







Q

Home ► All Journals ► Engineering & Technology ► The Engineering Economist ► List of Issues Volume 51, Issue 3 ▶ The Economic Benefits of Green Buildings

The Engineering Economist >

A Journal Devoted to the Problems of Capital Investment

Volume 51, 2006 - Issue 3

6,106 168 Views | CrossRef citations to date | Altmetric Original Articles

The Economic Benefits of Green Buildings: A Comprehensive Case Study

Robert Ries, Melissa M. Bilec, Nuri Mehmet Gokhan & Kim LaScola Needy

Pages 259-295 | Published online: 24 Feb 2007

66 Cite this article ▶ https://doi.org/10.1080/00137910600865469

> Sample our Economics, Finance, Business & Industry Journals >> Sign in here to start your access to the latest two volumes for 14 days

Full Article





66 Citations

Metrics

➡ Reprints & Permissions

Read this article

Share

Abstract

Several studies suggest green construction can result in significant economic savings by improving employee productivity, increasing benefits from improvements in health and safety, and providing savings from energy, maintenance, and operational costs. This article quantifies these benefits by establishing a set of measurable performance and building attribute variables, collecting longitudinal data, statistically analyzing the results, and performing sensitivity analyses for a precast concrete manufacturing facility located near Pittsburgh, Pennsylvania. Productivity, absenteeism, energy, and financial data are presented and an engineering economic analysis is reported. Results show that in the new facility manufacturing productivity increased by about 25%; statistically significant absenteeism results varied; and energy usage decreased by about 30% on a square foot basis. Considering all aspects, the economic analysis showed that the company made the correct decision to build a new green facility.

ACKNOWLEDGMENTS

The authors thank the University of Pittsburgh's Mascaro Sustainability Initiative (MSI) for their support of this project. MSI is aimed at initiating and nurturing research and education in the research thrust areas of green construction and sustainable water use. We appreciate the support and help of Castcon Stone Inc. as our case study. Castcon is one of the leading pre-cast concrete manufacturers in the United States. We also thank Pittsburgh's Green Building Alliance and the architectural firm Perkins Eastman.

Notes

- ¹New and old facility based on square foot comparison. There is one utility meter for both office and plant.
- ¹Total absences do not include excused with doctor's excuse or workers' compensation.
- ¹The ratio used to extrapolate data was changed to 25% building related and 75% production related.
- ²The ratio used to extrapolate data was changed to 75% building related and 25% production related.
- ³The productivity was changed to 270 pounds/hour for the new facility; and to 180 pounds/hour for the old facility.
- ⁴The production of both facilities were modeled at 70% of capacity.
- ¹Center for Building Performance and Diagnostics, Carnegie Mellon University, Workplace Satisfaction Survey
- ²Center for Built Environment at Berkeley, Occupant Indoor Environmental Quality Survey

View more

Published online: 13 Sep 2007

Information for

Authors

R&D professionals

Editors

Librarians

Societies

Opportunities

Reprints and e-prints

Advertising solutions

Accelerated publication

Corporate access solutions

Open access

Overview

Open journals

Open Select

Dove Medical Press

F1000Research

Help and information

Help and contact

Newsroom

All journals

Books

Keep up to date

Register to receive personalised research and resources by email



Sign me up











Accessibility



Copyright © 2025 Informa UK Limited Privacy policy Cookies Terms & conditions



Registered in England & Wales No. 01072954 5 Howick Place | London | SW1P 1WG