

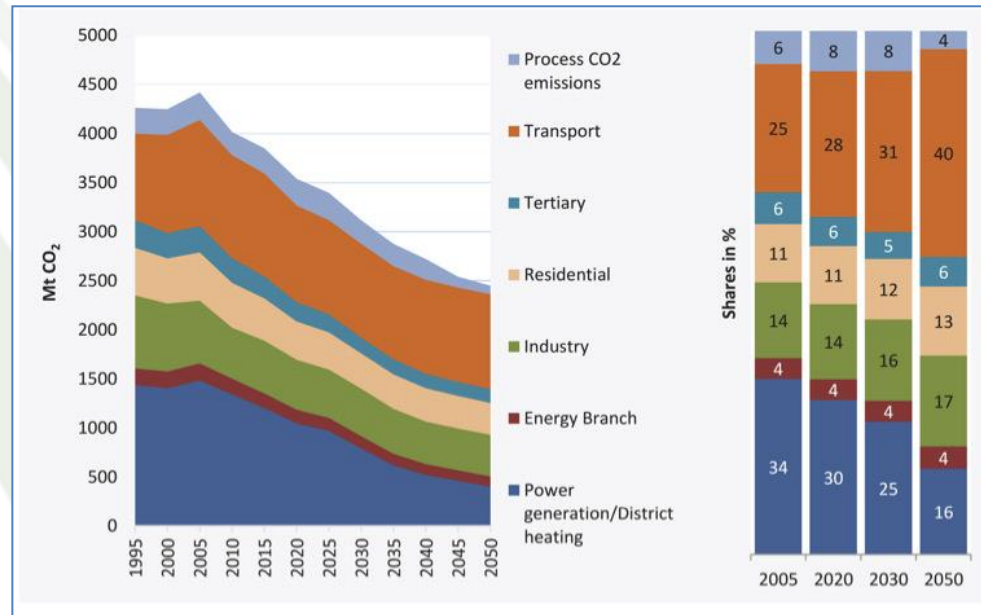


## GEODE Fact Sheet on E-Mobility

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# Scope and Drivers

- Transport: 25 % of EU greenhouse gas emissions



Data from 2013 – European Commission Report EU Energy, Transport, GHG Emissions, Trends to 2050,

[http://ec.europa.eu/clima/policies/transport/index\\_en.htm](http://ec.europa.eu/clima/policies/transport/index_en.htm)

- E-vehicles are part of the solution to decarbonise the transport sector
  - Need for a charging infrastructure

# Role of DSOs in E-mobility?



- DSOs provide a reliable connection point to the grid for charging stations on request from the customer
  - Metering of consumption and quality of supply is exactly as for any other grid customer
- Private charging:
  - In domestic building, “behind the electricity meter”
  - Demand coincides with peak consumption hours (after work) even if → opportunity for load shifting for, benefit for both DSO and consumer
- Public charging:
  - Public areas: parking, commercial, workplace
  - Operated by company or service provider
  - Demand coincides with business peak hours, harder to shift loads



*Charging station outside Krafringen, Sweden, available for employees and customers*

# Markets models for building charging stations



- Charging infrastructure should be built on free market principles
  - Growing need gives cost-effective infrastructure
- Examples to overcome “chicken-and-egg problem” until adequate number of charging points:
  - Subsidies until critical mass is reached (Ex. Norway)
  - Network operators can own the infrastructure
  - DSOs operate charging stations (neutral and non-discriminatory)
  - Market driven approach including independent charging station service providers (Ex. Finland and Sweden)

# Barriers and Challenges

- Grid capacity (kW) is important, not energy (kWh)
- High degree of simultaneous charging put high pressure on the grid
- Smart charging is important both for customer and DSO
  - “Traffic light concept”
  - Power quality
- Possibility to direct contracts between DSO and customer/operators (flexibility)
- Capacity oriented tariffs can also influence charging behaviours
- High investment cost and low utilization rate
  - Still low number of EVs on the market

# Key Messages



- E-Mobility is one important part of the solution to decarbonize transport
  - Provided that there is enough fossil free electricity production capacity
  - A charging infrastructure is key future electrification of the transport sector
- The European Member States have to put in place and comply with common technical standards
- Best practices must be shared in how to identify the location of EVs and charging stations
- E-mobility sector and the electricity sector have to interact and emphasise the importance of power quality standard compliance

# Key Messages

- It is important to increase customer awareness when purchasing new EVs and the impact this will have on their domestic electricity demand.
  - Visibility is essential through strengthened communication with customers they will be able to help the uptake of e-vehicles
- More EU-funded R&D on electrification of transport is needed
- If the charging points are an asset of the DSO, the business case would easier
  - Retailers would only have to support variable costs (energy)

# Key Messages



- It might be necessary to facilitate cooperation between authorities and market players until a critical mass is reached.
  - It might be an option that DSOs are allowed to invest, own and operate charging stations to overcome this obstacle
- DSOs need to have the possibility to influence the charging processes
  - To minimize the impact on the distribution grid and safeguard grid stability → smart/coordinated charging
- DSOs should be allowed to have direct contracts with customers and operators of charging stations
  - To be able to influence charging processes (procure flexibility services)