

UNIVERSITI TEKNOLOGI MARA

**A COMPARATIVE ANALYSIS
STUDY ON THE PHOTOMETRIC
PERFORMANCE AND ELECTRICAL
CHARACTERISTICS OF LIGHT
EMITTING DIODE STREET LIGHTS
FOR POWER UTILITY IN
MALAYSIA**

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MSc

June 2020

AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Recently, a rapid development technologies Light Emitting Diode (LED) in street lighting has recently developed and rapid development has continuously develop due to its character of better energy efficiency, long lifespan and robutsness. The new street light technology is developed as alternatives to High Pressure Sodium Vapour (HPSV) street lighting. In this research study, the aim is to study the photometric performance and electrical characteristics of LED Street Light in comparison to HPSV Street Light. This includes of its, photometric quality, electrical characteristics of the LED Street Light, and its energy saving. The study involves installation of 128 unit of LED street lights at site, measurement of its photometric performance and electrical characteristics at site. There are eight LED street lights technologies sourced from several manufacturers with variance of their technologies and design installed for this research study. From the study, it is found that LED Street Light is technically viable to replace to HPSV Street Light, though in this research, it is found that not all LED Street Light technologies comply to the requirement of Road Lighting Classification. It is also indicated that LED street lights can offer in between 23% to 58% energy saving. From the study, it shows that 3% failure rate for the first year of installation which is lower than HPSV Street Light failure, thus, shows that LED street lights requiring fewer repairs.

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