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Data needs and modeling challenges for planning charging infrastructure of on-road electric freight

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AIM

This research reviews the data needs and challenges in modeling infrastructure requirements, and the role of vehicle-based measurements in alleviating these obstacles, with a special focus on electrification of on-road freight.

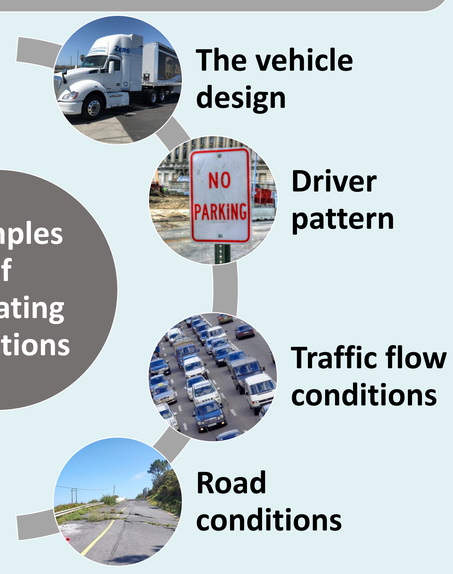
METHOD

We layout the data requirements needed to study heavy vehicles and their charging needs. We do this through a literature review of data used for alternative fuel vehicles freight infrastructure allocation and planning, data needs and challenges.

To effectively plan infrastructure for alternative-fuel vehicles

1 **Estimate the energy consumption per vehicle**

Energy consumption can differ according to several operational conditions.



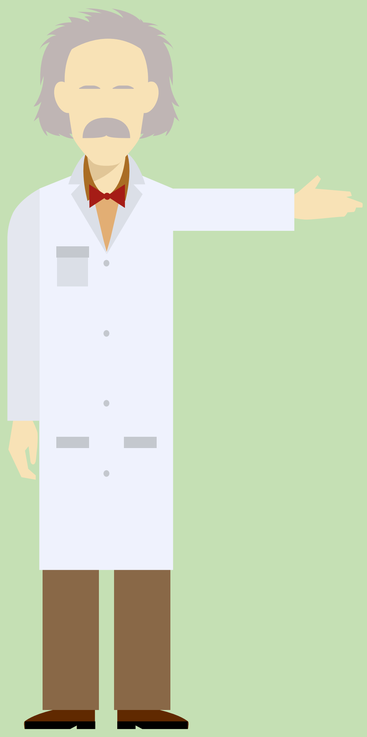
2 **Estimate the charging demand of the fleet to provide suitable charging facilities**

2.1 **Estimate charging infrastructure locations on routes**

Tour-based models are useful to provide stop details.

2.2 **Identity charging infrastructure facility characteristics.**

Individual charging demand identifies charging facility characteristics such as power level



To properly allocate freight infrastructure for the different charging technologies, we need data with high detailed insights into the vehicle and the fleet due to various requirements and limitations.

Vehicle-based measurements provide details of various driving operational conditions at the individual vehicle level, such as the truck's energy consumption and spatial position.

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