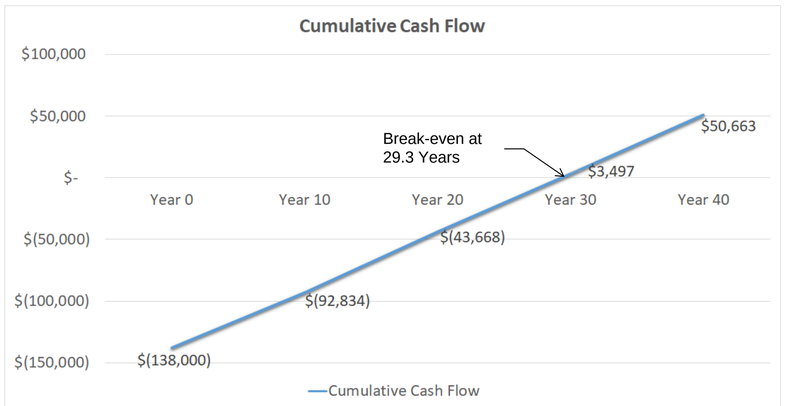
Value of Utilizing Tubular Daylighting Devices in CSU, Channel Islands' Gateway Hall

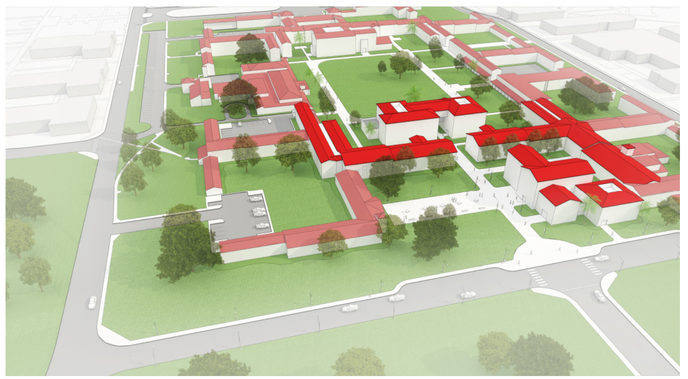


Daylighting is becoming an increasingly more important aspect of building design as our planet's natural resources deplete and the cost savings of daylighting systems grow. California State University, Channel Islands (CSUCI) values the use of daylighting and aims to incorporate it into its upcoming project, Gateway Hall. One option of daylighting that the campus is considering for this project is tubular daylighting devices (TDD). This paper will study the use of tubular daylighting devices and the potential cost savings that they could have on Gateway Hall. The company leading the way in TDD technology is Solatube, whose products are among the most efficient and advanced in the industry. To understand the cost benefits of TDDs, this paper estimates the cost of using Solatube's SolaMaster series throughout the building. Then, CSUCIs yearly sunshine hours show us how many hours in a year that the TDDs could replace the use of highly efficient LEDs, which are typical at CSUCI. The findings showed that TDDs are able to cut energy needs for lighting by nearly 75%, but due to the relatively low cost of lighting the building with LEDs and high initial cost of TDDs, the return on investment is low. Though large scale use of TDDs in place of LED lighting doesn't bring high savings to the campus, they are a means of providing comfortable lighting and reducing the campus's energy requirements.

Keywords: Tubular Daylighting Devices, Daylighting, Solar Lighting, Energy Savings

Advantages: Comfortable lighting, energy efficient, reduced campus footprint

Disadvantages: Large initial cost, poor roof aesthetics, small return on investment



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