

Charging infrastructure for an electric truck fleet

Power requirements and phased build-out

Prepared for: Regional haulage operator · Prepared by: Enord ehf. · Version 1.0, May 2026

Example report. A real Enord report, anonymised and shared with the client's permission. Client name, location and commercial details are removed and some figures are rounded.

Executive summary

This report analyses the charging infrastructure needed to electrify the operator's truck fleet. All charging is planned at the operator's main depot, and trucks currently based at the port terminal will return there to charge overnight.

The analysis follows the operator's planned roll-out: 2 trucks (phase 1), 4 trucks after two years (phase 2) and full electrification of 20 to 25 trucks (phase 3, analysed for 20). It assumes 200 to 300 km per truck per day, energy use of 1.2 to 2.0 kWh/km and a full battery every morning.

Key findings

- **One charging site at the main depot is a practical solution for the whole fleet.** Trucks arrive in the afternoon and are fully charged by morning.
- **35 kW per connector is enough.** Overnight charging does not need high-power connectors.
- **A 315 A connection covers phases 1 and 2,** and up to 6 trucks. Upgrade to 900 A for phase 3. The network operator gives no credit for an existing connection when it is upgraded, so it pays to take the larger step now.
- **Choose trucks with at least 600 kWh of battery.** This covers winter operation at 200 to 300 km a day and keeps a safe margin on return.

Recommended infrastructure by phase

	Phase 1	Phase 2	Phase 3
Trucks	2	4	20
Minimum power per connector	35 kW	35 kW	35 kW
Peak fleet power	69 kW	135 kW	526 kW
Recommended grid connection	315 A	315 A	900 A *
Recommended chargers	1 × 240 kW, 2 connectors	1 × 240 kW, 4 connectors	20 connectors, 600 kW in total

* The network operator can in some cases supply 900 A without a substation on site, but space for one should be allowed. The network operator then supplies the transformer and switchgear; the operator provides the enclosure.

1. Introduction and assumptions

1.1 Project description

The operator runs 16 trucks, 8 based at the main depot and 8 at the port terminal. The operator is electrifying the fleet and wants the whole fleet to use one charging facility at the main depot, with port-based trucks returning there at the end of each working day to charge overnight.

This report sets out the charging infrastructure needed in the three phases defined by the operator:

- **Phase 1 (now):** 2 electric trucks.
- **Phase 2 (in two years):** 2 more, 4 trucks in total.
- **Phase 3 (full electrification):** 20 to 25 trucks; the analysis uses 20.

1.2 Assumptions

Assumption	Value
Daily distance per truck	200 to 300 km
Specific energy use	1.2 to 2.0 kWh/km
Charging method	After the working day, 100% state of charge (SoC) by morning
Battery size in the analysis	600 kWh
Departure window	07:00 to 08:30
Return window	16:00 to 18:30

1.3 Method

Each phase was simulated minute by minute in a depot charging simulation with fleets of 2, 4 and 20 trucks. An additional 6-truck run tested the capacity of the 315 A connection. A driving schedule was generated for each truck within the limits above (200 to 300 km a day, 1.2 to 2.0 kWh/km, departure and return inside the given windows).

The simulation calculates the minimum power per connector, total power demand through the day and the utilisation of each connector.

2. Driving and energy overview

The table shows the key driving figures for each phase, taken from the worst day in the simulation period.

Measure	Phase 1, 2 trucks	Phase 2, 4 trucks	Phase 3, 20 trucks
Average distance per truck per day	260 km	253 km	239 km
Longest daily distance	268 km	272 km	292 km
Average energy use	1.80 kWh/km	1.75 kWh/km	1.62 kWh/km
Highest energy need per truck per day	483 kWh	477 kWh	550 kWh
Total energy per day	about 850 kWh	about 1,800 kWh	about 7,800 kWh
Lowest battery level on return (SoC)	32.5%	23.2%	11.6%
Average time charging	12.6 h	12.5 h	11.3 h

In phase 3 the lowest battery level on return falls to 11.6% on the worst day. This shows how much depends on battery size when trucks do not charge during the working day.

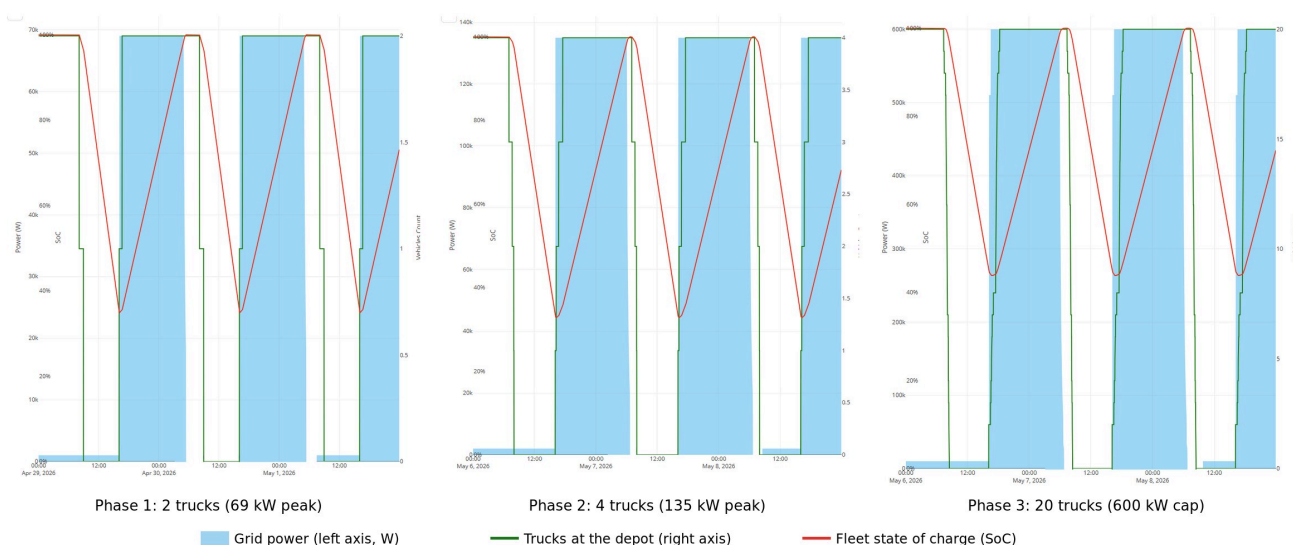


Figure 1. Simulation of each phase over three days. Trucks leave in the morning, return in the afternoon and are charged back to 100% overnight, within the power limit of each phase.

3. Phase 1: two trucks

3.1 Power requirement

Peak power is the most power the fleet draws at once, when all trucks charge at the same time.

Measure	Value
Number of trucks	2
Peak power demand	69 kW
Total current	100 A
Minimum power per connector	35 kW
Total energy delivered per day	about 850 kWh
Lowest SoC on return (worst day)	32.5% (600 kWh battery)

3.2 Recommendation

Recommended infrastructure

Grid connection: 315 A. We recommend taking the larger connection now, as 315 A covers up to 6 trucks and the network operator gives no credit for an existing connection when it is upgraded. An unused cable from the distribution substation already reaches the site and may speed up delivery.

Charger: 1 × 240 kW charger with 2 connectors (1 × 240 kW or 2 × 120 kW), limited to 200 kW.

Load management: built into the charger, set to 200 kW.

3.3 Charging and battery level

With a 600 kWh battery both trucks complete every trip of the day. With the connection, charger and load management above, both are fully charged overnight with time to spare before departure. Average time plugged in is 16.1 hours a day, of which 12.6 hours are spent charging.

4. Phase 2: four trucks

4.1 Power requirement

Measure	Value
Number of trucks	4
Peak power demand	135 kW
Total current	195 A
Minimum power per connector	35 kW
Total energy delivered per day	about 1,800 kWh
Lowest SoC on return (worst day)	23.2% (600 kWh battery)

4.2 Recommendation

Recommended infrastructure

Grid connection: the same 315 A connection as phase 1. No upgrade is needed between phases.

Charger: 1 × 240 kW charger with 4 connectors (1 × 240 kW, 2 × 120 kW or 4 × 60 kW), limited to 200 kW.

Load management: built into the charger, set to 200 kW.

4.3 Charging and battery level

With a 600 kWh battery the fleet completes every trip of the day and all four trucks are fully charged overnight, with time to spare before departure. Average time plugged in is 14.9 hours a day, of which about 12.5 hours are spent charging.

5. Phase 3: twenty trucks (full electrification)

5.1 Power requirement

Measure	Value
Number of trucks	20
Peak power demand	526 kW
Total current	722 A
Minimum power per connector	35 kW
Total energy delivered per day	about 7,800 kWh
Lowest SoC on return (worst day)	11.6% (600 kWh battery)

5.2 Recommendation

Recommended infrastructure

Grid connection: 900 A. The network operator can in some cases supply 900 A without a substation on site, but a substation enclosure should be allowed for. The operator would then provide the space and the enclosure, and the network operator the transformer and high-voltage switchgear.

Chargers: units with 20 connectors in total.

Load management: built into the chargers and coordinated across the site, set to a 600 kW maximum.

Peak fleet demand is 526 kW, but load management is set to 600 kW to leave margin and flexibility overnight. The chargers deliver 50 to 200 kW per connector depending on configuration, well above the 35 kW minimum.

5.3 Charging and battery level

With a 600 kWh battery every truck completes its trips, and the whole fleet is fully charged overnight with time to spare. Average time plugged in is 14.4 hours a day, of which 11.3 hours are spent charging.

6. Truck battery sizes

A daily distance of 200 to 300 km at 1.2 to 2.0 kWh/km means 240 to 600 kWh of energy a day. Winter conditions make operation more demanding and raise energy use by 25 to 35%.

6.1 Expected energy use

Conditions	Energy use	300 km a day	Recommended battery (gross)
Summer	1.2 kWh/km	360 kWh	450 kWh or more
Spring and autumn	1.5 kWh/km	450 kWh	600 kWh or more
Winter	1.8 kWh/km	540 kWh	600 kWh or more
Winter, worst case	2.0 kWh/km	600 kWh	700 kWh or more

6.2 Recommended battery size and connectors

- **At least 600 kWh gross**, based on the operator's routes and average daily distance. With 600 kWh the lowest SoC in the analysis falls to 11.6% on the worst day.
- **CCS2 connectors on both sides of the truck.** This makes it easier to reach chargers, both public and at the depot, and can lower infrastructure cost.
- **MCS as an addition**, for faster public charging. It adds flexibility and resale value.

6.3 Common trucks on the market, 2025/2026

Manufacturer and model	Gross battery	Expected range
Volvo FH Electric (6 packs)	540 kWh	300 to 450 km
Volvo FH Aero Electric, Extended Range (8 packs, e-axle)	780 kWh *	up to 700 km *
Mercedes-Benz eActros 600	621 kWh	350 to 500 km
Scania 45 R/S Electric	624 kWh	350 to 500 km
MAN eTGX (up to)	640 kWh	350 to 500 km

** Battery and range figures are indicative and based on manufacturers' published information. Configuration (for example the number of battery packs) and real range vary with specification, load and driving conditions. Enord does not guarantee manufacturers' figures.*

7. Proposed site layout

We propose the layout below for the main depot. The aim is a phased build that is economical in phase 1 and allows growth without major disruption.

7.1 Key points

- **Grid connection and substation:** in the south corner of the site. The network operator's distribution substation is close by, and an unused cable runs past that may serve phases 1 and 2. This keeps cable runs short and gives the network operator easy access.
- **Chargers, phases 1 and 2:** along the south-east edge of the yard, where trucks are parked in a row today. Phase 1: one charger with 2 connectors. Phase 2: one charger with 4 connectors, directly next to it.
- **Chargers, phase 3:** an extension of the same line, plus a few bays on the north-east part of the yard.
- **One charger per two bays:** trucks drive in to the charger and reverse out. Bays about 4 to 5 m wide give room to park, to open the driver's door without hitting the charger, and to walk past a truck while it charges.
- **Preparation in phase 1:** we recommend laying ducts and foundations for up to 6 charging bays already in phase 1, so phase 2 is quick to build.

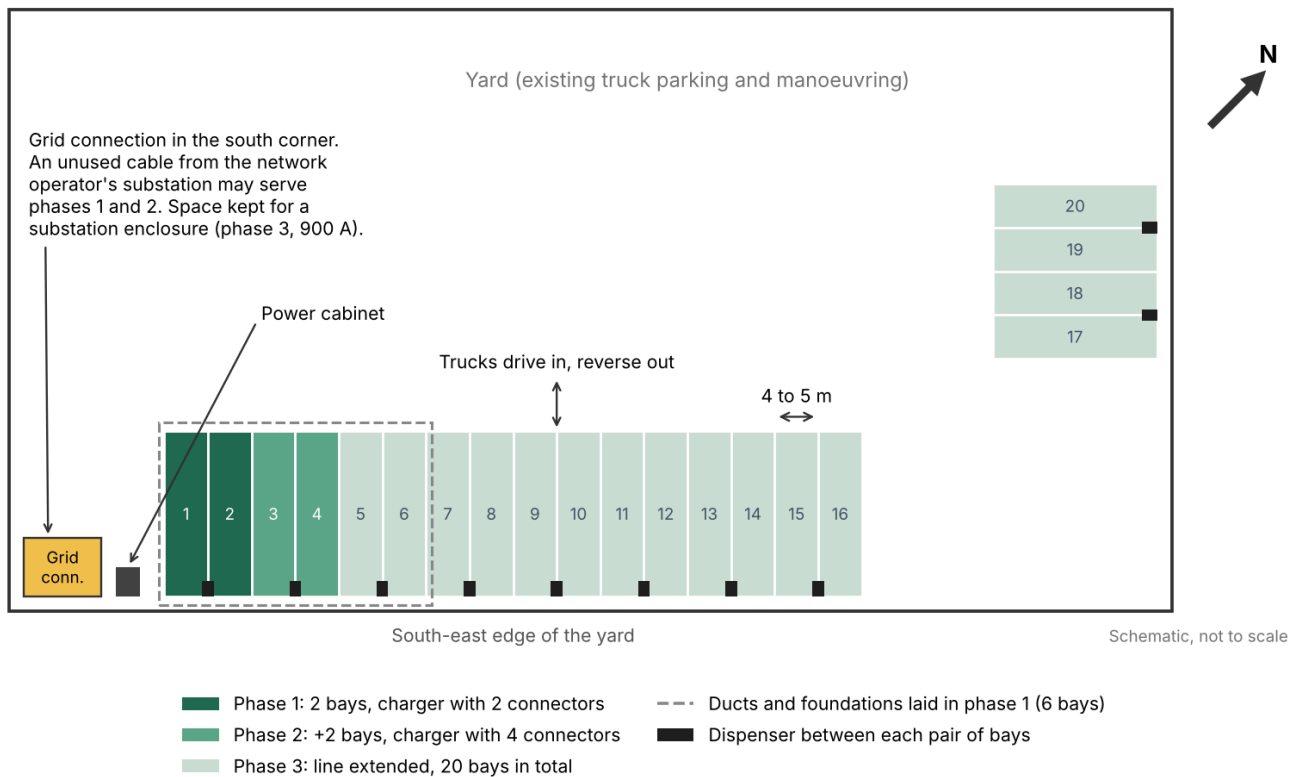


Figure 2. Proposed site layout, schematic. Phase 1 and 2 bays sit next to the grid connection, with ducts and foundations for six bays laid from the start. Phase 3 extends the same line and adds four bays on the north-east side of the yard.

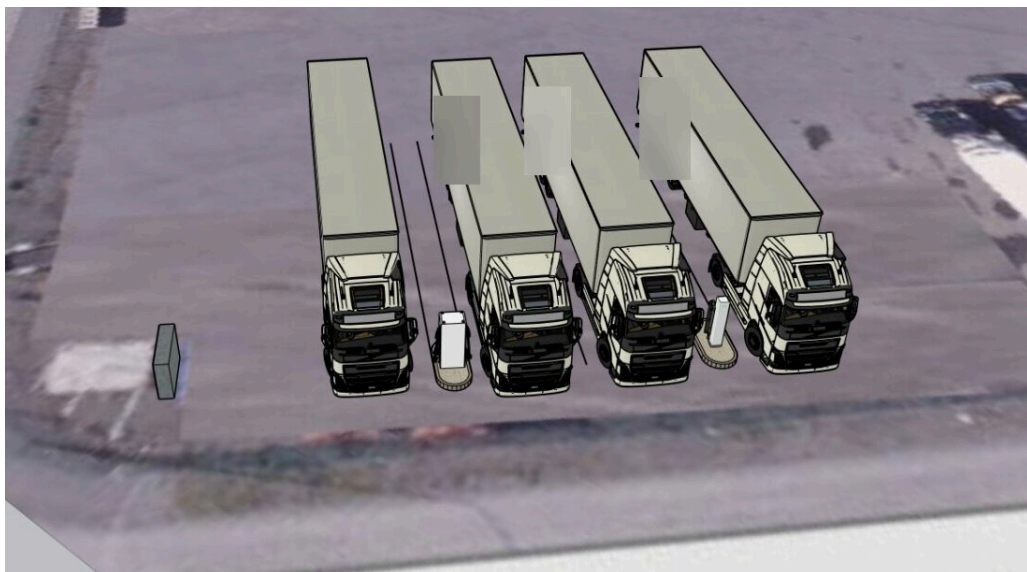


Figure 3. Phase 2 layout: 4 charging bays, each 4 to 5 m wide, with a dispenser between each pair of bays.

8. Next steps and responsibilities

The proposed process from an accepted offer to operating charging infrastructure at the main depot, with the split of work between the operator, the charging contractor and the network operator.

- 1. Project start.** Both parties name a contact and a project manager and agree the scope (phases 1, 2 and 3), the timeline and how decisions and communication are handled.

2. **Design.** The charging contractor prepares the electrical design and layout in consultation with the operator: charger positions, cable routes, ducts, foundations and impact protection.
3. **Grid connection and meter application.** The charging contractor applies to the network operator for a 315 A three-phase connection (phases 1 and 2) and gives notice of the planned upgrade to 900 A for phase 3. The operator pays for the connection and holds the electricity supply contract.
4. **Civil works, ducts and foundations.** The operator carries out the civil works to the contractor's drawings. We recommend ducts and foundations for up to 6 bays in phase 1 to limit later disruption.
5. **Electrical works.** The charging contractor carries out all electrical work for the charging installation and energises the connection, supplying the distribution board and cables.
6. **Installation and commissioning.** The charging contractor installs, connects and commissions the chargers. Testing and handover documents are part of delivery.
7. **Training.** The charging contractor trains the operator's drivers and staff in daily use and in handling faults.
8. **Operation and service.** The charging contractor operates and maintains the infrastructure under contract: monitoring, scheduled maintenance, fault response and software updates.

9. Recommended further work

Before the phase 3 design is fixed, we recommend two further studies. Both use the same simulation model and site layout as this report.

- **Fire evacuation simulation.** With 20 trucks charging overnight in one line, we recommend simulating evacuation of the depot in case of fire, using the actual layout and fleet. The result informs bay spacing, escape routes and the emergency response plan.
- **Battery storage and fire risk assessment.** A battery energy storage system (BESS) on site could delay or reduce the upgrade from 315 A to 900 A. If a BESS is considered, Enord assesses its sizing and value, and a detailed fire risk assessment of the battery and the depot is carried out with our specialist partner.

10. Disclaimer

This report is based on driving assumptions and information provided by the operator. Truck and battery information reflects the market in spring 2026 and may change. The results are indicative and suitable for preliminary design and tendering. Final design requires a detailed site survey, consultation with the network operator and confirmed planning consent.

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