

## Workshop

# How can Europe support and inspire Low Emission Mobility in Brussels?

Case Berlin: Providing access to electric recharging infrastructure for all

Brussels, 21.09.2021



## Agenda

1. Introduction to the Senate Department for the Environment, Transport and Climate Protection
2. Transport and E-Mobility in Berlin: Goals, Actions and Current Situation
3. Public Charging Infrastructure „Berliner Modell“ [Berlin Model]



**Senate Department for  
the Environment, Transport and  
Climate Protection**

Am Kölnischen Park 3  
D-10179 Berlin

fon: +49 30 9025-0

web: <https://www.berlin.de/sen/uvk/en/>

**Senate Department for  
the Environment, Transport and Climate Protection**



# About the Senate Department for the Environment, Transport and Climate Protection

## Political Leadership



**Senator for the Environment, Transport and Climate Protection**

Regine Günther



**Permanent Secretary for Transport**

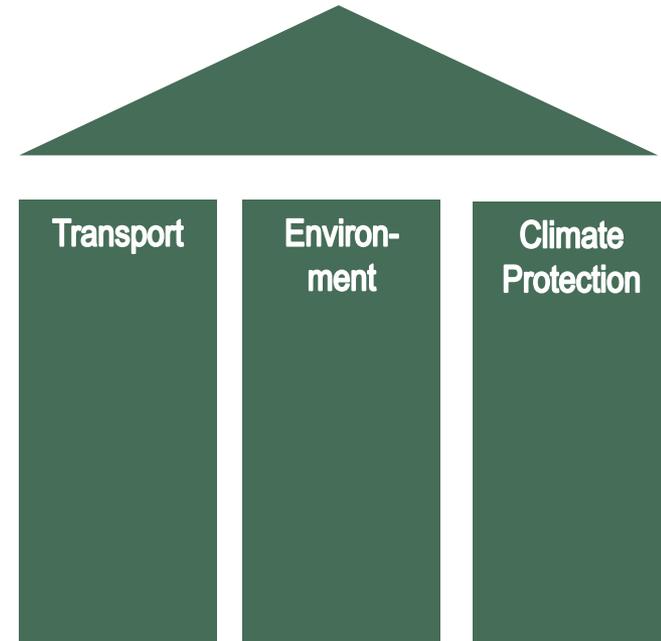
Ingmar Streese



**Permanent Secretary for the Environment and Climate Protection**

Stefan Tidow

Images: Roland Horn [Sen]; Die Hoffotografen GmbH [StS]





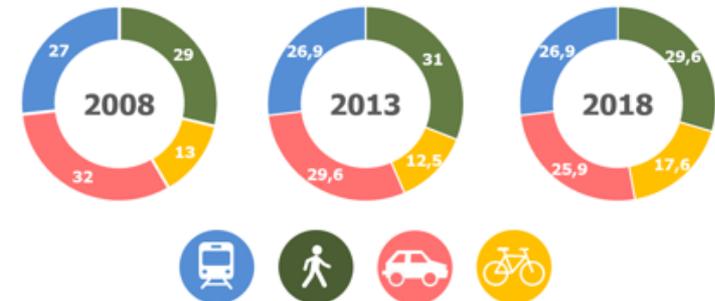
# E-Mobility in Berlin, Goals, Actions and Current Situation



## Some Facts and Figures about Transport in Berlin

- Since 2015, the population has grown by approx. 150,000 to 3.7 Mio. inh. (2019)
- Number of commuters has also been rising consistently (2020: 334,000 IN; 187,000 OUT)
- Comparatively low level of motorisation (342 vehicles per 1,000 inhabitants in 2018); 566cars/1000inh whole Germany)
- Growing sharing sector (2021: around 6,000 cars, 14,000 e-/bikes, 800 scooter and 16,000 kick-scooter)
- Pollution levels have fallen, but are in some parts of the city still exceeding the EU's limit values
- In 2020, more than 126,000 road traffic accidents (75% of the people seriously injured are pedestrians, cyclists and motorcyclists); however Berlin has within Germany one of the lowest numbers of fatalities

### Modal Split



(SfV, 2008; 2013; 2018)

### Pop-Up Bike Lanes



Von Fabian Deter - Eigenes Werk, CC BY-SA 4.0.  
<https://commons.wikimedia.org/w/index.php?curid=90566185>

# E-Mobility in Berlin, Goals, Actions and Current Situation



## Transport Planning – Goals and Actions

- In summer 2018, the Berlin Mobility Act came into force:
    - First aim is to increase road traffic safety to the point of “vision zero”
    - Second aim is to promote eco-mobility (public transport, cycling and walking)
- eco-mobility is being given priority over transport by private car

## Two Main Planning Frameworks

- Transport Development Plan (Stadtentwicklungsplan Verkehr); all transport modes
- Transit Plan (Nahverkehrsplan); public transport

## Accompanying Strategies

- Strategy for Pedestrians
- Cycling Strategy (improvement of cycling infrastructures, public bicycle hiring system)
- Strategy for Commercial Transport
- Promotion of E-mobility
- Master Plan for Sustainable and Emission-avoiding Mobility in Berlin



<https://www.berlin.de/sen/uvk/klimaschutz/klimaschutzpolitik-in-berlin/ziele-und-grundlagen/>; 2021



DLR, 2019

# E-Mobility in Berlin, Goals, Actions and Current Situation



## Development E-Mobility in Berlin

- Berlins e-car fleet is still small, but growing
- Public transport fleet is (except all buses, ferries and regional trains) fully electrified
- Number of E-Bikes, and E-Scooters (in private property) is growing
- Sharing: number of e-cars remains constant, number of e-bikes, e-scooters and e-kick-scooters is growing,
- Procurement of e-buses by Berlins public transport operator (BVG) is ongoing

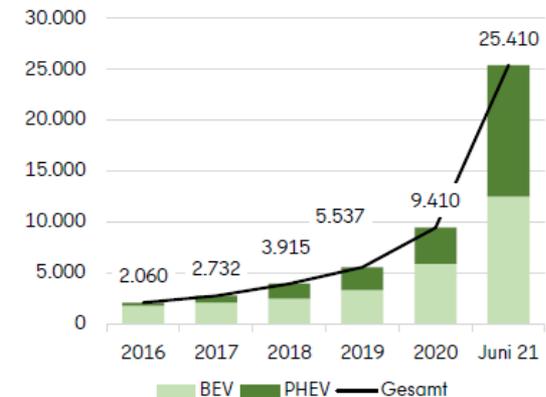
## Actions of the Federal State of Berlin

- E-Mobility in companies (support of fleet electrification [vehicles, charging infrastructure, consulting])
- E-taxi (subsidies for vehicle substitution)
- Electrification of the fleets of public local utilities
- Spatial extension of private charging infrastructure
- Mobility Hubs with CP for e-car sharing

## Actions Implemented by the SenUVK

- Spatial extension of public charging infrastructure
- Support (subsidies) of e-cargo bikes (private and commercial)
- E-Taxi fleet (charging concepts and erection of CP for Taxis)
- Supporting the development of scalable business-models for CP operation near tenement houses

Private light-duty vehicles in Berlin



LABO, June 2021

Mobility Hub with CP for e-car sharing



SenUVK, 2021

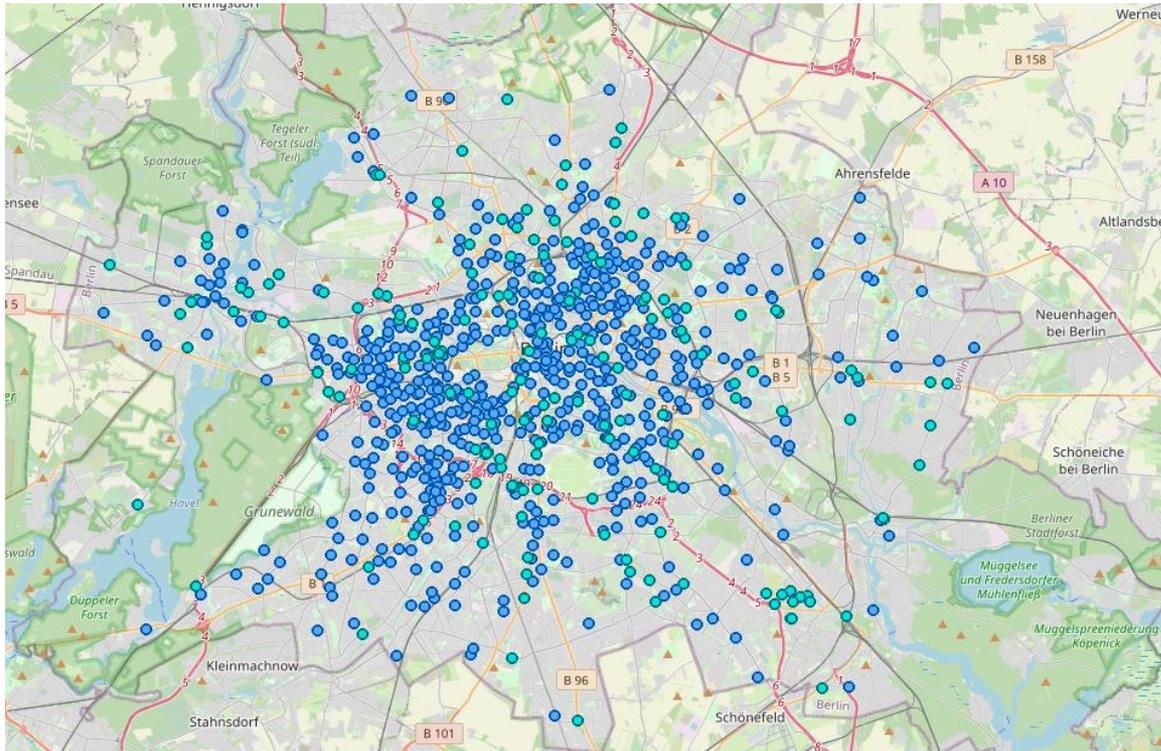
# E-Charging in Berlin – Status Quo



...

## Current Network of Publicly Accessible Charging Points

Q1 – 2021; 1761 CP



<https://energieatlas.berlin.de/>

**Private Ground**  
567 CP

**Private Operators**

**Private Operators  
(permission)**

E.ON Drive Infrastructure GmbH  
Vattenfall Smarter Living GmbH  
TEK Netz Europe GmbH  
Comfortcharge GmbH

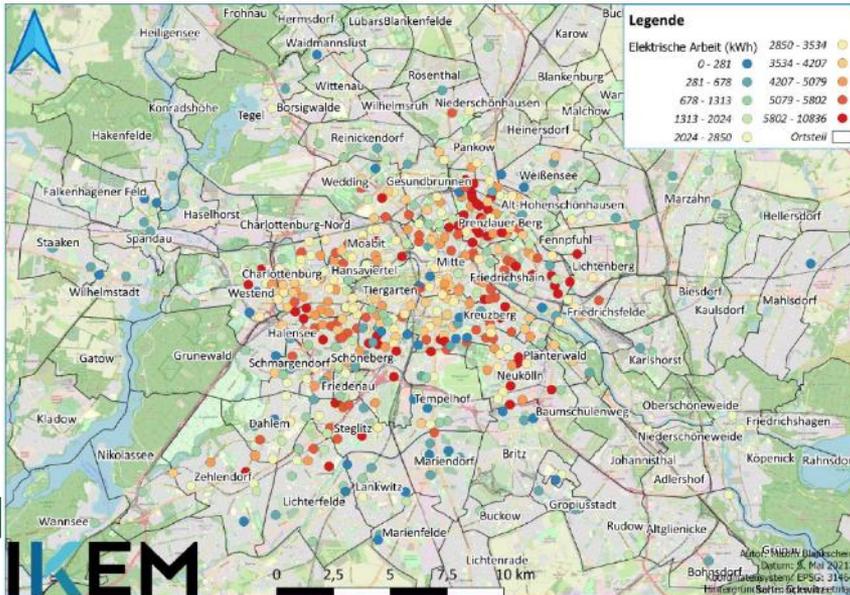
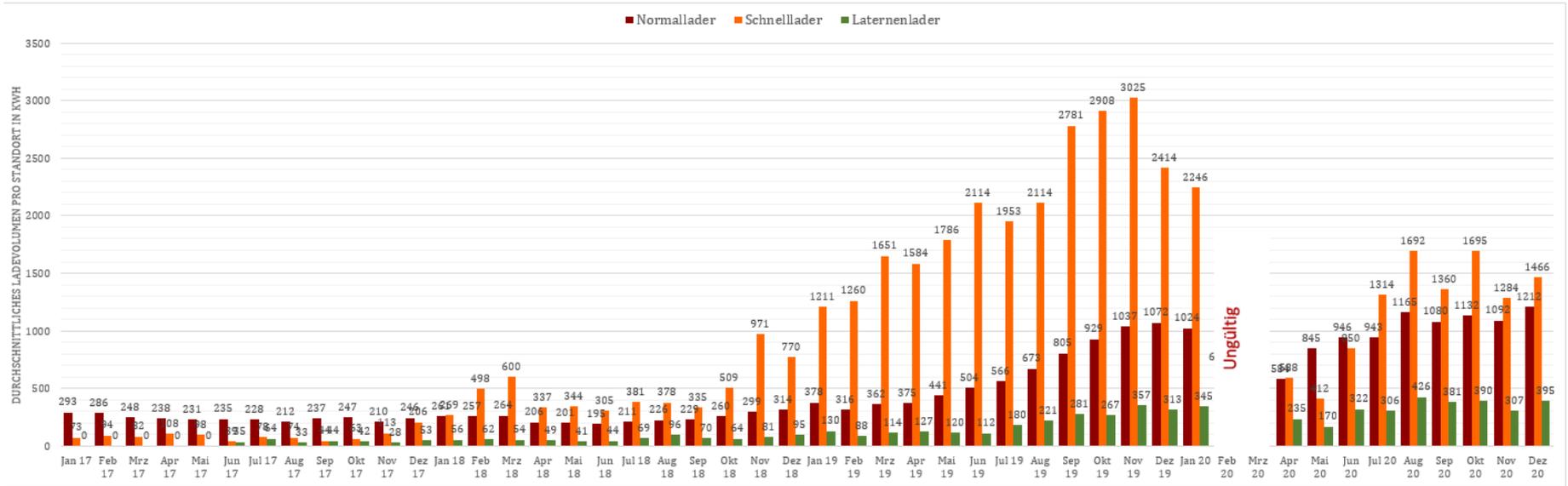
**Public Ground**  
1194 CP

**Private Operator  
(contract ends mid 2022)**  
Allego GmbH

# E-Charging in Berlin – Status Quo



## Charging Volumes – Allego infrastructure (2017 – 2020)



- Standard charging stations with AC 11 kW; on average 1,200 kWh/m
- Hot Spots with more than 3,000 kWh/m are unevenly distributed  
→ relevant for location planning approach



# Public Charging Infrastructure „Berliner Modell“ [Berlin Model]

.....

# Public Charging Infrastructure „Berliner Modell“ [Berlin Model]



## Why a Berlin Model and what do municipalities have to do with it?

Charging stations on public roads can only be used in combination with the parking lot in front of them

- For parking lots on public roads, the principle of public utility has to be safeguarded at all times.
- Non-discriminatory access to public roads at all times.
- Regulating competing uses of public space is one of the central tasks of a municipality.

**Municipalities have the task of regulating the use of public space.**

**This also refers to charging infrastructure.**

**→ Everyone can charge at every station.**

## Same rules for everyone!

### Berlin erects its own charging network

- 2015 – end 2020 the Allego GmbH erected around 1,000 publicly accessible charging points.
- Contract between the Berlin Senate and Allego GmbH ends mid 2022

### Berlin's public streets are open to third-party operators:

- Third-party operators and mobility providers can participate but have to follow the model's rules
- Fixed specifications for construction and technical standards, access medium, green electricity, etc.:
  - Berlin regulates in a public-law contract with operators the requirements of the Berlin Model
  - Non-discriminatory access for EMSP
  - Everyone can charge at every station
  - SenUVK coordinates on municipal level
  - Districts decide regarding implementation and signs (issuing the special use permit and signage)



## Planning framework until 2025 (short-term) and 2040 (long-term)

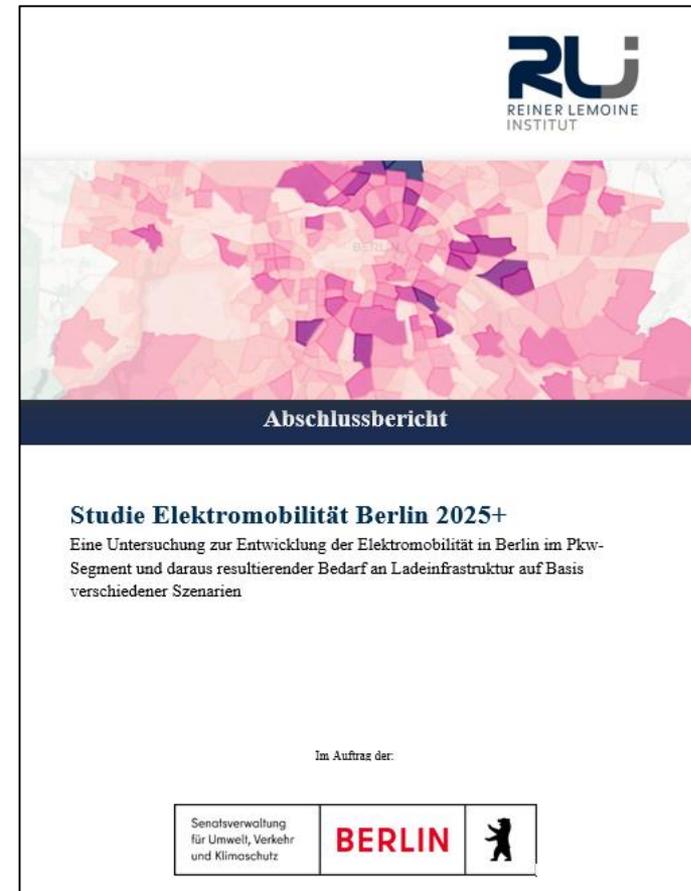
- Future vehicle fleet
- Future mobility behaviour
- Future charging patterns
- Future demand concerning number, type, and location of charging stations



Estimations based on different scenarios and user groups.

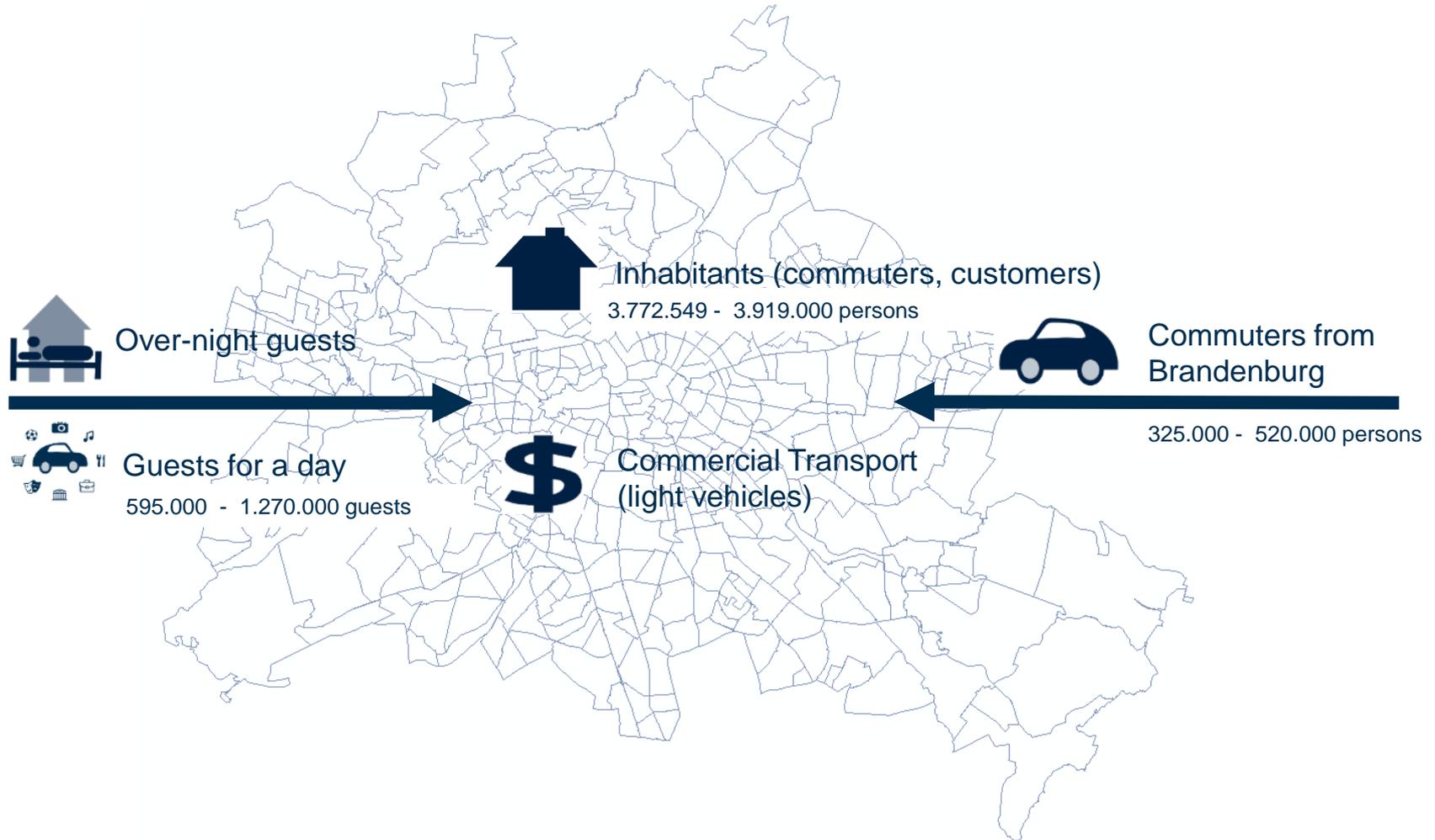
Why?

→ Due to the rapid technological development and the relatively young market, framework conditions are constantly changing.



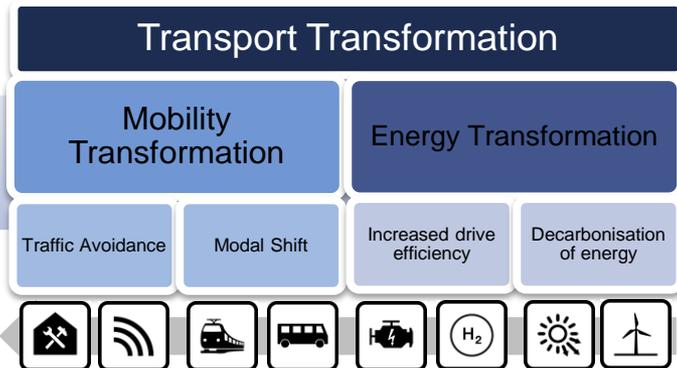


## Relevant user groups and parking locations during the day (inbound and outbound traffic)





## Scenarios



MOB

**Scenario 1:  
Business as usual**

Mobility behaviour remains constant  
- Constant degree of motorisation  
- Modal Split slightly changing

**Scenario 2:  
Energy  
Transformation**

**Scenario 3:  
Transport  
Transformation**

MIT is less important  
- degree of motorisation drops  
- Share of MIT on Modal Split decreases

EL

Share of e-vehicles increases

Focus on PHEV

Focus on FCEV

Focus on BEV

## Charging Use Cases

	Private			Publicly Accessible			
	Use Case 1	Use Case 2	Use Case 3	Use Case 4	Use Case 5	Use Case 6	Use Case 7
Location	 Garage or private parking lot near the own house	 Garages or parking lots near tenement houses	 Company parking lots	 Streets, public ground	 Customer parking lots, publicly accessible garages	 Charging Hubs within the city	 Charging Hubs near motorways
Current	AC	AC	AC	AC	AC / DC	DC	DC
Typical Charging power	Up to 11 kW	Up to 11 kW	Up to 22 kW	Up to 22 kW	Up to 50 kW	Up to 150 kW	Up to 350 kW
Typical parking time	Up to 14 hours (also at night)	Up to 14 hours (also at night)	Up to 8 hours (daytime)	Up to 4 hours; >14 hours at night	30 – 90 min	10 – 15 min	15 – 20 min

# Future Concept – post mid 2022



## Results



- It is assumed that by 2040 at least 95 percent of all cars in Berlin will be electrified.
- In 2040 between 435,000 and 802,000 charging points will be required in Berlin (private & public ground)
- depending on the assumptions made about traffic and technological developments and user behavior.
- The following factors play an important role:
  - Share of motorized individual transport (MIT),
  - Number of vehicles coming to the city,
  - Number of vehicles inside the city and km driven,
  - Type of vehicles (BEV, PHEV, FCEV) and speed of the market uptake,
  - Parking lot availability at home and workplaces,
  - Commercial transport with light duty vehicles.
- **A sole substitution of the drives together with an ongoing growth of the car fleet is nearly impossible.**
- **An electrification strategy needs to go hand in hand with a strategy to change mobility behavior and reduce private vehicle use.**
- The huge bandwidths show that there is not one development path for one specific area existing!
- The resulting strategy has to be flexible!
- Charging hubs in publicly accessible areas (e.g. at petrol stations) can significantly reduce the need for charging infrastructure in other publicly accessible areas.

2040	Use Cases								SUM
	UC1	UC2	UC3	UC4	UC5	UC6	UC7		
	Garage or private parking lot near the own house	Garages or parking lots near tenement houses	Company parking lots	Streets, public ground	Customer parking lots, publicly accessible garages	Charging Hubs within the city	Charging Hubs near motorways		
<b>Scenario 1 – Business as Usual</b>									
<b>CP demand</b>	145,000	198,000	89,000 – 213,000	63,000 – 130,000	2,000 – 22,000	1,000 – 2,000	1,000 – 3,000	499,000 – 713,000	
<b>Scenario 3 – Transport Transformation</b>									
<b>CP demand</b>	140,000	191,000	95,000 – 295,000	14,000 – 37,000	2,000 – 28,000	2,000 – 7,000	1,000 – 5,000	444,000 – 703,000	



## Public charging (on public ground)

Tendering process with a publicly owned company to operate existing and erect new charging infrastructure until 2030 is still running.

### Why?

- No investments from private operators since 2015
- Creation of a basic network also at the fringes of the city
- Surpluses will be used to refinance the erection
- More flexibility in matters of the chosen paths: AC vs. DC; charging power and quantities.

Third-party operators will also be allowed to erect charging infrastructure on public ground, after signing a contract with the city.

Rules of the Berlin Model have to be obeyed (non-discriminatory access for users and EMSP, green energy etc.).

### Running activities:

- Tendering process.
- Location finding and coordination with districts and grid operator.
- Acceleration / digitization of the planning and approval process.

## Continuation of WELMO (Wirtschaftsnahe Elektromobilität )

Berlin has introduced a support scheme for companies interested in e mobility, consisting of:

- Advice program
- Financial support for the procurement of e-vehicles
- Financial support for related charging infrastructure
- Program was very successful and has been extended

## Better information provision for users

- Users are lacking comparable and up-to-date information on publicly accessible charging infrastructure (location, prices, occupation).
- Berlin is planning to develop an info platform that brings together actual status and charging conditions (prices, accessibility, payment methods) of at least all operators on public ground.
- The information will be shared via an open interface.

## Development of scalable approaches for housing companies

A Study financed by SenUVK is currently developing scalable business-models for CP operation near tenement houses (private ground).

## Electrified Public Transport

#####

## Electrification of municipal fleets

- Electrification program for all municipal fleets
- Development of scalable models for CP operation on municipal properties

## Research Demand

- Approaches for commercial transport (light and heavy duty vehicles)
- Development of charging behavior / patterns
- Barrierfree charging
- Charging at companies
- Better monitoring of the private sector
- HPC strategies / support strategies inside the city



**Norman Döge**

Senatsverwaltung für Umwelt, Verkehr und Klimaschutz  
Abteilung Verkehr – IV A 1-1

Am Köllnischen Park 3 | 10179 Berlin  
Tel. +49 (0)30 9025-1625  
Fax +49 (0)30 9025-1675  
[norman.doege@SenUVK.Berlin.de](mailto:norman.doege@SenUVK.Berlin.de)

**Dank u wel!**  
**Vielen Dank!**  
**Merci!**