

ABSTRACT

Abstract— The Internet of things (IoT) wireless network are evolving to help meet the needs of a wide variety of connected devices. To support the development of IoT, the mobile industry has developed and standardised a new class of low power wide area (LPWA) technologies that help network operators to address the challenge of typical IoT characteristics. LPWA-based technologies divided into 3GPP-standard technologies that works in licensed spectrum and non-3GPP technologies that works in unlicensed spectrum. Narrowband IoT (NB-IoT) and Long Range (LoRa) Wide Area Network (WAN) are the leading technologies of 3GPP and non-3GPP technology, respectively. Smart metering is an application that potential to use LPWA technology and categorized into massive IoT because of its characteristics requirements like massive connectivity, low data rate, low power consumption, and low cost device. This study aims to provide techno-economic analysis of LPWA-based IoT for smart metering use case with the technologies to be assessed are NB-IoT and LoRa WAN. Therefore, it can be a reference for regulator or policy maker to determine the best-suited technology for IoT smart metering implementation by considering the importance of technical and economic aspects.

Keywords—*Internet of Things, LPWA, Narrowband, NB-IoT, LoRa, Smart Metering, Cost-Benefit Analysis, Techno-Economic Analysis*