## **MSc. Thesis Project**



A Combination of Static and Dynamic Charging Facilities for Road Freight Transportation

## Problem description

Electrification of heavy duty trucks is an important solution direction for decarbonization. Trucks equipped with batteries may be recharged at fixed locations (charging facilities) or while traveling along a highways equipped with dynamic charging facilities (i.e. as in Electric Road System, ERS). On the one hand, dynamic charging contributes to the battery-electric landscape by enabling trucks to charge while driving. While large-scale implementation of ERS has proven beneficial, it requires large investments and can be implemented on major highways, limiting the geographical reach range of Battery Electric Vehicles (BEVs). On the other hand, installing charging stations poses several challenges, such as the need for large batteries for long haul movements, the net payload loss of vehicles and the very high power levels needed.

## **Objectives & Assignment**

The purpose of this study is to identify the optimal configuration of dynamic and static charging facilities, i.e. to answer how a combination of both charging methods may be performed given a limited budget. In this approach, where ERS is the back-bone of the system and the freight transport demand must be fulfilled. This will build up on a recent study that identifies different ERS network configurations under various investment scenarios and will further improve it for consideration of fixed charging on a scenario analysis basis.

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