

# **Energy Efficient, Intelligent Public Street Lighting System**

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# Declaration

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references are given.

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# **Acknowledgement**

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## **Abstract**

Power demand is increasing day by day. Minimizing power wastage to face for the future power demand has become a worldwide concern. People are inspired to find alternative approaches to deal with energy conservation. Public streetlighting system is one sub system which accounts for a considerable energy consumption from entire global energy. it takes approximately 40% of the entire energy consumption.

This research proposes a method to save energy through smart control of public streetlights. The proposed system uses Light Emitting Diodes over traditional bulbs. The system is combined with existing traffic management system to get the real time traffic information to control streetlights. Different lighting classes are proposed for Highways, Normal Motor ways and Walking Paths based on speed limits allowed on roads. One sided and both side light installation methods are used based on the type of road. Solar cells are used as primary power source and in the absence of solar energy secondary power backup source is used. Charging circuit can recharge the battery when the battery power gets low. Moreover, charge controller between battery and solar panel can save the lifetime of battery. Each streetlight is attached a light sensor, ultrasonic sensor connected to a microcontroller for collecting environmental data. Microcontroller connects to the server through network and sensor collected data is sent to the server. Real time light information is sent to the database and server instructs the immediate streetlights to be switched on based on the program written. Also, a prototype has been developed to evaluate the functionality of system.

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