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- [Previous Article](#)
- [Next Article](#)

RESEARCH ARTICLE | AUGUST 17 2022

Solar powered vaccine refrigerator for rural off-grid areas in Nigeria

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More than a billion people around the world have no access to electricity and about 85% of them residing in rural areas in sub-Saharan Africa. The electricity supply in Nigeria right now is atrocious, and the dependence of hospitals on the on-grid supply is unadvisable, hence the need for a suitable alternative. Solar cell refrigerators for vaccine storage are offered as a viable solution to replace the noisy and eco-unfriendly gasoline and diesel generators that are currently used in many hospitals in Nigeria. The main

objective of this work is to select affordable and portable components of the photovoltaic system with solar panels, charge controllers and deep cycle battery, inverter and refrigerator to store about 50 litres vaccine in rural hospitals and primary health centres. A 75W refrigerator with 100W solar panel, 20A charge controller, 100AH deep cycle battery and 1000W inverter was arrived upon at a total cost of N135,000 per health centre. This will invariably make the vaccine available, thereby reducing infant and maternal mortality rate in Nigeria.

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