

Accelerating the shift:

How to advance electric truck charging in Europe

Europe's road freight sector is electrifying at high pace, with high uptake projections for electric heavy duty vehicles (e-HDVs) for the coming years. Accelerated build-out of public e-truck charging infrastructure along highways, as well as fast and optimized connection of electrified logistics depots and freight centres, are major bottlenecks to freight electrification that policymakers and planners need to address urgently to reduce emissions.

In this guide for policymakers and planners we present the building blocks of a policy framework supporting grid-friendly electrification of road freight, which allows to use the flexibility potential of electrified transport to use existing grid capacities best, while also encouraging rightly sized and localised investments into power networks for the future.

Pricing

The guiding signal for charging at lowest cost

Help e-HDV fleets use existing power networks optimally



- Smart and bidirectional e-HDV charging is key for making efficient use of the grid.
- Cost-reflective network pricing, such as time-varying or dynamic network fees, is a key driver of efficient grid utilisation from e-truck fleets and charge point operators (CPO).

Planning

Grids must serve electric trucks

Improve transparency on grids



- Create public, accessible, and updated grid hosting capacity maps, and encourage grid operators in EU Member States to enable flexibility procurement for all customers to help reduce network investment costs.
- Accelerate anticipatory investments and streamline permitting for connecting electrified transport projects, including high capacity charging infrastructure and depots.

Depot charging

Allow e-HDVs to serve the grid as flexibility resources

Support fleet and depot owners in electrifying logistics depots



- Governments and local authorities should design effective support schemes for the electrification of fleets and depots, including modelling energy demand (on-site generation and storage) as well as one-stop-shop solutions supporting fleets to purchase EVs and install charging infrastructure.
- To connect depots faster, grid operators should offer flexible connections through standardised products and procedures.

Highway charging

Advance electrification along highways

Advance build-out of public e-truck charging to grow a European network corridor



- Scale public truck charging along Trans-European Transport Networks (TEN-T) networks, e.g. via the Clean Transport Corridor initiative, with focus on cross-border traffic and avoiding charging price distortions.
- Use public tenders to accelerate truck charging infrastructure and align demand with grid capacity. Promising ways to avoid price distortion include tenders allowing fleets to use their own electricity contracts and share grid connections with car chargers.



Pricing

Cost-reflective electricity market prices and grid tariffs are powerful signals to match demand with available, ideally renewable, energy supply and local grid capacity. Most e-HDV charging is flexible, especially at logistics depots, but also at freight centres during loading and unloading. To use this flexibility, it's important to get price signals right and ensure they are available to users and the service they rely on to manage charging. This allows fleet owners to shift charging to times more favourable for both the grid and the user.

Energy regulators and grid operators should implement time-varying network tariffs, a key ingredient to drive efficient grid use by e-truck fleets and CPOs. Today, most network tariffs are based on the maximum installed capacity, also called demand charges. To support CPO profitability, despite low e-truck charging rates, it is preferable to move from non-coincident demand or fixed charges to a design based on electricity volume sold, e.g. via time-of-use volumetric tariffs.

See: [Imagine all the people](#)



Planning

Grids must serve the increasing demand from electric trucks. Network planning should include detailed forecasts of ideally local e-truck charging demand, along with industrial and residential heating and transport demand. Grid extension plans should provide transparency about timing and capacities. Streamlining and digitalising information, requests, and permitting procedures are urgently needed to reduce connection queues

and avoid administrative hurdles limiting demand-based charging site developments. Standardised application and reservation processes, along with access to land use information from all network operators, will help charging infrastructure development that responds to demand rather than administrative challenges.

See: [Transparent Grids for All Grid\(un\)lock: Hosting Capacity Maps](#)



Depot charging

Depots, where 70-80% of e-HDV charging is likely to occur before trucks begin their duty cycles, represent the low hanging fruit for advancing e-HDV electrification. Yet, depot charging broadly lacks support on the EU and national levels. Member States should be encouraged to design effective support schemes for fleets. For example, these could offer easy one-stop-shop solutions for fleets to electrify and upgrade their depots — helped by updated building regulations — and include granular demand modelling that accounts for on-site

generation and storage. Regulators and grid operators can support this by accelerating grid connections permits, implementing flexible grid connection options (see “planning”), and allow additional external financing for depot EV charging infrastructure paired with on-site renewable energy generation and storage. At the same time, making smart pricing available for depot and fleet owners will encourage faster electrification through smart charging savings. Shared charging at semi-public depots can also help fleets reduce costs.

See: [Savings from smart charging electric cars and trucks in Europe: A case study for France in 2040](#)



Highway charging

Member States are obliged to develop public e-truck charging corridors under the Alternative Fuel Infrastructure Regulation (AFIR), which focuses on building essential public charging infrastructure along TEN-T networks. To meet all charging needs and optimise grid use and costs, parking area infrastructure should include high-, mid- and low-capacity truck charging. Greater coordination, both on planning and pricing, across Europe is needed to enable cross-border traffic and avoid price distortion in the emerging truck

charging market. New strategic initiatives such as the proposed Clean Transport Corridor initiative could support this. Public tenders that align projected charging demand with grid infrastructure, as seen in Germany, are an efficient tool to accelerate planning that accommodates both the grid and its users, such as e-logistics fleets. Building-out charging corridors is a key milestone for freight electrification, offering back-up charging at highway sites for small e-HDV fleets when “home” depots don’t electrify fast enough.

See: [The power of moving loads](#)