



Shortening the distance between bins

Route planning and optimisation software has been widely adopted by local authorities for domestic waste collection over the past few years, with specialists such as AMCS, Webaspx and Integrated Skills - UK partner of US company RouteSmart Technologies - all offering suitable packages.

Adoption is to a great degree being driven by austerity, as councils battle to cut costs in line with shrinking budgets. "The primary goal for all recent route optimisation projects has been efficiency savings," says Stuart Henshaw, ISL director of public sector.

Nor is route optimisation being used solely to manage wheelie-bin emptying. It has been applied to road gritting for some time, and more recently to street cleansing and grounds maintenance, Henshaw says.

The systems that ISL and its rivals can provide enable councils and their subcontractors to devise routes that should ensure that the maximum amount of household waste is collected

Local councils are generating cost savings out of rubbish, by planning bin collection runs more carefully. Steve Banner dives in

using the minimum number of RCVs and crews.

Having developed systems for activities such as newspaper distribution, utility meter reading and delivering the post, ISL and RouteSmart are among those businesses that can bring their knowledge from private industry contracts to bear on public sector work. That work experience has one thing in common; it all involves going to houses and blocks of flats.

Optimisation can take into account everything from increased traffic during the rush hour to speed limits and access restrictions. Sending a 6x2 26-tonne RCV down a maze of narrow streets may be impractical if there is no space for it to turn round at the end, forcing it to reverse on to a main road: something safety-conscious councils would definitely wish to avoid.

These systems can also re-plan routes

in response to changes from weekly to fortnight collections with, for example, general household waste collected one week, and recyclable waste the next.

AMCS makes the point that optimisation can be used to address 'what-if' scenarios. For example, if planning permission for that estate of 1,000 houses on brownfield land close to the city centre is granted, will completely new RCV routes have to be created, or can the new estate be served by extending existing rounds?

The vendor cites the savings made by van Gansewinkel Group - the largest collector of municipal waste in the Netherlands, with 1.2 million households on its books - by switching to its route optimisation programme and away from a manual approach. The group cut transport expenditure by up to 10%, says AMCS, and was able to reduce the cost of its commercial waste

collections by 2.5% into the bargain.

“The point about this sort of software is that it enables you to look at everything that you need to take into account in parallel,” says Paragon Software Systems managing director William Salter. Those variables include the number of collections, vehicles, operatives, the daily traffic patterns, and so on. That is far more of a challenge if you are attempting to plan routes manually.

AMCS also says that using appropriate software rather than continuing to tackle the job manually can save planners many hours of work, with a potential 70% to 95% reduction in the amount of time spent on planning.

FOLLOWING THROUGH

All this of course presupposes that the carefully laid plan is actually followed, says Steve Thomas, sales director at telematics specialist Ctrack. If it isn't, then the anticipated efficiency savings will go straight out of the window.

If the RCVs are tracked using a telematics system, then any route deviations can be identified, and questions asked. The crew might have gone a different way because of delays caused by road works, for example. Once the system is made aware, then it can re-plan accordingly.

Other types of data are needed for planning, too, according to Julian Glasspole, managing director of Vehicle Weighing Solutions (VWS). As well as dynamic bin weighers (see pp10-11), VWS markets waste management software under the PurGo banner.

It keeps track of other information, says Glasspole. “It records where waste was collected, the day and time, and what type of waste it was,” he explains. “And as well as allowing you to put all your bin collections on a computer screen, it can help you manage your trucks and crews.”



That system can be used in conjunction with a ruggedised tablet (below) to enable the driver to report defects identified during vehicle walk-around checks that will need rectifying. RCV availability (or lack thereof) may mean that routes will have to be re-planned if no spare trucks are available.

“So far as drivers are concerned, you can include everything from holidays and licence entitlements to whether they have completed training courses on, for example, operating a skiploader,” he says.

All of this various information, as well as dates when trucks will need servicing or MOT testing, can be exported to the planning system that is being used.

Relying on pure data is never going to be quite enough, however, says Thomas. “You should take driver feedback into account,” he stresses. “Never ignore the human angle.”

The role of the human may be about to change, however. AMCS onboard technology has been fitted to an RCV in an application that could revolutionise route planning and optimisation, and domestic waste collection in general. It is an autonomous Volvo (above) now

on test in Sweden in conjunction with waste management company Renova. The first time that the

automated RCV is used in a new area, it is driven manually, while the onboard system constantly monitors and maps the route with the help of sensors and GPS technology. The next time it enters the same area it knows exactly which route to follow, and at which bins it has to stop.

On the round, automation kicks in after the driver/operator empties the first bin in the same way as usual, by operating the relevant controls. When that task is completed, the truck automatically reverses to the next bin, where it receives the operator's command. He or she walks the same route that the truck takes, and so always has full view of what is happening in the direction of travel.

“By reversing the truck, the driver can constantly remain close to the compactor unit, instead of having to repeatedly walk between the rear and the cab every time the truck is on the move,” says Volvo traffic and product safety director Carl-Johan Almqvist.

So would it be possible to incorporate autonomous trucks into routing software that could potentially coordinate their activities remotely, subject to safeguards? One wouldn't bet against it. [IE](#)

FURTHER INFORMATION

- Volvo autonomous RCV – <https://is.gd/azekip>*
- RouteSmart case study from San Francisco, California – <https://is.gd/oyicof>*
- AMCS case study from Groningen, Netherlands (with English subtitles) – <https://is.gd/MU4k3a>*

