

Quarterly Demand Report

Q4 2024

Automotive industry
demand forecast

April 2025



ADVANCED
PROPULSION
CENTRE UK

Accelerating
Progress

This demand forecast covers

Markets

Global; European; UK

Vehicles

Light Duty Vehicles (LDVs)
Heavy Duty Vehicles (HDVs)



Materials

Cathode Active Material (CAM); anode material;
battery foils; electrolyte and separator material;
traction electric motor material

Demand forecast purpose

This forecast brings together data from multiple sources to provide an overview of xEV vehicle production for LDVs and HDVs with the aim of putting this into context for global, European and UK regions.

This report consists of two sections:

- 1. Demand Updates
- 2. Electrified Components Demand

Our process

The data in these demand graphs is based on APC insight from UK original equipment manufacturers (OEMs); APC and Automotive Council PEMD traction specifications. Forecasts from S&P Global AutoTech Insight, Rho Motion, BloombergNEF (BNEF), Wood Mackenzie, Global Data and KGP Powertrain Intelligence have also guided the demand forecast.

Data

Data from January 2025 and Q4 2024 forecasts used.

Disclaimer

These forecasts provide an estimate of electrified powertrain demand and are by no means an accurate statement of future markets and industry intentions. The data should be used in good faith and the APC UK cannot be held liable for any inaccuracies in the data, views expressed or underlying assumptions.

The APC has been producing quarterly demand reports since 2022 to track and monitor changes and predictions in the demand for automotive batteries and subsequent components.

Our team of expert analysts regularly assess the market here in the UK, as well as Europe and worldwide, to understand the market outlook for automotive OEMs and their supply chains, focusing on battery production, supply chain, economic climate, and geopolitical impacts.

Vehicle production forecasts are used to predict the demand for both battery and electrified components in Europe and the UK, including both battery supply chain and electric motor demand. Additionally, a comparison is provided between demand and anticipated battery material supply in Europe.

The Advanced Propulsion Centre UK (APC) operational costs are funded by the UK Government's Department for Business and Trade (DBT) and industry contributions. DBT is the ministerial department for economic growth, supporting businesses to invest, grow, and export, creating jobs and opportunities across the country. Our combined mission is to accelerate the development of advanced propulsion technologies to reduce greenhouse gas emissions, minimise embedded carbon, and improve air quality.



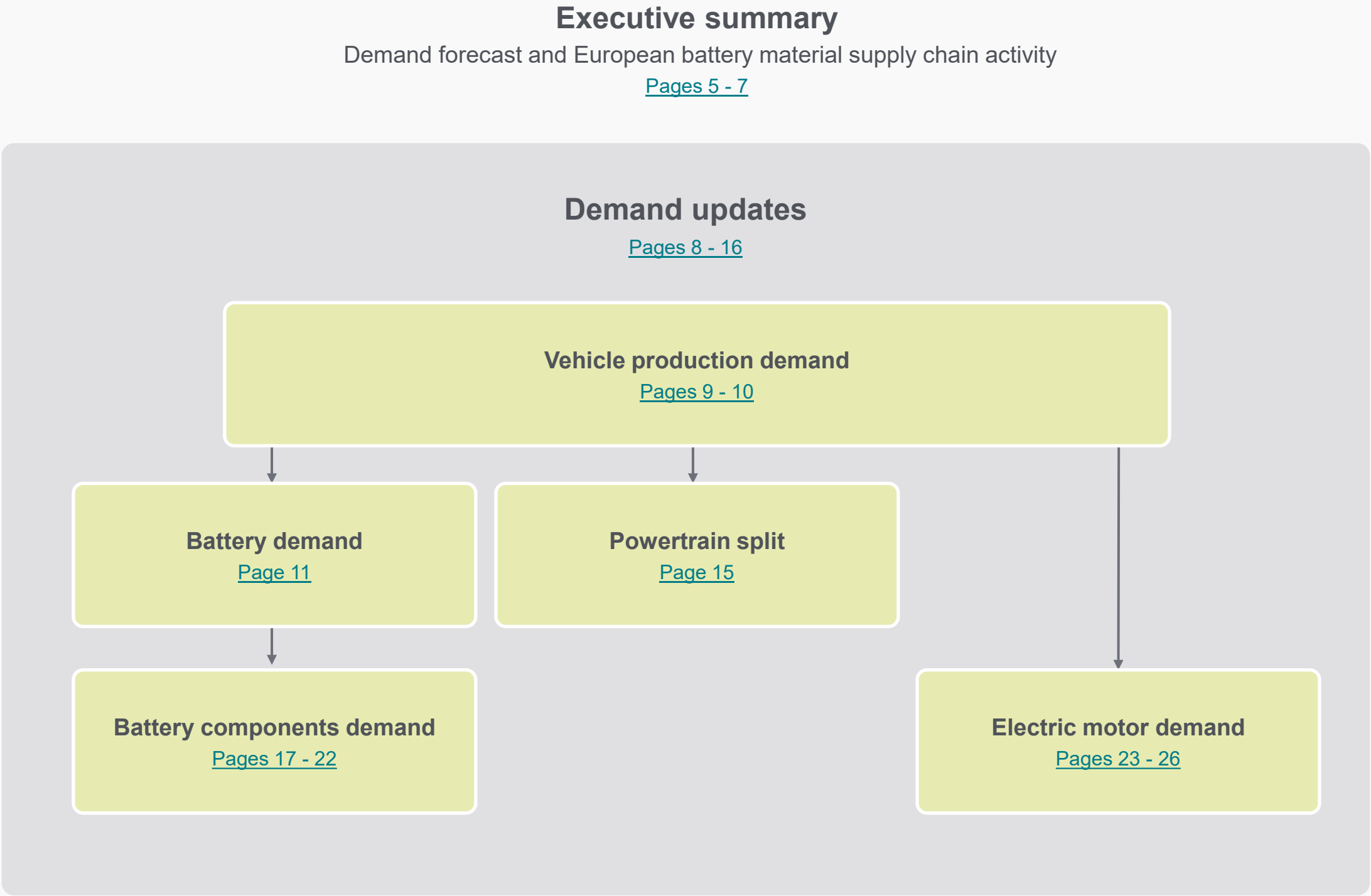
Department for
Business & Trade

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Vehicle production forecasts serve as the basis for projecting battery demand and the demand for electrified components across Europe and the UK. This includes forecasting requirements for both the battery supply chain and electric motor production.

The following outlines the information flow used in developing these forecasts:






Executive summary

Including:

- Changes to projected demand by region
- European battery material supply chain activity

Executive Summary – Changes to projected demand by region

Q4 2024 versus Q3 2024

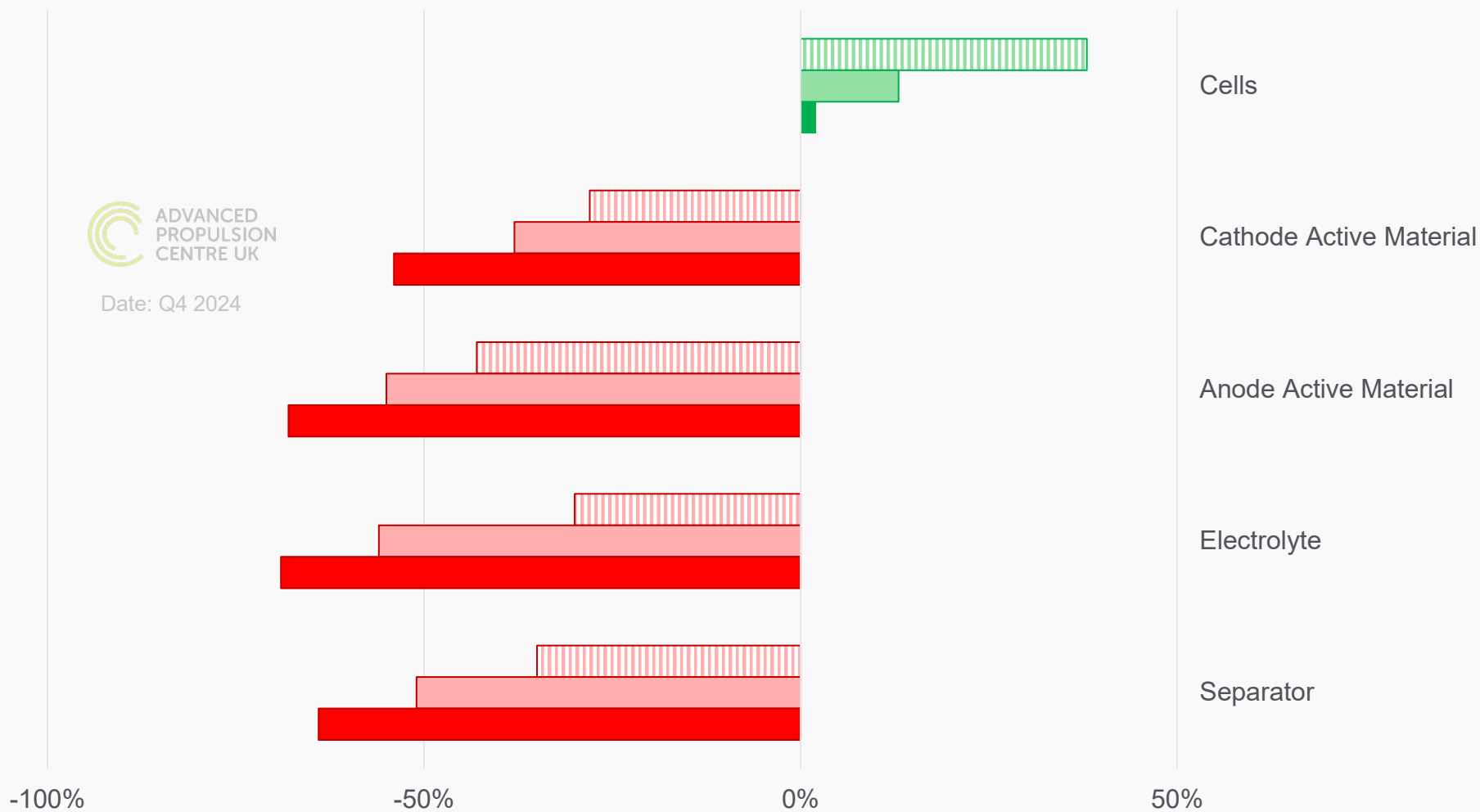
 Global demand update	<ul style="list-style-type: none">• Similarly to the APC’s Q3 forecast, this Q4 Demand Report indicates a more cautious approach to BEV adoption is likely. It is forecast that BEV production will double between 2027 and 2035.• Battery manufacturing outlook is still looking positive, with a new focus on recycling and some partnerships being created.• Global automotive battery demand is forecasted to exceed 4 TWh by 2035, with 2024 being the first year to surpass 1 TWh annual battery demand. A reduction in forecast battery demand over the next decade is driven by a change in vehicle production type (a reduction in BEV manufacture) rather than a reduction in overall vehicle volumes.• This quarter’s forecast does not consider the impact of newly announced US tariffs on automotive imports.	Page 12
 European demand update	<ul style="list-style-type: none">• As per Q3 2024 figures, European automotive battery demand is forecasted to grow to just below 1TWh by 2035, accounting for over 20% of global demand. However, it is expected there will be a reduction in battery demand from 2027 to 2030 due to reduced BEV production. Implications as result of US tariffs are still unclear and could have a knock-on effect to the forecast figures as we progress through 2025.• Lithium iron phosphate LF(X)P battery chemistries maintain their global dominance in LDVs however there is growing adoption in European manufacturing, which could represent up to 30% of the market by 2035.• Although there is surplus in cell manufacturing, there will still be a deficit of anode and cathode active material throughout the supply chain through to 2035.• The EU has just unveiled its 'Industrial Action Plan for the European Automotive Sector', including increased flexibility on compliance to the latest CO₂ emission targets, which may impact powertrain split in OEMs plans.	Page 13
 UK demand update	<ul style="list-style-type: none">• BEV production is expected to grow at a slower rate than forecasted in Q3 2024 due to delays in the introduction of new BEV models to market. Nevertheless, xEV production is expected to increase rapidly across the next decade with most new models being introduced with nickel-based battery chemistry.• The automotive industry growth to 2035 is expected to be led by major OEMs introducing new models. If the UK automotive industry is to grow further than forecasts indicate, then the introduction of additional new models or new OEMs will be required, with efforts to attract potential new investment.	Page 14

Executive Summary – European battery material supply chain activity

Q4 2024 notes

- This graph in Figure 1 details an assessment between Europe’s supply chain capacity for battery materials with Europe’s light duty vehicle (LDV) production demand. This assessment assumes Europe is a self-sustaining bloc with no imports or exports.
- Although cell production capacity is projected to surpass demand from 2027, this estimate is based on announced nameplate capacity, much of which is unlikely to materialise due to the slowing battery demand. Furthermore, recycling initiatives have gained momentum, with some new partnerships emerging to support this focus.
- This assessment does not take into account cell chemistry type.

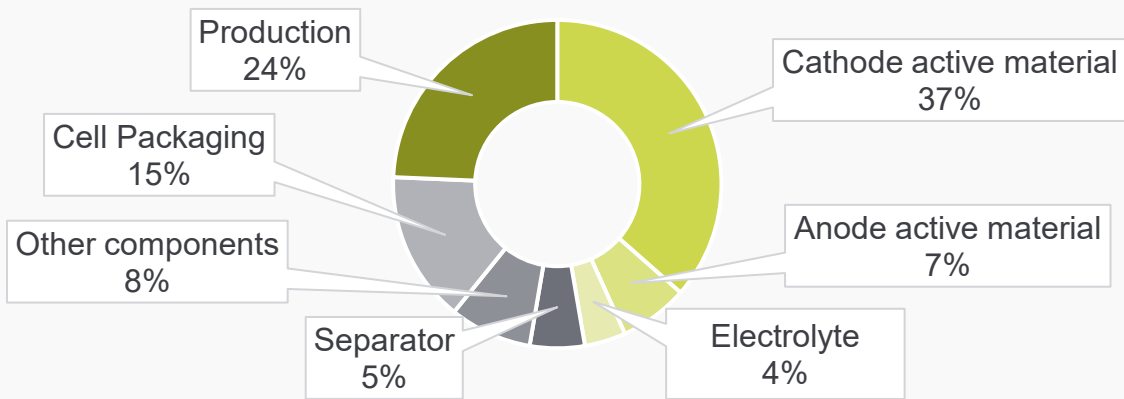
Figure 1: European capacity vs demand assuming Europe is a self-sustaining bloc with no imports or exports



2027 surplus reported this quarter	2030 surplus reported this quarter	2035 surplus reported this quarter
2027 deficit reported this quarter	2030 deficit reported this quarter	2035 deficit reported this quarter

Component	Europe supply chain status	UK supply chain status
Cell Production	<ul style="list-style-type: none">Delays in BEV production indicate increased overcapacity in the near term, with recent announcements since Q3 2024 including Stellantis and CATL’s joint venture in Spain producing up to 50 GWh longer term.	<ul style="list-style-type: none">As part of Nissan’s announcement of three EVs being produced in Sunderland, the company said it had initiated a feasibility study to explore potential further gigafactory investments in the UK as part of its EV36Zero hub.Agratas acquired new R&D facility in Oxford in December 2024.
Cathode Active Material	<ul style="list-style-type: none">Cathode manufacturing is limited in Europe. European companies are investing heavily in R&D and capital, but capital costs are very high. CAM is increasingly looking like a risk regarding local content requirements.	<ul style="list-style-type: none">Required to be made in the region from 2027 for UK cells to qualify as local and to avoid EV tariffs in the EU.The cost competitiveness of L(M)FP CAM is becoming more important for UK (and European) OEMs.
Anode Active Material	<ul style="list-style-type: none">There are no signs of local supply of anode at scale in Europe95% of the world’s anode material is produced in China.	<ul style="list-style-type: none">Increased supply in the graphite market (from China) has led to a relatively stable global prices over the past 12 months. Whilst the UK has some of the supply chain, e.g. needle coke, it would be prudent to have graphite supply in place by 2027.
Electrolyte	<ul style="list-style-type: none">Electrolyte manufacturing can be deployed relatively quickly.	<ul style="list-style-type: none">Value in today’s liquid electrolyte is relatively low, but potential investment for semi-solid and solid-state electrolytes
Separator	<ul style="list-style-type: none">Low capacity in Europe. Whilst separator is a fairly low-value material, it is relatively quick to establish production.	<ul style="list-style-type: none">Significant opportunities to localise in the UK, leveraging polymer and ceramic coating capability

Figure 2: Estimated cell cost breakdown per component (based on NMC811 cell)



Source: APC Demand Databases using S&P Global AutoTechInsight (Jan 2025), BNEF forecasts (2024), Wood Mackenzie forecasts (Q4 2024), Global Data and KGP Powertrain Intelligence (Q4 2024) and Rho Motion forecasts (Q4 2024)
†Europe region includes non-EU countries such as Turkey
*Risk-weighted capacity based on APC internal assessment of announced and under construction projects

Q4 2024 – Demand update

The following section includes production and battery demand for LDVs and HDVs

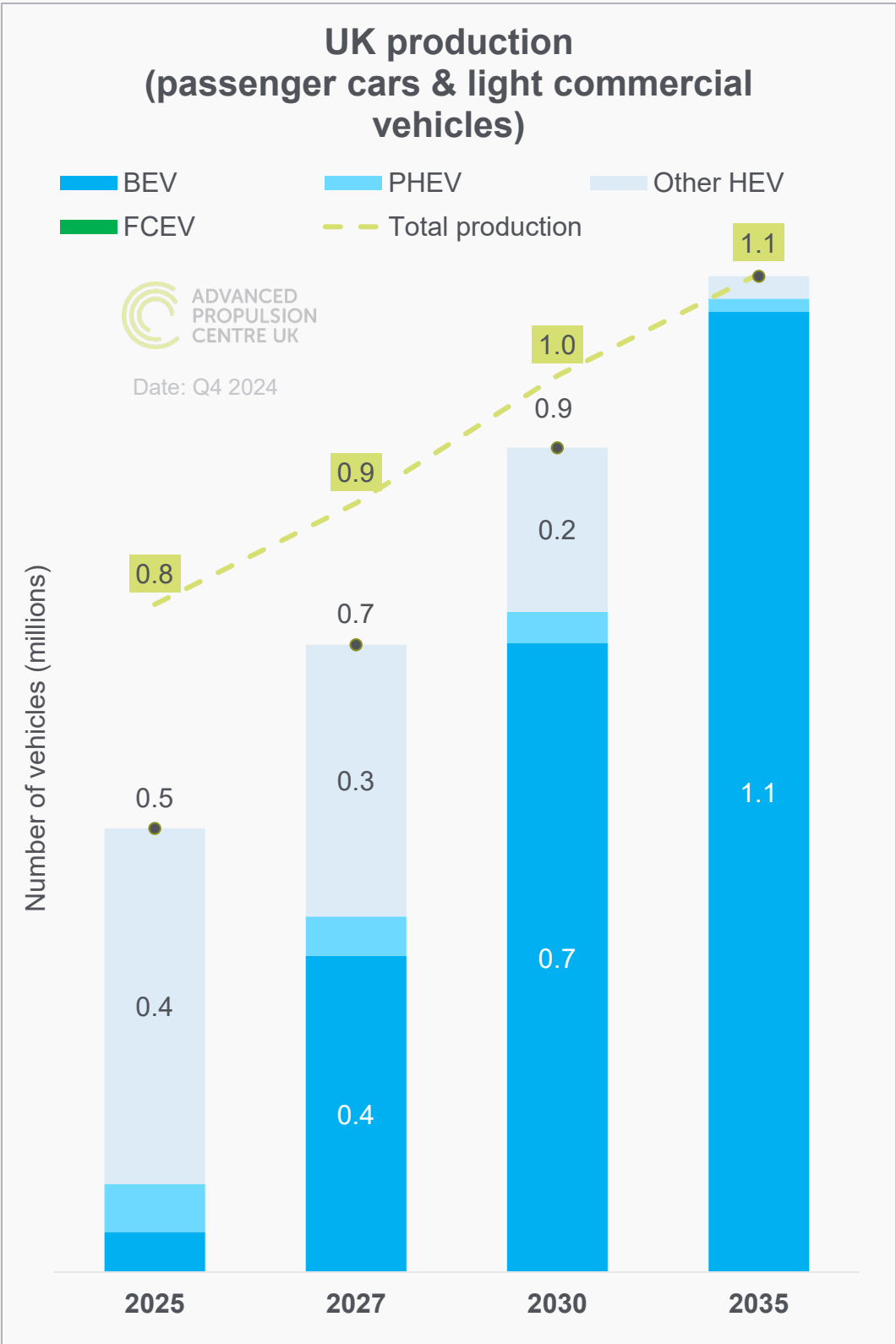
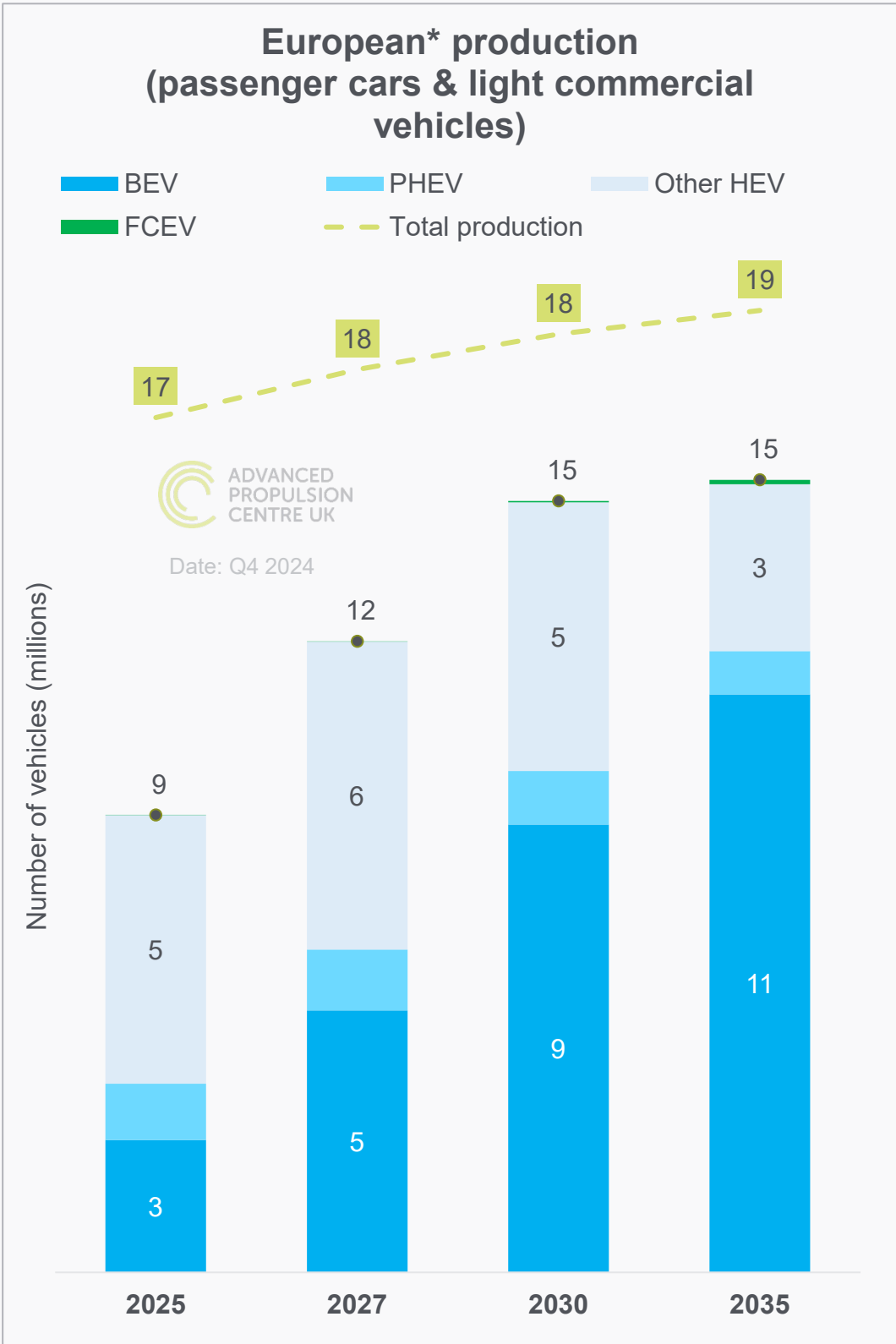
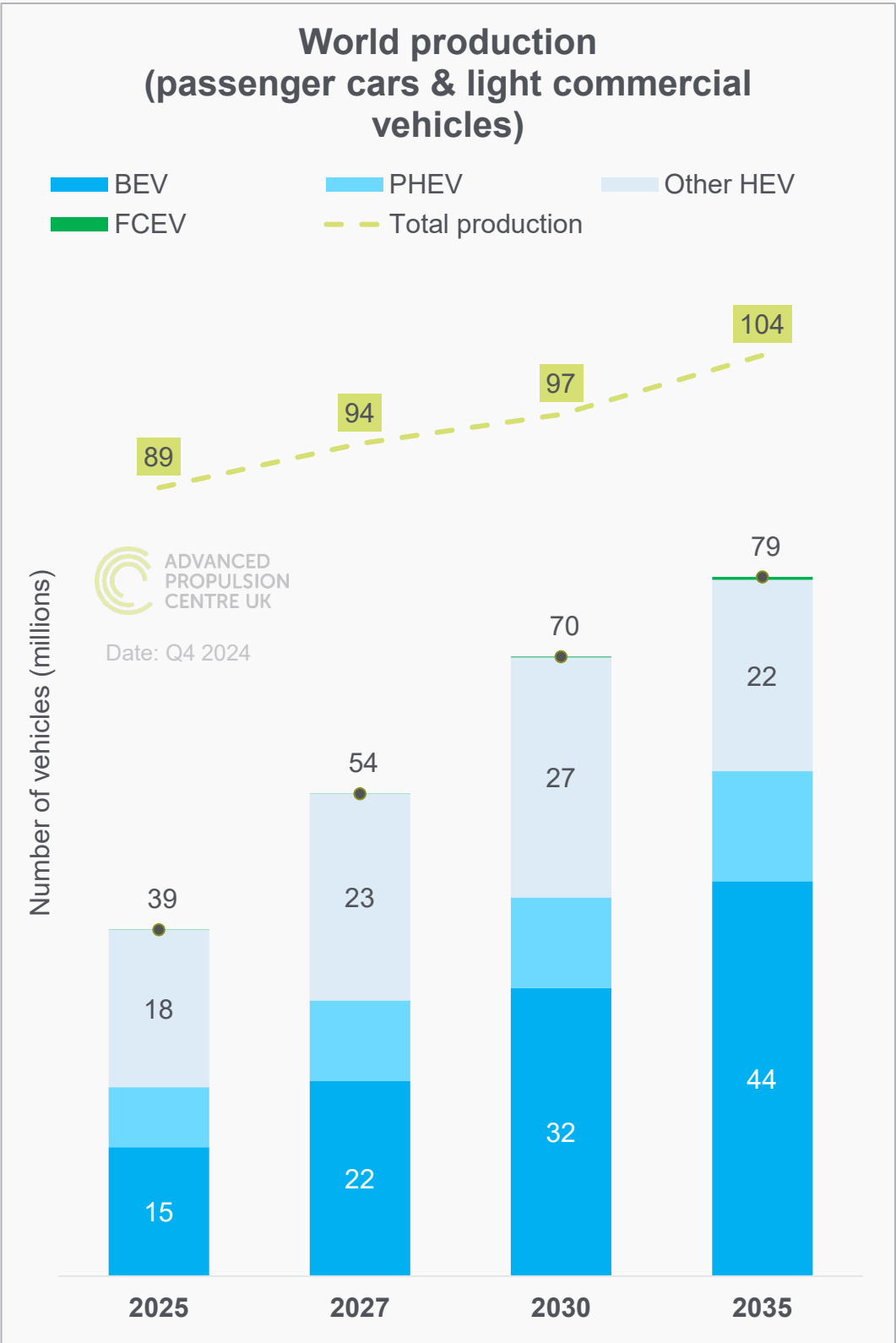


Vehicle production

Passenger cars and light commercial vehicles (<6 tonnes)

Q4 2024 notes

- The propulsion mix continues to vary by region with some markets experiencing a slowdown, whilst others continue to grow. For example, China’s trade-in incentives are driving growth in the region whilst uncertainty about tariffs from the US may negatively impact production. Key forecast drivers include challenges in affordability, improved supply conditions, tariff impacts, interest rates, and the complexities of electrification.
- Globally, including in Europe and the UK, there is a reduction in BEV demand when compared to the figures shared in the Q3 2024 demand report. One example is a global manufacturing reduction of 4 million BEVs by 2035, reflecting an expected more cautious approach to EV adoption.



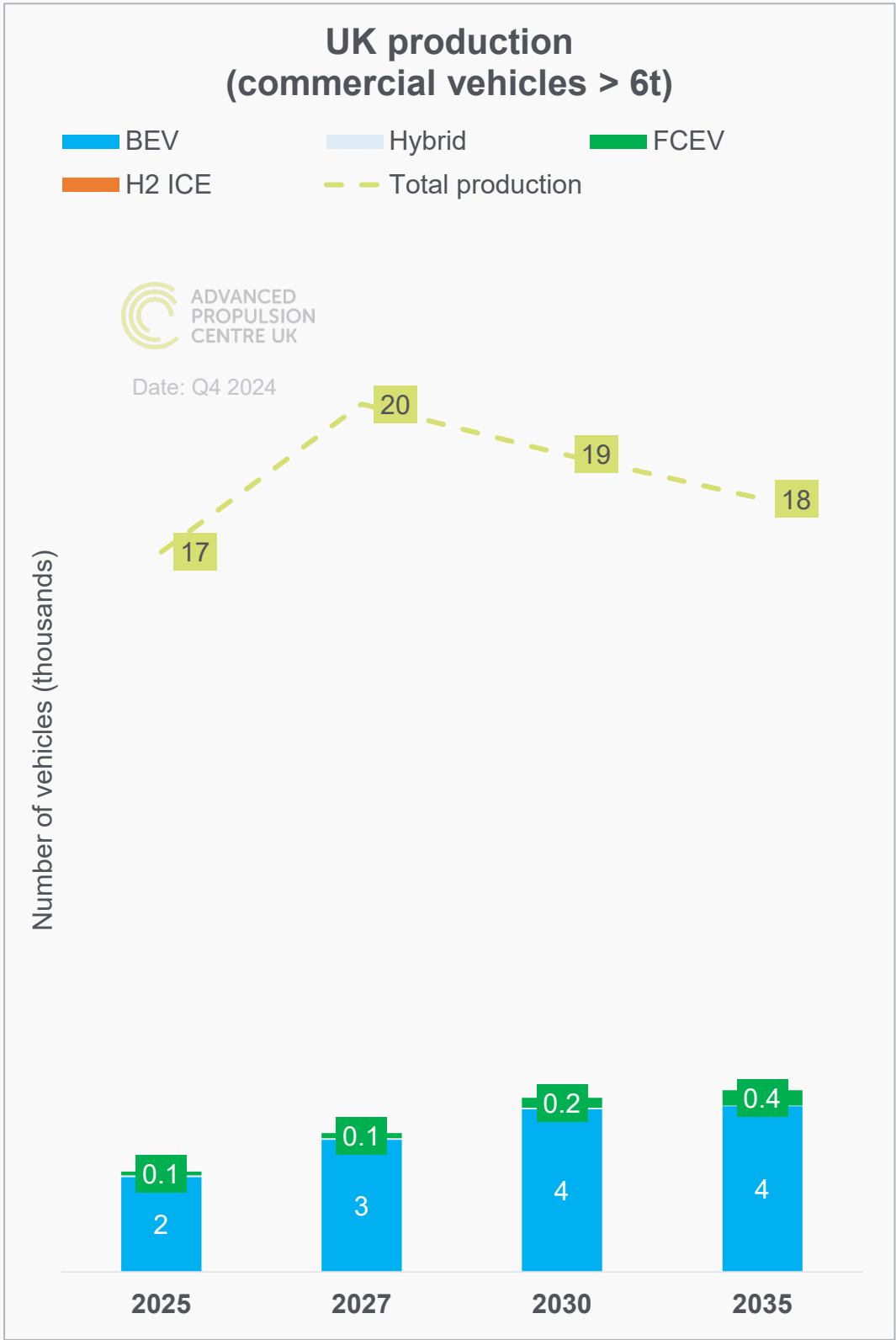
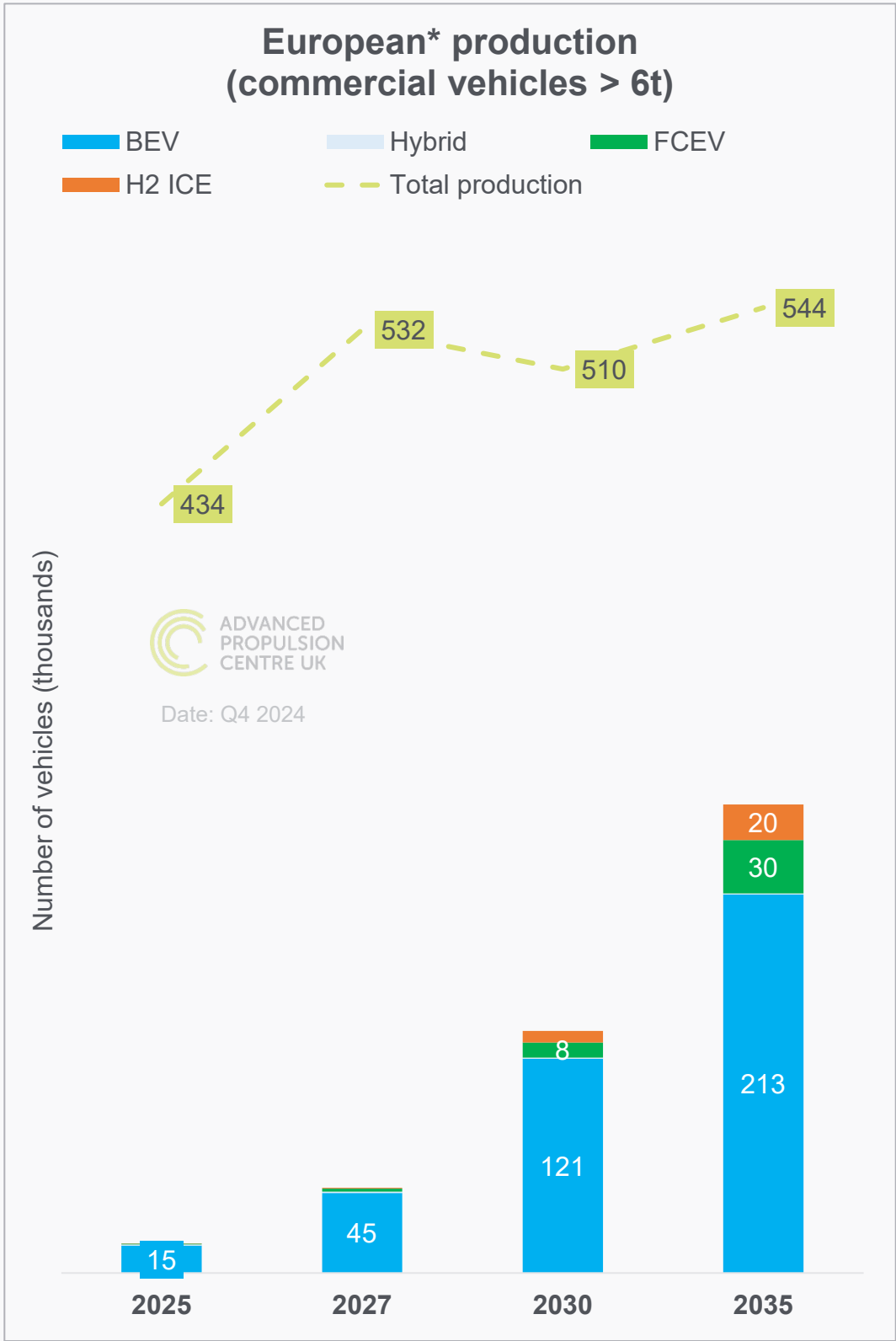
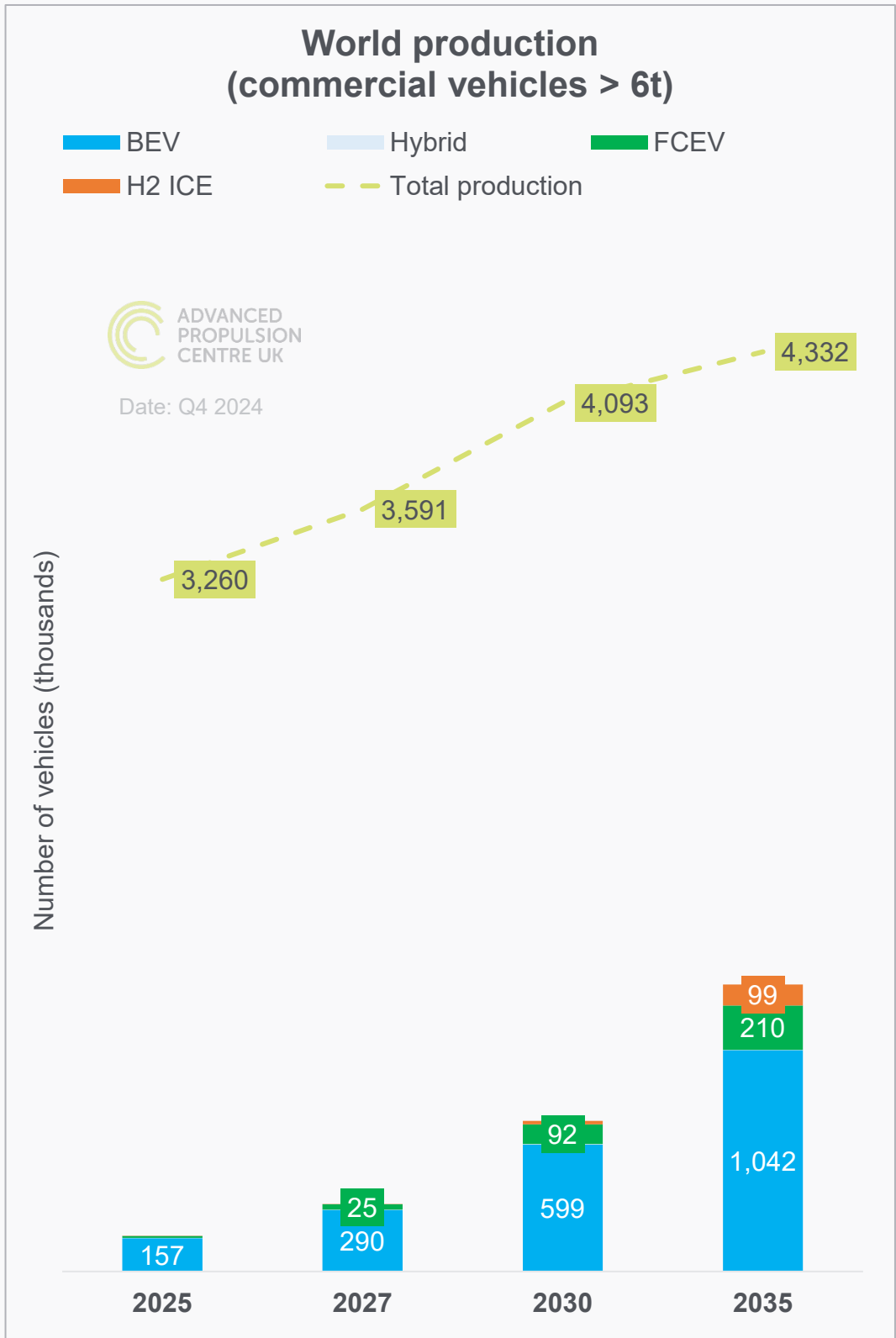
Source: APC Demand Databases using S&P Global AutoTechInsight (Jan 2025), BNEF forecasts (2024), Wood Mackenzie forecasts (Q4 2024), Global Data and KGP Powertrain Intelligence (Q4 2024) and Rho Motion forecasts (Q4 2024)
*European forecast includes non-EU countries such as Turkey
Total production includes ICE vehicles. Other HEV includes MHEV

Vehicle production

Commercial vehicles (>6 tonnes)
Bus and coach, medium and heavy truck

Q4 2024 notes

- BEV orders are slowing in many regions, in particular Europe and North America, with the exception being China. Many hydrogen projects have also been delayed or cancelled.
- UK production volumes for BEV are significantly lower than previously forecasted in the UK HDV supply chain opportunities to 2035 insight report¹, due to OEMs withdrawing from the market.
- The significant contributions from the UK's tier one suppliers and Non-Road Mobile Machinery (NRMM) manufacturing sectors are not captured.



Source: APC Demand Databases using S&P Global AutoTechInsight (Jan 2025), BNEF forecasts (2024), Wood Mackenzie forecasts (Q4 2024), Global Data and KGP Powertrain Intelligence (Q4 2024) and Rho Motion forecasts (Q4 2024)

*European forecast EU & EFTA region

Total production includes ICE vehicles.

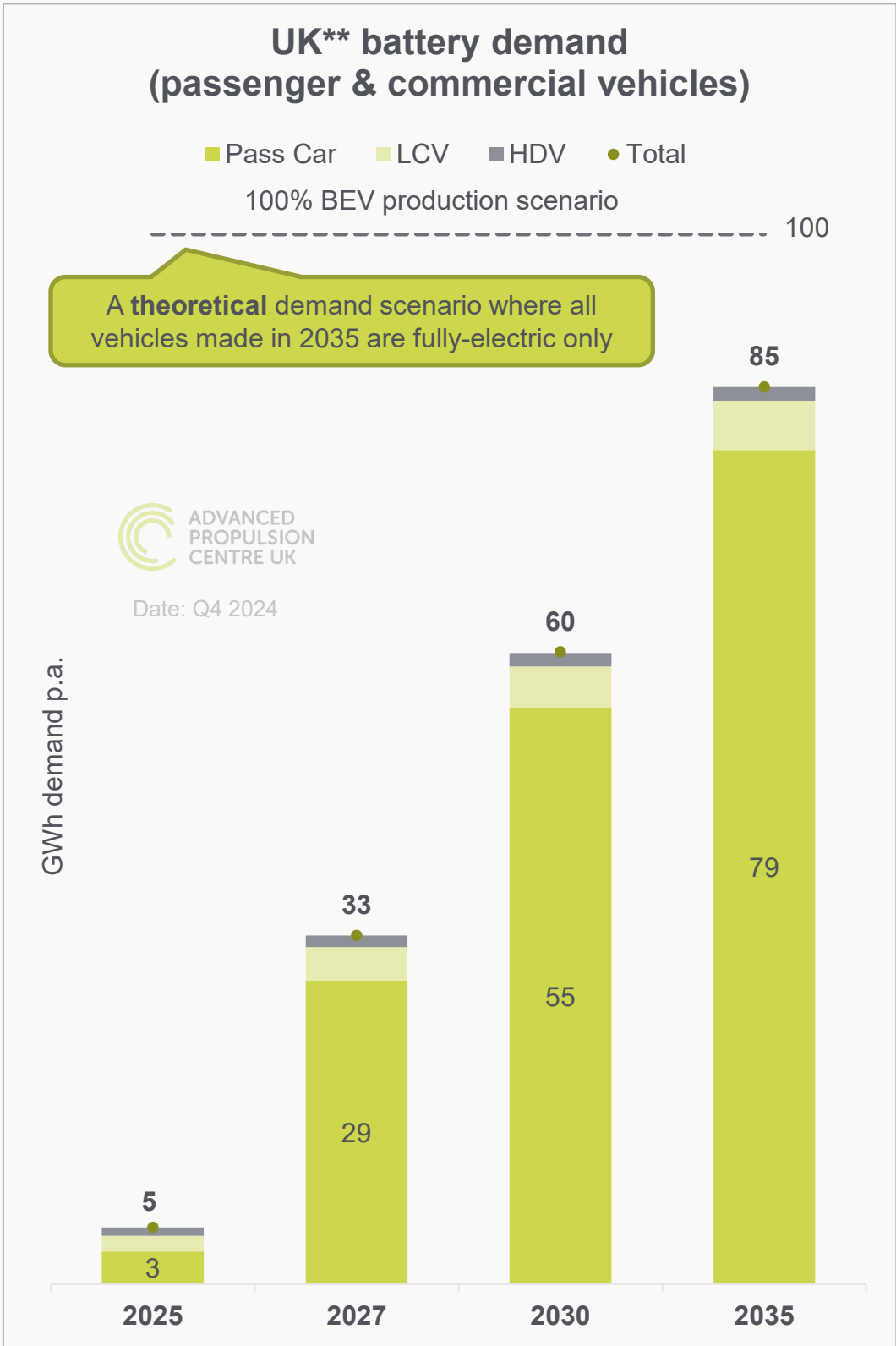
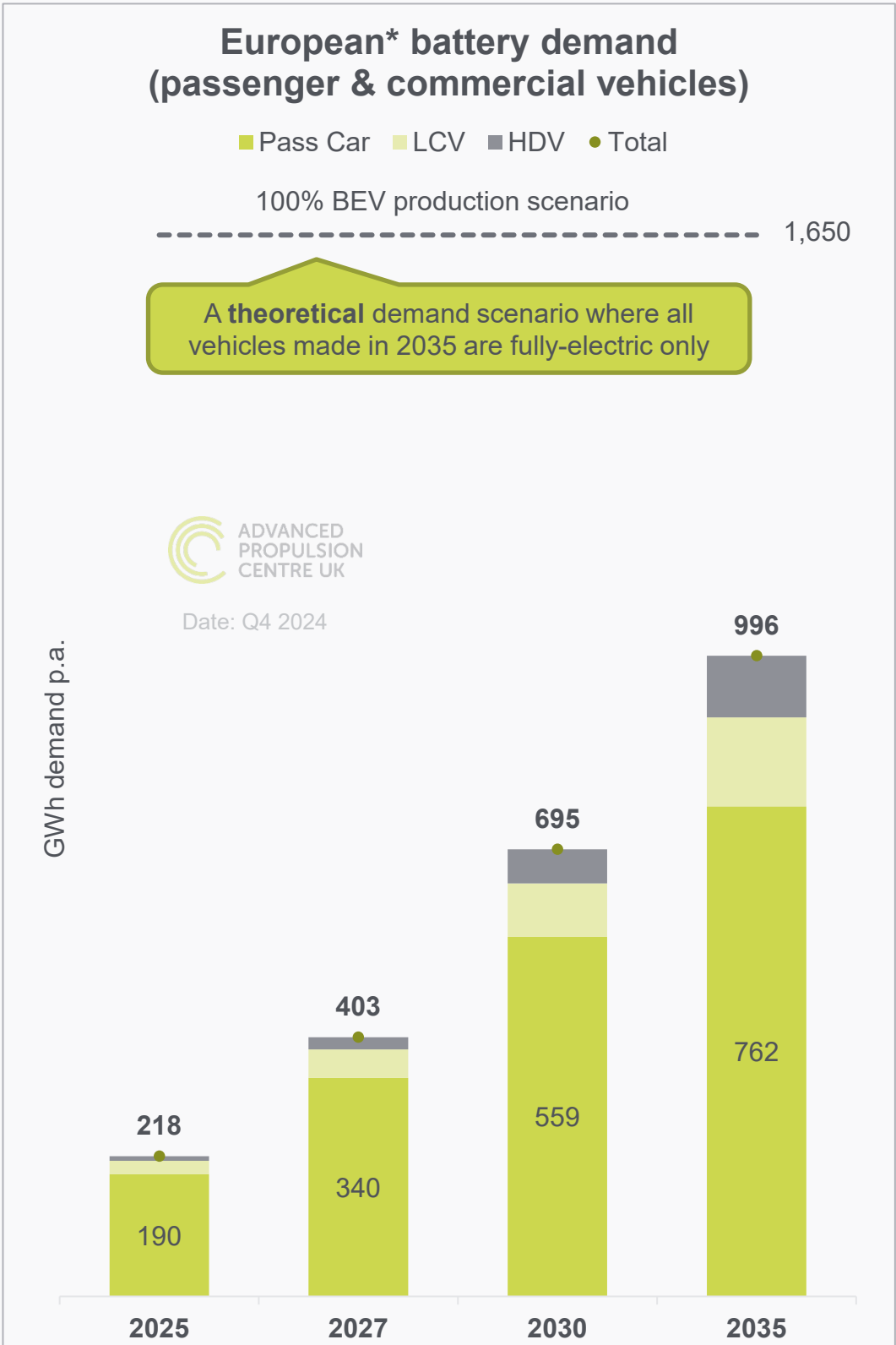
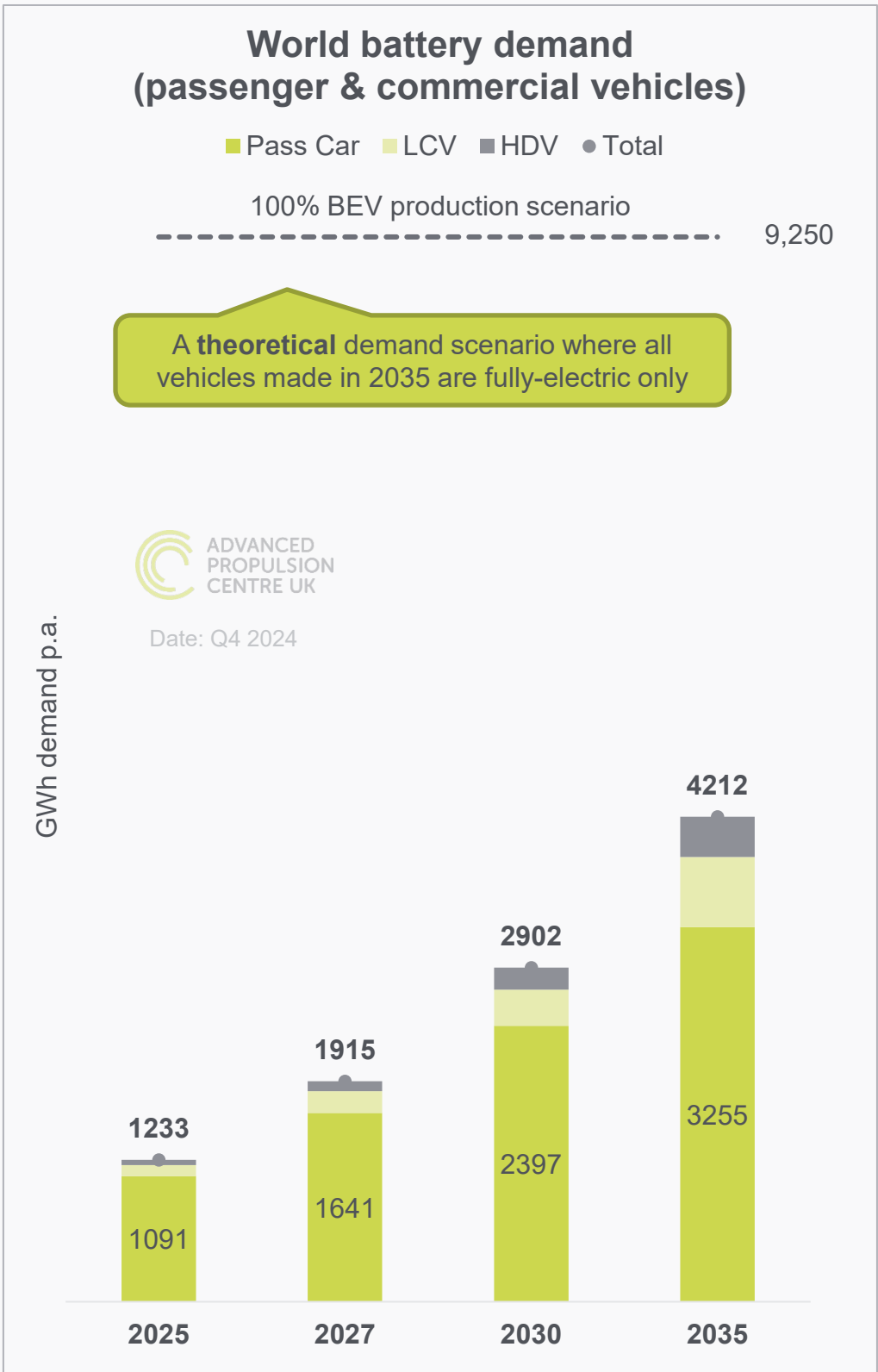
¹ [UK HDV supply chain opportunities to 2035](#)

Battery demand forecast

Passenger cars and commercial vehicles

Q4 2024 notes

- The battery demand forecast detailed below estimates the battery demand required in each given region to achieve the production volumes shown on pages 9 and 10.
- 2024 was the first year to surpass 1 TWh annual battery demand, however the reduction in forecasted BEV production is resulting in lower GWh demand than previously forecasted for Q3 2024. European production demand is also impacted due to production capability being developed outside of Europe.



Source: APC Demand Databases using S&P Global AutoTechInsight (Jan 2025), BNEF forecasts (2024), Wood Mackenzie forecasts (Q4 2024), Global Data and KGP Powertrain Intelligence (Q4 2024) and Rho Motion forecasts (Q4 2024)

*European forecast includes non-EU countries such as Turkey

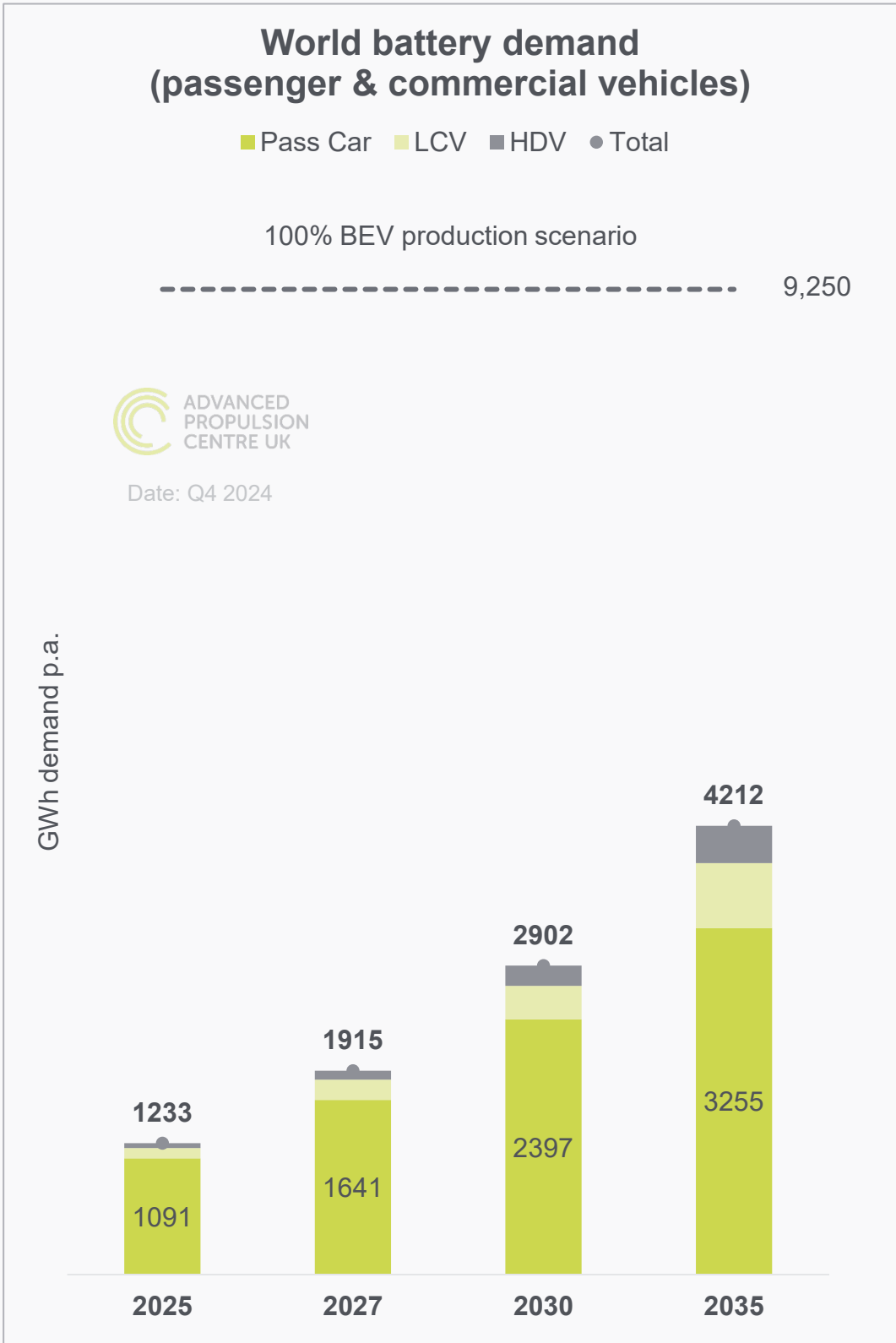
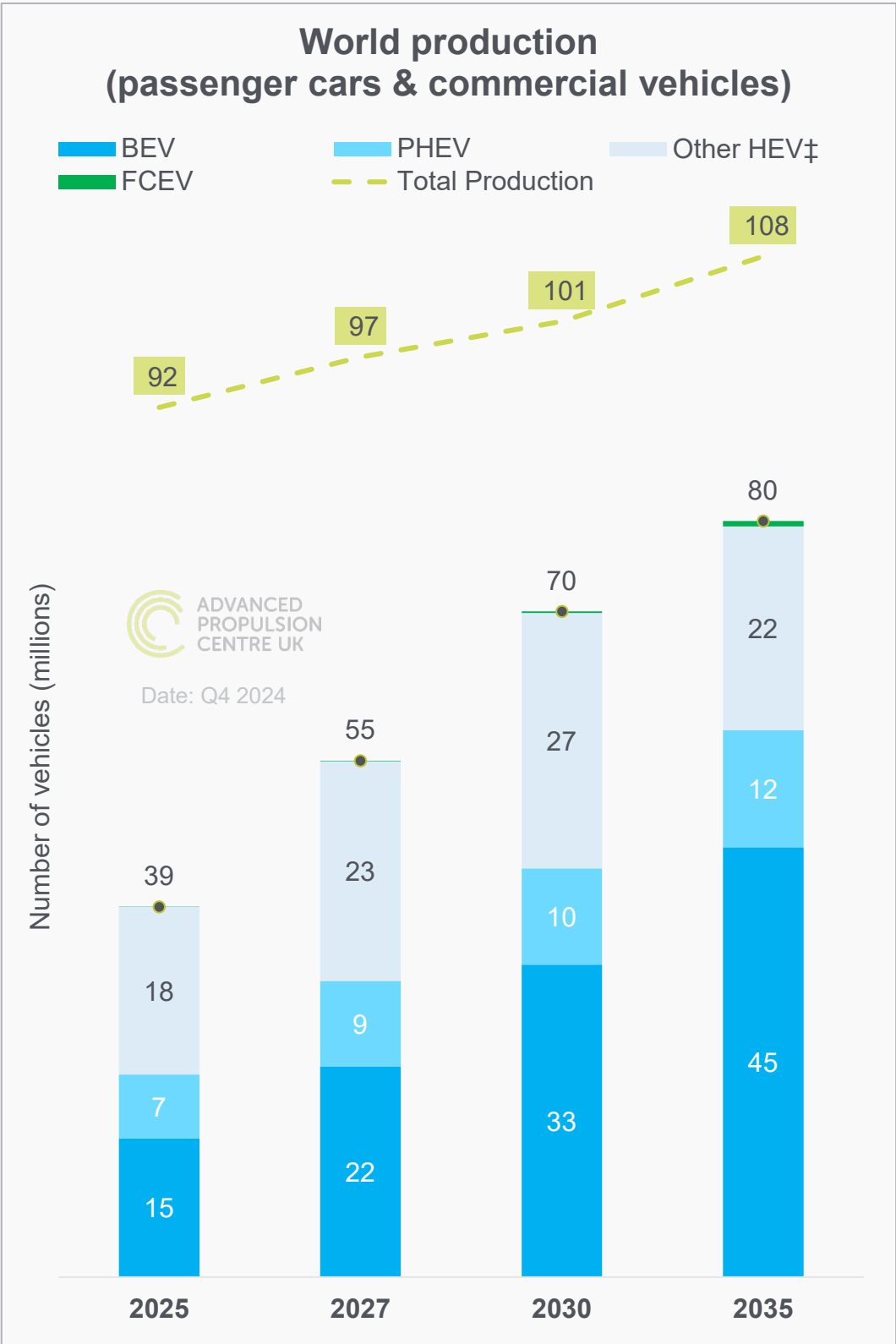
** Excludes forecast UK battery exports (this represents UK Vehicle manufacturing demand only)

Global production

Passenger cars and commercial vehicles

Q4 2024 notes

- 2027 and 2030 BEV production forecasts have reduced by over 10% from those forecast in the Q3 Demand Report owing to OEM planning delays, affordability concerns, regulatory pushback, and challenges related to infrastructure and policymaking.
- However, the annual global production figure is currently projected to exceed 100 million vehicles by 2035.



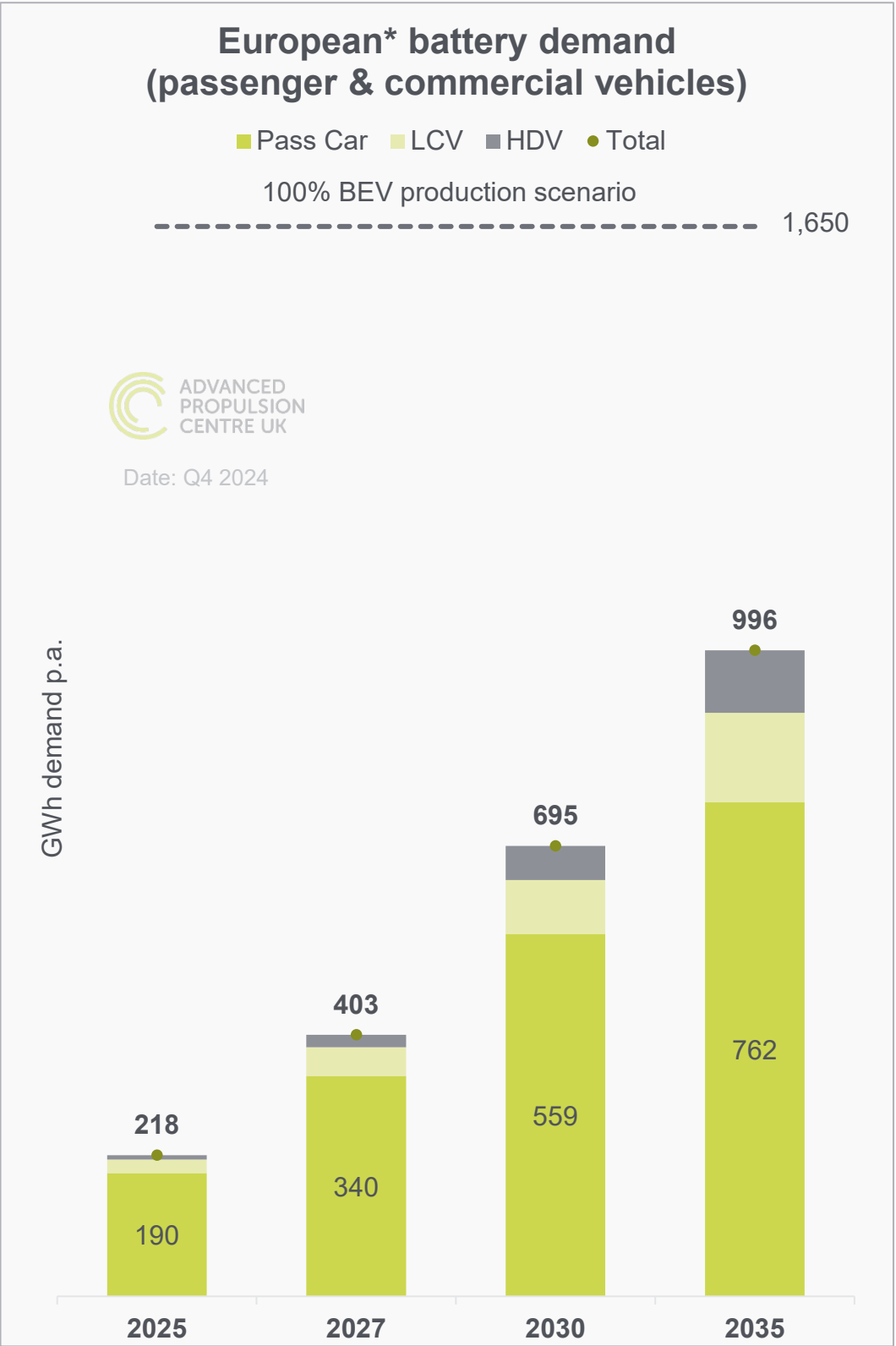
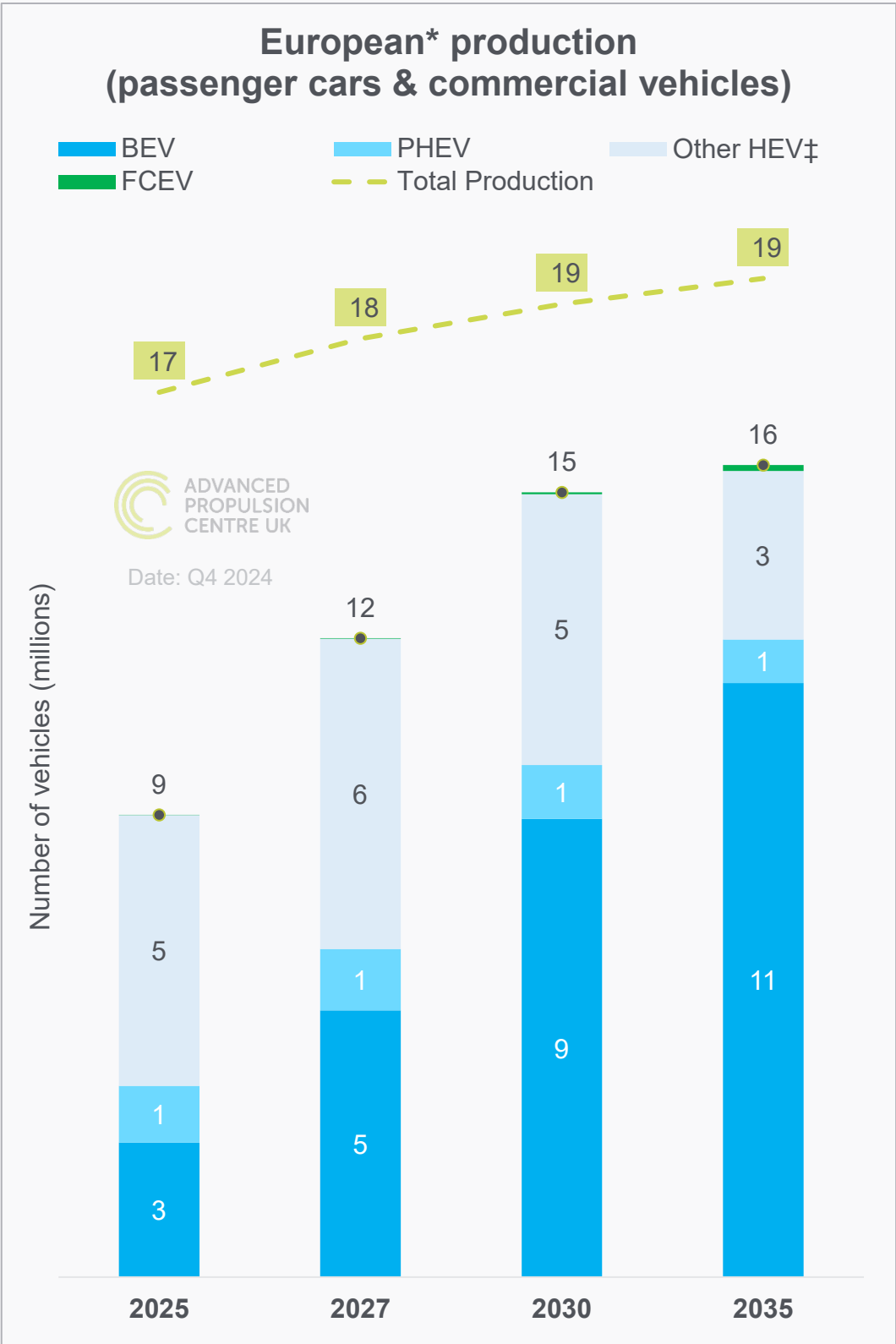
Source: APC Demand Databases using S&P Global AutoTechInsight (Jan 2025), BNEF forecasts (2024), Wood Mackenzie forecasts (Q4 2024), Global Data and KGP Powertrain Intelligence (Q4 2024) and Rho Motion forecasts (Q4 2024)
Total production includes ICE vehicles.
‡ Other HEV includes MHEV

European production

Passenger cars and commercial vehicles

Q4 2024 notes

- Stabilisation of demand in Europe will be a key driver influenced by macroeconomic factors, affordability, and mobility behaviours, as well as regulatory context (Fit for 55** CO₂ reduction).
- Compared to the Q3 2024 forecast, xEV production is anticipated to decline by approximately 1 million vehicles, primarily due to a reduction in forecasted BEV production. European production is also likely to be negatively impacted due to production capability being developed outside of Europe, including BEV imports predominantly from Asia and export limitations due to potential higher tariffs.



Source: APC Demand Databases using S&P Global AutoTechInsight (Jan 2025), BNEF forecasts (2024), Wood Mackenzie forecasts (Q4 2024), Global Data and KGP Powertrain Intelligence (Q4 2024) and Rho Motion forecasts (Q4 2024)

*European forecast includes non-EU countries such as Turkey

Total production includes ICE vehicles. ‡ Other HEV includes MHEV

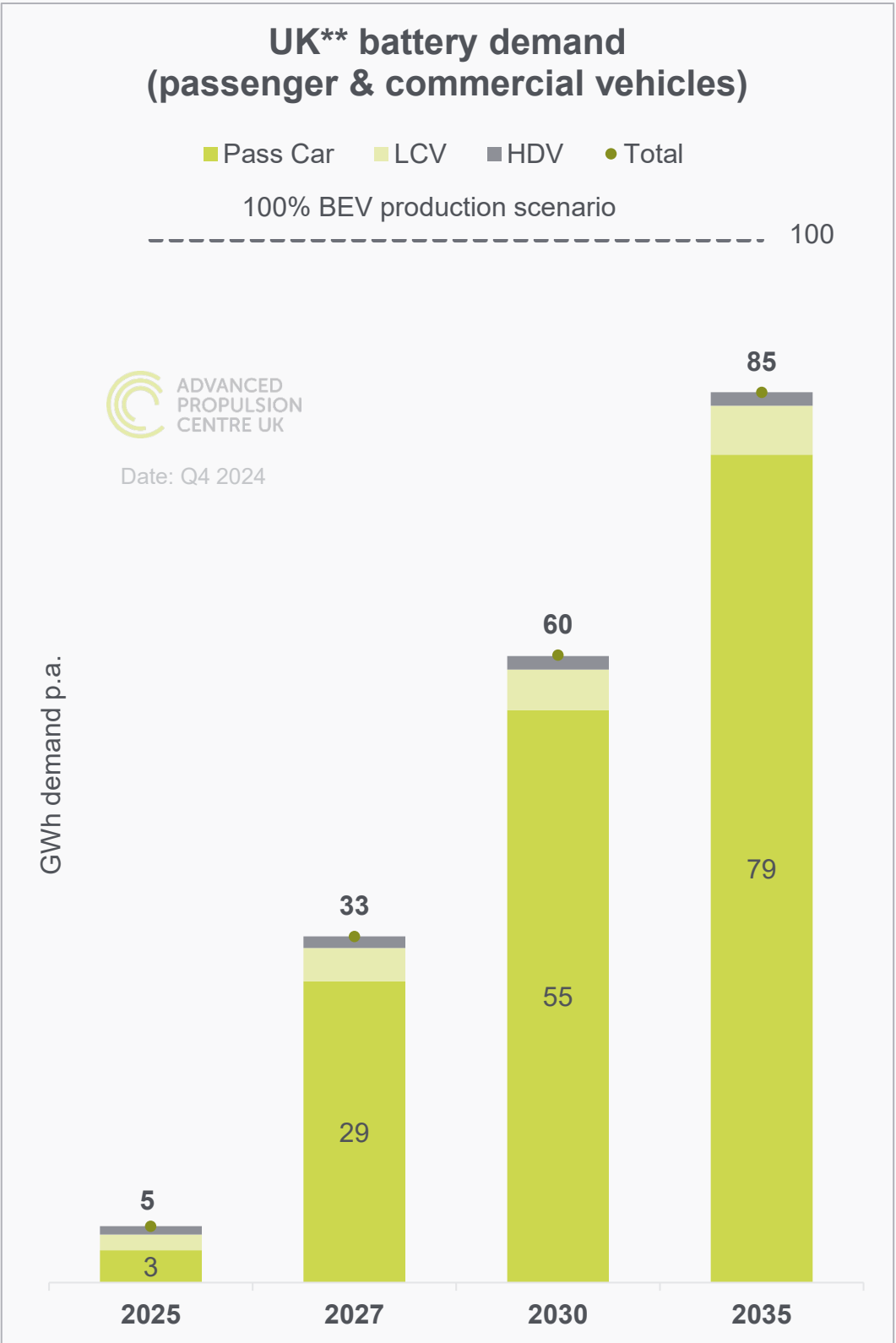
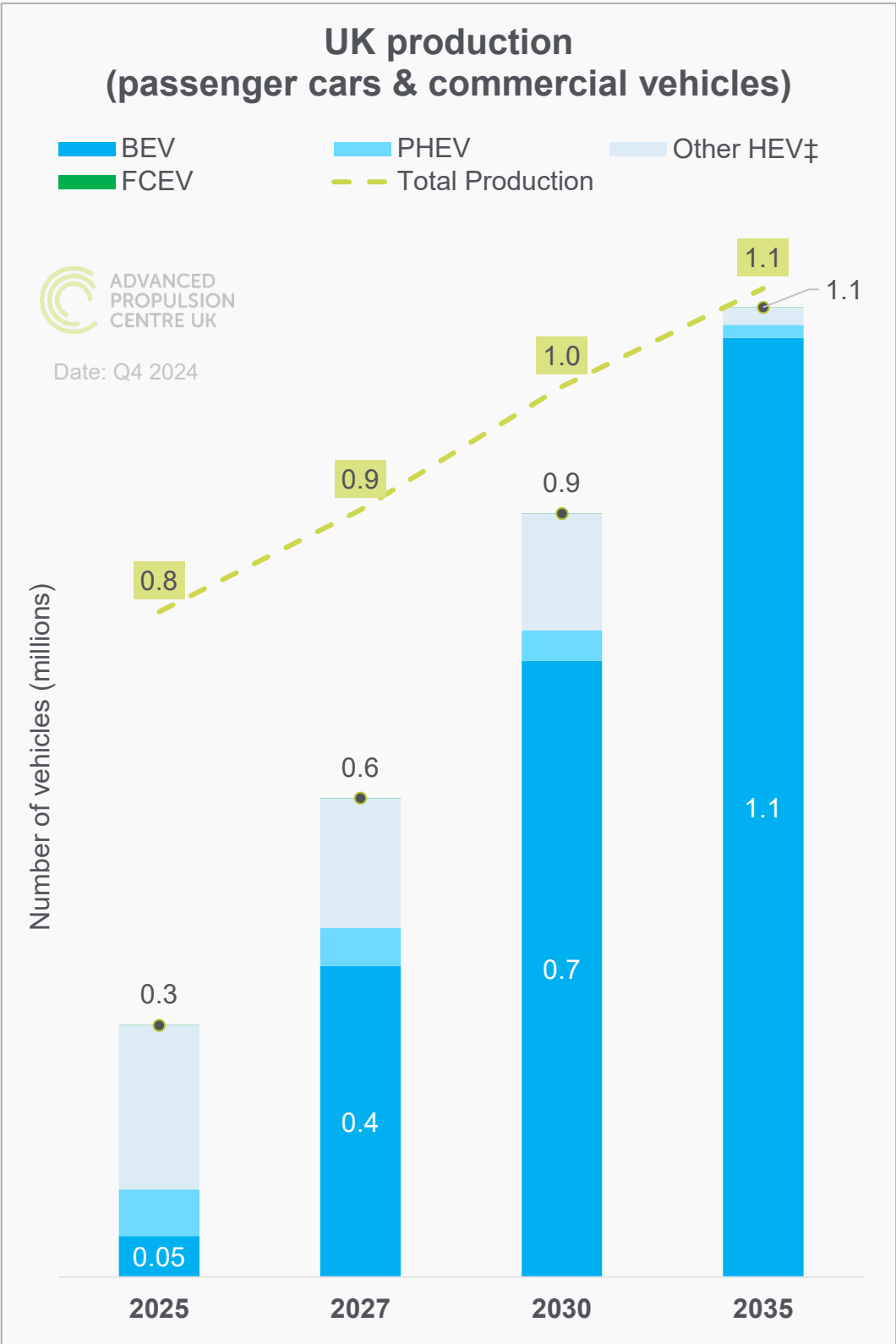
** <https://www.consilium.europa.eu/en/policies/fit-for-55/>

UK production

Passenger cars and commercial vehicles

Q4 2024 notes

- A slowdown is predicted in LDV production in the short-term as some models come to the end of production. BEV production volumes are forecast low in 2025 as a result of the introduction to market of new BEV models and subsequent factory retooling.
- Vehicle production volume is expected to increase over the next decade, forecasting around 1.1 million vehicles produced in the UK by 2035.
- UK vehicle exports are projected to account for approximately 80% of total production over the next decade. Most of these exports are expected to be directed to Europe (over 40%), followed by North America (over 10%).



Source: APC Demand Databases using S&P Global AutoTechInsight (Jan 2025), BNEF forecasts (2024), Wood Mackenzie forecasts (Q4 2024), Global Data and KGP Powertrain Intelligence (Q4 2024) and Rho Motion forecasts (Q4 2024)

Total production includes ICE vehicles.

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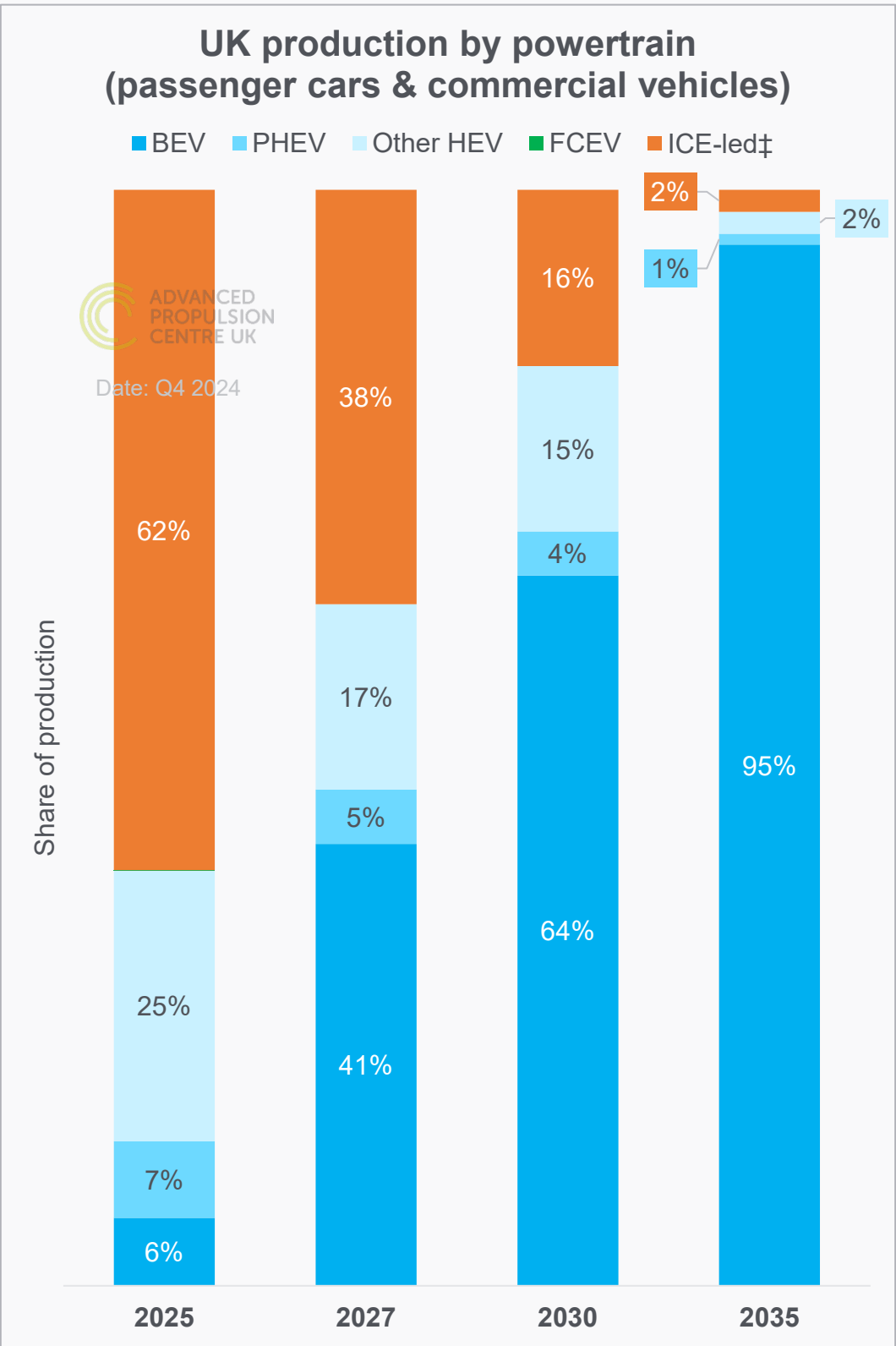
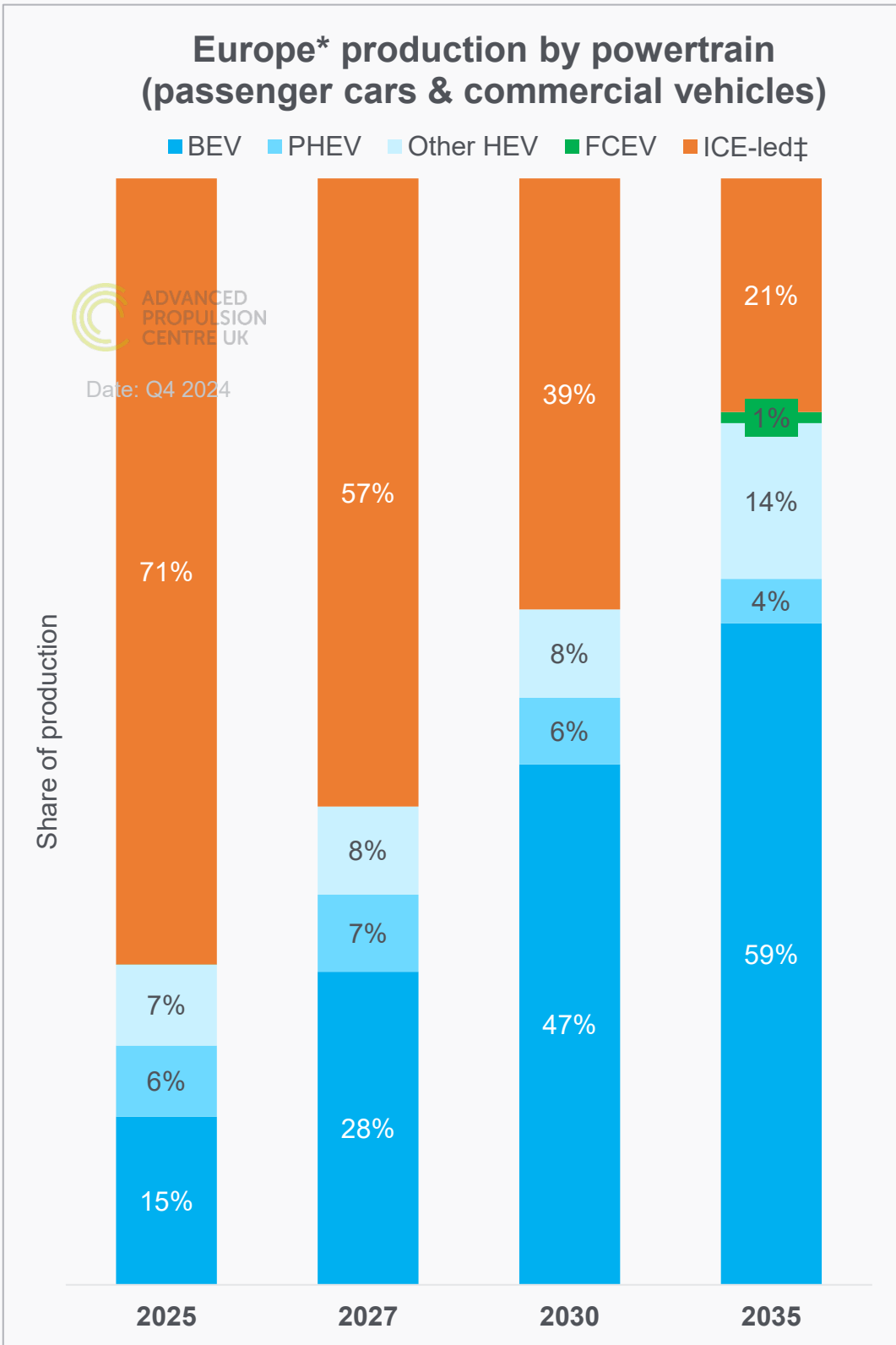
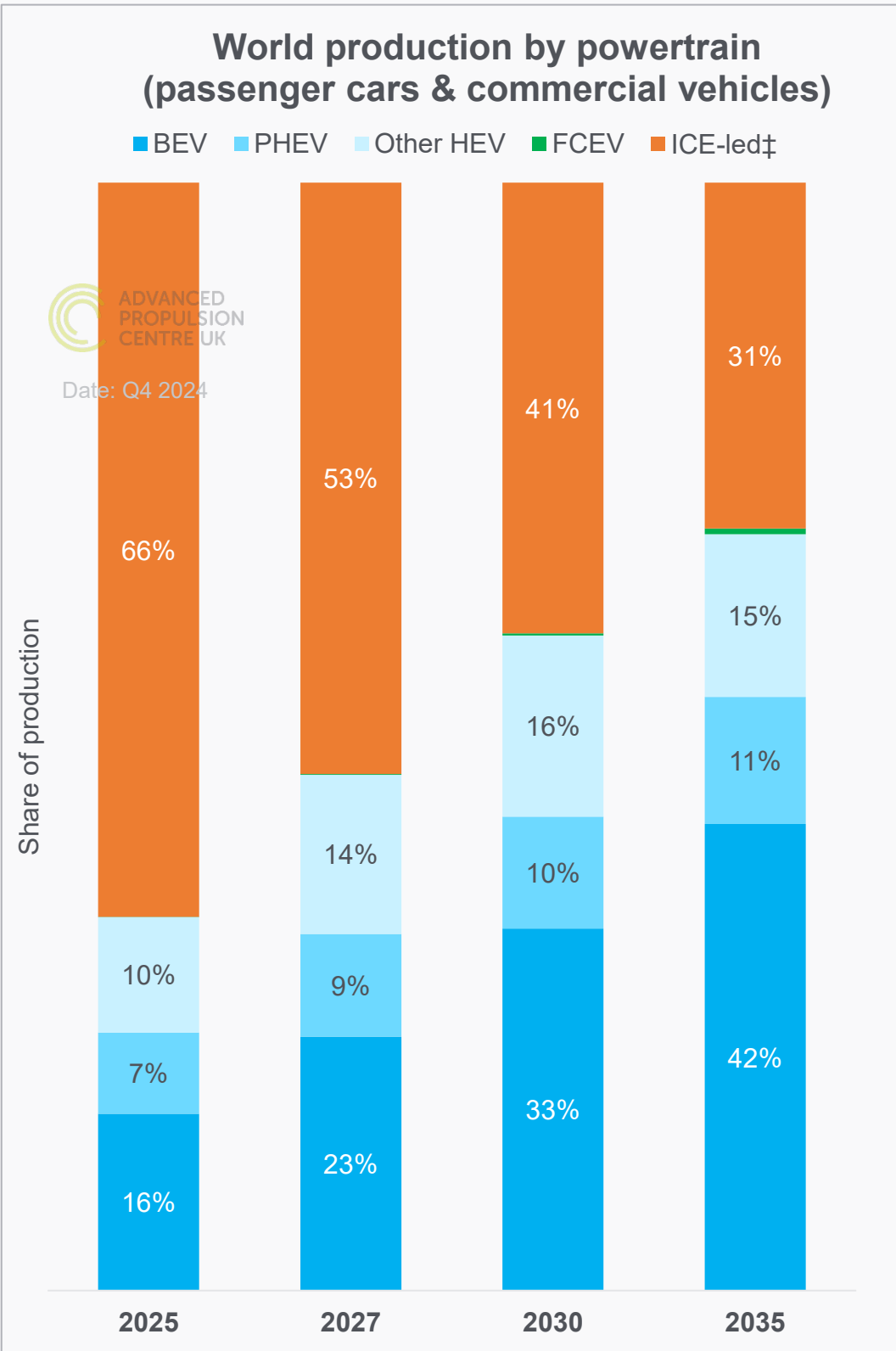
** Excludes forecast UK battery exports (this represents UK Vehicle manufacturing demand only)

Forecasts by powertrain

Passenger cars and commercial vehicles

Q4 2024 notes

- Across all regions there is a slowdown in xEV transition with higher production of ICE vehicle forecast compared with Q3 2024. However, UK maintains significant BEV manufacture in 2035 compared with Europe.
- By 2035, it is projected that 95% of vehicles manufactured in the UK will be BEV. This figure significantly surpasses both global and European manufacturing forecasts, primarily driven by the strategic shift of UK OEMs towards nearly total BEV production by this time.



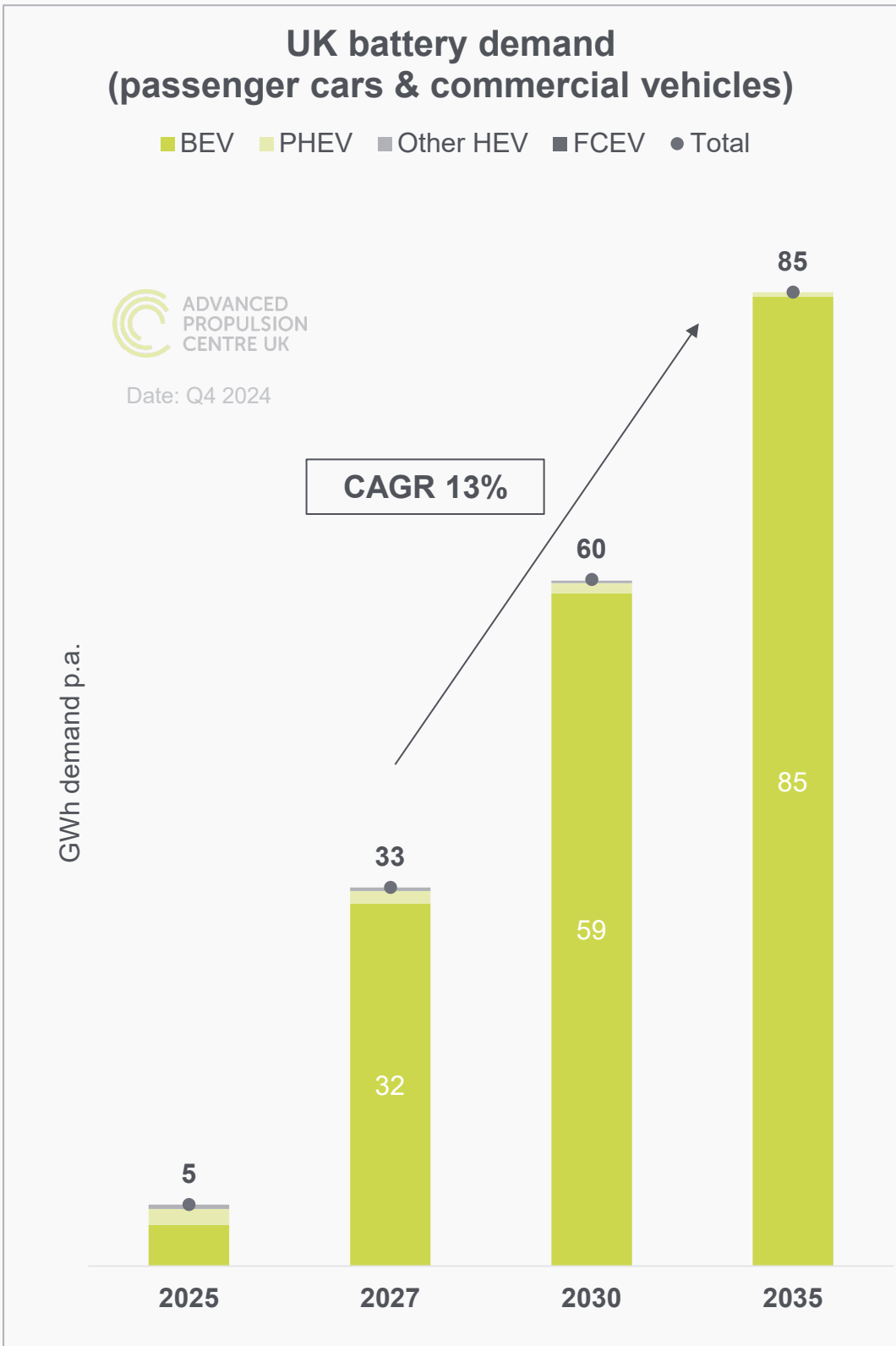
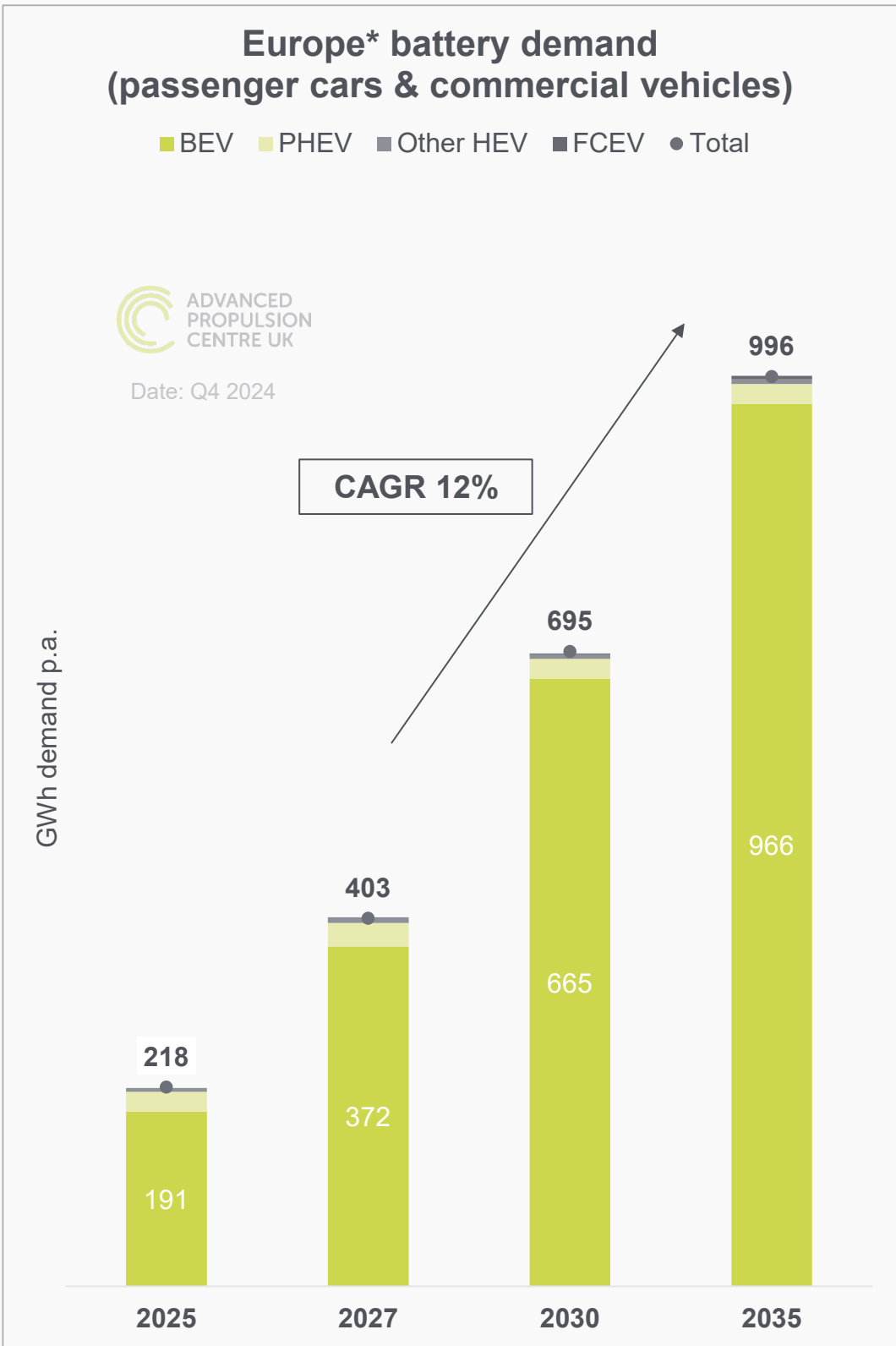
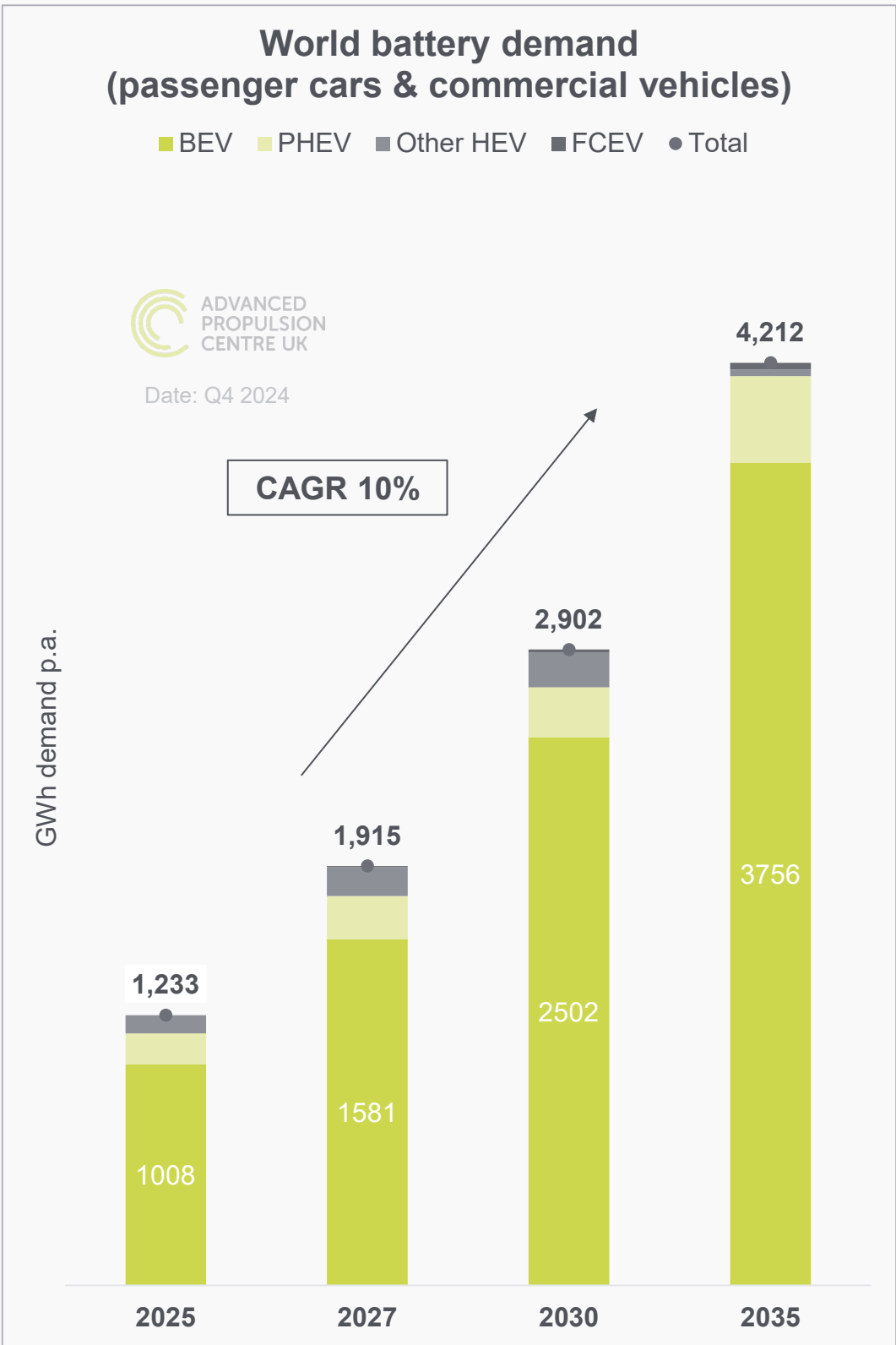
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*European forecast includes non-EU countries such as Turkey
‡Includes MHEVs, ICE and Hydrogen-ICE

Battery demand forecast

Passenger cars and commercial vehicles

Q4 2024 notes

- The predicted slowdown in short-term BEV production in 2025 (due to model phase out and delay in new models being released) results in low battery demand in 2025.
- From 2027 onwards, UK growth in demand aligns closely with European growth with similar compound annual growth rate (CAGR).



Source: APC Demand Databases using S&P Global AutoTechInsight (Jan 2025), BNEF forecasts (2024), Wood Mackenzie forecasts (Q4 2024), Global Data and KGP Powertrain Intelligence (Q4 2024) and Rho Motion forecasts (Q4 2024)

*European forecast includes non-EU countries such as Turkey

Total production includes ICE vehicles. Other HEV includes MHEV

CAGR calculated from 2027 to 2035

Q4 2024 – Electrified components demand

Battery components

The following section reviews cathode chemistry split, battery material demand and supply for LDVs (passenger cars and light commercial vehicles)

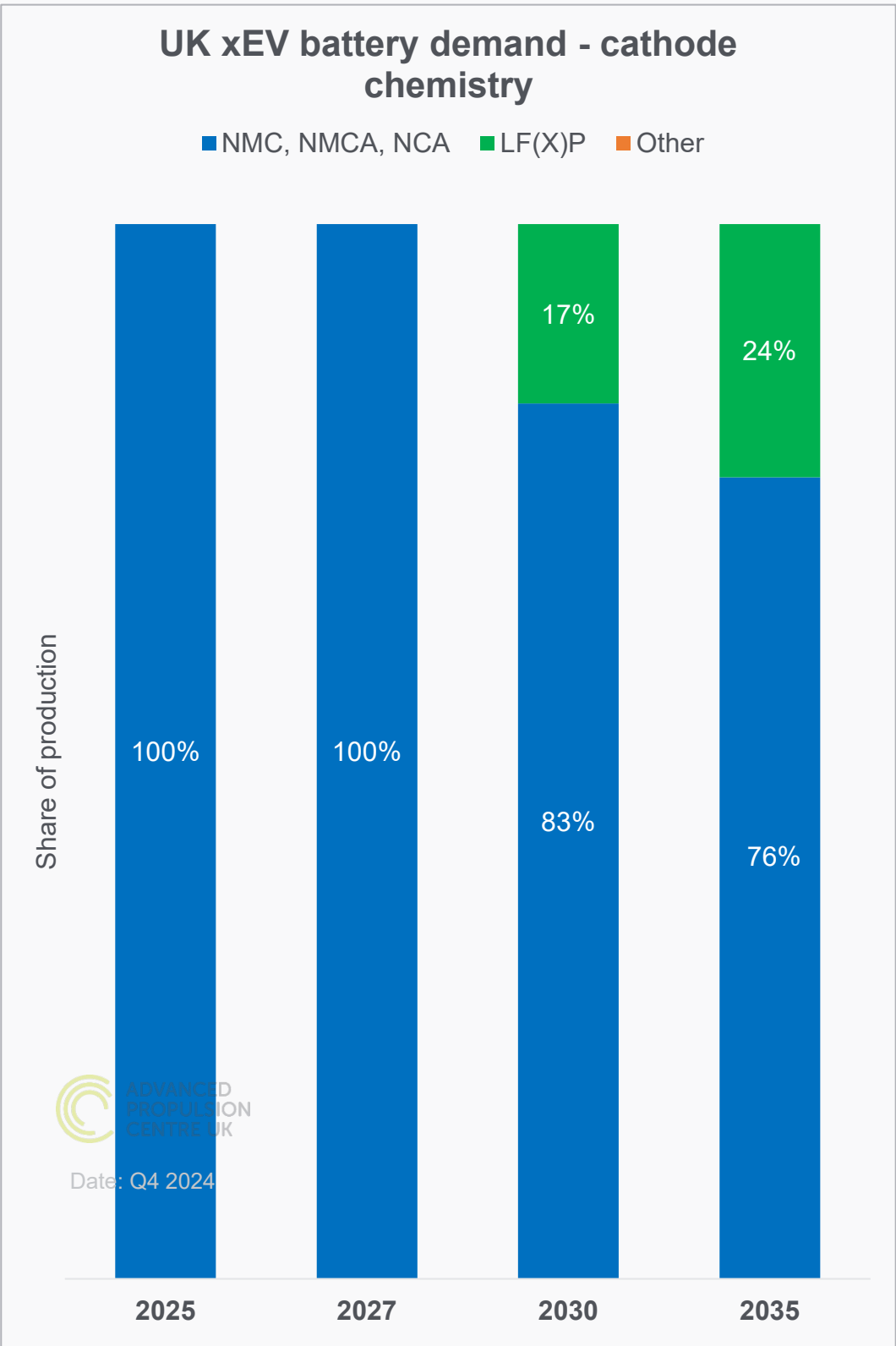
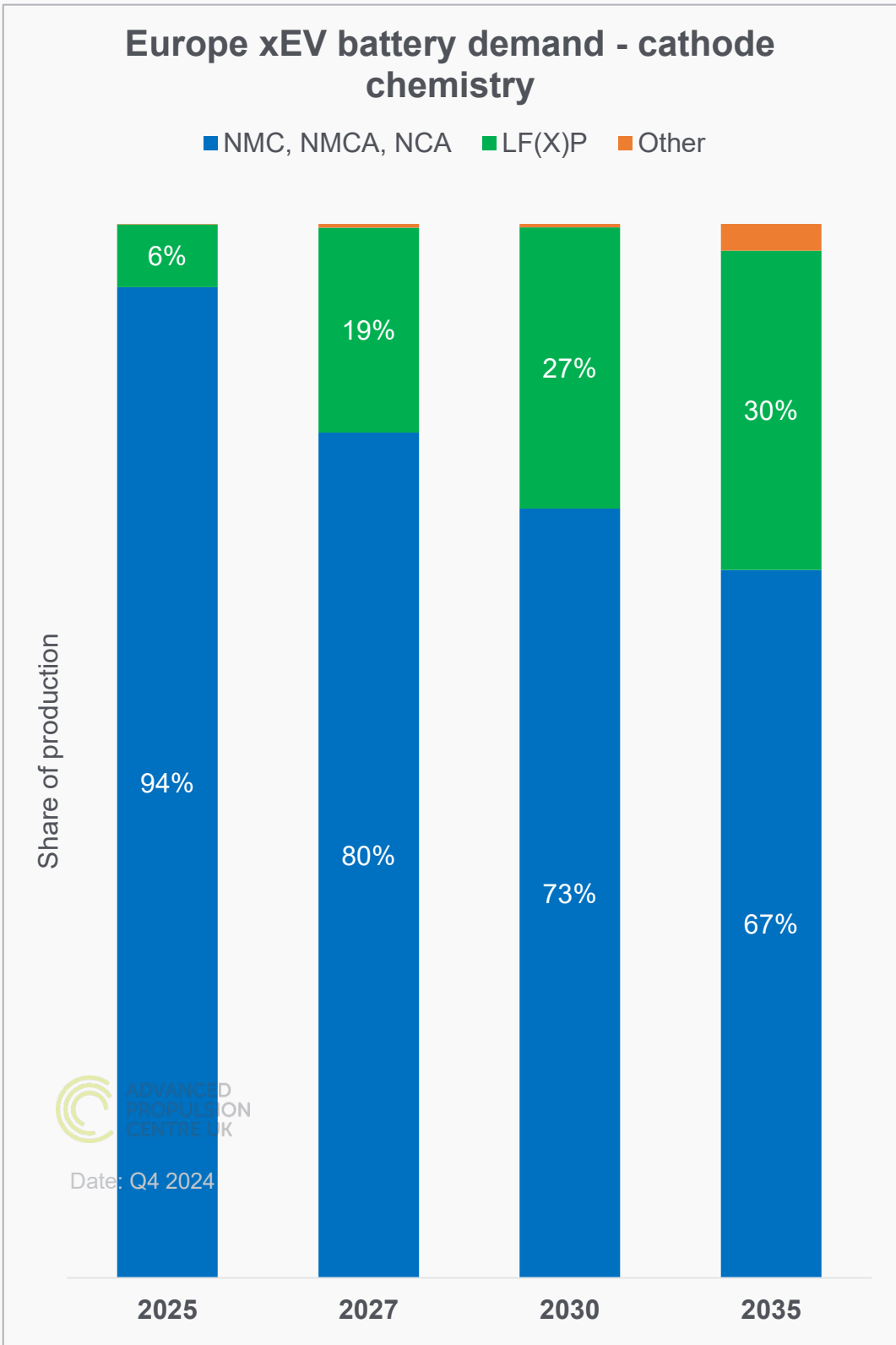
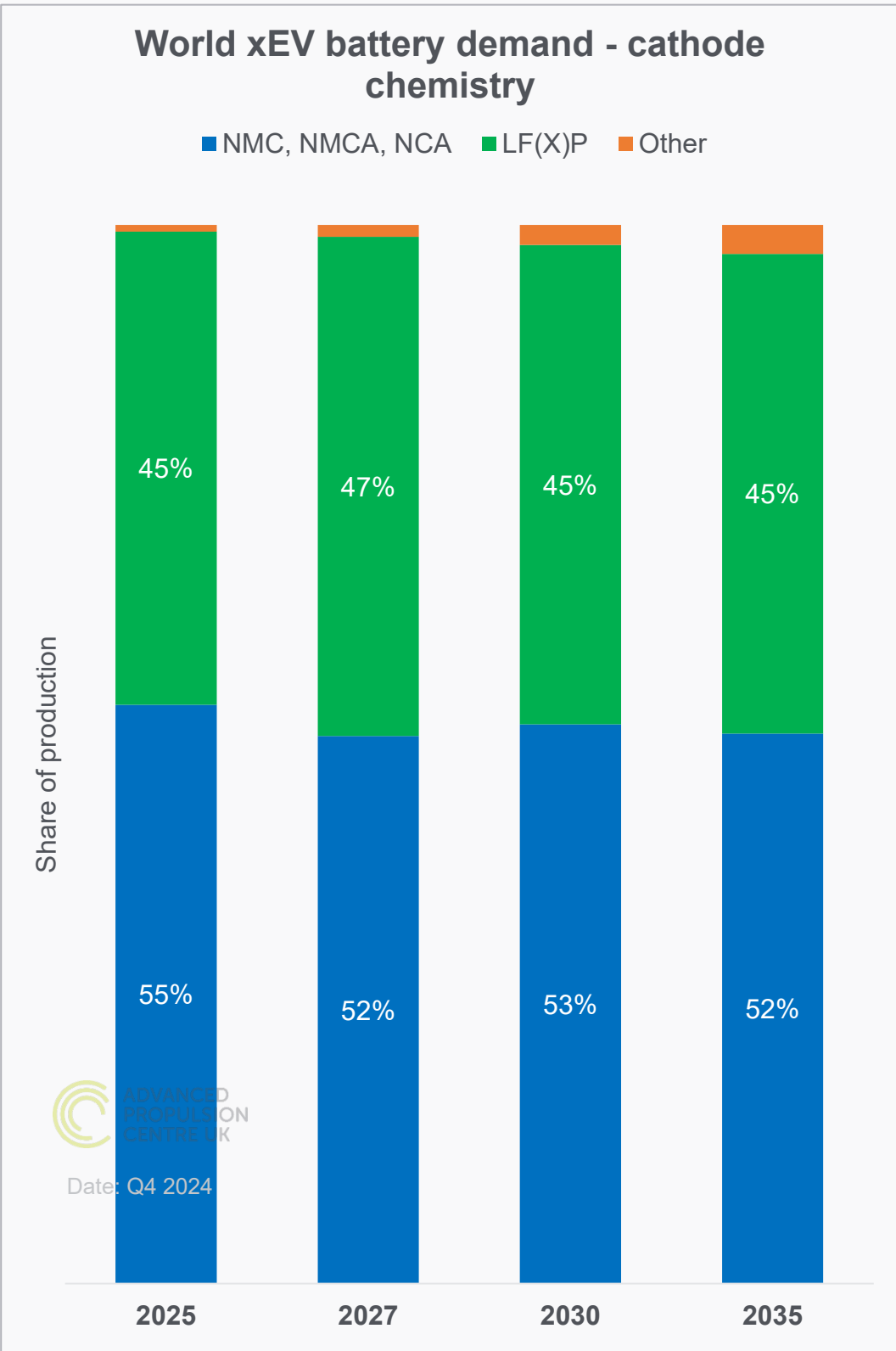


Forecasts for automotive battery demand by cathode chemistry

Passenger cars and light commercial vehicles (<6 tonnes)

Q4 2024 notes

- LF(X)P maintains high share of world vehicle production, most of which is accounted for in China, however, Europe is seeing an increase.
- In the UK, LF(X)P chemistries in batteries now shows a delay when compared to timings highlighted in the Q3 Demand Report due to delays on model introduction.
- Nickel-based chemistries are expected to remain popular in both Europe and the UK over the next decade.



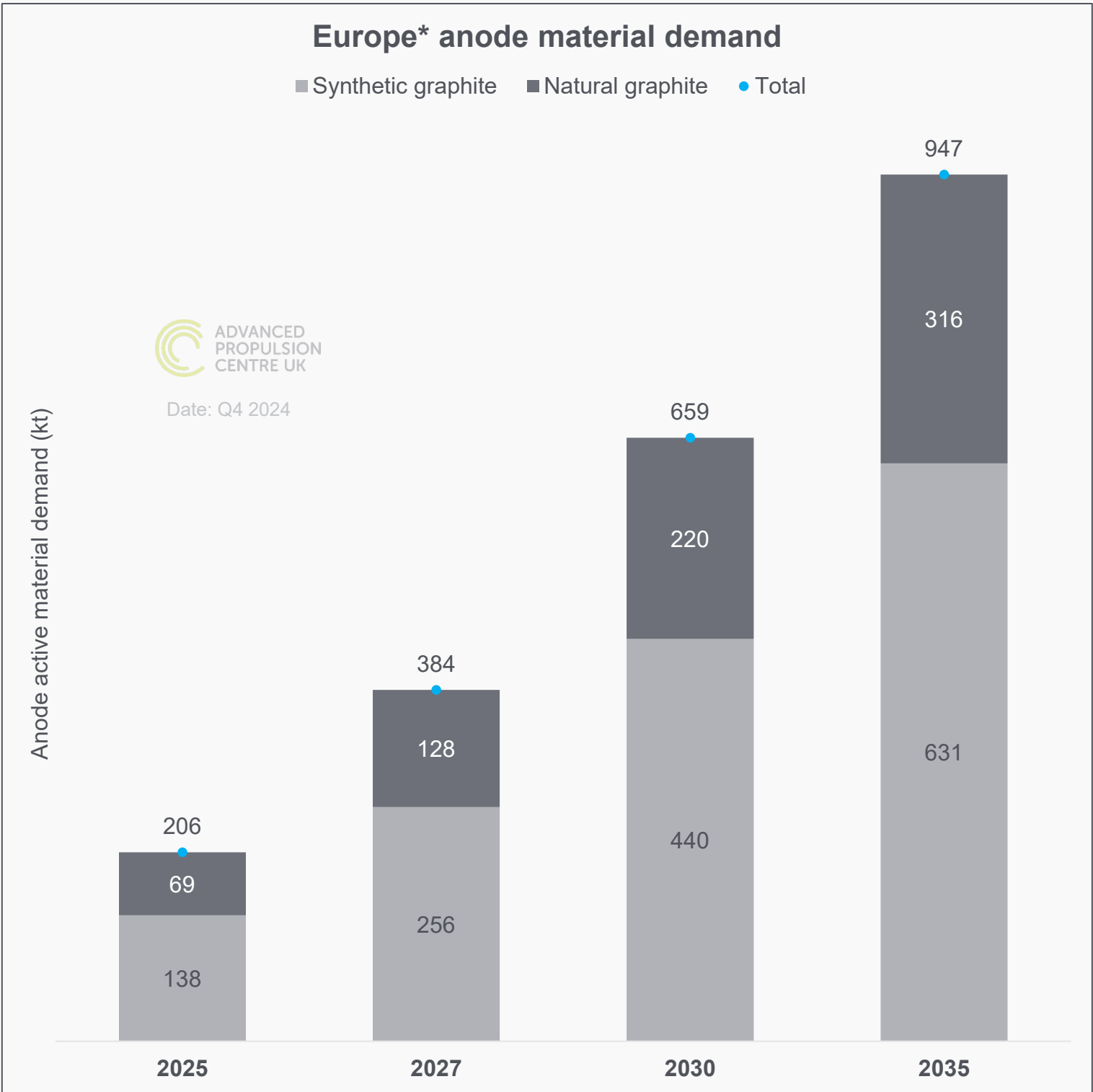
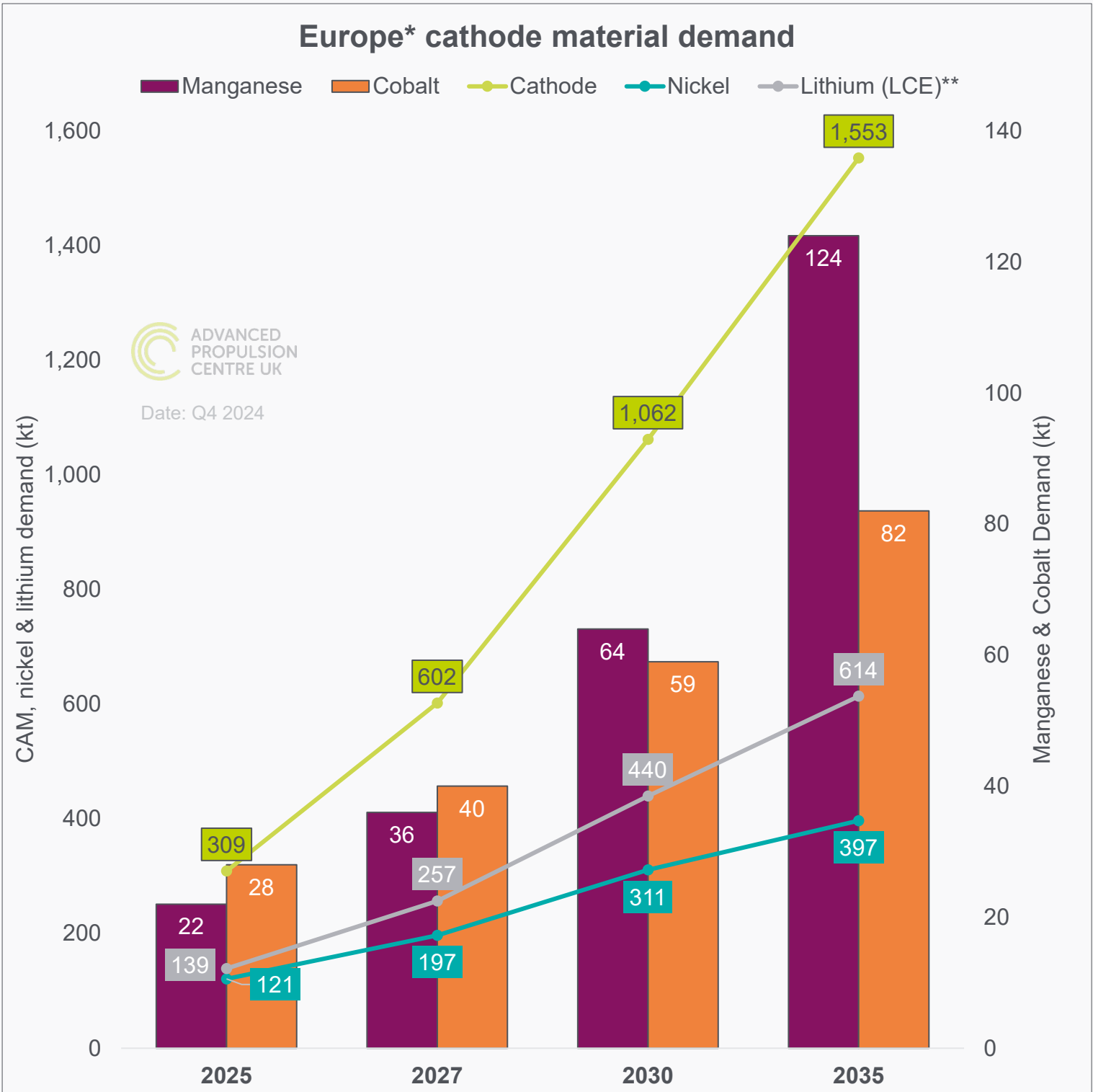
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Note: Passenger cars & Light Commercial Vehicles < 3.5t only, *European forecast includes non-EU countries such as Turkey, ‡Includes non-plug-in HEVs & ICE
NMC includes NMC chemistries with less than 80% Nickel content as well as NMCA

European Cathode and Anode Active Material demand

Passenger cars and light commercial vehicles (<6 tonnes)

Q4 2024 notes

- The adoption of high-nickel NMC chemistries is reducing cobalt and manganese demand. However, the demand for manganese is expected to rise significantly by 2035, driven by the adoption of LMFP and LMR cathode materials due to their cost-effectiveness and energy density.



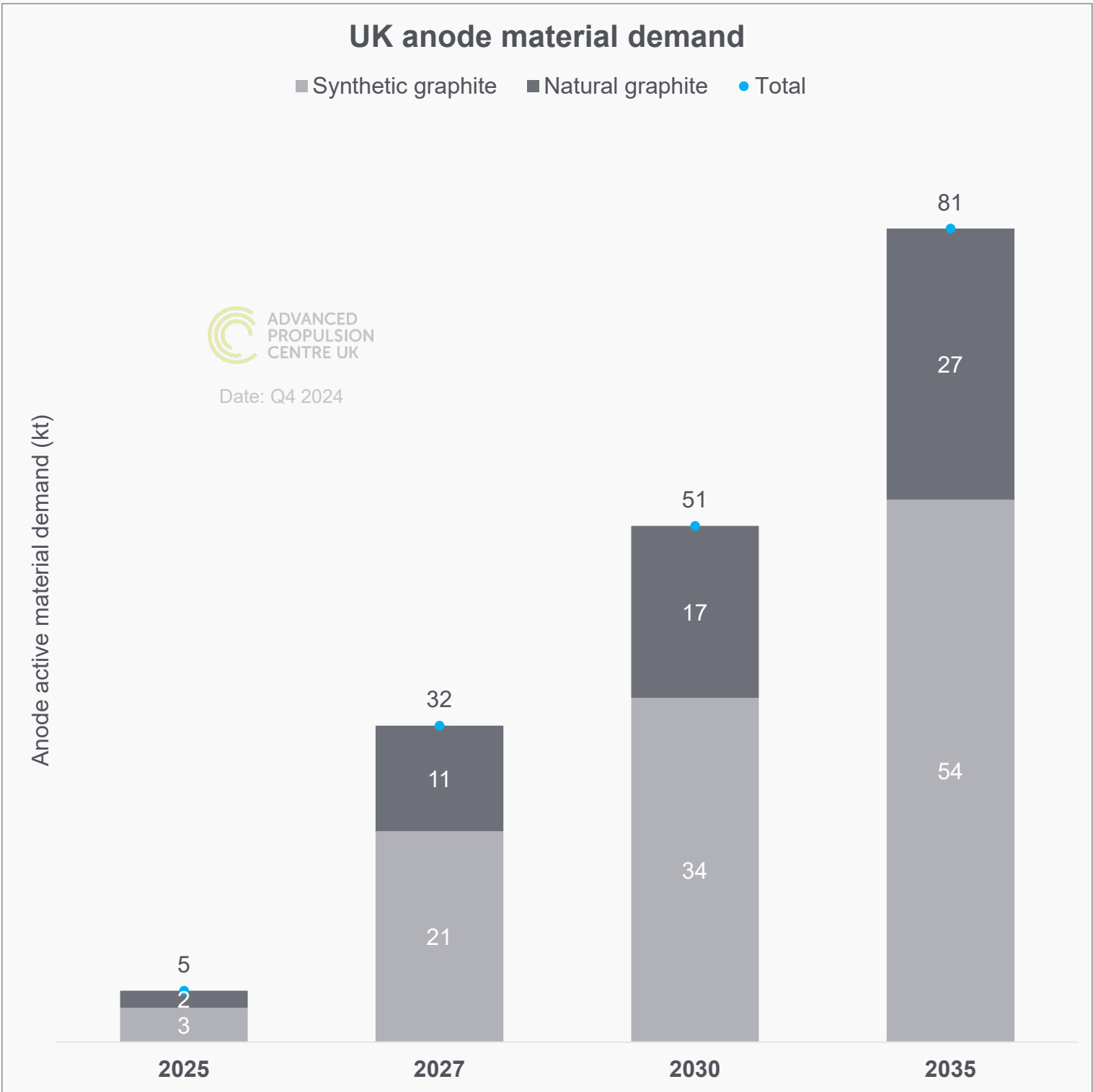
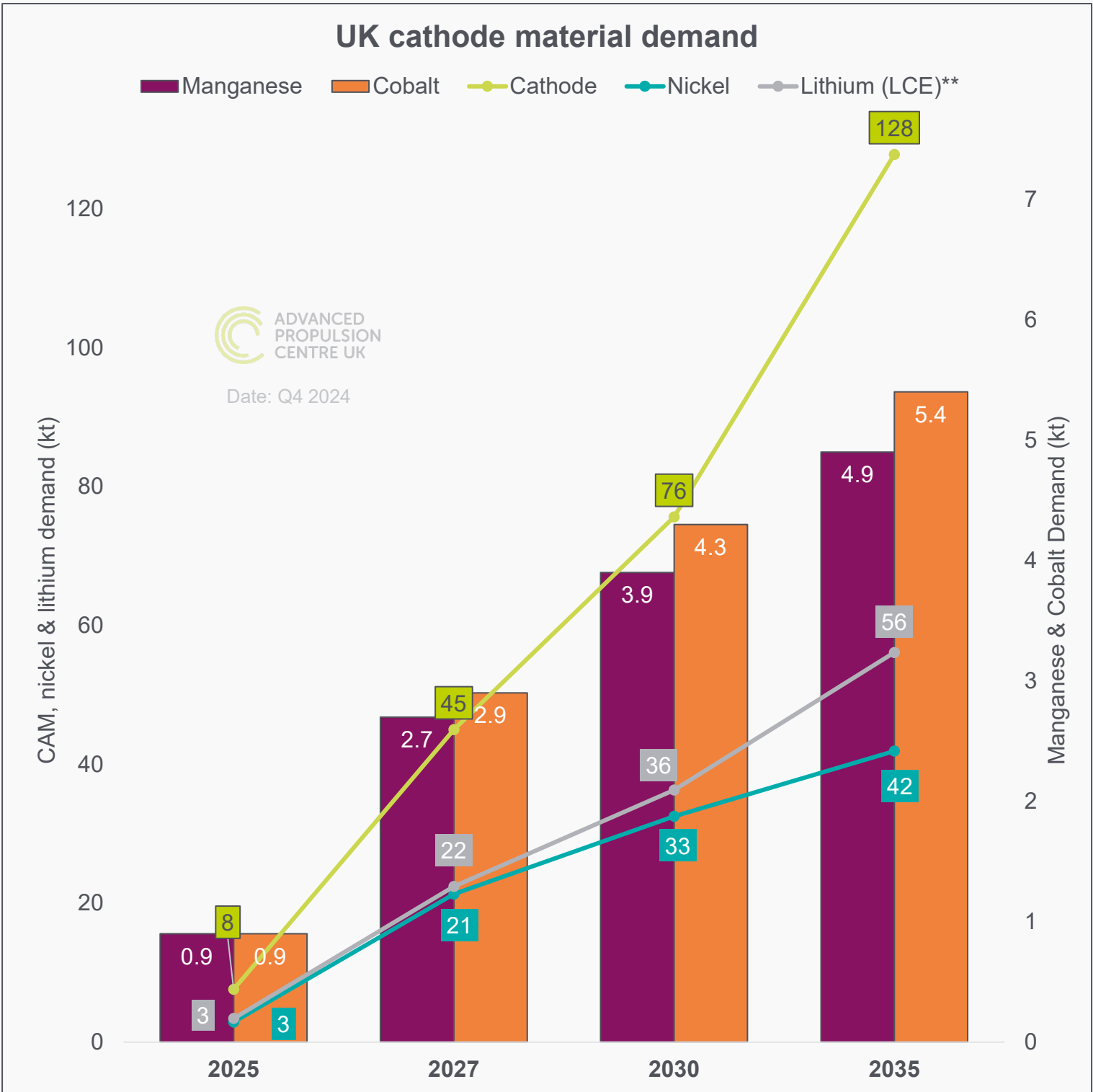
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Anode material demand assumption: Synthetic to natural graphite demand ratio 2:1

UK Cathode and Anode Active Material demand

Passenger cars and light commercial vehicles (<6 tonnes)

Q4 2024 notes

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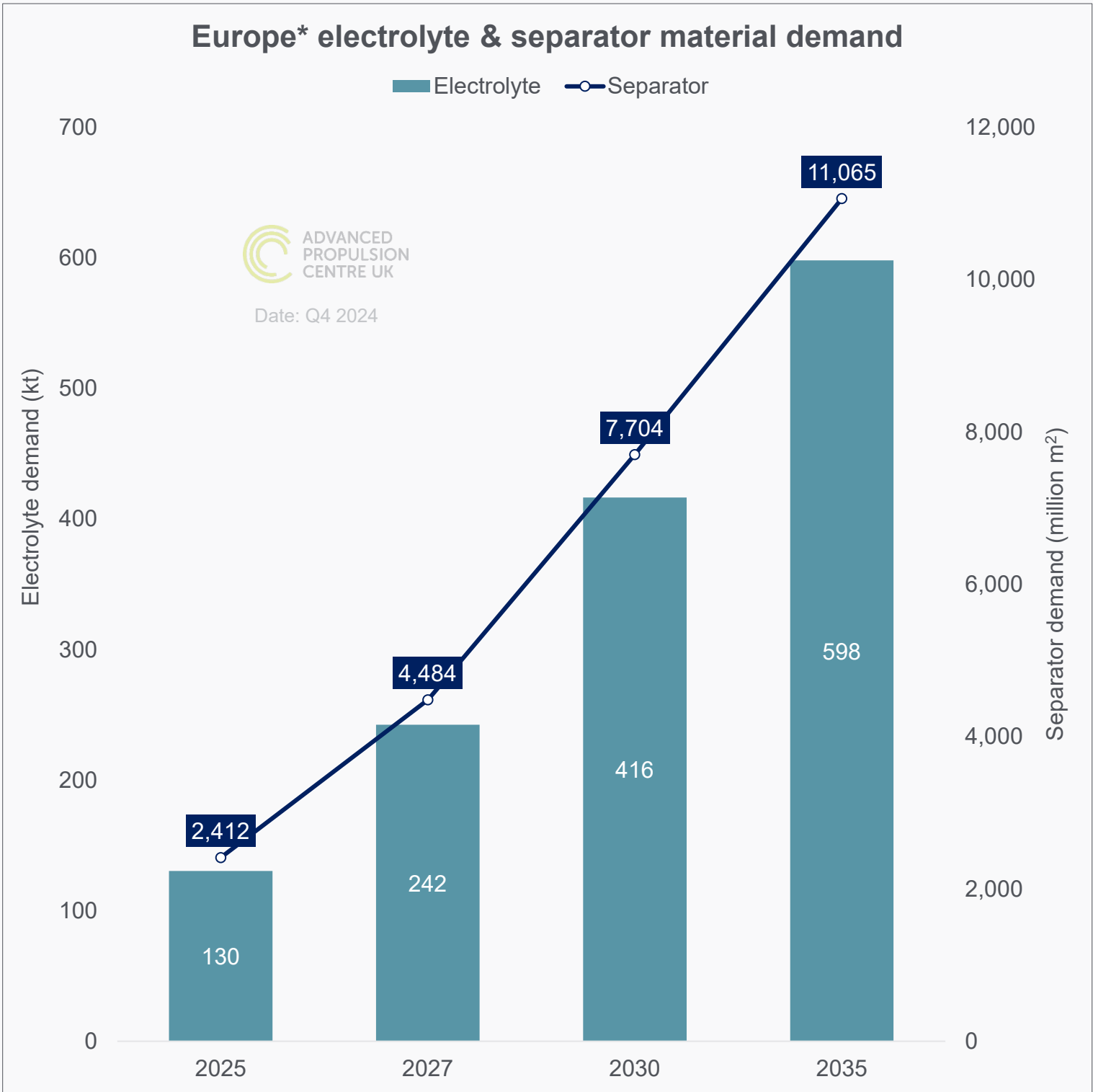
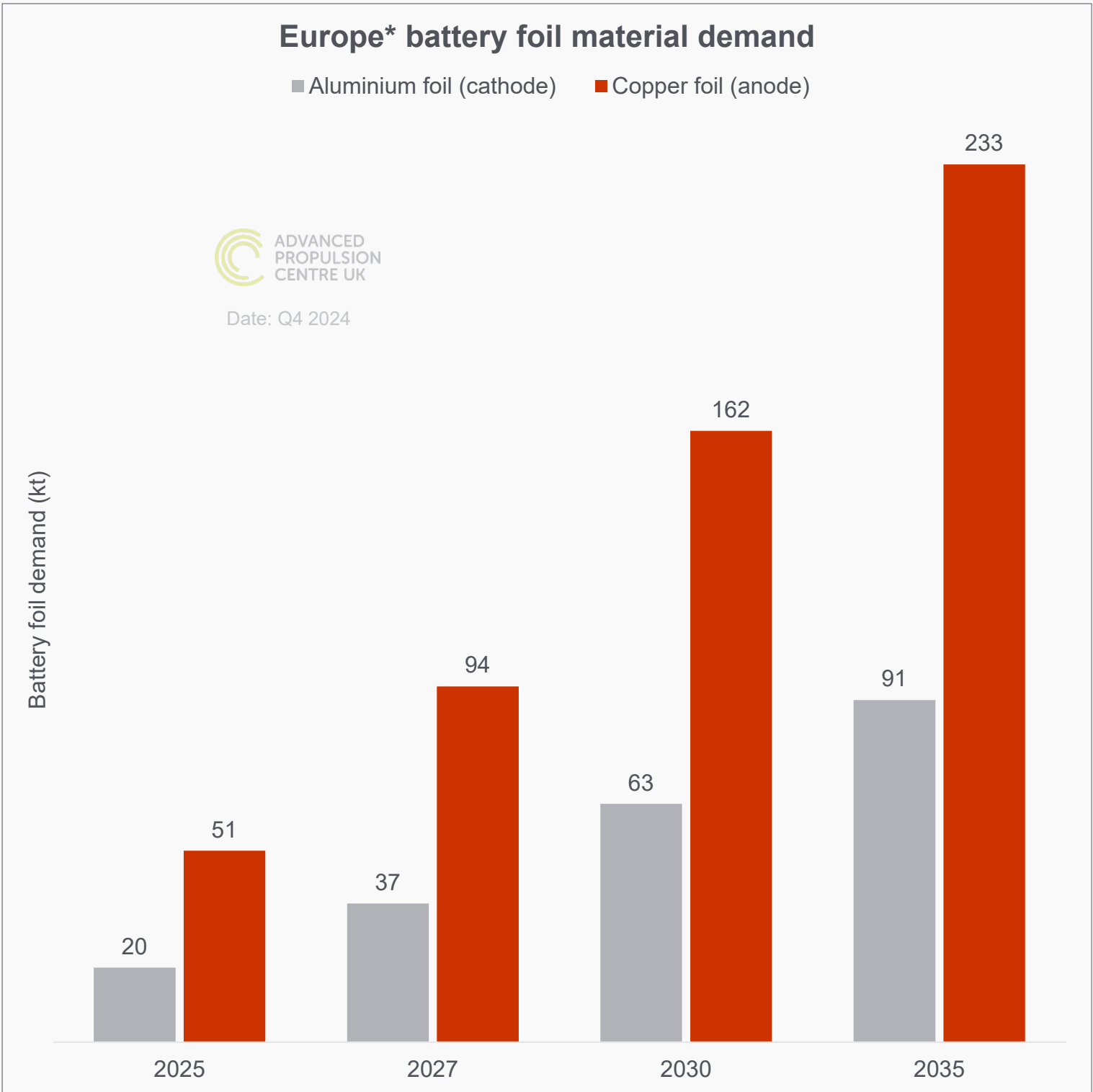
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Anode material demand model assumption: Synthetic to natural graphite demand ratio 2:1

European demand for battery foils, electrolyte and separator material

Passenger cars and light commercial vehicles (<6 tonnes)

Q4 2024 notes

- Although these materials are becoming significant in meeting local content requirements, there remains underinvestment. Nonetheless, the lead time for establishing these facilities is generally shorter, facilitating quicker operational readiness.



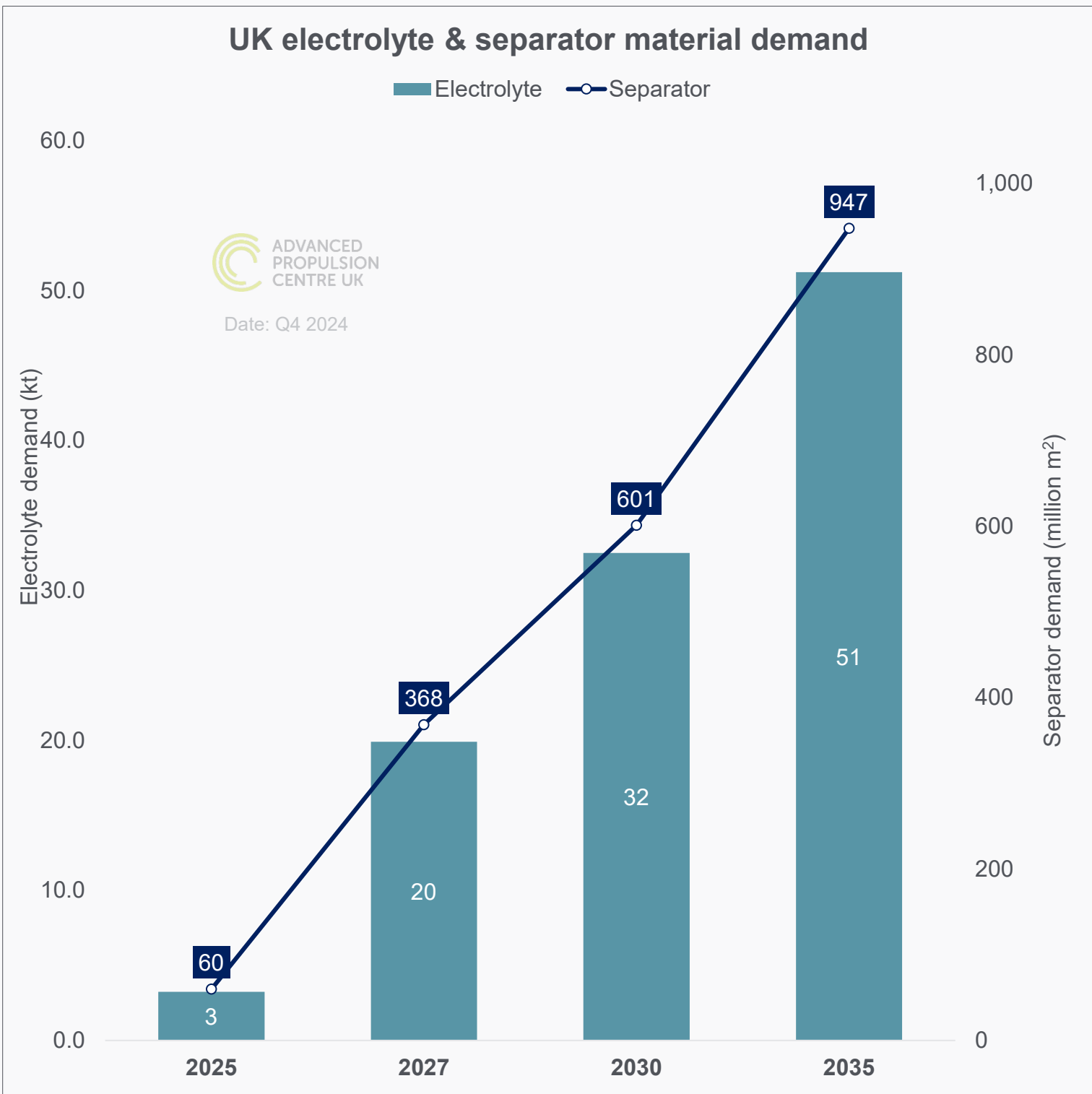
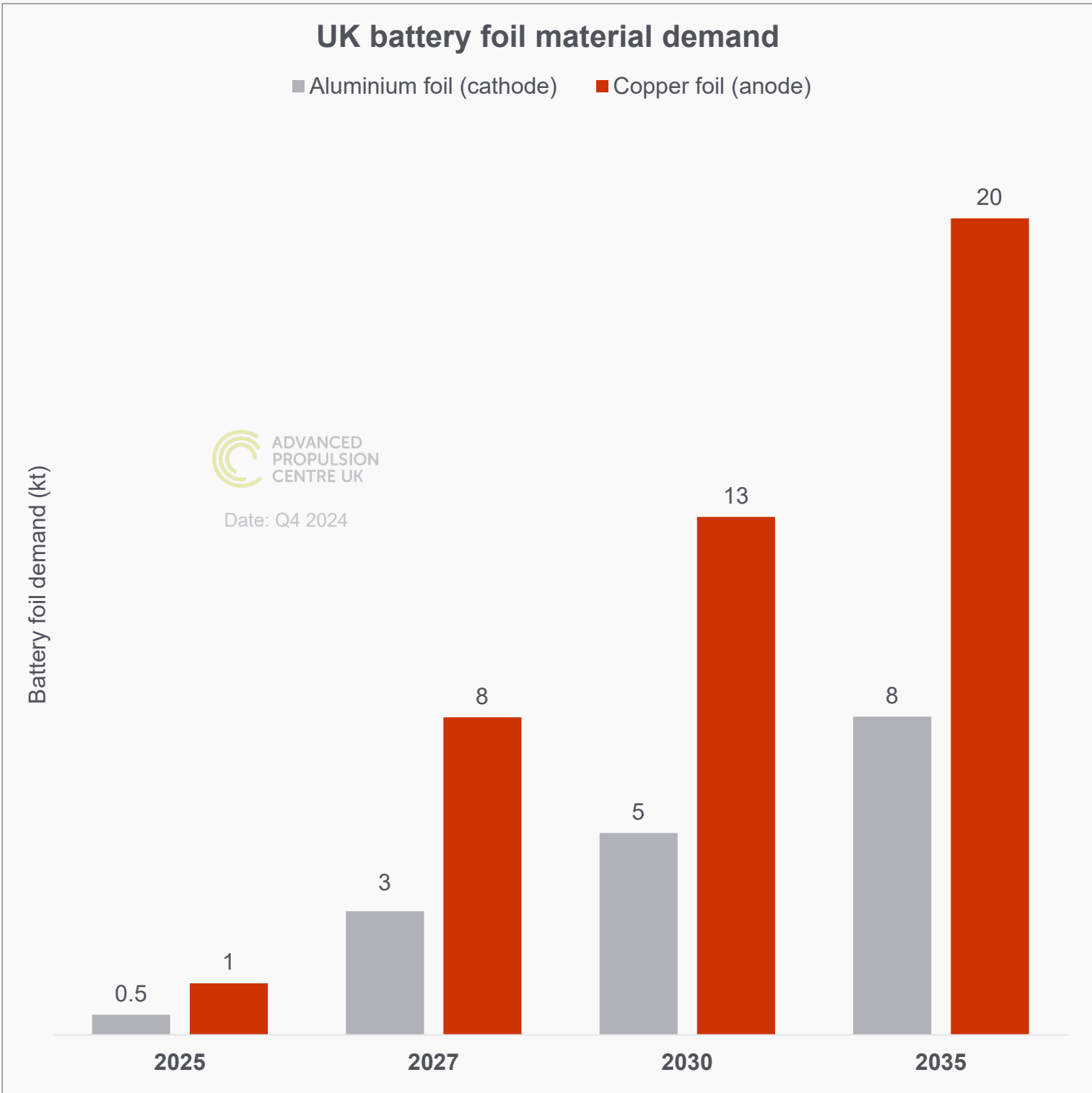
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UK demand for battery foils, electrolyte and separator material

Passenger cars and light commercial vehicles (<6 tonnes)

Q4 2024 notes

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Q4 2024 – Electrified components demand

Electric motors

The following section reviews traction electric motor demand for LDVs (passenger cars and light commercial vehicles)

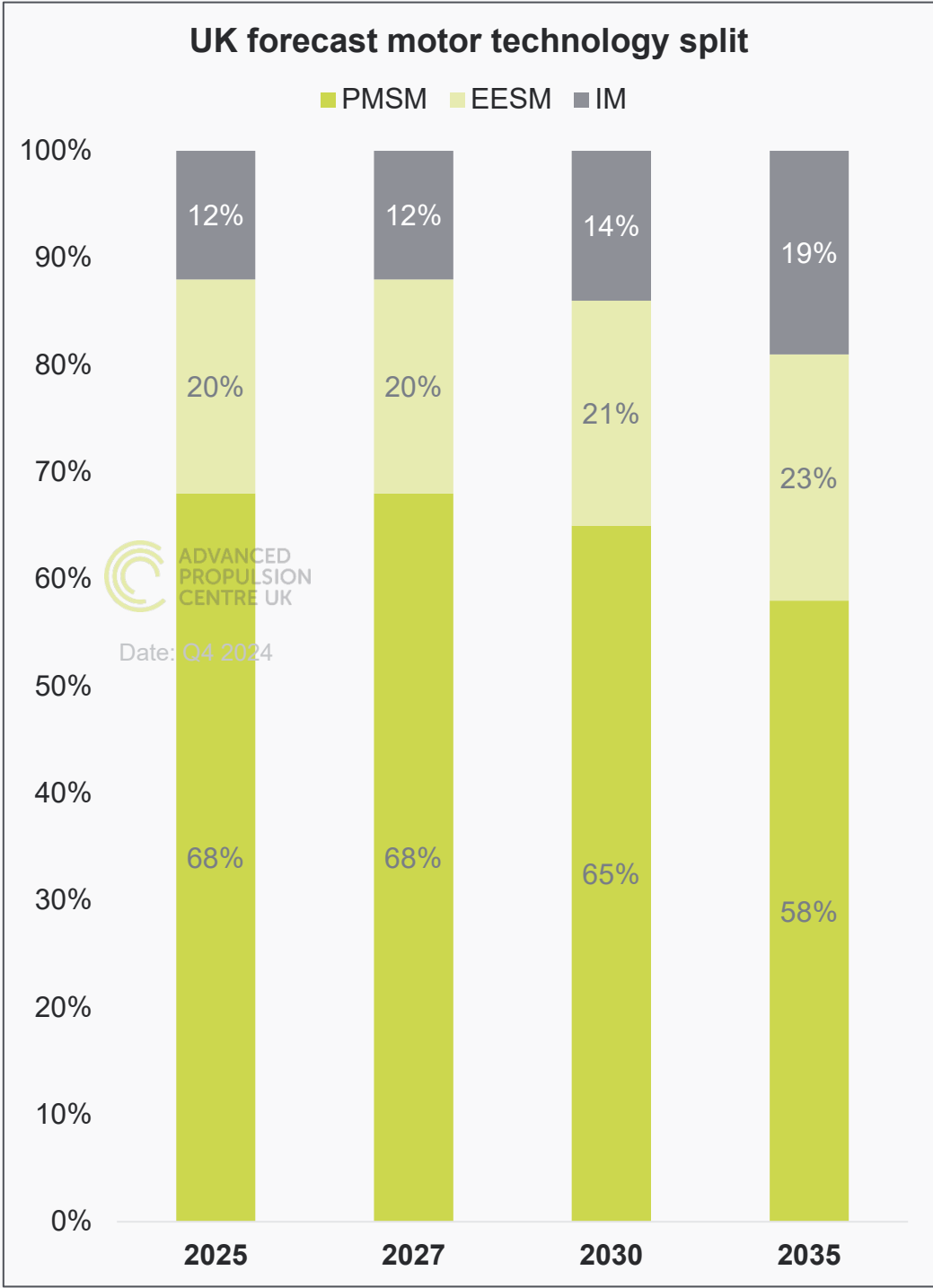
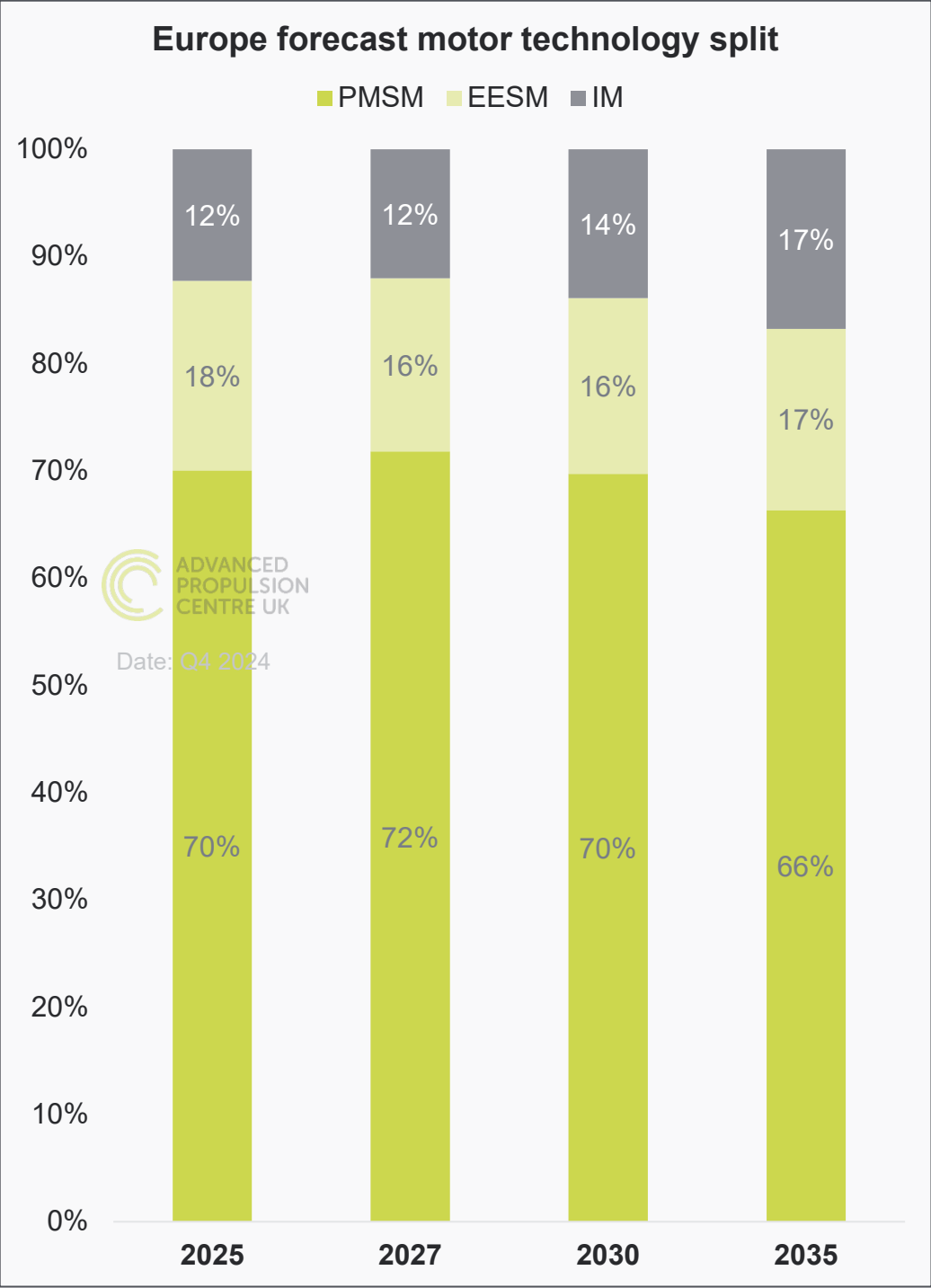
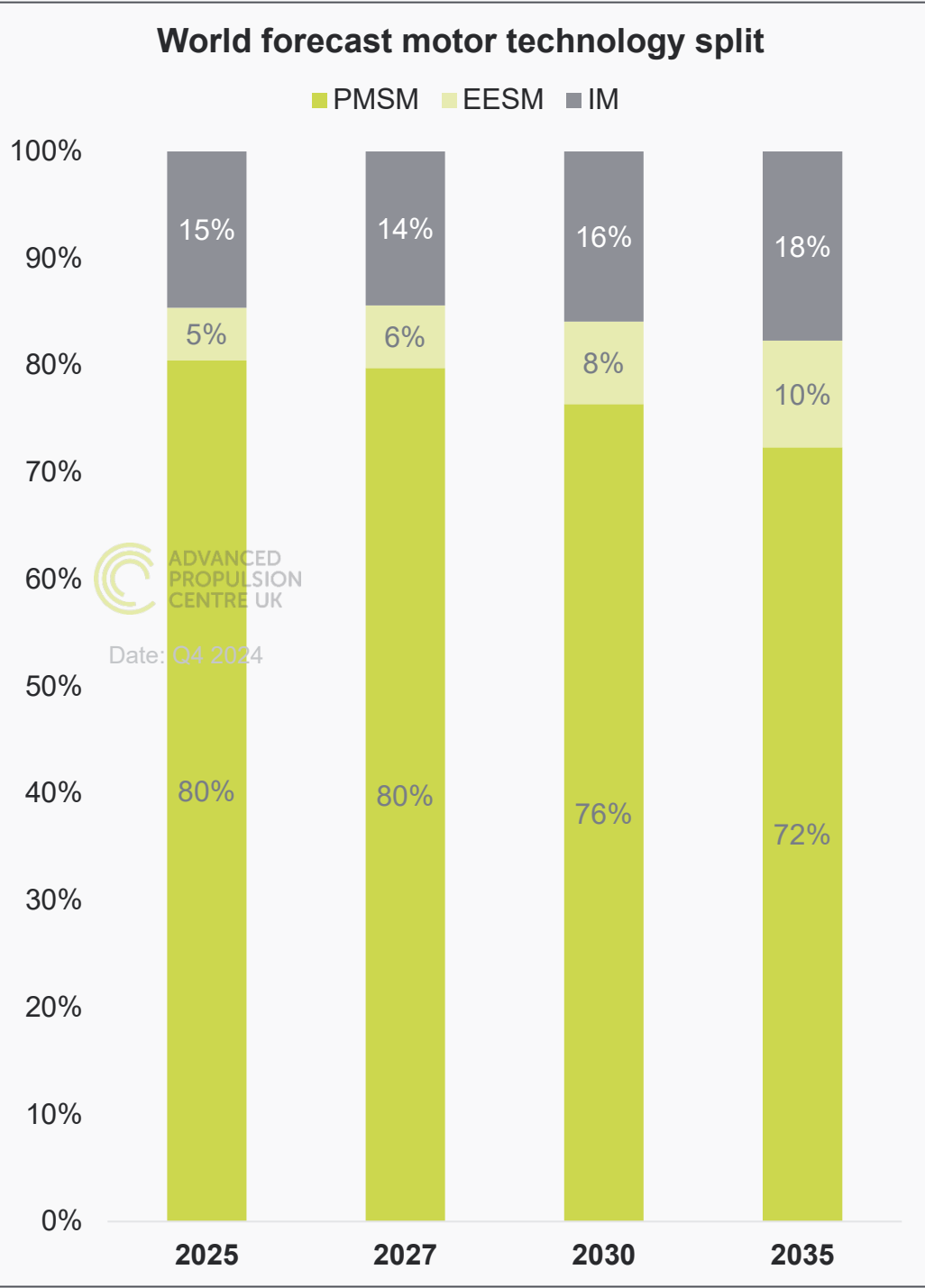


Forecasts for automotive traction motor demand by technology

Passenger cars and light commercial vehicles (<6 tonnes)

Q4 2024 notes

- Permanent Magnet Synchronous Motors (PMSMs) are expected to retain their dominant position in the global market, holding over 70% of the share worldwide and more than 65% within European production.
- However, Electrically Excited Synchronous Motor (EESM) and Induction Motor (IM) technologies are gaining market share, as they eliminate the reliance on rare-earth materials, thereby mitigating supply chain risks.
- In the UK, all-wheel drive and high-performance vehicles are particularly prevalent, with the secondary drive motor often being an IM or EESM.



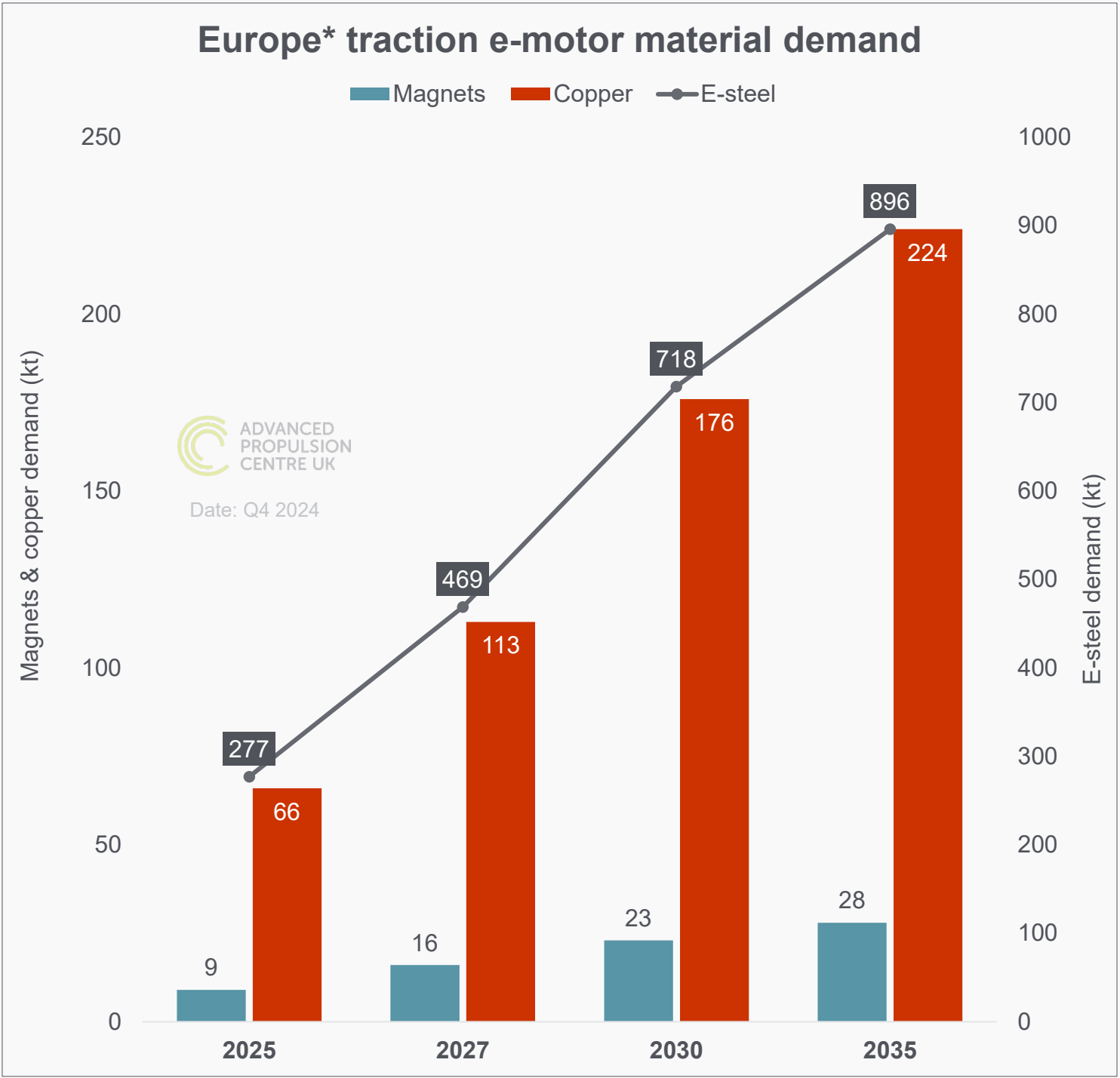
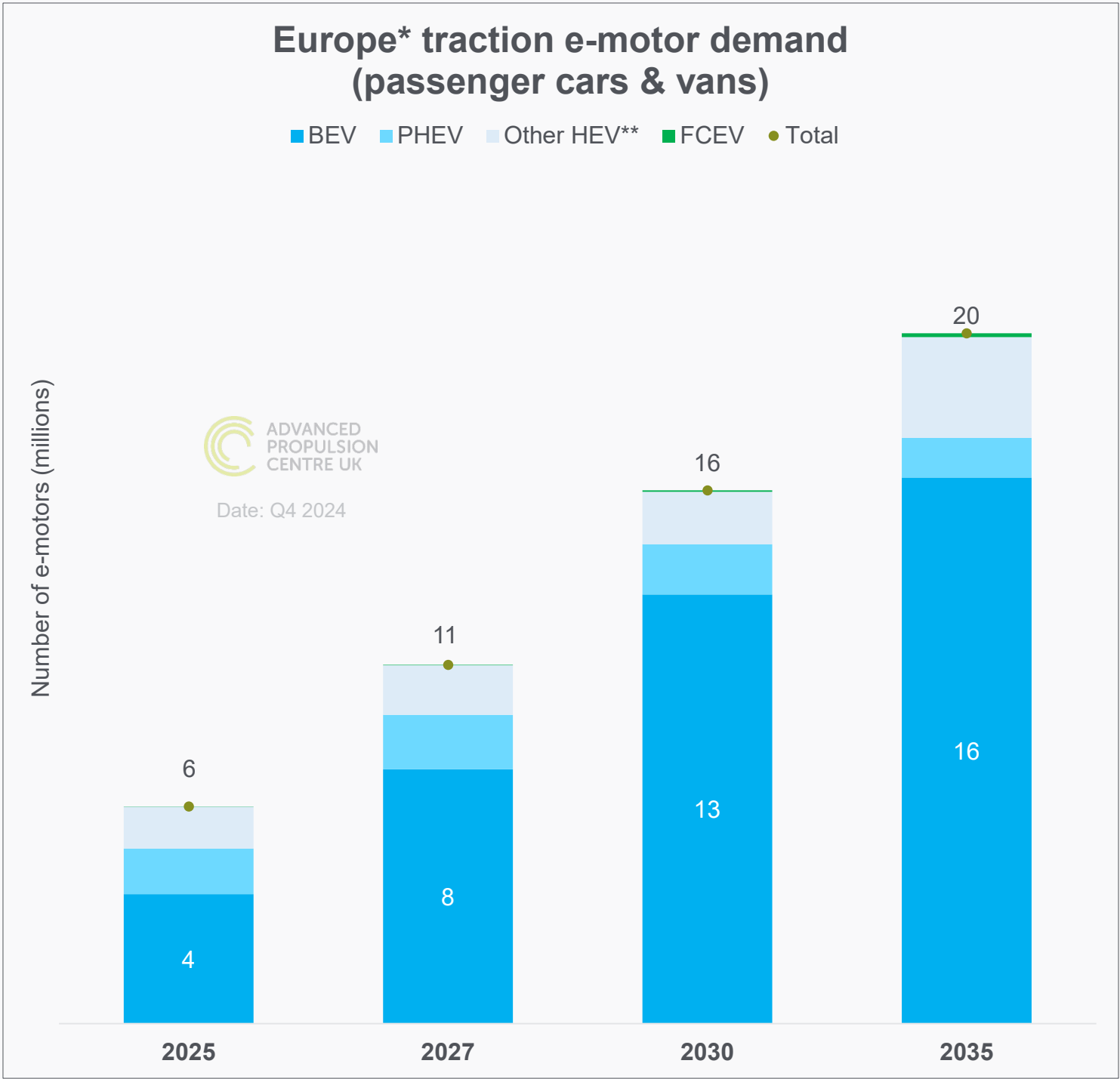
Source: APC Demand Databases using S&P Global AutoTechInsight (Sep 2024), Rho Motion data (2024), BNEF forecasts (2024)
Note: Passenger cars & Light Commercial Vehicles < 3.5t only, *European forecast includes non-EU countries such as Turkey, ‡Includes non-plug-in HEVs & ICE

European demand for traction electric motors

Passenger cars and light commercial vehicles (<6 tonnes)

Q4 2024 notes

- Figures for traction motors remain similar to Q3 2024 forecast with 20 million e-motors in 2035
- The number of e-motors per vehicle could see a potential increase of around 10% over the next decade in Europe, particularly in larger vehicles. This trend means demand stays on track despite a reduction in forecast figures for production.



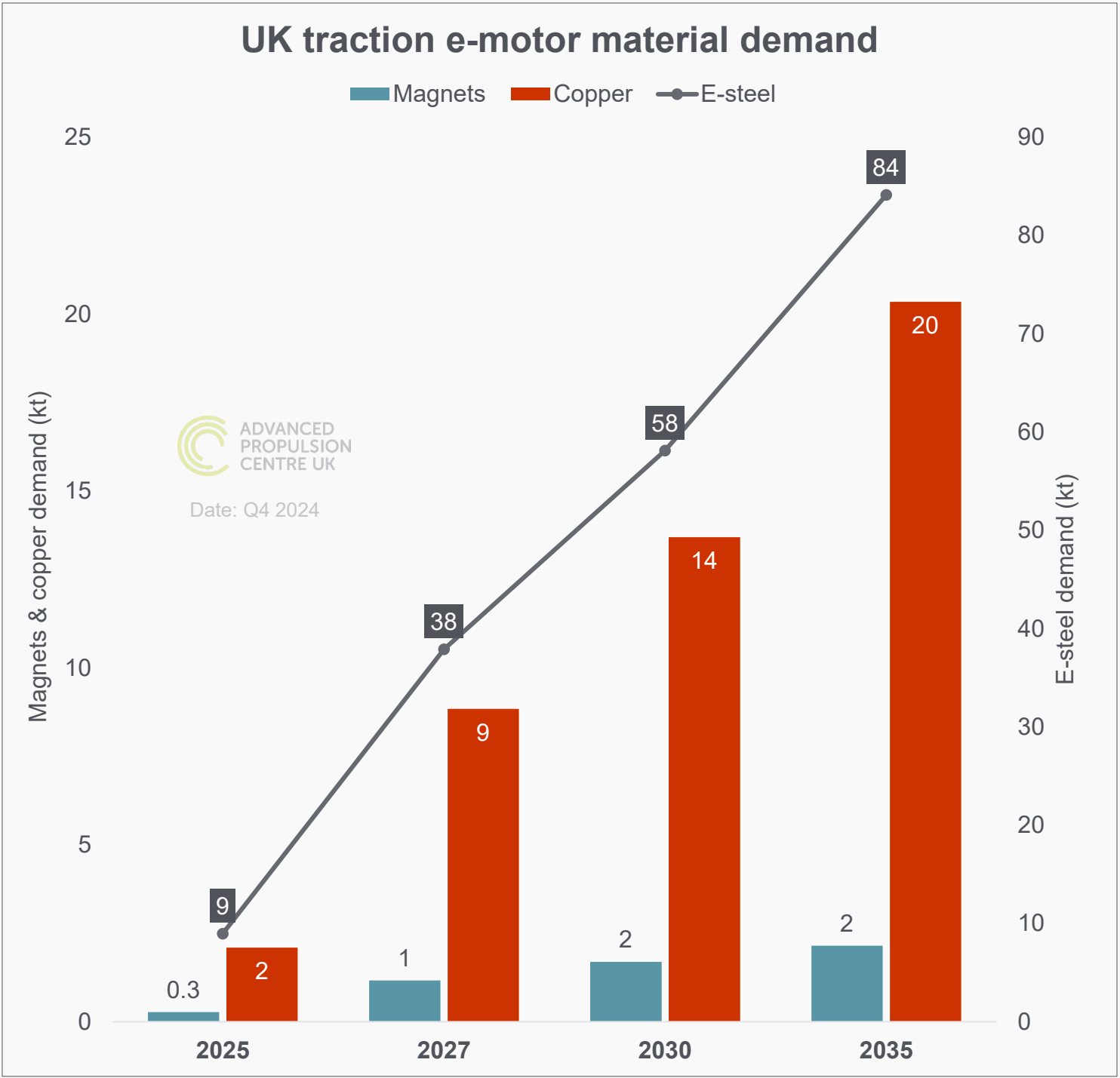
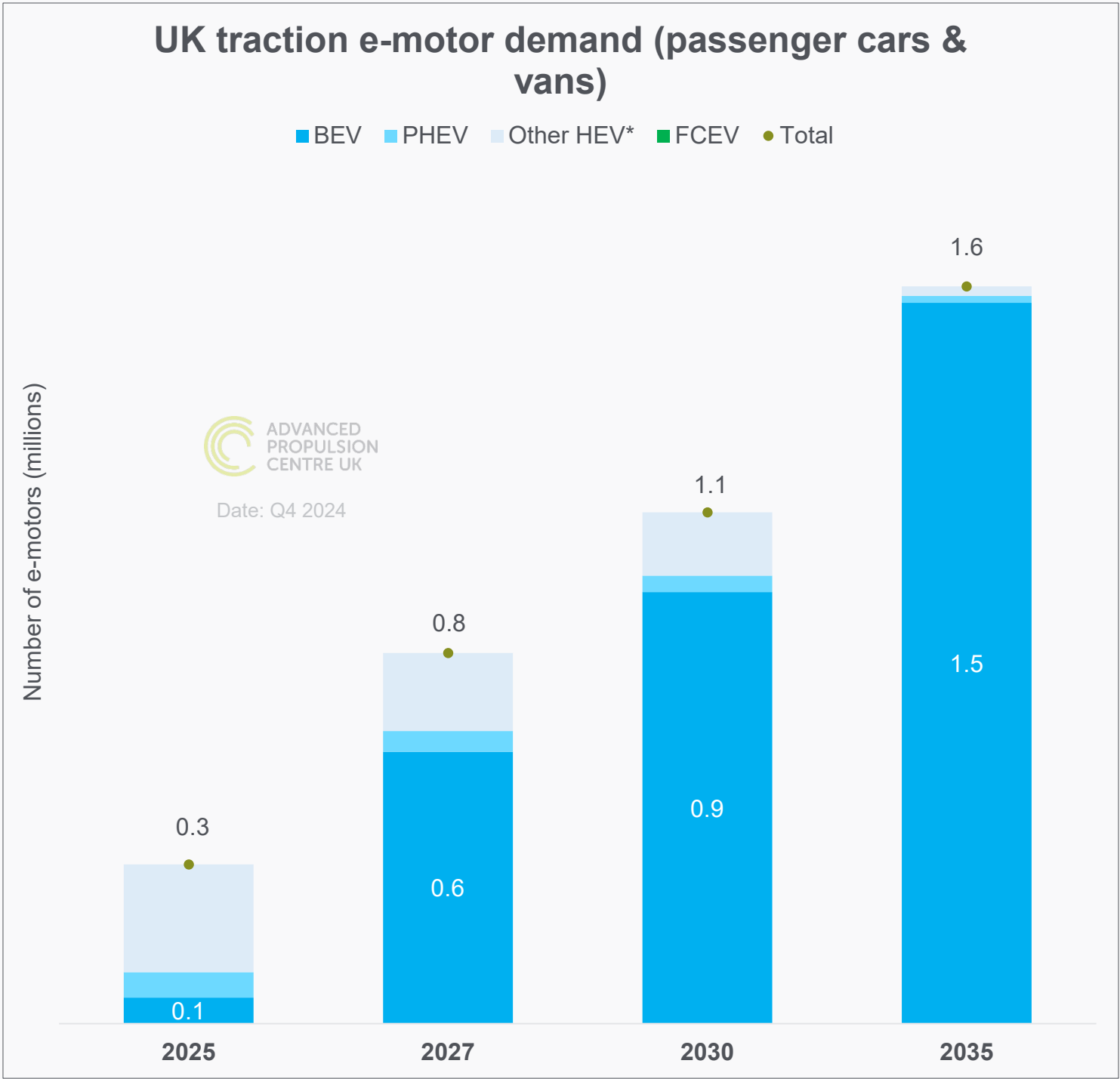
Source: APC Demand Databases using S&P Global AutoTechInsight (Sep 2024), Rho Motion data (2024), BNEF forecasts (2024)
Note: Passenger cars & Light Commercial Vehicles < 3.5t only, *European forecast includes non-EU countries such as Turkey, **Excluding mild hybrid electric motors

UK demand for traction electric motors

Passenger cars and light commercial vehicles (<6 tonnes)


Q4 2024 notes

- While demand for e-motors in the UK remains consistent with Q3 forecast figures, material demand has declined due to a reduction in motor size compared to earlier expectations.



Source: APC Demand Databases using S&P Global AutoTechInsight (Sep 2024), Rho Motion data (2024), BNEF forecasts (2024)
Note: Passenger cars & Light Commercial Vehicles < 3.5t only, *Excluding mild hybrid electric motors

Summary

 <div>Global demand update</div>	<ul style="list-style-type: none">• xEV growth continues globally but at a slower pace compared to the Q3 2024 Demand Report. BEV production is expected to double globally from 2027 to 2035, despite regional adoption challenges, with global automotive battery demand forecast to surpass 4 TWh by 2035. A shift in vehicle production types, not total volumes, drives a reduced battery demand forecast over the next decade.• January 2025 saw 18% xEV sales growth compared to January 2024, but BEV momentum faces hurdles like OEM delays, affordability issues, regulatory resistance, and infrastructure challenges.• Although BEV production forecasts for 2027 and 2030 dropped by over 20% since Q3 2024, global LDV production is still projected to exceed 100 million by 2035.
 <div>European demand update</div>	<ul style="list-style-type: none">• As per Q3 2024, European automotive battery demand is forecast to grow to around 0.9 TWh by 2035 accounting for around 20% of global demand. However, it is expected there will be a reduction in battery demand in 2027 and 2030 due to reduced BEV production. Implications as a result of US tariffs are still unclear and likely to have knock-on impact to the forecast throughout 2025.• LF(X)P continues to be a dominant chemistry globally for LDVs, whilst increasing popularity in European production could account for up to 30% LF(X)P in 2035.• Localising the production of cathode and anode materials remains a significant challenge. Although cell surpluses have increased compared to earlier forecasts, a deficit in the supply chain for cell components is expected to persist through 2035.
 <div>UK demand update</div>	<ul style="list-style-type: none">• BEV production is expected to grow at a slower rate than previously forecast due to delays in BEV model introduction. Nevertheless, xEV production is expected to increase rapidly across the next decade with most new models being introduced with high-nickel chemistry.• There is predicted to be a slowdown in LDV production in the short-term due to end-of-production for some models, delays in the introduction of BEV models and factory retooling, resulting in low BEV production volume in 2025.• UK vehicle exports are projected to account for approximately 80% of total production over the next decade. Most of these exports are expected to be directed to Europe (over 40%), followed by North America (over 10%).

Glossary

BEV	Battery Electric Vehicle
CAGR	Compound Annual Growth Rate
CAM	Cathode Active Material
EESM	Electrically Excited Synchronous Motor
FCEV	Fuel Cell Electric Vehicle
HDV	Heavy Duty Vehicle
IM	Induction Motor
LCE	Lithium Carbonate Equivalent
LCV	Light Commercial Vehicle
LDV	Light Duty Vehicle
LF(X)P	Lithium iron phosphate (LFP) lithium-ion cathode which can include manganese (LFMP)
NCA	Nickel Cobalt and Aluminium lithium-ion cathode
NMC	Nickel Manganese Cobalt lithium-ion cathode
NMCA	Nickel Manganese Cobalt and Aluminium lithium-ion cathode
MHEV	Mild Hybrid Vehicle
OEM	Original Equipment Manufacturer
Other-HEV	Non-plug-in hybrid vehicles including full and mild hybrids that combine and internal combustion engine and a battery to deliver power
Pass Car	Passenger car
PHEV	Plug-in hybrid electric vehicle combining an internal combustion engine and an electric powertrain
PMSM	Permanent Magnet Synchronous Motor
xEV	Electrified vehicle including BEV, PHEV, HEV, FCEV
ZEV	Zero Emission Vehicle

This Q4 2024 automotive demand forecast is provided by the Technology Trends team at the APC.

Q4 spans 1 October 2024 to 31 December 2024.

If you have any questions or would like more detail on any of the graphs or data email: info@apcuk.co.uk