Building A GREEN RECREATION COMPLEX

Austin Mitchell, Marina Petrilli, Daniel Sundaram

Introduction

In the 2016-2017 school year, Boston College will undergo the development of a new recreation facility for students, staff, and faculty. Collegiate recreation facilities have unique energy and water needs. This project considers how the new Boston College recreation facility can be sustainable. With the environmental challenges we face today, water and energy are valuable resources which must be used efficiently. Our research examined possible energy efficient and water saving methods which could be implemented to create a sustainable facility, such as solar panels, rainwater catchment, and energy efficient lighting.

Methods

Qualitative analysis included visiting and learning about other collegiate recreation facilities which helped to attain a benchmark of existing collegiate recreation facilities that have implemented sustainable features. The quantitative analysis included examining the potential monetary and environmental benefits of sustainable features such as solar panels, rainwater catchment, and energy efficient lighting; this helped to understand the current state of the Flynn Recreation Complex and provide recommendations of sustainable practices based on projected future energy and water usage of the new recreation facility.

- Compared energy and water efficiency methods at Worcester Polytechnic Institute (WPI) and Boston University (BU)
- Analyzed current peak hours of the Flynn Recreation Complex
- Conducted benefit-cost analysis of potential sustainable design features

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Solar

738 solar panels could be installed on the roof

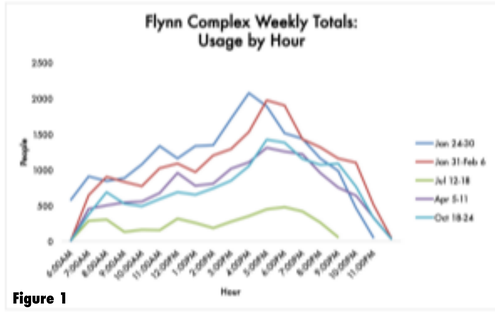

Figure 1

solar energy to heat the pool

flat roof area of new rec **14,200** sq. ft.

solar panels could offset fossil fuel use during low usage

Rainwater Catchment

use rainwater in the toilets

potential collection of **597,040.44** gallons of water

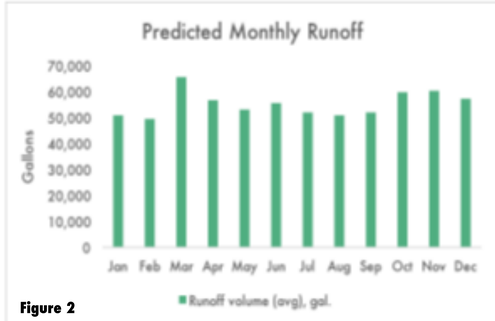

Figure 2

Lighting

average lifespan of bulbs

LED: 25,000 hours

Incandescent: 1,200 hours

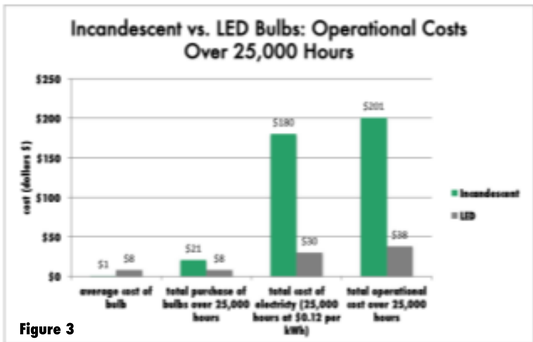

Figure 3

Watts Used

of an incandescent bulb **60 Watts** > of an LED bulb **10 Watts**

Results

Qualitative analysis showed the use of various sustainable design features at WPI and BU such as solar panels, rainwater catchment, and LED lighting. The energy from solar panels could offset the use of fossil fuels during low periods of usage such as during summer months seen in Figure 1. Quantitative calculations show that Boston College could save over $11,500 per year on water if a rainwater catchment system is installed based off the predicted monthly runoff seen in Figure 2. In addition, the results demonstrate the potential energy and financial savings of installing LED bulbs as Figure 3 shows the financial savings.

Conclusion & Recommendations

Boston College could install solar panels, rainwater catchment, and LED lighting in an effort to create a more sustainable recreation facility. These measures will reduce energy and water costs in the long-run while conserving these resources starting immediately. In addition, it is recommended that a water meter and energy meter be installed to better monitor the use of the new recreation facility. By combining a state of the art facility that serves the needs of a diverse student body with design elements that can run it efficiently, the university can build a center that will improve the health of individuals and the environment at the same time.

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