

Project Design Phase-I
Proposed Solution Template

Date	06 May 2023
Team ID	NM2023TMID15378
Project Name	Project – IOT based weather adaptive street lighting system

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	The problem is inefficient street lighting systems that waste energy by illuminating streets at full brightness regardless of the weather conditions. This leads to unnecessary energy consumption and increased costs for municipalities and cities.
2.	Idea / Solution description	<p>The proposed solution is an IoT-based weather adaptive street lighting system. It utilizes real-time weather data to dynamically adjust the brightness of streetlights based on the prevailing weather conditions. The system consists of weather sensors, a central control unit, and smart streetlights equipped with dimming capabilities.</p> <p>When the weather is clear and bright, the streetlights operate at full brightness to ensure optimal visibility. However, during foggy or rainy conditions, the system automatically reduces the brightness of the streetlights to conserve energy while still providing adequate illumination for pedestrians and vehicles. The brightness levels can be adjusted based on the intensity of weather conditions detected by the sensors.</p>
3.	Novelty / Uniqueness	The novelty of this solution lies in its integration of real-time weather data and IoT technology to achieve weather-adaptive lighting. By considering the current weather conditions, the system optimizes energy consumption and enhances safety on the

		streets. The ability to automatically adjust the brightness of streetlights based on real-time weather data sets this solution apart from traditional static lighting systems.
4.	Social Impact / Customer Satisfaction	Implementing an IoT-based weather adaptive street lighting system offers several social benefits. Firstly, it reduces energy consumption, leading to cost savings for municipalities and cities, thereby making the use of public resources more efficient. Additionally, by adjusting the brightness of streetlights according to weather conditions, the system improves visibility for drivers, cyclists, and pedestrians, enhancing safety on the streets. The reduced light pollution during clear weather also promotes a more pleasant environment for residents.
5.	Business Model (Revenue Model)	The proposed revenue model for this solution can involve a combination of hardware sales, installation, and ongoing maintenance services. The system components, including weather sensors, control units, and smart streetlights, can be sold to municipalities, cities, or street lighting companies. Installation services can be provided as part of the package or as a separate service. Additionally, ongoing maintenance and support contracts can be offered to ensure the smooth operation of the system.
6.	Scalability of the Solution	The solution is highly scalable as it can be implemented across various cities and municipalities. By leveraging IoT technology, the system can be easily deployed and integrated into existing street lighting infrastructure. The central control unit can manage a large number of streetlights simultaneously, and additional weather sensors can be deployed as needed to cover larger areas. As the system proves its effectiveness and benefits, scalability can be achieved by replicating and expanding the implementation to other regions and cities.