Department for Transport

Rolling Stock Perspective

Moving Britain Ahead

July 2015

Department for Transport

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Department for Transport
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Ministerial Foreword

The railway is vital for this country, for its own economic prosperity and to ensure we remain competitive as a nation on a global stage. The quality of our trains is the key ingredient in the journey experience of passengers. Our trains and our ability to meet our timetable promises are at the heart of what they are paying for. The success of a growing railway brings both challenges and opportunities for rolling stock and I am determined that passengers be placed at the heart of meeting them.

We now award franchises on the basis of quality as well as price, so we reward bidders who put the customer at the forefront of their plans for running the railway and this includes a modern passenger's demands of the train they are paying for. The vision we have for the fleet in this country is for extremely modern, well designed, immaculately clean, well maintained trains provided with the facilities that befit modern needs; so fantastic connectivity and a charging point for the smartphone that could hold a passenger's ticket – should simply be the minimum requirement. Train design should 'wow' and attract custom, not raise discontent for the amount of fare being asked.

I want to be clear with the market that any new trains on the existing franchised network will be bought in the market, by the market. Meeting demand affordably will be key to the future success of the railway and the market based approach is important in efficiently doing so. I am pleased that industry is moving away from guarantees for new orders, this is a sign of a mature market working in the interests of its customers rather than merely seeking to shelter risk at the expense of taxpayers. And we look to industry to take the lead, making the most of the opportunities that exist and meeting customer expectations and the issues that arise.

This document is a first issue of a perspective from the Department on rolling stock. I would like to see greater competition within the market – there are great opportunities through our modern era and dependable franchising mechanisms – for the procurement, manufacturing and financing of new vehicles, and for the high-quality refurbishment of existing stock.

This perspective sets out *our* view of rolling stock but we are always willing recipients of *your* views. We are interested in industry's thoughts on meeting the challenges ahead, including innovative approaches to financing that bring costs down for farepayers and taxpayers alike (without more Government shelter from risk – risk IS the business of a privatised industry). We particularly welcome innovation that delivers greater capacity through greater interoperability or, for example, the use of longer or double-decker trains – that don't need complicated new infrastructure.

This is not the final word, I am determined that we work constructively with all sections of the rail industry and with passengers and their representatives. In this way we can continue to build a better railway, together, to the benefit of passengers, taxpayers and the industry as a whole.

Claire Perry MP
Parliamentary Under Secretary of State for Transport.

Rolling Stock Perspective

Greater Transparency

There are large potential benefits to passengers and the national economy from creating greater confidence in the supply chain for train manufacturing, refurbishment and maintenance; not least in a better understanding of passengers' future requirements for their trains as well as the value generated, efficiencies and wider economic benefits. Increased transparency in planning and demand forecasting are important parts of achieving this. There is now a greater level of leadership and forward thinking within the industry thanks to the Rolling Stock Strategy Steering Group, whose annual report sets out industry's view of the requirements for rolling stock over the next 30 years. This is the kind of leadership the Rail Executive is looking for from industry as the market continues to mature.

Information about rolling stock is readily available, for instance the average age of rolling stock published by the Office of Rail and Road. Expectations, based on stakeholder consultations, are set out in each franchise competition prospectus. Nevertheless, in order to help the industry to plan, the Department has developed a high-level whole railway overview of the aspirations in relation to rolling stock features by service group. The focus of this document is on the rolling stock leased to operators of franchises let by the Department, which are listed in the fourth section of this document. The Department is not the only franchising authority in the country, though the aspirations set out here will be similar to those expected by colleagues in other franchising authorities, notably devolved administrations and local authorities, and also by Open Access operators. These aspirations will be met gradually as the franchising programme develops.

The Department is also providing an overview of the current status of each fleet by class and franchise as well as a number of publications and initiatives which are key references for industry, in particular new entrants.

Making Journeys Better

The railway network is being transformed to support economic growth for the benefit of all rail users, improve journeys and promote safer and more sustainable journeys. The Rail Executive's rolling stock policy is absolutely central to this as it seeks to engage with the market in delivering trains that are thoroughly modern in their form and function, designed to be entirely sympathetic to the infrastructure they operate on, greener, lighter, accessible to all and more reliable. Trains should have increased intelligence, providing real time, accurate information to passengers, and ensure they allow connections to business services, family and friends for passengers whilst on the move. Indeed, greater importance needs to be attached to improving the passenger experience, for example by improving ride quality, comfort and ambience. Business people should be able to discreetly tele and video conference on long distance journeys and everyone should be able to be connected with the world they are engaged in.

There is a great opportunity for the market in improving the design and styling of trains on the network and to put passengers at the heart of this, both through refurbishing existing stock and in the design of new trains. A challenge for industry is to use good design to promote the image of and demand for rail travel, building on people's positive perceptions both of rail's heritage and future. We want to improve further the image of train travel and there can be some quick wins if industry capitalises on the potential inherent in train design, the interior in particular.

Rolling stock is only one part of the train experience and must be part of an overall quality experience. Excellent customer service leads to greater passenger enjoyment of their journey and a better experience overall. For example, customers rightly need confidence that trains will have toilets on longer journeys. Furthermore, waste onto the tracks from toilets is unacceptable in the 21st Century and we have taken steps to ensure this is ended. We recognise that appropriate space for bicycles and luggage is important and are looking for the industry to continue to embrace this, and, for instance, greater cycle space can be instrumental in developing new markets for operators.

We are all living longer and, as a consequence, most of us will face some form of reduced mobility in our lifetime. We want trains and a railway that understand this and make it easy for all of us to use our railway. The importance of safety and increasing safety is a given.

Supporting Economic Growth

The Government's support for the market's central role in fleet development remains – to the benefit of passengers, workers and the economy. Our view is that effective competition for franchises is the best way to secure value for money in the supply of rolling stock, and on the existing railway, this will be achieved by private sector procurement, through franchise competitions. It is for bidders to respond creatively and commercially in coming up with proposed rolling stock solutions to meet the desired outputs we set out in franchising, both at competition and in-life. We recognise the importance of market confidence in a steady flow of sensibly-sized rolling stock orders. In this way, manufacturers will be able to bid for regular small to medium sized orders of vehicles with two to three franchises per year, continuing to moving the supply base away from the feast and famine of previous years.

The Crossrail, InterCity Express (IEP) and Thameslink programmes and their associated rolling stock fleets will deliver significant benefits to passengers and the wider economy and these benefits will start to be realised in the coming year. The first new Class 700 train is due to arrive at the newly completed Thameslink Depot at Three Bridges later this summer and enter passenger service next February, with the full fleet in place by 2018. When complete, Thameslink will provide an additional 30,000 seats at peak times through central London. Hitachi's new train manufacturing facility will open in Newton Aycliffe this year and IEP trains will be brought into passenger service on the Great Western Main Line from 2017 and on the East Coast Main Line from 2018. Crossrail is Europe's largest infrastructure construction project and its 26 mile tunnelling is now complete. Built in Derby, the state of the art trains' introduction is planned from 2017 onwards.

We do not foresee further programmes of this size and scale, led by the Department, in the short to medium term, with the exception of HS2. HS2 Ltd continues to consult and engage worldwide with relevant rolling stock manufacturers, including those with UK assembly capabilities, to inform its procurement strategy. It is anticipated that the procurement will commence around the end of 2016 with high-speed services commencing in 2026.

In addition, we are looking at the development of rail between the city regions of the North to support the Northern Powerhouse, including the shared use of HS2 tracks, which would almost certainly require new rolling stock. This is part of a Government commitment to expanding connectivity in the North of England and would require rolling stock suitable for these services.

Maintaining and creating competition between manufacturers and also financiers is key to ensuring value for money. Industry's rolling stock strategy sets out a low, medium and high forecast of rolling stock, with a forecast of between 2,824 and 3,934 additional vehicles by 2024. it helps to demonstrate the need for new rolling stock for passengers – under any scenario there will be growth. We are confident that this rolling stock market provides an attractive opportunity for manufacturers, and would encourage them to develop designs and manufacturing plants appropriate for the British market.

There are opportunities for new rolling stock alongside the refurbishment of existing vehicles in the next franchise competitions. In Northern, the requirement is clear: a minimum of 120 new self-powered vehicles, alongside a demanding requirement for existing fleets. The specification for TransPennine Express called for a substantial uplift in capacity, for which new-build would be one option. The shortlisted bidders for the East Anglia franchise are developing their own plans and will be asked to show how they will improve the region's railways, including providing reduced journey times to London, more reliable services, and better connections with a modernised and renewed fleet. The West Coast franchise has a relatively modern fleet, though even this can be improved and bidders will form their own plans when that competition begins. We can also foresee new and/or refurbished fleets being introduced on the East and West Midlands franchises. More capacity may be needed over the life of a franchise and we are open to proposals from operators to meet greater demand if there is a business case during the franchise period – franchising does not mean that everything is set in stone, capacity can subsequently be increased.

We will not meet growing demand on the rail network with new trains alone. Ensuring passengers travel on high quality and clean vehicles regardless of their age is a key goal. It is appropriate to consider the importance of good rolling stock refurbishment alongside procurement of new vehicles. Good, high quality refurbishment can deliver a passenger experience comparable with new rolling stock, and this level of quality should be maintained through the life of a franchise. In addition, consideration of the "embedded carbon" inherent in the production of new vehicles shows it can be environmentally beneficial to keep good quality refurbished stock on the network rather than scrap it and build new. This can also offer good value for money, and vehicle refurbishment, which is generally delivered in this country, supports a significant supply base and its skilled workforce. While some of the older vehicles on the network have not met acceptable passenger standards, others of an equal age remain amongst the most popular.

The Government and passengers, through the tickets they buy, are investing a record amount in the railway. But it's not just about investment and providing capacity to meet rising demand. Technology and innovation are crucial and we look to the private sector to play an important role in developing and pioneering it. The whole supply chain counts, the United Kingdom has a proud rail history and our aim must be for this country to compete at home and abroad for the manufacturing of trains and their valuable component sub-systems. We want to create an environment in which manufacturers choose to locate here and where the UK supply chain competes successfully. Apprenticeships are vital for developing our industry and the Department will continue to invest in skills and promote workforce diversity and apprenticeships through the franchising programme.

The Rail Supply Group, supported by this Department and the Department for Business, Innovation and Skills, is an important part of this agenda and is making a real contribution to strengthening the capability and competitiveness of our rail supply industry, here and abroad. The Rail Supply Group is currently overseeing the drafting of a Rail Industrial Strategy. The intention is to publish the Strategy in January 2016.

A More Digital Railway

The world of digital communications has significantly evolved in the last decade and we expect to see more use of these services on trains. We need digitally connected trains, increasing safety and security through the use of technologies such as CCTV. As a minimum this means on-train intelligent services for track monitoring, maintenance self-diagnosis, regenerative braking and more. Traction control alone is one area in which great improvements are being made and this needs to continue. The industry is moving towards being a digital railway and rolling stock must be a key part of this.

In February, the Government announced rail passengers would benefit from free Wi-Fi on trains across England and Wales from 2017, and we are making this a requirement of all new franchises. Where there is no new franchise planned before December 2016, we are investing almost £50 million to ensure it is provided on as many services as possible. In future, passenger mobile and internet connectivity needs to be an inherent design requirement for trains, with enabled trains permitting passengers seamless connectivity between on-train connectivity, at station services and mobile networks.

Creating Capacity

The success of the railway is something we can rightly be proud of but it also creates challenges for us. We need to maximise the capacity of train fleets through optimised maintenance regimes which enhance reliability and availability. Faster trains can make more journeys in a day and can occupy constrained track sections for less time – allowing more passengers to be carried more quickly over infrastructure to deliver more people to our cities and regions every day. Enhanced braking systems, with energy recovery and harvesting, which offer safely dependable improvements in braking rates can also improve journey times and enhance infrastructure utilisation rates. It's important not to discount approaches such as double-decker trains which could unlock capacity if they can be made to work on our infrastructure and with associated dwell times in the peak – which is a challenge for industry to consider.

The European Rail Traffic Management System (ERTMS) allows trains to be more safely controlled by providing the driver with information about the route directly into the cab rather than using line side signals, and we need an ERTMS that meets the performance needs of our network. Ultimately, it offers the opportunity to improve capacity on the rail network, and manage service disruptions quickly and efficiently. The rail industry challenge is to drive forwards the introduction of on-train ERTMS equipment to facilitate these improvements, whilst effectively managing the technology and commercial advantages that it brings. ERTMS is a system which is being deployed across rail networks world-wide and we expect to see industry taking advantage of the economic benefits of the market's capability in this area. In addition, ERTMS offers the possibility of automatic train operation (ATO) on highly congested, urban area networks, delivering more passenger carrying capacity – as will be delivered by the Thameslink Programme on the core route between Blackfriars and St Pancras.

The Challenge of Interoperability

Appropriate interoperability between different train fleets is also desirable because such flexibility can make the operation of trains more efficient, and can facilitate service recovery after operational perturbation. For vehicle owners, standardised interoperability can increase the flexibility with which rolling stock assets can be deployed, and thus help to reduce residual value risk. However, manufacturers are increasingly moving to manufacturer-specific train design “platforms” with proprietary train control systems, and thus the trend in recent years has been away from interoperability between different fleets. We invite Network Rail, train operators, manufacturers and the supply chain to propose approaches to specification and procurement if they provide benefits as a result of interoperability between different train fleets across Britain. We recognise this will need to take account of European Technical Standards for Interoperability (TSIs), noting that this is an issue not yet satisfactorily addressed by TSIs.

Unlocking Innovation

The railway is already a green mode of travel but we can and should do more. Energy efficiency is a vital part of this and, as an industry, we should maximise the use of technologies such as regenerative braking and the efficient use of power within trains.

We need to avoid damaging the environment and must make the most of rail's green credentials, ensuring we recycle as much as we can is a key aim.

There have been some very good examples of recent innovation, both technical and in design and style. While the market will determine their success, a couple are worth highlighting:

- IPEMU (Independently Powered EMU): this innovative project saw a battery powered train operating in passenger service in January and February this year on the Greater Anglia network. The technology used has potential to reduce the cost of electrification or to replace DMUs on branch lines without the need for overhead lines.

- Tomorrow's Train Design Today: this is a really exciting competition that has invited architects, engineers and designers to propose new design solutions to improve passenger rolling stock across the network. It's the kind of passenger focused design and style that can bring real benefits:
  http://www.ribacompetitions.com/ttdt/shortlist.html

Conclusion

This publication is an important first step and we look forward to the dialogue between passengers, representative groups, industry and the Department in this key policy area. We intend to update this publication annually, as part of Rail Industry Day, based on feedback from stakeholders, our latest policy position and market and technological developments. If our policy position evolves we will be open and transparent about it. We will feed comments on this document into our annual update. If you have views on the document and its annexes, please provide them to the Department's rolling stock team at the following address:

Rollingstockperspective@railexecutive.gsi.gov.uk

Rolling Stock Aspirations by Service Group

We have divided services into four broad groups but it is important to note that trains can be used flexibly during the day. Britain has a high intensity railway, in particular during the morning and evening peaks, and a train used as a Metropolitan service in the morning may be used on InterUrban or Rural services outside of the peak.

The aspirations listed below are therefore necessarily broad and do not take precedence over Invitations to Tender. There is no single classification for services in all circumstances and this is a high level overview, which industry should work towards. Operators and vehicle owners must know the requirements of their markets. These aspirations are intentionally cast as output-based and we expect industry to seek to meet and exceed them in a number of different and innovative ways.

InterCity

The InterCity service group is one of predominantly long distance services where passenger expectations are generally high given the nature of the market, length of journey and the transport modes against which operators compete.

InterUrban

Passenger expectations of the InterUrban service group are relatively similar to the InterCity group on services that are primarily express and limited-stop, but may be of shorter duration. It transports leisure and commuter passengers between towns and cities.

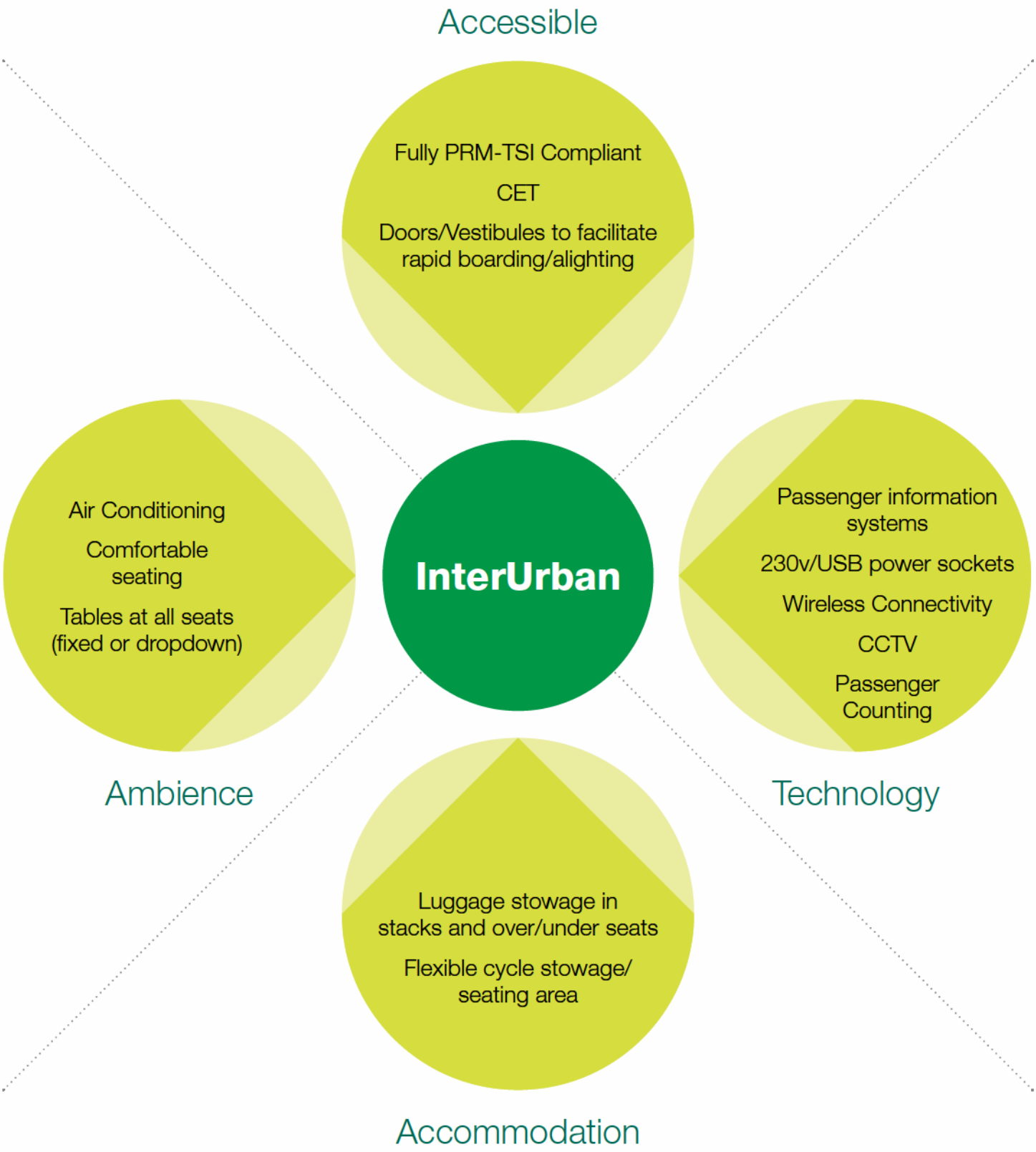
Metropolitan

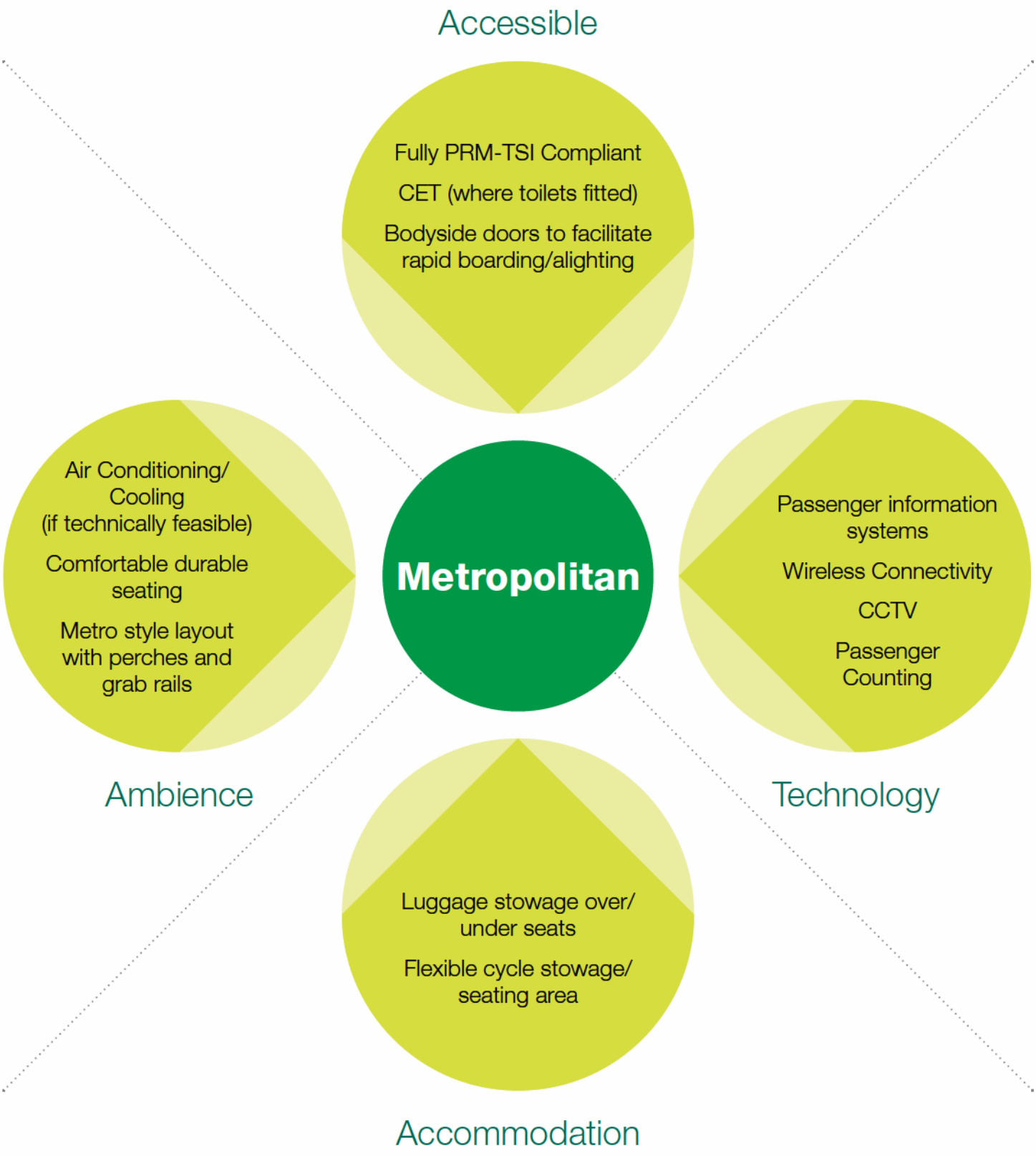
The Metropolitan service group has a focus on high-density traffic to meet a high volume of passenger demand during the traditional peak hours, with passengers generally making relatively short journeys with frequent stops. Passenger expectations may focus on certain aspects of comfort and there is a recognition that operators will balance the need to transport high volumes of passengers against the expectation of a seat.

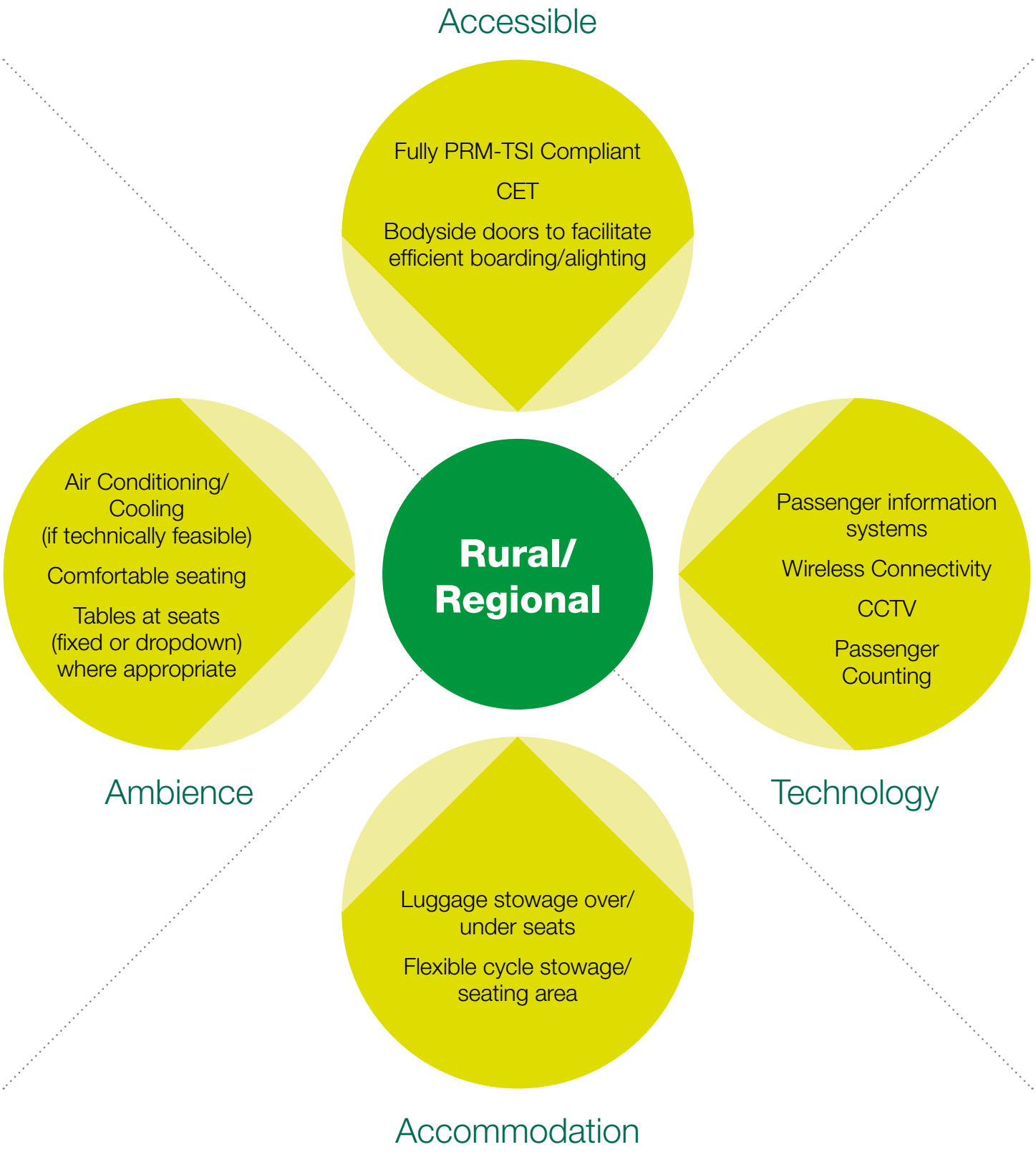
Rural/Regional

This service group will generally serve more rural communities and have lower frequency and ridership but performs a vital service for travellers, both local and tourist, and the regional economy.


Accessible
Fully PRM-TSI Compliant
CET
Doors/Vestibules commensurate with long distance services
Air Conditioning
Comfortable ergonomic seating
All seats with fixed or dropdown tables
At-seat lighting
InterCity
Passenger information systems
230v/USB power sockets
Wireless Connectivity
CCTV
Passenger Counting
Ambience
Technology
Luggage stowage in stacks and over/under seats
On-board catering
Dedicated cycle space
Accommodation


Accessible
Fully PRM-TSI Compliant
CET
Doors/Vestibules to facilitate rapid boarding/alighting
Air Conditioning
Comfortable seating
Tables at all seats (fixed or dropdown)
InterUrban
Passenger information systems
230v/USB power sockets
Wireless Connectivity
CCTV
Passenger Counting
Ambience
Technology
Luggage stowage in stacks and over/under seats
Flexible cycle stowage/ seating area
Accommodation


Accessible
Fully PRM-TSI Compliant
CET (where toilets fitted)
Bodyside doors to facilitate rapid boarding/alighting
Air Conditioning/ Cooling (if technically feasible)
Comfortable durable seating
Metro style layout with perches and grab rails
Ambience
Metropolitan
Passenger information systems
Wireless Connectivity
CCTV
Passenger Counting
Technology
Luggage stowage over/ under seats
Flexible cycle stowage/ seating area
Accommodation


Accessible
Fully PRM-TSI Compliant
CET
Bodyside doors to facilitate efficient boarding/alighting
Air Conditioning/ Cooling (if technically feasible)
Comfortable seating
Tables at seats (fixed or dropdown) where appropriate
Ambience
Rural/ Regional
Passenger information systems
Wireless Connectivity
CCTV
Passenger Counting
Technology
Luggage stowage over/ under seats
Flexible cycle stowage/ seating area
Accommodation

British Rolling Stock Fleet – Class by Class Overview

The following charts provide an overview of rolling stock in Britain, showing on which franchises or concessions they are currently operated as well as an indication of the year in which they were built. It is important to note that the quality of the vehicle is important, not its age. Good, high quality refurbishment can deliver a passenger experience comparable with new rolling stock.

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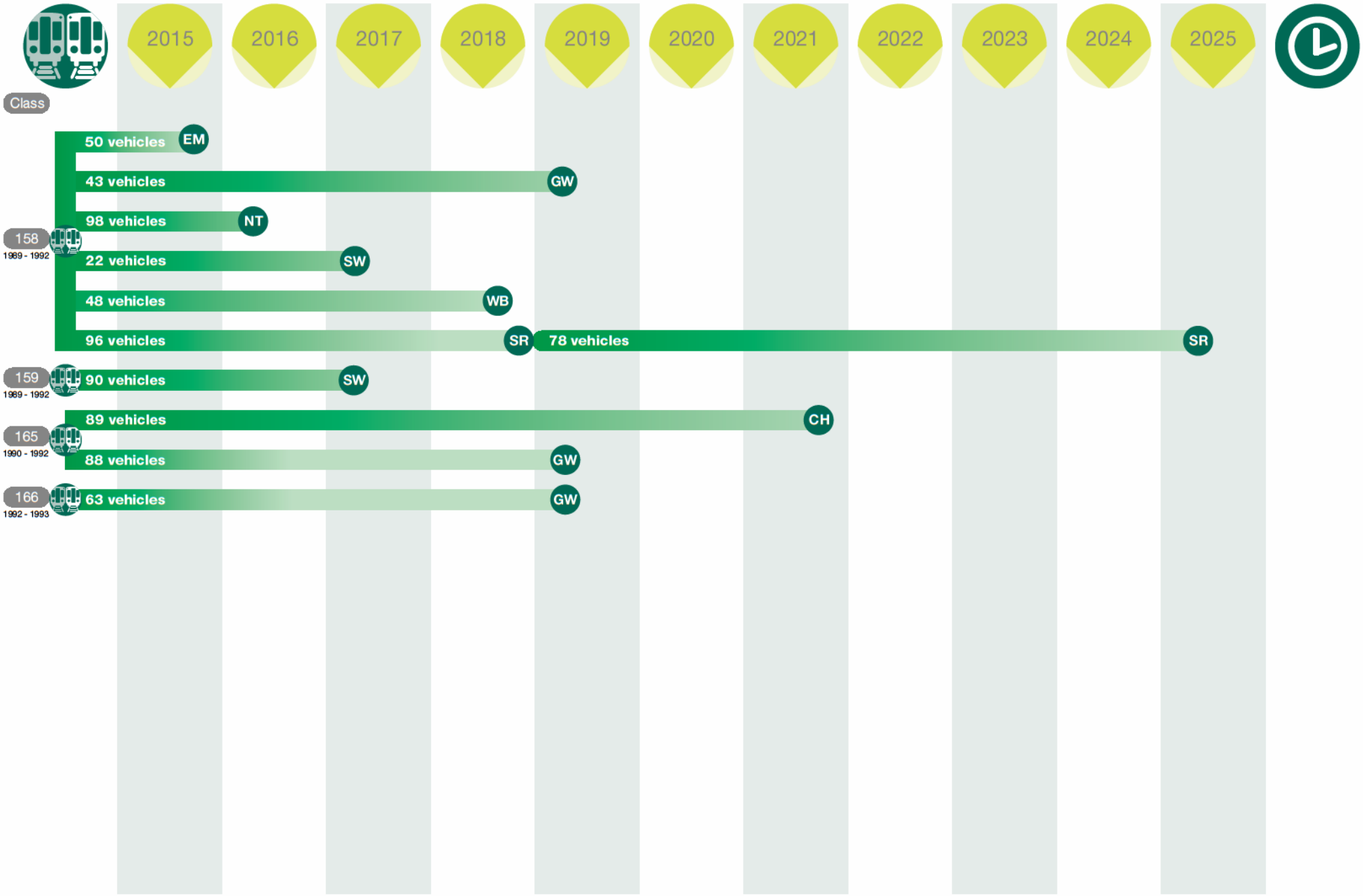
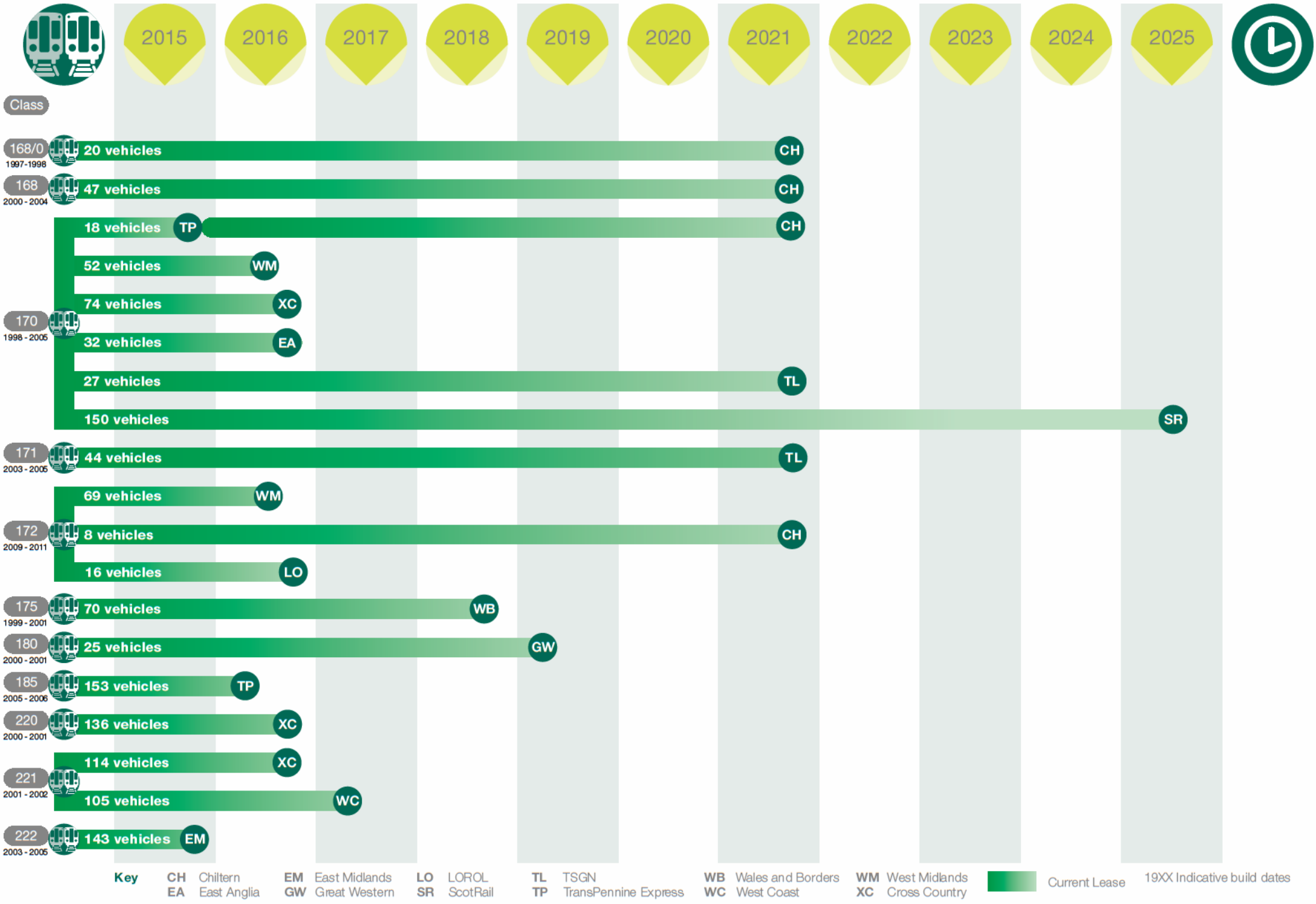
DMU Rolling Stock (Pre-1996 Orders)

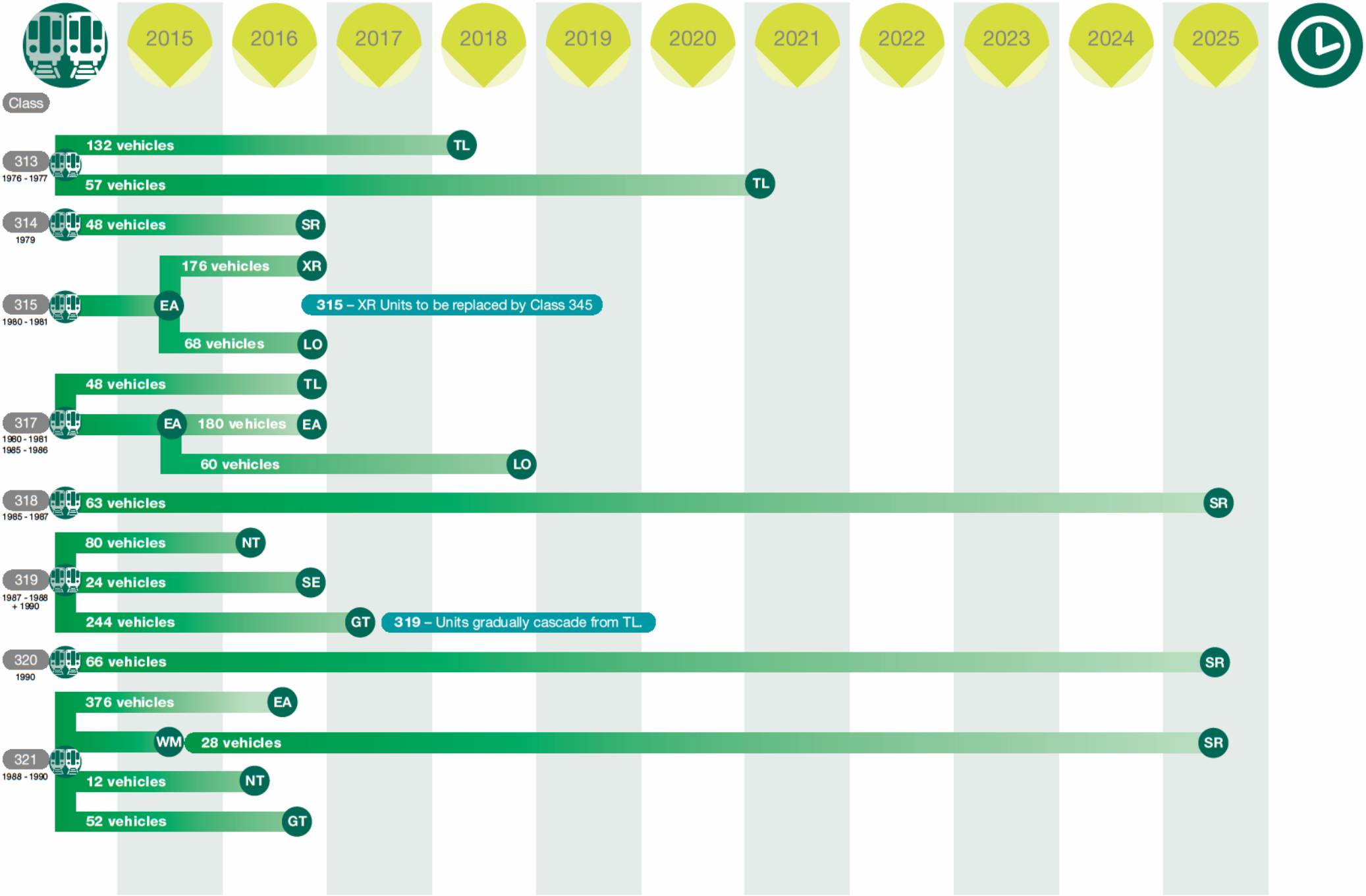
DMU Rolling Stock (Pre-1996 Orders)



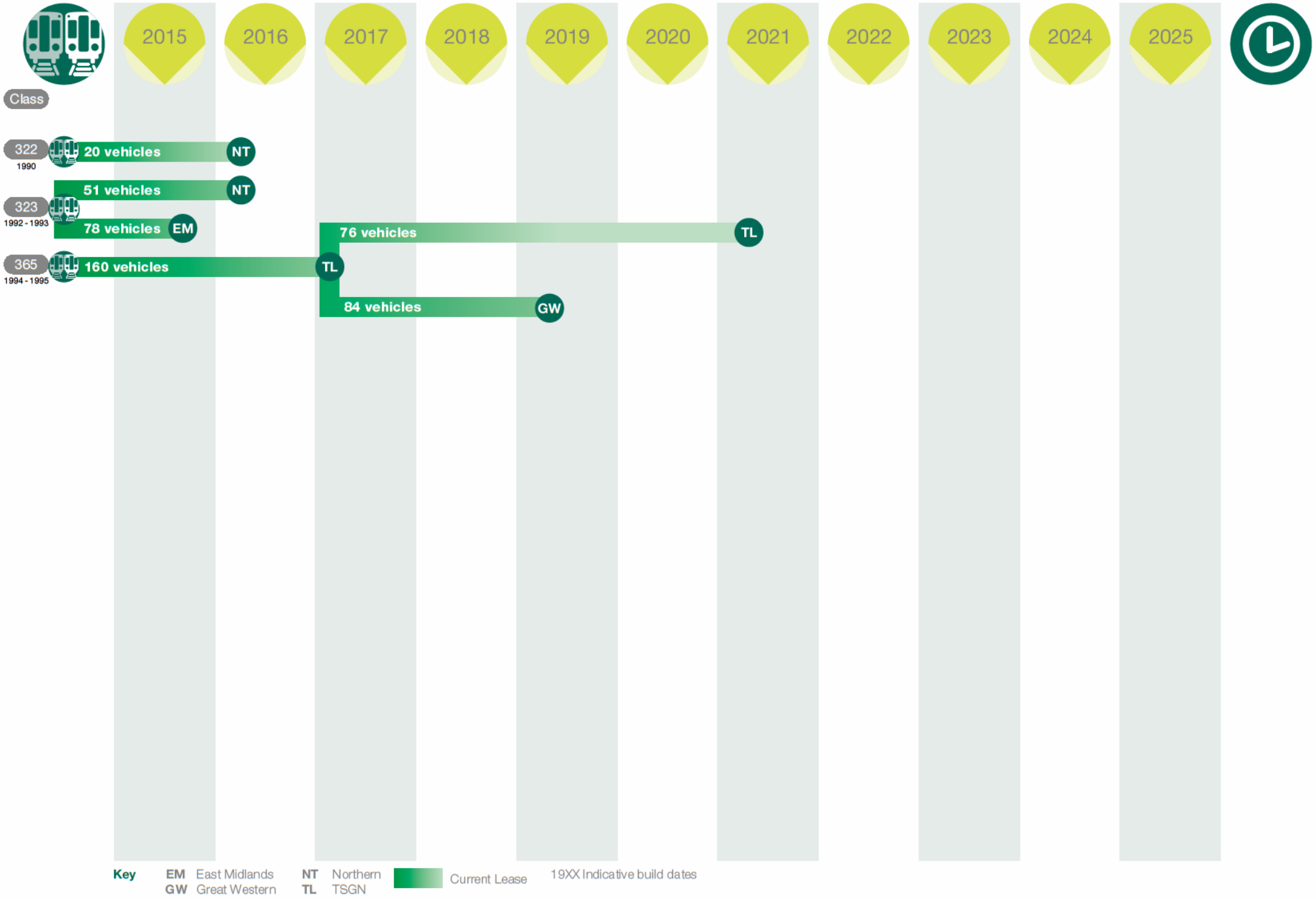
DMU Rolling Stock



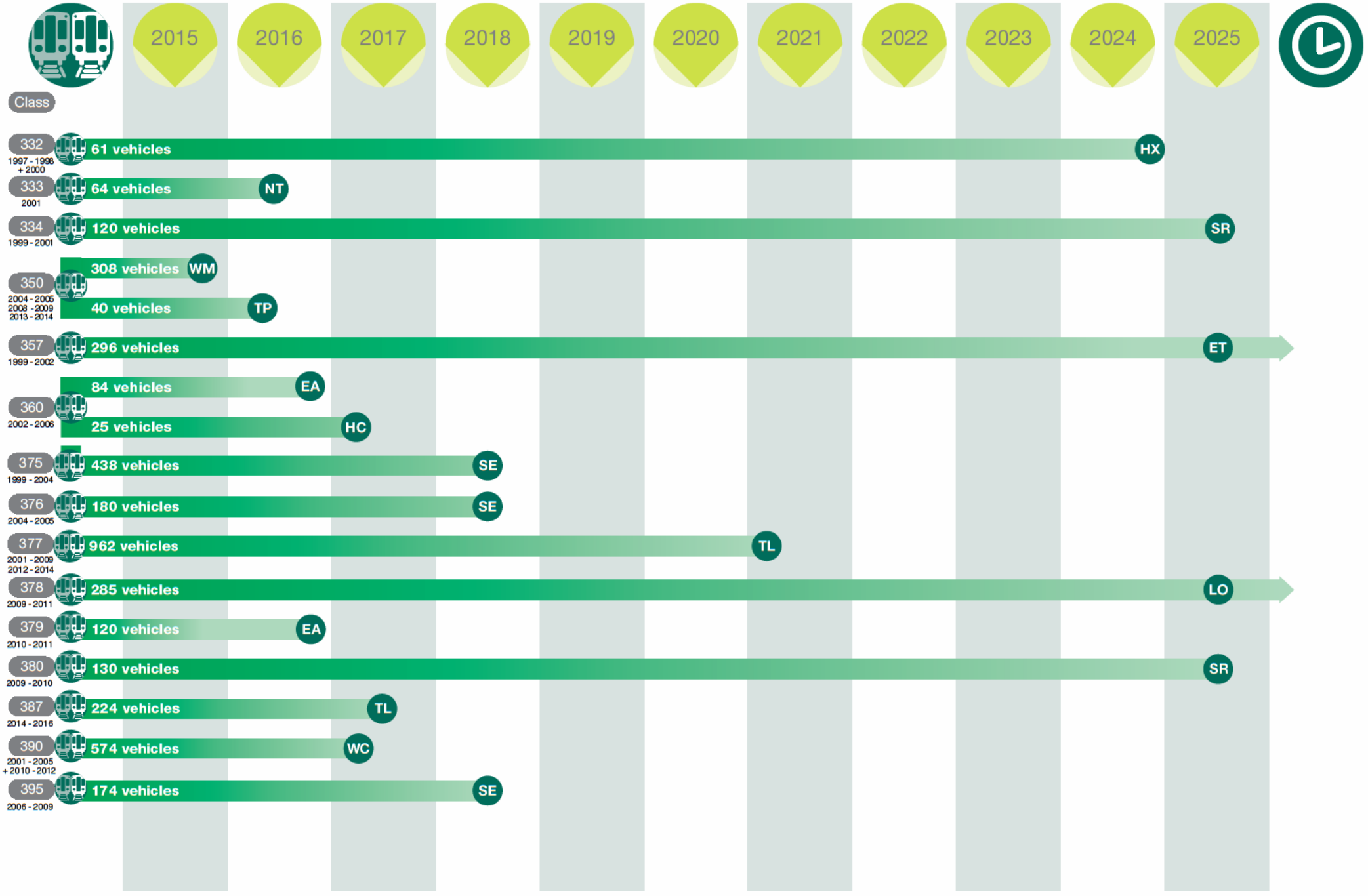
AC EMU Rolling Stock (Pre-1996 Orders)



AC EMU Rolling Stock (Pre-1996 Orders)

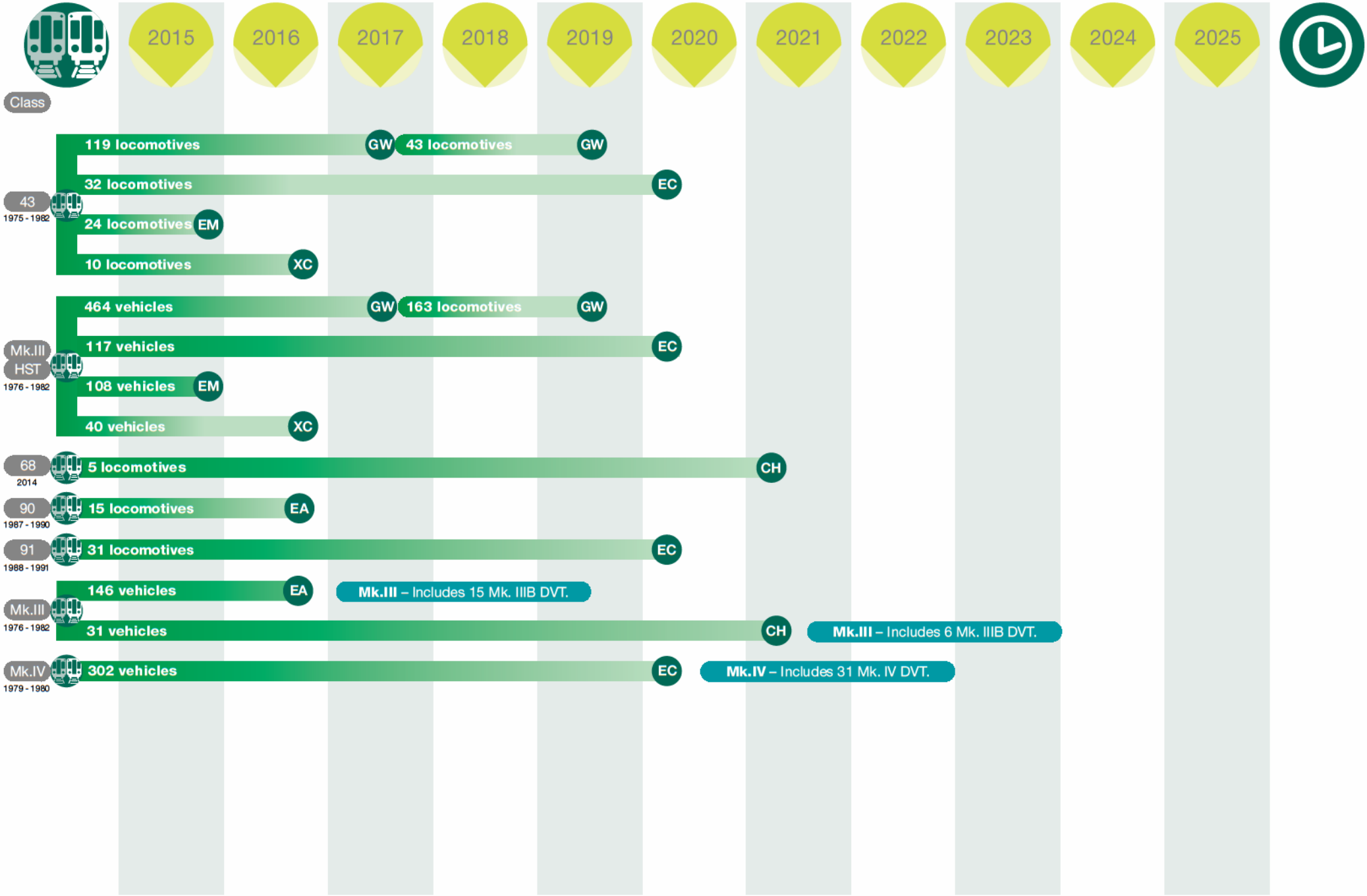


AC EMU Rolling Stock



DC EMU Rolling Stock

LHCS & HST


2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Class
119 locomotives
GW
43 locomotives
GW
32 locomotives
EC
43
1975 - 1982
24 locomotives
EM
10 locomotives
XC
464 vehicles
GW
163 locomotives
GW
Mk.III
HST
1976 - 1982
117 vehicles
EC
108 vehicles
EM
40 vehicles
XC
68
2014
5 locomotives
CH
90
1987 - 1990
15 locomotives
EA
91
1988 - 1991
31 locomotives
EC
146 vehicles
EA
Mk.III – Includes 15 Mk. IIIB DVT.
Mk.III
1976 - 1982
31 vehicles
CH
Mk.III – Includes 6 Mk. IIIB DVT.
Mk.IV
1979 - 1980
302 vehicles
EC
Mk.IV – Includes 31 Mk. IV DVT.
Key
CH Chiltern
EA East Anglia
EC East Coast
EM East Midlands
GW Great Western
XC Cross Country
LHCS Loco Hauled Coaching Stock
DVT Driving Van Trailer
Current Lease
19XX Indicative build dates

Department for Transport – Franchised Operators Overview

The following charts provide an overview of rolling stock that is currently on each of the franchises let by the Department with an indication of the make-up of their fleets and the years in which they were built.

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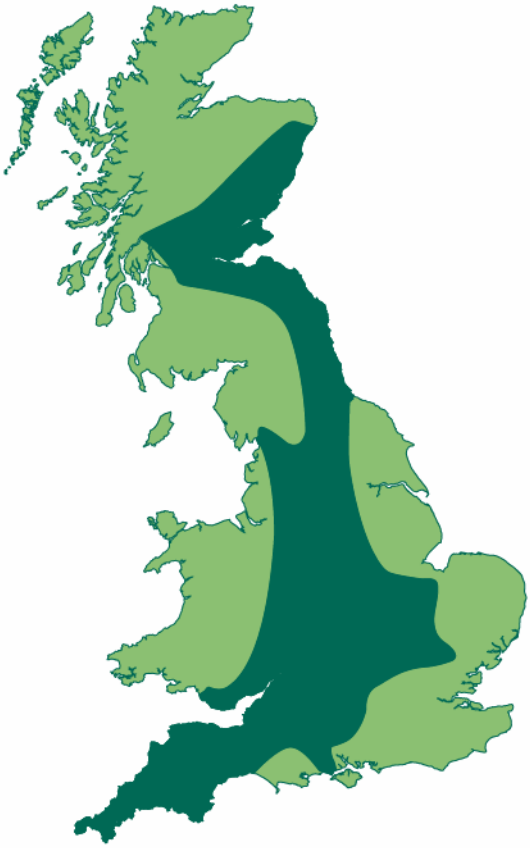
Chiltern

Diesel Fleet

Class	Quantity	Built
Class 68	5 Locomotives	2014
Mk. III (inc. DVT)	31 Vehicles	1975–1988
Class 121	3 Vehicles	1959–1960
Class 165	89 Vehicles	1990–1992
Class 168/0	20 Vehicles	1997–1998
Class 168/1	26 Vehicles	2000
Class 168/2	21 Vehicles	2003–2004
Class 172/1	8 Vehicles	2009–2010

Cross Country



Diesel Fleet

Class	Quantity	Built
Class 43	10 Locomotives	1976–1982
Mk. III	40 Vehicles	1974–1988
Class 170	74 Vehicles	1999–2000
Class 220	136 Vehicles	2000–2001
Class 221	114 Vehicles	2000–2001

East Anglia

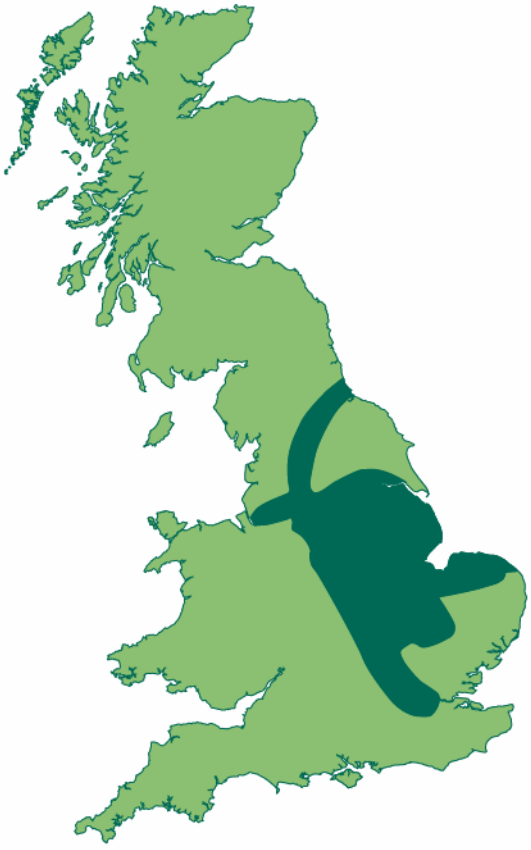
Diesel Fleet

Class	Quantity	Built
Class 153	5 Vehicles	1985–1987
Class 156	18 Vehicles	1986–1987
Class 170	32 Vehicles	2002

Electric Fleet

Class	Quantity	Built
Class 90	15 Locomotives	1987–1990
Mk. III (inc. DVT)	146 Vehicles	1975–1988
Class 317	88 Vehicles	1981–1982
Class 317/6	96 Vehicles	1985–1987
Class 321	376 Vehicles	1988–1990
Class 360	84 Vehicles	2002–2003
Class 379	120 Vehicles	2010–2011

East Midlands



Diesel Fleet

Class	Quantity	Built
Class 43	24 Locomotives	1976–1982
Mk. III	108 Vehicles	1975–1988
Class 153	17 Vehicles	1987–1988
Class 156	30 Vehicles	1987–1989
Class 158	50 Vehicles	1989–1992
Class 222	143 Vehicles	2003–2005

Essex Thameside

Electric Fleet

Class	*Quantity*	*Built*
Class 357/0	184 Vehicles	1999–2000
Class 357/2	112 Vehicles	2001–2002

Greater Western

Diesel Fleet

Class	*Quantity*	*Built*
Class 43	119 Locomotives	1975–1982
Mk. III	464 Vehicles	1976–1982
Class 57	4 Locomotives	1964–1965*
Mk. III Sleeper	20 Vehicles	1982–1984
Class 143	16 Vehicles	1985–1986
Class 150	80 Vehicles	1984–1987
Class 153	14 Vehicles	1987–1988
Class 158	43 Vehicles	1989–1992
Class 165	88 Vehicles	1992
Class 166	63 Vehicles	1992–1993
Class 180	25 Vehicles	2000–2001

* Built as class 47 locomotives, rebuilt as Class 57 in 2004.

InterCity East Coast

Diesel Fleet

Class	Quantity	Built
Class 43	32 Locomotives	1975–1982
Mk. III	117 Vehicles	1976–1982

Electric Fleet

Class	Quantity	Built
Class 91	31 Locomotives	1988–1991
Mk. IV (inc. DVT)	302 Vehicles	1989–1992

InterCity West Coast

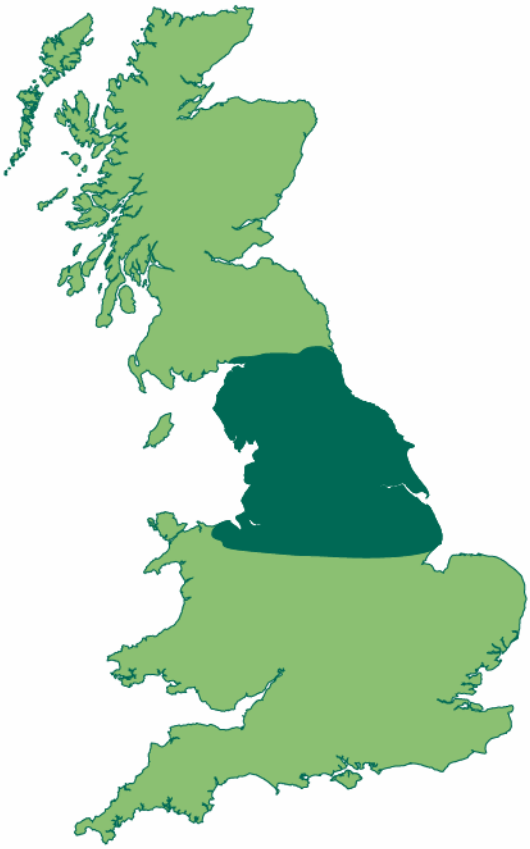
Diesel Fleet

Class	Quantity	Built
Class 221	102 Vehicles	2001–2002

Electric Fleet

Class	Quantity	Built
Class 390/0	189 Vehicles	2001–2004
Class 390/1	385 Vehicles	2001–2004 & 2010–2012

Northern



Diesel Fleet

Class	Quantity	Built
Class 142	158 Vehicles	1985 – 1987
Class 144	56 Vehicles	1986 – 1987
Class 150	116 Vehicles	1985 – 1987
Class 153	18 Vehicles	1987 – 1988
Class 155	14 Vehicles	1988
Class 156	84 Vehicles	1987 – 1988
Class 158	98 Vehicles	1989 – 1992

Electric Fleet

Class	Quantity	Built
Class 319	80 Vehicles	1990
Class 321	12 Vehicles	1988 – 1991
Class 322	20 Vehicles	1990
Class 323	51 Vehicles	1992 – 1993
Class 333	64 Vehicles	2000 & 2006

South Eastern

DC/DV Electric Fleet

Class	Quantity	Built
Class 375	438 Vehicles	1999 – 2005
Class 376	180 Vehicles	2004 – 2005
Class 395	174 Vehicles	2006 – 2009
Class 465	588 Vehicles	1991 – 1994
Class 466	86 Vehicles	1993 – 1994

South Western

Diesel Fleet

Class	Quantity	Built
Class 158	22 Vehicles	1989–1992
Class 159	90 Vehicles	1989–1992

DC Electric Fleet

Class	Quantity	Built
Class 444	225 Vehicles	2003–2004
Class 450	508 Vehicles	2002–2006
Class 455	364 Vehicles	1984–1985
Class 456	48 Vehicles	1990–1991
Class 458/5	180 Vehicles	1998–2000
Class 483	12 Vehicles	1938

Thameslink, Southern & Great Northern

Diesel Fleet

Class	Quantity	Built
Class 171	44 Vehicles*	2003–2005

Electric Fleet

Class	Quantity	Built
Class 313	189 Vehicles	1976–1977
Class 377/1	256 Vehicles	2002–2003
Class 377/3	84 Vehicles	2001–2002
Class 377/4	300 Vehicles	2004–2005
Class 377/6	130 Vehicles	2012–2013
Class 442	120 Vehicles	1988–1989
Class 455	184 Vehicles	1982–1984

* Excludes 27 Vehicles of which 15 are sub-hired to Abellio ScotRail and 12 are awaiting conversion to Class 171.

Thameslink, Southern & Great Northern

Electric Fleet

Class	Quantity	Built
Class 317	48 Vehicles	1981 – 1982
Class 321	52 Vehicles	1989 – 1990
Class 365	160 Vehicles	1994 – 1995
Class 377/2	60 Vehicles	2003 – 2004
Class 377/5	92 Vehicles	2008 – 2009
Class 377/7	40 Vehicles	2013 – 2014
Class 387	224 Vehicles	2014 – on
Class 319	248 Vehicles*	1987 – 1988

* Fleet size at 1 July 2015 following cascade of units to Northern.

TransPennine Express

Diesel Fleet

Class	Quantity	Built
Class 185	153 Vehicles	2005 – 2006
Class 170*	8 Vehicles	2000 – 2001
Class 156*	14 Vehicles	1987 – 1989

Electric Fleet

Class	Quantity	Built
Class 350	40 Vehicles	2013 – 2014

* Subject to sub-leasing arrangements. Class 156 – up to 7 units (14 vehicles) to be made available by Northern on a daily basis. Class 170 – 4 units (8 vehicles) to be sub-leased from Chiltern until Spring 2016.

Wales & Borders

Diesel Fleet

Class	Quantity	Built
Class 67	3 Locomotives	1999–2000
Mk. II (inc. DVT)	15 Vehicles	1975–1987
Class 142	30 Vehicles	1985–1987
Class 143	30 Vehicles	1985–1987
Class 150	72 Vehicles	1986–1988
Class 153	8 Vehicles	1987–1988
Class 158	48 Vehicles	1989–1992
Class 175/0	22 Vehicles	1999–2000
Class 175/1	48 Vehicles	1999–2001

West Midlands

Diesel Fleet

Class	Quantity	Built
Class 150	6 Vehicles	1984–1987
Class 153	8 Vehicles	1987–1988
Class 170	52 Vehicles	1999–2000
Class 172	69 Vehicles	2011

Electric Fleet

Class	Quantity	Built
Class 319	28 Vehicles	1988–1991*
Class 321	28 Vehicles	1988–1990†
Class 323	78 Vehicles	1992–1993
Class 350	308 Vehicles	2004–2005

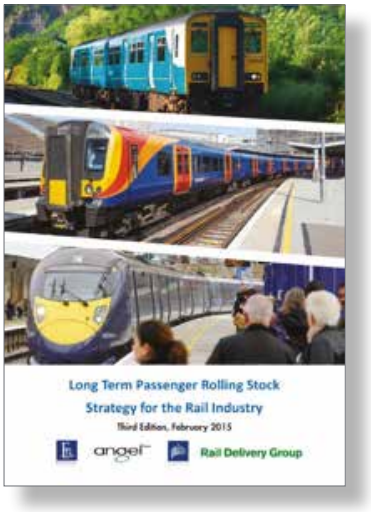
* Committed fleet by September 2015.
† Off lease September 2015.

Key Rolling Stock Publications

There are a number of key publications for rolling stock which we have listed here for reference.

The Rail Industry Sustainable Development Principles

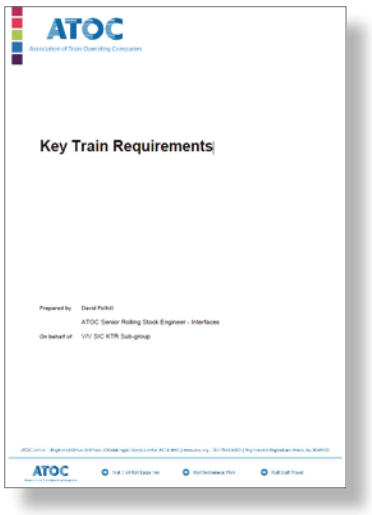
Industry Rolling Stock Strategy Steering Group



The Rail Technical Strategy

Rail Supply Group – Fast Track for Growth

The Key Train Requirements



Technical Specifications for Interoperability

ISBN 978-1-84864-157-0