

CEN Reference:

BT N 12875

Draft BT C031/2022

CENELEC Reference:

BT171/DG12568/DV

Simultaneous circulation to CEN and CENELEC TECHNICAL BOARDS

BT by correspondence

CENELEC Agenda item:

6.2.1

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2022-02-02

Deadline:

2022-03-01

	Vote - IR2 clause 6.1.4 (Acceptance/Refusal of SReq)	For information to organization not addressed in the SReq
CEN	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CENELEC	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SUBJECT

Final draft SReq on 'Alternative fuels infrastructure' (AFI II) – BTs Vote

BACKGROUND

On 2022-01-31, DG GROW informed that **CoS voted favourably** on the Standardization Request as regards communication exchange, electricity, and hydrogen supply for road, maritime transport and inland navigation in support of Directive 2014/94/EU (AFI II) and its planned revision under the 'Fit for 55' package (see Annex 1) of which the CoS consultation closed on 2022-01-28 (see BT N 12833). The details of the vote have not been communicated to CEN-CENELEC at this stage.

A CoS positive opinion implies that in the coming weeks the Implementing Act containing the SReq may come to CEN and CENELEC for possible acceptance according to Art.10 of Regulation 1025/2012. CEN and CENELEC will then have one month in which to indicate whether it accepts the SReq. CEN and CENELEC BT Members are therefore requested to vote on the final draft (Annex 1) to enable a timely response, when the Implementing Act is officially received.

The request

As explained in BT N 12833 and BT171/DG12523/INF, the purpose of the SReq is to support the current Directive 2014/94/EU and the future EU regulation that will replace it, with a new series of standards to develop, in addition to the ones already developed in the framework of M/468 and M/533. More precisely, the SReq contains 23 deliverables with new requests, notably on liquid hydrogen fuelling and bunkering for heavy duty road vehicles and ships, on electrified roads for heavy duty vehicles, and on ammonia and methanol refuelling for maritime and inland vessels.

The work program will involve directly and indirectly a lot of different TCs, notably CLC/TC 9X 'Electrical and electronic applications for railways', CEN/TC 268 'Cryogenic vessels and specific hydrogen technologies applications', CEN/TC 301 'Road vehicles', CEN/TC 15 'Inland navigation

vessels', and CEN-CLC/JTC 6 'Hydrogen in energy systems'. It is also important to underline that the work program will require transposition of IEC standards into CLC IEC and that some deliverables will be TRs or TSs.

The deadline for delivery of the deliverables range from 2023-12-31 to 2028-12-31. This variation is based on the SRAHG request considering the difference of technical committee capacity and of maturity of some technical fields, and also on the fact that some standards are already under development.

The Work Programme must be submitted within 1 month after adoption of the Decision on the SReq by the Commission. The annual report must be submitted within 12 months after adoption of the Decision on the SReq by the Commission. The expiry date of the SReq – 2029-06-30 is acceptable.

SRAHG final recommendation

On 2021-11-16, CCMC circulated the draft to SRAHG for a final recommendation for BT. **The SRAHG issued a positive recommendation for the BT.** The work exchanges with the European Commission were excellent and all the SRAHG requests for corrections have been accepted.

Finally, as indicated in BT N 12833 and BT171/DG12523/INF, the EC informed CEN & CENELEC at a very late stage (on 2021-12-15 with a very short delay for reply) of the possibility of funding. After an exchange, the EC agreed on extending the deadline for the response to the call (2022-02-19).

As a preliminary information to the BTs, CCMC is of opinion that, although the call is potentially covering all the topics of the Standardization Request, the proposal to be submitted by CCMC would concentrate on a dedicated number of projects because some of the topics listed in the call are already well advanced and are therefore not eligible for funding.

CEN

In line with Decision BT 8/2015, CEN/BT is asked to approve the Standardization Request (final draft) in Annex 1 following the provisions of IR2 clause 6.1.4.

Note: Possible votes are 'Agrees', Disagrees with comments' and 'Abstains'. Any vote indicating 'Disagrees fundamentally' will be counted as 'Disagrees with comments'.

CENELEC

In line with Decision D150/088, CLC/BT is asked to approve the Standardization Request (final draft) in Annex 1 following the provisions of IR2 clause 6.1.4.

BT is also reminded of decision *D150/065*:

In line with the principle of management of exception, BT agreed that, at the end of the BT consultation, 'no reply' is considered as 'positive vote' in the context of clause 6.1.4 of IR2 and that any disagreement, considered as 'negative vote', should be accompanied by a comment. The acceptance of the proposal will be calculated in line with clause 6.1.4 of IR2.

PROPOSAL(S)

CEN/BT,

- having noted
 - o the CoS positive opinion of 2022-01-28 on the SReq as regards communication exchange, electricity, and hydrogen supply for road, maritime transport and inland navigation in support of Directive 2014/94/EU and its planned revision under the 'Fit for 55' package (AFI II);
 - o the final recommendation of the SRAHG Alternative fuels infrastructure II;
- considering decision BT 8/2015 and applying the provisions of IR2 clause 6.1.4;
- accepted the SReq as regards communication exchange, electricity, and hydrogen supply for road, maritime transport and inland navigation in support of Directive 2014/94/EU and its planned revision under the 'Fit for 55' package.

CLC/BT,

- having noted
 - o the CoS positive opinion of 2022-01-28 on the SReq as regards communication exchange, electricity, and hydrogen supply for road, maritime transport and inland navigation in support of Directive 2014/94/EU and its planned revision under the 'Fit for 55' package (AFI II);
 - o the final recommendation of the SRAHG Alternative fuels infrastructure II;
- considering decision D150/088 and applying the provisions of IR2 clause 6.1.4;
- accepted the SReq as regards communication exchange, electricity, and hydrogen supply for road, maritime transport and inland navigation in support of Directive 2014/94/EU and its planned revision under the 'Fit for 55' package.

2022-01-31 – MAC

Brussels, XXX
[...] (2021) XXX draft

COMMISSION IMPLEMENTING DECISION

of XXX

on a standardisation request to the European standardisation organisations as regards communication exchange, electricity and hydrogen supply for road, maritime transport and inland navigation in support of Directive 2014/94/EU and its planned revision under the ‘Fit for 55’ package

This draft has not been adopted or endorsed by the European Commission. Any views expressed are the preliminary views of the Commission services and may not in any circumstances be regarded as stating an official position of the Commission. The information transmitted is intended only for the Member State or entity to which it is addressed for discussions and may contain confidential and/or privileged material.

COMMISSION IMPLEMENTING DECISION

of **XXX**

on a standardisation request to the European standardisation organisations as regards communication exchange, electricity and hydrogen supply for road, maritime transport and inland navigation in support of Directive 2014/94/EU and its planned revision under the ‘Fit for 55’ package

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council¹, and in particular Article 10(1) thereof,

Whereas:

- (1) Directive 2014/94/EU of the European Parliament and of the Council² lays down common technical specifications for recharging and refuelling points for the building-up of a harmonized European alternative fuels infrastructure. Pursuant to that Directive, the Commission is empowered to adopt delegated acts to supplement and update those technical specifications and it may request the development of European standards for that purpose.
- (2) Pursuant to Article 10(1) of Regulation (EU) No 1025/2012 the Commission requested³ the European standardisation organisations (‘ESOs’) to develop and adopt appropriate European standards by 31 December 2022 for electricity supply for road, maritime transport and inland navigation, hydrogen supply for road transport, natural gas, including biomethane, supply for road, maritime transport and inland navigation. The requested standardisation work is not fully finalised.
- (3) In order to supplement and update Annex II to Directive 2014/94/EU, the Commission adopted Commission Delegated Regulation 2019/1745/EU⁴. The standards included in

¹ OJ L 316, 14.11.2012, p. 12.

² Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure (OJ L 307, 28.10.2014, p. 1).

³ Commission Implementing Decision C(2015) 1330 final of 12.3.2015 on a standardisation request addressed to the European standardisation organisations, in accordance with Regulation (EU) No 1025/2012 of the European Parliament and of the Council, to draft European standards for alternative fuels infrastructure (M/533).

⁴ Commission Delegated Regulation (EU) 2019/1745 of 13 August 2019 supplementing and amending Directive 2014/94/EU of the European Parliament and of the Council as regards recharging points for L-category motor vehicles, shore-side electricity supply for inland waterway vessels, hydrogen supply for road transport and natural gas supply for road and waterborne transport and repealing Commission Delegated Regulation (EU) 2018/674 (OJ L 268, 22.10.2019, p. 1).

that Delegated Regulation were developed and adopted by the European Committee for Standardisation ('CEN') and the European Committee for Electrotechnical Standardisation ('Cenelec') on the basis of the standardisation request in Implementing Decision C(2015) 1330.

- (4) The lack of common standards for recharging and refuelling points constitutes a barrier for the creation of a single market of alternative fuels infrastructure. Standardisation is therefore an essential mechanism to create economies of scale and a mature internal market in that sector as well as to allow an effective integration of electric vehicles into the grid and prevent vendor lock-in by proprietary solutions.
- (5) Standardisation efforts to support electromobility have focused on electro-technical issues, such as plugs, outlets and electrical safety specifications. However, in order to ensure interoperability between electric vehicles, recharging points, electromobility service providers, e-roaming platforms and electricity distribution networks, appropriate communication interfaces and data models need to be standardised as well.
- (6) The Commission's communication on the European Green Deal⁵ estimates that by 2025 about 1 million public recharging and refueling stations would be needed on European roads. Furthermore, the Commission's communication on the Sustainable and Smart Mobility Strategy⁶ states that by 2025 the aim is to build 1 million out of 3 million public recharging points and half of the 1 000 hydrogen refueling stations needed by 2030, to serve at least 30 million zero-emission vehicles that are planned to be in operation on European roads. For the purpose of guiding that process, the Commission has adopted a strategic rollout plan⁷ setting supplementary actions for a quick deployment of infrastructure, including standardisation and data aspects.
- (7) Therefore, new compatible standards are needed, in particular for electromobility, to ensure the complete interoperability of the electric vehicle recharging ecosystem, enabling the implementation of emerging technologies such as smart charging and vehicle-to-grid ('V2G'). Further standardisation work is also necessary to ensure the maturity and complete interoperability of the hydrogen refueling ecosystem.
- (8) In addition, to achieve a fully interoperable road transport system, future standardisation work should address specific challenges for recharging and refueling heavy-duty vehicles, including the harmonisation of plugs, outlets and, importantly, communication interfaces built on the basis of European technical specifications already developed for light duty vehicles. Furthermore, new technical specifications for electric road systems ('ERS') intended to transmit electrical energy to vehicles during travel should be developed, considering electronics and communication components. The standardisation of ERS represents a long-term strategic approach, which might constitute a relevant complementary recharging solution in the future.

⁵ Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions COM(2019) 640 final of 11.12.2019 on the European Green Deal.

⁶ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions COM(2020) 789 final of 9.12.2020 on the Sustainable and Smart Mobility Strategy – putting European transport on track for the future.

⁷ Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions COM(2021) 560 final of 14.7.2021 on A strategic rollout plan to outline a set of supplementary actions to support the rapid deployment of alternative fuels infrastructure.

- (9) New standards should also be developed for maritime transport and inland navigation to facilitate and consolidate the entry on the market of alternative fuels, especially in relation to the supply of electricity and climate-neutral shipping fuels, including hydrogen, as well as communication exchange in the recharging ecosystem for maritime and inland navigation.
- (10) All standards should be based on risk assessment and risk reduction methodologies and reflect the generally acknowledged state of the art.
- (11) CEN and Cenelec have indicated that the work covered by the request falls within their area of competence.
- (12) It is therefore appropriate to request CEN and Cenelec to draft new European standards taking into account the recent technological developments and the new markets needs as concluded in the 2019 European Commission's Sustainable Transport Forum report . This Decision should set out deadlines for the adoption of those standards by CEN and Cenelec.
- (13) The ESOs have agreed to follow the Guidelines for the execution of standardisation requests⁸.
- (14) In order to ensure transparency and facilitate the execution of the requested standardisation activities CEN and Cenelec should prepare a work programme and submit it to the Commission.
- (15) In order to enable the Commission to better monitor the requested standardisation work, CEN and Cenelec should provide the Commission with access to an overall project plan containing detailed information on the execution of the standardisation request. CEN and Cenelec should promptly inform the Commission if they consider that additional standards would need to be developed or if they consider that more time is necessary for the execution of this request.
- (16) In accordance with Article 10(3) of Regulation (EU) No 1025/2012 each standardisation request is subject to acceptance by the relevant European standardisation organisation. It is therefore necessary to provide for the rules on the validity of a request where it is not accepted by CEN and Cenelec.
- (17) In order to ensure legal certainty as to the validity of the request after its execution, it is appropriate to provide for a date of expiry of this Decision.
- (18) Given that the requested drafting work on the basis of the standardisation request set out in Implementing Decision C(2015) 1330 is not yet fully completed for standards on a single solution for wireless recharging for passenger cars and light duty vehicles as well as for electric buses and for battery swapping for electric vehicles this Decision provides for a revisited basis to complete that work. Therefore it is appropriate to provide for the end of validity of the standardisation request in Implementing Decision C(2015) 1330.
- (19) The European standardisation organisations, the European stakeholders' organisations receiving Union financing and the members of the Alternative Fuels Committee established by Article 9 of Directive 2014/94/EU and the expert group of the Sustainable Transport Forum have been consulted.

⁸ SWD(2015) 205 final of 27 October 2015.

(20) The measures provided for in this Decision are in accordance with the opinion of the Committee established by Article 22 of Regulation (EU) No 1025/2012,

HAS ADOPTED THIS DECISION:

Article 1
Requested standardisation activities

The European Committee for Standardisation ('CEN') and the European Committee for Electrotechnical Standardisation ('Cenelec') are requested to draft the new European standards listed in Tables 1 to 5 and the new standardisation deliverable listed in Table 6 of Annex I to this Decision in support of Directive 2014/94/EU.

The standards and the standardisation deliverable referred to in the first paragraph shall meet the requirements set out in Annex II.

Article 2
Work programme

CEN and Cenelec shall prepare a joint work programme indicating all the standards and the deliverable listed in Annex I, the responsible technical bodies and a timetable for the execution of the requested standardisation activities in accordance with the deadlines set out in Annex I.

CEN and Cenelec shall submit the draft joint work programme to the Commission by [XX][XX][XXXX] [1 month after the notification of this Decision by the Commission]. CEN and Cenelec shall inform the Commission of any amendments to the joint work programme.

CEN and Cenelec shall provide the Commission with access to an overall project plan.

Article 3
Reporting

CEN and Cenelec shall report annually to the Commission on the execution of the request referred to in Article 1 indicating the progress made in the implementation of the work programme referenced to in Article 2.

CEN and Cenelec shall submit the first joint annual report to the Commission by [XX].[XX].[XXXX][12 months after the notification of this Decision by the Commission]. Subsequent joint annual reports shall be submitted by 30 September each year.

CEN and Cenelec shall provide the Commission with the joint final report by 31 January 2029.

CEN and Cenelec shall promptly report to the Commission any major concerns relating to the scope of the request referred to in Article 1 and the deadlines set out in Annex I.

Article 4
Validity of the standardisation request

Where, in accordance with Article 10(3) of Regulation (EU) No 1025/2012, CEN or Cenelec indicate that they do not accept the request referred to in Article 1 of this Decision, that request may not constitute a basis for the standardisation activities referred to in Article 1 of this Decision.

This Decision shall expire on 30 June 2029.

Article 5
Repeal of the existing standardisation requests

Implementing Decision C(2015) 1330 final of 12 March 2015 is repealed.

Article 6
Addressees

This Decision is addressed to the European Committee for Standardisation and the European Committee for Electrotechnical Standardisation .

Done at Brussels,

For the Commission

The President
Ursula von der Leyen



Brussels, **XXX**
[...](2021) **XXX** draft

ANNEXES 1 to 2

ANNEXES

to the

Commission Implementing Decision

on a standardisation request to the European standardisation organisation as regards communication exchange, electricity and hydrogen supply for road, maritime transport and inland navigation in support of Directive 2014/94/EU and its planned revision under the 'Fit for 55' package

ANNEX I

List of new standards and the new deliverable to be drafted as referred to in Article 1

Table 1: List of new European standards supporting an interoperable infrastructure for electricity supply for road transport.

Reference information		Deadline for adoption by the ESOs
1	European standard containing technical specifications with a unified solution on a supply connector for recharging heavy duty vehicles (DC charging)	31.12.2024
2	European standard containing technical specifications with a unified solution for wireless recharging for passenger cars and light duty vehicles	31.12.2022
3	European standard containing technical specifications with a unified solution for wireless recharging for electric buses	31.12.2022
4	European standard containing technical specifications with a unified solution on inductive static wireless recharging for heavy duty vehicles	31.12.2024
5	European standard containing technical specifications on electric road systems (ERS) with a unified solution for inductive dynamic wireless recharging for passenger cars, light and heavy duty vehicles	31.12.2025
6	European standard containing technical specifications on electric road systems (ERS) with a unified solution for dynamic overhead power supply via a pantograph, for heavy duty vehicles	31.12.2023
7	European standard containing technical specifications on electric road systems (ERS) with a unified solution for dynamic ground level power supply through conductive rails for passenger cars, light duty vehicles and heavy duty vehicles	31.12.2024
8	European standard containing technical specifications with a unified solution for battery swapping for heavy duty vehicles	31.12.2027
9	European standard containing technical specifications with a unified solution for battery swapping for L category vehicles	31.12.2025

Table 2: List of new European standards supporting an interoperable infrastructure for hydrogen supply for road transport.

Reference information		Deadline for adoption by the ESOs
1	European standard containing technical specifications with a unified solution for hydrogen refuelling points dispensing compressed (gaseous) hydrogen for heavy duty vehicles	31.12.2023
2	European standard containing technical specifications with a unified solution for hydrogen refuelling points dispensing liquefied hydrogen for heavy duty vehicles	31.12.2025

Table 3: List of new European standards supporting an interoperable infrastructure for electricity supply for maritime transport and inland navigation.

Reference information		Deadline for adoption by the ESOs
1	European standard containing technical specifications with a unified solution for shore-side battery recharging points for each technical category of vessels, featuring interconnectivity and system interoperability	31.12.2024
2	European standard containing technical specifications with a unified solution for each technical category of vessel-to-port grid communication interface in automated onshore power supply (OPS) and battery recharging systems.	31.12.2025
3	European standard containing technical specifications with a unified solution for battery swapping and recharging at onshore stations for inland waterways vessels	31.12.2026

Table 4: List of new European standards supporting an interoperable infrastructure for refuelling vessels and hydrogen, methanol and ammonia bunkering.

Reference information		Deadline for adoption by the ESOs
1	European standard containing technical specifications with a unified solution for compressed (gaseous) hydrogen refuelling points and bunkering for maritime and inland waterway hydrogen-fuelled vessels	31.12.2026
2	European standard containing technical specifications with a unified solution for liquefied hydrogen refuelling points and bunkering for maritime and inland waterway hydrogen-fuelled vessels	31.12.2028
3	European standard containing technical specifications with a unified solution for methanol refuelling points and bunkering for methanol-fuelled maritime and inland waterway vessels	31.12.2024
4	European standard containing technical specifications with a unified solution for ammonia refuelling points and bunkering for ammonia-fuelled maritime and inland waterway vessels	31.12.2027

Table 5: List of new European standards supporting interoperable communication in the electric vehicle recharging ecosystem.

Reference information		Deadline for adoption by the ESOs
1	European standard on vehicle-to-grid communication interface (based on ISO 15118)	31.12.2022
2	European standard on managing electric vehicle charging and discharging infrastructure (based on IEC 63110)	31.12.2023
3	European standard on information exchange for electric vehicle charging e-roaming service (based on IEC 63119)	31.12.2023
4	European standard on information exchange with distributed energy resources (based on IEC 61850)	31.12.2023

Table 6: New European standardisation deliverable supporting an interoperable infrastructure for electricity supply for road transport.

Reference information		Deadline for adoption by the ESOs
1	European standardisation deliverable on battery swapping for electric vehicles	31.12.2023

ANNEX II

Requirements for the standards referred to in Article 1

Part A. General requirements for standards listed in Annex I

1. Requirements to be met by the standards

The standards described in this standardisation request shall support the development of a unified and interoperable alternative fuels infrastructure in the EU, setting out the digital specifications that will ensure a user-centric approach.

Definitions

Unified – in the context of this standardisation request, *unified* means the characteristic of systems and infrastructure to make use of standards that are consistent and aligned with the existing and emerging solutions, bringing a higher level of maturity and convergence to the alternative fuels market and European industry, while respecting the unique features of each application and transport mode.

Interoperable – in the context of this standardisation request, *interoperable* means the capacity of systems and infrastructure to exchange data and share information, to facilitate the supply of energy in a way that is compatible with the different parties participating in the electric recharging and hydrogen refuelling process, such as:

- (a) vehicle and vessel manufacturers,
- (b) recharging operators,
- (c) mobility service providers,
- (d) electric vehicle e-roaming operators,
- (e) transmission system operators (TSOs),
- (f) distribution system operators (DSOs),
- (g) hydrogen suppliers,
- (h) any other supplier of alternative fuels relevant in this context.

The new European standards shall support the revision of Directive 2014/94/EU on the deployment of alternative fuels infrastructure.

The standards shall guarantee an open and competitive market framework for recharging and refuelling operations and services, where new entrants and technologies may operate in a non-discriminatory manner.

2. Risk assessment and risk reduction to include safety aspects in requested European standards

Where health and safety is concerned the European standards concerning interoperability of alternative fuels infrastructure shall be drafted, revised and completed by applying the iterative process of risk assessment and risk reduction.

Part B. Specific requirements for drafting new standards listed in Tables 1 to 4 of Annex I

1. Requirements for all standards

The requested European standards for physical infrastructure shall consist of consistent and unified technical specifications for each transport system and the relevant infrastructure.

Those specifications shall be compatible and aligned as much as possible with relevant international standards, and as far as possible with existing recharging/refuelling infrastructure, leaving room to accommodate the adopted standards to local, technical and regulatory needs.

The requested European standards for developing communication systems for interoperability shall be consistent with the different operators in the electric vehicle recharging market. They shall be open and converge with existing and emerging protocols, so as not to prejudice early adopters in the alternative fuels market – for example recharging point operators that are making use of them.

The requested European standards shall be technologically and commercially neutral and based on knowledge currently held by European industry and the public sector, on a fair, reasonable and non-discriminatory basis.

2. Requirements for specific standards

2.1 European standard on a supply connector for recharging heavy duty vehicles (see Table 1, point 1, of Annex I)

The standard shall describe the technical specifications with a unified and interoperable solution for electricity supply for heavy duty vehicles. The technical specifications shall include an interoperable solution for Direct Current (DC) recharging points supporting a power supply ranging from 350 kW up to at least 2MW.

The standard shall consider the Combined Charging System (CCS) for power up to 350 kW and the standards widely accepted by international industry stakeholders, contained in standard IEC 62196-3 Ed.1 for power over 350 kW – encompassing, as feasible, the required specifications to allow vehicle-to-grid communication based on the standard ISO 15118.

2.2 European standard on wireless recharging for passenger cars and light duty vehicles (see Table 1, point 2, of Annex I)

The standard shall be finalised, giving continuity to the work requested in Decision C(2015) 1330 final (M/533), listed in point 1 of Appendix I of that Decision.

2.3 European standard on wireless recharging for electric buses (see Table 1, point 3, of Annex I)

The standard shall be finalised, giving continuity to the work requested in Decision C(2015) 1330 final (M/533), listed in point 4 of Appendix I of that Decision.

The development of this standard shall depend on the maturity of this technology for this vehicle category.

2.4 European standard on inductive static wireless charging for heavy duty vehicles (see Table 1, point 4, of Annex I)

The standard shall describe the technical specifications with a unified and interoperable solution for inductive static wireless recharging for heavy duty vehicles.

The standard shall be based on and compatible with:

- (a) the specifications for communication and magnetic field wireless power transfer to be developed for static wireless charging for light duty vehicles in standard IEC 61980-2 and -3;
- (b) the specifications and operation of the on-board vehicle equipment that enables magnetic field wireless power transfer included in standard ISO 19363:2020.

2.5 European standard on electric road systems (ERS) for inductive dynamic wireless recharging for passenger cars, light and heavy duty vehicles (see Table 1, point 5, of Annex I)

The standard shall describe the technical specifications with a unified and interoperable solution for inductive dynamic wireless recharging for passenger cars and light and heavy duty vehicles, through inductive coils embedded in the road. These standards shall be developed and compatible with the specifications for communication and magnetic field wireless power transfer for static wireless recharging for light and heavy duty vehicles respectively, as stated in point 2.4 of this Annex.

2.6 European standard on electric road systems (ERS) for dynamic overhead power supply via a pantograph for heavy duty vehicles (see Table 1, point 6, of Annex I)

The standard shall describe the technical specifications with a unified and interoperable solution for dynamic overhead power supply via a pantograph for heavy duty vehicles.

It shall include the specifications for ensuring the electric power is transferred uninterruptedly to the vehicle by an overhead current supply system – the catenary system – from which the power is transmitted down to the electric motors via a pantograph that is mounted on the roof of the vehicle. Simultaneously, the battery could be recharged.

In addition, the standard shall be compatible with EN 50696 on the contact interface for automated connection devices.

2.7 European standard on electric road systems (ERS) for dynamic ground-level power supply through conductive rails for passenger cars, light and heavy duty vehicles (see Table 1, point 7, of Annex I)

The standard shall describe the technical specifications with a unified and interoperable solution for dynamic ground-level power supply through conductive rails, for passenger cars, light and heavy duty vehicles.

It shall describe the specifications for communication and power supply through conductive rails embedded in the road. Simultaneously, the battery could be recharged.

2.8 European standard on battery swapping for heavy duty vehicles (see Table 1, point 8, of Annex I)

The standard shall describe the technical specifications with a unified and interoperable solution for battery swapping for heavy duty vehicles.

It should benefit from the technical developments of the standardization deliverable on battery swapping for electric vehicles included in this standardisation request (Table 6, point 1 of Annex I).

In particular, the standards for battery swapping should provide technical specifications to unify and accommodate the future application of battery-swapping technologies, to enable the interoperable use of docking stations under ‘swap-and-go’ systems. In this respect, the standardisation on battery swapping shall be subject to the standardisation developments at battery level, in particular for aligning battery dimensions.

2.9 European standard on battery swapping for L category vehicles (see Table 1, point 9, of Annex I)

The standard shall be finalised giving continuity to the work requested in Decision C(2015) 1330 final (M/533), listed in point 2 of Appendix I of that Decision. The standard shall focus only on the electrical and mechanical interface for the connection.

The development of this standard shall depend on the maturity of this technology for this vehicle category.

2.10 European standards on hydrogen refuelling points dispensing compressed and liquefied hydrogen for heavy duty vehicles (see Table 2, points 1 and 2, of Annex I)

The standards shall describe the technical specifications for a unified and interoperable solution for refuelling points and physical connectors designed to dispense compressed and liquefied hydrogen for heavy duty vehicles.

The standard for liquefied hydrogen shall be developed considering the most convenient pressure level, having into account relevant technological developments, industry position and impact on the future refuelling infrastructure. The standard for compressed hydrogen for heavy duty vehicles shall be developed based on the standards EN ISO 17268:2020 on gaseous hydrogen land vehicle refuelling connection devices and EN 17127:2018 on outdoor hydrogen refuelling points dispensing gaseous hydrogen and incorporating refilling protocols.

2.11 European standard on shore-side battery recharging points for each technical category of vessels (see Table 3, point 1, of Annex I)

The standard shall describe the technical specifications for physical recharging points for each technical category of vessels ensuring a common an interoperable connection between the vessels and its corresponding battery system.

If a technical solution for all vessel types is not feasible and multiple solutions are needed, the standard categorisation shall attend to technical capabilities ensuring consistency and full coverage of the different technical categories of vessels, for both maritime and inland applications. The standard shall be developed in cooperation with international organisations to ensure other ports outside the EU also have interoperable connections, considering the unique features of the European maritime and inland navigation sectors.

The standard shall include not only the relevant functional specifications for the connector, but also for recharging equipment, including the transforming unit on the shore-side, the different recharging modes/operations, the mechanical interface connection and the connector geometry and dimensions.

In addition, it is important to include relevant risk assessment regarding vessel and ship motions during recharging, to avoid excessive loads applied on the mechanical connection. Other risks to consider include electrical malfunctions, thermal runaway prevention and battery management system failure.

2.12 European standard on vessel-to-port grid communication interface (see Table 3, point 2, of Annex I)

The standard shall describe the technical specifications for the communication interface for each technical category of vessels, to ensure an interoperable and secure information exchange between the infrastructure and the battery management systems.

If a technical solution for all vessel types is not feasible and multiple solutions are needed, the standard categorisation shall attend to technical capabilities ensuring consistency and full coverage of the different technical categories of vessels for both maritime and inland applications. The development of the standard shall require cooperation with international maritime organisations, to ensure the interoperability of the connection in other ports outside the European Union, considering the own specificities of the European maritime and inland navigation sectors.

The principle for the standard shall be focused on the development of common protocol allowing the shore side to be informed and integrate data relative to battery health onboard, including but not limited to electrical state of charge and temperature of battery modules. The standard shall be relevant for both automated OPS systems and shore-side battery charging.

In addition, this standard shall be developed considering the technological basis used in the standard ISO 15118 on vehicle to grid communication for road vehicles.

2.13 European standard on battery swapping and recharging at onshore stations for inland waterways vessels (see Table 3, point 3, of Annex I)

The standard shall describe the technical specifications for a unified and interoperable solution for battery swapping for inland waterways vessels. In addition, the standard shall describe the operational and connectivity aspects to recharge the battery in onshore stations at ports. The development of the standard shall require cooperation with international maritime organisations to ensure other ports outside the EU also have safe and sustainable interoperable connections, considering the unique features of the European inland navigation sectors, as well as to enhance compatibility and interoperability for ships from non-EU countries calling in EU ports.

The standardisation of the battery charger shall promote standardisation of interchangeable batteries. Communication between the battery modules and the battery charger unit shall be ensured, to monitor essential electrical and safety parameters.

2.14 European standard on gaseous compressed hydrogen refuelling points and bunkering for maritime and inland waterway hydrogen-fuelled vessels (see Table 4, point 1, of Annex I)

The standard shall describe the technical specifications for gaseous hydrogen refuelling points for maritime and inland waterways vessels. The standard shall include the technical specifications for the refuelling system, including the nozzle and connection, male and female flanges, their geometry, dimensions and failsafe features.

In first instance, the standard development shall focus on the connector side. The remaining elements of the standard, covering the whole process of compressed hydrogen refuelling and bunkering, shall be developed only if the technology reaches sufficient maturity.

The standard shall also include the relevant functional specifications for the different equipment necessary for the bunkering operation, procedures, responsibilities and risk assessment scope, taking into consideration the specific hazards in handling and bunkering compressed hydrogen.

The standard shall be made in cooperation with international maritime organisations, to ensure other ports outside the EU also have interoperable connections.

2.15 European standard on liquefied hydrogen bunkering for maritime and inland waterway hydrogen-fuelled vessels (see Table 4, point 2, of Annex I)

The standard shall describe the technical specifications for liquefied hydrogen refuelling points for maritime and inland waterway vessels. The standard shall include the technical specifications for the refuelling system, including the nozzle and connection, male and female flanges, their geometry, dimensions and failsafe features.

In first instance, the standard development shall focus on the connector side. The remaining elements of the standard covering the whole process of liquefied hydrogen refuelling and bunkering shall be developed only if the technology reaches sufficient maturity.

The standard shall also include the relevant functional specifications for the different equipment necessary for the bunkering operation, procedures, responsibilities and risk assessment scope taking into consideration the specific hazards in handling and bunkering liquefied hydrogen.

The standard shall be developed in cooperation with the international maritime organisations to ensure other ports outside the EU also have interoperable connections.

2.16 European standard on methanol refuelling points and bunkering for methanol-fuelled maritime and inland waterway vessels (see Table 4, point 3, of Annex I)

The standard shall describe the technical specifications for methanol refuelling points for maritime vessels. It shall include the technical specifications for the refuelling system, including the nozzle and connection, male and female flanges, their geometry, dimensions and failsafe features.

It shall also include the relevant functional specifications for the different equipment necessary for the bunkering operation, procedures, responsibilities and risk assessment scope, taking into consideration the specific hazards in handling and bunkering methanol fuel.

The standard shall be developed in cooperation with international maritime organisations, to ensure other ports outside the EU also have interoperable connections.

2.17 European standard on ammonia refuelling points and bunkering, for ammonia-fuelled maritime and inland waterway vessels (see Table 4, point 4, Annex I)

The standard shall describe the technical specifications for ammonia refuelling points for maritime vessels. It shall include the technical specifications for the refuelling system, including the nozzle and connection, male and female flanges, their geometry, dimensions and fail-safe features.

In first instance, the standard development shall focus on the connector side. The remaining elements of the standard, covering the whole process of ammonia refuelling and bunkering, shall be developed only if the technology reaches sufficient maturity.

The standard shall also include the relevant functional specifications for the different equipment necessary for the bunkering operation, the bunkering operation procedures, responsibilities, and the scope of risk assessment, taking into consideration the specific hazards in handling/ bunkering ammonia fuel.

This standard shall be developed in cooperation with international maritime organisations, to ensure other ports outside the Union also have interoperable connections.

C. Specific requirements for drafting new standards and standardisation deliverables listed in Table 5 and 6 of Annex I

1. Requirements for all standards

The requested European standards for communication and interoperability of recharging infrastructure shall consist of consistent and single technical specifications, based as far as possible on advanced digital solutions.

Those technical specifications shall integrate the different areas of the electric vehicle recharging ecosystem, which may be classified as:

- (1) communication between the electric vehicle and the recharging point;
- (2) communication between the recharging point and the recharging software management system (back-end);
- (3) communication related to the electric vehicle e-roaming service;
- (4) communication with the grid.

The standards shall be developed and made available in an open manner by CEN and Cenelec, avoiding possible lock-in by specific market players.

The completion of these standards shall be carried out in a manner that ensures a full technical compatibility among them and the different areas of the electric vehicle recharging system, mentioned above. This is to enable smart charging and vehicle-to-grid functionalities in different scenarios, such as public parking spaces, individual houses and working and residential buildings.

2. Requirements for specific standards and standardisation deliverables

2.1 European standard on vehicle-to-grid (V2G) communication (see Table 5, point 1, of Annex I)

The standard shall be based on ISO 15118-20.

In particular, the standard shall create the technical conditions to allow the installation and replacement of an unlimited number of valid digital certificates associated with electromobility service providers.

In addition, the installation of digital certificates shall be possible via the charging infrastructure, providing flexibility to the user. In this respect, CEN and Cenelec shall, if needed, recommend to ISO that ISO 15118-20 (and other relevant standards for this purpose, such as IEC 63119 and IEC 63110) to include the relevant technical specifications needed to enable the possibility for users to check at any time which contract is installed and which contract has been overwritten.

Likewise, the standard shall include the required technical specifications to enable electromobility service providers to verify the status of their digital certificates. This is without the prejudice to any future initiative or act that the Commission may adopt, including pursuant to empowerments under Directive 2014/94/EU, concerning the functioning and management of Public Key Infrastructure systems in Europe in view of ensuring a level-playing field and avoiding conflicts of interest.

In consequence, this comprehensive standardisation work, in conjunction with other relevant standards in the different areas of the electromobility ecosystem (such as IEC 63119 and 63110) shall enable the necessary communication channel to ensure this information can be verified through an app.

To facilitate this task, CEN and Cenelec shall recommend the necessary technical specifications to ISO and IEC for future releases of the standard, to ensure open-market development.

Moreover, the standard shall create the conditions to operationalise the communication channel enabling access to relevant battery data required to enable smart charging¹ and bidirectional charging² (vehicle-to-grid) functionalities to third-party providers.

2.2 European standard on managing of electric vehicle recharging and discharging infrastructure (see Table 5, point 2, Annex I)

The standard shall be based on IEC 63110 and describe the technical specifications for a unique interoperable solution for communication between the charging points and the charging point operator's software management system (the 'back-end' – used for operating and managing the charging points in the operator's network).

The standard shall allow the collection and exchange of information on billing, charging session, reservation, authorisation and grid connection, and shall be compatible with smart charging and vehicle-to-grid functionalities.

The standard shall aim to provide a uniform solution that takes into account the OCPP (Open Charge Point Protocol), which itself represents a widely extended solution adopted by the market for this aspect electric vehicle recharging. The implementation of the standard shall not prejudice early movers who already use open protocols to cover the functionalities that are designed to converge in standard IEC 63110.

2.3 European standard on information exchange for electric vehicle charging e-roaming service (see Table 5, point 3, of Annex I)

The standard shall be based on IEC 63119 and describe the technical specifications for implementing e-roaming in Europe, considering Europe's established architecture, based on peer communication between market parties and electric vehicle clearing houses (e-roaming hubs).

Therefore, the standard shall make possible for charging stations from different operators to connect and exchange information across the different Member States in the EU on a peer-to-peer basis, including electromobility service providers, and under e-roaming hubs.

The standard shall enable information to be shared on billing, charging session, reservation, authorisation and parking spots, and shall be compatible with smart charging and vehicle-to-grid functionalities. The standard shall aim to provide a unified interoperable solution that takes into account the solutions implemented in the market such as OCPI (Open Charge Point Interface), OICP (Open InterCharge Protocol), OCHP (Open Clearing House Protocol) and eMIP (eMobility Protocol Inter-Operation), to create a uniform, cross-border digital communication system for electric vehicles.

In addition, the standard shall include a data gateway to enable the transfer of static and dynamic data to EU-wide digital layers, such as the National Access Points (NAPs), which may take various forms, including a database, data warehouse, data marketplace, repository, register, web portal or similar.

¹ Defined in COM(2021) 559 final and COM(2021) 557 final as “a recharging operation in which the intensity of electricity delivered to the battery is adjusted in real-time, based on information received through electronic communication”

² Defined in COM(2021) 557 final as “smart charging where the direction of electric charge may be reversed, so that electric charge flows from the battery to the recharging point it is connected to”

Finally, the standard shall consider the particular specifications to function in conjunction with Public Key Infrastructure systems, as stated in standard ISO 15118. The standard shall also include security specifications to ensure an adequate level of resilience against cyber attacks, particularly those related to data theft and phishing.

2.4 European standard on information exchange with distributed energy resources (see Table 5, point 4, of Annex I)

The standard shall be based on IEC 61850 and describe the technical specifications and data models required for communication between distribution/transmission system operators and electric vehicle charging operators. To facilitate grid management, the standard shall ensure, in a non-exclusive manner, the provision of a communication channel for exchanging information on demand response, price and load control, metering and capacity forecast.

The object model for electromobility IEC 61850-90-8 shall ensure smart charging and vehicle-to-grid functionalities, if – through adequate firmware upgrades – it can be kept up to date and so function in charging points. In addition, the standard shall create the conditions to allow information to be provided at the charge point about how much of the recharging energy is from renewable sources, to inform customers about the source of energy they are using during the recharging process.

The standard shall be compatible with specifications for dispatchable loads (such as electric vehicles), which shall be defined in a new standard that mirrors the principles defined by EN 50549. In addition, the standard shall be also compatible with the standard EN 50491-12-2 on smart grid interface and framework for customer energy management, by laying down the technical specifications (control types) for energy management inside buildings, including the needs for electric vehicles.

2.5 European standardisation deliverable on battery-swapping for electric vehicles (see Table 6, point 1, of Annex I)

The European standardisation deliverable shall specify and outline the most appropriate technical solutions, including underlying technical specifications, to be used as a basis for the development of a future European standard on battery swapping for electric vehicles.

During the drafting process CEN and Cenelec shall keep the Commission informed on the content of the draft.