



Interoperability at TMB

Standardisation & Interoperability Bus-Charger Online Workshop

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TMB acquisition plans

Clean buses

388 CNG buses currently, and up to 450 units by 2023

Zero Emission buses

- **28 electric articulated opportunity charging buses by 2021**
- **8 Fuel Cell buses by 2021**
- **48 electric standard overnight charging buses by 2022**
- **29 electric articulated opportunity buses by 2022**
- **40 electric standard overnight charging buses by 2023**
- **10 electric articulated overnight charging buses by 2023**
- **38 Fuel Cell buses by 2023**
- **32 electric standard overnight charging buses by 2024**
- **10 electric articulated overnight charging buses by 2024**

Why interoperability?

Interoperability between chargers and buses allows us to:

- **Choose the best option in each tender without entering into vendor lock-in.**
- **Open the possibility to use on street infrastructures with other vehicles (waste collection trucks).**
- **All the vehicles with the same charging system and protocol simplifies the maintenance.**

Thanks to ASSURED....

- **TMB is building a protocol analysis laboratory to identify charging problems and determine the origin (charger / vehicle).**
- **TMB's tenders for electric vehicles and chargers include a certification by a third-party that validates compliance with the ASSURED 1.1 IR standard.**
- **TMB go one step ahead in Barcelona to define on street charger systems for the city fleet.**

More ASSURED applications

- **The ASSURED protocol is used by TMB in all electric buses (opportunity & night charging).**
- **In depot the buses are charged with pantograph without manual plugs or cables on the floor.**
- **Thanks to interoperability buses can park everywhere and an overnight bus can charge on street if necessary too.**

Thank you!

More info Demo Barcelona:

<https://assured-project.eu/news-and-events/news/assured-holds-successful-demo-launch-in-barcelona-a-wrap-up>