

# Hybrid Buses in Leeds

LEB Workshop

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- Our operations
- Enter the Hybrids
- Current challenges
- The future

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# Arriva Yorkshire

- Operate across Yorkshire
- Five depot sites; around 800 drivers
- Fleet of 320 vehicles (>50% deckers)
- 200 new buses in past 5 years (63% of fleet)
- Mix of urban, interurban and rural services
- Around 100 of weekday PVR enters Leeds City Centre
- Previously 100% conventional diesel fleet

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# The Hybrid fleet: overview

- 12 vehicles entered fleet from new in March 2013
- All based at Castleford depot
- Volvo B5LH chassis with Wrightbus Eclipse Gemini body
- Parallel hybrid transmission; Volvo I-Sam motor; Volvo I-Shift transmission



# The Hybrid fleet: financials

- Capital cost circa 20% higher than conventional double deck equivalent
- Arriva fleet part-funded by Green Bus fund
- MPG consistently circa 20% better than equivalent diesel bus (8.88 in 2015; 8.77 2017 YTD)



## The Hybrid fleet: commercials

- Operated from launch on services 163 and 166 (Castleford – Kippax – Leeds).
- Busy trunk corridor, every 15 minutes Mondays to Saturdays
- Operate through designated Air Quality Management Areas at Castleford and Leeds
- Introduction of fleet met the ambition of the West Yorkshire Local Transport Plan to encourage cleaner technologies



# The Hybrid fleet: commercials

- Comfortable and attractive internal design
- Heavily marketed and promoted as an electric, 'green' option for customers
- No real evidence of emission standards being a key driver for demand
- No passenger growth identified as having been driven by the vehicle technology



# The Hybrid fleet: operational performance

- Reliability consistently good (no different from conventional diesel)
- Contract maintenance in place with Volvo
  - fixed costs
  - good level of service
  - more expensive than in-house
- Popular with drivers
- No significant safety issues (either in engineering or on-road)

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# Current challenges

- Overall life cost of vehicles unknown
  - Battery life (potential £40k-50k every 5-7 years)
  - Other parts (e.g. electrical compressors)
  - Contract maintenance vs in-house
- Leeds Clean Air Zone
  - Requirement to get a third of our fleet to Euro VI emission standards
  - Scale of investment; advances in diesel Euro VI standards

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# The future

- Investment in 37 new Euro VI conventional diesel buses in 2017
- 12 new buses on the 163/166 route; Hybrids cascaded to Wakefield 444
- Balancing risk with benefit
  - Good first 4 years but future costs still uncertain
  - Conventional buses with Euro VI engines meet the immediate requirements of air quality agenda in West Yorkshire
- Will continue to monitor the fleet and consider all options for future investment