



INSTITUTE FOR SUSTAINABILITY REPORT #4

Environmental Management Assessment of Student Housing & Conference Services

May 2012



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EXECUTIVE SUMMARY

The environmental assessment of Student Housing & Conference Services (SHCS) at California State University, Northridge was conducted over a 3-day period on November 2, November 9, and December 2, 2009. The assessment was conducted by a team consisting of one faculty member and four graduate students from the Department of Recreation & Tourism Management.

The assessment of SHCS' operations and facilities was done using the Hotel Environmental Assessment (HEA) protocol developed by PA Consulting Group and the Caribbean Alliance for Sustainable Tourism. The HEA was modified (with permission) to assess SHCS. This assessment protocol provides a comprehensive evaluation of a property's environmental performance by: (1) establishing current baseline performance for water and energy use; (2) evaluating the extent to which environmental best practices are incorporated in operations, equipment and infrastructure; (3) identifying the environmental aspects (e.g. water use, solid waste generation) that are most effectively and least effectively addressed by the property; (4) identifying the environmental best practices that are already in place; and (5) presenting recommendations for improving environmental performance.

The HEA protocol is centered on a questionnaire consisting of questions based on a comprehensive list of 'best practices' designed to help a property reduce its impact on the environment and improve its use of water, energy, materials and chemicals. This questionnaire is subdivided into two major sections: facilities & equipment (best practices that are related to the facilities, equipment and fixtures) and operations (best practices that are related to the activities and operations carried out in all departments and areas). These two main sections are further divided into sub-sections that cover, inter alia, utilities, public areas, grounds, property management, administration, maintenance, and purchasing. Specific environmental aspects, namely, energy use, solid waste generation and handling, wastewater quality and handling, and chemicals use, as well as health and safety and community relations, were also evaluated. The questionnaire was completed through a mix of interviews, observation, and measurement. All common use areas and a representative sample of student accommodations were assessed. Utility bills and occupancy data for one year were also analyzed.

The analysis of data collected through the best practices questionnaire showed that while SHCS is relatively strong in terms of facilities, its operations are rather weak. In other words, while a significant amount of efficient equipment is in place, current operational practices lessen its effectiveness and hence its positive effect. Notable best practices include:

- *the use of energy efficient lighting in most areas;*
- *water conservation devices in most areas;*
- *the use of motion sensors in accommodation units in a few buildings; and*
- *the construction of the most recent residential buildings to Leadership in Energy & Environmental Design (LEED) silver standard.*

As previously noted, the operational aspect of SHCS is where most change is warranted and recommendations are made to this end. The recommendations include:

- *a more formal approach to environmental management through the creation of a 'green team' and the establishment of an environmental policy;*



- *the creation of purchasing guidelines to minimize wastage and ensure that appropriate products are being used consistently;*
- *better management of public areas to prevent lighting of unoccupied areas 24 hours per day;*
- *greater attention to preventing and repairing leaks in irrigation and other lines; and*
- *the creation of an awareness campaign to encourage residents to reduce their consumption of water and energy.*

The utility use indices for SHCS for the 12 month base period of September 2008 to August 2009 were calculated by dividing the property's monthly water, electricity, and gas usage by the number of residents for that same period. The indices were:

- *water - 2,399 US gallons/month per resident*
- *electricity - 265 kWh/month per resident*
- *gas - 10 therms/month per resident (291 kWh/month per resident)*
- *total energy - 556 kWh/Res.*

There is some cause for concern over these data given that they exceed the average household consumption for the state of California. Further analysis indicated that there was significantly higher per resident consumption during the low occupancy months of June, July and August, which is indicative of a high base load. The base load is defined as the water and energy consumed in activities or events that are not directly related to the number of residents living in housing (e.g. nighttime illumination of the grounds and public areas, air-conditioning of public areas). A high utility base load is a sign of inefficiency.

The draft assessment report was presented to the Director of Housing and key team members who have committed to implementing changes. The environmental assessment of SHCS represents the beginning of a process which hopefully will culminate in the establishment of an environmental management system (EMS). The EMS is a management tool through which a company can assess and improve its environmental performance in a systematic way and establish, achieve and sustain its environmental performance objectives. There are myriad benefits to implementing an EMS which have been documented across a range of companies and industries.



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INTRODUCTION

Student Housing & Conference Services (SHCS) at California State University, Northridge is an important component of the campus. Understanding SHCS' resource consumption patterns is critical given that SHCS includes several thousand individuals who live on campus and use resources whether or not classes are in session.

SCOPE OF THE ASSESSMENT

The assessment of SHCS' operations and facilities was done using the Hotel Environmental Assessment (HEA) protocol developed by PA Consulting Group and the Caribbean Alliance for Sustainable Tourism. The HEA was modified (with permission) to assess SHCS. This assessment protocol provides a comprehensive evaluation of a property's environmental performance by: (1) establishing current baseline performance for water and energy use; (2) evaluating the extent to which environmental best practices are incorporated in operations, equipment and infrastructure; (3) identifying the environmental aspects (e.g. water use, solid waste generation) that are most effectively and least effectively addressed by the property; (4) identifying the environmental best practices that are already in place; and (5) presenting recommendations for improving environmental performance.

PURPOSE OF ASSESSMENT

The purpose of the findings and recommendations is to provide an objective assessment and to recommend practical actions

SHCS can take to improve its environmental performance. The findings and recommendations will also facilitate SHCS' efforts to introduce an Environmental Management System (EMS) if it so desires.

An EMS is a management tool through which a property can systematically evaluate and improve its environmental performance and establish, achieve and sustain its environmental performance objectives. The potential benefits of EMS programs are numerous and include economic and operational benefits, as well as environmental benefits.

The assessment of Student Housing & Conference Services at California State University, Northridge was conducted over a 3-day period on November 2, November 9, and December 2, 2009.

DESCRIPTION OF THE PROPERTY

Student Housing & Conference Services offers an array of amenities, activities and services. Student housing is broken down into two major locations on campus: University Park and University Village Apartments.

University Park

University Park has two categories of living quarters: The Suites and The Apartments. All residents

have access to wireless Internet, swimming pools, and sports facilities.

The Suites Facilities

- 2-person bedrooms, furnished
- 1 semi-private bath per every two bedrooms
- Living and study lounge

The Apartments Facilities

- Two-bedroom, one bath furnished (4 students total)
- Living room/dining area
- Private patios
- Most with kitchens

University Village Apartments

University Village Apartments are specifically for families. Community amenities include swimming pool, common room and children's playground.

- 1 bedroom, 1 bathroom
- 2 bedroom, 1 bathroom
- Living room, dinette, kitchen
- Private patios

WATER & ENERGY CONSUMPTION

The utility use indices for Student Housing are presented in this section. The indices for the 12 month base period September 2008 to August 2009 were calculated by dividing the property's water, electricity, and gas by the number of residents for that same period. Table 1 summarizes Student Housing's water and energy use

Water use index	2,399 gallons/month (per resident)
Electricity index	265 kWh/month (per resident)
Gas	291 kWh/month (per resident)
Total energy index	556 kWh/month (per resident)

Table 1. Student Housing Water and Energy Use

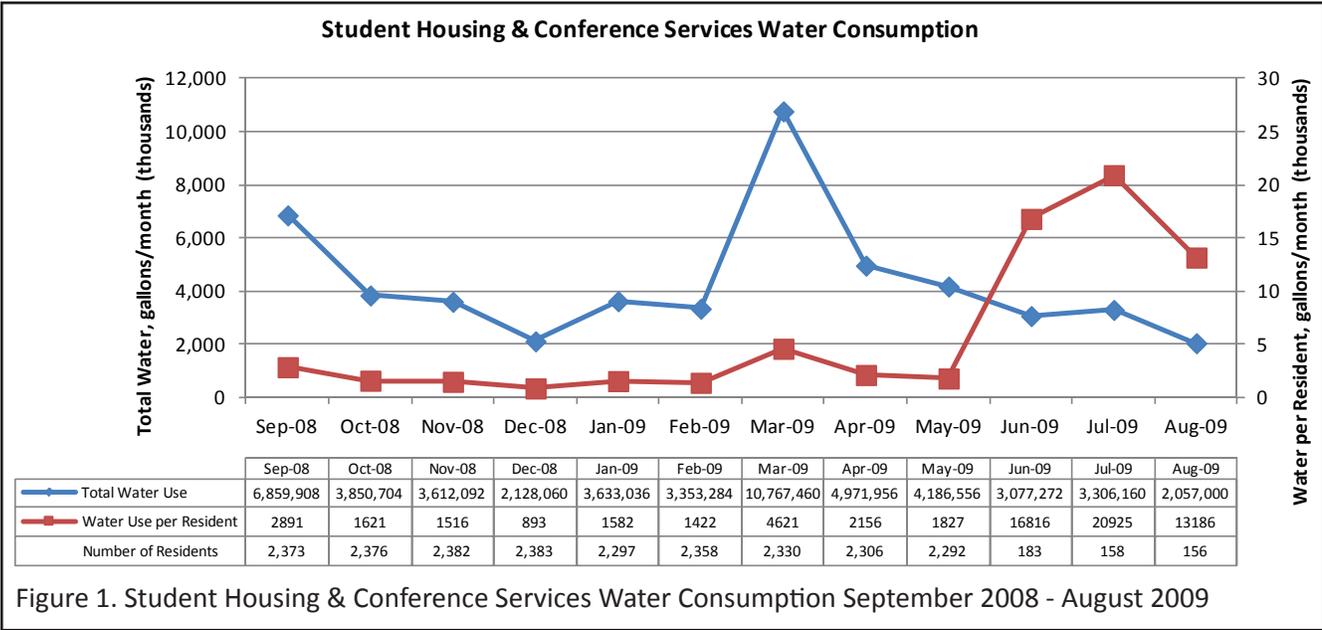


Figure 1. Student Housing & Conference Services Water Consumption September 2008 - August 2009

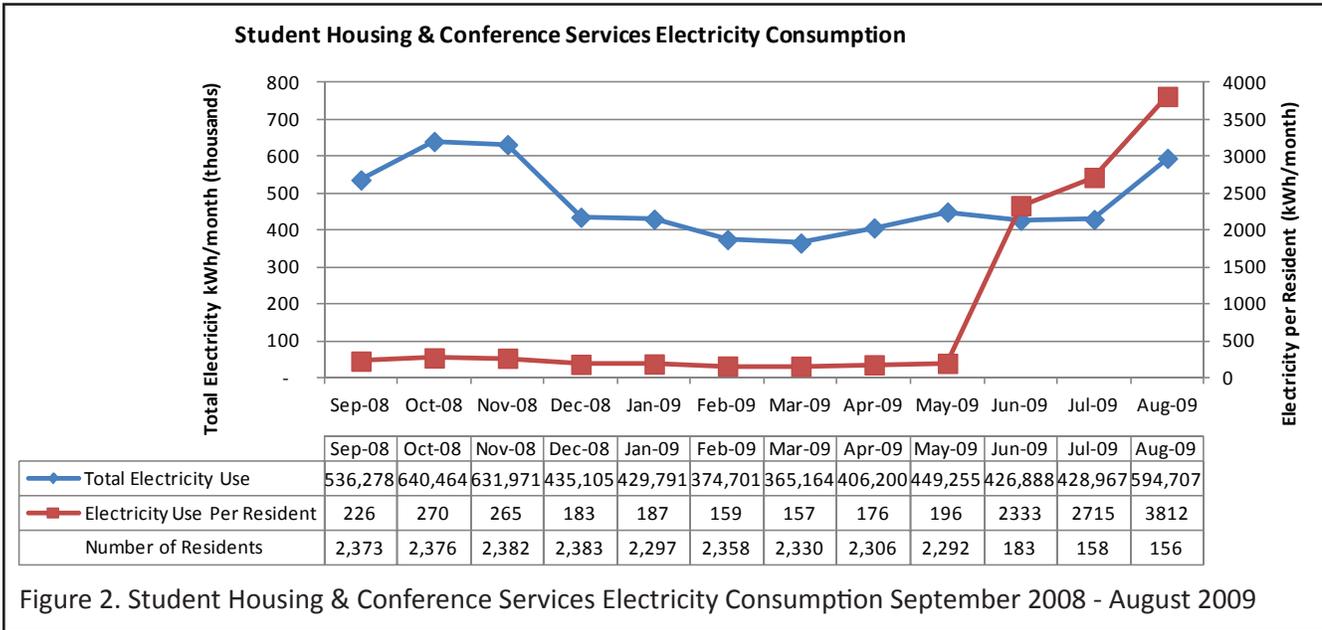


Figure 2. Student Housing & Conference Services Electricity Consumption September 2008 - August 2009

per resident.

The data used to calculate these indices are presented in Figures 1-3, which show how the property's use of water, electricity, and gas per resident changes from month to month. It should be noted that, although the monthly utility

use indices are expected to vary (weather conditions, seasons, etc.), the significantly higher consumption during low occupancy periods may be the result of a high utility base load. The utility base load is defined as the water and energy that is consumed in activities or events that are not

directly related to the number of residents living in housing. A high utility base load is therefore a sign of inefficiency. Examples of activities or events that contribute to the utility base load include water leaks, nighttime illumination of the grounds and public areas, and air-conditioning of public areas.

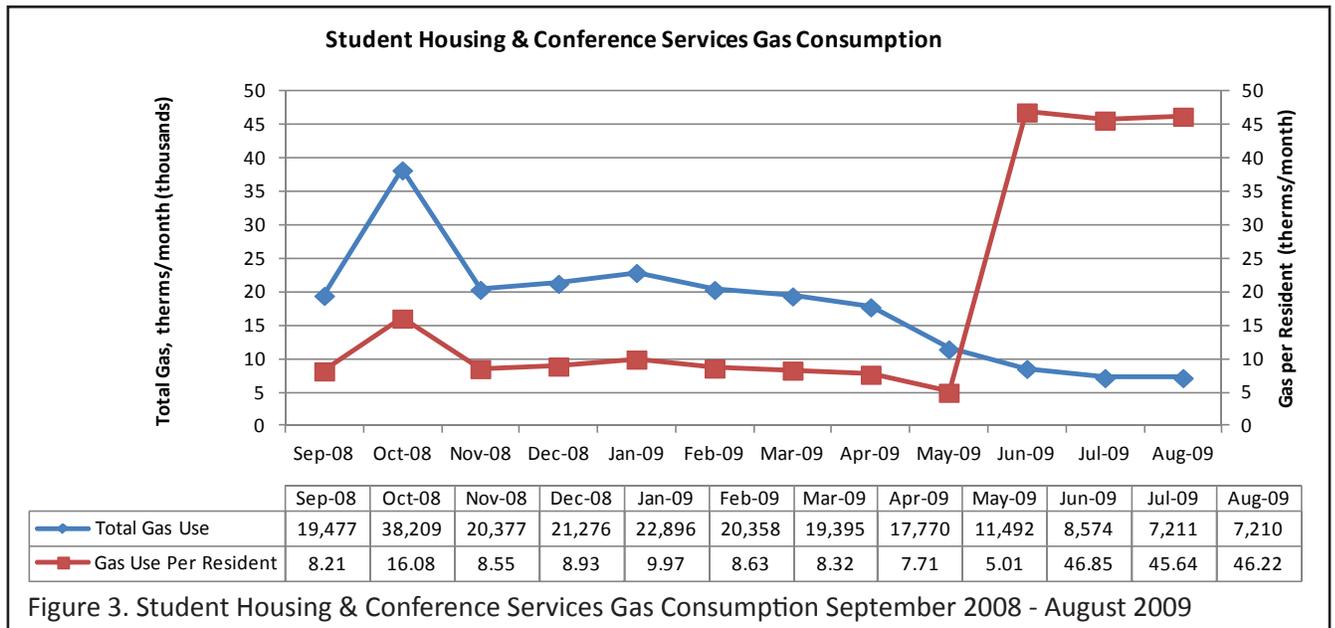


Figure 3. Student Housing & Conference Services Gas Consumption September 2008 - August 2009

ENVIRONMENTAL BEST PRACTICES CURRENTLY IN PLACE

Some of the environmental best practices that are already in place at Student Housing are summarized below:

- All common areas and guestrooms use florescent lighting.
 - Examining the florescent lighting usage is one of the major parts in our assessment. Florescent lighting consumes approximately one-sixth the electricity of comparable incandescent lighting. We noticed that all the main areas including the lobby, office, hallway and all living rooms in the dorm are using florescent lighting.
- Maintenance staff are scheduled to clean the lint traps within each laundry room once per day.
 - Cleaning the lint traps

regularly can prevent the risk of fire and allow the dryers to work more efficiently with less energy.

- Most of the kitchen faucets and shower heads are water-saving.
 - 19 out of 20 shower heads and 20 of 20 kitchen faucets were within quantified water-saving standards.
- All doors are loaded with spring door-closers.
 - All of the rooms within the dorms, offices, and main entrances are loaded with automatic closing spring door-closers which assist the A/C units and heaters in operating more efficiently.
- There are signs "Please turn lights off" appearing in public areas such as the laundry and meeting rooms. However these signs do not appear in all buildings consistently, or in various public areas, throughout Student Housing.
- A simple sign helps remind students to save energy. Some public restroom toilets have

a dual flushing feature to conserve water.

- Dual flush toilets save more water than traditional single flush toilets.
- Digital thermostats are used in some rooms for visible, precise control of room temperatures.
- Motion and open window sensors are installed in The Suites buildings.
 - These technologies help save energy and reduce unnecessary waste.
- The Suites buildings which opened in 2009, were built to meet LEED Silver specifications. However they are not certified.
 - The LEED rating system offers four certification levels for new construction that correspond to the number of credits accrued in five green design categories: sustainable sites, water efficiency, energy and atmosphere, materials and resources and indoor environmental quality.



- Maintenance staff are scheduled to clean the A/C filters every 90 days. (Recommended every 30 days in The Suites buildings).
 - Changing filters regularly helps A/C units to operate much more efficiently.
- Gas is used widely in the property for heating and for all student dryers.
 - Using gas (over electricity) conserves a significant amount of energy.

BEST PRACTICES QUESTIONNAIRE AND SCORES

A key tool in this assessment was a questionnaire focusing on environmental best practices, that are designed to help the facility reduce its impact on the environment and improve its use of water, energy, materials and chemicals. The questionnaire is subdivided into two major sections:

- Section F - “Facilities and equipment” covers the best practices that are related to facilities, equipment and fixtures
- Section O - “Operations” covers the best practices that are related to activities and operations.

Each best practice in the questionnaire is followed by a rating (column 1) which reflects the degree to which the best practice has been implemented. The 5 possible ratings are:

- High: This is a well-established practice or this practice was observed in more than 75% of the cases surveyed by the assessment team.
- Medium: This practice is often implemented, or this practice was observed in 50 to 75% of the cases

surveyed by the assessment team.

- Low: This practice is sometimes implemented, or this practice was observed in 25 to 50% of the cases surveyed by the assessment team.
- Zero: This practice is rarely or never implemented, or this practice was observed in less than 25% of the cases surveyed by the assessment team.
- N/A: This practice is not applicable.

The importance of the best practice is indicated by the weights (H = high, M = medium, L = low, blank = no impact) that are presented in columns 2 to 9. The weights that have been assigned to each best practice reflect the impact of the best practice on water use, energy use, solid waste generation and handling, wastewater quality and handling, chemicals use, safety and health, nature conservation, and community development.

Both the weights and the assigned ratings of the best practices are used to calculate the scores presented at the bottom of each

sub-section. The general rule is: the higher the rating and the higher the weights, the greater the impact of the best practice on the overall score. For example, a “high-weight” best practice that receives a “High” rating will have a greater effect on the overall score than a “low-weight” best practice that also receives a “High” rating.

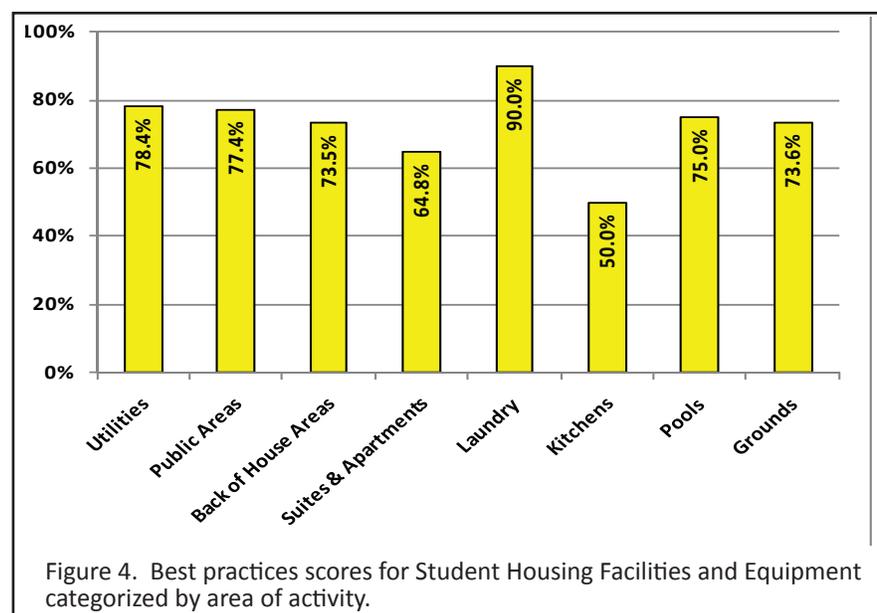
The “percent best practice score achieved” provides a general indication of how well your facility has implemented the best practices presented in the sub-section. For example, a facility that has fully implemented all applicable best practices in a sub-section will obtain a score of 100% for that particular sub-section.

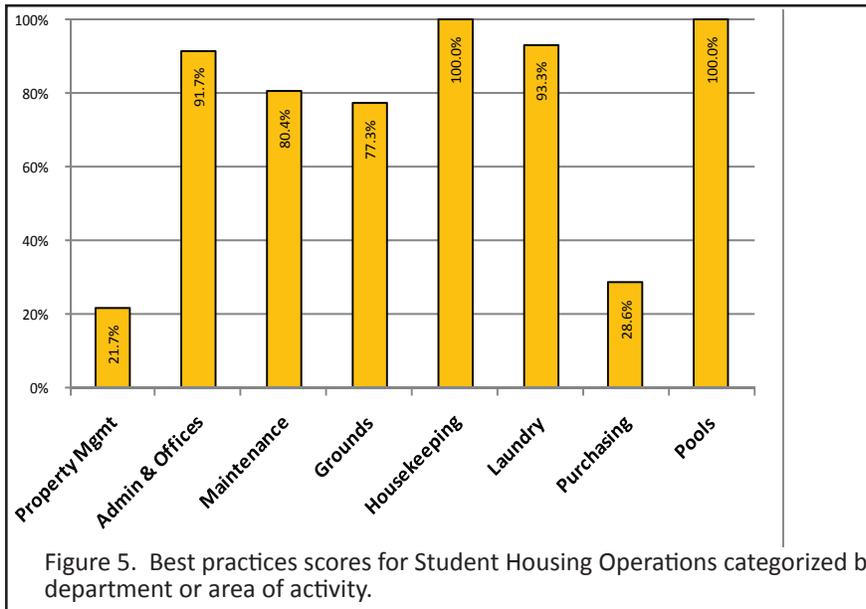
The results from the best practices questionnaire are presented in the following table and charts.

KEY RECOMMENDATIONS

PROPERTY MANAGEMENT

- A/C and heating intake vents

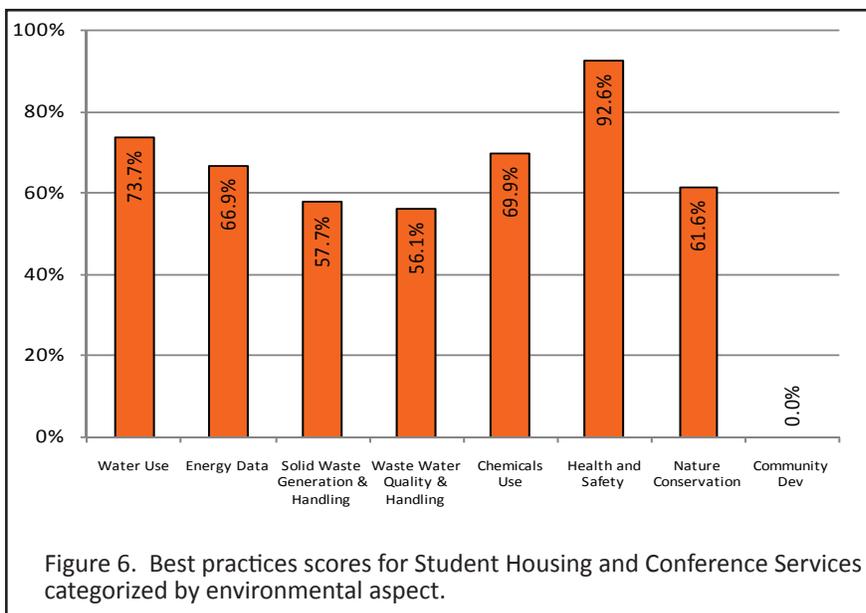




and replace improperly functioning seals on the deficient refrigerators.

Water conservation

- Bathroom faucets in all dorm and public restrooms exceeded current water saving standards of 1.5 gpm or less, but in one test the sink was producing over 4 gpm.
 - Add faucet aerators to all dorm and public bathrooms.
 - Turn faucet shut-off valves down to reduce flow, especially in The Suites buildings where faucets meet current best practice standards.
- Irrigation equipment is leaking in various locations throughout Student Housing areas.



Energy Conservation

During the assessment it was found that most patio lights (in the dorms) were not efficient, thus replacing such lights with energy efficient ones is recommended for this issue. Also, most lights were kept on inside the dorm buildings during the day. In order to save energy, an increase in natural sunlight entering the building would avoid the necessity of turning on the major hall lights during daylight hours. Or, the hall lighting can be staggered so that not all of the lights are on at the same time. Other lights, such as those in the mailroom, were also kept on all day. Some mailrooms and laundry rooms had a sign posted reminding students to turn off the lights before exiting these rooms. Our recommendation would be to have such signs posted in each laundry room, mailroom,

were dirty in a high number of facilities assessed.

- Cleaning of vents throughout all buildings both in dorm rooms and public areas, such as laundry and common recreation rooms.

MAINTENANCE

General issues

- In select dorm rooms, refrigerator seals were not working properly.
 - Housing maintenance staff to go through and inspect all of the refrigerators onsite in an effort to identify



and other common areas, so that all students are aware of the need to conserve energy. A condensed summary follows:

- A high level of balcony lights are incandescent and thus not energy efficient.
 - Replace with florescent or LED bulbs similar to some in assessed rooms.
- Most lights in public entry rooms are kept on all day.
 - Natural lighting could be used and lights turned off during day.
- Lights in the mailroom were left on all day.
 - A motion sensor could be installed to turn lights on when in use, and off when not.
- Hall lights in select buildings are not efficient (building #13).
- Some windows in dorm rooms were left open when the A/C was turned-on.
 - Educate students to the inefficiency of this contradictory air circulation practice and seek to proactively provide assistance to stop any dueling circulation problems. (Potentially with maintenance personnel)
 - Educate about the use of cross ventilation in rooms, by opening windows and patio doors. Students may not be aware of this, but it is an easy way to avoid using the air conditioning when natural air can be used to cool a room. This will also help to reduce cooling costs.

PURCHASING

- No formal environmental purchasing policy or preferential purchasing practices for local businesses exists.
 - Purchasing practices needs to be modified to include a formal environmental purchasing policy and a preference to local vendors, as well as the currently preferred minorities, veterans, and disabled vendors.

HOUSEKEEPING & LAUNDRY

- More than half of all lint traps tested were dirty and in need of cleaning (although they were said to be cleaned daily)
 - Post a sign in the laundry rooms that asks students to clean out lint filters after they are done drying clothes. This will encourage students to become more knowledgeable of best practices and allow them to take more responsibility in keeping the laundry facilities clean and efficient.

GROUNDS & GARDEN

- The grounds areas were flooded in some areas from sprinklers and other possible leaks.
 - In order to fix this, the grounds staff will need to test the sprinklers throughout the property and create a master list with an intended timeframe for various projects completion.

ASSESSMENT TEAM

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