



# Bin Weighing Guide

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### Document reference

Bin weighing guide May 2025

[[Insert reference text] ]

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## 1.0 Bin Weighing Guide

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A workplace recycling guide for collectors considering adopting 'onboard' (vehicle-based) bin weighing.

The guide has been prepared by Circulogic, on behalf of WRAP Cymru, with input from technology suppliers (VWS) and officers with experience of implementing bin weighing across commercial collection fleets.

### 1.1 Introduction

As workplace recycling in Wales goes through a transformation driven by the legal requirement to separate materials for collection<sup>1</sup>, greater focus is on the performance and cost of recycling-led waste management. For those operators, whether local authorities or private waste management service providers, collecting from workplaces - having a good handle on operating costs and incomes is essential to offer customers value for money services. This is dependent on having access to accurate weight data, which at an individual customer level, can help demonstrate your legal compliance with the new requirements, support performance benchmarking, ESG reporting<sup>2</sup> and help target any additional support that may be needed. Vehicle-based bin weighing technology provides granular data to help do that.

This guide is to help inform decision making by waste collectors wanting to know more about onboard bin weighing. It sets out the benefits, introduces the types of technology involved (including wider data and systems interfaces), provides headline information on costs as well as practical considerations.

### 1.2 Bin weighing - benefits

Adopting bin weighing has significant strategic (long-term) and operational (day-to-day) benefits for collectors:

- Better management of overweight bins. Reduces the risk of exposure to heavy weight customers when a flat lift price is charged. The ability to capture individual bin weights helps benchmarking and reporting across the service so customers with particularly heavy bins can be targeted for advice, e.g. to drive out materials such glass and food waste for recycling and help ensure compliance with the workplace recycling law. Identifying heavy or overweight bins provides an opportunity to mitigate the risks associated with lifting heavy bins.<sup>3</sup>

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<sup>1</sup> [Separate Collection of Waste Materials for Recycling: A Code of Practice for Wales | GOV.WALES](#)

<sup>2</sup> An increasing number of businesses, both small and large, are responding to the need to monitor and report on Environmental, Social and Governance commitments. A number of waste and recycling related metrics may be required in support of demonstrating progress against ESG and carbon reduction goals.

<sup>3</sup> WISH Position statement 1 March 2023. Safety in the operation of automatic bin lifting equipment on RCVs [apse.org.uk/index.cfm/apse/members-area/briefings/2023/23-10-wish-position-statement-1-march-2023/](https://apse.org.uk/index.cfm/apse/members-area/briefings/2023/23-10-wish-position-statement-1-march-2023/)

- Improved statutory reporting. Where local authorities service commercial and domestic (e.g. flats) premises on the same round, being able to accurately report tonnages to different customer groups is important. Being able to report weights collected at the premise vs round levels helps to ensure reports, e.g. to WasteDataFlow and digital tracking are accurate and easily auditable
- Better container stock and vehicle fleet management. With businesses shifting from single-bin, disposal-led, waste management to separating more material for recycling, business waste collections can become more dynamic. The ability to plan for changes in service provision and make informed decisions about investing in container stocks and vehicle fleets is dependent on reliable service (lift) data
- Improved future planning. Adopting bin weighing helps drive improvements in customer lift data that can be used to inform future planning, e.g. where lift records are both geo-tagged and time-stamped so operators are able to identify exactly where and when each collection takes place. This can also help operational reporting in response to missed collection service requests. It can also make it easier to take on sub-contracted (including broker) work where payment may be linked to evidenced lifts and service weights
- Customer-specific weight reports. Bin weighing provides the ability to offer customer-specific weight reports. Large and multi-site customers may request site-based weight reports as part of their tender specifications. So investment in this technology may enable smaller / regional operators to bid for larger contracts
- Insight into your customers. Bin weighing data can help you profile the typical weight of bins by organisations in different sectors. Over time you will be better placed to target sales efforts at good customers and tailor information, policies and support to sectors with different waste production characteristics

***START WITH A CLEAR VISION OF HOW YOU INTEND TO USE THE DATA AND HOW IT WILL BE USED IN LINKED SYSTEMS***

The intended use of the bin weight data will inform how that data needs to be captured, transferred and analysed internally, shared with the customer (if applicable). If the intention is to apply a charging policy linked to weights it is essential to have a robust mechanism for linking premise (and associated account) information, ideally through a UPRN (Unique Property Reference Number), with external bins (assets) assigned to it. At a basic level you may simply want the driver to be able to print a ticket for the waste, but with an effective in-cab and back-office system linking to customer sector information there is potential to generate meaningful analytics that help with understanding what good business looks like and informing strategic decisions for the service. Various cloud-based systems exist, e.g. through VWS Live, waste data systems supplied by AMCS, Whitespace, Bartec etc.

## **1.3 Technology overview**

The main components of a typical onboard bin weighing system comprise of:

- Load cells (X2). These are the hardware components that measure the full (gross weight) of the lifted bin, the (tare) weight of the empty container and the resulting (net) weight of the contents
- Bin weighing module. The system 'brains' that receive and process incoming data from the load cells
- Cabling, sensors and cab link. Enabling ongoing monitoring and data transfer between vehicle and external systems.

### **1.3.1. Applying data to customers.**

Creating the link between assigned bins and customers can be achieved via a number of methods, e.g.

- Installation of RFID tags that are 'read' each time a bin is lifted/emptied. These create a 'hard' link with the premise the bin is registered to
- Using 'geo-fencing' to automatically assign bins to premises based on location from the vehicles GPS system
- Driver (manual) assignment of weights to customer accounts using in-cab software

Be sure to factor in the costs of purchasing and installing RFID tags (where applicable) along with the additional time needed to make data links with back-office systems so that bins are correctly allocated to the correct premise / contract. This isn't always straightforward, e.g. where a bin may be shared by multiple users or is stored / emptied at a location that is not on or adjacent to the customer premises.

### **1.3.2. Interim solutions.**

If you are not yet ready to use bin weighing technology across your fleet but are interested in lower-cost options to capture sample data, the following may be worth considering as an interim step:

- Mobile weigh scales – various options exist. These can be purchased for <£1k - £3k, requiring a separate crew/van to work ahead of collection crews to weigh sample bins before they are collected on the usual vehicle.
- Vehicle hire with onboard weighing. An RCV with onboard weighing equipment installed would allow customer weight data to be recorded across all bins over a dedicated short-term hire period.

Both options can help create sector-specific weight data or create a service weight baseline. They won’t facilitate automatically transfer the data to your back office systems so consideration will need to be given to ensure this data is recorded, captured and assigned to your customers.

1.4 Costs and maintenance

Approximate costs, for headline budgeting purposes, can be broken down into upfront (capital) items and ongoing (operating) costs. A ‘rule of thumb’ upfront cost of £15k per vehicle represents a good starting point (2023/24 prices). There will also be initial software and back-office costs, depending on the level of systems integration required. Ongoing costs will be due to associated software licences and ongoing warranty / system checks.

Table 1: Approximate costs

Upfront costs	(£)	Ongoing costs	(£)
<b>Hardware</b>			
Weighing system	12,000		
Fabrication	2,500		
RFID tags	2,500 (typical allowance, dependent on bin nos. per vehicle)		
<b>Software</b>			
Integrated software	10,000	Basic software	30/month
		Integrated software	100/month
		<b>Ongoing maintenance / calibration</b>	1,495.00 p/year extended warranty - includes annual calibration

Where commercial operators deploy bin weighing as part of a ‘pay by weight’ charging model many cite the technology payback period being as little as 6 – 9 months.

1.5 Implementation considerations

- Implementing bin weighing technology could be driven by a fleet review, as part of a relevant procurement cycle or as a response to the workplace recycling law<sup>4</sup>.
- Engage with crews and staff throughout the process of implementing the new technology. Ensure they are fully aware of the benefits and why it is being introduced.

<sup>4</sup> [Separate Collection of Waste Materials for Recycling: A Code of Practice for Wales | GOV.WALES](#)

They will be key in providing feedback on the system, including highlighting if there are any issues with the data being submitted.

- Consider rolling out one vehicle at a time, perhaps starting with a round that has a lower customer density and higher mileage. This can help reduce having to redistribute weights to customers and false reads, whilst you are bedding in both the technology and the supporting processes.
- The bin weighing hardware needn't link directly to existing vehicle telemetry. Having the systems operate independently of each other can have its advantages, e.g. if one system were to go down for any reason.



## 2.0 Watchpoints

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Experience gained by collectors that have already adopted bin weighing, and suppliers of the technology, is invaluable. Insights and lessons learnt to factor into your decision making include:

- Hardware costs do not scale with vehicle size, so the costs of deploying the technology to a small, e.g. 7.5t food waste, vehicle are likely to be similar to a much larger frontline RCV.
- You can specify that new vehicles with bin-lifts are 'weighing prepared', or it can often be as quick to fit the technology to a vehicle from scratch. be aware it can take up to 10 working days for the technology to be fitted, tested and certified (calibrated)
- There is currently no legal requirement to have the systems calibrated once installed, unless advised by a qualified engineer. If you are using the weighing systems to charge customers by weight the UK Weighing Federation<sup>5</sup> recommends that the systems are checked annually
- Do not under-estimate the time and effort needed to support the integration with back-office systems. It can take up to 12 months to iron-out issues depending on internal resources and existing systems, data quality. Plan the workload around the back-office requirements.
- When crews are required to help with the changes, including the deployment of RFID tags, ensure they are provided with clear instructions and a means of capturing problems in a 'snagging' list.
- Bag customers are difficult to handle and workarounds may be needed. It may be a good idea to generate a list of average weights for each material stream collected that can then be applied to relevant customers. Sacks could then be loaded into an empty bin and then onto the bin lift to be tipped. Alternatively, an approved underbody system could be used although they operate to a lesser degree of accuracy.
- Premises with shared bins represent a challenge. You will need to work out how to apportion recorded bin weights to customers. Being able to track bin access and usage will help, which could be achieved through the use of 'smart cards' or bar-coded sacks linked back to individual customers

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<sup>5</sup> <https://www.ukwf.org.uk/>

## Acknowledgements

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