CHAPTER 1

PROJECT BACKGROUND

1.1 INTRODUCTION

The goal of this project is to expand the use of skateboards from driveways and skate parks to city and streets, where it had expanded from a recreation activity to a form of personal mobility transportation. With a higher demand of personal transportation nowadays, we introduce an electric skateboard as an alternative green transportation, with which provide lots of benefits in aiming to maintain a pollution free with zero emissions, free parking, freedom from gridlock and less impact on human health and on the natural environment compared with normal vehicles where it affected and increase the greenhouse emissions at present time and its impacts will be worse in the near future. In most situations of traffic jam in the city, riding an electric skateboard will be faster and cheaper other normal vehicles either own or using public transportation.

Throughout the years, many students in Universiti Malaysia Pahang (UMP) choose to walk for a short distance and take public transport or car along far distance buildings inside campus. Usually, students have to take at least 15-20 minutes to travel to classes around university because most campus have long distances between each building. The idea of having a portable and fast transportation, where people don’t have to use physical force, become as benefit for people to use it in this new era green technology.

To improve on pass team's success, we must make significant changes to the vehicle to reach our goal. There are three objectives that need to achieve for this project which are to develop an alternative mode of transport, electric skateboard that is highly portable and low cost, high durability and reliable for daily commute with minimum maintenance needed, to improve the efficiency to achieve longer travel distance within a single charge besides to reduce the impact on environment by developing a solar system charger.
1.2 PROBLEM STATEMENT

Transportation is one aspect we cannot live without in these day and age. However, the transportation systems nowadays come along with lots of problems including global warming, environment degradation, health issues (physical, emotional, mental, and spiritual) and emission of greenhouse effect. In fact, the transport sector attributes to 23% of the globe’s greenhouse gas emission resulting from burning of fossil fuels. All of this puts lot of burden on the national governments to devise policies to reduce greenhouse gas emissions as well as oil demands. Green transportation revolves around efficient and effective use of resources, modification of the transport structure and making healthier travel choices (Converse Energy Future, 2017). Besides, according to World Bank’s 2015 Malaysia’s Economic Monitor report, the congestion cost in Malaysia had amounted to 1.1%-2.2% of Malaysia’s GDP in 2014, where this sum of cost is divided into 3 types of cost, including delays, fuel, and CO\textsubscript{2} and other emissions (Gil Sander, Blancas Mendivil, & Westra, 2015).

It is common to know that that these recent years, fuel price is increasing. Moreover, buying a car is a large and often necessary purchases and the price of car will keep depreciates over time. Besides, maintenance service and road tax are also high cost expenses that vehicle owners couldn’t avoid. By contrast, electric skateboard only requires minimum operation and maintenance fees, no insurance fees, attract no road tax and typically do not require a license to ride in most countries. Furthermore, they are efficient, environmentally friendly, and far denser, when parked and driven, than the equivalent rows of cars. Riding an electric skateboard could also help eliminate the requirement of parking spaces, especially in urban areas where parking spaces are highly limited.

Therefore, a green technology transportation is needed to develop to replace the current transportation. In our research, using a solar charging skateboard to commute is another great mode of green transportation. Skateboarding has expanded from its predominant form of recreation into a recognizable form of transportation. Solar electric
skateboard is an ideal form of transportation for trips that are too far to walk. A standard electric skateboard is normally controlled by a radio frequency remote control and have a maximum speed up to 30 km per hour. Hence, we develop a solar electric skateboard by using many strong and best material to overcome those problems. Moreover, an electric skateboard design is portable and lightweight to be carried everywhere so it is not a burden for different age of people. It is a low cost product so that people can afford to purchase it and it need less maintenance compared to other transportation.

1.3 OBJECTIVES

The main objective of this project is to develop an alternative mode of transport, electric skateboard that is highly portable and low cost, high durability and reliable for daily commute with minimum maintenance needed. Since charging the battery is one important procedure this thesis is dedicated to two objectives:

1. To reduce the impact on environment by developing a solar system charger.
2. To achieve fast efficient charging of the electric skateboard battery using the solar charging system.