Innovation in Transportation using Hyperloop Technology

A research study of the feasibility of launching Hyperloop transportation technology on a global scale

Team 3 Executive Summary APS1012H

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Executive Summary

Hyperloop technology is a revolutionary high-speed method of transportation that improves inter-city travel in comparison to traditional transportation methods such as cars, trains, and airplanes. Hyperloop transportation is faster, more efficient, and produces fewer carbon emissions than the majority of existing transportation technologies. This technology is driven by a network of vacuum tubes around the world that contain pods traveling at ultra-high speeds. The vacuum creates a low-pressure, low-drag environment which enables a silent and comfortable passenger experience. Hyperloop technology strives to combine the benefits of speed, flexibility, comfort, safety, and sustainability through its energy-efficient operations while innovating the entire transportation sector as a whole. This paper aims to analyze the future potential of Hyperloop technology through a perspective of policy frameworks both in Canada and internationally.

Internationally, almost all the major nations are competing in the hyperloop race. With the USA leading the game, the 3 main US based companies titled Virgin Hyperloop, Hyperloop Transportation Technologies and Hyperloop One are the pioneers of this technology. These companies are doing feasibility studies for all the other countries like India, Saudi Arabia and China. Then they lay a test track and perform a test run. Almost all countries are in the testing stage and plans for construction are underway.

This project aims to develop a policy framework as an Engineer General that will assist the Prime Minister in formulating and exploring the planning and transportation policy of hyperloop technology involving its technical, economic and environmental advantages and implications. This will be done through a wide range of literature reviews and will discuss the possible development effects of a hyperloop line or network on cities at the federal, provincial or municipal level. The scope of this project deals with multiple aspects of hyperloop technology along with examining its benefits and detriments if implemented into society in the future.

The overarching goal of this project is to develop a policy framework that will assist the prime minister in formulating and exploring the planning and transportation policy regarding hyperloop technology. In order to achieve this goal, we identified the project objectives to

include an overview of the current high-speed transportation systems in Canada and around the world, followed by evaluating the need for hyperloop technology based on the flaws that exist among these current transportation systems. The next stage in the project was to analyze the current hyperloop development projects being implemented or proposed in different countries, followed by eventually developing our policy framework based on the role of the engineer general in Ontario.

The research and development of Hyperloop technology is subject to a variety of standards and regulations, including those set by TÜV SÜD and government bodies such as the U.S. Department of Transportation and Transportation Canada. In addition, both HyperloopTT and VH - Hyperloop Certification Center are actively involved in developing industry-wide standards for Hyperloop technology.

In this report, various potential policies are discussed in detail in the policy framework that could be established for the operation of a hyperloop transportation system in Canada, including policies for safety, environmental sustainability, liability, certification, risk management, and sustainability. A recommendation as a way forward for the engineering general in respect to the role and responsibility of the prime minister was established. These recommendations include that the Engineer General should; provide expert advice to the Prime Minister on matters related to technology and infrastructure, ensure compliance with regulations, foster innovation and technology adoption, promote sustainability, and collaborate with other government departments.