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Item 3 of the provisional agenda

Alternative fuels

Submitted by International Road Safety Initiative

This document intends to supplement Informal document No. 1 (29 September 2022) on "Road signs for electric charging," which also covers alternative liquid fuels. This document includes signs for eight alternative liquid fuels and for electric vehicles.

ALTERNATIVE FUELS









Abbreviations	Definition
ALT	Alternative fuel
BD	Biodiesel
CNG	Compressed natural gas
D	Diesel
E85	Ethanol
EV	Electric vehicles
GNV	Liquefied natural gas
GPL	Liquefied petroleum gas
HOV	High occupancy vehicle
H2	Hydrogen
HYD	Hydrogen
LNG	Liquefied natural gas
LPG	Liquefied petroleum gas
NZEV	Net zero electric vehicle
P	Propane
PMV	Personal mobility vehicle









VIENNA CONVENTION SIGN SECTIONS









Section	Definition
A	Warning
C	Prohibition
D	Mandatory
E	Special regulation
F	Facilities and services
G	Direction, position, indication
H	Additional panel










VEHICLES










Electric or Hybrid
PMVs (scooters, segways, etc.)
Cycles
Mopeds/Motorcycles
Cars
Buses
Trucks









REGULAR PETROL and COMPRESSED NATURAL GAS			
Sign Image	Description	CP	Comments 3
	C: Prohibition	Czech Republic	Refers to transport of CNG
		Slovakia	Same as above
	F: Facilities and Services	R.E.2	
		Belgium	
		Estonia	
		Finland	
		Germany	
		Kazakhstan	










REGULAR PETROL and COMPRESSED NATURAL GAS			
Sign Image	Description	CP	Comments
	F: Facilities and Services	Luxembourg	
		Netherlands	
		North Macedonia	
		Slovakia	
		Sweden	
	H: Additional Panel	Lithuania	Only CNG unless another sign or H panel indicates more fuel types; the panel is used with sign F4
Sign Image	Description	NCP	Comments
	F: Facilities and Services	Slovenia	
		USA	Only CNG unless there is another sign for another type of fuel


REGULAR PETROL and LIQUEFIED NATURAL GAS			
Sign Image	Description	CP	Comments
	F: Facilities and Services	R.E.2	
		Belgium	
		Luxembourg	
		North Macedonia	
		Sweden	
Sign Image	Description	NCP	Comments
	F: Facilities and Services	Slovenia	
		USA	Only CNG unless there is another sign for another type of fuel
		Venezuela	Only LNG


REGULAR PETROL and LIQUEFIED PETROLEUM GAS			
Sign Image	Description	CP	Comments 6
	C: Prohibition	Czech Republic	Refers to transport of LPG
		France	Same as above
		Slovakia	Same as above
	F: Facilities and Services	R.E.2	
		Belgium	
		Estonia	Only LPG available
		Estonia	Regular fuel and LPG available
		Estonia	Example of sign combination
		France	





REGULAR PETROL and LIQUEFIED PETROLEUM GAS			
Sign Image	Description	CP	Comments 7
	F: Facilities and Services	Germany	
		Hungary	Regular and unleaded fuel and LPG; the latter is depicted in orange or yellow
		Italy	
		Kazakhstan	
		Luxembourg	
		Netherlands	
		North Macedonia	
		Norway	
		Poland	


REGULAR PETROL and LIQUEFIED NATURAL GAS			
Sign Image	Description	CP	Comments 8
	F: Facilities and Services	Portugal	
		Romania	
		Slovakia	
		Sweden	
	H: Additional Panel	Lithuania	Only LPG unless another sign or H panel indicates more fuel types; the panel is used with sign F4
Sign Image	Description	NCP	Comments
	F: Facilities and Services	Slovenia	
		Taiwan	Only LPG
		USA	Only LPG unless there is another sign for another type of fuel



REGULAR PETROL and HYDROGEN			
Sign Image	Description	CP	Comments 9
	F: Facilities and Services	R.E.2	
		Belgium	
		Finland	
		Germany	
		Luxembourg	
		Netherlands	New sign design developed to increase legibility on motorways and also comprehension of fuel type
		North Macedonia	
		Slovakia	
		Sweden	



HYDROGEN ONLY			
Sign Image	Description	NCP	Comments 10
	F: Facilities and Services	USA	Only hydrogen unless there is another sign for another type of fuel


BIODIESEL			
Sign Image	Description	NCP	Comments 10
	F: Facilities and Services	California, USA	Is always accompanied by an H panel









DIESEL			
Sign Image	Description	CP	Comments
	F: Facilities and Services	Italy	
Sign Image	Description	NCP	Comments
	F: Facilities and Services	British Columbia, Canada	
		USA	
		Venezuela	



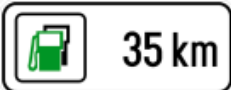

ETHANOL			
Sign Image	Description	NCP	Comments
	F: Facilities and Services	USA	


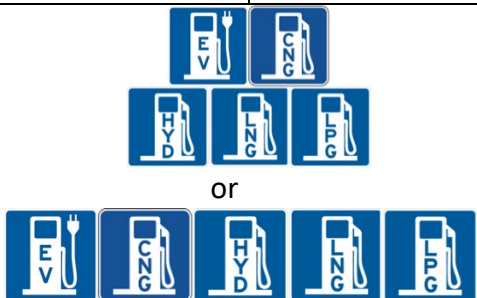
METHANOL			
Sign Image	Description	CP	Comments
	F: Facilities and Services	Italy	
Sign Image	Description	NCP	Comments
		California, USA	May be accompanied by an H panel that says "METHANOL"

PROPANE			
Sign Image	Description	NCP	Comments
	F: Facilities and Services	British Columbia, Canada	
		USA	









UNLEADED FUEL			
Sign Image	Description	NCP	Comments
		Hungary	Regular and unleaded fuel (at the time R.E.2 was written, some CPs were using green to stand for "unleaded"; therefore, WP.1 chose blue as the alternative fuel color)










NON-SPECIFIC ALTERNATIVE FUELS			
Sign Image	Description	CP	Comments
	F: Facilities and Services	Belarus	
		Belarus	
		Bulgaria	
		Italy	
		Latvia	A specific fuel type may be indicated on the sign or on an H panel
		Netherlands	New sign design developed to increase legibility on motorways and also comprehension of fuel type
		North Macedonia	
		Slovakia	










NON-SPECIFIC ALTERNATIVE FUELS			
Sign Image	Description	CP	Comments
	F: Facilities and Services	Ukraine	
		Ukraine	
	G: Direction, Position, or Indication	North Macedonia	
Sign Image	Description	NCP	Comments
	F: Facilities and Services	Slovenia	



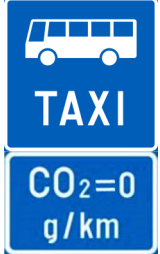



MULTIPLE ALTERNATIVE FUELS			
Sign Image	Description	NCP	Comments
	F: Facilities and Services	California, USA	Many USA states do not follow the national sign code
		USA	These interchangeable signs are placed together on motorways in the same size as 1 sign would be; from 2 to 5 signs are displayed; the road section with these signs has a large inscription above them stays "Alternative Fuels Corridor"

ELECTRIC VEHICLE CHARGING SIGNS APPROVED BY WP.1	
Advance Signs	Parking Signs
<p>WP.1 discussed harmonizing EV signs from 2010-2012 and then approved all advance and parking signs submitted by CPs. As shown above, the signs were from Belgium, Denmark, France, Portugal, and Sweden. Harmonization was not achieved, but all sign symbols appear to be comprehensible.</p> <p>Among the approved sign symbols is an image of a blue car (top row, 3rd sign from left).</p>	





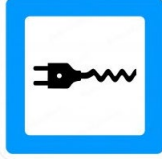




SPECIFIC ELECTRIC VEHICLES			
Sign Image	Description	CP	Comments 15
	A: Warning	Czech Republic	Beware of PMVs
	C: Prohibition	Czech Republic	No riding on segways or other PMVs
		Norway	No riding on small electric vehicles
	E: Special Regulations (Zone)	Czech Republic	No riding on segways or other PMVs within the zone
		Czech Republic	End of the no small electric vehicles zone
		Norway	No riding on PMVs within the zone; vehicles may be pushed or carried
		Norway	End of the no small electric vehicles zone
		Norway	No parking zone for small electric vehicles













SPECIFIC ELECTRIC VEHICLES			
Sign Image	Description	CP	Comments 16
	E: Special Regulations (Zone)	Norway	End of no parking zone for small electric vehicles
	H: Additional panel	Germany	Small electric vehicles
		Germany	Permitted
		Italy	Electric scooter
		Italy	Segway
		Norway	Small electric vehicles
		Slovakia	Small electric vehicles
	F: Facilities and Services	Netherlands	
		North Macedonia	













SPECIFIC ELECTRIC VEHICLES			
Sign Image	Description	CP	Comments
	H: Additional panel	Germany	
		Germany	Permitted
		Germany	Permitted
		Slovakia	
	F: Facilities and Services	Netherlands	
Sign Image	Description	NCP	Comments
	C: Prohibition	Quebec, Canada	
	Road marking	Spain	Designates parking space for cycle charging
		Spain	Designates parking space for motorcycle charging
		Spain	Designates parking space for bus charging





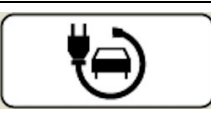


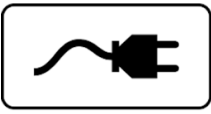



SINGLE SYMBOLS FOR ELECTRIC VEHICLES			
Sign Image	Description	CP	Comments 18
	C: Prohibition	France	Example of how many CPs use no parking or no stopping signs for EV charging
	D: Mandatory	Slovakia	EVs permitted to use mandatory bus lane
	E: Special Regulations (Lane Use)	Finland	EVs permitted to use reserved HOV bus/taxi lane if CO2 value is zero
		France	Experimental sign not in national code; reserved HOV lane includes EVs; lane use for EVs is voluntary
		France	Same as above
		France	Same as above, but large vehicles (>3.5t) are prohibited; the sign is in effect only when the reserved lane symbol is illuminated


SINGLE SYMBOLS FOR ELECTRIC VEHICLES









Sign Image	Description	CP	Comments
	E: Special Regulations (Parking)	Netherlands	Example of how many CPs use parking signs for EV charging
	F: Facilities and Services	Belarus	
		Chile	The ground color relates to the type of road.
		Chile	Same as above.
		Denmark	
		Estonia	
		France	
		North Macedonia	
		Norway	


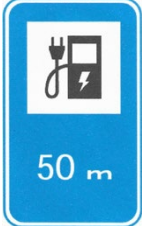






SINGLE SYMBOLS FOR ELECTRIC VEHICLES			
Sign Image	Description	CP	Comments
	F: Facilities and Services	Poland	
		Portugal	EV charging point
		Slovakia	EV charging only
		Slovakia	EV charging plus other fuels
		Sweden	
		Ukraine	
ausgenommen 	H: Additional panel	Austria	Exempt
		Belarus	
		Belgium	
		Belgium	
		Denmark	
		Estonia	


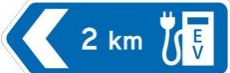







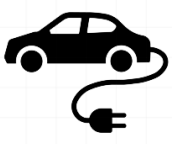
SINGLE SYMBOLS FOR ELECTRIC VEHICLES			
Sign Image	Description	CP	Comments
	H: Additional panel	Finland	
		Finland	
		Finland	Depending on CO2 value, may be used to grant LEVs or NZEVs privileges, such as with parking
		Finland	Same as above; colors differ to coordinate with the signs
		France	Prohibited except
		Germany	
		Germany	Permitted
		Latvia	
		Lithuania	
		Lithuania	Except
		Luxembourg	
		Luxembourg	








SINGLE SYMBOLS FOR ELECTRIC VEHICLES			
Sign Image	Description	CP	Comments
	H: Additional panel	North Macedonia	
		Portugal	
		Portugal	
		Portugal	Parking sign applies only while EV is charging
		Russia	
		Russia	Except
		Russia	
		Russia	
		Slovakia	
		Switzerland	This may not be a national symbol
	Road Marking	North Macedonia	Reservation of perpendicular parking spaces for EVs
			









SINGLE SYMBOLS FOR ELECTRIC VEHICLES			
Sign Image	Description	NCP	Comments 23
	C: Prohibition	British Columbia, Canada	Slow electric vehicles (<50 kmh) prohibited on higher-speed roads
		South Korea	Same as above
		British Columbia, Canada	
		Quebec, Canada	
		Queensland, Australia	
	E: Special Regulations (Parking)	Colombia	
		Dominican Republic	

SINGLE SYMBOLS FOR ELECTRIC VEHICLES			
Sign Image	Description	NCP	Comments 24
	E: Special Regulations (Parking)	Iceland	
		New Zealand	Parking with time restriction
		New Zealand	Parking with time restriction and fee
		Slovenia	
		Queensland & Victoria, Australia	
	Electric vehicle recharging point only	UK	Prevalent on British roads, but not included in the national code
	E: Special Regulations (Lane use)	Quebec, Canada	Reserved HOV lane includes EVs; lane use for EVs is voluntary
	E: Special Regulations (Zone)	British Columbia, Canada	

SINGLE SYMBOL FOR ELECTRIC VEHICLES			
Sign Image	Description	NCP	Comments
	F: Facilities and Services	British Columbia, Canada	
		Dominican Republic	
		Slovenia	
		Spain	EV charging ahead
		Spain	EV charging point
		Taiwan	
		Thailand	
		USA	








SINGLE SYMBOLS FOR ELECTRIC VEHICLES			
Sign Image	Description	NCP	Comments
	G: Direction, Position, or Indication	British Columbia, Canada	
		New Zealand	
		Queensland, Canada	
	H: Additional panel	Israel	
		Israel	
		Israel	
		Quebec, Canada	
		Queensland, Australia	
		Queensland, Australia	
		Victoria, Australia	





SINGLE SYMBOLS FOR ELECTRIC VEHICLES			
Sign Image	Description	NCP	Comments
	Road marking	New Zealand	
		Queensland, Australia	
		Queensland, Australia	
		Quebec, Australia	
		Spain	Designates parking space for EV charging
	No VC sign category	British Columbia, Canada	Slow electric vehicles (<50 kmh) permitted
		South Korea	Same as above

SYMBOLS FOR ELECTRIC VEHICLES AND LIQUID FUELS			
Sign Image	Description	CP	Comments 28
	F: Facilities and Services	Belarus	Green stands for electric
		Belarus	Same as above
		Belarus	Same as above
		Denmark	Liquid fuel choices and electric charging
		France	The plus clarifies the sign's meaning
		France	
		France	The plus sign clarifies the meaning
		Lithuania	The EV symbols are redundant

SYMBOLS FOR ELECTRIC VEHICLES AND LIQUID FUELS

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Sign Image	Description	CP	Comments
	F: Facilities and Services	Luxembourg	
		Netherlands	New sign design developed to increase legibility on motorways and also comprehension of fuel type
		Netherlands	Same as above
		Poland	
		Portugal	The horizontal line clarifies the sign's meaning
		Portugal	
		Russia	

SYMBOLS FOR ELECTRIC VEHICLES AND LIQUID FUELS				
Sign Image	Description	NCP	Comments	30
	F: Facilities and Services	South Korea	Detail: 	
		Spain		
		Spain		

DECISIONS

- Should signs for liquid alternative fuels and EVs be added to the VC? Assuming yes...
- Which liquid fuels should be included? BD, CNG, D, E85, H2, LNG, LPG, P?
- How should the fuel names be abbreviated?
- Almost all countries have a pump symbol for liquid fuels so we may assume that will be the symbol. Where on the sign does the fuel name(s) belong relative to the pump?
- When several liquid fuel types are present, where do their pump symbols belong relative to each other? In front, behind, beside, below?
- What colors should the pumps be?
- How should multiple fuels be indicated?
- For EVs, which vehicles need symbols? PMVs, cycles, mopeds/motorcycles, cars, buses, trucks?
- Does each vehicle need its own symbol or can 1 detached symbol (a plug) apply to all?
- What should the design of the EV symbol(s) be?
- What color should the EV symbol(s) be? Black, white, blue, green?
- How should the EV symbol be combined with alternative liquid fuel symbols?
- Do signs need to be differentiated for EV slow charging and fast charging stations?
- For trucks, can 1 symbol suffice for charging engines vs. electrifying containers and/or trailers (e.g., for long-haul refrigeration)?

COMMENTS

- More prominent placement for alternative fuel symbols send a stronger message, that is, in front of the regular fuel symbol.
- A plug symbol attached or separated from a vehicle symbol or attached to a pump symbol delivers a clear message. When plug and pump symbols are separated, there are 2 interpretations: only electric charging or regular fuel plus electric charging.
- Privileged parking for EVs would not be confused with parking permitted only while charging because privileged parking would not be sited at charging points.
- Symbols for alternative liquid fuels exhibit a high degree of harmonization, but symbols for EVs do not. The main symbols used worldwide are vehicles with attached electric plugs and filling station pumps with attached electric plugs. Due to the prevalence of these symbols (plus other symbol designs), choosing one symbol and envisioning all CPs using it does not seem realistic.
- Sound decision-making for complex issues requires sufficient time for careful consideration and debate.

CP = Contracting Party to the Convention, **NCP** = Non-Contracting Party

R.E.2 is a document sponsored by the UNECE Working Party on Road Traffic Safety (WP.1). It contains recommendations for road sign designs. Adoption of the designs is voluntary.
