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Electro-mobility charging infrastructure requirements in the Commission's EPBD proposal

Electro-mobility is a key component for decarbonizing the transport sector and is envisaged to play an important role in the flexible, renewables based energy system of tomorrow. Abundant access to charging infrastructure is important for consumer convenience and confidence. If charging of EVs is to play a role in balancing the energy system, they should be flexibly charged when demand is low in the system. This is often during the night, when the car is parked at the consumer's residence.

The Commission proposal to amend the *Directive 2010/31/EU on the Energy Performance of Buildings* (EPBD) embraces this development by extending charging infrastructure for Electro-mobility to be a part of the "technical building system", hence formally suggesting to include it in the consumer's options for increased energy management and potentially demand-side response.

This part of the EPBD follows up on the *Alternative fuel infrastructure Directive (2014/94/EU)*, which establish a framework for the infrastructure for all alternative fuels and suggests national targets for LNG, CNG and hydrogen public filling stations with the main focus on TEN-T core network. As the only alternative fuel, electricity can be charged at home, or at work and it is expected that more than 90 % of the charging will be done at such distributed locations. Consequently, it makes good sense to integrate electro-mobility charging infrastructure requirements in the EPBD alongside with other requirements governing how the buildings are to perform within the field energy consumption and interaction with the rest of the energy system.

The Commission proposes to amend the Directive 2010/31/EU on the Energy Performance of Buildings, to include infrastructure for electro-mobility. The proposals full text on the topic can be seen in the annex to this briefing.

Proposed EPBD requirements for new buildings and buildings undergoing major renovations, with more than ten parking spaces in 2025.

	Residential buildings with more than 10 parking spaces	Non-residential buildings with more than 10 parking spaces
Precabbling required	For all parking spaces.	-
Charging point required	-	One for every 10 th parking space.
Exemptions		Member states can decide to exclude: 1) Buildings owned and used by SMEs (= all companies with less than 250 employees) 2) Public buildings already covered by Directive 2014/94/EU.



Why is it important?

There will be a big need for charging infrastructure for electro-mobility in the coming years. The rapid development in battery technology and especially the price of batteries, has moved very quickly forward the last year, as have the investments made by car producers. Current speed of development strongly points to an increasing share of electro-mobility in the car-market towards 2030. And most of this charging of these vehicles will have to be in connection with buildings where cars are parked and electricity already is available. Future buildings and connected parking spaces need to be ready for this, since supplying energy for transport will be an integrated part of the performance of buildings. This likewise reasons with the gradual move to a more electrified and in some cases more distributed energy system, which is expected with the transition to renewable based energy production.

The Commission proposal should be supported and strengthened because the costs of establishing infrastructure to electro-mobility in connection with projects of new – or renovated – buildings and parking spaces, are significantly lower than the cost of establishing this infrastructure at a later point. Therefore, it makes perfect sense to include these requirements alongside other building component criteria, which are to be included when a building project is planned and executed. The EPBD is rightly the place to regulate this.

Economy

It is indeed a key point that the costs of establishing infrastructure for charging are significant lower if made in connection with the construction of new buildings or in connection with projects where buildings are anyway undergoing major renovations.

A report commissioned by The Danish Energy Agency shows that (under Danish conditions) the costs are 9 times higher for precabbling, in the form of conduits, in single family houses if this is done as a separate project compared to the case where it is done in connection with a new building than at a later point. For larger residential buildings, the costs are assessed to be 6 times higher, and for office buildings it is 5 times higher, if the precabbling is done at a later point instead of in connection to the construction of the building. Likewise, the total cost for establishing a 20 kW public charging station on a parking lot is twice as high without precabbling/conduites.

How much higher are the costs without precabbling/conduits? ⁱ

Single family house	Larger residential buildings	Office buildings	Public charging stations on a parking lot (20 kW)
9x	6x	5x	2x

In reality the precabbling/conduite cost will be close to zero on most new outdoor electrical lit parking lots, since conduits will be put in the ground anyway for the lights. The same goes for multi-story car parks



Intelligent charging

The Commission proposes charging points... “*which is capable of starting and stopping charging in reaction to price signals*”. We think this requirement is a bit misguided, as the important point is that the charging points to be required under this regulation can provide ‘*smart*’ or ‘*intelligent charging*’. In most countries in the European Union, it is currently a necessity that charging can be remotely controlled i.e. started, stopped and changed when the numbers of electric vehicles rapidly grow. Otherwise the cost of strengthening the capacity of the grid to accommodate the need for more electricity use, will be quite high. For this reason, it doesn't necessarily provide the most value to the energy system or provides the lowest system cost to link the charging management solely to a plain price-signal. This is because the price signal doesn't take into account issues such as potential overload at small part of the grid. Consequently, we recommend a different wording so the requirement changes to: ‘*charging point which is capable of reacting to remote signals e.g. price signals or remote stop, start or change of charging*’.

Technology neutrality

The European Union often aims to design policies which promote decarbonization, but leaves some discretion in terms of the choice of specific technologies. When it comes to the transport sector it is however important to acknowledge that different fuels have different needs and also that different fuels have different roles to play as a part of the overall energy system.

This is why the *Alternative fuel infrastructure Directive (2014/94/EU)*, aims at establishing infrastructure for all mature alternative fuels and proposes targets for the establishing of specific CNG and LNG fueling stations, because new fueling stations were considered necessary if this fuel were to be deployed. The liquid biofuels don't need any policies to drive new infrastructure. Technically they're blended into the conventional liquid fossil fuels (petrol and diesel) and since the EU has adopted a blending mandate almost all ordinary fuels in the EU contains biofuels, which is then supplied via the conventional fueling infrastructure i.e. normal gas stations. Those examples show that there is no “one size fits all” and no “technology neutral solution” for transport fuels, as needs are different depending on their place in the energy system and interaction with conventional fueling infrastructure. In case of electricity the future role of centralized “super charging” in connection to the TEN-T network (major road network) should mainly be for “top up” and act as “mental safety belt” for consumers on the road. For electromobility to be integrated in the energy system and ripe the systemic benefits of such for both sides, the charging infrastructure needs to be distributed and located in the vicinity of the buildings.

The proposed exemptions

The proposed requirement give the member states the possibility to exempt SMEs. Since SMEs (according to EU definition) are companies below 250 employees the consequence will be that member states can exempt a significant share of all companies in Europe. According to Eurostat approximately 99% of all enterprises in the EU qualify as SMEs¹. So in practice the proposal from the Commission means that almost all supermarkets and shops can be exempt

¹ http://ec.europa.eu/eurostat/statistics-explained/index.php/Statistics_on_small_and_medium-sized_enterprises



from the requirements, which is obviously not very helpful for providing easy access to charging for customers or employees. It should be noted that the regulation already exempts new non-residential buildings *with less than 10 parking spaces*. There seems to be no good reason to increase the future cost for establishing charging infrastructure by exempting most European companies. We therefore suggest that the possible exemption instead only refers to the smaller business types, small- and micro-sized enterprises.

Regarding the exemption on public buildings covered in Alternative fuel infrastructure Directive (2014/94/EU), it is very unclear which buildings could be exempted and why. Especially since there is no real requirements in connection with buildings in the directive.

Recommendations

The Danish Ecological Council recommend that:

- The measures are implemented in 2023 instead of 2025
Justification: The market for electro-mobility is rapidly speeding up, and since most charging will be done in connection with parking spaces at homes and workplaces. Only a smaller part (around 1%) of the building stock are newbuild each year, so it is important that these measures are adopted as soon as possible. It can be noted that 2023 apparently was the timeframe in an earlier leaked version of the proposal.
- Instead of requiring that the charging points are: ‘capable of starting and stopping charging in reaction to price signals’, it should be required that they are able to be: ‘capable of reacting to remote signals e.g. price signals or remote stop, start or change of charging’
Justification: The text proposed by the Commission only focus on the charging point ability to react on price signals. It is important that the charging point is able to be remotely controlled for e.g. to be able to avoid local overload.
- The requirements for precabbling/conduits for **residential buildings** should not be restricted to buildings with more than 10 parking spaces, but should apply to all new residential buildings and residential buildings undergoing major renovations.
Justification: The cost of precabbling are rather low in these buildings and the relative increase of cost for installation at a later point is significant.
- For **non-residential buildings**, the exemption for SMEs should be changed to ‘small’ and ‘micro’ enterprises.
Justification: almost 99% all companies in the European Union are SMEs according to the EU definition of the term and a limitation to the smallest shops and enterprises makes more sense. The limitation will supplement the already existing exemption in the Commission proposal for buildings with less than 10 parking spaces.
- The exemption on **public buildings** already covered in Alternative fuel infrastructure Directive (2014/94/EU) should be deleted.
Justification: It is very unclear which buildings are covered in (2014/94/EU) since it is not specified which buildings are ‘covered’ and because they are without specific obligations.



ANNEX I – COMMISSIONS PROSAL AS PRESENTED AND PROPOSED CHANGES

COMMISSIONS PROSAL	Our proposed changes
<p>2. Member States shall ensure that in all new non-residential buildings and in all existing non-residential buildings undergoing major renovation with more than ten parking spaces, at least one of every ten is equipped with a recharging point within the meaning of Directive 2014/94/EU on the deployment of alternative fuels infrastructure, which is capable of starting and stopping charging in reaction to price signals. This requirement shall apply to all nonresidential buildings, with more than ten parking spaces, as of 1 January 2025. Member States may decide not to set or apply the requirements referred to in the previous subparagraph to buildings owned and occupied by small and medium-sized enterprises as defined in Title I of the Annex to Commission Recommendation 2003/361/EC of 6 May 2003.</p> <p>3. Member States shall ensure that newly built residential buildings and those undergoing major renovations, with more than ten parking spaces, include the pre-cabling to enable the installation of recharging points for electric vehicles for every parking space.</p> <p>4. Member States may decide not to set or apply the requirements referred to in paragraphs 2 and 3 to public buildings which are already covered by Directive 2014/94/EU.'</p>	<p>2. Member States shall ensure that in all new non-residential buildings and in all existing non-residential buildings undergoing major renovation with more than ten parking spaces, at least one of every ten is equipped with a recharging point within the meaning of Directive 2014/94/EU on the deployment of alternative fuels infrastructure, which is capable of starting and stopping charging in reaction to price signals. capable of reacting to remote signals e.g. price signals or remote stop, start or change of charging. This requirement shall apply to all nonresidential buildings, with more than ten parking spaces, as of 1 January 2025 2023. Member States may decide not to set or apply the requirements referred to in the previous subparagraph to buildings owned and occupied by small and medium micro-sized enterprises as defined in Title I of the Annex to Commission Recommendation 2003/361/EC of 6 May 2003.</p> <p>3. Member States shall ensure that newly built residential buildings and those undergoing major renovations, with more than ten parking spaces, include the pre-cabling conduits dimensioned to enable the pre-cabling later installation of recharging points for electric vehicles for every parking space.</p> <p>4. Member States may decide not to set or apply the requirements referred to in paragraphs 2 and 3 to public buildings which are already covered by Directive 2014/94/EU.;</p>

ⁱ "Analyse af de økonomiske konsekvenser ved forberedelse af bygninger til ladning af elbiler" by COWI for Energistyrelsen, 2015. The data on cost for 20 kW charging station is based on collected market data from suppliers in Denmark, March 2017.