Jolt
Joint Operator Logistics Trial

Energy and Range Performance of Electric Lorries in-service, first-round report:

Key Findings and Operational Implications

Evidence summary

Based on: Joint Operators Logistics Trial (JOLT), 'Energy and Range Performance of Electric Lorries in-service', first-round, draft report, 16 September 2026. Trial data: June 2024–July 2026.

The purpose of this document is to highlight key findings for operators and trial participants from the full first round JOLT report on energy and range performance, with references to relevant sections of the full report for further reading.

Abstract

The first JOLT round measured the performance of 15 battery-electric heavy goods vehicles (HGVs) from five manufacturers, operating across 12 fleets. The dataset covered 36,265 trips, 840,049 km and 8,366 charging events. Drawing on vehicles operating in service, the analysis provides real-world evidence of energy consumption and range across different vehicle models, fleets and operating conditions.

The findings show that energy consumption and achievable range depend on vehicle weight, usable battery capacity and operating conditions. Gross vehicle weight (GVW) was the strongest measured influence on energy consumption, while cold weather increased energy demand. Differences in usable battery capacity help explain the variation in estimated range between vehicle models.

For operators, the findings provide evidence to inform assessments of whether an electric HGV is suitable for a particular duty. They show how vehicle weight, usable battery capacity and operating conditions influence energy consumption and estimated range, helping operators understand the factors that affect whether a vehicle can complete the work required. The results also illustrate why range estimates should be considered in the context of the loads and conditions in which a vehicle will operate.

The report also highlights the importance of interpreting performance data in context. Trip-to-trip variation is substantial, meaning that a single high-consumption reading does not, by itself, indicate a vehicle fault or deterioration. Comparing performance across journeys with similar operating conditions can provide a more useful basis for identifying persistent differences.

This first round of testing in Project JOLT establishes a real-world evidence base for understanding the energy consumption and range of electric HGVs in service. Further investigation is needed to understand battery degradation and other factors affecting performance over time.

Key Findings, interpretation, implications & recommendations



Findings that inform vehicle and duty suitability

- Gross vehicle weight (GVW) has the strongest measured influence on energy consumption.
- Usable battery capacity, alongside energy consumption, are major determinants of achievable range. These help explain differences between vehicle models.



Findings that help interpret vehicle performance

- Trip-to-trip variability is substantial: a single high-consumption reading does not, by itself, indicate a fault.



Supporting findings on environmental conditions

- Wind can meaningfully affect energy consumption, while wet weather had a smaller additional effect after other factors were accounted for.
- Cold weather increases energy consumption and can reduce the feasibility of running EVs on a duty cycle that is achievable in milder conditions.

Key Finding 1: Gross vehicle weight is the strongest measured influence on energy consumption

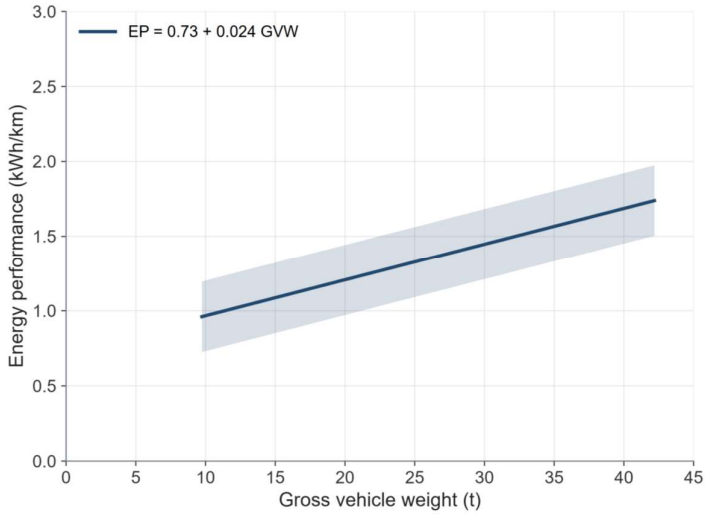


Figure 5.1 | Fleet-wide energy performance across gross vehicle weight. The shaded band shows one standard deviation of scatter of data points either side of the mean.

Finding: Across 31,256 trips from 12 vehicles, energy consumption increased by approximately 0.024 kWh/km for every additional tonne of gross vehicle weight (GVW). Across models, estimated consumption ranged from 1.2–1.4 kWh/km at 25 tonnes to 1.5–1.9 kWh/km at 42 tonnes.

Insight: The weight at which a vehicle operates has a substantial effect on how much energy it needs to cover a journey. A vehicle's range under lighter loading may not reflect its performance when carrying heavier loads.

Implication: Assess expected energy demand at realistic operating weights. A vehicle's performance under lighter loading may not reflect the energy required for its heavier duties.

Further reading:

- **p. 4, Executive Summary** — key findings.
- **p. 30, Section 5.1, Figure 5.1** — the relationship between GVW and energy consumption.

If you read only one section, start with Figure 5.1 on p. 30.

Key Finding 2: Range depends on both usable battery capacity and energy consumption

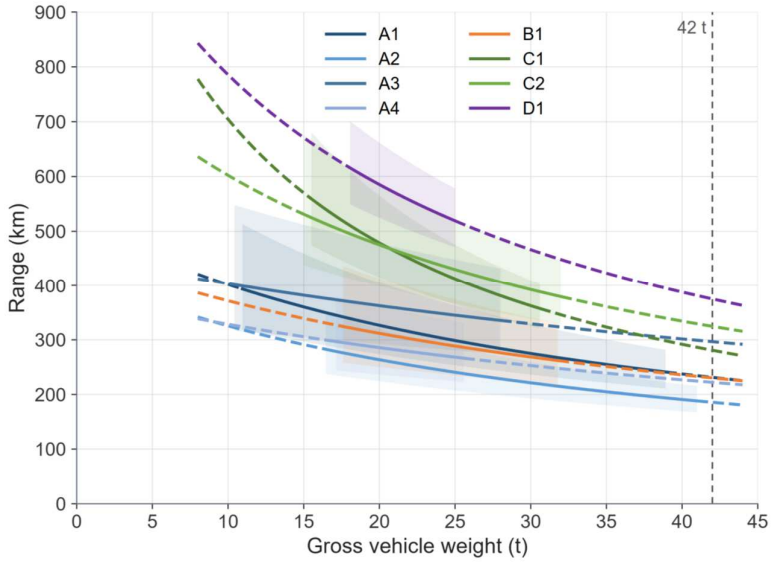


Figure 4.3 | Range by GVW and vehicle model.

Finding: Estimated full-depletion range varied from approximately 240–520 km at 25 tonnes and 190–380 km at 42 tonnes across models with usable-capacity inputs. These estimates show how differences in usable battery capacity and energy consumption contribute to variation in range between models.

Insight: Energy efficiency and range are different measures of capability. A vehicle that uses less energy per kilometre may still have a shorter range if its usable battery capacity is smaller.

Implication: When assessing whether a vehicle can perform a particular duty, consider both its energy consumption and usable battery capacity. Together, these provide a more useful indication of potential range than either measure alone.

Further reading:

- **pp. 21–23, Section 4.2, Figure 4.3 (above) and Table 4.2** (below)— usable battery capacity and estimated range.
- **p. 27, Section 4.4, Figure 4.5** — comparisons of energy consumption between models.
- **pp. 35–36, Section 6** — conclusions and limitations.

If you read only one section, start with Table 4.2 on p. 22.

OEM	Vehicle model	Usable battery capacity (kWh)	Empty tractor (10 t, km)	Empty tractor + trailer (17 t, km)	Light load (25 t, km)	Heavy load (42 t, km)
OEM A	A1	404	400	350	300	230
OEM A	A2	334	330	280	240	190
OEM A	A3	432	400	370	350	300
OEM A	A4	372	330	300	270	220
OEM B	B1	393	370	330	290	230
OEM B	B2	—	—	—	—	—
OEM C	C1	538	700	530	410	280
OEM C	C2	525	600	510	430	320
OEM D	D1	600*	790	630	520	380
OEM E	E1	—	—	—	—	—

*Table 4.2 | Range at 4 typical GVW cases. *Manufacturer's nominal battery size*

Key Finding 3: Cold weather can materially reduce achievable range

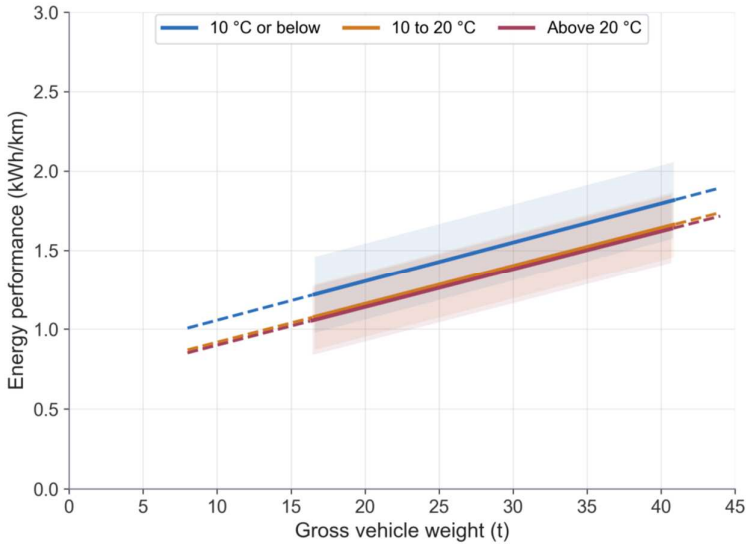


Figure 5.2a | Fleet-wide EP-GVW best-fit lines by ambient-temperature band

Finding: Across the fleet, at 25 tonnes GVW, energy consumption was approximately 13% higher at temperatures of 10°C or below than above 20°C. Average auxiliary power was around 7.7 kW in the coldest temperature bands, compared with around 3.7 kW at 15–25°C.

For an illustrative vehicle with approximately 400 kWh of usable battery capacity, estimated range at 25 tonnes was around 300 km in mild conditions. Allowing a 10–20% battery reserve reduces this to 240–270 km, falling to approximately 210–240 km in cold weather.

Insight: Range is not fixed across the year. For a duty close to a vehicle's practical range limit, the increase in energy consumption during cold weather can change whether the journey is achievable or not.

Implication: Assess vehicle suitability against the conditions in which it will operate, including colder weather and the required battery reserve. In the report's illustrative example, a 250 km journey sits close to the estimated range available with a reserve in mild conditions and may exceed it in colder conditions.

Further reading:

- **p. 30, Section 5.2, Figures 5.2a and 5.2b** — temperature, auxiliary power and energy consumption.
- **p. 23, Table 4.2** — estimated range by vehicle model.
- **pp. 35–36, Section 6** — conclusions and implications.

If you read only one section, start with Figure 5.2a (above) on p. 30 then compare it with Table 4.2 on p. 23.(see table 4.2 in Finding 3 above)

Key Finding 4: Wind and wet weather can affect energy consumption

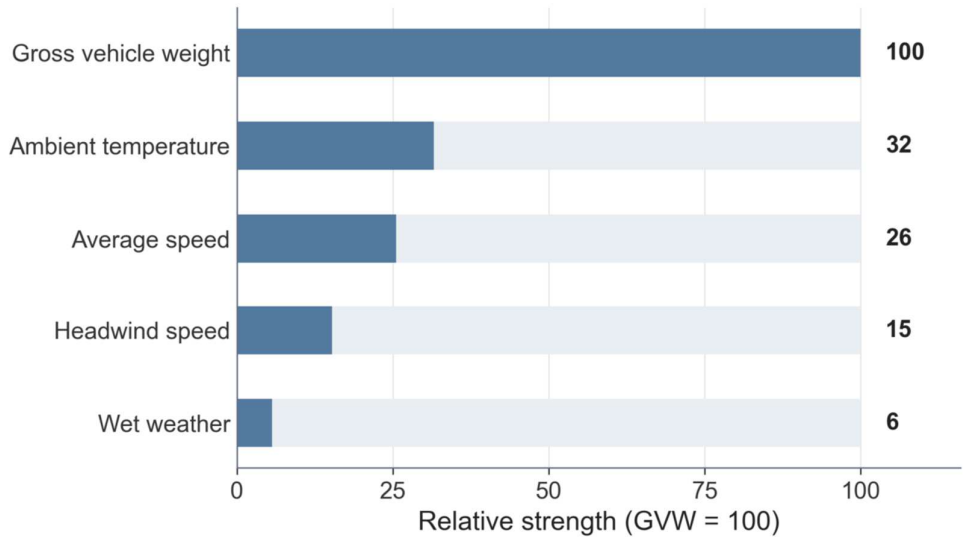


Figure 5.5 | Relative influence of fleet-wide operating factors on Energy Performance

Finding: In the fleet-wide model at 25 tonnes, estimated energy consumption was approximately 10% higher with a headwind above 4 m/s than with a tailwind above 4 m/s. Wet weather was associated with approximately 3% higher consumption at 25 tonnes, although its additional influence was limited once other factors were accounted for.

Insight: The fleet-wide results suggest that wind can have a meaningful effect on energy consumption, while wet weather had a smaller independent effect after other factors were accounted for.

Implication: Consider weather when interpreting journey-level energy use, particularly when a vehicle is operating close to its range limit. The findings do not establish a single adjustment that will apply to every journey.

Further reading:

- **pp. 31–32, Section 5.3, Figures 5.3a and 5.3b** — fleet-wide wind and wet-weather findings.
- **p. 34, Section 5.5, Figure 5.5** — comparison of the influence of operating factors.
- **pp. 34–35** — interpretation and conclusions.

If you read only one section, start with Figure 5.5 on p. 34, then read Section 5.3 for the supporting evidence.

Key Finding 5: Context is needed to understand trip-to-trip variability in EP data

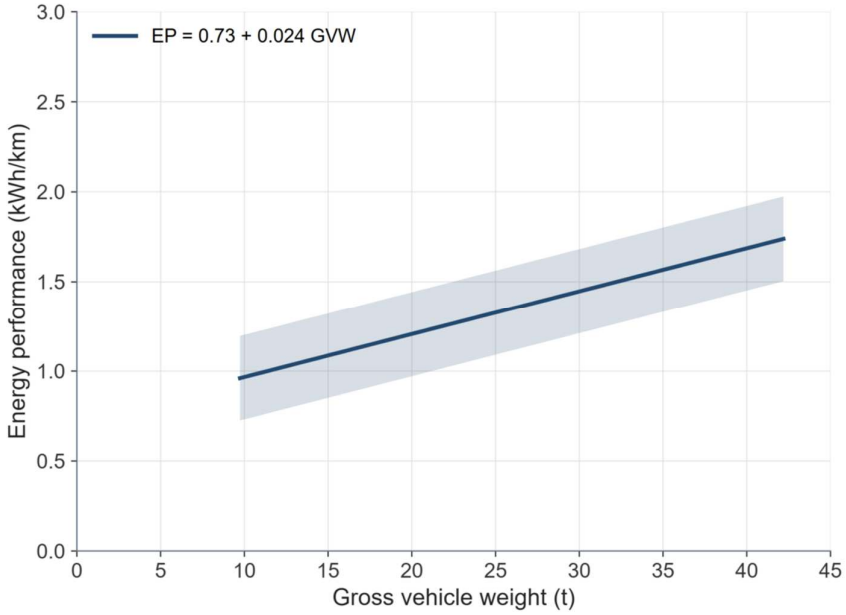


Figure 5.1 | Fleet-wide energy performance across gross vehicle weight

Finding: At the same GVW, trip-level energy performance varied by approximately 18% around the fitted value (one standard deviation). The report cautions that a single high-consumption reading is not, by itself, evidence of a fault.

Insight: Energy consumption can vary substantially between journeys, even at the same vehicle weight. One unusually high reading does not necessarily indicate a vehicle problem.

Insight: The duty cycle of the vehicle – combination of speed and elevation profiles, due to route and traffic – can also affect energy performance by up to 12% at 42t.

Implication: Individual journeys should not be treated as definitive evidence of vehicle performance. Comparing patterns across journeys with similar loads and operating conditions gives a more useful basis for understanding whether consumption has changed consistently.

Further reading:

- **p. 4, Executive Summary** — summary of trip-to-trip variability.
- **pp. 15-19, Section 3.4.1 and 3.4.2** – Effect of duty cycle on energy consumption
- **p. 29, Section 5.1, Figure 5.1** — variation in energy consumption at different GVWs.
- **p. 35, Section 6** — interpretation and limitations.

If you read only one section, start with Section 5.1 and Figure 5.1 on p. 29.