

Alternative fuels infrastructure:

Preliminary assessment of EC's Proposal



Public Charging Points for LDV

EC metric proposal overview:



	2025	2030	2035
Fleet based	for each BEV Light duty vehicle, a total power of at least 1.0 kW is provided through publicly accessible recharging stations for each PHEV Light duty vehicle, a total power of at least 0.66 kW is provided through publicly accessible recharging stations		
LDV			
TEN-T Each 60 km: core, *	aggregated power of at least 300 kW with 1 CP with an individual power of at least 150 kW	aggregated power of at least 600 kW With two CPs with an individual power of at least 150 kW	-
TEN-T , Each 60 km comprehensive *	-	aggregated power of at least 300 kW with 1 CP with an individual power of at least 150 kW	aggregated power of at least 600 kW with 2 CPs with an individual power of at least 150 kW

The fleet based targets are dependent on the number of registered vehicles and hence any increase in vehicle uptake would need to be matched with sufficient infrastructure. Changes in the ambition level with respect to the uptake of electric vehicles would not affect the overall target setting.

Fleet based target allow flexibility within targets to avoid being too prescriptive on the types of charging and adapt to different countries/local situation (urban, sub urban etc)

distance based targets across TEN-T, paramount to provide for a sufficient level of infrastructure across the network. However in case of a higher demand at those locations, additional CP will be triggered through market forces only

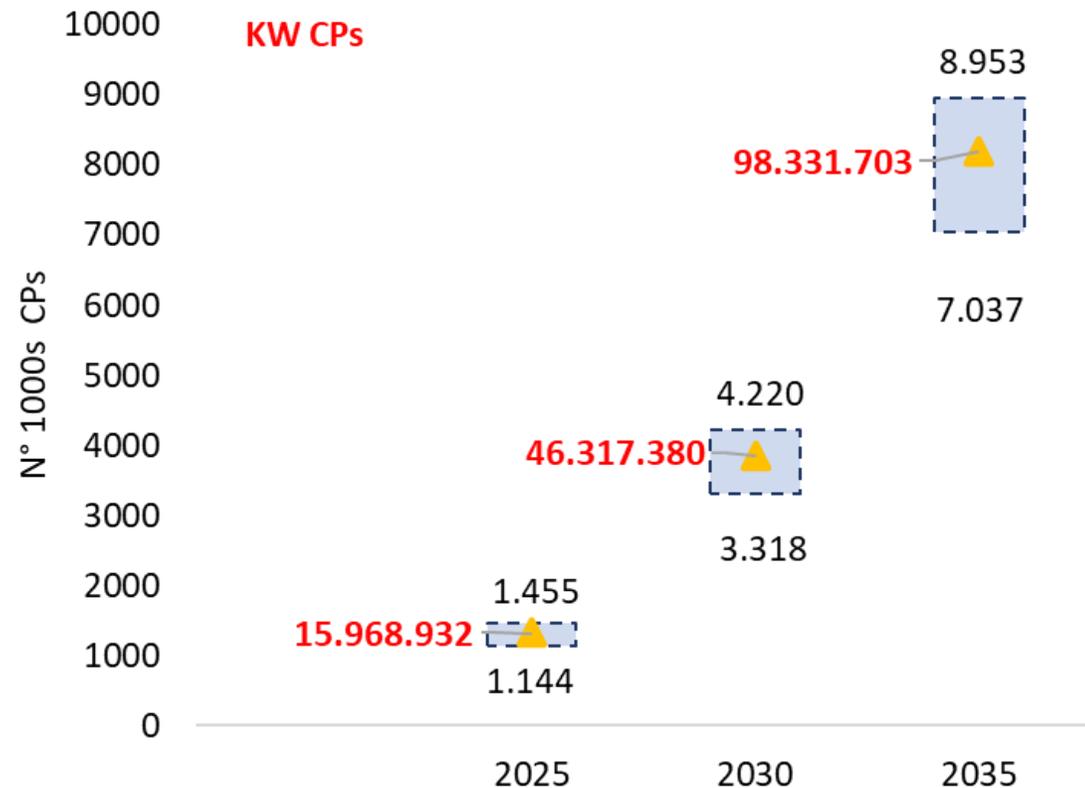
Public Charging Points for LDV

N° CPs estimation (EC proposal):



Overall EU Public Charging points for LDV

(TEN-T 150 KW & upper value 14 KW average, lower 11 KW)+



TEN-T network

	KW CPs	N° 1000s CPs*
2025	470.190	3,1
2030	1.470.190	9,8
2035	2.000.000	13,3

* All CPs considered with individual power of 150 KW

In order to determine a sufficient national-level target for electric LDVs, an energy-based approach was utilized by EC whereby the proportion of energy delivered by public chargers, and the utilization of charging infrastructure.

EC's Impact Assessment fleet methodology sensitivity

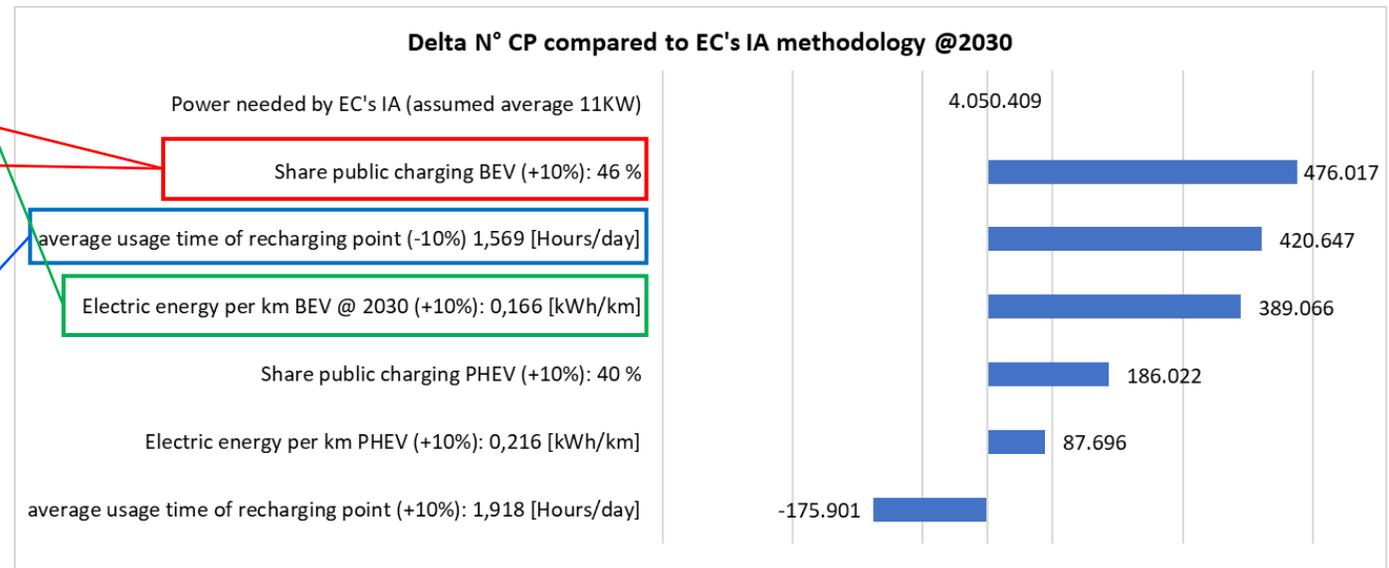
Public Charging Points for LDV



	Estimation based on fleet and EC assumption	source
Number of BEVs	36.851.000	EC IA pg 55
Number of PHEVs	14.343.000	EC IA pg 55
Average km / year (assume same for BEV / PHEV)	13.141	EC's IA pg. 162
Electric energy per km BEV (kWh/km)	0,130	EC's IA pg. 162
Electric energy per km PHEV (kWh/km)	0,168	EC's IA pg. 162
Uplift for more recent data on efficiencies from 2018	16,50%	EC's IA pg. 162
2030 electric energy per km BEV (kWh/km)	0,148	EC's IA pg. 162
2030 electric energy per km PHEV (kWh/km)	0,196	EC's IA pg. 162
UF for PHEVs (% of km in EV)	52%	EC's IA pg. 162
Total energy consumed per year BEV (kWh)	71.670.330.668	
Total energy consumed per year PHEV (kWh)	19.205.450.678	
Share private charging BEV	60%	EC's IA pg. 163
Share private charging PHEV	67%	EC's IA pg. 163
Proportion of energy delivered via public normal charging	20%	EC's IA pg. 163
Proportion of energy delivered via public normal charging BEV	33%	EC's IA pg. 163
Proportion of energy via public fast BEV	20%	EC's IA pg. 163
Proportion of energy via public fast PHEV	0%	EC's IA pg. 163
Total energy delivered via public normal charging	14.334.066.134	
Total energy delivered via public normal charging BEV	6.337.798.724	
Total energy delivered via public fast chargers	14.334.066.134	
average usage time and availability of normal recharging point (hours/day)	1,80	EC's IA: pg. 163 "around two hours" pg. 84 "around 1,8 hours"
usage ratio %	7,50%	
average usage time and availability of fast recharging point (hours/day)	3,00	EC's IA pg. 163 and pg. 84
usage ratio %	12,50%	
power of normal chargers BEV (KW)	21.817.452	
power of fast chargers BEV (KW)	13.090.471	
power of normal chargers PHEV (KW)	9.646.573	
Tot (KW)	44.554.497	46.317.380

according to EC's IA values, the targets of 1 KW/BEV and 0,66 KW/PHEV seems to be just enough: demand of 44,5 GW for 46,1 GW installed CP power @2030

However the energy approach is sensitive to the conservative hypothesis considered by EC (e.g. BEV Electric energy per km considered 0,148 KW/km @ 2030) and could carry to an undervaluation of the minimum CP power needed



Discussion Points related to targets



The fleet-based metric with sub target distance based across TEN-T seems a suitable approach to assure a minimum coverage meanwhile allowing enough flexibility on CP power in different MS

Taking into account more representative parameters (e.g. BEV consumption) the value of 1 KW/BEV is subminimal and should be adjusted and differentiate between 2025 and 2030 (especially in 2025 consider the potential effect of further higher BEV consumption, lower CP utilization rate)

The proposed distance based subtarget across TEN-T will leave completely behind all the comprehensive network until 2030 (no whatsoever mandatory deployment targets at 2025). The coverage in the Comprehensive Network is a further critical point that will need to be addressed fostering zero emission vehicles uptake also in regions not covered by the Core Network, hence bridging the gap in terms of social and economic disparity

Back UP



Average vehicle efficiency @ 2025 & 2030



Table 17: Electric vehicle range efficiency, 2020-2035 (kWh/km)

Segment	2020	2025	2030	2035
Small	0.17	0.15	0.14	0.13
Medium	0.17	0.16	0.15	0.14
Large	0.18	0.17	0.16	0.15
SUV	0.19	0.18	0.16	0.15

Source: BNEF.

BNEF EV outlook 2021

Assumptions: EU-wide EV fleet average values

		2020	2025	2030	
EV new car sales scenarios	CurrentPolicies	BEV	3%	13%	23%
		PHEV	2%	7%	10%
	Road2Zero	BEV	3%	15%	40%
		PHEV	2%	8%	13%
Energy use ratio (%)	3-7 kW (public)	7%	10%	14%	
	11-22 kW (public)	3%	5%	8%	
	50 kW	2%	4%	7%	
	150 kW	1%	3%	5%	
Availability (or uptime)		97%	98%	99%	
Recharge Efficiency (losses from plug to battery)		95%	95%	95%	
Average vehicle efficiency (kWh/km)	BEV	0.18	0.17	0.16	
	PHEV	0.18	0.17	0.17	
(real world driving of EV fleet average)					

T&E Recharge EU