



# ZERO

by  DYNAMON

APSE Transport  
Advisory Group

Fleet Decarbonisation  
31 January 2024



# Agenda

## Transition to Electric Vehicles

- How to model an existing fleet to determine the optimum vehicle mix, load requirement and location within existing grid capacity as we transition to Net-zero. Includes the 'EV transition test'.



# 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**



Dynamon

Our **Customer Success Team**

Our approach to **Project Management**



# Dynamon - Customer Project Planning Workflow



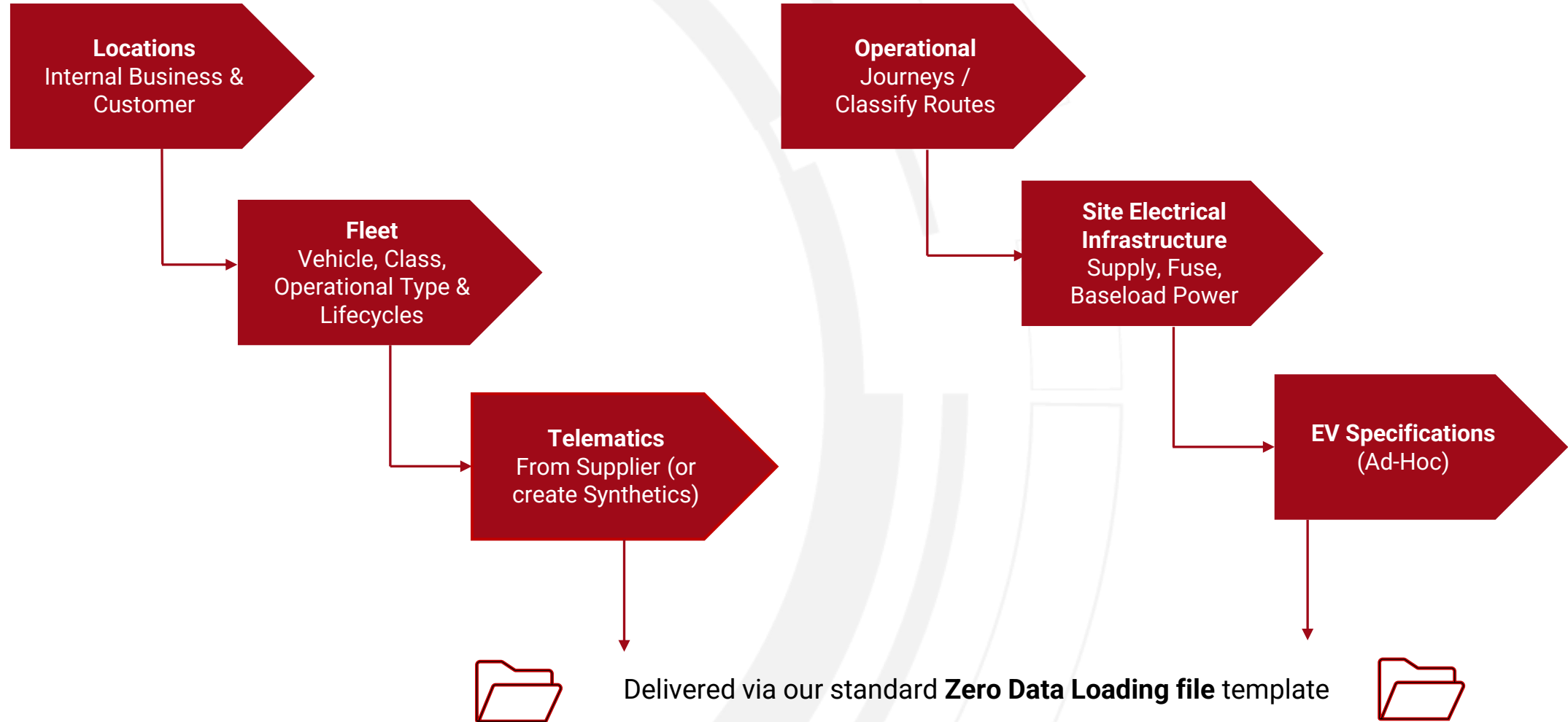


# Local Authority Teams

## What do we need from you?



# Zero - Customer Data Collection Workflow





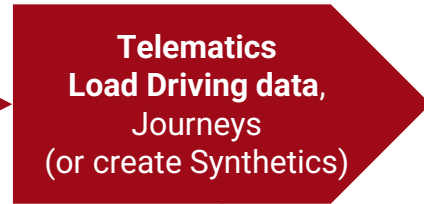
# Delivering change via a **Partnership based** approach



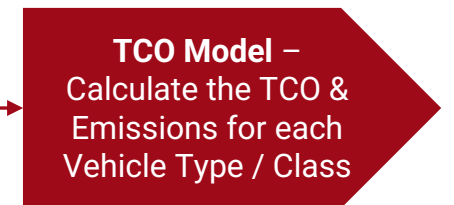
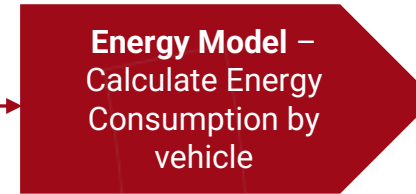
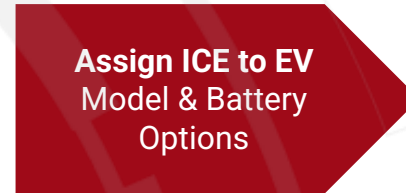


# Zero - Data Loading & Simulation Pipeline

## Data Loading



## Simulate





# Partnerships – Working together

## Options for driving Fleet related transition & decarbonisation plans

- LA Teams can analyse Zero outputs internally with own resources
- LA Teams can partner with and APSE associate to deliver the plan options
  - Learn best practice and share opportunities with others
  - Measure outputs and change supported by APSE performance networks
  - Grab some APSE awards during 2024
- LA Teams could use their own contractors
- Dynamon could support

Over 300 councils have declared Climate emergencies to date!  
Is “do nothing” still an option?



# Insights and Analysis



# Insights/Analysis Summary - How can Zero help ?



Dashboards, KPI's & Reporting Metrics



Develop fleet transition plan with options



Vehicle Utilisation Baseline Review



Visualisation of low utilisation assets

Optimisation the number of assets required by operational team



EV Energy Model



Forecast energy usage demand by vehicle & operational duty cycle



ICE to EV Transition Plan Feasibility



Assign EV Spec options to ICE Vehicle types

Simulate Different Vehicle Battery Sizes & Charger Configurations

Develop emissions reduction opportunities



Depot Charging Infrastructure Model



Develop infrastructure design for each depot

Calculate the number & type of chargers required (AC/DC)

Identify Grid requirements / Public charging

Depot tariff optimisation



Financial Planning



Financial Impact Assessment - ICV vs EV by Class/type

Capex & Opex Cash Flow identification

Emissions reduction benefits

Total Costs of Ownership



Fleet Decarbonisation



Lifecycle transition planning by Vehicle Class/Type

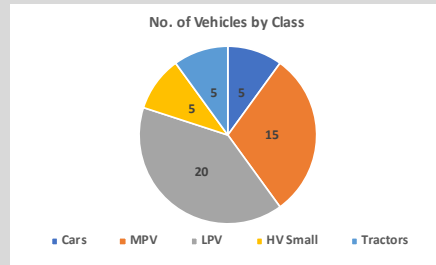
Roll Out Plan - 10 Years



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

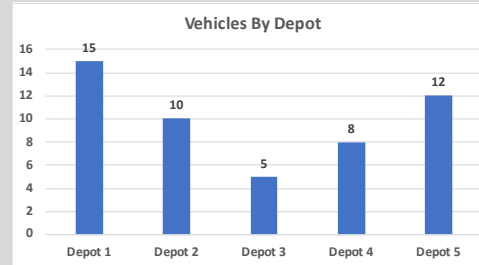
## Highest level - Customer "As-Is" Baseline

1  
**Total Number of Fleet ICE Vehicles by Class**  
50



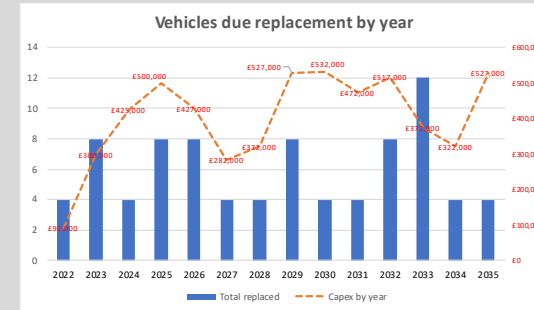
Drill into data by Depot and / or Vehicle Class  
In future this KPI could also be by Category

2  
**Total Number of Depots & Vehicles**  
5



Drill into data by Depot & Vehicle Class

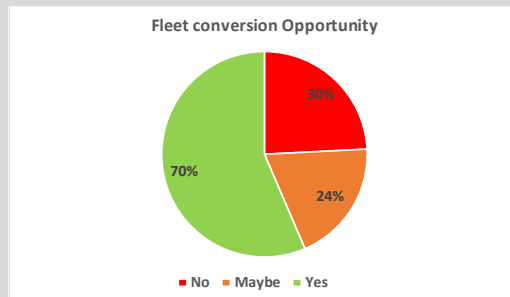
3  
**Vehicles due Replacement by Year**  
(Capex Value)



Drill into data by Vehicle Class & Replacement Year  
Drill into data by Depot, Vehicle Class & Replacement Year

## Highest level - Customer "To-Be" Opportunity

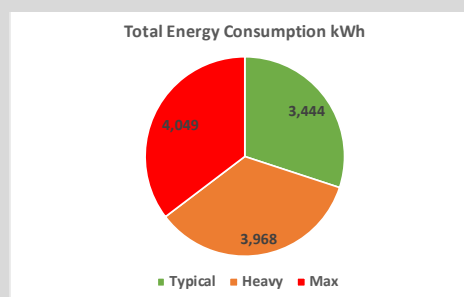
4  
**Total % of Fleet that can convert their Duty Cycles (RAG rated)**



EV Transition Assessment Frame detail from Zero

Drill into data by Depot & Conversion opportunity score  
Drill into data by Vehicle Class & Conversion opportunity

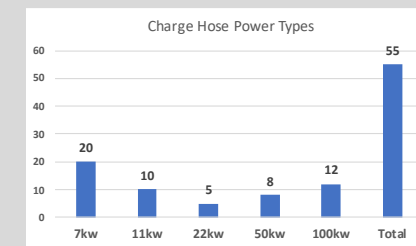
5  
**Total Energy Consumption kWh**  
Weather condition = Harsh



Highest level by depot

Drill into data by Depot

6  
**Total Number of Charging hoses required**  
55

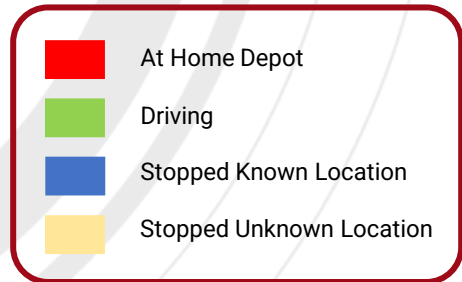




# Vehicle Utilisation – Operational Baseline

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

Asset No.	Vehicle Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	%	Distance
1	Van < 3.5t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	18	87
2	Van < 3.5t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	21	100
3	Van < 3.5t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	23	67
4	Van < 3.5t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	38	122
5	Van < 3.5t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	35	108
6	Van < 3.5t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	38	170
7	Van < 3.5t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	45	98
8	Truck 7.5t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	46	120
9	Truck 7.5t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	45	130
10	Truck 7.5t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	46	180
11	Truck 7.5t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	25	100
12	Truck 7.5t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	25	80
13	Truck 7.5t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	38	70
14	Truck 7.5t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	38	130
15	Truck 7.5t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	38	81
16	Truck >20t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	30	220
17	Truck >20t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	50	250
18	Truck >20t	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	75	300
19	Motive Unit	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	71	400
20	Motive Unit	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	70	360
21	Motive Unit	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	70	400



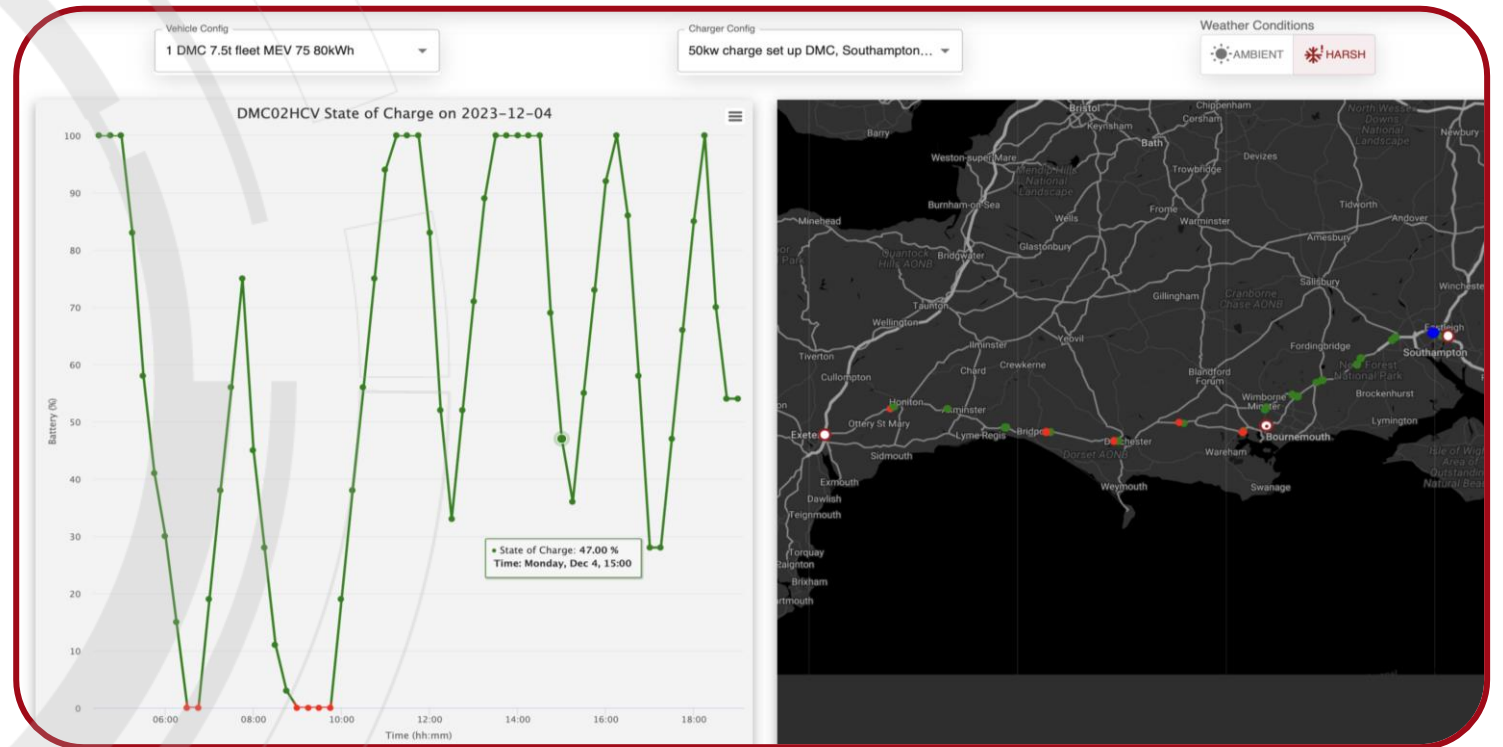


# EV Energy Model

Driving data and locations mapped via Telematics

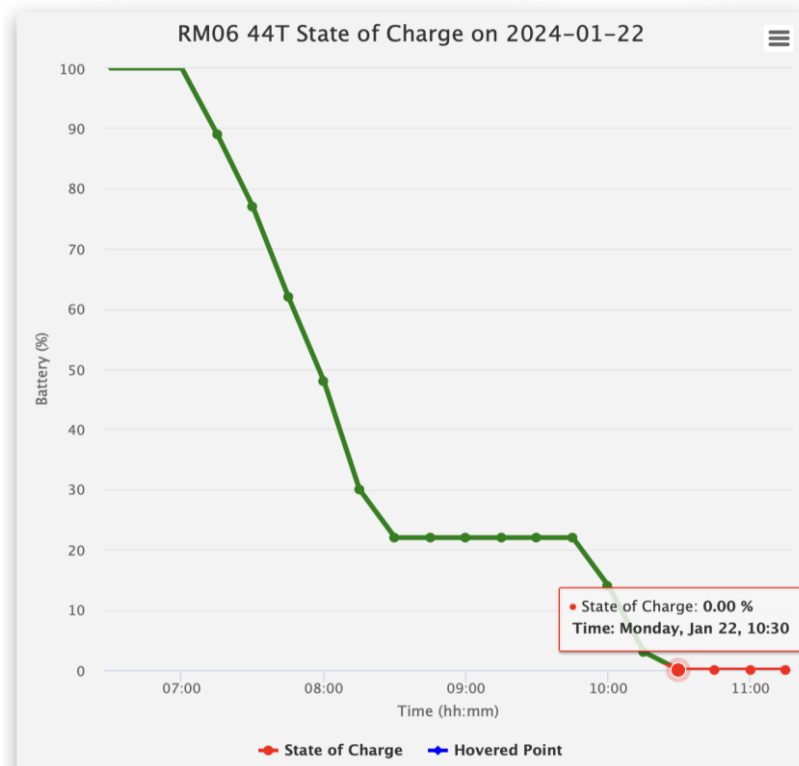
## Journeys

Classify routes & create duty cycles with stops and total distance

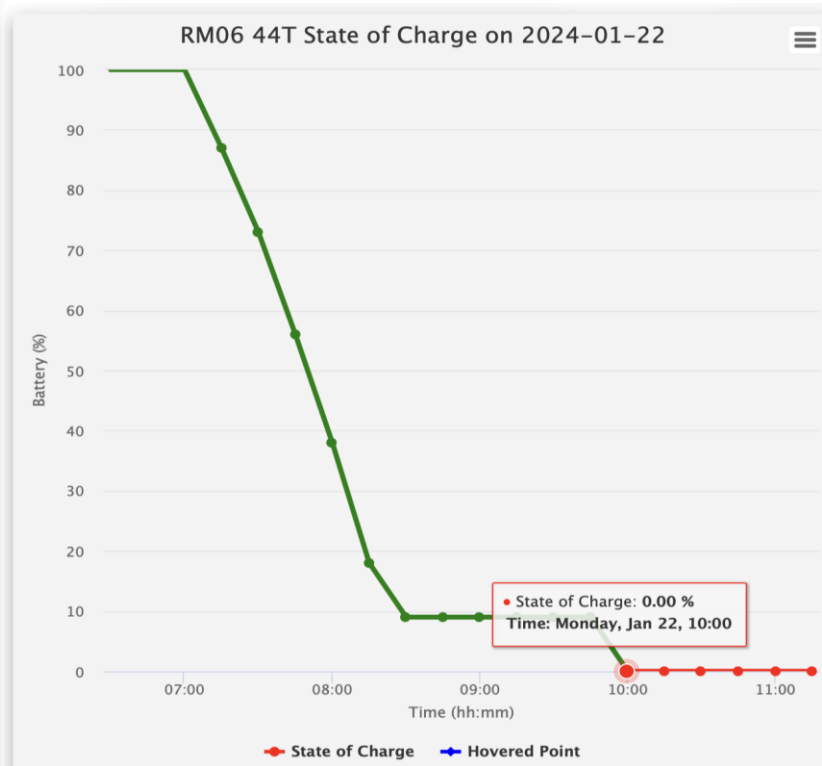


# Duty cycle Analysis – Motorway Route

- Total dutycycle distance - 164 miles
- Weather condition – Harsh
- Tractor 6x2 44t Single-deck: Dutycycle incomplete, requires additional charge or bigger battery
- Tractor 6x2 44t Double-deck: Dutycycle incomplete, requires additional charge or bigger battery

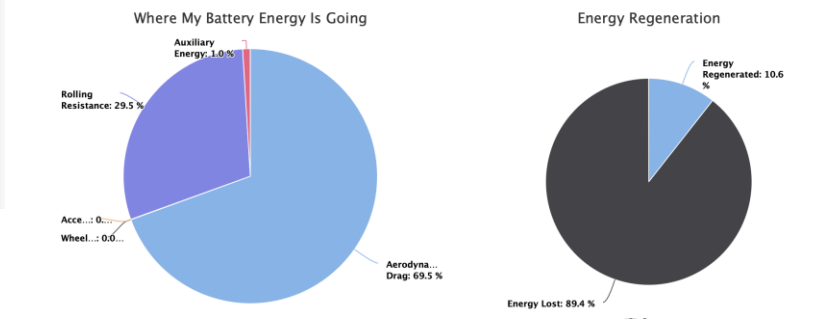
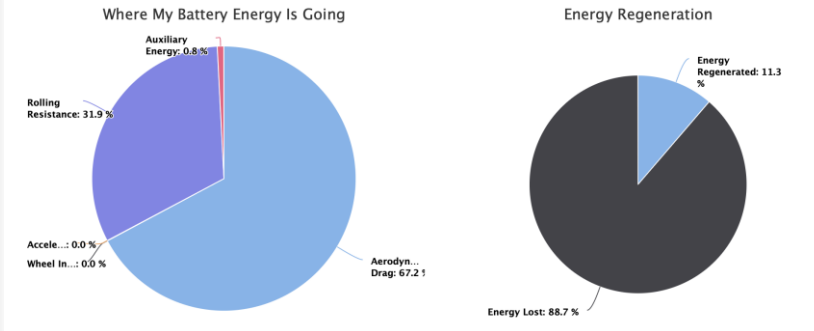


Single-deck



Double-deck

## Motorway Route







# 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).

Nick Bridle (Nick Hub & Spoke Distribution HCV Fleet)

## ICE TO EV SETUP

[BACK](#)

**Save EV simulation as**

**Simulation description**

**Allow home charging** No  Yes

View ICE Vehicle by:

**Advanced configuration** No  Yes

Truck (Rigid) - Very Light - 2 Axles (7500 kg) Simulate Selected Vehicles as:

<input type="checkbox"/>	Registration	Location	Make/Model	Simulation Vehicle
<input type="checkbox"/>	DMC10HCV	Dorset Mail Centre	7.5t Distribution Truck with Taillift	Magtec MEV 75 80kWh
<input type="checkbox"/>	DMC04HCV	Dorset Mail Centre	7.5t Distribution Truck with Taillift	Magtec MEV 75 80kWh
<input type="checkbox"/>	DMC02HCV	Dorset Mail Centre	7.5t Distribution Truck with Taillift	Magtec MEV 75 80kWh
<input type="checkbox"/>	DMC06HCV	Dorset Mail Centre	7.5t Distribution Truck with Taillift	Magtec MEV 75 80kWh
<input type="checkbox"/>	DMC09HCV	Dorset Mail Centre	7.5t Distribution Truck with Taillift	Magtec MEV 75 80kWh
<input type="checkbox"/>	DMC08HCV	Dorset Mail Centre	7.5t Distribution Truck with Taillift	Magtec MEV 75 80kWh

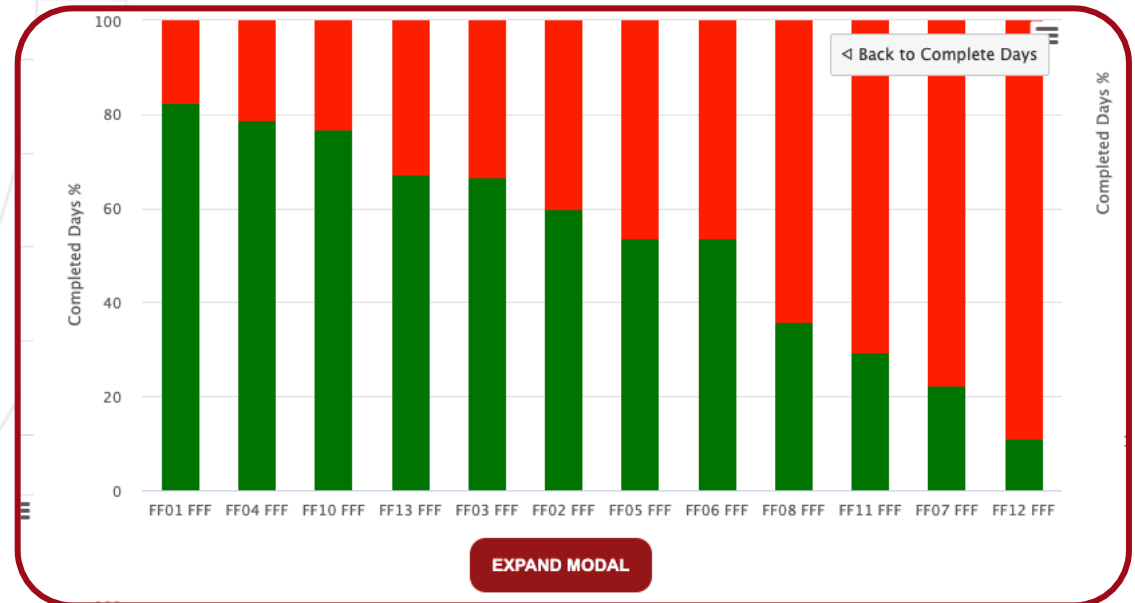
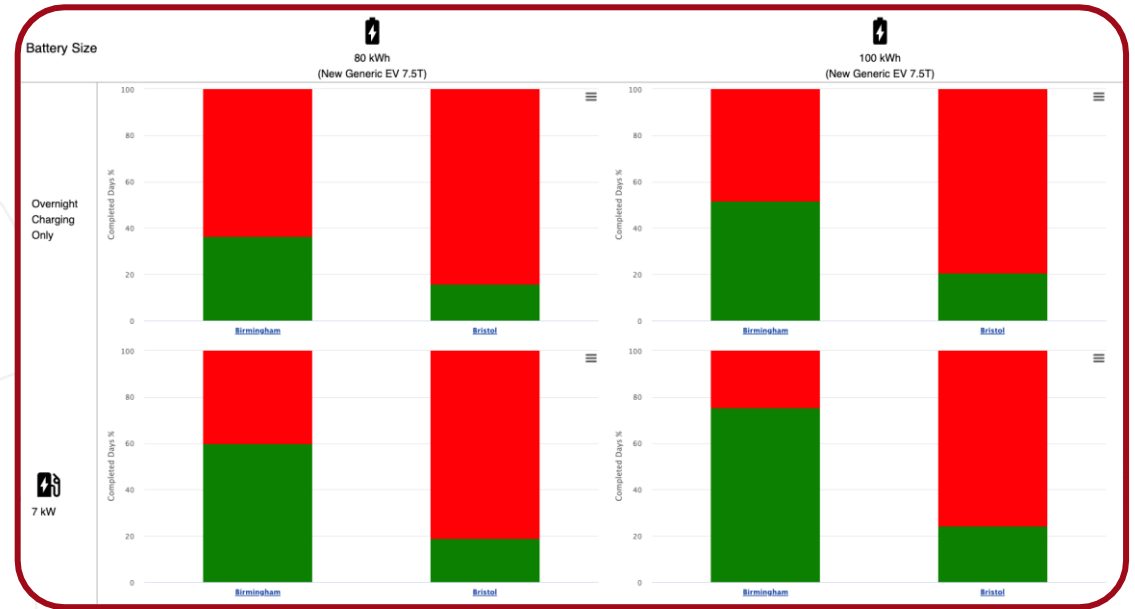


# Simulation of Different Battery and Charging scenarios

Understand required battery and charger combinations

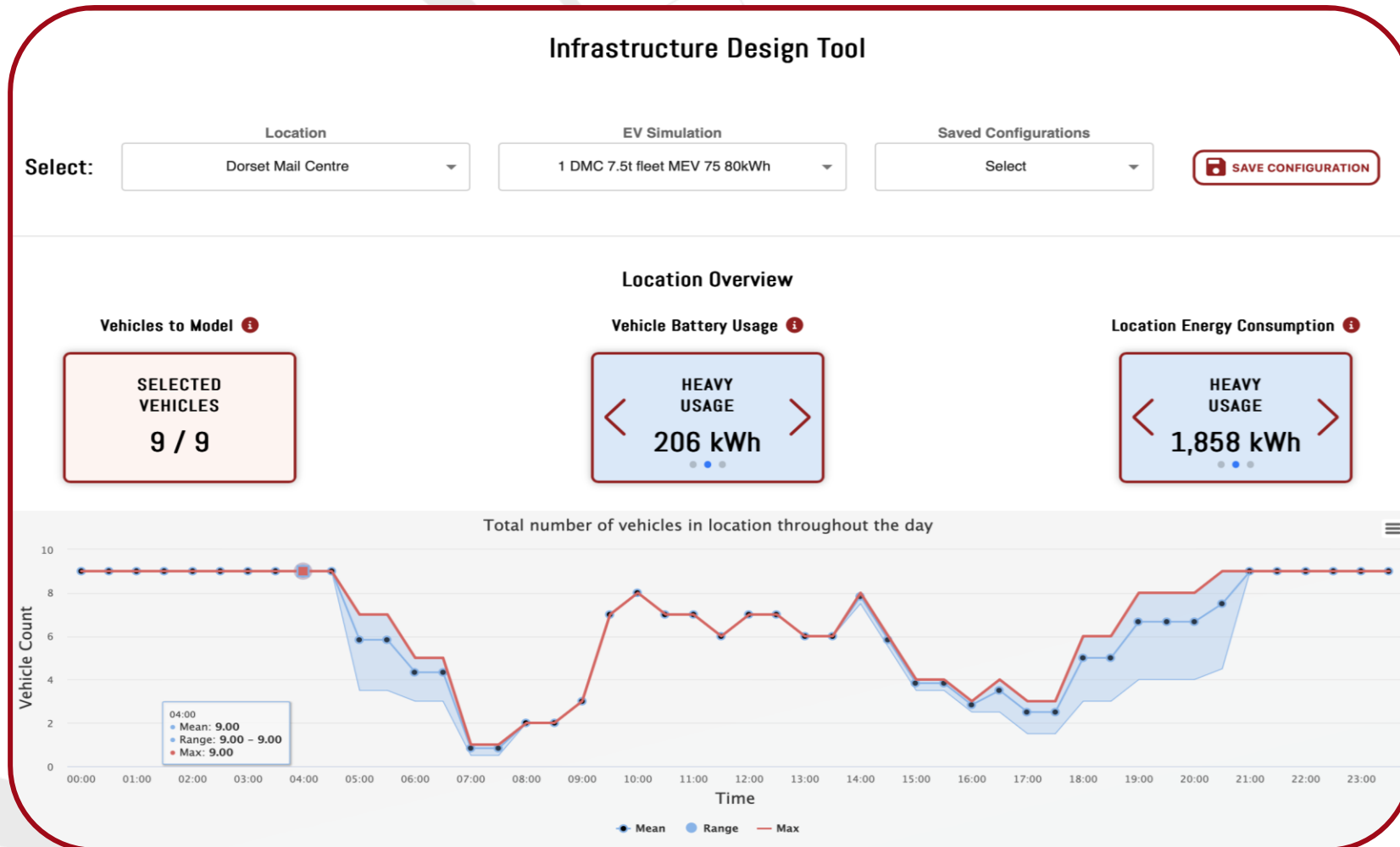
See which vehicles and routes can be electrified today

Future planning for transition as battery and charging technology improves





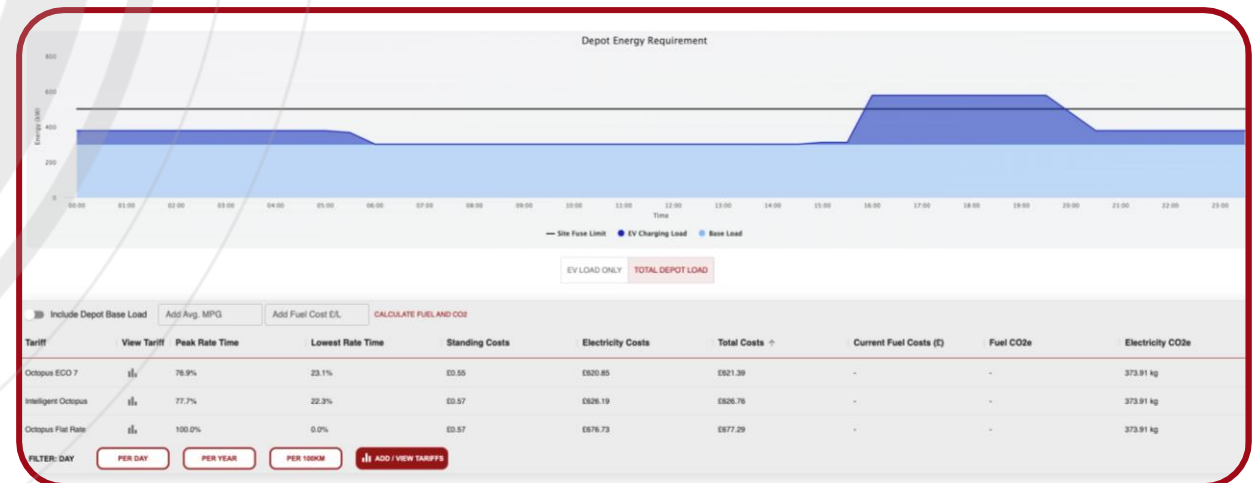
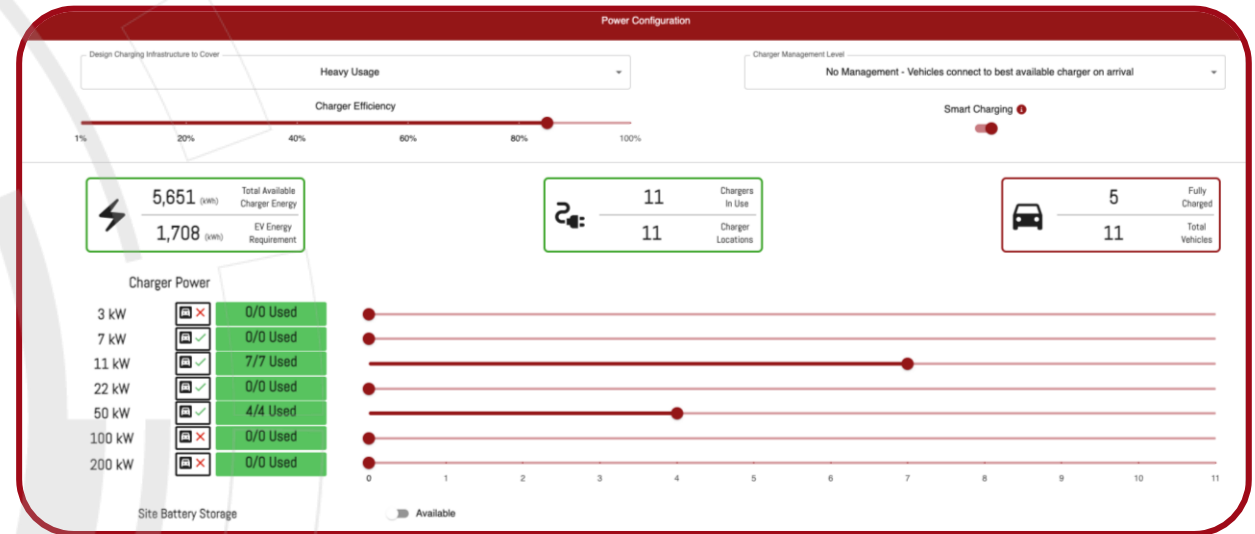
# Infrastructure Design – Depot Charging





# 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





# Financial Planning Tool

## TCO Cost Analysis

Total Cost of Ownership (TCO)

(Rate Cards ICE vs BEV)

### FINANCIAL PLANNING TOOL

ICE Rate Card	EV Rate Card	EV Rollout Plan
<p>Rate Card Name: <input type="text"/> <b>Save</b></p> <p><a href="#">Load saved ICE rate card</a></p> <p><b>General Details</b></p> <p>Vehicle Replacement Age <input type="text"/> km</p> <p>Vehicle Replacement Odometer <input type="text"/> yrs</p> <p><b>Capital Costs</b></p> <p>Purchase Price <input type="text"/> £</p> <p>Sale Price <input type="text"/> £</p> <p><b>Operational Costs</b></p> <p>Insurance <input type="text"/> £/yr</p> <p>SMR <input type="text"/> £/yr</p> <p>VED <input type="text"/> £/yr</p> <p>PPM Costs (Eg.Tyres) <input type="text"/> £/km</p> <p>Emission Zone Fees <input type="text"/> £/yr</p> <p>Fuel Price <input type="text"/> £/L</p> <p>Fuel Efficiency <input type="text"/> mpg</p>	<p>Rate Card Name: <input type="text"/> <b>Save</b></p> <p><a href="#">Load saved EV rate card</a></p> <p><b>General Details</b></p> <p>Vehicle Replacement Age <input type="text"/> km</p> <p>Vehicle Replacement Odometer <input type="text"/> yrs</p> <p><b>Capital Costs</b></p> <p>Purchase Price <input type="text"/> £</p> <p>Sale Price <input type="text"/> £</p> <p><b>Operational Costs</b></p> <p>Insurance <input type="text"/> £/yr</p> <p>SMR <input type="text"/> £/yr</p> <p>VED <input type="text"/> £/yr</p> <p>PPM Costs (Eg.Tyres) <input type="text"/> £/km</p> <p>EV Tax Rebate <input type="text"/> £/yr</p> <p>On site Electricity Tariff <input type="text"/> £/kWh</p> <p>Public Electricity Tariff <input type="text"/> £/kWh</p>	<p><b>Threshold</b></p> <p>Replace ICE with EV if cost difference is less than X%</p> <p><input type="text"/> % 10</p> <p><b>Calculate</b></p> <p><small>Note to Dev: I have just modelled the error version on this button to show what would happen if there is missing vehicle information</small></p>



# TCO Cost Analysis

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

### FINANCIAL PLANNING TOOL

#### ICE Rate Card

Rate Card Name:  Save  
[Load saved ICE rate card](#)

**General Details**

Vehicle Replacement Age  km  
Vehicle Replacement Odometer  yrs

**Capital Costs**

Purchase Price  £  
Sale Price  £

**Operational Costs**

Insurance  £/yr  
SMR  £/yr  
VED  £/yr  
PPM Costs (Eg. Tyres)  £/km  
Emission Zone Fees  £/yr  
Fuel Price  £/L  
Fuel Efficiency  mpg

#### EV Rate Card

Rate Card Name:  Save  
[Load saved EV rate card](#)

**General Details**

Vehicle Replacement Age  km  
Vehicle Replacement Odometer  yrs

**Capital Costs**

Purchase Price  £  
Sale Price  £

**Operational Costs**

Insurance  £/yr  
SMR  £/yr  
VED  £/yr  
PPM Costs (Eg. Tyres)  £/km  
EV Tax Rebate  £/yr  
On site Electricity Tariff  £/ kWh  
Public Electricity Tariff  £/ kWh

#### EV Rollout Plan

**Threshold**

Replace ICE with EV if cost difference is less than X%

% 10

Calculate

Note to Dev: I have just modelled the error version on this button to show what would happen if there is missing vehicle information

**Tabular Results** | TCO Overview | Rollout Strategy | Fleet Costs

Group by Replacement year | Group by Location | Group by Cost difference

Columns | Filters | Export

Location & Replacement Year	Vehicle Class	Vehicle Reg	TCO EV (£/year)	TCO ICE (£/year)	Cost difference	In service date
> Bristol (6)						
v 2023 (4)						
	Large Van (3500)	HN23 ABC	£900	£1000	-1%	12 Nov 2023
	Large Van (3500)	HN23 ABC	£1500	£1000	5%	12 Nov 2023
	Large Van (3500)	HN23 DEF	£2000	£1000	10%	12 Nov 2023
	Large Van (3500)	HN23 GHI	£2500	£2000	15%	12 Nov 2023
v 2024 (2)						



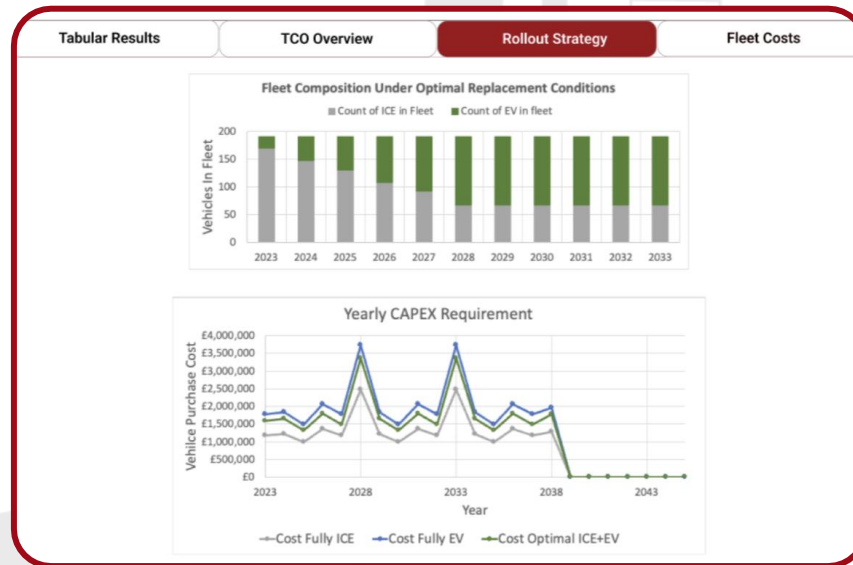
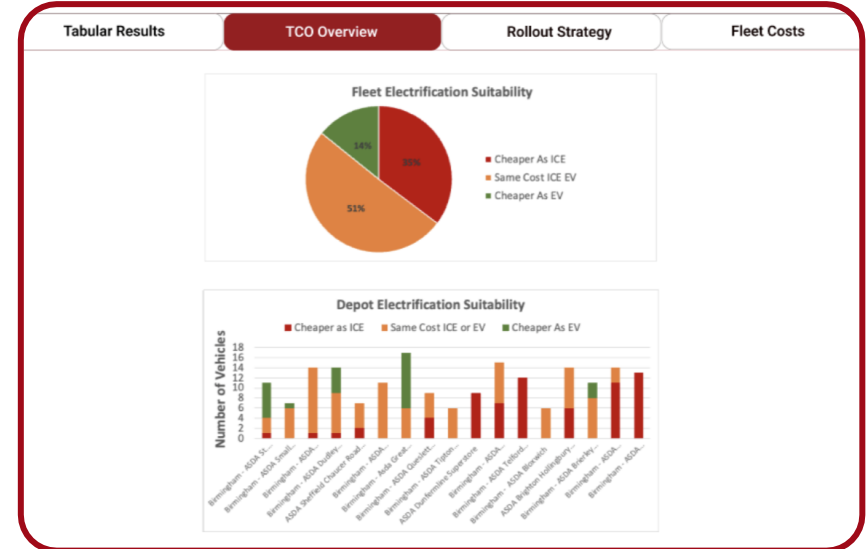
# Financial Planning Tool

Tabular Results | TCO Overview | Rollout Strategy | Fleet Costs

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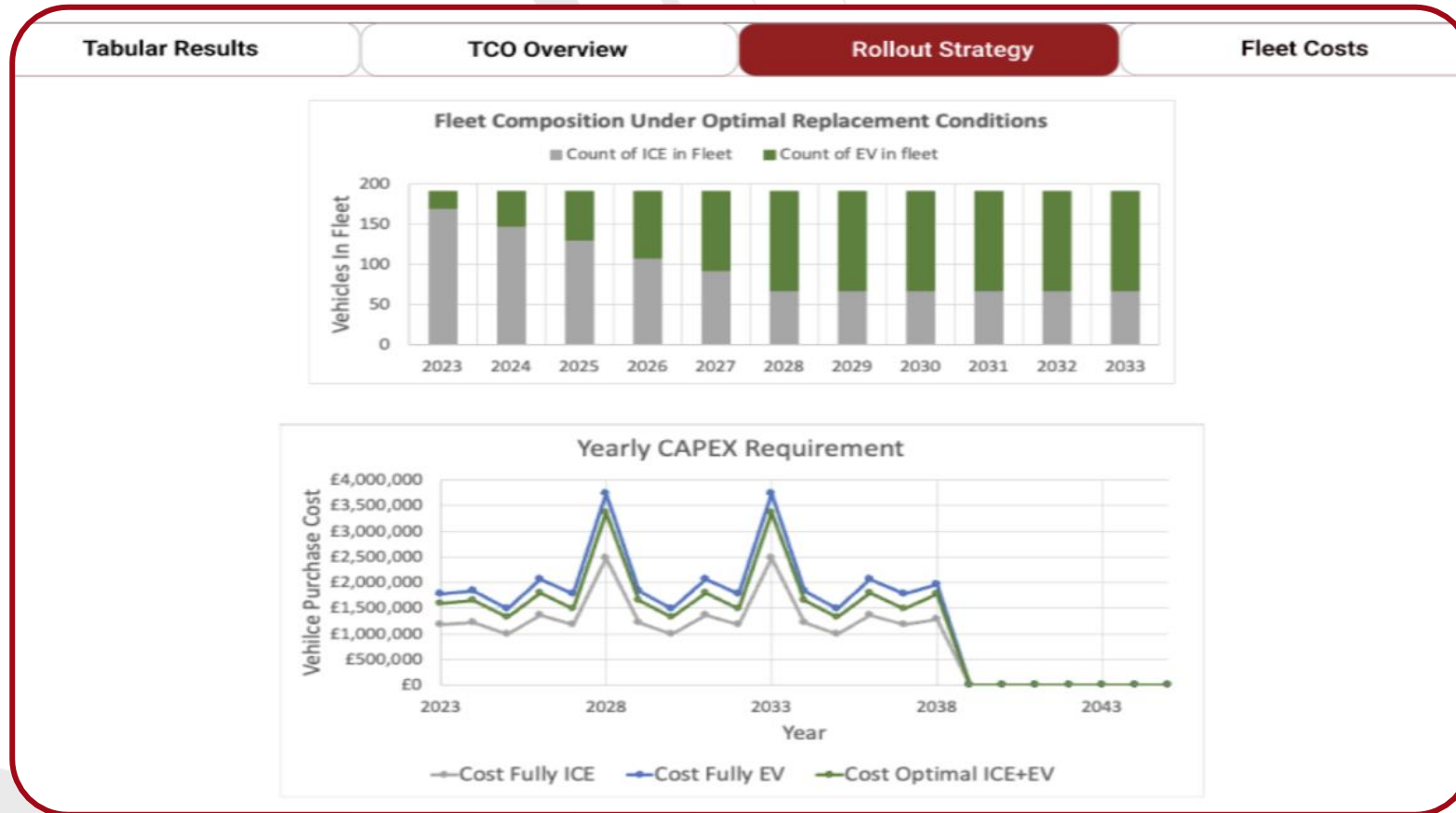
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	Large Van (3500)	HN23 DEF	£2000	£1000	10%	12 Nov 2023
	Large Van (3500)	HN23 GHI	£2500	£2000	15%	12 Nov 2023
v Southampton (2)						





# Fleet Decarbonisation Plan - Operational Cost Baseline







# Fleet Decarbonisation Plan - Operational Cost Baseline by Vehicle & Type

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

Class	Lifecycle	Depo	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Car 1	3		£15,000			£25,000			£30,000			£30,000			£30,000			£30,000
Car 2	3		£18,000				£25,000			£35,000			£35,000			£35,000		
Car 3	3		£20,000					£30,000			£35,000			£35,000				£35,000
Car 4	3		£25,000					£35,000			£40,000			£40,000				£40,000
CDV 1	4			£15,000				£35,000				£35,000				£35,000		
CDV 2	4			£18,000					£35,000				£35,000				£35,000	
CDV 3	4			£20,000						£35,000				£35,000				£35,000
CDV 4	4			£25,000							£35,000				£35,000			
MPV 1	4				£20,000	£20,000			£42,000				£42,000					£42,000
MPV 2	4				£22,000					£42,000				£42,000				£42,000
MPV 3	4				£20,000						£42,000				£42,000			
MPV 4	4				£30,000							£42,000				£42,000		
LPV 1	4					£30,000				£70,000				£70,000				£70,000
LPV 2	4						£70,000				£70,000				£70,000			
LPV 3	4							£70,000				£70,000				£70,000		
LPV 4	4								£70,000				£70,000				£70,000	
7.5t truck 1	6			£50,000						£100,000						£100,000		
7.5t truck 2	6			£55,000							£100,000						£100,000	
7.5t truck 3	6			£60,000								£100,000						£100,000
7.5t truck 4	6			£70,000		£100,000							£100,000					
MU 1	6					£125,000						£250,000						£250,000
MU 2	6						£250,000						£250,000					
MU 3	6							£250,000						£250,000				
MU 4	6								£250,000						£250,000			
Trailer 1	8						£40,000								£45,000			
Trailer 2	8						£40,000								£45,000			
Trailer 3	8							£40,000								£45,000		
Trailer 4	8							£40,000								£45,000		
Total replaced			4	8	4	8	4	8	8	4	4	8	4	4	8	12	4	4
Year			2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Capex by year			£78,000.00	£313,000	£92,000	£300,000	£425,000	£500,000	£427,000	£282,000	£322,000	£527,000	£532,000	£472,000	£517,000	£372,000	£322,000	£527,000



# Questions

# Contact

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

**Nick Bridle**

Customer Success Manager

Email: [nick.bridle@dynamon.co.uk](mailto:nick.bridle@dynamon.co.uk)

Tel: +44 (0) 7702 676816



# DYNAMON

EMPOWERING FLEETS FOR TOMORROW. TODAY.

[dynamon.co.uk](http://dynamon.co.uk)