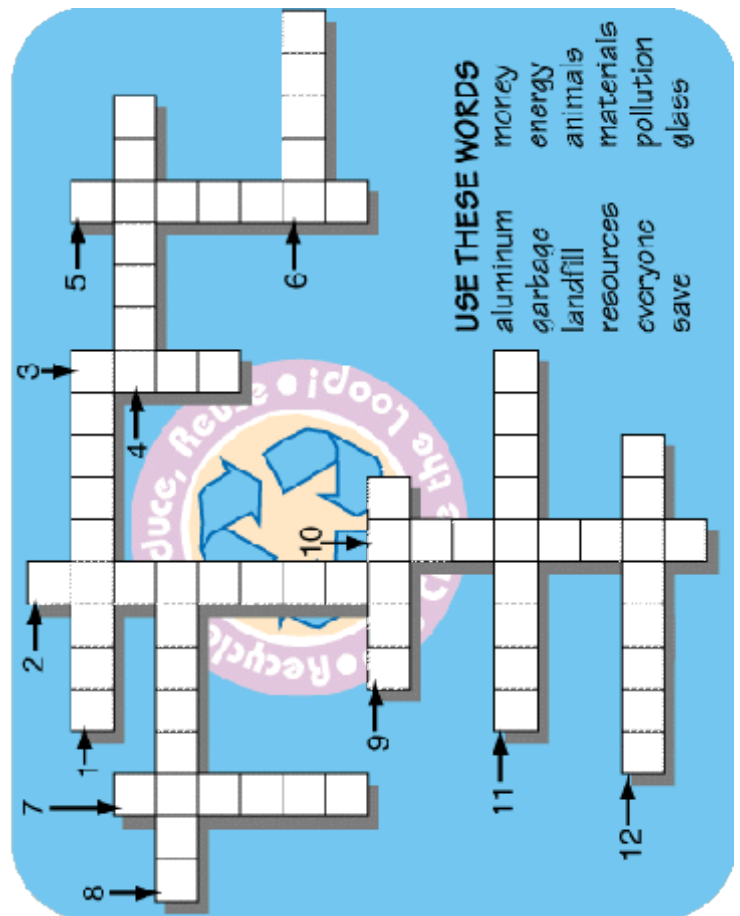
Please only put your washing machine and dishwasher on when full to capacity.



Think before you throw away water, can the water be used to water the plants?

We hope you can remember these tips and try to help save our precious water – remember, even the smallest amount you can save helps!

Kids' Corner



Recycling helps us preserve our environment and keeps garbage out of our landfills. There are a lot of other reasons to recycle. Complete the crossword to find out why we should recycle! When you have completed the crossword, send this to the Office of Sustainability (M220) or scan it in and email it to sustainability@aus.edu. We will send you an environmental certificate.

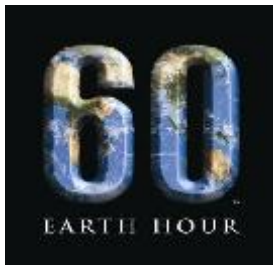
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sustainability@aus.edu
www.aus.edu



Make your change today.

Office of Sustainability Newsletter

April 2012



Earth Hour 2012

Did you turn out the lights?
Did you make a pledge?

Earth Hour is not just about one hour on 31st March, it is asking everyone to take

personal accountability for their impact on the planet and make changes to facilitate a sustainable lifestyle.

Source: www.earthhour.org

The Green Sheikh's pledge

His Highness Sheikh Abdul Aziz Al Nuaimi (also known as the Green Sheikh) is organizing a challenge for Earth hour. His challenge is: He will fast for 6 days continuously if 6000 people recycle their unused medicines in a 6 week period starting from April 01, 2012. The challenge can be viewed at:

**[www.youtube.com:
green_sheikh_iwiyw_challenge](http://www.youtube.com:green_sheikh_iwiyw_challenge)**

AUS Office of Sustainability and the University Health Center will be supporting this campaign. Please look out for emails about where to recycle your medicines. We wish the Green Sheikh the very best of luck!



Is it so DIFFICULT?

-to switch off a light?
-to switch off a computer?
-to switch off your monitor?
-to use the air to dry your clothes?
-to make sure your dishwasher and washing machine are full before using
-to use an energy efficient light bulb?
-to walk to class if you live here?
-to switch the TV off at the plug?
-to recycle your cans, plastic and paper?
-to think before you print?
-to buy recycled paper?
-to turn up your AC?

No? Didn't think so

You can help AUS and our environment by doing these things, **MAKE THE CHANGE TODAY!**

As a responsible individual you have a commitment not only to your generation but also to future generations.



Earth Day 2012

'On April 22, more than one billion people around the globe will participate in Earth Day 2012 and help Mobilize the Earth™. People of all nationalities and backgrounds will voice their appreciation for the planet and demand its protection. Together we will

stand united for a sustainable future and call upon individuals, organizations, and governments to do their part.'



You can join in and pledge to help save our planet, go to: www.earthday.org/2012

Source: www.earthday.org

Recycle / Donate

If you have finished with something, someone else may be able to use it. Think before you throw!



Recycle

Magazines and newspapers, plastics, cardboard boxes.....

Donate

Text books, novels, clothes.....



Kids' Corner



Color in the picture and find all the energy-wasting things wrong with this picture! Make a list and send this to the Office of Sustainability (M220) or scan it in and email it to sustainability@aus.edu. We will send you an environmental certificate.

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Make your change today.

Office of Sustainability Newsletter

May 2012

Tree Planting with Day Care

On March 28, the Office of Sustainability organized a tree planting with the Day Care children from KG2. The keen children learnt about trees and their roots and together planted four Ghaf trees.



Ecoventure generously donated 10 Ghaf trees in addition to providing us with advice on how to plant and nurture these trees. The Ghaf is the national tree of the UAE and is probably the sturdiest plant of the harsh desert environment in the UAE. All trees have been planted and are located in the parking lots of P09, P10 and between P01 and P02.

We thank Ecoventure for their donation and time. We also thank the kids of KG2 (names listed over) for helping us make this event a huge success!



Pledged to the Sheikh yet?

**THE GREEN SHEIKH
WILL FAST FOR 6 DAYS**

IF

**6000 PEOPLE IN
THE UAE RECYCLE
UNUSED MEDICINES,
IN THE 6 WEEKS
FROM APRIL 1ST**

 **CREATE YOUR CHALLENGE**
YOUTUBE.COM/EARTHHOUR



AUS Office of Sustainability and the University Health Center is supporting the Green Sheikh's campaign on the recycling of medicines. Collections have started! Please deposit your unused medicines at the Health Center, Sundays – Thursdays from 8:30 a.m. - 4:30 p.m.

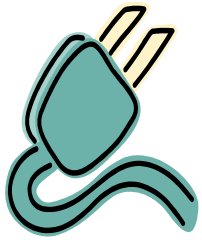
Metering a Kick off

The Office of Sustainability and the Facilities Department have started working on a metering project, where areas on campus will have meters installed to attain accurate use of energy. These meters will be able to store real time information of consumptions that will aid modeling trends of the campus. More to follow on this project!

UN PLUG when not in use!

Local utility authority, DEWA, mentions that in an average home, 40% of all electricity used to power home electronics is consumed while the devices are turned off.

Come on! Together, when not in use, let us all unplug...



- Personal computers
- TVs, DVD players
- Non-essential electric devices
- Chargers
- Other phantom loads

Sustainability on the AUS Environmental Day!

April 26 was the AUS Environmental Day. At time of print, the Office of Sustainability was busy preparing for a booth themed at carbon footprint and carbon neutrality. The booth echoes messages from the World Water Day (March 22) and Earth Day (April 22) and displays some fun games as well as equipment that AUS has installed as part of its energy and water conservation program.

Did you know?

By mid-2013, only compact fluorescent light bulbs (CFL) and LED lamps will be allowed in every household and office in the UAE. This comes in line as the Emirates Authority for Standardization and Meteorology (Esma) expands its range of efficiency standards to cover more electrical equipment and appliances.



The new standards will require all light bulbs sold and used in the country to be eco-friendly as per a rating system which will be announced early next year. (source: Gulf News)

Kids' Corner

Color in the picture to see what these kids are up to. Send back the colored image and you could get an environmental certificate. Colorings can be sent to Office of Sustainability (MM220) or emailed to sustainability@aus.edu.



Special thanks to Thikra Karim and Chandrika Amarasinghe from the AUS Day Care Center, the KG2 children; Ali Ezzedin, Anna Kettell, Emaan Ali, Farah Abdel-Hafez, Lily Mitchell, Mohamed Khalil Otmani, Mohammad Atif Ul Haq, Muhammad Salih, Rinad Wael Al Aqaad, Samy Alnaser, Suleyman Qureshi and Mathew Cocks from Ecoventure for participating in the Ghaf tree planting!

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www.aus.edu



Make your change today.

Appendix 6 | Residential Student Life's presentation animation

The following pages are screen prints of the animation made for the Residential Student Life. A soft copy of this presentation animation is available for viewing on request.

The Office of Sustainability and Student Residential Life Department

present....



Ali

&



John

in ...

Living Green at AUS




Hi! My name is
Ali.



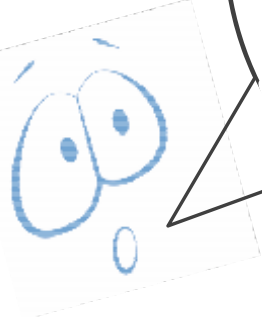
And I'm John.





We are trying
to become more
sustainable
by using our resources wisely.

Have a look at some instances
in our lives. Can you apply
similar practices to your daily
lives?

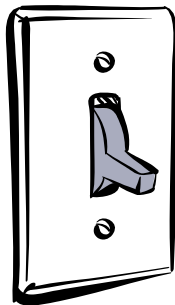



Hurry!
Lets go, the taxi is
waiting for us.





Yes, let's!
But first let me
switch off the lights
in my dorm room!



Switch off the lights
when you exit a room.





Hi! Are you ready
to study for
tomorrow's quiz?



Come on in!
And don't forget to
close the door behind
you once you enter the
room.



Close doors once you
enter/exit a room.



Shall we leave for
the Sports
Complex?





Sure, just let me save
my report and switch
off my laptop.



Turn off your **laptop** after
you have finished working
on it.



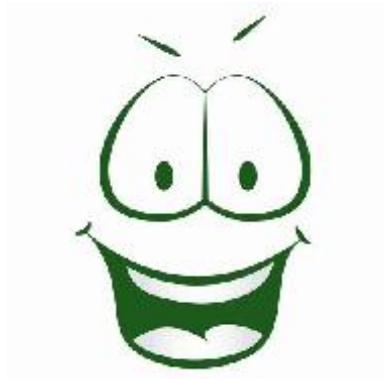
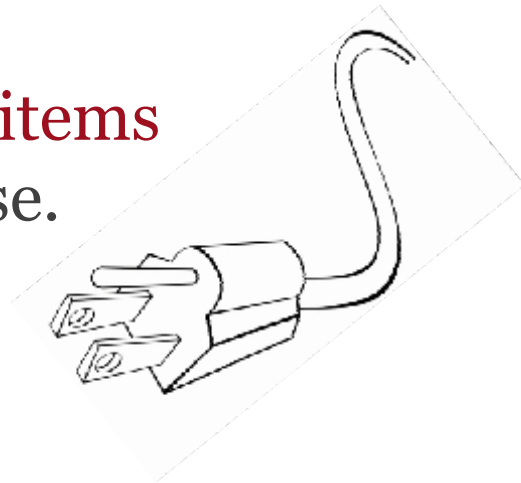
What are
phantom loads?



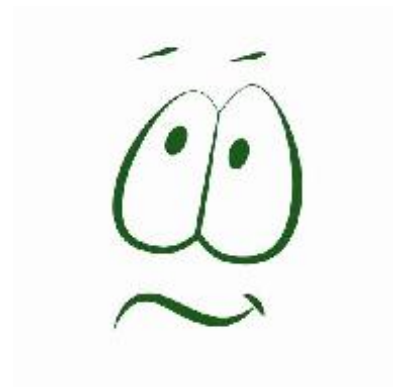
Chargers and other
appliances that continually
consume power even when
they are not in use, but are
connected to the power
supply.



Unplug electrical items
when not in use.

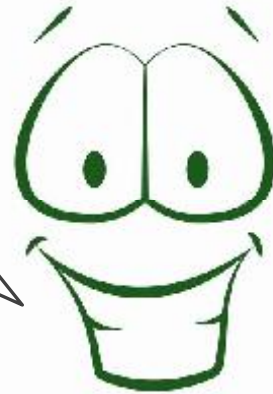


Bye David!
I am going to hail
a cab to Dubai.





There is no need for a cab! Hop into my car, I am going the same way!



Carpool
to destinations.





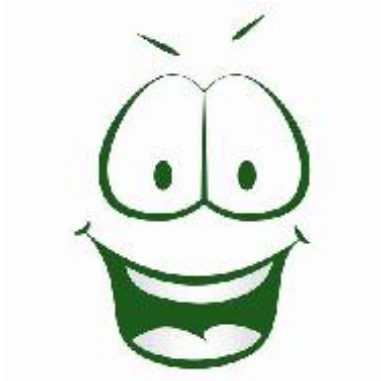
I am driving to class in a bit. Would you like to come along?



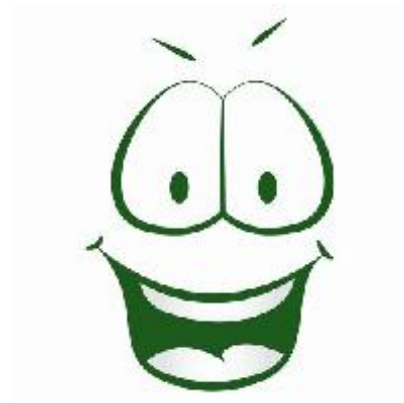
Yes! I'll come along.
Why don't we use the bus?
There is no need to find parking then!



Ride the bus to campus
or
walk, if the weather is
right!



The End



Appendix 7 | Presentation for staff orientation

The following pages are screen prints of the presentation used for staff orientation.

Office of Sustainability Staff Induction

19 March 2012

What we do

Awareness

- Monthly newsletter
Available at www2.aus.edu/sustainability
- Monthly sustainability tip
- Student, staff & faculty orientation
- Observation of World Days/ events
 - World Carfree Day
 - World Water Day
 - Earth hour
 - Earth dayCalendar of Events will be available
On the website soon
- Team up with other departments
 - Wellness
 - Day Care
 - Student Residential Life

Sustainability Induction _ Staff | 19.03.2012



Management | Office of Sustainability

What we do *continued...*

Commercial

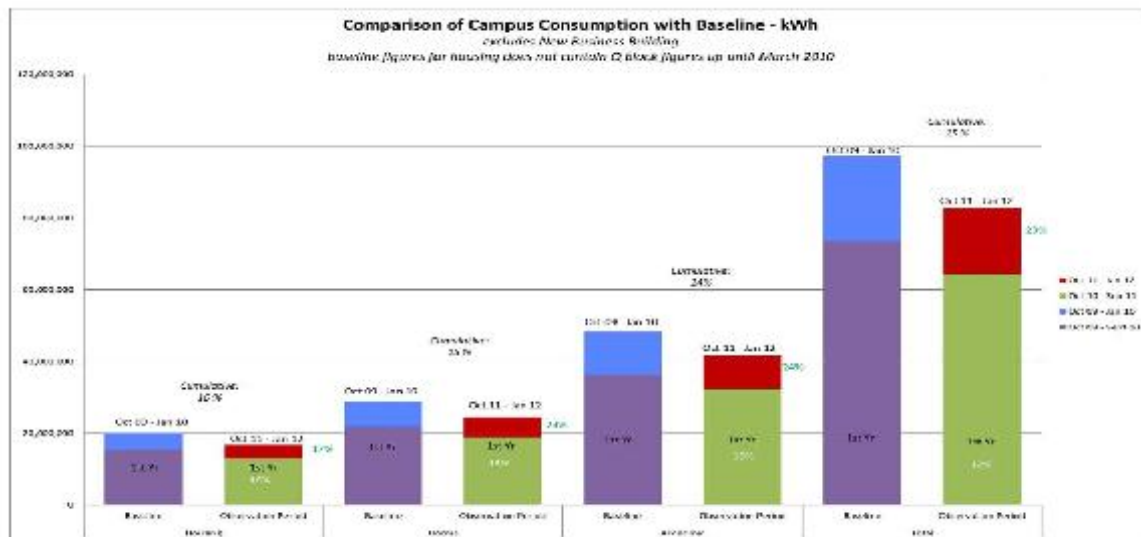
- Recycling initiatives
 - Collaboration with Bee'ah
- Consumption Analysis
 - Energy
 - Water
- Work with Facilities Department
 - Energy reduction program
 - Water conservation initiatives
- Becoming a Verified Corporate Hero
- Sustainability Steering Committee



Sustainability Induction _ Staff | 19.03.2012

What we do *continued...*

Achievements



Sustainability Induction _ Staff | 19.03.2012

Facilities available

- Three- stream bins
- Yellow bins in pantries
- Blue office baskets
- Blue bins for residents
- Blue truck bins in Housing Area
- Recycling deposit next to Sports Complex
- Dual flush
- Aerated taps
- Automated mixers



Sustainability Induction _ Staff | 19.03.2012

How to use facilities at work?



Paper & Card



Cans & Plastics



Cans & Plastics

Paper & Card

Non - recyclables



All recyclable materials
On campus residents only.
Available on request.

Sustainability Induction _ Staff | 19.03.2012

Help Required

- Close fridge doors
- Utilize dual flush
- Turn off running faucets
- Less disposables... use your own mug!
- Reusable bottles



Help Required

- Print double sided / Don't print!
- Switch off unused appliances/PCs/printers
- Switch off lights
- Close doors/windows
- Do not set air conditioning too low (cold)
- Use reusable bags
- Energy saving settings
- Report issues

THINK BEFORE USING ENERGY

Thank you