

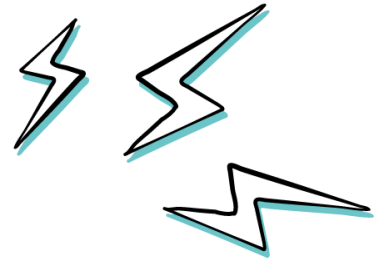


MANCHESTER  
CITY COUNCIL

# Electric Refuse Collection Vehicles: Manchester's Journey

Presented by  
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# Project Overview

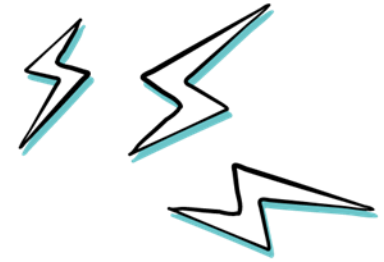


- 27 electric RCVs.
- £9.7m investment in vehicles.
- £800k investment in infrastructure.
- Will reduce greenhouse emissions by 900 (tonnes) & NOx by 2,826 (kg) per annum.
- Development of business case 12 months (2019/20).
- Business case approved February 2020, first vehicles received February 2021.

# Manchester's Requirements:

- Manchester c.233,000 households (hh).
- Service provided: refuse (fortnightly), food & garden (fortnightly), dry comingled recycling and pulpable (alternate weekly).
- 157k hh (wheeled bin service), 76k hh (communal containers) apartments or terraced areas.
- Collections contract provided by Biffa since 2015.
- 64 RCVs used across service.
- Densely populated urban setting – no rural areas.
- Disposal points located in close proximity – within the GM conurbation.

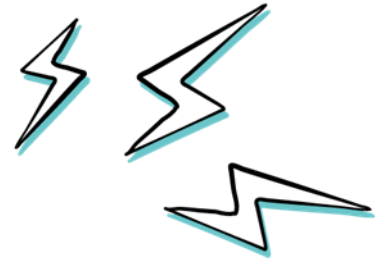
# Business Case:



- Successful trial of ERCV (Electra/Biffa) across collection rounds / service types (18mth).
- 27 diesel RCVs at end-of-life.
- Coincided with a major depot refurbishment.
- Manchester declared a climate emergency in 2019 - aims to be zero carbon by 2038.
- Independent analysis of BC and options appraisal (Energy Savings Trust).
- Clean Air Zone in Greater Manchester 2021 (pre-COVID). HGV's older than Euro 6 - £100 penalty.

	Diesel	Electric
Capital Cost (27 RCVs)	4,117,500	9,787,500
Charging Infrastructure		150,000*
Residual Battery Value		(972,000)
Grant Funding		(336,000)
<b>Total Capital Costs</b>	<b>4,117,500</b>	<b>8,629,500</b>
Financing Costs	borrowing	Invest to save / borrowing
Energy Costs		64% less
VED & RUL	£300 & £315 per /RCV	nil
Service/Repair		30% less
<b>Total Revenue Costs</b>		<b>51% less</b>
<b>Variance</b>		<b>1,483,535</b>
		*Actual cost £800k

# Vehicle Specification:



- Mercedes-Benz chassis.
- Geesink RCV body.
- Terberg split bin lift.
- Battery sizes: 225 / 287kw.
- Same payload as diesel RCV.
- Range: 100 miles (9 hrs operation).
- Charge time: 22kw (from 0%-100% - 10 hrs), 44kw (from 0%-100% - 6 hrs).
- Biffa will monitor vehicle outputs via their Manchester control centre.



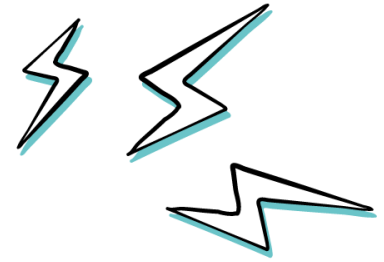
# Charging Infrastructure:



- Most complex element of the project. Two depots – 30 chargers.
- Vehicle charger: 22kw Alfen charger.
- Engie Genie Point – management system.
- Electricity supply: Electricity North West.
- Depot 1 – wider redevelopment project, new megawatt substation required, new switchgear & extensive ground works.
- Depot 2 – multiple stakeholders, upgrade of existing supply to accommodate 262 kva additional load to the site and HV works & load monitoring equipment.



# What worked well:



- Trial of ERCV – proved the technology worked across different types of collections and rounds across the city.
- Close working relationship between MCC, Biffa and Electra.
- Independent assessment of business case by Energy Savings Trust.
- Zero carbon strategy and inclusion of bin collection fleet in the targets.
- Broad political support.
- Support of services across the organisation: Capital Team, Estates & FM, Finance, Policy and Operational Teams.



# What could have worked better:

- Identification and engagement with all relevant stakeholders from the start.
- Initial scoping of the electric charging infrastructure requirements.
- Unexpected complications – load monitoring requirements, network interference from motorway and changes to charger specification.
- Mapping out the contingency arrangements / scenario planning and future management of the infrastructure.
- Impact of COVID and Brexit had some unexpected impacts on the supply chain and process to approve the new vehicle types.

# Top tips:



1. Engage all stakeholders who may potentially be touched by the project at the earliest stage.
2. Start with the electric infrastructure. Look at wider strategy for your organisations fleet – what does your future EV charging infrastructure requirements look like.
3. Trial an ERCV if you can – is this the most suitable option for your authority? ERCVs better suited to urban settings, rather than rural collections.
4. Seek support from EST, OLEV, and your network provider to inform your business case.
5. Contingency planning for various scenarios.

# Useful Contacts for your project:

**Biffa**, Matt Bailey, Operations Development Manager, [matt.bailey@biffa.co.uk](mailto:matt.bailey@biffa.co.uk)

**Electra**, Russell Markstein, Group Commercial Director, [RMarkstein@nrgfleet.com](mailto:RMarkstein@nrgfleet.com)

**Energy Saving Trust**, Helen Acott, Fleet Support Manager, [Helen.Acott@est.org.uk](mailto:Helen.Acott@est.org.uk)

- May be able to assist with fleet audits.

## **Manchester City Council**

Heather Coates, [heather.coates@manchester.gov.uk](mailto:heather.coates@manchester.gov.uk)

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## **Office for Less Emission Vehicles (OLEV)**

- Grants currently available for some vehicle types.



# Questions?