
Data-driven fleet planning tools for cost saving and decarbonisation

ZERO | TYRE ANALYTICS | AERO ANALYTICS | PRECISION TRIAL ANALYTICS


# Fleet Decarbonisation & Transition to EV's

## Agenda:

- Introduction to Dynamon's Planning Software, ZERO:
  Discover how ZERO can help model your fleet's transition to EVs, ensuring optimal vehicle mix and load requirements aligned with grid capacity.
- EV Transition Test:
  Learn about this essential assessment tool and its application in evaluating your fleet's readiness for EV integration.
- Driving Fleet-Related Transition & Decarbonisation Plans:
  Explore various options for councils.
- Collaboration and Best Practices:

# About **US**


Dynamon, originating from Southampton University, emerged from collaborative efforts with Team GB during the 2012 Olympic Games.

Developed advanced simulation and data analytics to optimise equipment choice. We apply the same methodology at scale to the transport industry.

Our mission is to help logistics companies be more efficient by saving fuel and reducing $CO_2$ emissions.

# Government Projects

eFREIGHT 2030

- As a key member of the eFREIGHT 2030 consortium, Dynamon will collaborate with major industry players to support the deployment of 100 electric HGVs and 32 new charging locations.
- ZERO software will be used for modelling and optimising the integration electric HGVs into fleet operations

ZENFreight
Accelerating Decarbonisation of HGVs

- Dynamon is leading the ZENFreight consortium, spearheading efforts to accelerate the adoption of electric heavy goods vehicles (HGVs).
- The consortium includes leading truck manufacturers, an academic partner, fleet operators and an energy company, working together to decarbonise HGVs

Zemo Partnership
Accelerating Transport to Zero Emissions

- Accelerating Transport to ZERO emissions
- Working across sectors such as Buses & Coaches, Cars, Commercial Vehicles, Energy Infrastructure, Collaborative Interests
- Connects members with access and insights into government policy and technical developments.

# TRUSTED BY


Royal Mail
TOYOTA
currys
Transport for London
VOLVO
bp pulse
Teletrac Navman
METROPOLITAN POLICE
ASDA
BRIDGESTONE
GOODYEAR
MICHELIN
Continental
Sainsbury's
SCANIA
IKEA
M&S
EST. 1884
Wincanton
NHS
WELCHS TRANSPORT
webfleet
Zenith

# What is simulation?

- Mathematical computer programs that imitate real-world systems or processes.
- Allow users to experiment with different variables and scenarios to see how they might affect the outcome.

| | | |
|---|---|---|
| Flight Simulators | Vehicle Simulators | Race Simulators |
| Biological Simulators | Environmental Simulators | Computer Games |

# Simulation Benefits

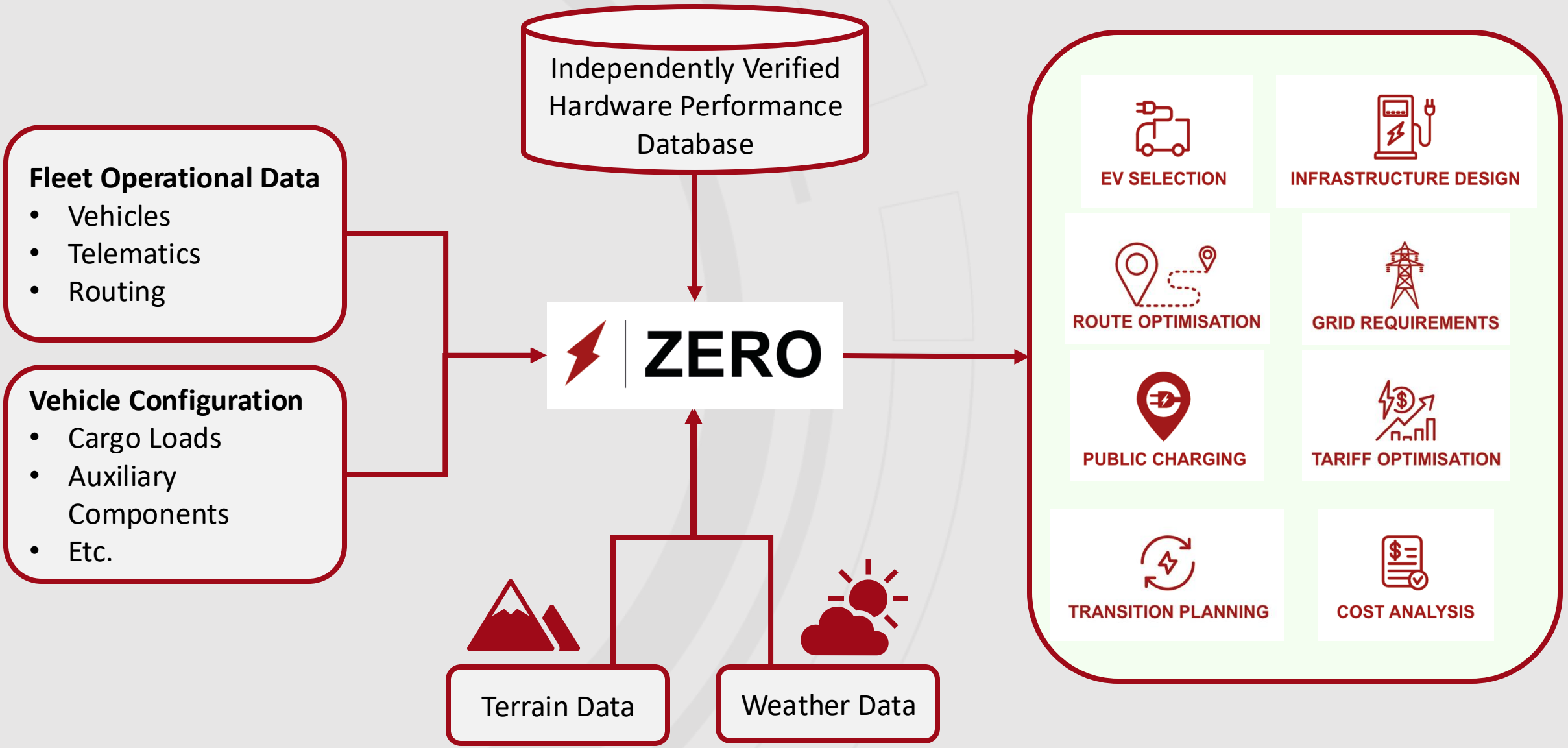
- Decision-making
- Planning
- Flexibility
- Cost-effectiveness
- Accuracy
- Speed

# Introducing **Zero**

- Forecasts performance of Electric Vehicles and charging infrastructure across all fleet departments and depots.
- Provides high-value insights for strategy, planning, procurement and operations.
- Uses advanced simulation, data analytics technology and our proprietary EV performance database.
- Integrates with real-world telematics to make sense of in-life data, enabling better fleet management decision-making.
- Provided as a Software-as-a-Service tool, scaled through Cloud-based infrastructure.

"The transition to electric is very exciting and full of possibilities. But for too many fleets, it also comes with uncertainty. At Dynamon, we create certainty, helping them get it right, first time."
**Dr Angus Webb**

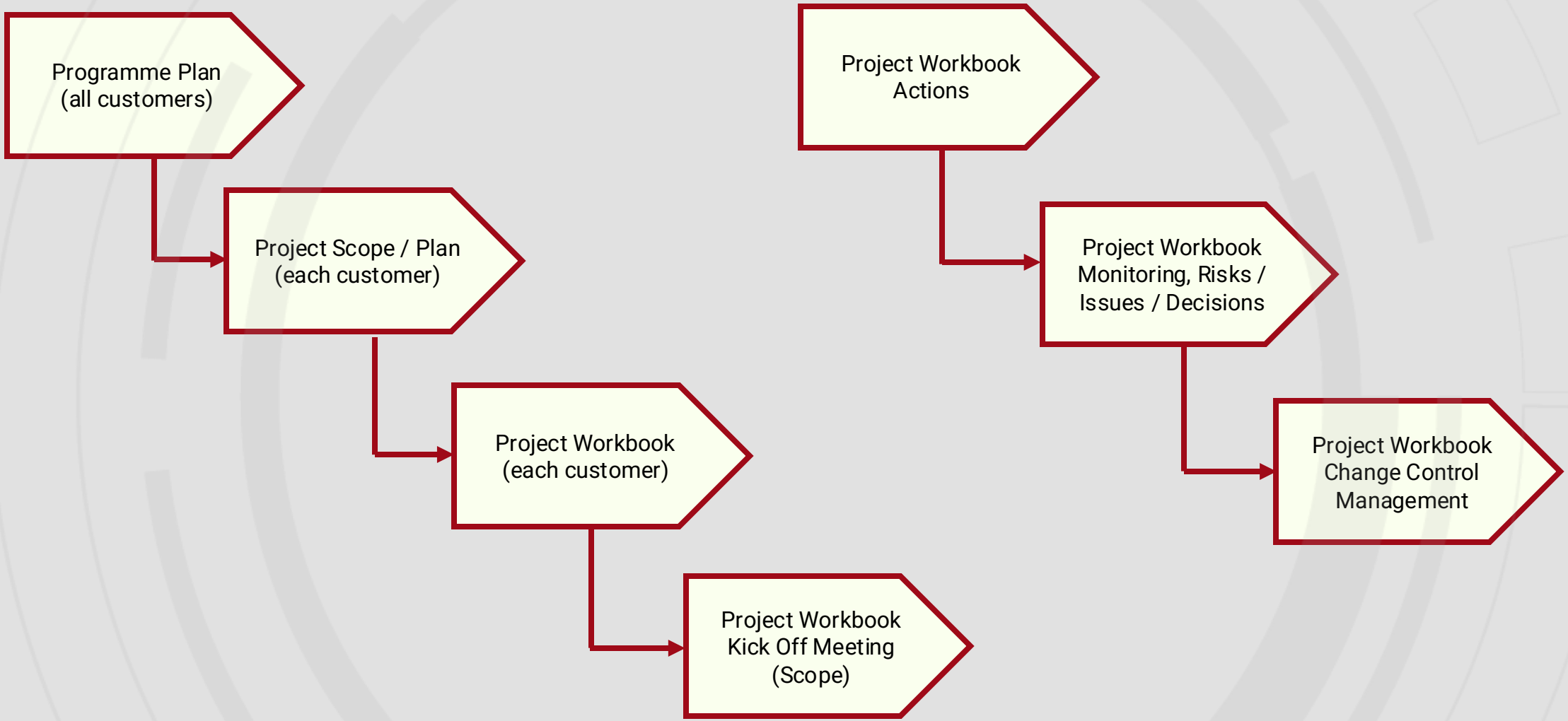
# About ZERO


Independently Verified Hardware Performance Database
Fleet Operational Data
• Vehicles
• Telematics
• Routing
Vehicle Configuration
• Cargo Loads
• Auxiliary Components
• Etc.
ZERO
Terrain Data
Weather Data
EV SELECTION
INFRASTRUCTURE DESIGN
ROUTE OPTIMISATION
GRID REQUIREMENTS
PUBLIC CHARGING
TARIFF OPTIMISATION
TRANSITION PLANNING
COST ANALYSIS

Our partnership approach to

# **Programme / Project Management**

# Dynamon – Project Transition Planning Workflow



# Programme / Project Structure

## Fleet Electrification Programme

**Key Business Stakeholders**

| Fleet | Operations | Drivers | Energy | Facilities | IT |
|---|---|---|---|---|---|
|  |  |  |  |  |  |

Scope – time, cost (CAPEX), quality

**Business Case Strategy**

Scope – what, when, how

# Fleet Decarbonisation Strategy – Achieving Net Zero

Local authorities need to consider:

- Size of their fleets – Usually large with a mix of LCV's, HCV's and equipment
- Identify which vehicles that are suitable for replacement with alternative fuelled vehicles (EVs) and by when (future 10-year plan)
- Formulate a Procurement strategy recognising the ZEV mandate, vehicle class lifecycles and whole life costs.
- Install chargepoints at council depots and review the options for optimum EV charging.
- Address local air pollution by reducing Greenhouse gas emissions and realise energy efficient targets

# Feasibility - Evaluation Phase ZERO

ZERO **Zero Data Analytics**

| Vehicles | Journeys | Infrastructure | Drivers |
|---|---|---|---|
| Fleet Utilisation, EV Optimisation Review | Ops Journey Duty Cycle Plan | Infrastructure Costs, Charging Software, Plan | Engagement / Awareness |
| Fleet Decarbonisation Plan (10yr) | | | |
| TCO | | | |
| Business Intelligence Monitors | | | |
| Downtime, Locations, Shifts | EV Duty Cycle Optimisation | Fully Integrated Depot, Home On Road | Training, Behaviour, Payments |
| EV Procurement, Movements | | | |
| By Vehicle Class | | | |
| CAPEX, Opex CO2, NoX, Pm's | | | |

Scope – time, cost (CAPEX), quality

**(Draft) Business Case / Plan**

Scope – what, when, how

# Fleet Electrification Programme

# EV Transition Test

# What do we need from you ?

# Zero - Data Loading, Simulation & Analytics

## Data Loading

**Fleet**
Load Vehicles,
Locations & Classes

**Telematics**
Load Driving data,
Journeys
(or create Synthetics)

**Route Classifier**
Create Journeys and
duty cycles

## Simulate

**Assign ICE to EV**
Model & Battery
Options

**Energy Model**
Calculate Energy
Consumption by
vehicle

## Analytics

**Depot Infrastructure**
Calculate Depot
Charger Config & Grid
Requirements

**Plan / TCO Model**
**Calculate the Plan /**
**TCO & Emissions for**
**each Vehicle Type /**
**Class**

# Delivery Phase – Plan – Time, Cost & Quality

ZERO **Zero Data Analytics**

| Vehicles | Journeys | Infrastructure | Drivers |
|---|---|---|---|
| Fleet Utilisation, EV Optimisation Review | Ops Journey Duty Cycle Plan | Costs, Charging Infrastructure Software, Plan | Engagement / Awareness |
| Fleet Decarbonisation Plan (10yr) | | | |
| TCO | | | |
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| Downtime, Locations, Shifts | EV Duty Cycle Optimisation | Fully Integrated Depot, Home On Road | Training, Behaviour, Payments |
| EV Procurement, Movements | | | |
| By Vehicle Class | | | |
| Monitors CAPEX, Opex Co2, NoX, Pm's | | | |

Scope – time, cost, quality **Business Case / Plan** Scope – what, when, how

# Working together - Partnerships

- LA Teams can analyse Zero outputs internally with own resources
- LA Teams can partner with an APSE associate to recommend options
  - Collaborate / Learn best practice and share opportunities with other LA's
  - Monitor and measure business intelligence outputs and change supported by APSE performance networks
  - Grab some APSE awards during 2024/5
- LA Teams could use their own contractors
- Dynamon could support

Over 570 councils have declared Climate emergencies to date!

*Is "do nothing" still an option?*

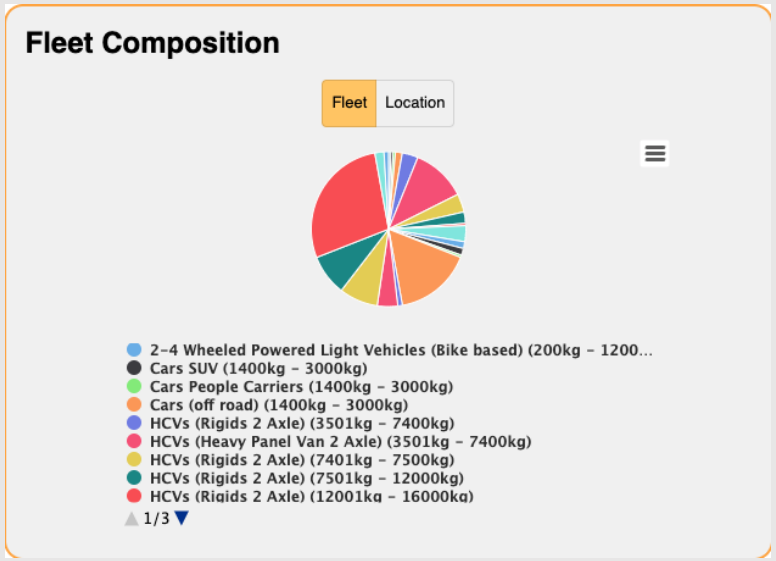
# **Insights** and **Analysis**

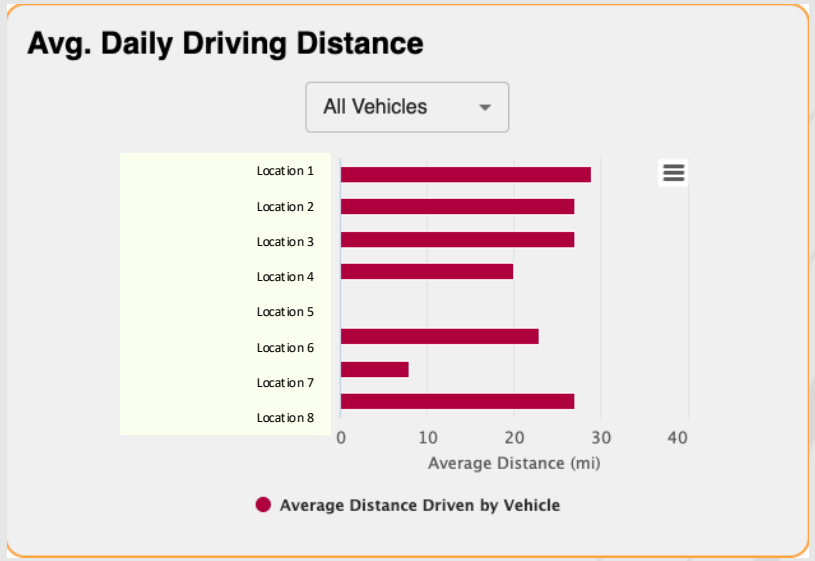
## How can Zero help ?

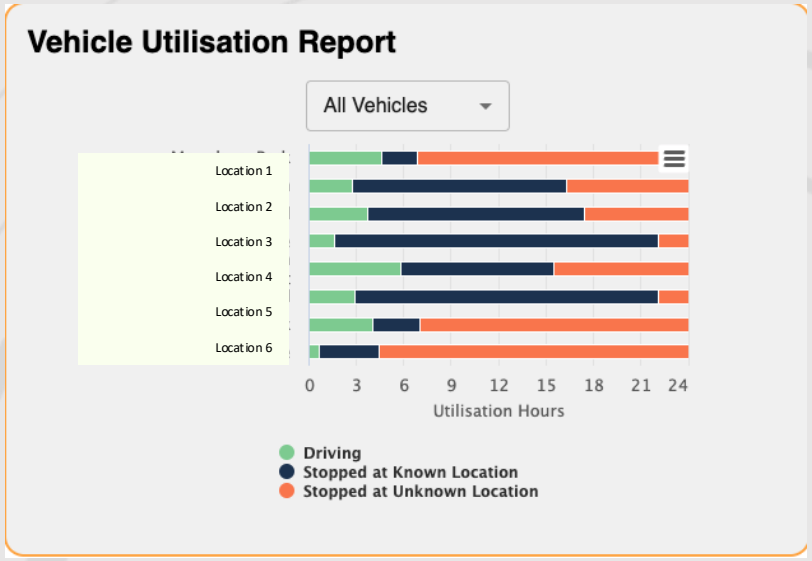
# Insights/Analysis Summary

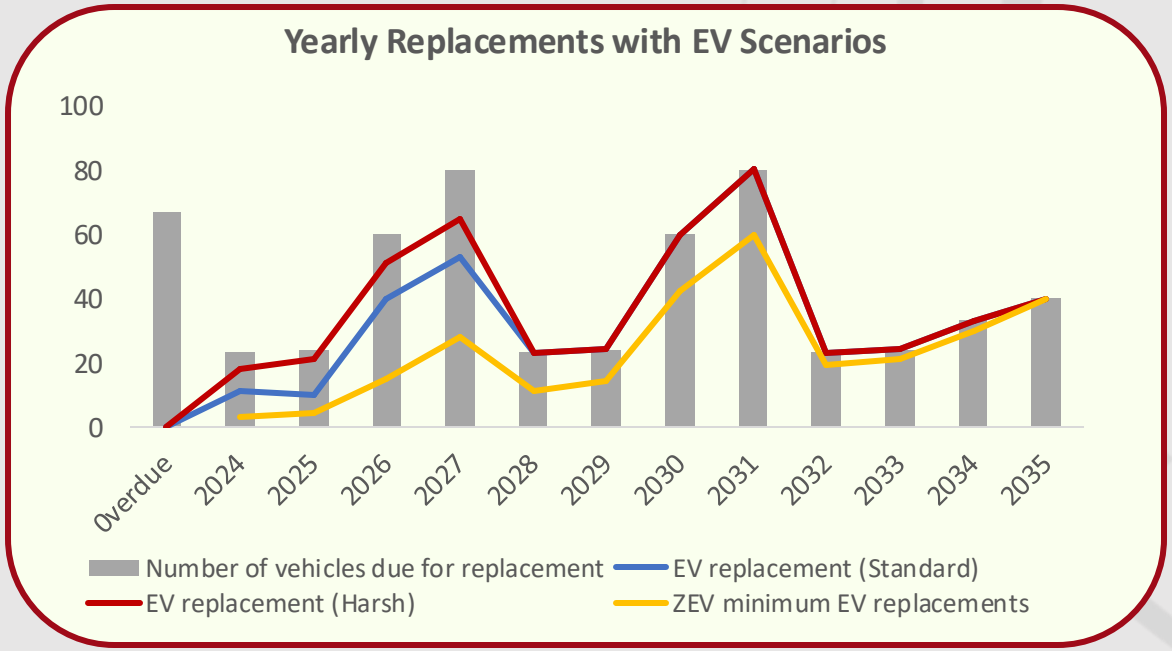
| | |
|---|---|
| Dashboards, KPI's, Monitors & Reporting Metrics | Develop fleet transition plan with options |
| Vehicle Utilisation Baseline Review | Visualisation of low utilisation assets<br>Optimisation the number of assets required by operational team |
| Telematics - EV Energy Model | Route Classifier - Forecast energy usage demand by vehicle & operational duty cycle |
| ICE to EV Transition Plan Feasibility | Assign EV Spec options to ICE Vehicle types<br>Simulate Different Vehicle Battery Sizes & Charger Configurations<br>Develop emissions reduction opportunities |
| Depot Charging Infrastructure Model | Develop infrastructure design for each depot<br>Calculate the number & type of chargers required (AC/DC)<br>Identify Grid requirements / Public charging<br>Depot tariff optimisation |
| Financial Planning<br>Total Costs of Ownership | Financial Impact Assessment - ICV vs EV by Class/type<br>Capex & Opex Cash Flow identification<br>Emissions reduction benefits |
| Fleet Decarbonisation<br>Roll Out Plan – 10 Years | Lifecycle transition planning by Vehicle Class/Type |

# Dashboard KPI's "As-Is" Baseline & "To-Be" Reporting



# Route Classification - Telematics

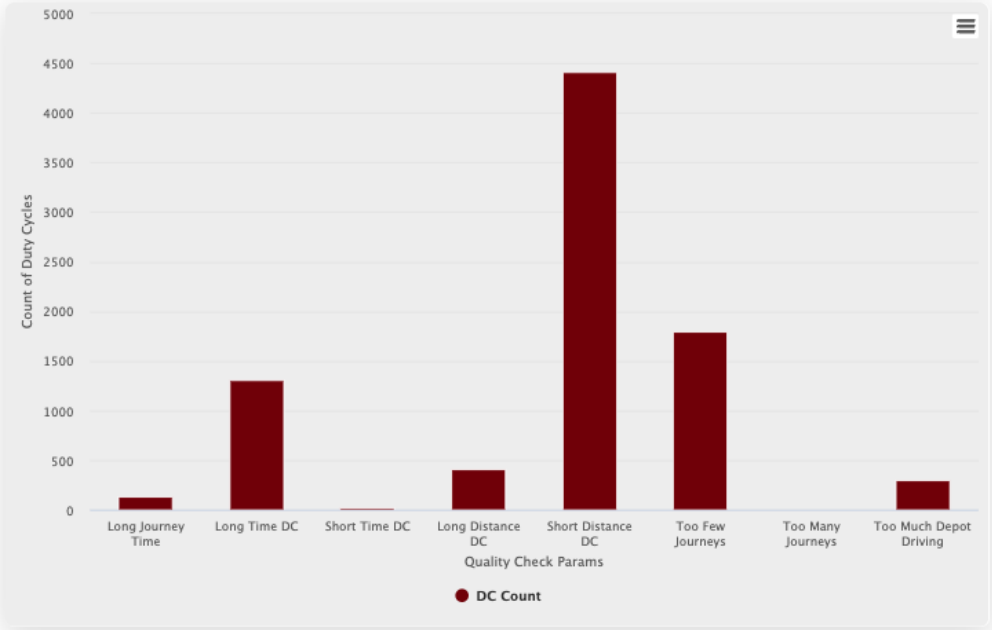
## TELEMATICS SETUP

1. LINK TELEMATICS ID

2. ANALYSE OPERATIONS

3. ANALYSIS SUMMARY

| NUMBER OF DUTY CYCLES IDENTIFIED | PASSED DUTY CYCLES | FAILED DUTY CYCLES | TOTAL DISTANCE ANALYSED | DISTANCE OF FAILED DUTY CYCLES |
|---|---|---|---|---|
| 76,180 | 70,062 (92%) | 6,118 (8%) | 8,722,077 MI | 728,688 MI (8%) |




Group By Locations | FAILED | ALL

Search...

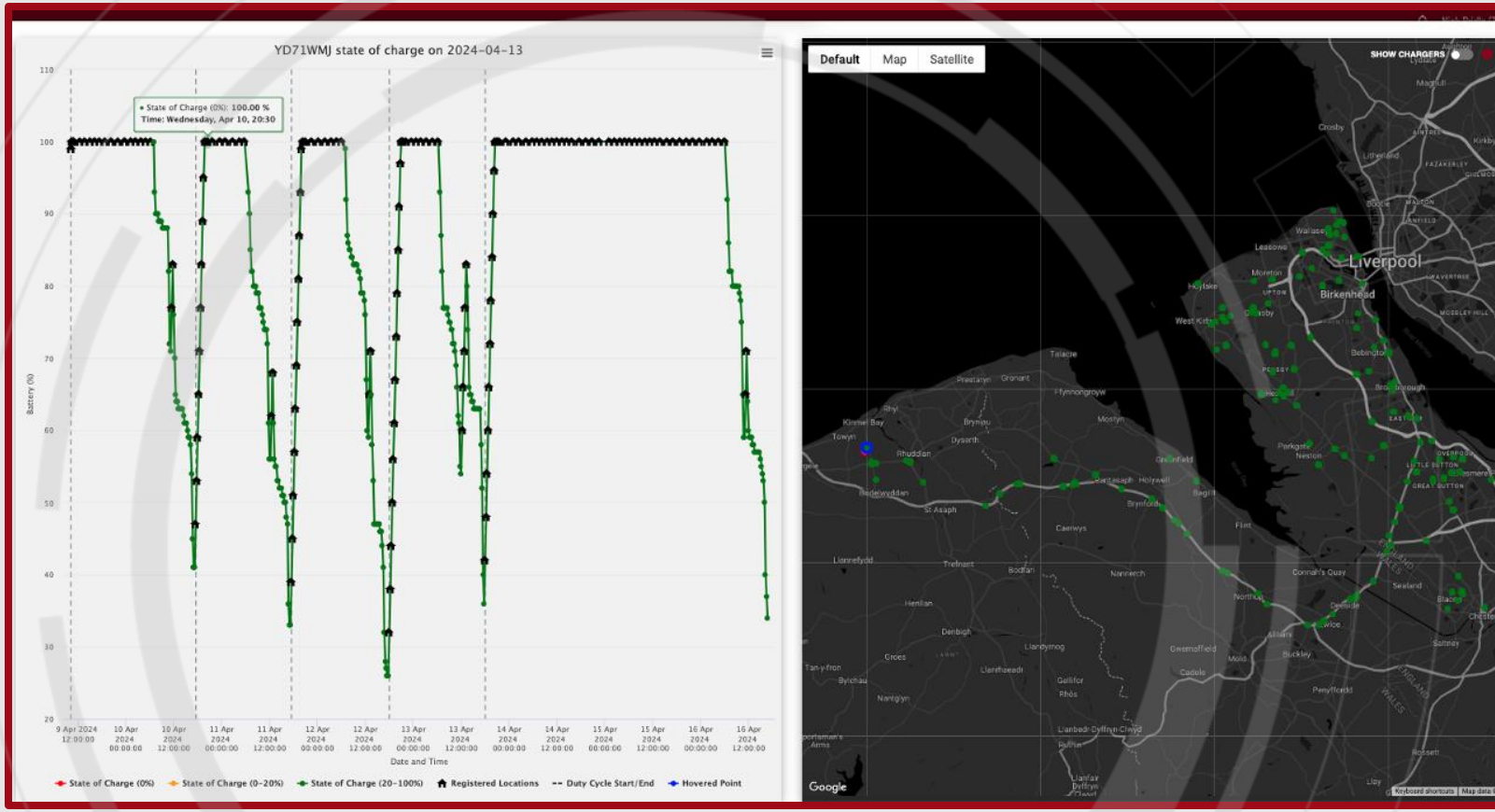
| Registration | Location | Distance (mi) | Time | Fail Reasons | |
|---|---|---|---|---|---|
| YD71WKJ | Snodland CSC | 28.6 mi | 29h 26mins | Too Few Journeys Duty | SELECT |
| YD71WKJ | Snodland CSC | 0.4 mi | 13h 8mins | Short Distance Duty Cy | SELECT |
| YD71WKJ | Snodland CSC | 45.3 mi | 24h 53mins | Too Few Journeys Duty | SELECT |
| YD71WKJ | Snodland CSC | 45.8 mi | 53h 33mins | Too Few Journeys Duty | SELECT |
| YD71WKJ | Snodland CSC | 0 mi | 170h 10mins | Long Time Duty Cycle, S | SELECT |
| YD71WKJ | Snodland CSC | 127.5 mi | 29h 55mins | Long Location Stop Dis | SELECT |
| YD71WKJ | Snodland CSC | 0.1 mi | 15h 19mins | Short Distance Duty Cy | SELECT |

Total Rows: 6,118

# EV Energy Model

Driving data and locations mapped via Telematics

**Journeys**
Classify routes & create duty cycles with stops and total distance

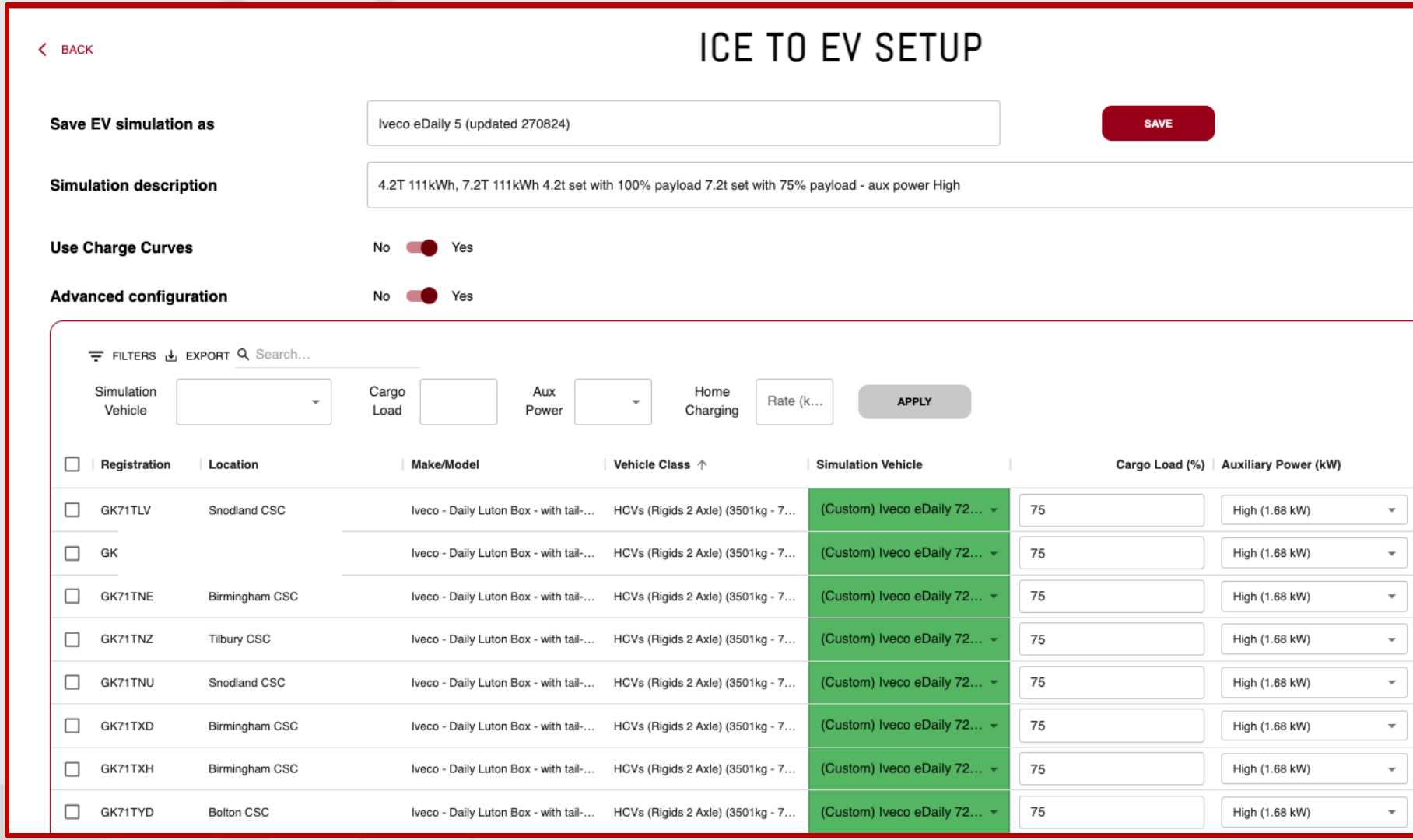


# ICE to EV Selection

Use ZERO to **choose the best EVs for your specific operation**. Make sure EVs can do the work required, but don't have overly sized batteries causing unnecessary costs.

**Analyse the performance** of any commercial EV in any fleet operation by accessing a validated database of electric vehicles.

ZERO provides **real-world EV performance insights** considering specific vehicle configurations, modifications, fleet operations, driver behaviour, road conditions, weather, vehicle payloads, and auxiliary power consumption (e.g., refrigeration units and tail lifts).



# Fleet Route Classification / Simulation

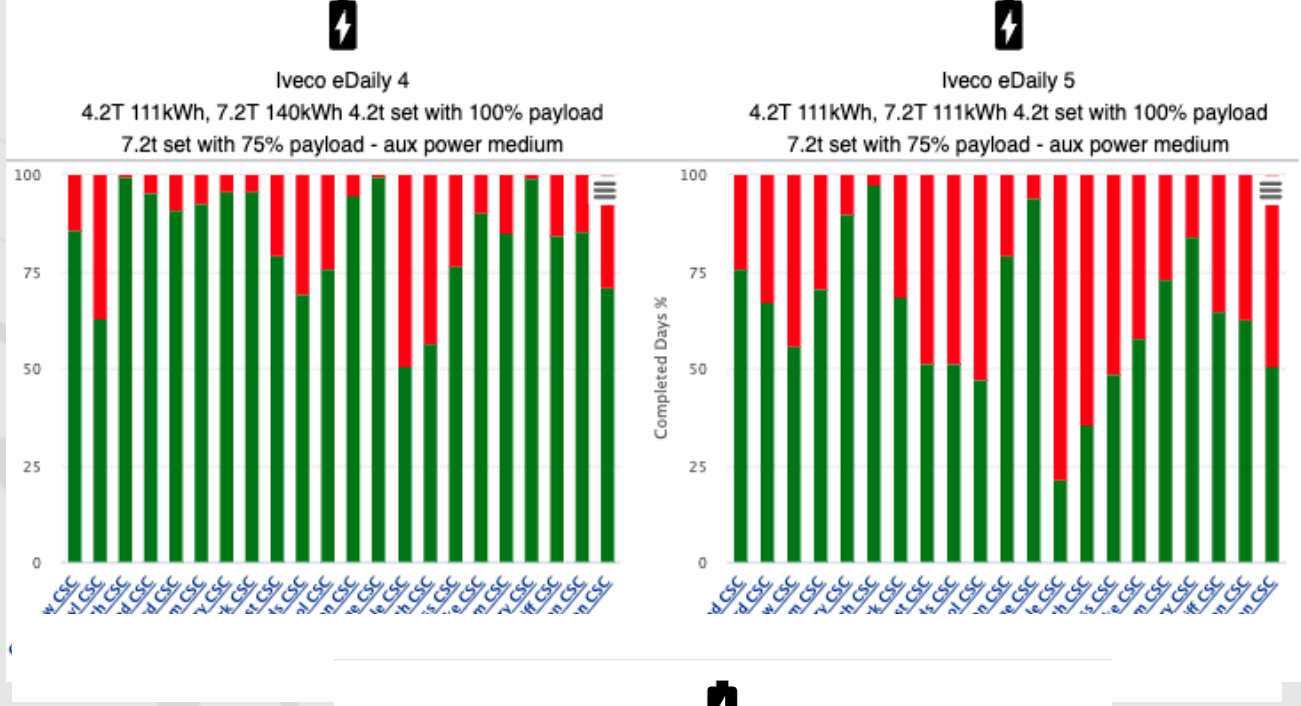
# Simulation of Different Battery and Charging scenarios

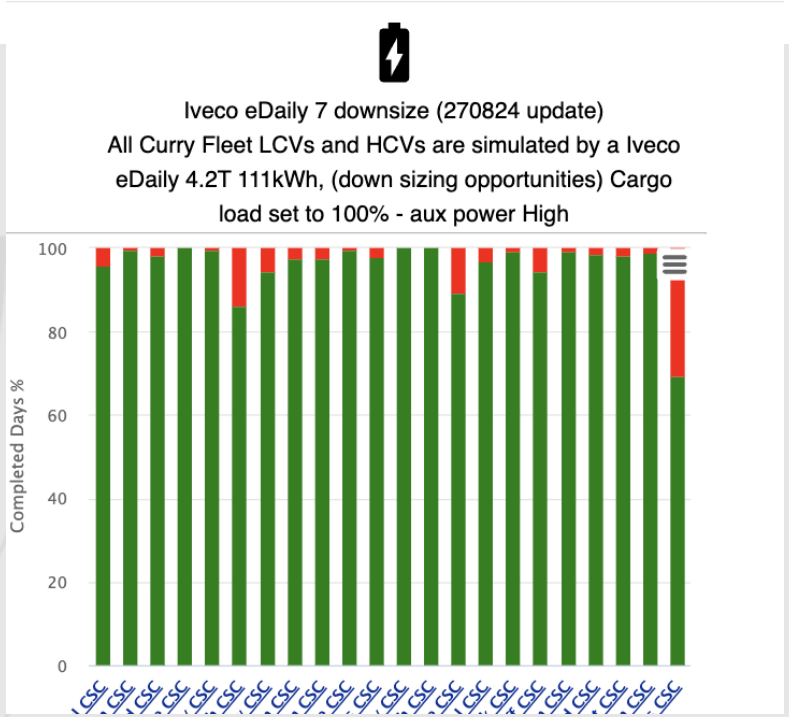
Understand required battery and charger combinations

See which vehicles and routes can be electrified today

Future planning for transition as battery and charging technology improves

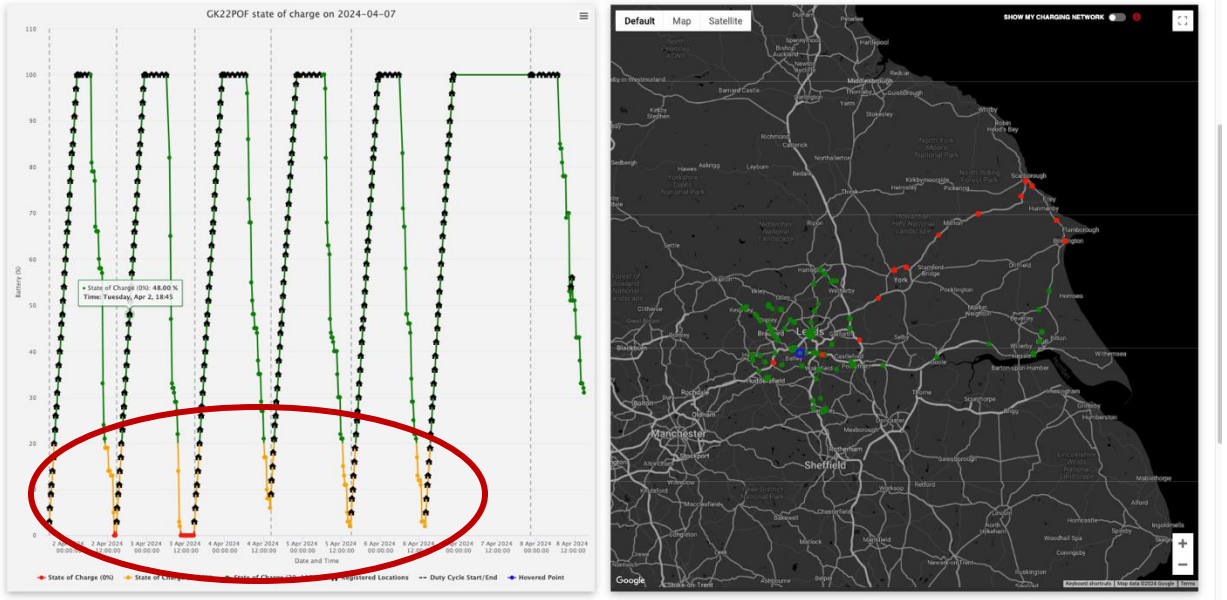
Dowsizing fleet options scenarios



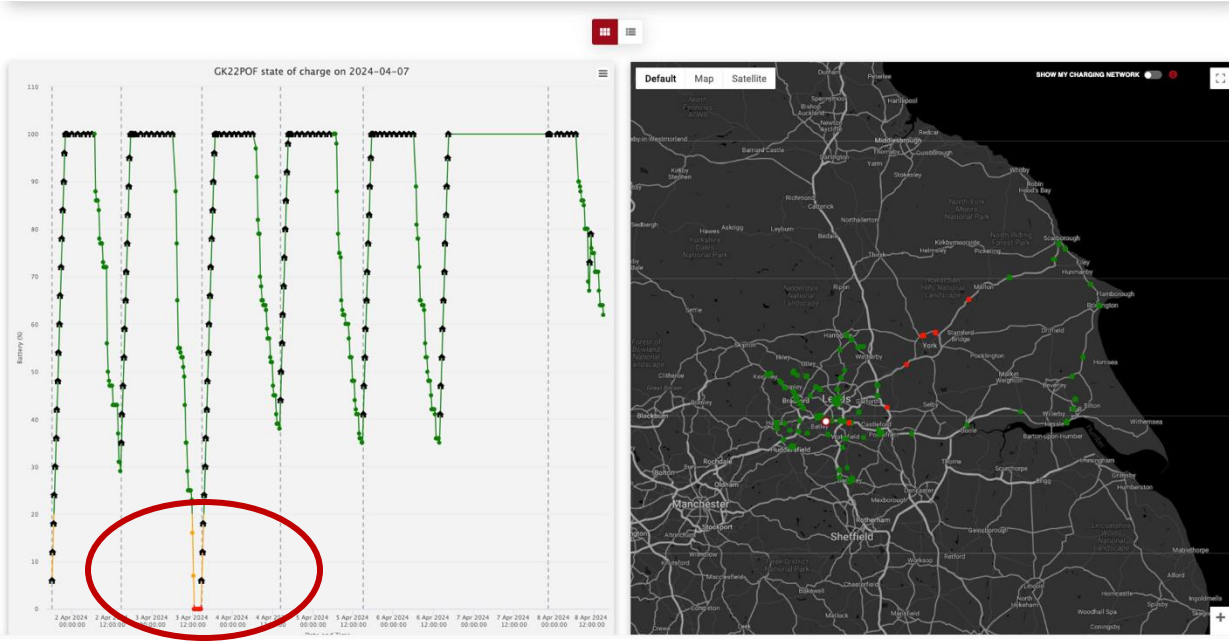



# Duty Cycle Analysis

- Average duty cycle distance - 130 miles
- Iveco eDaily 7,2t 74kW battery – Duty cycle incomplete,
- Iveco eDaily 7,2t 111kW battery – Duty cycle almost complete, bigger battery
- Depot charge Power not an issue




7.2t box van 74kW Battery



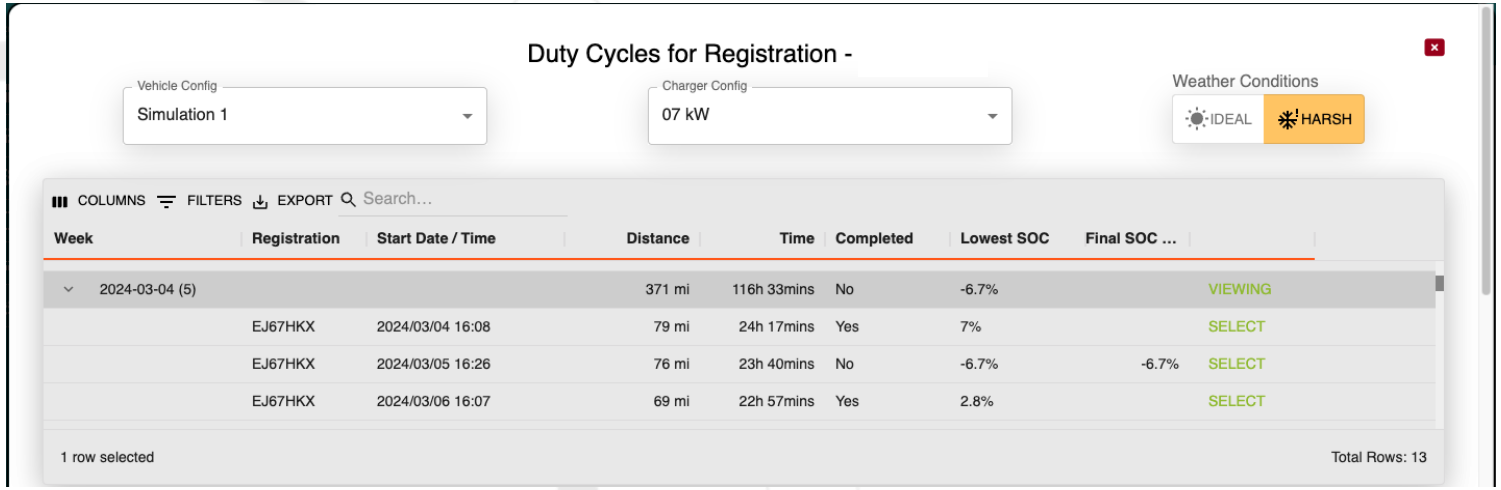

7.2t box van 111kW Battery

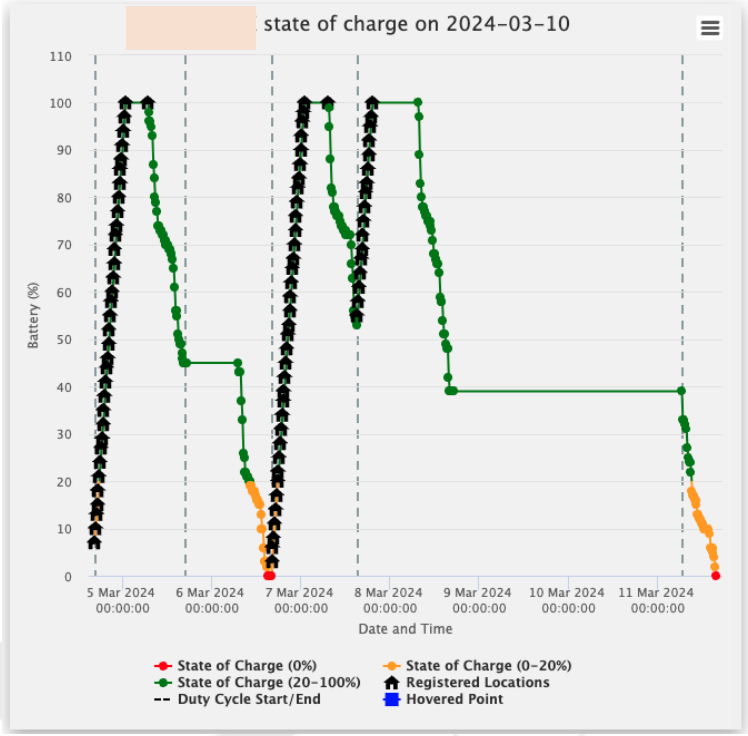
# Duty Cycle Analysis

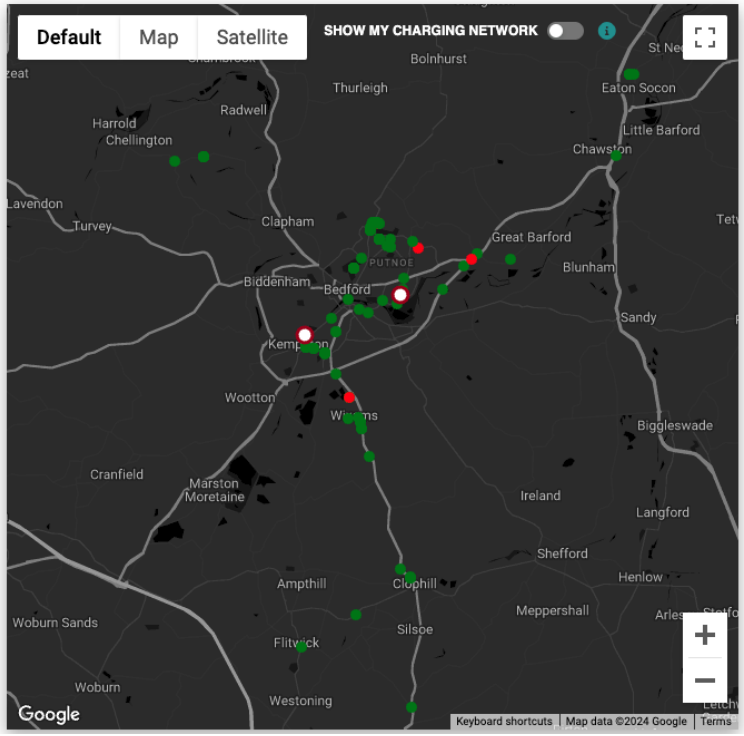
Transition analysis

- Vehicle = LCV 3.5t (75kWh battery)
- Completed duty cycle = 71%
- Average duty cycle distance = 55 miles
- Average Journey distance = 44 miles
- SOC at zero on two occasions
- Location dwell time = 11 hours
- 7kW charger is enough to fully charge the vehicle due to dwell time

- Issue = Vehicles not returning to depot

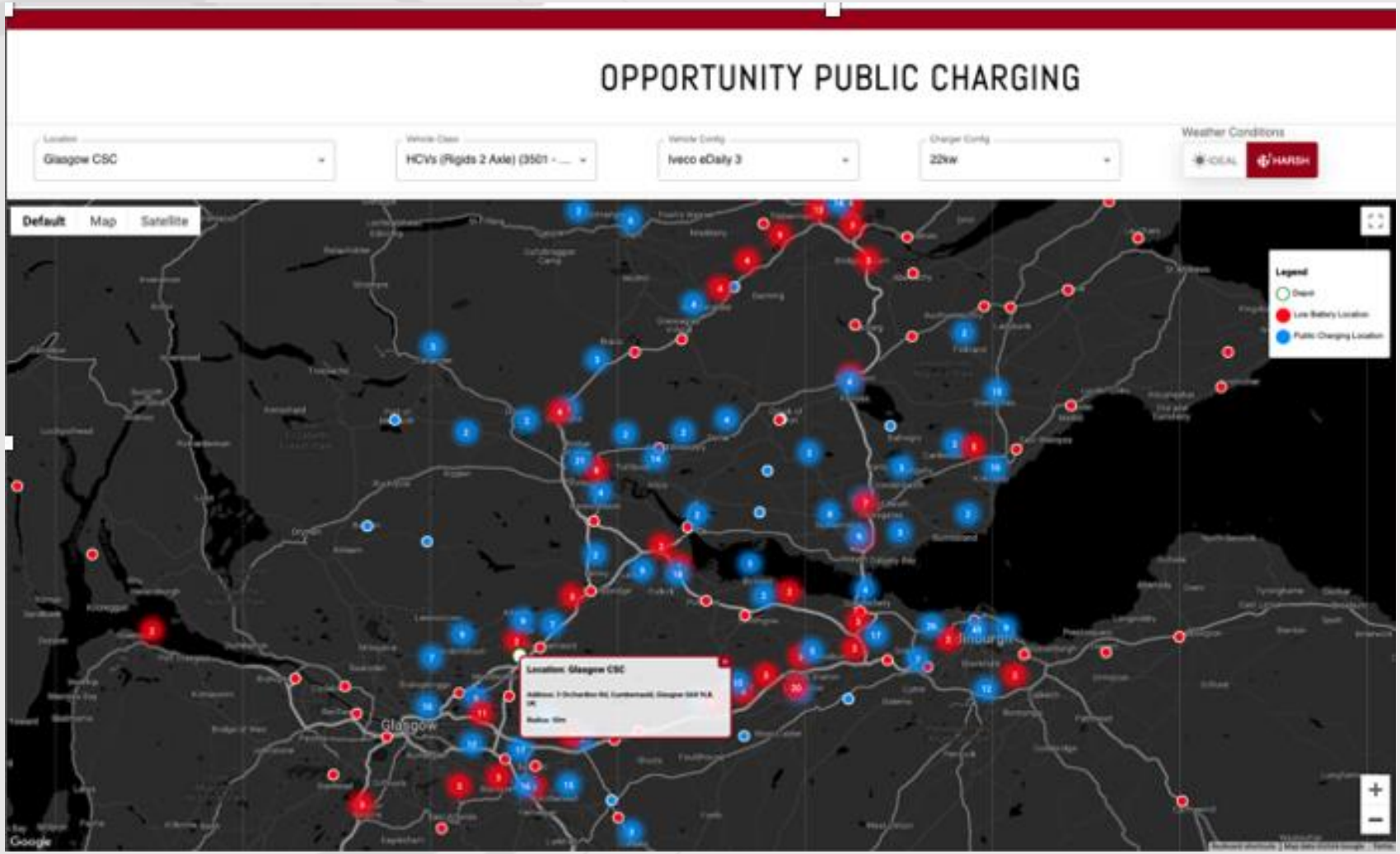


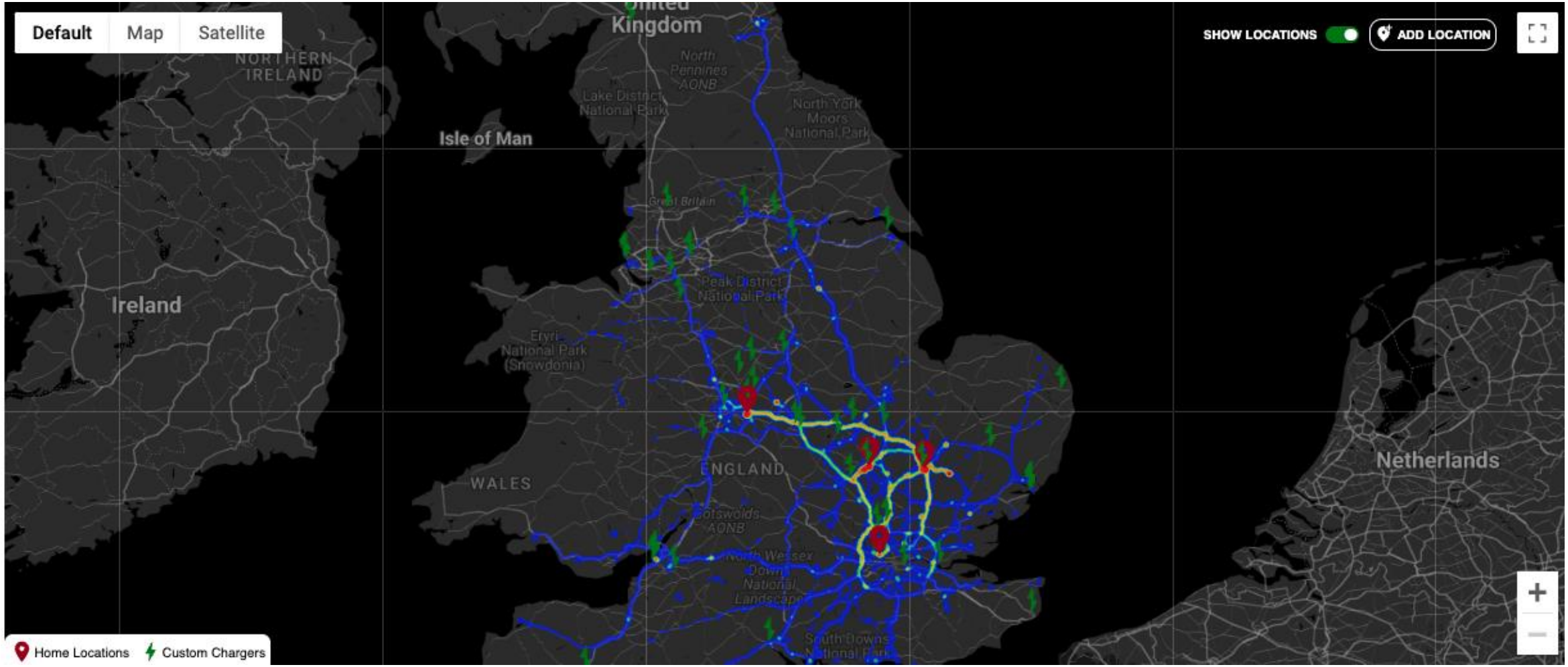



# Public Charging

Detailed analysis of nearby public charging points for when electric vehicles require top-up and identify hot spots where future infrastructure could be deployed.



# Heat Map Analysis (eFREIGHT 2030)



# Depot Simulation results by Vehicle Class

| 22 locations<br>500 Fleet Vehicles (internal) | Total vehicles | No of vehicles 3.5t | No. of vehicles 7.2t | Av Daily mileage driven 3.5t | Av Daily mileage driven 7.2t | Charger Power | Iveco eDaily 1<br>3.5T 37kWh, 7.2T 74kWh | Iveco eDaily 2<br>3.5T 74kWh, 7.2T 111kWh | Iveco eDaily 3<br>4.2T 111kWh, 7.2T 111kWh | Iveco eDaily 3<br>Depot Transition Challenge |
|---|---|---|---|---|---|---|---|---|---|---|
| **Location 1** | | | | | | | | | | **9.4** |
| All vehicles | 22 | | | | | | 54.02% | 85.57% | 87.54% | |
| Heavy Panel Van(LCV) | | 2 | | **111** | | 7kwh | 13.64% | 66.67% | 93.94% | |
| Heavy Vehicle Small (HCV) | | | 20 | | **93** | | 56.24% | 86.61% | 87.19% | |
| | | | | | | | | | | |
| Bolton (all vehicles) | 22 | | | | | | 54.73% | 87.54% | 88.49% | |
| Bolton (Heavy Panel Van(LCV) | | 2 | | **111** | | 22kWh | 24.24% | 87.88% | **96.97%** | |
| Bolton (Heavy Vehicle Small (HCV) | | | 20 | | **93** | | 56.41% | 87.52% | **88.02%** | |
| | | | | | | | | | | |
| Bolton (all vehicles) | 22 | | | | | | 55.21% | 87.85% | 88.56% | |
| Bolton (Heavy Panel Van(LCV) | | 2 | | **111** | | 75kWh | 27.27% | 93.24% | 98.48% | |
| Bolton (Heavy Vehicle Small (HCV) | | | 20 | | **93** | | 56.74% | 87.52% | 88.02% | |

# Depot Simulation results by Vehicle Class

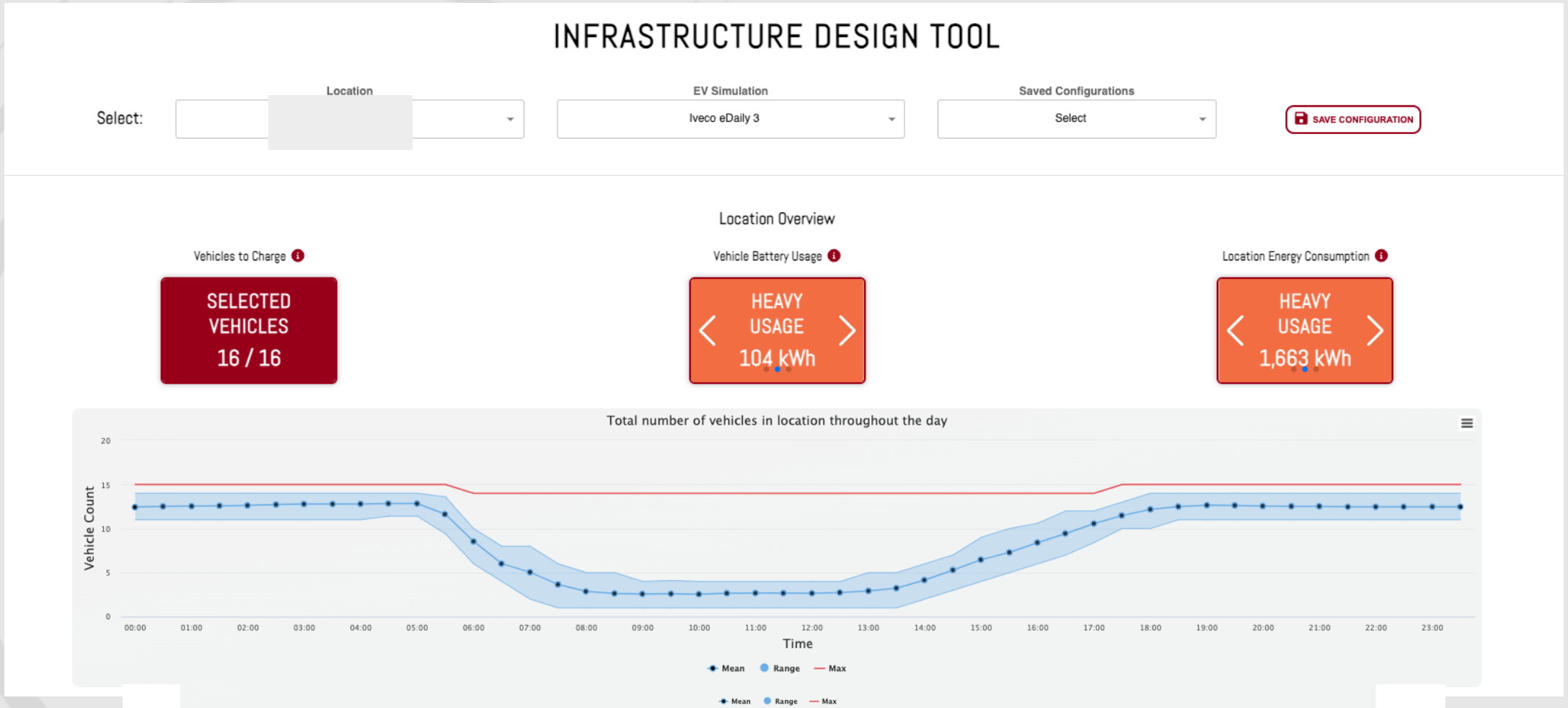
## Vehicle Simulation –

- Vehicle Class, Model & Battery size
- Charger Power

| | Spec 1 = Iveco eDaily 3.5t = 37kW battery & 7.2t= 74kWh battery | | | Spec 2 = Iveco eDaily 3.5t = 74kW battery & 7.2t= 111kWh battery | | | Spec 3 = Iveco eDaily 3.5t =111kW battery & 7.2t= 111kWh battery | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Iveco eDaily 1 - 22kw | Iveco eDaily 1 - 7 kW | Iveco eDaily 1 - 75kw | Iveco eDaily 2 - 22kw | Iveco eDaily 2 - 7 kW | Iveco eDaily 2 - 75kw | Iveco eDaily 3 - 22kw | Iveco eDaily 3 - 7 kW | Iveco eDaily 3 - 75kw | Grand Total |
| Vehicle 1 | 55.68 | 54.55 | 55.68 | 92.05 | 92.05 | 92.05 | 92.05 | 92.05 | 92.05 | 79.80 |
| Vehicle 2 | 50.00 | 50.00 | 50.00 | 91.67 | 88.89 | 91.67 | 91.67 | 88.89 | 91.67 | 77.16 |
| Vehicle 3 | 64.52 | 64.52 | 64.52 | 91.94 | 91.94 | 91.94 | 93.55 | 93.55 | 93.55 | 83.33 |
| Vehicle 4 | 67.47 | 67.47 | 67.47 | 93.98 | 93.98 | 93.98 | 95.18 | 95.18 | 95.18 | 85.54 |
| Vehicle 5 | 64.77 | 63.64 | 64.77 | 96.59 | 95.46 | 96.59 | 96.59 | 95.46 | 96.59 | 85.61 |
| Vehicle 6 | 63.51 | 63.51 | 63.51 | 90.54 | 90.54 | 90.54 | 91.89 | 91.89 | 91.89 | 81.98 |
| Vehicle 7 | 37.50 | 37.50 | 38.75 | 77.50 | 77.50 | 77.50 | 77.50 | 77.50 | 77.50 | 64.31 |
| Vehicle 8 | 42.05 | 42.05 | 42.05 | 71.59 | 71.59 | 71.59 | 71.59 | 71.59 | 71.59 | 61.74 |
| Vehicle 9 | 71.95 | 71.95 | 73.17 | 90.24 | 89.02 | 90.24 | 92.68 | 91.46 | 92.68 | 84.82 |
| Vehicle 10 | 76.09 | 76.09 | 76.09 | 95.65 | 95.65 | 95.65 | 97.83 | 97.83 | 97.83 | 89.86 |
| Vehicle 11 | 46.75 | 46.75 | 48.05 | 81.82 | 77.92 | 81.82 | 81.82 | 79.22 | 81.82 | 69.55 |
| Vehicle 12 | 61.18 | 61.18 | 62.35 | 92.94 | 90.59 | 92.94 | 92.94 | 90.59 | 92.94 | 81.96 |
| Vehicle 13 | 51.92 | 51.92 | 51.92 | 92.31 | 92.31 | 92.31 | 92.31 | 92.31 | 92.31 | 78.85 |
| Vehicle 14 | 50.00 | 50.00 | 50.00 | 68.18 | 68.18 | 68.18 | 68.18 | 68.18 | 68.18 | 62.12 |
| Vehicle 15 | 57.45 | 57.45 | 57.45 | 91.49 | 90.43 | 91.49 | 91.49 | 90.43 | 91.49 | 79.91 |
| Vehicle 16 | 47.13 | 47.13 | 47.13 | 79.31 | 78.16 | 79.31 | 79.31 | 78.16 | 79.31 | 68.33 |
| Vehicle 17 | 24.24 | 13.64 | 27.27 | 87.88 | 66.67 | 93.94 | 96.97 | 93.94 | 98.49 | 67.00 |
| Vehicle 18 | **54.84** | **54.08** | **55.30** | **87.39** | **85.34** | **87.75** | **88.44** | **87.54** | **88.53** | **76.58** |

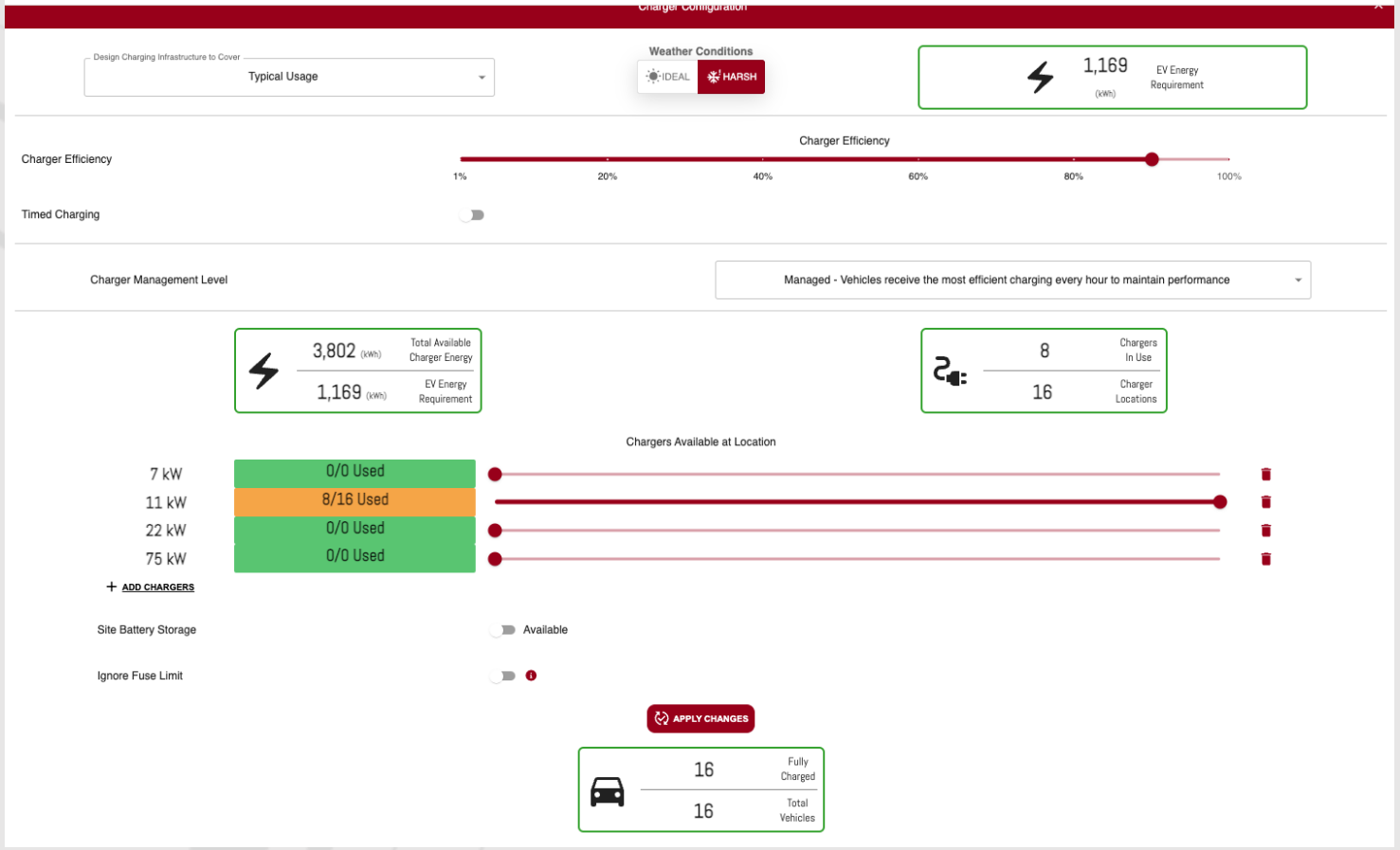
# Infrastructure Design

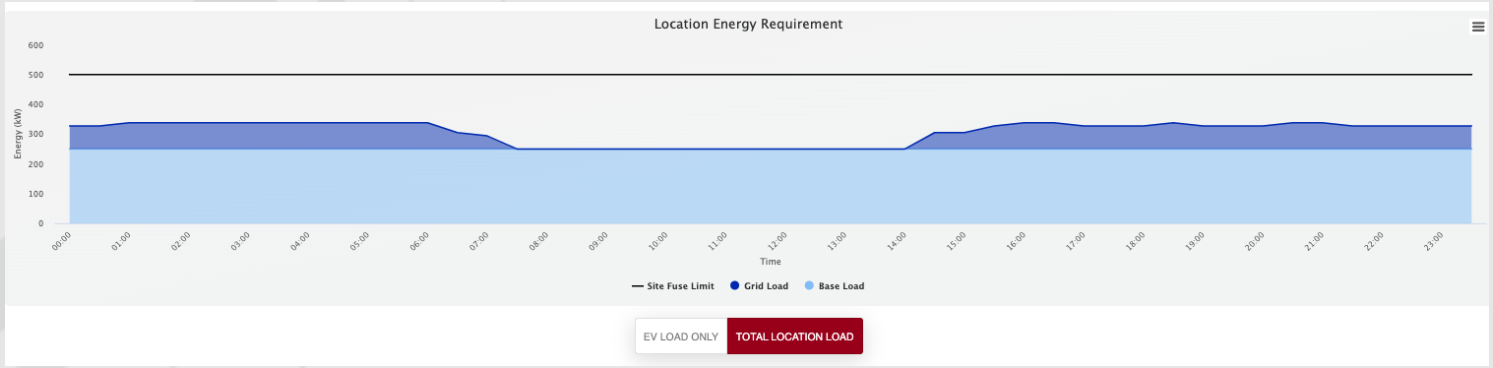
# Infrastructure Design – Depot Charging



# Infrastructure Design – Depot Charging

- ✓ Design infrastructure to support charging requirements
- ✓ Analyse projected electrical load throughout the day
- ✓ Find the optimum tariff for your unique charging profile



# Fleet Transition Decarbonisation Planning – inc. TCO

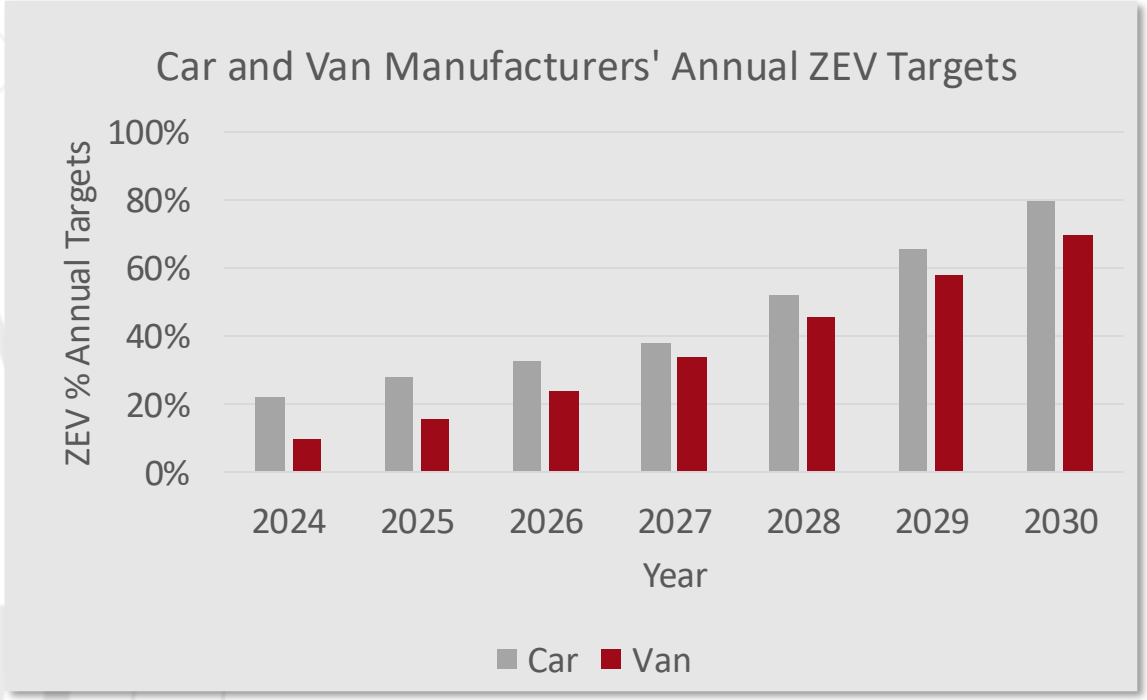
# Market Context

The recent Government announcement to reinstate the date for the ban on the sale of the traditional internal combustion engine vehicles from 2035 to 2030

The zero-emission vehicle (ZEV) mandate means that in 2024, 22% of all cars sold by manufacturers in the UK must be fully electric,  rising incrementally year on year until it reaches 80% in 2030. Electric van sales have slightly lower targets, starting at 10% in 2024 and rising to 70% by 2030.

Forecasts suggest there will be 8 million BEVs on UK road by 2030, an eightfold increase on the 1 million BEVs currently on the road.

This significant increase highlights how fleets need to be prepared and ahead of the curve when it comes to their fleet electrification and associated charging infrastructure.




More than 570 local authorities in the UK have declared a climate emergency, covering around 95% of the population. Many of which are aiming to be carbon neutral by 2030 and have net zero targets before the Government's legally binding date in 2050.

Fleet and vehicle emissions account for a large proportion of emissions and therefore electrification of these assets will be a key focus in the coming years.

# Fleet Transition / Decarbonisation Plan Strategy

**Fleet related transition & decarbonisation plans options**

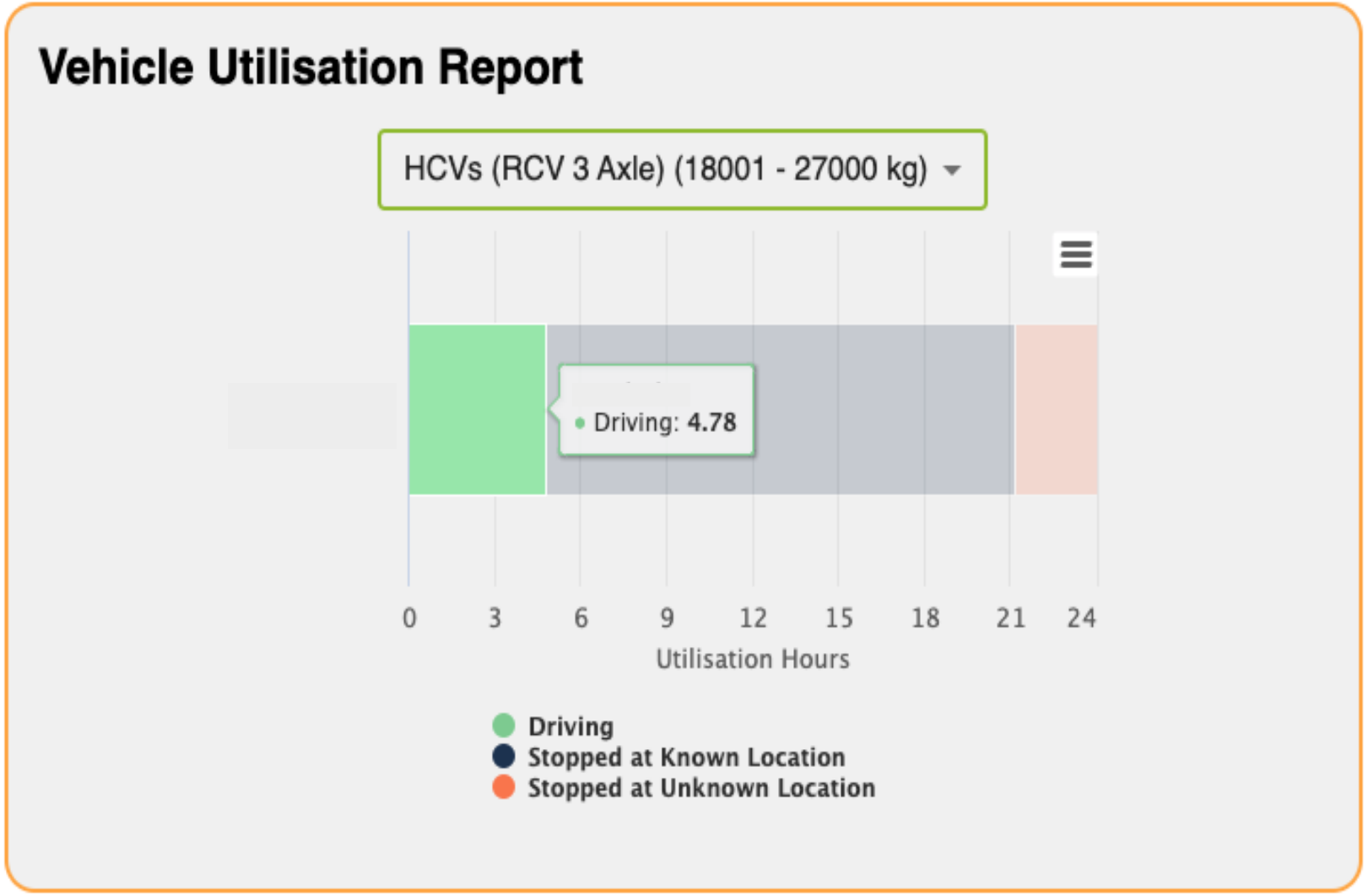
- Baseline ICE replacement plan 10 years *(Do nothing)*
  - What does your current ICE replacement plan look like ?
  - Peaks and troughs based on lifecycles and CAPEX shortages ?
  - CAPEX & $CO_2$ impacts by year

- ZEV Mandate Overlay (Car & Commerical Vehicles)
  - What does your baseline replacement plan (do nothing) look like with a ZEV mandate overlay to 2030 ?
  - CAPEX & $CO_2$ impacts by year

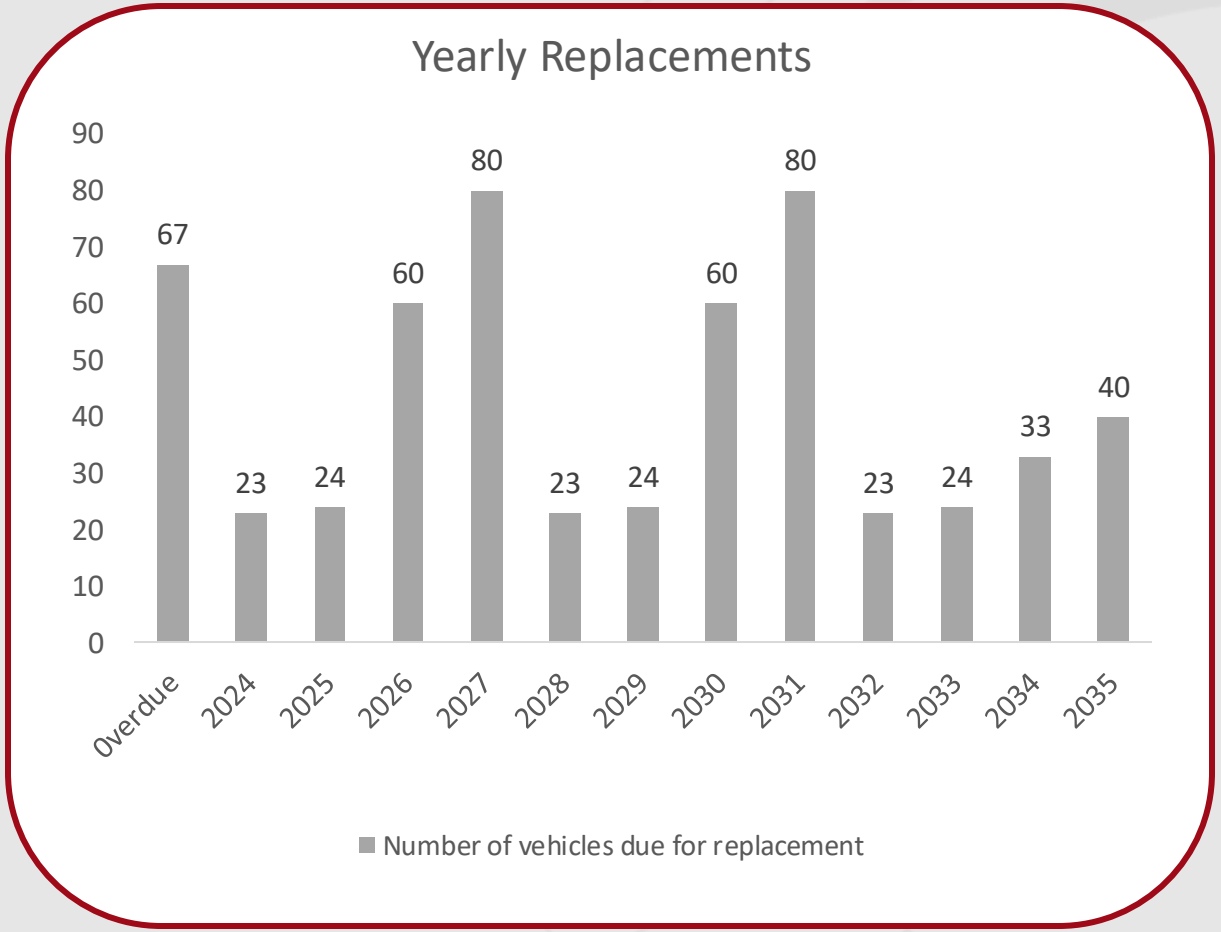
- ZERO transitions option overlayed on Decarbonisation plan
  - Offer the board 3 decarbonisation plans as part of the programme
  - Take into account overdue Asset impacts
  - Plan for stranded assets
  - Depot charging insights, chargers required with power impacts
  - CAPEX & $CO_2$ impacts by year

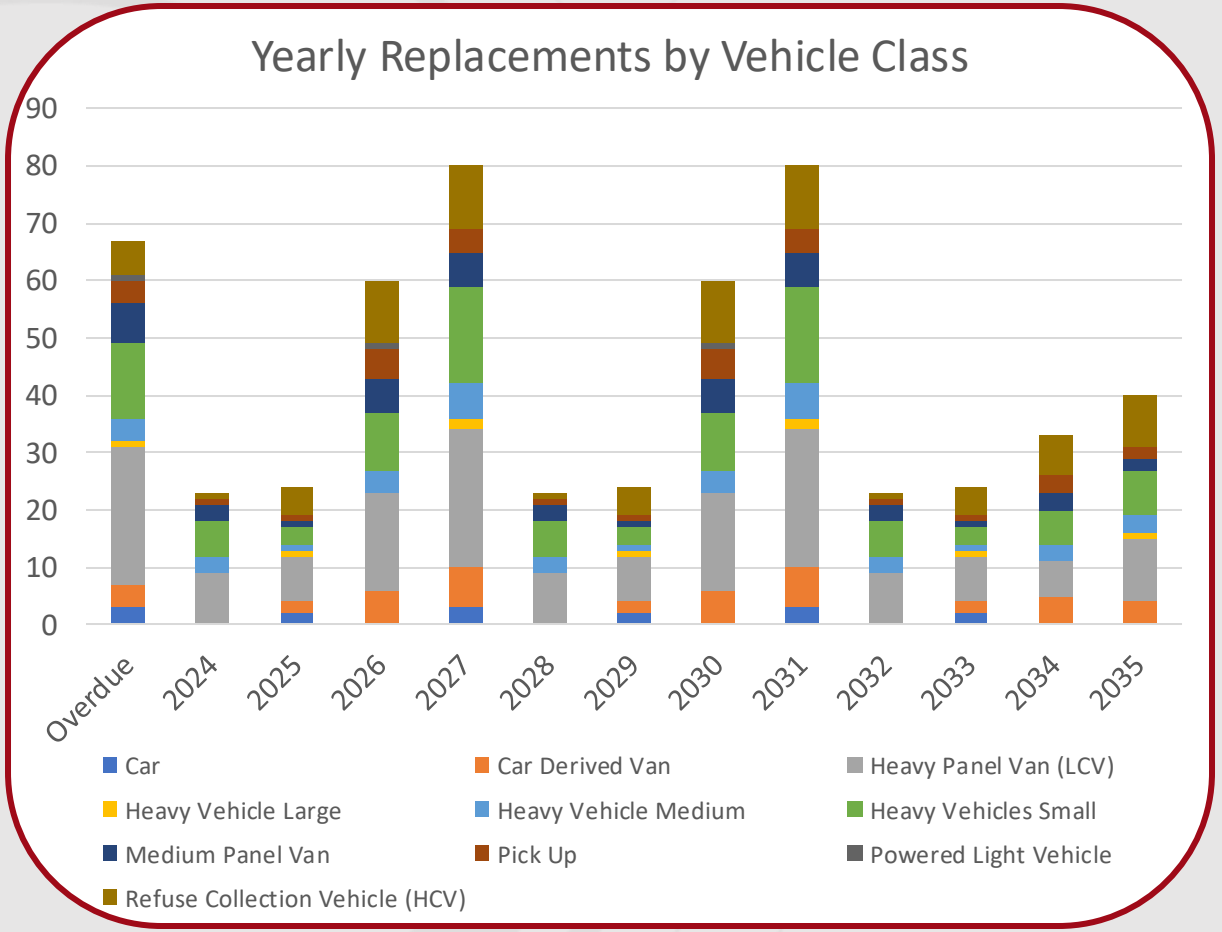
# Vehicle Utilisation – Operational Baseline

- ✓ Identify asset utilisation percentage at each location
- ✓ Visualisation of low utilisation assets for review
- ✓ Optimise the number of assets required for operational performance

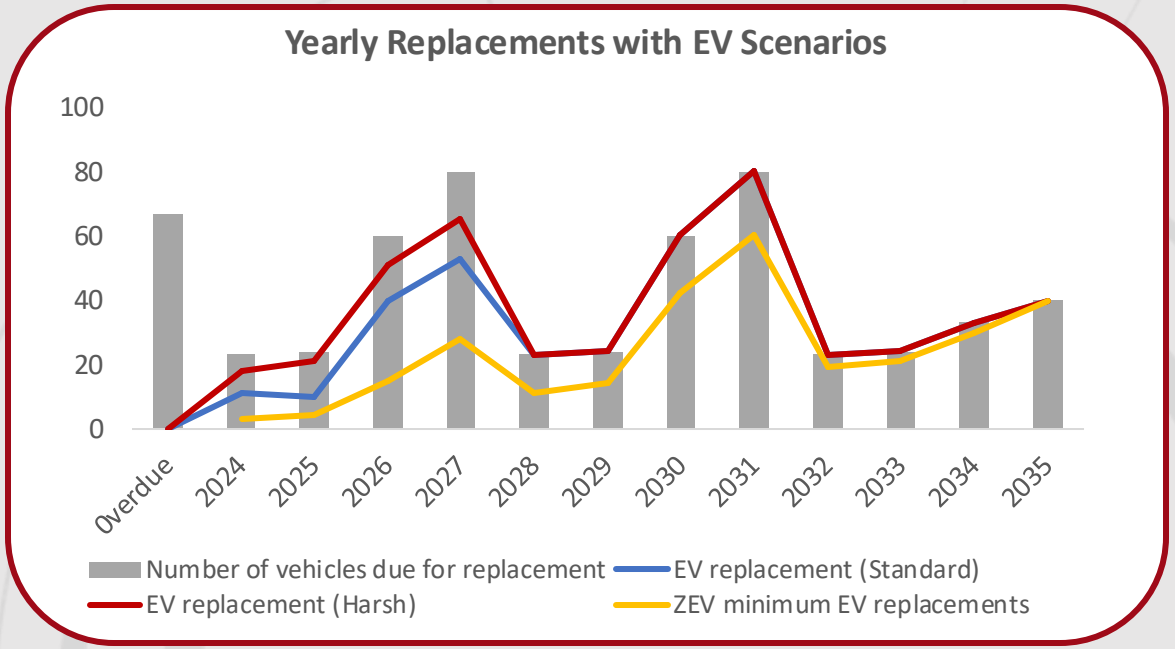


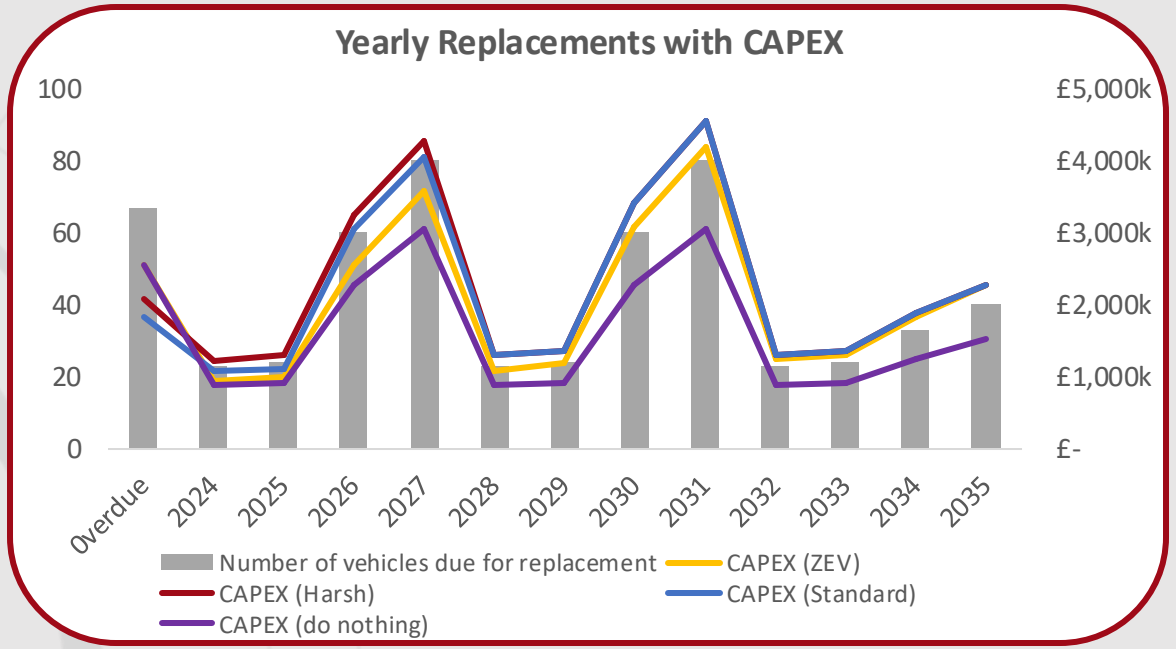
# Fleet Transition / Decarbonisation Plan Strategy



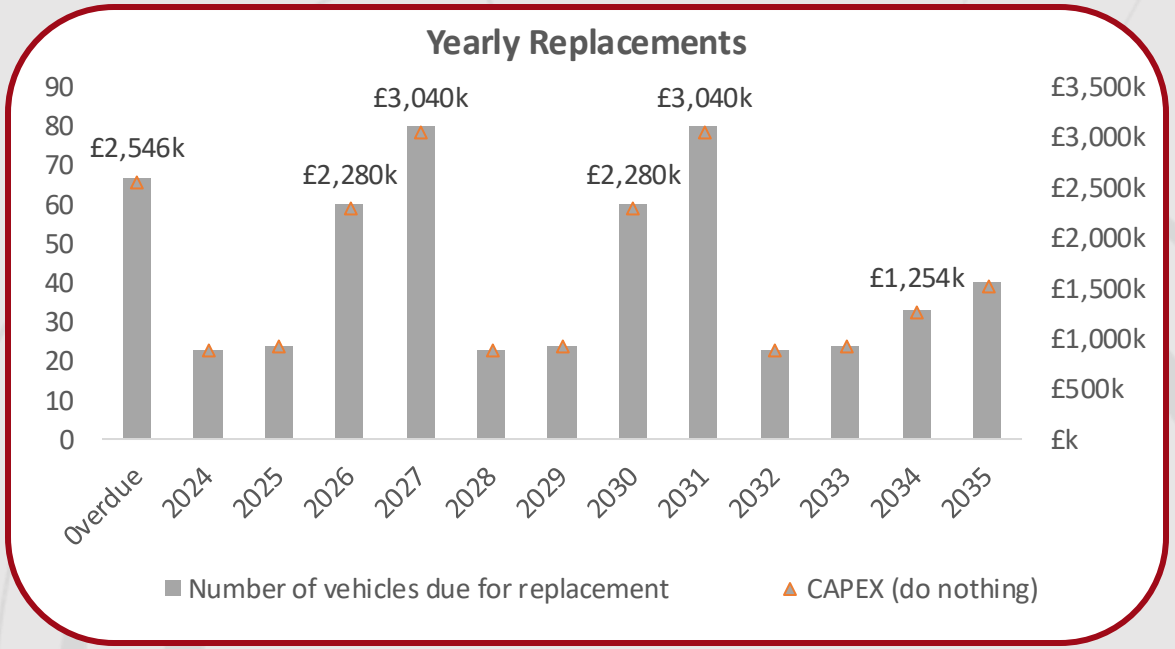
# Fleet Replacement Planning

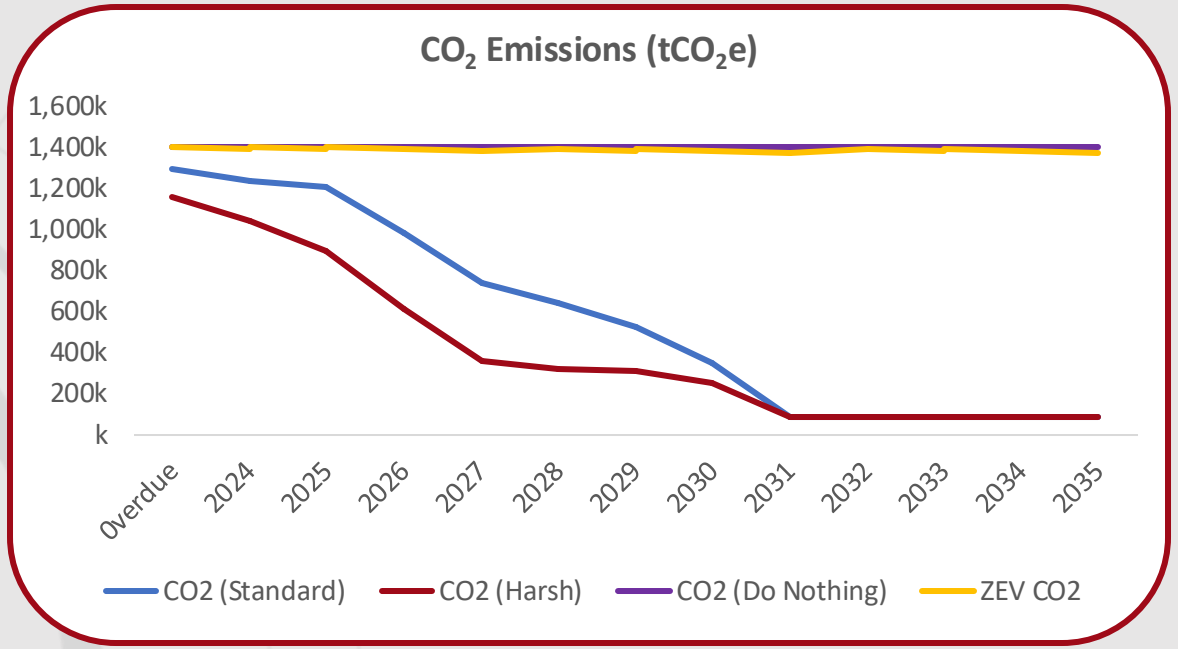



| CAPEX Scenario | Overdue | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replacements | 67 | 23 | 24 | 60 | 80 | 23 | 24 | 60 | 80 | 23 | 24 | 33 | 40 | |
| Standard | £1,824,000 | £1,083,000 | £1,102,000 | £3,040,000 | £4,047,000 | £1,311,000 | £1,368,000 | £3,420,000 | £4,560,000 | £1,311,000 | £1,368,000 | £1,881,000 | £2,280,000 | £28,595,000 |
| Harsh | £2,071,000 | £1,216,000 | £1,311,000 | £3,249,000 | £4,275,000 | £1,311,000 | £1,368,000 | £3,420,000 | £4,560,000 | £1,311,000 | £1,368,000 | £1,881,000 | £2,280,000 | £29,621,000 |
| Do nothing | £2,546,000 | £874,000 | £912,000 | £2,280,000 | £3,040,000 | £874,000 | £912,000 | £2,280,000 | £3,040,000 | £874,000 | £912,000 | £1,254,000 | £1,520,000 | £21,318,000 |
| ZEV | £2,546,000 | £931,000 | £988,000 | £2,565,000 | £3,572,000 | £1,083,000 | £1,178,000 | £3,078,000 | £4,180,000 | £1,235,000 | £1,311,000 | £1,824,000 | £2,280,000 | £26,771,000 |

# Fleet Replacement Planning




| $CO_2$ Scenario | Overdue | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replacements | 67 | 23 | 24 | 60 | 80 | 23 | 24 | 60 | 80 | 23 | 24 | 33 | 40 | |
| Standard | 1,289,763 | 1,236,172 | 1,200,317 | 983,271 | 735,203 | 639,432 | 521,289 | 349,588 | 84,154 | 84,154 | 84,154 | 84,154 | 84,154 | 7,375,805 |
| Harsh | 1,152,135 | 1,038,898 | 895,559 | 605,336 | 354,876 | 318,752 | 308,094 | 247,570 | 84,154 | 84,154 | 84,154 | 84,154 | 84,154 | 5,341,993 |
| Do nothing | 1,396,421 | 1,396,421 | 1,396,421 | 1,396,421 | 1,396,421 | 1,396,421 | 1,396,421 | 1,396,421 | 1,396,421 | 1,396,421 | 1,396,421 | 1,396,421 | 1,396,421 | 18,153,476 |
| ZEV | 1,396,421 | 1,395,071 | 1,394,621 | 1,389,671 | 1,383,821 | 1,391,471 | 1,390,121 | 1,377,520 | 1,369,420 | 1,387,871 | 1,386,971 | 1,382,921 | 1,378,420 | 18,024,320 |

# Fleet Decarbonisation Plan – CAPEX Cost Baseline by Vehicle & Type

- ✓ Identify asset replacement dates by year
- ✓ Visualisation of assets for review
- ✓ Capex reflects new Alternative Fuelled vehicle costs

| Vehicle Type / Year | Overdue | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Car | £114,000 | £0 | £76,000 | £0 | £171,000 | £0 | £114,000 | £0 | £171,000 | £0 | £114,000 | £0 | £0 |
| Car Derived Van | £190,000 | £0 | £114,000 | £304,000 | £380,000 | £0 | £114,000 | £342,000 | £399,000 | £0 | £114,000 | £285,000 | £228,000 |
| Heavy Panel Van (LCV) | £1,216,000 | £494,000 | £437,000 | £931,000 | £1,292,000 | £513,000 | £456,000 | £969,000 | £1,368,000 | £513,000 | £456,000 | £342,000 | £627,000 |
| Heavy Vehicle Large | £38,000 | £0 | £38,000 | £0 | £95,000 | £0 | £57,000 | £0 | £114,000 | £0 | £57,000 | £0 | £57,000 |
| Heavy Vehicle Medium | £190,000 | £114,000 | £38,000 | £171,000 | £285,000 | £171,000 | £57,000 | £228,000 | £342,000 | £171,000 | £57,000 | £171,000 | £171,000 |
| Heavy Vehicles Small | £494,000 | £247,000 | £114,000 | £513,000 | £855,000 | £342,000 | £171,000 | £570,000 | £969,000 | £342,000 | £171,000 | £342,000 | £456,000 |
| Medium Panel Van | £380,000 | £152,000 | £57,000 | £342,000 | £304,000 | £171,000 | £57,000 | £342,000 | £342,000 | £171,000 | £57,000 | £171,000 | £114,000 |
| Pick Up | £152,000 | £38,000 | £38,000 | £228,000 | £209,000 | £57,000 | £57,000 | £285,000 | £228,000 | £57,000 | £57,000 | £171,000 | £114,000 |
| Powered Light Vehicle | £38,000 | £0 | £0 | £57,000 | £0 | £0 | £0 | £57,000 | £0 | £0 | £0 | £0 | £0 |
| Refuse Collection Vehicle (HCV) | £228,000 | £38,000 | £190,000 | £494,000 | £456,000 | £57,000 | £285,000 | £627,000 | £627,000 | £57,000 | £285,000 | £399,000 | £513,000 |
| **Total** | £2,926,000 | £1,083,000 | £1,026,000 | £3,040,000 | £3,876,000 | £1,311,000 | £1,254,000 | £3,420,000 | £4,389,000 | £1,311,000 | £1,254,000 | £1,881,000 | £2,280,000 |

# Fleet Decarbonisation Plan – overdue assets

- ✓ Identify overdue asset replacements
- ✓ Visualisation of 'low hanging fruit'
- ✓ Replace 'easy to transition' vehicles as a priority

| Vehicle Id | Ice Vehicle Class | Cheaper as EV | EoE Score | Replace with EV? |
|---|---|---|---|---|
| 246 | Heavy Vehicles Small | FALSE | 1 | No |
| 254 | Medium Panel Van | TRUE | 1 | Yes |
| 255 | Heavy Vehicles Small | FALSE | 1 | No |
| 259 | Medium Panel Van | TRUE | 1 | Yes |
| 266 | Heavy Panel Van (LCV) | TRUE | 1 | Yes |
| 276 | Heavy Vehicles Small | FALSE | 1 | No |
| 284 | Heavy Panel Van (LCV) | TRUE | 1 | Yes |
| 285 | Car | FALSE | 1 | No |
| 294 | Heavy Vehicles Small | FALSE | 1 | No |
| 295 | Pick Up | TRUE | 2 | No |
| 298 | Heavy Panel Van (LCV) | TRUE | 2 | No |
| 305 | Heavy Vehicles Small | FALSE | 1 | No |
| 307 | Pick Up | FALSE | 1 | No |
| 308 | Heavy Panel Van (LCV) | TRUE | 1 | Yes |
| 311 | Heavy Panel Van (LCV) | TRUE | 1 | Yes |
| 313 | Heavy Vehicles Small | FALSE | 1 | No |

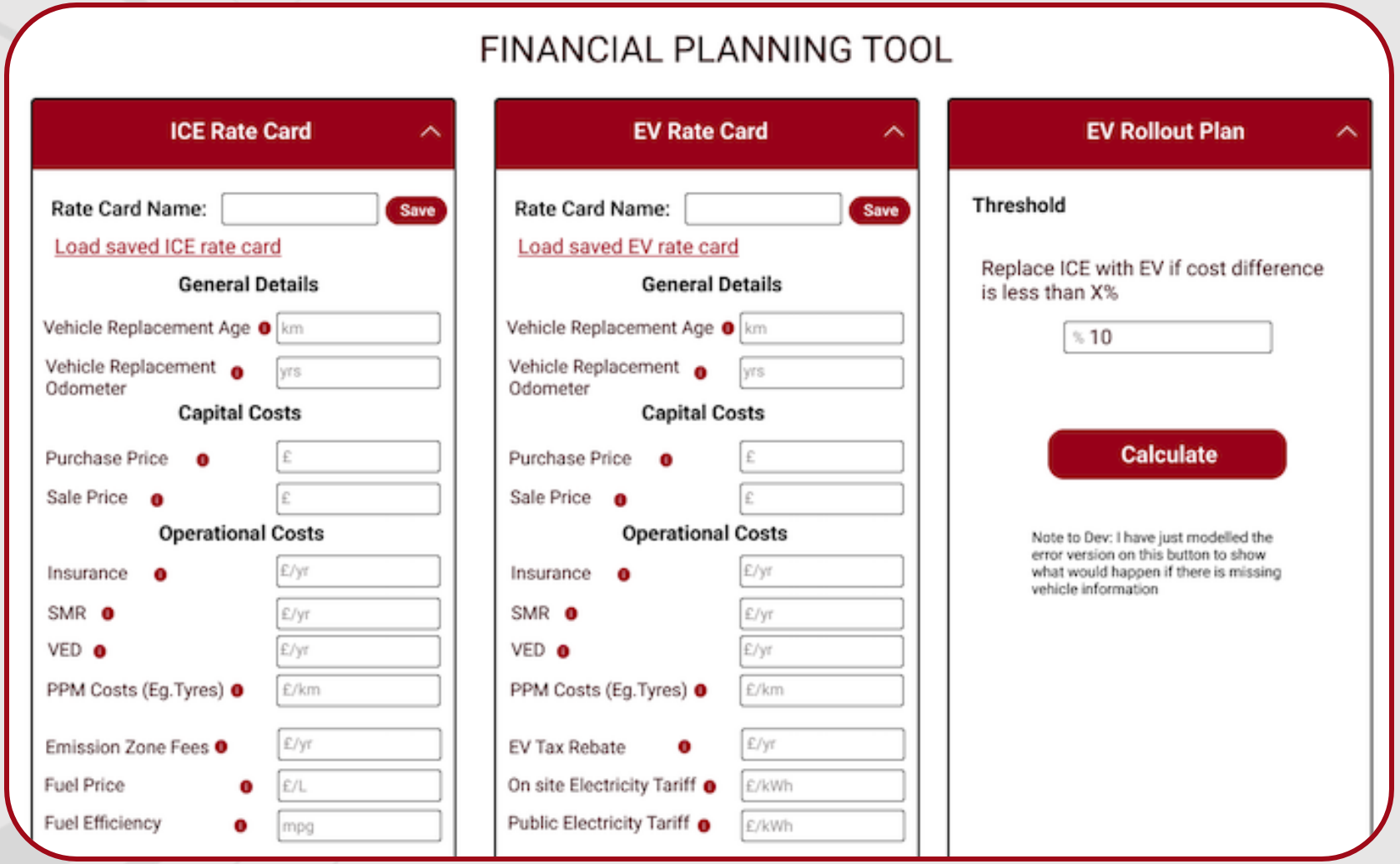
# Fleet Financial Planning Tool

## TCO Cost Analysis

Total Cost of Ownership (TCO)

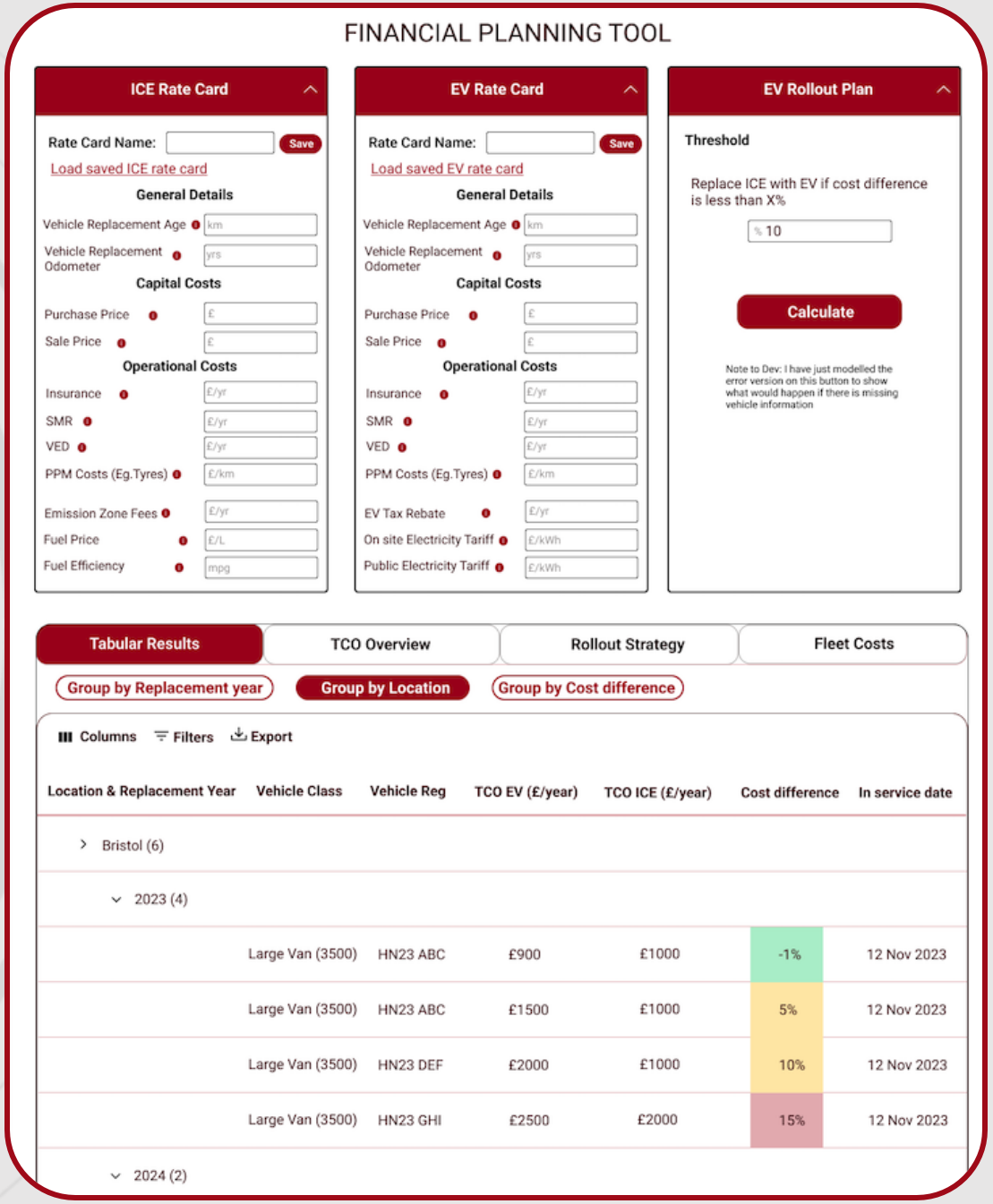
(Rate Cards ICE vs BEV)

Could use APSE Categories



# TCO Fleet Cost Analysis

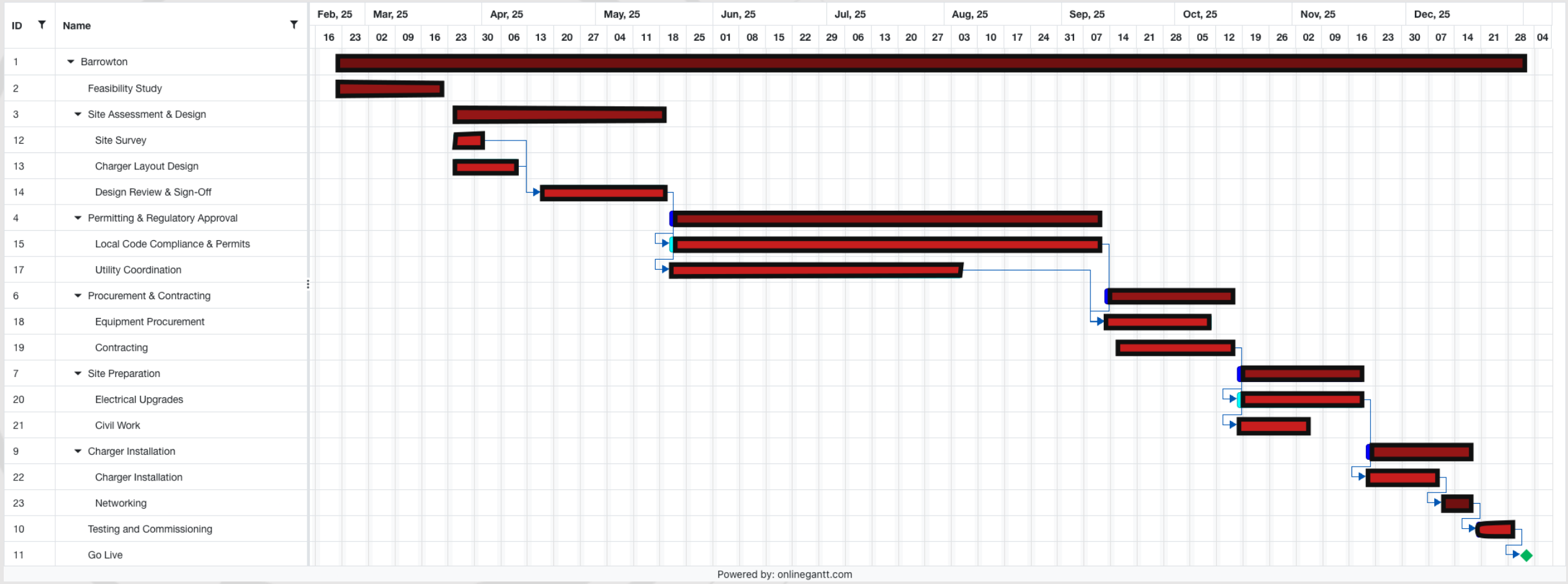
Fleet transition opportunity grouped by location, replacement year inc. costs difference



# Infrastructure Roll out Strategy

# Plan & TCO Considerations

# Infrastructure Roll Out Strategy



# Depot Infrastructure Capex & TCO

| DNO Connection | |
|---|---|
| DNO | Northern Powergrid |
| Site Capacity Requirement Upgrade | 73 kW |
| Upgrade Size Category | Medium |
| Low Estimate | £16,000 |
| High Estimate | £110,000 |

| LV Infrastructure | |
|---|---|
| Low Estimate | £20,000 |
| High Estimate | £35,000 |

| Charge Point Infrastructure | |
|---|---|
| Project Management and Planning Overheads | £2,170 |
| Charge Point Cost | £12,436 |
| Civil Costs and Installation | £3,769 |
| Electric Materials Costs | £7,860 |
| Cost of Set-up, Transport and Plant | £3,775 |
| Testing and Commissioning | £472 |
| **Total** | **£26,482** |

| Total Cost Estimation | |
|---|---|
| **Low Estimate** | **£62,842** |
| **High Estimate** | **£171,482** |

# In Summary

# What do we need from you ?

# Zero - Data, Simulation & Analytics

## Data Loading

**Fleet**
Load Vehicles,
Locations & Classes

**Telematics**
Load Driving data,
Journeys
(or create Synthetics)

**Route Classifier**
Create Journeys and
duty cycles

## Simulate

**Assign ICE to EV**
Model & Battery
Options

**Energy Model**
Calculate Energy
Consumption by
vehicle

## Analytics

**Depot Infrastructure**
Calculate Depot
Charger Config & Grid
Requirements

**Plan / TCO Model**
**Calculate the Plan /**
**TCO & Emissions for**
**each Vehicle Type /**
**Class**

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Sainsbury's
SCANIA
IKEA
M&S
EST. 1884
Wincanton
NHS
WELCHS TRANSPORT
webfleet
Zenith

# Questions

# Contact

**If you would like to connect, learn more about our software tools and discuss your requirements please contact:**

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