

How to build the city with electric heavy vehicles

Peter Lindgren, Urban Traffic Administration, City of Gothenburg

City of Gothenburg projects

Some of the projects within electromobility:

- We have run electric busses in the ElectriCity project since 2015, now with two bus lines
- Heavy city trucks (delivery and refuse trucks)
- Stadsleveransen is operated since 2015
- Electric ferries operations will start very soon
- Autonomous mini busses runs at the campus of the university of Chalmers



Advantages with electric heavy vehicles in the city

- Electric vehicles makes very little noise at lower speeds
- Electric vehicles can operate during all hours of the day
- There is no local emissions from the drivetrain



- Better comfort and work environment
- The vehicles are silent, but we found no issue with this
- Cost might be a issue initially, but lower running cost outweigh this
- This can be combined with auto brake and geofencing for high level of safety

Tools for the city to promote electrification of public transport and heavy vehicles in the city

- Charging infrastructure
 - Opportunity charging (dedicated if needed)
 - Fast charging (super fast)
 - Hydrogen stations
- Environmental Zones
 - Controlled access at different times of the day
 - Zero emission zones
 - Silent zones
 - Geofencing zones
- City planning
 - Planning for a city with less noise/air pollutants
 - Indoor bus stops, goods loading/unloading
- Procurement
 - Request electric vehicles whenever it is possible
 - Request zero emission transports when procuring transport services



Who will build and operate the high power fast charging infrastructure in the city

- Electric vehicles operating in the city can either charge only at night or need opportunity charging during daytime
- There is a demand for opportunity charging in order to keep battery size, weight and cost down



- Charging infrastructure is needed for public transport and heavy vehicles on public roads
 - The City of Gothenburg will not build/own charging infrastructure
 - To build dedicated chargers for public transport require close cooperation between the PTA and road authorities
 - The placement and numbers of high power fast chargers for commercial traffic is important
 - There is also a need for hydrogen filling stations

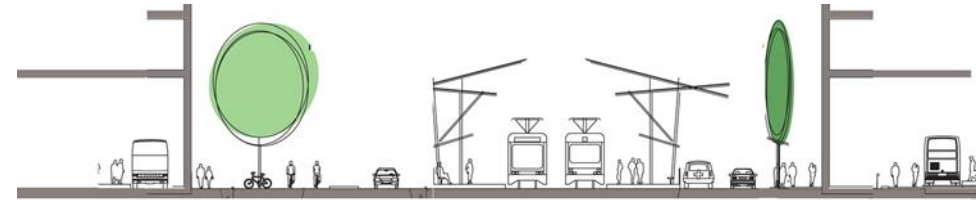
City planning with electric heavy traffic

- Local and overall noise pollution can be reduced for the benefit of the inhabitants
 - This must be quantifiable and computable
- The road infrastructure must be checked against electric vehicles wear
 - Especially the old road network/bridges
- New types of vehicles will also affect the city planning
- The ongoing trends of digitalization and automation will affect city planning profoundly



The electric heavy traffic goes indoor

The next step is to build the city
with integrated electric smart traffic



- Bus stops inside buildings, close the travelers
 - Vehicles can come to the residents and businesses instead of the other way
 - Some safety and security issues arise
 - Number of busses per hour determine the design of the indoor bus stop
 - The city/PTA must control the bus stop area for the foreseeable future!
- Indoor logistic hubs, garbage centers, unloading areas
 - When the vehicles are silent, the work done by them must not disturb the surroundings

Conclusion, city planning with electric traffic

There are many ways the city can promote

- To build or allow to build smart charging infrastructure for commercial (heavy) vehicles
- Have electrification in mind for every procurement that affect traffic, either required or optional
- Work with different constraining and voluntary zones (different areas, different times)
- These measures will also be greatly affected by digitalization and automation, so developments/work in these areas must be coordinated
- We must find ways to put a value on the positive factors of electrification, so that the cost for introducing electric vehicles and the building of infrastructure can be balanced



Kontakt

Utveckling & Internationellt

Urban Traffic Administration, City of Gothenburg

Peter Lindgren

peter.lindgren@trafikkontoret.goteborg.se