

UNIVERSITI TEKNOLOGI MARA

**GREEN ELECTRICITY:
ASSESSING THE FEASIBILITY OF
SOLAR PHOTOVOLTAIC
TECHNOLOGY FOR ROYAL
MALAYSIAN POLICE (RMP)
BUILDING**

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ABSTRACT

In future, global energy crisis may leads to frequent power interruptions that cause safety and security issues. Therefore, many countries, including Malaysia, need to strengthen its energy security system or otherwise it will create vulnerable security environment for the nation. The most significant organisation to maintain the national security in Malaysia is the Royal Malaysia Police (RMP). At the moment, this organisation is fully reliant on conventional electricity supply that can be suspended if national oil reserve is interrupted. Therefore, it is significant for RMP to have self-sufficient electricity supply in order to remain their operation in any circumstances. With constant solar irradiance, Malaysia has a great potential in generating green electricity through PV panels. This study has explored the feasibility of utilising solar electricity for RMP. Using the Network Operation Centre (NOC) in RMP as the main case study, the research has obtained several significant results to prove that green electricity generated from solar PV panels are feasible. Using Homer software, the Hybrid system with the PV capacity of 396kW has been identified as the most optimize configuration for NOC core systems. The suitable panels are monocrystalline or polycrystalline solar panel with the power capacity of 250W and above. The energy is projected about 36% from the whole building energy requirement with the cost of MYR2, 141,555. Thus, it contributed to feasible initial cost, Net Present Cost (NPC) and Cost of Energy (COE). It will contribute to 50% of monthly electricity bill reduction and 70% of cost saving within 25 years with expected of carbon emission (CO₂) reduction at 51,330 (kg/yr).

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