

***Performance Analysis and Effectiveness of Implementing PJU-CAM Solar Cell  
Based on ESP32-CAM to Enhance Community Mobility on the Argopuro  
Mountain Evacuation Route***

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***ABSTRACT***

*Solar-powered street lighting systems serve as an alternative solution to overcome limited electricity access in remote areas. This study aims to analyze the performance and effectiveness of the PJU-CAM Solar Cell, based on ESP32-CAM, in improving residents' mobility along the evacuation route of Mount Argopuro. The system implementation includes the installation of solar panels, LiFePO4 batteries, PIR sensors for motion detection, and an ESP32-CAM as a monitoring camera. Testing results indicate that the PJU-CAM Solar Cell provides adequate illumination in accordance with rural road lighting standards. A survey conducted among local residents revealed that 90% of respondents reported increased safety and comfort when passing through the evacuation route at night. The system's effectiveness is also demonstrated by the stability of the ESP32-CAM connection and the efficiency of solar energy utilization. Therefore, the implementation of the PJU-CAM Solar Cell can serve as a sustainable solution for lighting in areas with limited electricity access.*

***Keywords:*** *Solar Energy, ESP32-CAM, PJU-CAM Solar Cell*