Charging point distribution for energy demand in the mobility sector

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Berlin, 16.01.2020

Energy demand

Generate energy demand timeseries based on data from Mobilität in Deutschland 2017 (MiD 2017)

Input

Statistical distribution of journeys differentiated by household type und trip purpose information:

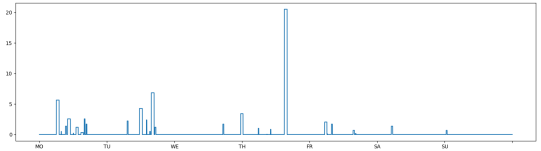
- Distance of the journey
- Speed of the journey
- Starting time of the journey
- Parking time

Tool

Random distribution of trips for a week depending on the probabilities of the MiD-data (differentiated by household type and car type)

Output

Energy demand time series for each battery electric vehicle



Next steps:

- Locations of charging points and distribution of energy demands

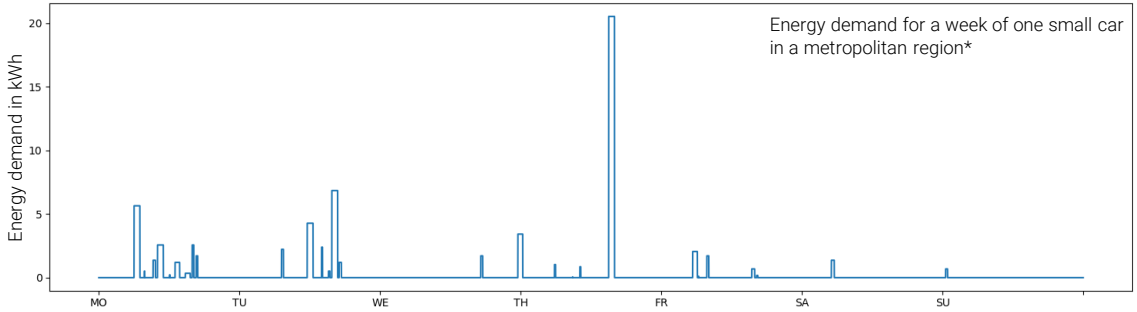


*figure based on self-created data

Objective

Specific locations of charging infrastructure in a given region differentiated by use case to distribute energy demand of the battery electric vehicles

- Generic Python code as a module for a larger tool
- Should work for any given region in Germany (shape-file)
- Usage of open data (openstreetmaps etc.)

Input

- Shape-file of the given region
- Total amount of required charging infrastructure differentiated by use case
- open data:
  - Openstreetmaps
  - Zensus data (population and living space (apartments), in 100x100 meter layer)

Ladeort	Regelladung			Schnellladung		Zwischendurchladen	
	@home		@work	@public			
	Privat - 1	Privat - 2	Privat - 3	Öffentlich - 4	Öffentlich - 5	Öffentlich - 6	Öffentlich - 7
Lade Use Case (Masterplan)	Eigenheim, Garage/Stellplatz	Parkplätze/Tiefgaragen Wohnanlagen	Firmenparkplätze, eigenes Gelände	Lade-Hubs, Tankstelle innerorts	Autohof, Raststätte, Autobahnparkplätze	Einkaufzentrum, Parkhäuser, Einzelhandel	Straßenrand, öffentliche Parkplätze
	Zensus	Zensus	OSM ?	OSM	OSM	OSM ?	POI/ Locations?

Agenda

- 2 min — Brainstorming
- 30 min — Idea discussion (Use cases)
- 30 min — Group work (Specific problem)
- 15 min — Result presentation

Idea discussion

Ladeort	Regelladung			Schnellladung		Zwischendurchladen	
	@home		@work	@public			
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Home (1+2)

Work (3)

Gas station/charging hub (4+5)

Public (6+7)

Group work - example

- Shape of an example network

https://github.com/rl-institut/mobi

- Distribution of charging infrastructure (sum: 500):

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	175	100	100	15	10	50	50