# Vehicle and Infrastructure Procurement Checklist

This checklist is used by Cenex to understand the procurement of new zero emission waste and recycling vehicles and supporting recharging infrastructure by Local Authorities under the Welsh Government’s ZE Waste and Recycling Programme.

The questions in this checklist cover the entire process from the procurement of the vehicles and infrastructure to in-service operation including:

1. Vehicle Requirements
2. Infrastructure Requirements
3. Data Requirements
4. Vehicle Handover, Acceptance, and Ongoing Support
5. Fleet Transition Plan

If any further support or advice is required, please contact [vicente.jofre@cenex.co.uk](mailto:vicente.jofre@cenex.co.uk).

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| **Roles and responsibilities** | |
| Senior responsible officer (SRO) for vehicle and infrastructure deployment | Name, job title and email. |
| Person responsible for vehicle and infrastructure deployment | If different. Fleet manager or similar. Name, job title and email. |
| Person responsible for ensuring sufficient energy is available for vehicle charging | If different. Energy manager or similar. Name, job title and email. |
| Other key personnel involved | Names, job titles and emails. |

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| No. | Question | Comments |
| **Vehicle Requirements** | | |
| **1** | What vehicles are you planning on ordering? Please can you provide us with a list including the main vehicle specifications. | No. and type of vehicles, preferred make and model, GVW and body type, battery capacity. |
| **2** | Where will the vehicles be based | Name of depot and/or postcode. |
| **3** | What is the composition of your current waste fleet? How many depots are they based at? | Number and types of vehicles (RCVs, RRVs, other). |
| **4** | How did you assess what options were available and what experience do you already have of using these vehicles? | Preferred supplier only or reviewed all options. Demo vehicle, long term trial, already deployed on fleet. |
| **5** | How have you determined whether the vehicles will be fit for purpose and are able to complete their rounds over the life of the vehicle? | Vehicles meet all procurement specifications and have been trialled on all rounds.  Have factored in winter, degradation etc.  Will be determined during operation. |
| **6** | Have you used the Vehicle Energy Model spreadsheets on the project website to check the performance of electric RCVs and sweepers under your specific operating conditions (if appliable)? | Yes / No.  RRV models are not currently available. |
| **7** | Are the vehicles a like for like replacement and are you making any operational changes to better accommodate the electric vehicles? | Are there any differences in payload / vehicle capabilities (speed, gradeability)? |
| **Infrastructure Requirements** | | |
| **8** | What are the AC and DC charging capabilities of the vehicles? | 22 kW AC, 44 kW AC, 50 kW DC, 150 kW DC. |
| **9** | What chargepoints are you planning on ordering and why? Will each vehicle have its own dedicated chargepoint? Do the chargepoints come with a back-office charging management and reporting system? | Type (mobile, dedicated, distributed), make and model, what power are they, what connectors do they have (CCS, Type 2, tethered or untethered), are they free standing or wall / post mounted? |
| **10** | How did you determine the charging needs of each vehicle (power and charging time)? | Daily energy consumption, time available for charging, minimum charging power. |
| **11** | What is your proposed solution to provide the additional power required to charge these vehicles at each depot? | Unmanaged charging, scheduled charging, static / dynamic load management system, grid connection upgrade, onsite generation, battery energy storage system. |
| **12** | Have you used the Infrastructure Guidance Documents on the project website and the EVSE database to help specify your charging infrastructure and power supply? | Yes / No. |
| **13** | Do you have a detailed plan for installing and commissioning the charging infrastructure before the vehicles are delivered? | Site layout / parking arrangements, electrical installation, physical installation, markings, grid upgrades etc. |
| **Data Requirements** | | |
| **14** | Have you read and understood the data requirements document at the bottom of this checklist (also on the project website)? | Yes / No / Need further support. |
| **15** | Have you specified a telematics solution for the vehicle? Are you confident that the vehicle, chargepoint, or existing fleet data systems can provide all the data required as a condition of the grant offer letter? | Telematics supplier details.  Yes / No / Need further support. |
| **Vehicle Handover, Acceptance, and Ongoing Support** | | |
| **16** | When and how will the vehicles be introduced into the fleet? What are the lead times on the vehicles? | All at once or in phases. |
| **17** | What training will be provided for drivers, other staff, and maintenance technicians to familiarise them with using the vehicles and infrastructure? | Handover training from suppliers.  Training for all individuals or ‘train the trainer’. |
| **18** | Is the introduction of subsequent vehicles conditional on the reliability and performance of the initial vehicle deployments? | Yes / No.  What are the KPIs / criteria? |
| **17** | How and where will servicing, maintenance, and repairs take place? | Main dealer, supplier, in house, third party.  Locally, elsewhere, abroad. |
| **18** | What warranties will be provided with the vehicles and infrastructure? | Battery, drivetrain, chassis (years, miles, % state of charge), chargepoints. |
| **19** | What level of support are you guaranteed from the vehicle and infrastructure suppliers?  How quickly will they resolve issues?  Will replacement vehicles or spares be used in the event of an issue with the electric vehicle? | Is there a service level agreement in place?  Telephone support, breakdowns, identifying and resolving repeat issues, chargepoint availability. |
| **Fleet Transition Plan** | | |
| **20** | How long do you intend to keep the grant funded vehicles for? What are you doing to maximise the cost and emissions benefits of these vehicles? | X years, is this the same or longer than a diesel vehicle?  Deploying on rounds with high utilisation. |
| **21** | What are your plans to charge the vehicles on 100% renewable energy? | Already running on 100% renewable energy (state source), depot planning switch to renewable energy before 2025, 2030, 2035, 2040 (state source). |
| **22** | When do you intend to order more zero emission vehicles? | Next year, when vehicles are next due for replacement, when new vehicles come out, no further plans at this stage. |
| **23** | Do you have a long-term zero emission vehicle fleet and infrastructure strategy document?  When do you think all your waste, recycling, and street cleansing vehicles will be zero emission vehicles? | Yes / No.  Can it be shared with Welsh Government, Local Partnerships, and Cenex?  Before 2025, 2030, 2035, 2040. |

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| **Cenex comments** | |
| Person completing form | Name, job title and email. |
| Comments | Free text comments if needed. |

**Project Data Requirements**

Reporting vehicle operation data to Cenex is a condition of Welsh Government funding.

Cenex uses the data to:

* Provide feedback on the performance of vehicle to the Welsh Government and to Local Authorities participating in the programme.
* Build spreadsheet models to allow Local Authorities to understand how electric vehicles will perform under their specific operating conditions.
* Produce insight reports on the best use of the vehicles to maximise emission savings and operability.

***Essential Reporting Requirements***

As a minimum the aim is to record the following metrics **for every day of operation for new vehicles in the programme**:

* Daily mileage (miles)
* Daily electricity used (kWh from the vehicle battery. If this is not available then kWh supplied by the vehicle charger could be used instead))
* Round intensity indicator (e.g. total number of bins lifted, compaction cycles)
* Total amount of waste collected (kg)
* Total operating hours (hours and minutes)

***How Data Should be Provided to Cenex***

* The Vehicle Performance Data table below assumes that vehicle data will be collected using automated telematics systems fitted by the vehicle manufacturer or contractors working on their behalf and that daily summaries of the data will be supplied to Cenex.
* Cenex is happy to discuss data collection options with Local Authorities and their vehicle suppliers to facilitate the data collection process to make it as simple and efficient as possible for all parties.
* For example, the direct download of detailed vehicle telematics data by Cenex for subsequent processing offers another option for data collection that can be explored if required.

***Data Hierarchy***

The following terms are defined in relation to the data hierarchy:

* **Essential** – absolute minimum amount of data or information required for Cenex to assess the performance of BEVs against diesel baseline vehicle (energy consumption, maximum operating range, reliability, running costs and emissions savings).
* Desirable – additional data that can improve the accuracy of the results compared to the essential data only.

***Data Requirements***

The following tables define the data requirements. Where appropriate, each table also details the preferred data collection method followed by the preferred data format and units. Relevant notes or deviations are described after each table.

**Vehicle Performance Data**

**One row of data should be provided for every day of operation for new vehicles in the programme.**

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| --- | --- | --- |
| Data / Information | Format and Units | Example Data Sources |
| **Vehicle Registration Number** | XX##X## | Manual Driver Record |
| **Start Date and Time** | 01/11/2020, 06:00 | Vehicle Telematics |
| Manual Driver Record |
| **Route ID** | Unique Route ID | Manual Driver Record |
| Driver ID | Anonymised Driver ID | Manual Driver Record |
| Work Type | Domestic, Trade, Missed Bins | Manual Driver Record |
| **Distance Covered / Hour operated (for Sweepers)** | Km / Hrs | Vehicle Telematics |
| Odometer Readings (at start and end of shift) |
| **Electricity Used (one or more of the following).** *If this information is not available a further option is to get energy data from vehicle chargepoint. This should be discussed further with Cenex if required* | kWh | Vehicle Telematics |
| % State of Charge | Instrument Panel (at start and end of shift) |
| kWh / 100 km (or equivalent) | Trip Computer (reset at start of shift, recorded at end of shift) |
| **End Date and Time** | 01/11/2020, 14:00 | Vehicle Telematics |
| Manual Driver Record |
| Number of Loads | 1 | Vehicle Telematics  Manual Driver Record  *(at least one indicator of round intensity is required)* |
| Number of Individual Bins Lifted | 700 |
| Number of Compaction Cycles | 700 |
| Payload (per transfer) | 10,000 kg |
| Notable Deviations | Text such as vehicle settings changed, adverse weather conditions, different route etc. | Manual Driver Record |

**Vehicle and Infrastructure Reliability Data (Operation Notes)**

**One record should be supplied for all scheduled and unscheduled service, maintenance, or repair events. This file must also contain any reason for which the vehicle did not operate in a given day, be it a planned reason or an unplanned scenario. These records will be required for each BEV and a diesel comparator vehicle.**

*Non – Operation Notes*

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| --- | --- |
| Data / Information | Format and Units |
| **Vehicle Registration Number** | XX##X## |
| **Vehicle Off Road Start** | 01/04/2021 08:35 |
| **Vehicle Off Road End** | 03/04/2021 17:00 |
| **Operation Type** | Planned / Unplanned |
| **Reason for Vehicle Being Unable to Complete Planned or Unplanned Operations** | Not operated / Inspection / Fault & repair details |
| **Battery Charge at Off Road Start Time (if applicable)** | % of battery remaining at start |
| Non-Operation Remedial Action | E.g. Use of a diesel vehicle |
| **Zero Emissions System Fault** | Y / N |

*Maintenance Notes*

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| --- | --- |
| Data / Information | Format and Units |
| **Vehicle Registration Number** | XX##X## |
| **Vehicle Off Road Start** | 01/04/2021 08:35 |
| **Vehicle Off Road End** | 03/04/2021 17:00 |
| **Maintenance Type** | Planned / Unplanned |
| **Maintenance Description** | Not operated / Inspection / Fault & repair details |
| Labour Cost | £#,### |
| Parts Cost | £#,### |
| **Zero Emissions System Fault** | Y / N |