



MORE FOR LESS

guidance for local authorities on





saving money in waste & recycling services

March 2010

Foreword

We know the pressure is on you to save money. This guidance covers some of the main things that councils can do (and some have done) to save money while either maintaining or improving services. This can help all councils whether their service is in-house or contracted-out.

This guidance is relevant to:

- **Collection / WCAs?** 
- **Disposal / WDAs?** 
- **In-house services/DSOs?** 
- **Contracted-out services?** 

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PART I – productivity analysis

1. What is productivity analysis?

For the purposes of this guidance, we use the term 'productivity analysis' to cover a range of methods that can help to identify opportunities to increase productivity of waste collection services. By 'productivity' we mean the amount of work that can be completed ('output') for a given unit of input. In waste collection, productivity is generally increased by:

- ❖ Reducing the amount of 'unproductive' time which the council is paying for; and/or
- ❖ Increasing the amount of work done during productive time.

Relevant to collection and disposal?

Actually – yes it is. Although the focus is very clearly on productivity in collection systems, we strongly recommend that disposal authorities develop their knowledge of this area if they have not already. An overall financial analysis, considering both collection and disposal, is the only way to be sure that money is being invested in the right part of the system.

More specifically, the geographic location of waste delivery points (e.g. disposal or treatment facilities) and indeed whether or not these can be co-located with the depot can be some of the most significant factors affecting productivity of collection systems.

Does this apply to councils with in-house or contracted out services?

It applies to both. It is often assumed that it is more difficult to implement changes in the middle of a contract, but this is not necessarily the case. Both present their own complications:

- ❖ For DSO/in-house services, internal negotiation and change management can be challenging.
- ❖ For contracted out services, negotiation with your contractor will be required and the nature of your contract (e.g. 'cost plus' or 'fixed price') will impact on the approaches that are open to you.

However, in both cases it should be possible review service efficiency and find a route to delivering increased value for your council.

Productivity analysis alone, or part of a wider review?

A council (or partnership) may choose to conduct productivity analysis as part of a wider review, because there are often close links between productivity and other service design issues. In addition, a wider review may

result in a programme of recommendations which, in totality, is more worthwhile to implement than just making a few tweaks to collection services. For these reasons, this guidance does also cover key points relating to system design.

Why should we do it?

- ❖ Is this really different? As far as WIN is aware, relatively few councils have carried out a one-off productivity analysis, and even fewer carry out this type of analysis an ongoing part of operations or contract management. This is in spite of the fact that the potential savings identified are often significant, with several councils achieving 10% + of collection costs saved.
- ❖ Various forms of productivity analysis were used extensively until the 1990s. Productivity analysis used to be a central part of the job of being a waste manager. In the 1980s, training in 'work-study methodology' was common and analysing productivity was a key part of the DSO manager's job (before and during the introduction of Compulsory Competitive Tendering). In those days, of course, the job was mainly about refuse collection.
- ❖ Since then, productivity as a concept has taken a back seat, largely because it has not been the main priority. The priority in most councils in recent years has been changing collection systems to increase recycling. Collection system change has often been piecemeal and occurred mid-contract.
- ❖ But now that new systems are bedded in, the time is right to look at and review all the changes made. In recent years councils have started to use productivity analysis once again as one way of reviewing their operations, focussed on saving money and improving outcomes.

Consultants or in-house skills?

Expertise in productivity analysis has become relatively less common in the council waste officer as services have become more complex and focused on diverting resources from landfill as opposed to simply collecting waste efficiently. Where services have been contracted out, it is even less likely that these skills will have been retained in-house. Consultancy firms do provide these kinds of services, but there are clearly advantages in carrying out productivity analysis in-house. In any event, it is important that waste officers have a good grounding in the subject, whether undertaking the analysis themselves or working with consultants. Using this guidance as a starting point and obtaining further training where required, it is hoped that councils will become increasingly well equipped to make optimising productivity a core part of environmental services management. **Annex 1** gives some guidance on engaging consultants in this type of review.

2. Improving productivity in productive time / eliminating unproductive time

What is productive and unproductive time?

'Productive' time is the time that a crew actually spends collecting from households, loading collection vehicles and driving between properties on the round. All other time (e.g. driving to and from rounds, unloading vehicles etc.), although essential to the overall task, is termed 'unproductive' time.

Increasing productivity during productive time

To improve productivity during productive time, you essentially need to increase the rate at which work is completed (increasing output) or reduce the cost of completing that work (reducing input). The overall workload is the number of properties that the council provides the service to (i.e. the number of households that the service must 'pass').

The 'pass rate' (the number of properties passed per day per round) is therefore a fundamental measure of productivity. This is because the number of rounds (i.e. vehicles) required for a service = total households covered ÷ the number of working days to complete one collection cycle (e.g. 10 days for a fortnightly service) ÷ the pass rate. For example:

$$\begin{array}{ccccccc} \text{Total households} & \div & \text{Days to complete} & \div & \text{Pass Rate} & = & \text{Number of} \\ \text{served} & & \text{one collection cycle} & & & & \text{vehicles required} \\ \mathbf{50,000} & & \mathbf{10} & & \mathbf{1,000} & & \mathbf{5} \end{array}$$

However, **pass rate** should not be considered in isolation. The 'number of houses *picked up from*' (as opposed to simply passed) per hour i.e. the '**set out rate**', is very important too because it defines the amount of actual *work* to be completed during the available productive time. Also '**kg of waste collected per crew member per hour**' should be measured. The usefulness of these measures is best explained by example:

- A poorly performing recycling service may lead to a high pass rate. If the 'set out rate' increases e.g. if more households participate in a recycling scheme, the pass rate will tend to reduce, but this is overall a good thing because of the increased recycling performance.
- An overmanned crew may lead to a high pass rate. Reducing crewing levels (e.g. from driver +2 to driver +1) may reduce the pass rate (and create a need for more vehicles) but it may also reduce overall costs and so be a good thing.

Goal: to get all rounds working at the most productive (cost and performance optimised) pass rate.

This is generally achieved by analysing operational data and looking in detail at how crews are working, more of which later. If you manage to increase productivity, it follows that you would need to reorganise rounds to some extent, to account, for example, for vehicles filling up faster and crews finishing rounds faster.

The '3 ultimate constraints'

Only three things cause a crew to have to go to the tip or return to base (thereby ending productive time, at least for the moment):

- ❖ **Weight:** the vehicle has reached its maximum payload and cannot legally continue to be loaded, so has to return to tip.
- ❖ **Volume:** the vehicle, although it has not reached maximum payload, is full (or at least one compartment is full), so has to return to tip.
- ❖ **Time:** the available time in the working day has been used, only leaving time for the vehicle to return to tip and return to base.

These constraints are very important to bear in mind. Ideally, rounds would be constructed so as to be well balanced in terms of all three constraints. In practice, vehicles with compaction (i.e. rear end loaders) are more likely to be constrained by weight than non-compacting recycling vehicles, which are likely to be constrained by volume. Time constraints are most likely to impact heavily on productivity where travel times to and from rounds are long (e.g. where this leads to inadequate time for crews to complete a second round in a day).

Goal: to have as many full, or close to full, tips as you can have by the end of the working day without having time over or an excessively short final round of the day

Reducing unproductive time

Unproductive time can be reduced in several ways. Sometimes, some rounds are constrained by weight or volume (e.g. because they are in a more urban area) whilst others are constrained by time (because of long travel times to and from the round). In both cases, crews may generally be finishing work relatively early in the day, because inadequate time is available in the working day for another worthwhile round to be carried out. By rebalancing these different types of rounds, it can be possible to deliver a larger number of 'optimised rounds' (i.e. as per the goal above).

Productive time can also be increased by rerouting rounds so that travel time to and from rounds is reduced across the fleet as a whole, or reducing unloading times at the disposal point/transfer station. All of these and other options for reducing unproductive time are considered in greater detail below.

How much productive time should we have in a day?

One council had a working day of 8 hours for drivers and loaders. The amount of time they were actually loading (productive time) was between 3 and 4 hours. This was largely because of long unloading times and some long travel distances. Both issues were subsequently tackled to reduce unproductive time.

Ideally you would have a minimum 5 hours of productive time for an 8 hour contracted day. You may be constrained by e.g. travel distance but if you are not constrained in this way you may be able to achieve as high as 6. You wouldn't want to put a cap on potential productive time because, for example, if you have a large vehicle, don't have to tip twice and co-locate the depot and tip, you may be able to achieve even higher productive time.

3. Typical ways councils find to save money

This section includes a lot of ideas on where it may be possible for councils to save money, based on real experiences, grouped under a number of headings.

IMPORTANT NOTE: Various ideas are included that go beyond pure productivity and into other related opportunities for cost saving. Some of these are included because opportunities to exploit them are likely to come up at the same time as some of the more operational measures are implemented.

Operational productivity measures

- ❖ Reducing loading time per household / improving collection ergonomics e.g. by introducing slave bins or reducing time spent by loaders waiting for other loaders to finish loading;
- ❖ Re-balancing rounds to reduce unproductive time;
- ❖ Improving unloading times at tip, transfer station or bulking facility (common problems being: queuing at the weighbridge, not having the optimum site layout or material handling equipment to efficiently offload vehicles or not having enough depot staff or equipment to offload multiple vehicles simultaneously);
- ❖ Moving away from 'single round' task and finish. Single round task and finish tends to lead to the greatest amount of unproductive time at the end of a round. By moving to 'group' task and finish or 'two round' buddying (where two crews are responsible for completing the overall work of both crews) you can balance your rounds more effectively;

- ❖ Moving to operating in zones, which allows group task and finish to be implemented, as you have your resources in the same geographic area on the same day. It also allows you to make changes to routes whilst minimising day changes to customers;
- ❖ Changing crew numbers: in reducing loader numbers, you might need more rounds, but that can still be cheaper where the cost of capital equipment is a relatively small proportion of your costs. You might need to operate an extra, truck but you may be reducing your workforce by 8 loaders, which would mean you are still becoming more productive:
 - It's important to analyse whether, with large crew sizes, the increased pass rate per round that each additional loader is giving you is worth what they cost;
 - The biggest problem with large crews is, when the vehicle and crew are in unproductive time (e.g. driving to and from rounds), all crew members are being paid to do nothing;
 - A common ergonomic problem can be that loaders are having to wait for other loaders to get out of the way before they can get access to the right position on the vehicle to load waste;
 - NOTE – we provide a worked example of where reducing loaders from two to one, and increasing rounds, saves a council £150,000 per year.
- ❖ Optimising the number of tips per day for different rounds and sizes of vehicle. Avoiding an over-standardised approach to vehicle size or number of tips per day may be more efficient, but requires more management input;
- ❖ Ending the use of refuse round routes as a template for recycling / composting rounds. This is often a relic of tactical implementation of new kerbside collection services, sometimes leading to unbalanced workloads between the refuse collection service and recycling services;
- ❖ Reducing fuel consumption, vehicle maintenance and wear and tear. Reducing fuel use = money savings = carbon savings. Many approaches to increasing productivity will reduce overall miles driven. You can also use driver training to reduce fuel usage and vehicle damage/wear.

Policy changes

- ❖ Introducing a 'no side-waste' policy. Allowing side waste means the operative probably has to make more trips to and from each house – so a no side-waste policy has an operational productivity impact, as well as supporting waste prevention and increasing recycling;

- ❖ Communication with customers. There can be good opportunities to improve loading ergonomics by communicating new messages to customers. For example, many councils provide multiple collection containers for kerb sort services. The average loading time can sometimes be significantly reduced by asking householders to, for example, set out fibres and containers in separate boxes. Even if this isn't enforced in any kind of heavy-handed way, it can have a significant beneficial impact on the key driver of productivity during productive time.

Management changes

- ❖ Improving management of sickness / absenteeism, particularly where rates are relatively high. This often has its route in wider issues leading to poor workforce morale;
- ❖ Improving management of overtime and temporary agency labour;
- ❖ Could your managers and supervisors be doing more with the way they spend their time to improve productivity of the rest of workforce? Is it possible that you have too many supervisors, or are not getting full value out of their time?

Infrastructure / high capital investment changes

- ❖ Location of infrastructure. This is clearly not something you can change easily, unless you are lucky with timing. However, opportunities may be more available than you think. For example, highways infrastructure may be one answer: there may be highways depots around the area or county which are under-used.
- ❖ Co-locating depots and transfer stations / treatment facilities, which results in being able to design a return-to-base journey out of the system, can make a significant difference to reducing unproductive time. Opportunities to deliver co-location should be considered where the WDA is procuring major new waste infrastructure.
- ❖ Reducing the number of passes per household, such as changing from two separate passes (e.g. one for glass one for paper on separate rounds), to do doing them both on one pass (i.e. with one vehicle). This can improve productivity because you are likely to have:
 - fewer miles driven, so less fuel used, less vehicle damage and wear;
 - less unproductive time, because every time you drive from depot to round, and round to tipping, that is unproductive time;

- lower total loading time per household because you are reducing the average number of times a loader needs to walk back and forth from a household to the vehicle; and
- improved vehicle utilisation, due to a lower risk of one compartment on one vehicle becoming volume constrained;
- ❖ Vehicle size. Is it possible that you are running too many restricted access rounds? Could you be running larger vehicles for some of your rounds?
- ❖ Tipping times can create a restriction on the length of your working day based on when the tip closes. Although this is often a result of planning or permitting conditions, in many cases there are possibilities for greater flexibility to be introduced and this can open up possibilities for approaches such as introducing larger vehicles for some rounds.

Partnership working between councils: what are the real benefits?

- ❖ Analysing total cost per household – you can ensure collection (including material income), sorting, treatment and disposal costs are all included in total system costs – enabling you to properly undertake cost-benefit analysis;
- ❖ Looking at the overall pattern of infrastructure, including depots. Where collection authorities are operating separately this can militate against the optimum pattern of infrastructure and round sizes;
- ❖ Economies of scale if you are a small collection authority. In particular, it is sometimes hard to realise savings as a small authority because you can't 'knock out' a whole round. More generally, all the same examples above can be considered, it's just that you will be doing it in partnership.

Other interventions (strategic)

- ❖ Materials marketing; materials marketing consortia, or simply improving procurement of end markets, can make a significant contribution to improving the economics of waste collection;
- ❖ Charging for services where appropriate (e.g. garden waste collection) or avoiding providing free services where unnecessary e.g. free refuse sacks if you're on sacks, or caddy liners (most evidence suggests they are not self-funding in terms of increased yields);
- ❖ Changing haulage arrangements for recycle. If you are doing the haulage, should it be you? You may be able to get a better price using a haulage contractor if your reprocessor is not already providing you with an 'ex works' price (i.e. where the reprocessor is arranging the haulage);

- ❖ Changing capital financing arrangements. Are you leasing or using capital or prudential borrowing or is your contractor using expensive financing when you could provide them with cheaper capital? Contractors may well be interested in refinancing contract vehicles, even during a contract, if this could release capital for them to invest in more profitable parts of their business. This may even open up possibilities for negotiating on other issues within the contract;
- ❖ When procuring vehicles or collection containers, looking at collective purchasing arrangements (e.g. framework contracts, purchasing organisations) and if procuring directly, negotiating hard with suppliers. Smaller orders are more important to manufacturers in times of economic downturn;
- ❖ When recruiting, take account of changes in the local labour market. Again, the market price for e.g. LGV drivers has reduced in recent times due to the economic downturn.

Health & Safety

There may be risks associated with making people work faster, increasing risk of accidents. It is therefore critical that health and safety considerations are paramount in any major change to working practices and that changes are fully risk-assessed.

Ironically, productivity analysis often identifies that some operatives are working too fast, not giving enough consideration to H&S and not taking adequate breaks. It is often by, for example, changing crewing levels that you can ensure operatives are working their hours and taking breaks, with less incentive to go too fast, and thereby reducing risk of accidents.

4. Common problems with implementation: making sure you actually achieve savings

Think about implementation at the outset!

Before we head into detail on the technicalities of productivity analysis, it is worth considering how some common barriers to implementation can be overcome. It is essential that these issues are considered from the outset, as the approach to the analysis should be tailored to provide a route-map for implementation that will work for your council.

Not getting off the starting blocks

Recommendations from productivity reviews are not always easy to implement because they may carry reputational risk, involve difficult

negotiation, or just simply mean that change is needed (and change may be resisted for many reasons). This section deals with some of the common problems and gives some pointers on how to avoid a situation where you don't manage to implement some perfectly sensible recommendations.

High level project leadership

If there's no real buy-in to the idea of change at senior level, then the process will be made much more difficult. There needs to be a genuine desire for the review and for implementing any recommendations at a senior level within the council. A project 'sponsor' at corporate director level can go a long way to achieving this, by strategically breaking down barriers across the organisation or partnership.

Someone needs to be excited about the project and able to lead and bring people along. Leadership is a much vaunted attribute – but what does it actually mean? As well as having adequate seniority, whoever is sponsoring or leading the project should be:

- ❖ Tenacious and persistent;
- ❖ Positive; and
- ❖ Wanting things to change: believing in change themselves will help to inspire and convince others.

Manage the decision making process carefully

A lot of what you're going to do might carry reputational risk for the council and so Elected Members will naturally be concerned about the impact on the public. This can be addressed through:

- ❖ Managing the decision making process well, in particular, having very good evidence and not just covering, but actively planning to manage, all potential concerns.
- ❖ Working hard to demonstrate to Members that implementation will go smoothly – ensure you show them that excellent communications and contingency plans will be in place (e.g. that you will be investing in extra contact centre capacity; establishing contingency resources to sort out any issues during roll out, etc.) In essence, give Members and senior officers confidence that reputational, operational and other risks will be managed effectively and that customers will be properly looked after.

Getting buy-in early

Sometimes the council will be concerned about the impact on residents or other high profile consequences of change.

The most effective way of addressing this challenge is to ensure that, with any potentially controversial change (e.g. introducing a new side waste policy, system re-design, frequency of collection changes or collection day changes), Members and senior officers are brought into the process at the outset and – at this early stage – it should be made clear that some changes might carry reputational risks.

Get key people involved from the beginning and make sure your evidence is good and that opinion formers and decision makers are bought into the change. This might be addressed through running workshops – so people really do understand what is coming out of it – specifically covering:

- ❖ Potential savings;
- ❖ Investment cost; and
- ❖ Key reputational, operational and other risks and some indication of how they can be managed.

Resistance to change

Operational staff at any level may be resistant to change, possibly with good reason as change might mean extra stress or work, in particular if things are not planned carefully.

Careful planning, taking concerns seriously and reassuring staff not just with words but action (e.g. providing additional resources while change is being implemented) and effective communication can ensure people don't feel it's as difficult as their instincts tell them it will be. If things are not managed well, staff may leave and further change can become even harder, as people become more resistant.

Insufficient evidence or 'not a strong enough' case

Sometimes this happens because there is not enough information to make one key decision – often because of complex interrelationships between areas of action.

If you focus on a single issue, then the case may not look strong enough. For example, introducing a side waste ban may save relatively little in pure productivity terms (from less trips to and from each house to the vehicle). But an integrated package of change involving introducing a side-waste policy plus changing the collection system and vehicles, leading to a better performing recycling service and considerable savings on waste disposal is more likely to look attractive, given the reputational risks.

Good project and/or programme management

If your 'change programme' is considerable then there is a greater need to establish robust programme management arrangements (a programme = a set of coordinated projects) to ensure change is carefully planned and managed. If the scale of potential benefits justifies the investment, the council may bring in an experienced change manager who previously managed change in another part of the authority, to manage the programme of change in waste collection services. Such an approach may add considerably to the credibility of the project in the eyes of senior officers and Members.

Getting the right people with the right skills in place is clearly essential – skills and qualities required are likely to include project management, change management and good people skills. Many of the kinds of changes likely to be part of such a project will come about through people changing the way they do things, so getting people on side and bought in is vital. Good negotiation skills are also likely to be essential.

Good communications

You may end up involving some key people whose day to day job will be affected by the changes that are being proposed. If a large number of people / departments are going to be involved, you may need to have a more formal communications strategy. In terms of internal stakeholders, this might include:

- ❖ waste management teams (office based and operations)
- ❖ finance officer
- ❖ legal officer
- ❖ HR officers
- ❖ potentially facilities management / estates.

Preparing for any workforce issues

Significant improvements in productivity will often require changes to be made to either working practices or employee terms and conditions of employment (or both).

Change to working practices

When making changes to working practices (e.g. reducing crewing levels / significant round re-routing or zoning) you (or you and your contractor) will need to get staff bought in to the changes envisaged. You can do this by:

- ❖ promoting the benefits
- ❖ making clear the consequences of a lack of change / other options
- ❖ making clear you are planning the operation so that it goes smoothly and they won't be adversely affected.

For example, if you are reducing loader numbers on your recycling rounds, the council could allow crews to work overtime during implementation to ensure that work is completed, or provide a temporary labour budget to back up front-line staff if things do not go according to plan. In other words, listen and respond to concerns, and put contingency plans in place, even if this is primarily to demonstrate to staff that they will not be adversely affected.

Change to contractual terms & conditions

When seeking to make changes to contractual terms and conditions (e.g. changing working hours or ending contractual task and finish) the consent of employees and/or their representatives will generally be required. Obtaining this will involve formal consultation with the workforce's representatives, leading to negotiation. You can ensure you have the right skills by bringing in a high-calibre HR manager with experience of commercial negotiation with Trades Unions. This might have to be sourced externally if you feel this is not available in-house or within the HR departments of partnership authorities who you may be able to borrow from.

Doing the analysis properly – funding

Ensure you have the funds to do a review properly. Depending on how you do it, it may not cost as much as you think and there is likely to be a considerable return on investment *providing* there is buy-in to the process. For a project with minimal consultant input, a productivity review might cost as little as £10,000 for a single district. More complex projects with a greater degree of consultant input might cost £20 – 30,000 plus.

WRAP's Local Government Services programme does provide support for efficiency projects (through training, direct advice and funded consultancy support) and have assisted this type of review so you may be able to access support there.

Decision making in partnerships

If you have a decision that has to be taken back to each council in the partnership:

- ❖ It is likely that all of the above will apply, but the decision making process will be more complex and time consuming and potentially resource intensive;
- ❖ Knowing the different councils' non-negotiables / deal breakers can be essential;
- ❖ You may well have to strike a compromise: be prepared to do so;
- ❖ Ideally, agree to write generic reports that each council can 'top and tail' with its own style of cabinet report, as this means all Members see the same content.

PART II – doing the analysis

5. Gathering and reviewing operational data to identify potential for productivity gains

Before reviewing operational data it is a good idea to do some basic benchmarking. This can help you to identify where the strategic issues are e.g. performance, cost or both – compared to similar authorities. This will give you a guide and potentially some baselines to measure improvements against.

Looking at combined indicators such as cost per household per 1% recycling/composting performance can be a useful way of benchmarking overall value for money (i.e. a combination of a cost and a performance measure). However, benchmarking across councils is rarely straightforward and is no substitute for detailed analysis of your own operational data.

Operational data needed for productivity analysis and review

The table below sets out the kind of operational data that would ideally be available when carrying out a productivity review:

	Date:	1/2	2/2	3/3	Etc..	Avg
Journey time from depot to Round A						
Time doing the round i.e. loading time						
Journey time to tip/transfer station						
Time at tip/transfer station (tipping/unloading)						
Properties passed (stays same)						
Pass per hour (of loading time)						
Properties setting out						
Properties actually picked up from per hour						
Weight collected (by material if relevant/possible)						
o Paper						
o Glass						
o Etc...						
Number of crew (e.g. Driver +2 loaders = 3)						
Weight collected per crew member						
Weight collected per hour						
Journey time to Round B (if appl.)						
Etc...						
Journey time to return to depot from tip						
Comments (e.g. 'long traffic jam' or such like)						

Other data which maybe useful to collect

- ❖ Any staff absence or details of temporary cover for each round
- ❖ Fuel usage
- ❖ Mileage
- ❖ Repairs/maintenance cost
- ❖ No. of insurance claims
- ❖ Sickness levels
- ❖ Missed bins for each round
- ❖ Incidents (e.g. diversions due to road closures etc) for each round
- ❖ No. of assisted collections

Ideally, you would have this data for each individual collection round (residual, recycling, composting) with a reasonable time series i.e. you will have collected it for the same round over a few months to obtain a meaningful average. If you do not routinely collect all of this data at the moment (and not many councils or contractors do) you should probably start, even if you don't plan to do a full productivity review in the short term.

If you don't have most of this data already and do want to carry out a review, you will need to collect data for a sensible period to give you a reasonably representative sample. One of the key aims will be to be able to establish an **average** for each of the items in the table. (In this example table, we assume that a Round = a vehicle + crew doing 2 rounds per day - Round A and Round B, but if your crews only do Round A, adjust the table).

How long should you collect data for to obtain a reasonable average?

Try to establish a system to collect the data over a period of 4 to 5 months. For refuse collection and dry recycling, remember that August, late December and January are likely to throw up unusual figures. For garden waste collection (especially free schemes), it is important to understand the impact of the peak period of waste production (usually May, June and July, with two more 'high' months in August and September).

There are of course practical ways of varying resources to adapt to changes in service demand, e.g. reducing loader numbers in the 'lower' months or bringing in temporary additional resources in peak periods.

In general, the aim is to account for the impact of seasonal factors and to remove outliers from your average data (e.g. if there was an unusual traffic problem on one day) and establish a 'typical' dataset for a round.

In reality (and helpful hints), you may need to work with a practical data set you can get together:

- ❖ You could use estimates of set out rates. Set out rates define the work content in a round, so you would want to have an idea of how set out rates vary between rounds. If one round has a high set out rate, it may well have a lower pass rate but they are doing more work (hence the need to look at weight per round and per crew member as well).
- ❖ Much of this data could be collected over a shorter period. The real issue is that you would want to try to set things up so you are collecting it on an ongoing basis so you are able to review it once every 3 to 6 months (depending on how much change is happening).
- ❖ Two simple but useful calculations are tonnage per hour and pass per hour. Ask: Are they fairly even? Does it look like work is fairly well distributed? Usually there will be quite a lot of variation. If it's your own service you might know this already and there might be something obvious happening (e.g. there are a lot of schools on that round).
- ❖ Round sheets can be used for this (information is often recorded but filed away so some of this may be available to you already).
- ❖ Sometimes councils record houses not set-out, to resolve issues with missed bins – and this could be used to derive the set out rate i.e. by deducting the no. of houses not set-out from the no. households passed.

If you are really short of time – you might need to obtain the dataset over a very short period. Obviously the bare minimum is one complete service cycle (e.g. two weeks for a fortnightly service) but such a small sample is very likely to result in very inaccurate extrapolation. As with any analysis, the quality of the result can only be as good as the data used and so generally the longer the time series, the better.

Analysing operational data

One of the key things to look for is variations in data between rounds or crews, with the aim being to try to explain the variation that you will undoubtedly find. The following issues should be considered:

- ❖ Look at round size – i.e. number of houses. How much variation is there in number of houses passed per round?
- ❖ Look at pass rates i.e. number of houses passed per unit of time (probably per hour), separately for each of your collections i.e. for your residual collection and then separately for your various recycling and composting collections. Measure this for each service, then for each round and crew. Pass rates are an important indication of productivity and you may need to increase them to be more productive, so you will need a baseline to establish target pass rates and to measure improvements.

- ❖ Look at set-out rates i.e. the number of households actually collected from on the round. These define the actual amount of work done on the round and are key to understanding overall productivity, as small changes in e.g. pick-up time per household can have a significant impact on overall productivity.
- ❖ Look at weight collected per vehicle or per crew member (include drivers and loaders). ***This often holds as the best single measure of productivity for both residual and recycling collections.***
- ❖ Look at a breakdown of the working day i.e. what is the contracted day / what's the typical day actually worked / how much of that day is currently productive time and how much could be productive time. This can be done using a combination of timesheet / clocking on/off times and GPS tracker or tachograph data, either in place of or in addition to the operational data in the table above.
- ❖ Look at mileages and see how they vary between rounds. You need to understand two things: (i) miles to and from the start and finish of the round and returns to tip and base; and (ii) the miles actually spent on the round itself. If not collected routinely, you can get that data easily either from tachograph analysis or a GPS tracker system, if you use these.

Recycling Performance

It is also important to understand the impact that a poorly performing recycling scheme may have on value for money:

- ❖ Pass rates may be high, due to low participation rates and tonnages; but
- ❖ Fundamentally, you may be paying for a service that is contributing relatively little to the environmental impact of your community;
- ❖ You may be losing potential income from materials and having to pay unnecessarily for disposal; and
- ❖ Whilst your collection cost per household may be low, your cost per tonne of recycling will probably be high, so using that measure of productivity your service is inefficient.

The two most important factors in increasing recycling are:

- ❖ System design (e.g. convenience, providing enough container capacity for recycling, restricting residual waste); and
- ❖ Direct marketing activity backed up by monitoring, to ensure residents know what they are being asked to do, ensuring that residents properly understand their recycling system or what is expected of them.

- ❖ Consider how weights are likely to change between residual and recycling. If you have a target to increase recycling, the recycling and residual rounds will need to be adjusted accordingly. The table below is derived from one published by WRAP on the variation in capture rates in England

in 2007/8, which could help you to benchmark your current performance and establish targets. (Taken from *Analysis of kerbside dry recycling performance in England 2007/8* published by WRAP December 2009.)

	Paper (no card) kg/hh/yr	Paper & card kg/hh/yr	Cans kg/hh/yr	Glass kg/hh/yr	Plastic kg/hh/yr	All 5 materials kg/hh/yr
Minimum*	18	46	0	0	0	72
Lower quartile	63	95	5	29	5	140
Median	73	129	9	43	10	182
Upper quartile	88	155	11	53	11	216
Maximum	125	207	18	78	20	305

*As values are rounded to the nearest whole number, values of zero may occur.

Appendix 2 includes a worked example of a daily operational data record, with preliminary analysis, for a single round.

6. Conducting detailed analysis of work

To properly understand opportunities and constraints on productivity improvement, you almost certainly need to spend some time out with the crews collecting detailed data on exactly what they are doing.

Work study technique

One technique that is well established but no longer commonly used is work study (see box below for details). This is the most thorough approach for understanding resource requirements but less involved methods of observation can still be very useful.

Is detailed work observation really necessary?

If you have quite good operational data (as per Section 5 above) then gathering further detailed collection work data may not be so important and may really just confirm some conclusions you have probably already reached by looking at operational data.

HOWEVER – it is still good practice to be reviewing the detail of collection work on an ongoing basis – so if it has not been done for a while, it will almost certainly be worth doing as it will (a) provide you with supporting evidence for your recommendations and (b) give you a chance to talk to operatives, find out their issues, establish what is 'really going on' etc. Of course you will also get some useful data out of it!

Overview of how to obtain detailed data

If you aim to take detailed measurement of work with a view to extrapolating to model the whole service, you will need to take measurements for a representative sample of crews and rounds, probably between 10% and 25% of all rounds. Don't choose the sample until you have looked at the operational data for all rounds.

Once you've taken your measurements, you can compare them to your data set of time records. Hopefully by now you will have a time record that gives you a measure of productive time, so you can match field measurements to operational data.

WORK STUDY

Work study is a method of making the best use of resources (Method Study) and quantifying the amount of resources required (Work Measurement). The determination of efficient methods in waste collection and the estimates of resources required (generally vehicles and collection crews) have been problematic as they are often based on approximations and/or management experience in similar operations. Errors in these estimations can either lead to under-used resources or too much being required of the existing resources with implications for health and safety, the potential for conflict between the management and workforce and the potential for poor service delivery. It is important to ensure that efficient methodologies are employed and therefore the first element of a work study is a **Method Study**. A method study will examine whether crews are using suitable techniques for, for example, emptying containers. Although not formally part of a method study the examination of the suitability of collection vehicles for the required task is important at this stage of a study. Once the collection methodology has been examined and amended to be optimal, work measurement can be conducted to determine whether crews are working to optimal performance. **Work Measurement** is a relatively sophisticated approach to setting target times for work. The approach takes into account the breakdown of the job into discreet elements and considers the time and working rate required to undertake those elements.

There are various Work Measurement techniques that can be used. Rated Activity Sample is a Work Measurement technique that is commonly used in assessing waste collection operations. Typically this would involve a trained work study practitioner recording and monitoring a sample of collection crews for entire days and recording the tasks that they were conducting for each minute of the day and rating how quickly those tasks were completed. By comparing field data with longer term records of working time such as clocking in/out records, weighbridge tickets etc., it is possible to determine whether the observed crews were working at their normal rate of work. Once a picture of the time and work rate of tasks has been built up it is possible to determine whether crews can do more (and so estimating resources required

for a contract if applicable). Asking crews to do more usually involves re-designing collection rounds and therefore Work Study can be an important tool as a pre-cursor to effective round re-routing. It is important to note that the rating of crews is a subjective activity and therefore it is important that practitioners are properly trained and experienced in the field that they are working in. The Institute of Management Services is the professional body for work study practitioners and many of the facets of work study are defined by a British Standard (BS 3138).

Keeping data gathering proportionate / using more informal approaches

When collecting from perhaps 1,000 properties a day per round, every second counts and it is clearly important to understand whether small improvements in productivity can be made to each pick-up. However, you may be able to understand the key causes of variations in productivity using much less formal approaches to work observation. It is obviously important to keep your data gathering proportionate. If it's not obvious where to look, you might need to gather more data.

Using more informal approaches, you should be making general observations on the work happening during productive time as well as making some more detailed observations which allow you to compare times for specific activities with a view to trying to establish reasons for variations. Using video recording can be a very effective way of allowing strategic observation and discussion with crews to take place alongside the gathering of detailed time data. In either case, you will want to be chatting to the crew, getting them comfortable enough to behave as normally as possible.

Case Study: Taking a loader off but NOT increasing rounds

Following a service efficiency review, ABC District Council identified that the 'driver plus 2' crews were finishing early in the working day on the kerbside recycling service and so there was a lot of time being paid for which was not productive time. They decided to reduce crewing levels on the service to 'driver plus 1'. This change also meant that the drivers assisted the loaders more than when there were two loaders. Essentially what was done by taking a loader off was extending the working day to closer to the contracted hours that the contractor was paying for and, in this case, no more rounds were required.

This change resulted in a saving of £200,000 per annum. This was a contracted out service with a cost plus contract and there was a requirement in the contract for the contractor to be efficient.

Breakdown of loading process

From the moment the vehicle stops, these are the specific activities you should be observing the operatives doing: (not exhaustive)

- ❖ Going to collect the container at the household;
- ❖ Picking up the waste, either simply picking it up or loading it into a slave bin or box;
- ❖ Checking the load for contamination (and leaving advice leaflets for householders if necessary);
- ❖ Bringing the waste back to the vehicle;
- ❖ Tipping or sorting the waste into the vehicle;
- ❖ Waiting to access the point on the vehicle where the material has to be loaded (i.e. waiting for another loader to get out of the way);
- ❖ Taking the container back to the household if required (i.e. if it's not a slave bin system); and
- ❖ Then either returning to vehicle or walking to the next property.

Other elements of the loading process to observe

Observe whether operatives are having to deal with large amounts of waste e.g. if cardboard is not flatpacked by householders, it may take loaders a long time to break it up and load it (in this case, you may want to change the policy for how householders are asked to put out cardboard, if you operate a non-compacting vehicle).

Observe if some boxes or bags take much longer than others. For example, in a kerbside sort recycling collection, depending on whether or not the householder neatly separated the materials, or mixed up all paper with bottles, you might see a range of times from under 5 seconds to over 40 seconds for the same activity of loading the material onto the vehicle.

Common problems identified through this approach

- ❖ Poor general ergonomics: e.g. how the loaders use their pick-up time – which might range on average from 12 to 30 seconds depending on e.g. whether they are doing a straight tip or a kerbside sort. Pick up time can be broken down (see list above). Use of slave bins / slave boxes can eliminate the need to go back to the house to return the bin.
- ❖ People working too slowly: You may need to create pass rate targets and have more supervision. You may need to make more use of your disciplinary processes or even conduct a capability review of some operatives if you have major problems.

- ❖ People working too fast: This is often a sign that the task and finish system is not being managed properly, meaning that significant numbers of contracted hours may be being paid for but not worked, as well as leading to an increased health and safety risk.
- ❖ Too large crew sizes – leading to crew waiting to get access to the vehicle to tip waste into the truck while another crew member is tipping i.e. they are getting in each others' way.

7. Analysing the data and establishing and presenting recommendations

The effort put into gathering operational data and observing crews will feed into a process of modelling options for change, with the aim being to test whether a business case exists to make a particular change. This is achieved by first modelling a baseline that is reasonably clear and reasonably accurate, based on the data that you have collected.

To test the business case, you need to understand *incremental* change in cost or performance for the various options or scenarios that you are considering. This means that you don't necessarily need a model of all your current costs in your baseline (e.g. if you think you might be able to design out one round, you just need to understand how much that round costs). Focus on the areas that are going to change as a result of the interventions you are considering. A number of simple worked examples are included in Section 8 below.

Certain things could be impossible or very difficult to change. For example:

- ❖ Sparsity and congestion;
- ❖ Quantity of waste set out per household (though system design, policy changes and communications clearly *can* have an impact); and
- ❖ Long travel distances due to geographic constraints (although these may eventually be improved by changing location of infrastructure).

Certain things you can change (although not necessarily right away):

- ❖ Round size;
- ❖ Vehicle size (influences payload i.e. max weight, and capital cost);
- ❖ Crewing arrangements, specifically number of loaders (influences pass rate and revenue cost);

- ❖ Working practices e.g. moving away from individual round task and finish;
- ❖ Working systems e.g. introducing use of slave bins to eliminate walking to and from households more often than necessary;
- ❖ Policies – e.g. you could introduce a no side-waste policy to remove the need for the operative to return to the household (clearly, introducing a no-side-waste policy has other impacts, this is just one of them), or ask customers to present waste differently;
- ❖ System design (though this may be beyond the scope of the review); and
- ❖ Depot / tipping locations (though this may be beyond the scope of the review).

Case Study: changing vehicles

To support waste and recycling collection in lower population density areas, Rural Borough Council has decided to invest in vehicles that can carry out both tasks simultaneously. The vehicle has two completely separate compacting chambers to ensure no cross-contamination. One will be used for residual waste and the other will be used to collect household recyclables and garden waste on alternate fortnightly collections. Savings will come from reducing the staffing and fuel required when compared with separate waste and recycling rounds (currently done with three vehicles). The return on the £165,000 per vehicle capital outlay is expected to be at least £45,000 per annum for a ten year life span. The vehicle changes the economics of recycling and has made rural garden waste collections financially viable.

Understanding weight and volume constraints

Two of your key constraints (i.e. the things that will force you stop and go back to the tip) are maximum vehicle weight and volume (with the third being available working time). Using accurate weight data it is possible to calculate approximate material volume by multiplying tonnage by a bulk density factor i.e. Kg per cubic metre (m³). Here are some figures derived from data published by WRAP on bulk density, showing large variations depending on collection method.

Bulk density figures from WRAP's Bulk Density Study: Phase 2, April 2009

Material	Comments	Kg/m³
News and pams	No compaction	305
Mixed paper and card	Rear end loader (compacted)	431
Glass	No compaction	456
Cans (mixed ferrous and non-ferrous)	No compaction	63
Plastic bottles	Rear end loader (compacted)	158
Plastic bottles	No compaction	26
Food waste	No compaction	500
Garden waste	Rear end loader (compacted)	368

Food and garden waste	Rear end loader (compacted)	459
Food, garden & card	Rear end loader (compacted)	502
Co-mingled 1: plastic bottles, news & pams, cardboard, mixed cans	Rear end loader (compacted)	310
Co-mingled 3: plastic bottles and mixed cans	Rear end loader (compacted)	184
Co-mingled 4: plastic bottles, news & pams, cardboard, mixed cans, glass	Rear end loader (compacted)	405
Co-mingled 5: plastic bottles, mixed cans, glass	Rear end loader (compacted)	450

Are you more likely to be constrained by weight or volume? Very generally, you are more likely to be operationally constrained by volume if you are not compacting waste, but potentially by weight if you are. However, it's important to design rounds to ensure that you are not likely to be exceeding legal weight limits for the type of vehicles you are using. High density materials obviously may be more likely to create a *weight* constraint.

How to predict weight accurately – You can do an average easily. If you take Waste Data Flow tonnage / no. houses / no. scheduled collections per year i.e. 52 for weekly, 26 fortnightly, that will tell you what the average weight set out per property per collection will be. What that doesn't tell you is variation by season, area and housing type. You can overlay that with data from individual rounds or you can do something cruder but based on local knowledge to make assumptions about how areas vary from the average.

To get more sophisticated you can look at trying to classify your households in different ways using e.g. housing types (detached, semi-detached, terraced, etc. available from ONS); or ward based data e.g. IMD; or for the most sophisticated analysis you could use ACORN profiles but these obviously require baseline data on what each profile produces in the way of waste, and it needs to be matched up so that it is detailed enough to allow you to create a model and extrapolate from your baseline. The council's GIS team may be able to help with converting geographic round data into a stratified dataset based on these characteristics, but even with good statistical analysis the quality of the resulting data should be treated with caution.

How to present costs and savings

- ❖ Consider one-off costs e.g. redundancy or redundant capital (e.g. vehicles not at end of life);
- ❖ You should *not* show one-off costs as being equivalent to your savings – because your savings will be ongoing: savings should be shown as ongoing, probably for each year up to end of current contract or up until the end of the lifetime of main service assets;
- ❖ However, you can choose to show one-off costs annualised i.e. spread over a given period;

- ❖ For redundant capital: you need to work out whether to sell them / keep them and how to value them for the purposes of the business case (the market value of waste collection vehicles is usually less than shown on your accounts: they depreciate on the market quicker than on your accounts).

Presentational issues

- ❖ Flag up positive aspects of the current service as well as negative e.g. high customer satisfaction.
- ❖ Put recommendations alongside how the customer experience would be managed (if customer satisfaction is high – how will you keep it high?!). Be particularly careful to do this if you are making recommendations which carry reputational risk.
- ❖ Have the output in the form of a suggested programme of change – so it can be seen what can be done now and what needs to happen later.

Retaining spare capacity for future needs – is this sensible?

It is quite common for councils to say “we have spare capacity but we need that for housing growth” – or “we’ll need it some point in the future for increased recognition rates (i.e. capture of recyclate)”. Generally, you should focus on maximising current productivity rather than retaining spare capacity for housing growth or increased material yields, i.e. optimising productivity now and managing any increase in demand later. The exception to this may be where particularly significant amounts of housing development are planned.

Thinking about and trying to forecast trends is of course a good idea though, and you need to look at the impact on weight & volume and loading times (more material per house potentially means more trips to the property curtilage, so it is not just about weight but the impact on loading time as well). Keep an eye on whether vehicles will be constrained, and you may need another round at some point to accommodate the additional material.

8. Worked examples

Taking a loader off each round and increasing rounds (and buying more vehicles) may still save money overall. There is a tipping point with loader numbers – if you have fewer loaders you might need more rounds – but that can still be cheaper because the cost of capital is generally a relatively small proportion of your costs. This is an example of where reducing loader numbers means more rounds are needed, so more vehicles have to be purchased, but this still saves money.

Example 1: Reducing loader numbers

A council using driver + 2 loaders was operating 10 rounds at a cost of £135,000 each (vehicle annualised cost £55,000 / loader £25,000 / driver £30,000) and a total cost of £1,350,000.

There were 1,000 properties passed by each round per day. Removing one loader meant they could only pass 835 properties per day per round, so with just one loader per round – they now needed 2 more rounds, increasing the total number of rounds to 12. At a new cost of £110,000 per round, total costs were now £1,320,000, saving £30,000.

Slow unloading at the tipping point, transfer or bulking station can be caused by, for example, queuing at the weighbridge; not having the right / optimum site layout or material handling equipment to efficiently offload vehicles; or not having enough depot staff or equipment to offload multiple vehicles simultaneously.

Example 2: Reducing unloading time

One council had a particular problem with queuing at a weighbridge so they considered whether it would pay to buy a new weighbridge. The weighbridge cost £30,000. With only one weighbridge they were losing 15 minutes of productive time per day per round. With 8 rounds, that meant they were losing 2 hours a day of productive (i.e. loading) time. This was equivalent to 520 hours per year (2 hours x 5 days x 52 weeks).

They calculated that each of their vehicle + crew worked 5 hours of productive time per day or 1,300 productive hours a year. If that vehicle + crew costs £120,000 per year, then the cost for each hour of productive time is £92.31. So regaining 520 hours of productive time by adding another weighbridge, would save £48,000 a year. (As this is equivalent to the cost of half a round – it may be difficult for the council to actually realise the savings because they will not be able to 'knock out' a whole round.)

If, as in the above example, a round costs £120,000 then simply by adding a second weighbridge (as in the example above) you will only be saving 40% of a round (other examples may throw up the same problem). And therefore you won't actually be able to realise the full saving because you can't eliminate an entire round. However, there are options:

Example 3: Eliminating half a round!

Option 1: find more productivity improvement somewhere else and, combined with the weighbridge savings (in that example) you manage to take a whole round out;

Option 2: just save 2 days per week worth of labour costs and vehicle operating costs for one crew (however you still have the capital cost of the vehicle);

Option 3: work in partnership with a neighbouring council which also has half a round's worth of spare capacity.

Re-routing with zones – worked example of how savings are made

Rural District Council announced a plan to optimise its waste and recycling collection by dividing up the district into ten zones – one for each weekday of a fortnightly cycle. Their rounds had evolved piecemeal over decades – so it was felt that the rounds had become rather 'messy' and could probably be organised better.

They decided to use zones, concentrating vehicles in one geographical area of the district on any given day, for both waste and recycling collections. Rather than planning completely new rounds – they used the old rounds but chopped them up to create a set of new rounds within each zone. This made it easier because they already had a lot of data on how the rounds worked. The size of zones was balanced carefully and the new routes were more rational from the point of view of driving to & from the depot and tip i.e. saving the council unproductive time. (See the next case for an example of cost savings.)

The zones also made supervision more efficient, customer contact more concentrated, and operational contingency measures more feasible. The Council expects to save £70,000 per annum as a result.

Reducing driving times through round reorganisation

Authority X rerouted their rounds based on a zoning system to ensure that rounds started as close to the depot as possible and finished as close to the tip as possible. This resulted in a reduction on average of 5 minutes to each of the 3 types of journey they made i.e. (a) journey to the round (b) journey to the tip and (c) the return-to-base journey. There were 14 vehicle + crew doing a round each with 2 tips per day. That meant each one was doing 5 journeys (2 trips to round, 2 trips to tip, one return to base). That's 5 journeys x 5 minutes x 14 rounds = 1,517 unproductive hours a year. Using the same costs assumption as in the example above, this would lead to a saving of £140,000 per year allowing a whole round to be taken out of service.

Depot location optimisation

Average District Council achieved a similar reduction in travel time in practice by moving the depot to a more optimum (e.g. central) location in the district.

Eliminating the return to base journey (co-location)

A county and district worked together on the location of a transfer station to co-locate it with the depot. The return to base journey was, on average, 20 minutes and there were 8 rounds a day so they have saved 693 hours a year which (on the same costings as above) is £64,000 a year or about half a round.

Balancing rounds (time, weight, volume)

Some rounds are constrained by weight or volume because their travel times are quite short. Other rounds are constrained by time because their travel distances are so long that it's impossible to fill the vehicle by the time you've done the round and still return to base and tip before the end of the working day. By rebalancing those 2 extreme types of unproductive round i.e. by rebalancing start and finish points and routes, you should be able to improve productivity (the key point here is that so-called 'route optimisation' is as much about weight and volume as it is about routes).

EXAMPLE In Metropolitan Borough Council, there was big variation in the amount of waste set out in different parts of the Borough. Some rounds were constrained by weight or volume because of the amount of material they were collecting and they were having to end the day early as a result. Other rounds were only constrained by time so the vehicle was rarely full at the end of the round. By rebalancing rounds, allocating more of the houses which put out lots of waste to the vehicles which are never filling up – and allocating more of the houses producing less waste to the vehicles filling up too quickly – the council was able to increase productivity.

Sharing depots, zoning and moving to group Task and Finish

The five waste collection authorities in Shire County decided to work together on their collection services. They realised that, if they did not work together, the small amounts of unproductive time they had each identified would be much harder to eliminate because each district would have had to identify exactly, or near exactly, a round's worth of unproductive time in order to take a round out. Working together enabled them to organise rounds on a larger scale which basically helped them to tackle that problem which none of them could easily resolve by working in isolation.

They realised that, by working together, they could create more rational round sizes (balancing working day with weight and volume collected – as per the 3 key constraints of round design), more rational rounds in terms of cutting out journey to & from tip and depot, and by locating depots more optimally they could reduce journey times further. They also introduced collective task & finish so removed unproductive time occurring at the end of single-round task & finish as well. They reduced the number of depots and

increased the amount of resources based at each depot. They were able to increase the number of rounds per depot.

They achieved a productivity increase of 12% across their refuse, recycling and garden waste collection services through introducing a joint collection contract based on zoning of the whole county. In operational terms, the new contract, which started in October 2008, resulted in a reduction of 5.5 refuse collection vehicles and 10 kerbside recycling vehicles.

A range of small measures which add up to eliminating a round

Anyshire District Council carried out an efficiency review in 2009 and identified a number of ways to enhance the productivity of their in-house collection service. It was estimated that the whole programme of initiatives would provide savings of more than £500,000.

- ❖ More intensive use of crews, round optimisation within the existing zones and a change to the methodology for dry recycling were significant contributors.
- ❖ Recommendations for crew utilisation focussed on reducing the numbers on recycling rounds and reducing high levels of sickness.
- ❖ Round optimisation included reducing the number of restricted access vehicles required and reducing the number of loaders on them.
- ❖ A number of different dry recycling methodology scenarios were modelled, for example moving from a two pass to a one pass system and using vehicles capable of volume reduction of bulky materials.

PART III – extra notes for reviews of contracted out services

9. Negotiating with existing contractors

If you are mid contract there may be good reasons for you to want to review the service and costs. The key issue for your council is likely to be working with the current contractor to achieve this. Though it is quite common for councils in this position to feel it will be very hard to change anything, this is highly unlikely to be the case: in almost all cases, negotiation with the contractor will be possible. Several of the case studies in this guidance are based on real cases of mid-contract negotiation. However, the approach taken can vary depending on the kind of contract the council has with the service provider.

Types of contract

FIXED PRICE – Under most contracts, the contractor is paid according to a schedule of fixed prices for different parts of the service. With most fixed price contracts, the contractor has an incentive to be efficient (as this increases profit margin), but the council gets no share of the benefit. Some fixed price contracts have an *excess profit share* clause (or similar). This might state, for example, that profit margin above a set limit would be shared 50/50 between the contractor and the authority – so the contractor still has an incentive to improve productivity, but a clear mechanism exists for both parties to benefit. For this approach to work, you need to have an 'open book' arrangement.

COST PLUS – Cost plus contracts mean the council pays the contractors whatever their costs are, plus a margin. This profit margin may be smaller than a fixed price contract, because the contractor takes less risk than under a fixed price contract. The possible down side is there may be no incentive for the contractor to keep costs down (in fact, the opposite can be the case). To work well, cost plus contracts need to have a clause that requires the contractor to be efficient or to only charge for resources that they can demonstrate are actually required. Productivity reviews can be a way of demonstrating this. Again, an 'open book' is essential to allow the authority to understand the contractor's costs.

What does the term 'open book' mean?

- ❖ The literal meaning of 'open book' is that the client has access to the contractor's financial records in order to verify/understand its costs – so this can apply to fixed price and cost plus contracts; but
- ❖ It is often used to mean a 'cost plus' contract where the contractor's books are open to the client for cost verification/scrutiny purposes.

Does it matter what type of contract I have?

No, reviews should be possible and are important whatever the type of contract you have. There are some kinds of clauses (e.g. excess profit share or a requirement for the contractor to be efficient) which can be very helpful if you have them in your contract, but it's not essential to have these clauses to negotiate with the contractor. Many newer contracts include a Partnership Board or some similar forum where senior managers from both sides (and sometimes elected Members) can get together regularly to discuss strategic issues. This can be the ideal place to bring up concerns regarding the efficiency of the service.

Preparation

Contractors are used to the commercial negotiation process and so you need to ensure that your team also has strong negotiating skills. Although you may not have been involved with precisely this kind of negotiation in the past, indirect experience can be equally valuable. For example, you may have negotiated with trades unions while managing a DSO or may have negotiated deals for the sale of recyclates.

What does good negotiating involve?

- ❖ Get as much information on the other party and what they may want to change about the contract as possible;
- ❖ Don't reveal too much of your position;
- ❖ Have an overall negotiating strategy with clear idea of where your non-negotiable 'red lines' are;
- ❖ Give yourself room to manoeuvre; and
- ❖ Use tactics that have been thought through in advance and be well prepared for each meeting with the contractor.

Key competencies needed:

- ❖ Good negotiating skills and experience;
- ❖ Strong commercial outlook and ability to understand how the contractor will be viewing the situation from the perspective of their business needs;
- ❖ Knowledge of the service and contract and ability to understand the detail; and
- ❖ Authority to negotiate on behalf of the council (i.e. with seniority to agree things on behalf of the authority).

First ask yourself:

- ❖ Do you have the right skills?
- ❖ Do you have the capacity e.g. a project manager / business manager?

Getting the review underway

EITHER – if your contract has a review clause

If you have an excess profit share or other relevant contractual provision, you can probably agree an approach to conducting a review relatively easily (depending on what the contract says). If the contract isn't very prescriptive, you may need to begin by negotiating how to go about the review. This is likely to arrive at one of the following options:

- ❖ The council could manage/carry out the review (as you would if the service was in-house), with the contractor cooperating with you; OR
- ❖ You could jointly commission the work with your contractor (this helps to minimise dispute between client and contractor) e.g. through your contract Partnership Board; OR
- ❖ You could agree that the contractor will do the review itself – so, for example, the contractor would present the Partnership Board or contract manager with a report. This requires the least input from the council, but if you leave it to the contractor you have little input into how thoroughly the job is done.

OR – if your contract has NO review clause

If you don't have a contractual right to a share of the benefit when efficiencies are found then you will have, to some extent at least, to renegotiate the contract.

The contractor is unlikely to have an obvious incentive to renegotiate so may well be reluctant. However, if the council is unable to afford the contract any longer, the contractor may well be prepared to enter into discussions regarding a review in order to protect its position as much as possible. If the contract is due to expire relatively soon, this can help as the contractor will not generally want to be viewed as obstructive at such times. Also, the contractor may not like something about the contract and may be open to making some changes the council wants in exchange for the contractor's own issues being addressed. General advice on getting the contractor's agreement to carry out a review and share savings might include:

- ❖ Make your contractor aware that you want to renegotiate because the current position is not sustainable. In discussing with the contractor, ensure they understand the severity of the situation;

- ❖ If your local contractor representatives remain reluctant, you may feel you need to go to their company's Head Office and talk to the Municipal Director or Operations Director (i.e. a Board level Director. Some companies a lot of people with 'Director' in their job title who actually have relatively little authority to negotiate for the company);
- ❖ Most contracts have a 'reduce the level of service' clause. If it comes to it, you may need to state that your options are (1) renegotiate or (2) use the change mechanism to reduce the service. Renegotiation may look preferable to the contractor, as a big reduction in turnover may hit profit harder than an improvement in productivity;
- ❖ Remember that the contractor is much more concerned about profit than turnover. If the impact on the amount of profit the contract contributes to the contractor's business can be minimised, even if the amount of income reduces significantly, the contractor may well be prepared to negotiate.

Negotiating what changes will be implemented and how costs and savings will be apportioned

You will need to negotiate to a greater or lesser extent to get to the point of doing the productivity analysis / review and, in practice, this should involve setting some ground rules about how the benefits will be shared and defining the approach in principle before you begin to carry out the review itself. If the review presents evidence to suggest that savings can be made, agreement should be achievable, although resolving detailed contractual issues and fully implementing operational changes can be time consuming.

In terms of sharing savings, contractors will generally be reluctant to take a significant backward step in profit, unless they see some other tangible benefit – so it may be necessary to agree that the gain share only kicks in after a certain threshold (either % profit margin or absolute £ of profit). Beyond that, 50/50 can be a difficult principle to argue against.

One issue that will need to be factored in is implementation cost, particularly where the change requires significant investment in e.g. new vehicles. Again, this will have to be taken into account before any gain share kicks in. Having said that, it may well be that the council can finance, or share the financing of, implementation costs at an overall lower cost to the contractor, so it may well be that the council can make some additional gain here.

There will be occasions where, following a productivity review, a clear business case exists to make changes, but the parties cannot easily agree a contractual mechanism. In these cases, the contractor may have less incentive to compromise than the council, as the status quo may not be causing the contractor a major problem. The council may need to revise its

negotiating strategy in these circumstances, to avoid throwing out the baby with the bathwater.

Councils also need to be careful that any changes agreed with the contractor do not fall foul of the procurement rules (governed by the Public Contracts Regulations 2006), either in terms of the extent of any variation to the contract or such issues as councils financing capital investment on behalf of their contractors. Legal advice should obviously be sought before any variations to contracts are agreed with the contractor.

10. Building review clauses into new contracts

The ideal position would be for the contract to define how and when efficiency or productivity reviews will be carried out. Contractors are likely to become increasingly used to these kinds of requirements as the need for year-on-year savings becomes more pressing:

- ❖ Fixed price contracts offer greater certainty, but may result in higher costs overall, as the contractor is taking more risk; whereas
- ❖ Cost plus contracts should have the potential to be cheaper, but costs may vary over time and the lowest cost may only be achievable with significant council input.

The council should consider its preferred approach to ensuring that some form of gain sharing mechanism is included in the contract at an early stage in the procurement process.

Which type of contract is better – fixed price or cost plus?

There's no right answer as to whether one type of contract is better for you than another. They have different theoretical pros and cons, but culturally, different councils will be likely to be comfortable with one type or the other. Hybrids are also possible, where some elements of the price are fixed and some are based on the contractor's costs. However, the key issues are:

- ❖ Having the right review and gain sharing clauses, whatever type of contract; and
- ❖ How you manage the contract, including how you resource this in terms of skills and capacity.

Further Information and Advice

If you would like advice on any of the issues raised in this guidance please contact us at WIN. It is likely we will be able to point you in the direction of resources either in your region or locally to help you.

The authors

This guidance was written by Alice Roberts, Programme Manager at the Waste Improvement Network, and Joe Papineschi and Andy Grant from Eunomia Research & Consulting with additional contributions from Paul Bridger of Waste Consulting. A number of local authorities in England were consulted when drafting the guidance.

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Appendix 1: Guidance for councils wishing to employ consultants to support an efficiency review

If your existing operational data is good you may decide that you would like support in analysing the data.

Be clear about what you want without over constraining the consultant. Keep the brief short and to the point, as this is unlikely to be a huge project. As a ballpark figure – and completely dependent on the extent of the work you require – you may pay between £10,000 and £25,000 (for large district)

For a council wanting to get a return of between £250,000 to £500,000 in annual revenue savings (to make it worth the effort to do the review and implement the changes) you might seek support in:

- ❖ Benchmarking;
- ❖ Some analysis of readily available operational data, or data gathering;
- ❖ Some operational observation.

Full work-study will cost more – and may not be completely necessary – especially if you have good operational data. However it does give:

- ❖ A structured opportunity to see what's happening with the crews; and
- ❖ An opportunity to gather further evidence to support conclusions you may have been able to reach through looking at operational data.

Of course it will also provide supplementary data which may be very useful.

Note on 'route optimisation'. Councils may be considering appointing consultants to help with route optimisation. This can be worthwhile, but is relatively costly and if you have good GIS and operational data, then you may get a better result working in-house with your crews, supervisors and operational managers – the people who know the territory best and who know all the local foibles, one way streets etc.

Appendix 2: Example operational data monitoring sheet for kerbside sort recycling service.

Daily operational data record, with preliminary analysis, for a single round.

Volume/date	23/04	24/04	25/04	26/04	27/04	28/04	29/04	30/04	1/05	2/05	3/05	Average m3
Glass m3	2.11	3.29	3.45	2.84	4.07	2.44	1.95	2.94	1.90	2.71	3.29	2.82
Paper m3	4.30	3.89	3.91	4.49	5.19	6.36	3.82	5.40	4.91	4.76	4.76	4.71
Cans m3	1.71	2.54	1.90	2.54	1.90	1.28	2.29	1.71	1.71	2.54	1.71	1.98
Card m3	9.08	11.74	10.79	9.08	7.43	9.90	9.90	9.90	10.79	10.49	9.90	9.91
Total m3	17.19	21.46	20.05	18.94	18.59	19.98	17.95	19.94	19.31	20.50	19.66	19.42
Spare m3	6.37	2.10	3.51	4.62	4.97	3.58	5.61	3.62	4.26	3.06	3.90	4.14

Tonnage/date	23/04	24/04	25/04	26/04	27/04	28/04	29/04	30/04	1/05	2/05	3/05	Average kg
Glass	594	880	1,001	715	1,210	737	506	869	605	781	825	793
Paper	781	825	671	946	1,177	1,386	792	1,155	946	957	1,023	969
Cans	99	154	121	154	88	66	99	121	99	110	110	111
Card	341	605	627	495	385	352	462	462	341	506	319	445
Total kg	1,815	2,464	2,420	2,310	2,860	2,541	1,859	2,607	1,991	2,354	2,277	2,318

Other Information/date	23/04	24/04	25/04	26/04	27/04	28/04	29/04	30/04	1/05	2/05	3/05	Average
Loading Hours	4.00	4.00	3.00	3.75	3.50	3.40	4.00	4.00	4.00	5.00	4.00	3.88
Props passed	220	260	256	245	268	279	294	302	315	346	310	281
Props presenting	176	208	205	196	214	223	235	242	252	277	248	225
Props per loading hour	44	52	68	52	61	66	59	60	63	55	62	58
Kg per passed property	8.3	9.5	9.5	9.4	10.7	9.1	6.3	8.6	6.3	6.8	7.3	8.3
Miles to first collection	18	16	12	11	14	5	5	5	6	6	14	10
Miles from last collection	23	20	15	14	18	6	7	7	7	7	18	13
Total miles driven	90	81	58	54	70	25	26	27	29	29	70	51
Fuel (litres)	54	0	91	58	0	0	85	0	0	0	83	34
Minutes at transfer station	45	60	65	48	43	42	53	60	43	40	38	49