



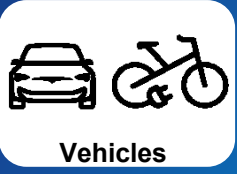
Integration of Infrastructure & Vehicles into the Electricity System:

Discussion on smart charging

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New technologies and innovation**



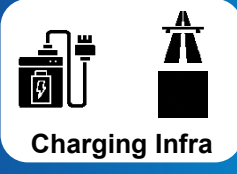
Clean Vehicles Directive



CO2 standards for cars, vans & trucks



Intelligent Transport Systems Directive



Electricity Market Design Directive
Alternative Fuels Infrastructure Directive
Energy Performance of Buildings Directive



Innovation- Batteries
Sustainable Urban Mobility Plans-





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Public Transport



Citizens



Urban planning



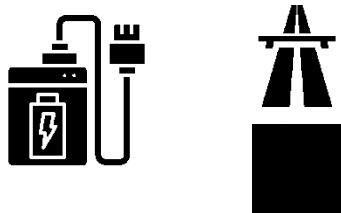
Vehicles



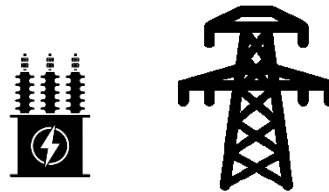
Consumers/Drivers



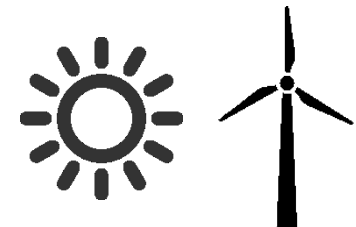
Services



Charging Infra



Electricity Grid



Clean Energy Sources





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Context

- **An accelerated roll out of EVs and other AF vehicles and infrastructure a key priority** (EC Communication on the Action Plan on the Alternative Fuels)
- **evaluation of the Directive on Alternative Fuels (2014/94)**
- **If full electrification of road transport**
 - increase of today's total electricity demand by approx. 20%
- **Electricity system can cope with that increase if electricity demand becomes flexible**
- **Concept of « smart » charging linked to « smart » demand management:** *Management of the final user's electricity demand to avoid network congestions and shift consumption to times when cheap and/or renewable electricity is available*



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Scope of the workshop: **smart charging**

Likely scope of « the use cases »
for the EV market

Home

Office

**Fleets &
depots**

Likely outside the scope of the use cases

**Random on-demand
charging without a "type
pattern"**



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Enabling conditions for smart charging (1/2)

- **Technical Conditions**

- Availability of **enabling technologies**, e.g. **smart metering and ICT infrastructure** (charge point a/o vehicle and ICT backend)
- **Interoperability**, e.g. data management and data exchange between parties, compliance with GDPR requirements

- **Market incentives for EV-users**

- Availability, information and transparency on **dynamic price contracts** for end consumers
- Consumers to « **delegate** » **their charging** to aggregators



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Enabling conditions for smart charging (2/2)

- **Regulatory Conditions:**
 - **market access** for independent demand side response (DSR) aggregators
 - trading of **DSR** and **flexibility products** in electricity markets
 - full **participation of storage** into electricity markets



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Electricity Directive

- Proposal for a **revised Electricity Market Design** establishes a legal framework that incentivises smart charging:
 - allows consumers to get a **smart meter**
 - enables consumers to **access new services, e.g. dynamic price contracts**
 - ensures fair market access **for new service providers (e.g. aggregators)** that can manage EV charging and trade flexibility of EV users on energy markets
 - enables also **DSOs to procure flexibility**
 - encourages regulators to introduce **time-differentiated network tariffs**



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For discussion : what else is needed?

- Are there **technical bottlenecks** for smart charging at any of the relevant actors / systems? e.g.:
 - Vehicle / Car Battery
 - Charging Station (individual or for fleets)
 - Metering (Smart Meter or possible sub metering)
 - System Operator (DSO / TSO)
 - EV-user / Fleet Operators
- **Technical bottlenecks between actors/systems?**
 - Are standards available for all interfaces between all actors?
 - Are developed standards sufficiently detailed?
 - Are existing standards deployed?



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For discussion : what else is needed?

- **Are there remaining regulatory gaps for smart charging?**
 - EU level (energy or transport legislation)
 - National level (e.g. procurement of charging points by public authorities, incentives to invest in "smart charging ready" infrastructure, etc.)
- **Is data management sufficiently and correctly defined?**
 - Energy data (smart metering data)
 - Transport data (incl. battery data)
 - Consent of the users