

Assessment of Economic and Environmental Impacts of Energy Conservation Strategies in a University Campus

[Sunday O. Oyedepo](#)

[Emmanuel G. Anifowose](#)

[Elizabeth O. Obembe](#)

[Joseph O. Dirisu](#)

[Shoaib Khanmohamadi](#)

[O. Kilanko](#)

[P.O. Babalola](#)

[O.S. Ohunakin](#)

[R.O. Leramo](#)

[O.C. Olawole](#)

Book Editor(s):
[Suman Lata Tripathi](#)

[Sanjeevikumar Padmanaban](#)

First published: 15 December 2020

<https://doi.org/10.1002/9781119760801.ch16>

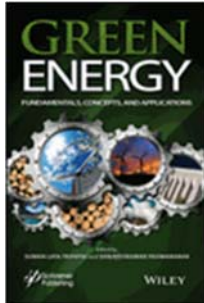
[SHARE](#)

Summary

Large institutions, such as universities, consume large amounts of energy daily. The quantity of energy consumed is continually rising due to an increase in student enrolment and expansion of energy facilities. Energy conservation practices are essential at the university campus as they decrease environmental impact and also reduce energy cost burdens on university management. Hence, it is essential to understand the pattern of energy consumption in the university campus to ensure the sustainability of energy usage, reduction in its costs and environmental impacts. This study takes a look at the energy consumption in Covenant University to provide recommendations that would help to decrease the energy consumption in the university. An energy audit was conducted on 18 selected buildings to determine the electrical appliances responsible for energy consumption in the selected buildings. Building energy models were constructed for each of the

buildings using Quick Energy Simulation Tool (eQUEST Software) to run parametric simulations on the generated models. The utility bills of the university for the past five years (2014 – 2018) were examined for seasonal variation of energy consumption. The study revealed that there are several ways of energy wastage in the university.

Additionally, suggestions on possible solutions to energy conservation strategies to reduce energy consumption in the facilities are presented. A qualitative analysis of two recommendations showed that over N30 million (\$81,000) could be saved annually with a payback time of fewer than six years. Also, the implementation of these suggested recommendations could eliminate about 500 tons of CO2 emissions annually.



[Green Energy: Solar Energy, Photovoltaics, and Smart Cities](#)

Details

© 2021 Scrivener Publishing LLC

Keywords

- [Energy efficiency](#)
- [environmental impacts](#)
- [energy consumption](#)
- [energy audit](#)
- [building energy moels](#)

Publication History

- Published Online:18 December 2020
- Published Print:15 December 2020

ISBN Information

- Online ISBN: 9781119760801
- Print ISBN: 9781119760764

Copyright © 1999-2021 [John Wiley & Sons, Inc.](#) All rights reserved

WILEY

