



Alternative Fuels Infrastructure Regulation proposal (AFIR)

*ChargeUp Europe proposal for light duty
vehicle charging infrastructure targets*

In collaboration with

ADL
Arthur D Little

(technical support & analysis)

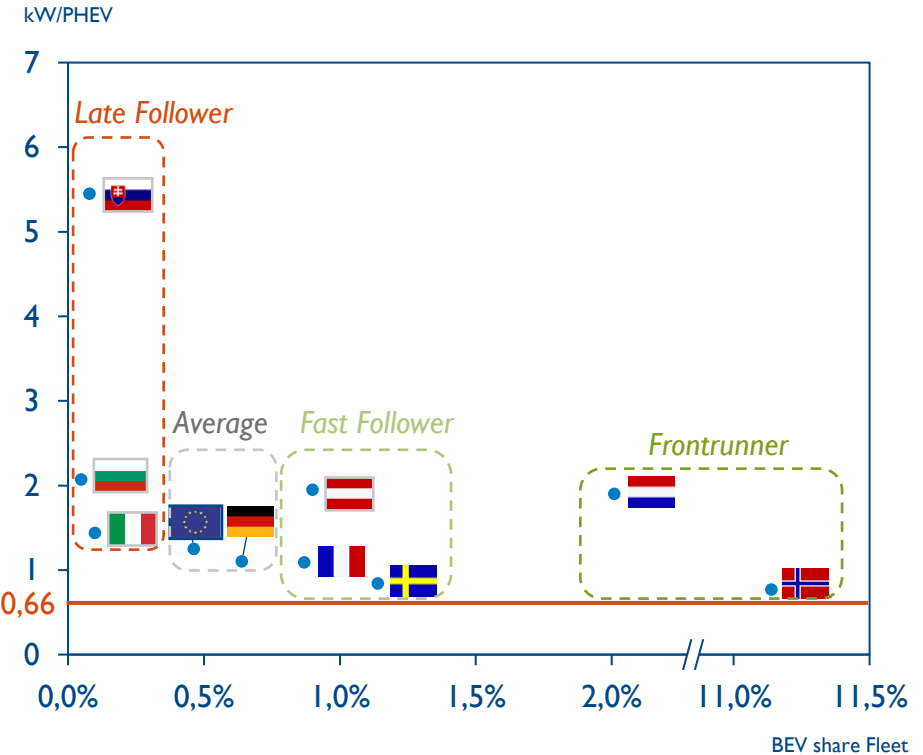
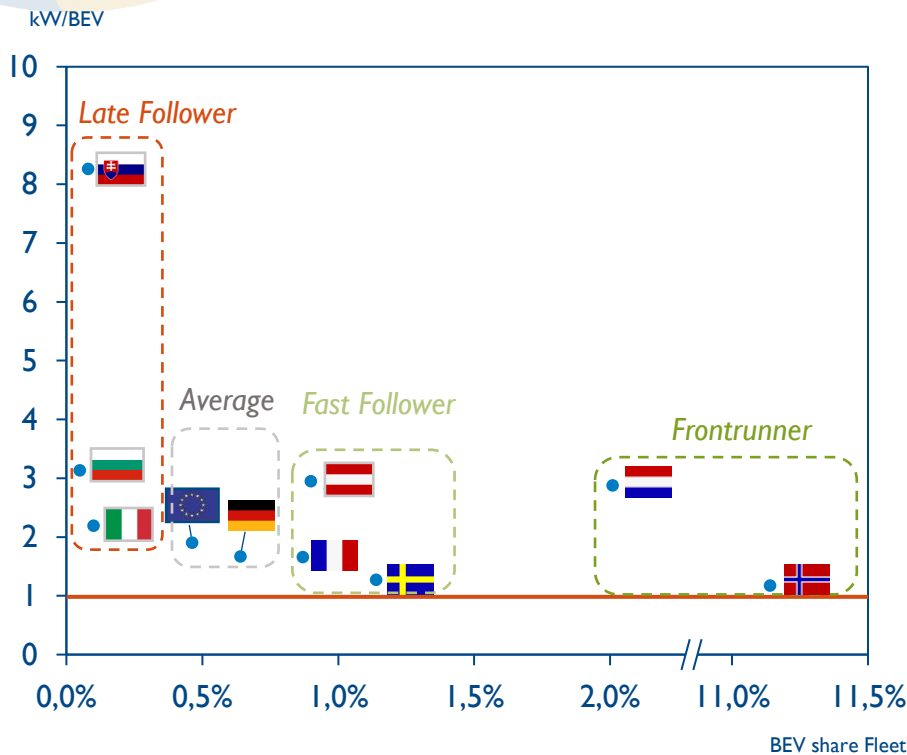
Current AFIR proposal for infrastructure target is lower than the existing public charging infrastructure in 2020 for every European market

Power-to-BEV Ratio 2020 in kW

Combined Analysis with PHEV (3:2 split analog to AFIR Proposal)

Power-to-PHEV Ratio 2020 in kW

Combined Analysis with PHEV (3:2 split analog to AFIR Proposal)

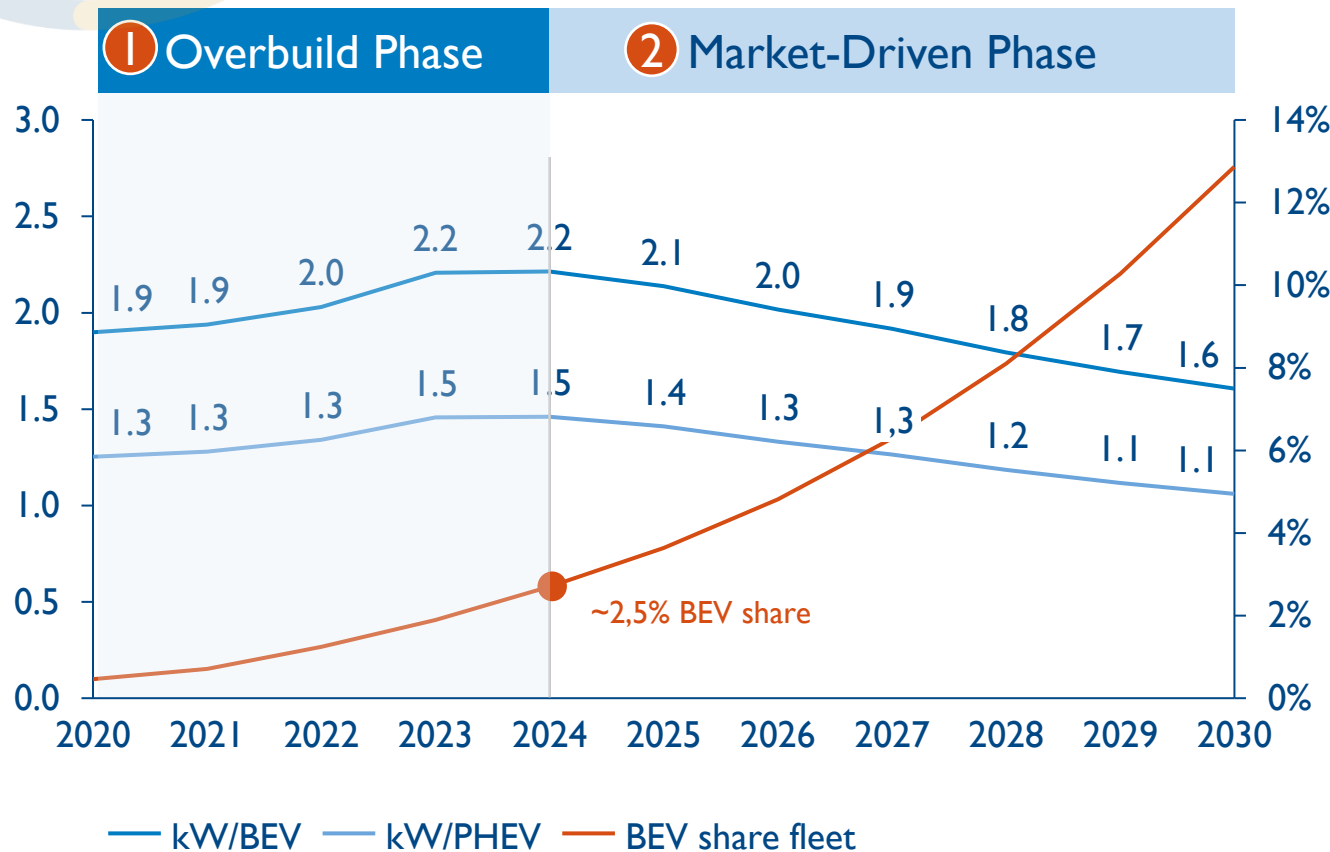


Binding infrastructure targets would be especially relevant for late follower markets – this group currently has the highest kW per vehicle ratios

Source: Arthur D. Little Analysis, EAFO

The ChargeUp Europe Infrastructure Forecast (Scenario I) assumes an overbuild of public infrastructure until 2024 to kick-start EV adoption

Forecast of Power-to-xEV Ratios Public Charging EU 2020 to 2030

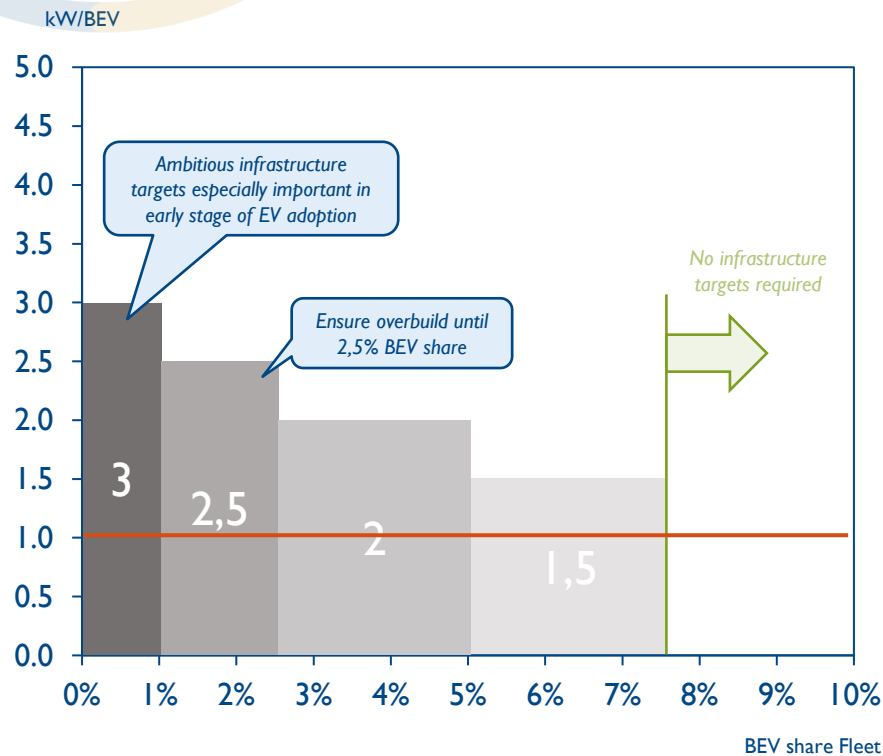


- Power-to-vehicle targets only become relevant as soon as a market reaches a critical size
- Ambitious infrastructure targets are **especially important in the early stage of BEV adoption** to overcome range anxiety of end-customers
- The Charge Up Europe Market Model assumes an **overbuild** of infrastructure until the **European BEV fleet reaches 2,5%**

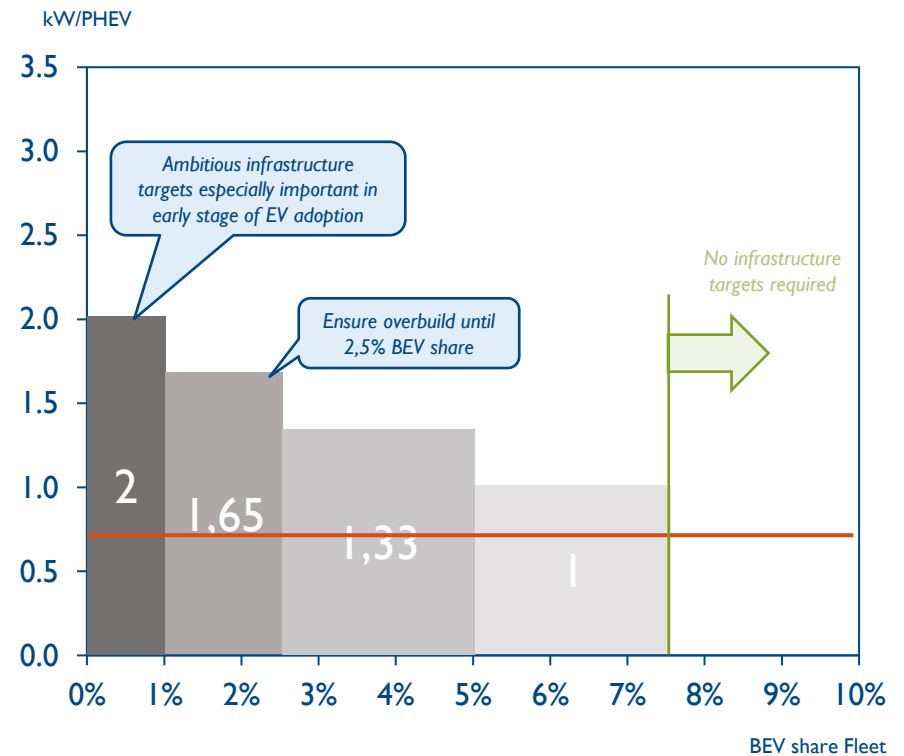
Source: Arthur D. Little Analysis, ChargeUpEurope

We therefore propose phased infrastructure targets on country-level depending on their fleet electrification maturity for public charging

Power-to-BEV Infrastructure targets in kW
Public Charging



Power-to-PHEV Infrastructure targets in kW
Public Charging

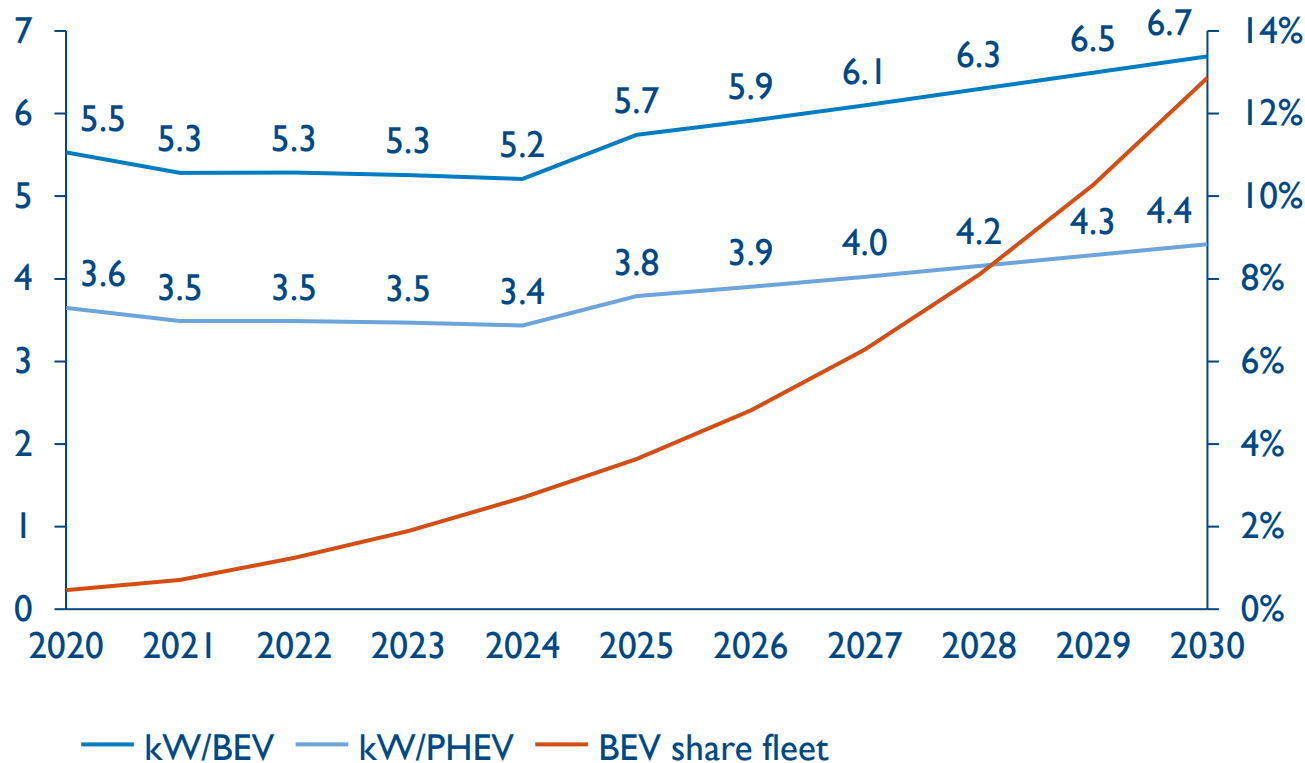


— AFIR target proposal

Source: Arthur D. Little Analysis, EAFO

The ChargeUp Europe Infrastructure Forecast (Scenario I) assumes a quite constant power per BEV/PHEV ratio for private charging over time

Forecast of Power-to-xEV Ratios Private Charging Charging EU 2020 to 2030

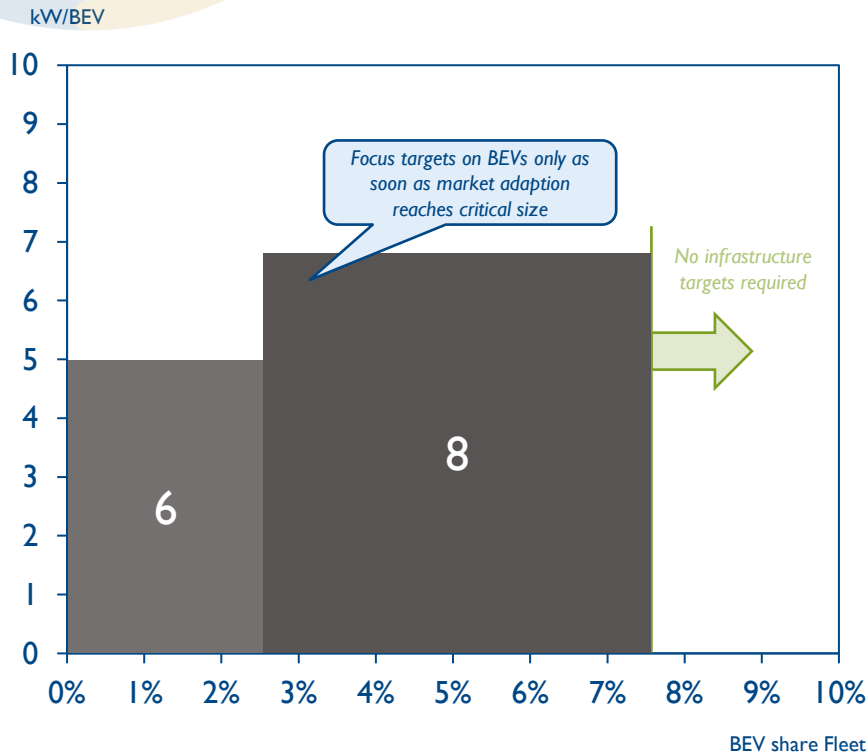


- Private Charging consists of Home Charging and Workplace Charging
- Charge Up Europe Infrastructure Forecast assumes quite constant power per BEV/PHEV over time
 - Slight increase from 2024 onwards due to assumed increase of power output at workplace charging (DC wallbox)

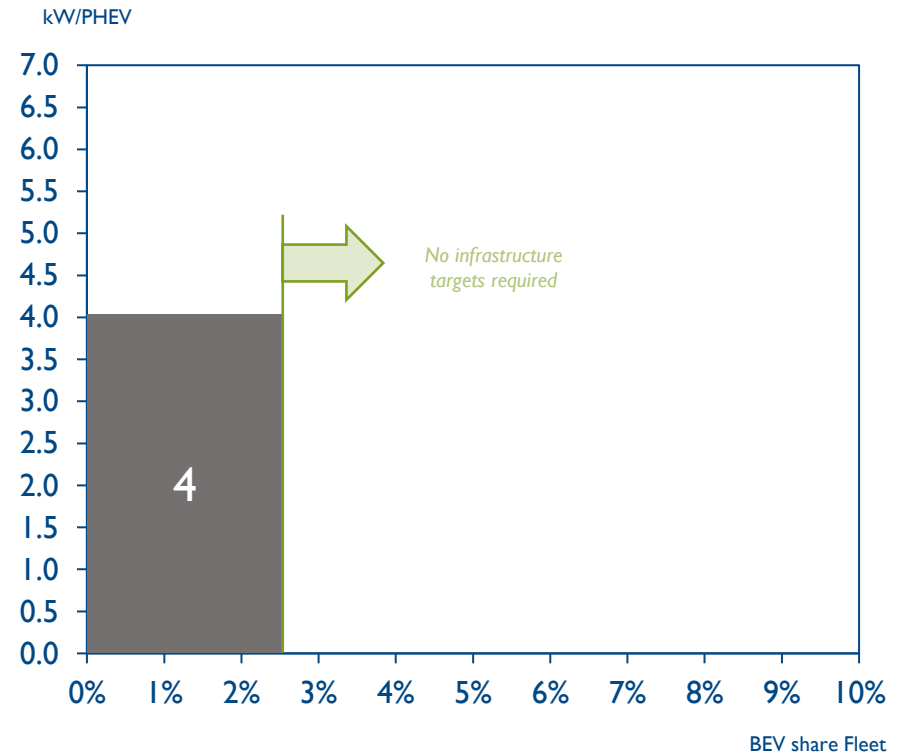
Source: Arthur D. Little Analysis, ChargeUpEurope

We propose to set indicative targets for private charging infrastructure and to focus them on BEVs only in the future

Power-to-BEV Infrastructure targets in kW
Private Charging



Power-to-PHEV Infrastructure targets in kW
Private Charging



Source: Arthur D. Little Analysis, EAFO

Charge Up Europe proposes binding targets for public and indicative targets for private charging based on a single country's fleet electrification

Charge Up Europe Proposal for AFIR

Public Charging	BEV share of vehicle fleet	0 - 1%	>1 – 2,5%	>2,5 – 5%	>5 – 7,5%	>7,5%
	<i>Binding Infrastructure Targets</i>	kW/BEV	3,0	2,5	2,0	1,5
	kW/PEHV	2,0	1,65	1,33	1,0	
Private Charging	BEV share of vehicle fleet	0 - 1%	>1 – 2,5%	>2,5 – 5%	>5 – 7,5%	>7,5%
	<i>Indicative Infrastructure Targets</i>	kW/BEV	6,0	6,0	8,0	8,0
	kW/PEHV	4,0	4,0	0,0	0,0	