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Working Group on Waste Prevention and Recycling

WASTE CONTRACT DESIGN AND MANAGEMENT FOR ENHANCED WASTE MINIMISATION:

A Synthesis Report

This synthesis report was adopted and declassified by Delegates of the Working Group on Waste Prevention and Recycling in May 2004.

The document comprises a synthesis report on waste contract design and management for enhanced waste minimisation.

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FOREWORD

Waste prevention and minimisation objectives have been widely embraced by OECD and other governments as key elements of a strategy aiming for environmental sustainability. Considerable work has been undertaken in the OECD and elsewhere on the environmental benefits of providing economic incentives for households, commercial establishments and industrial facilities to reduce their waste generation. However, due to the growing use of private firms in the collection, treatment, and disposal of municipal solid waste, it may no longer be sufficient to ensure that only the waste generators themselves face appropriate incentives. Rather, incentives would need to be aligned all the way from the public authority to the waste service provider and ultimately to the waste generator. In many cases, such incentives are not aligned.

The OECD project on **Contract Design and Management for Enhanced Waste Minimisation** was initiated in 2001 to address the waste reduction implications of traditional and emerging types waste service contracts. The central focus was the degree to which performance factors may be incorporated and optimized in the design and management of various types of waste service contracts. As a first step, **a scoping study** was carried out in early 2002 by the Tellus Institute, Boston, USA, under the supervision of Dr. John Stutz. The second phase of the project - **A Study on Waste Contract Design and Management for Enhanced Waste Minimisation** was undertaken in 2003 by the "Five Winds International" as a consultant to the OECD, to deepen the understanding of the potential of performance contracting .

As the final output of the project, this synthesis report presents the results of the two studies referred to above. The paper concludes that performance contracting in municipal waste management is still in its infancy, and only a few Local Public Authorities have gained experience on this new approach. However, even the limited experience available demonstrates that performance contracting could offer advantages of all three dimensions of sustainability, economic, social and environmental, if implemented properly.

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The report is published on the responsibility of the Secretary-General of the OECD.

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GLOSSARY OF TERMS

Local Public Authority (LPA) means a unit of local government within a State, including a county, municipality, city, town, township, special district, school district, intrastate district, council of governments, and any other instrumentality of local government.

Material recovery facility (MRF) means an industrial facility that reprocesses recyclable materials into new materials or products that can be marketed, thus generating a host of environmental, financial, and social benefits.

Performance Factors may be *defined* as those components of a contract that give incentives for waste prevention, reduction, recovery and/or environmentally sound materials management.

Recovery of waste is *defined* as any waste management operation that diverts a material from the waste stream and which results in a certain product with potential economic or ecological benefit. Recovery mainly refers to the following operations:

- material recovery, i.e. recycling (see below);
- energy recovery, i.e. reuse as fuel;

Reuse of material for recycling or reuse as fuel within industrial facilities at the place of generation is normally excluded.(1)

Request for proposals (RFPs) means a document used to detail proposed goods or services requirements and invites responses and bids from prospective suppliers.

Recycling means any reprocessing of material in a production process that diverts it from the waste stream, except reuse as fuel. Both reprocessing as the same type of product, and for different purposes should be included. Recycling includes composting. Direct recycling within industrial plants at the place of generation are normally excluded.(1)

Wastes are substances or objects, other than radioactive materials covered by other international agreements, which:

- are disposed of or being recovered; or
- are intended to be disposed of or recovered; or
- are required by the provisions of national law, to be disposed of or recovered.(2)

Waste Management means the collection, transport, treatment and disposal of waste, including closure and after-care of disposal sites.(3)

Waste Minimisation Within the OECD context waste minimisation is understood to mean: *preventing and/or reducing the generation of waste at the source; improving the quality of waste generated, such as reducing hazard, and encouraging re-use, recycling, and recovery.*(3)

Waste Prevention Within the OECD context waste prevention is understood to mean: *a) strict avoidance - the complete prevention of waste generation by virtual elimination of hazardous substances or by reducing material or energy intensity in production, consumption and distribution; b) reduction at source - minimising the use of toxic or harmful substances and/or minimising*

material or energy consumption; and c) product re-use: the multiple use of a product in its original form, for its original purpose or for an alternative, with or without re-conditioning.[3]

Waste Service Contracts may address a variety of activities (e.g., collection, composting, recycling, disposal), customers (industrial entities, public authorities, and households), waste streams (e.g., household, manufacturing, paper, glass, plastic) and service periods (short, middle, and long-term). Notwithstanding their diversity, the three main types of waste service contracts are: *1) haul and dispose contracts; 2) area-based contracts; and, 3) integrated materials management contracts*. These contracts exist between a local authority and a company providing waste management services.

EXECUTIVE SUMMARY

Background

Waste prevention and minimisation objectives have been widely embraced by OECD and other governments as key elements of a strategy aiming for environmental sustainability. Nevertheless, the amounts of waste generated have increased substantially throughout the OECD area during the last twenty years, as demonstrated in the recent *OECD Data Compendium 2004* [(1)]. For example, the generation of municipal waste has increased over 59% between 1980 and 2002, and is expected to increase further by 2020, although at a slightly lower rate. This is due to the observed weak de-coupling of municipal waste generation from the economic growth during 1990s.

Considerable work has been undertaken in the OECD and elsewhere on the environmental benefits of providing economic incentives for households, commercial establishments and industrial facilities to reduce their waste generation. The evidence indicates that unit-based waste fees, advance disposal fees and other measures can bring about significant reductions in waste generated, and OECD member countries are responding to this evidence by introducing appropriate fee structures for waste collection[1]. However, due to the growing use of private firms in the collection, treatment, and disposal of municipal solid waste, it may no longer be sufficient to ensure that only the waste generators themselves face appropriate incentives.

Objectives

Most of municipal waste stream is traditionally addressed through waste contracts that provide no incentives for waste and cost reduction. Waste disposal volumes rather than service levels have driven compensation for waste service contracts, and these traditional contracts do not tend to support waste reduction efforts. In such arrangements, the financial incentives of the waste generator and the waste contractor are at odds; while the waste generator has an incentive to decrease waste quantities, the contractor is better off handling continuously increasing quantities of waste. These conflicting objectives work to impede serious progress in waste reduction.

A new approach in waste management contract is required on the environmental benefits of providing economic incentives for waste generators to reduce waste generation. The private waste service provider is now an intermediary between the responsible public authority and the waste generator, and this can complicate efforts to provide incentives for waste reduction. Contracts between the responsible authorities and private service providers should be designed in such a way to reinforce the waste generator's incentives to reduce waste at source. Thus, incentives need to be aligned all the way from the public authority to waste service provider and ultimately to the waste generator. In many cases, such incentives are not aligned. Performance contracting may provide a solution.

The OECD project on performance contracting was initiated in 2001 and carried out as a multi-year project with the objectives of exploring opportunities for waste contract design and management to

[1] New work in this area will be carried out in 2005-2006 under the programme on the Economics of Waste.

promote enhanced waste minimisation, improving understanding of the potential of performance contracting for promoting waste minimisation, and developing a conceptual framework for performance contracting.

The Work Undertaken

As the first step of this project, a scoping study was carried out in 2001-2002 at the Tellus Institute, Boston, USA, under the supervision of Dr. John Stutz (Part 1 of the Synthesis Report). It was based on a literature review and complemented by a scoping survey in December 2001 – January 2002. The study mainly described business-to-business models for waste service contracts in trying to address the waste reduction implications of traditional and emerging types of waste service contracts. It also outlined a conceptual model for inclusion of performance factors into waste service contracts which could be applied also by Local Public Authorities (LPAs), when entering into contracts with private waste service providers.

As a second step, and based on the recommendations of the scoping study, Five Winds International, as a consultant to the OECD, carried out an in-depth study on the possibilities of improving understanding of the potential of performance contracting for promoting waste minimisation (Part 2 of the Synthesis Report). The study builds heavily on the case studies in selected OECD member countries with experience in performance contracting for municipal waste services, to obtain better information on current performance contracting arrangements and achievements within different jurisdictions. On the basis of the case studies and literature review, the study explored at the conceptual level on how, and to what extent, performance factors and incentives could best be integrated into the existing main waste service contract types, and how this "performance contracting practice" could be built in national policies, programmes and incentives intended to foster waste minimisation and resource recovery.

Structure of the Synthesis Report

This synthesis Report is divided into two main parts: Part 1 contains the "Scoping Study on Contracting to Enhance Waste Minimisation**"** with five chapters.

Chapter 1 includes the background, objectives and structure of the report. Chapter 2 provides information on municipal waste management policies, available waste services and options for government actions in relation to different contracting types. Chapter 3 describes the existing business models used in performance contracting for energy and chemical sectors and highlights a possible conceptual model for performance contracting. Chapter 4 provides the survey results and Chapter 5 presents key findings of the scoping study and recommendations for further work in this area.

Part 2 contains the study "Towards Conceptual Framework for Performance Contracting" with four chapters.

Chapter 6 provides the introduction to this report. Chapter 7 describes the key findings. Chapter 8 provides **a conceptual framework** for performance contracting and Chapter 9 presents the **conclusions** of and **recommendations** for designing and implementing performance contracting.

Key Findings

The key findings of the studies undertaken are the following:

1. Currently there are waste policies in place to provide producers and consumers with financial incentives that foster waste minimisation. However, waste service providers currently do not have such incentives.

2. A substantial portion of waste services are currently provided by private firms. Adoption of performance contracting could create incentives for these firms to foster waste minimisation.

3. Performance contracting for waste management is a concept that evolved out of the established model of energy programmes. For over 30 years there has been a growing awareness and presence of performance contracting for energy and chemicals. Only recently the concept has been applied to waste management. The waste perspective began in the United States manufacturing sector with companies such as General Motors Corporation. The application of performance contracting for waste services is growing in the manufacturing sector, and slowly attracting interest from the municipal sector. This has brought waste management service providers into the arena seeking opportunities to capture market share and expand services through response to customer demands on performance contracting.

4. It can be rather challenging for LPAs to optimise waste minimisation, control costs, and make performance contracts more attractive and profitable to service providers than the conventional tonnage-based haul and dispose contracts. LPAs are striving to find ways of merging waste minimisation objectives with service agreements involving private waste companies and their profit incentives. Performance contracting may offer a way for LPAs to address these issues and develop policies and programmes promoting cost-effectiveness and environmental performance.

5. The conceptual framework developed for performance contracting requires LPAs to outline clear responsibilities and opportunities for waste minimisation coupled with economic incentives for private companies to participate in performance contracts. Contracts should be structured to remain open to innovation by the service provider.

6. The development and implementation of performance contracting programmes are strongly affected by the availability of reliable data on baseline waste generation, composition and recycling rates. This information is necessary for the proper structuring of contracting fees and recycling/diversion targets.

7. It is important to engage waste service providers early in the performance contract development process. The LPA can invite experienced service providers to offer ideas as to the structuring of contracts and the types of incentive programmes that are attractive. Performance contracting programmes can then be developed to have clear and upfront objectives that provide the required detail for potential service providers to bid on.

8. Requests for proposal (RFPs) can stimulate creative strategies for waste minimisation if they offer incentives for performance improvement but are not too prescriptive in outlining how the service provider is to achieve the target level of performance. Required actions/services in the contract should remain as loose as possible to allow private contractors to be innovative in their proposed strategies.

9. The immediate benefits from performance contracting arise from improved recycling rates and implementation of new recycling schemes covering more materials. Service providers are searching for long-term benefits to be found from performance contracting once recycling efficiency is maximised. This will require financial incentives for waste prevention and other advanced programmes.

10. Unfortunately, current accounting structures of many LPAs do not encourage public authorities to seek alternative contracts. Statutory limitations and budgets that are interdependent across

departments, limit the flexibility and incentives for LPAs to implement performance contracting. The ways to overcome the missing financial incentive in LPAs are required.

PART 1

SCOPING WASTE CONTRACTING FOR ENHANCED WASTE MINIMISATION

1. INTRODUCTION

This scoping study was the first step in a broader OECD project on "Contract Design and Management for Enhanced Waste Minimisation". It addresses the waste reduction implications of traditional and emerging types of waste service contracts. The central focus is the degree to which performance factors can be incorporated, and their effect optimized in the design and management of contracts for waste management services. Performance factors are those components of a waste service contract that provide incentives for the contractor to foster waste minimisation. Development of contracts containing performance factors is referred to as **performance contracting**. In addressing performance contracting, this study takes a policy perspective, i.e. a central concern is actions that government can take to foster the use of performance contracting.

While contracting for waste services is not new, interest in the role contracting might play in government's pursuit of waste management goals, particularly waste minimisation, is recent. Little in the literature on waste management policy addresses the role of contracts. Nor does the literature on incentives for waste minimisation have much to say about the connection between such incentives and contracts for waste services. This study aimed to fill these gaps, at least in a preliminary fashion. To do so, the study relies on a variety of background material as well as the results of a **scoping survey**. This scoping study was to address the waste reduction implications of traditional and emerging types waste service contracts, highlight a possible conceptual model, and analyse the survey results designed to provide current information on the use of contracts for waste management services.

In addition to this Introduction, the paper contains the following four chapters:

Background. The current structural relationship among producers, consumers, waste service providers, and government at both the local and the national, state, or provincial level is described. The incentives for waste minimisation within the current structure are identified. The impact of privatization of waste services and the role of contracts as a source of additional incentives are discussed.

Business Models. Models for performance contracting from the energy and chemical services sectors are discussed. Based on the experience in these sectors, a conceptual model for performance contracting for waste services is described. Current performance contracts for waste services are compared to the model.

Survey Results. A scoping survey results, designed to provide current information on the use of contracts for waste management services and the role of performance factors within those contracts, is discussed. The questions asked are explained, and the responses received are summarized and discussed. Results from another similar survey conducted recently for the US EPA are also discussed.

Findings and Recommendations for Future Studies. Findings, supported by the background research and survey responses and recommendations for additional research and analysis, are presented.

2. BACKGROUND

2.1 Waste Management Policy

Among the OECD member countries there is general agreement on the preferred approach for waste management. Management is guided by the waste hierarchy which specifies waste prevention, resource recovery and disposal as the preferred sequence of options.(5) National, state and provincial (NSP) governments develop and enforce policies designed to require or encourage the adoption of waste management arrangements consistent with the hierarchy. Local governments which have the responsibility for providing or arranging for waste management services try to conform their activities and arrangements to the hierarchy.

The decision to manage waste in a fashion consistent with the hierarchy is based on environmental concerns. In general, waste prevention and resource recovery are environmentally preferable to disposal. Among the environmental benefits of waste minimisation is the reduction of greenhouse gas emissions.(6) Increasingly, waste minimisation is an aim of sustainable development strategies.(7)

Fostering the fullest possible use of waste prevention and resource recovery is quite challenging for those charged with developing waste policy, and for those providing or arranging for waste services. The challenge arises because waste prevention and, to a lesser extent, resource recovery require the cooperation of the producers and consumers who generate waste.

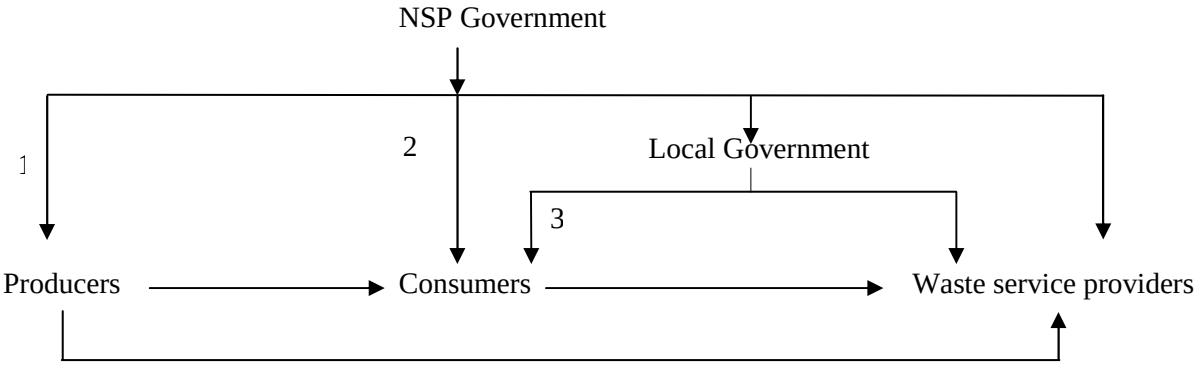
- Waste prevention occurs before materials or products become “waste.” Producers and consumers need to take action to reduce the amount of waste generated.

- Resource recovery requires effort on the part of producers and consumers, to separate mixed waste and separately collected fractions, and to deal with each appropriately.

In order to encourage producers and consumers to cooperate, both NSP and local governments take actions that create financial incentives. Figure 1 below is useful for summarising the range of incentives currently in place, and for considering where that range might be expanded.

Figure 1 presents, in a very simplified fashion, the two sets of linkages that together define the waste management system:

Figure 1. **Material Flows and Policy Linkages**



- The horizontal arrows show the flow of products and materials. Producers send products to consumers and non-product output to waste service (WS) providers for recovery or disposal. At the end of product life, consumers send products for recovery or disposal.

- The vertical arrows show how government takes or could take action to influence the horizontal flows. NSP government can develop and enforce policies that affect producers, consumers, local government and waste service providers. Local government can affect consumers and WS providers through its policies, and through its role in arranging or providing for waste services.

One can identify the horizontal linkages through which government takes action to create incentives for waste minimisation. These are indicated by the numerals in the figure. The actions corresponding to the numerals are as follows:

1. **NSP Government to Producers.** In many OECD member countries producers are subject to Extended Producer Responsibility (EPR) provisions that require them to take partial or complete responsibility for the packaging and product waste resulting from their business activities.[(8)] EPR provisions often contain incentives for producers to undertake waste prevention or resource recovery;

2. **NSP Government to Consumers.** Consumers in some OECD member countries are subject to deposit/refund requirements on beverage containers and other items. These requirements encourage recycling, or waste prevention if the containers returned are reusable;[(9)] and

3. **Local Government to Consumers.** Some governments in some OECD member countries have instituted pricing for waste services which varies with the amount of waste discarded for disposal. Such unit pricing systems encourage both waste prevention and resource recovery.[(10)]

There is substantial, empirical evidence that these financial incentives increase waste minimisation.[(11)]

EPR, deposit/refund, and unit pricing address only producers and consumers. How can government create incentives for waste service providers to help increase waste minimisation? As

explained in the remainder of this section, government can take action to require or foster the use of performance contracts which provide such incentives.

2.2 Waste Services

The term "waste services" is quite broad. Major waste streams that require service include household waste, non-household municipal waste, construction and demolition (C&D) waste from buildings and infrastructure (i.e., roads, bridges, etc.), non-hazardous industrial waste and hazardous wastes from a variety of sources. Each of these streams requires collection and transport followed by material or energy recovery, incineration or landfilling. The waste service sector provides these services.

It is common to think of waste as one of a bundle of services (water, sewage, etc.) provided by local government. Use of the term "municipal waste" for the waste generated by households as well as certain commercial establishments and government facilities, reflects this view. However, waste service is often provided by the private sector:

- The services required to managing C&D, as well as industrial hazardous and non-hazardous waste are often obtained directly from the private sector;

- In some OECD countries (the US, for example), the services required to manage non-household municipal waste are often obtained directly from the private sector; and

- Local government generally takes responsibility for household waste. However, rather than providing the required services directly, local government has increasingly been obtaining the required services from the private sector.

The increasing breadth and complexity of the regulations governing waste management, as well as general trends toward the outsourcing of non-core functions by business and the privatization of government service functions, all have contributed to the increasing role of private firms in providing waste management services.

Today, waste services comprise a large industry. In a recent research report,[(12)] Deutsche Bank estimated the global market for waste services at EURO 115 billion, with the US and Europe accounting for 52 and 39 billion, respectively. The extent to which municipal waste is managed by private firms is quite substantial. Deutsche Bank estimates that in France, private firms handle 65 percent, in the US 60 percent, in the UK 50 percent, and in Germany 10 percent, respectively. Privatization is less extensive elsewhere. However, Deutsche Bank does estimate that private firms service 10 percent of municipal waste in Latin America and the Asia/Pacific region.

Waste management services are provided by firms that specialize in waste and related areas. As shown in Table 1 below, a few large firms control much of the market for these services.

Table 1. **Sales for Leading Firms in the Global Waste Services Market (EURO Millions)**

	Total Sales	North America	France	Europe	Rest of World
Waste Management	14 000	14 000	0	0	0
Allied Waste	6 400	6 400	0	0	0
Vivendi environment	4 900	1 100	2 210	1 270	320
Suez Lyonnaise	4 800	0	1 800	2 390	610
Republic Services	2 400	2 400	0	0	0

2.3 Contract Types

The waste management services provided to a client by a provider firm, and the amount and arrangement of compensation for those services is governed by a waste services contract. There are two basic types of contracts:

Direct Contracts, in which the service provider has a contract with the party actually receiving the services; and

3rd-Party Contracts, in which a party not receiving the service contracts with the service provider.

3rd-Party contracts can arise through the privatization of municipal waste services. Waste collection and the various services needed to sort, treat, and dispose of the material collected are often provided to households by a private firm. However, the contract governing the services to be provided and the compensation for them is not between the service provider and the households. A 3rd party - usually the local or regional government or an agency representing it - enters into the contract. The Deutsche Bank report cited earlier describes the waste services offered by one of the major firms, Vivendi Environment, through 3rd-party contracts with local governments as follows:

- **Waste collection.** Local authorities outsource the collection of household waste to companies, who then enjoy a monopoly for the period of the contract (these can be for up to 20 years in France but tend to be much shorter elsewhere, for example, 3-5 years in the UK);

- **Sorting, recycling, treatment and disposal (waste).** After collection, the next stage is sorting waste, separating what can be effectively recycled from what requires disposal or further processing;

- **Operation and management of municipal waste sites.** Municipalities are increasingly contracting out the operation of disposal facilities (landfill sites, transfer and sorting centers, incineration units, etc.) in order to improve productivity and gain higher standards of environmental compliance; and

- **Design and build of waste-treatment and disposal plants/incinerators**. Vivendi Environment can design, build and maintain municipal waste infrastructure as part of a long-term 3rd-party contract.

Initially one might assume that businesses always have direct contracts and that 3rd-party contracts only arise through the privatization of municipal waste services. However, there are a variety of other possibilities.

- Direct contracts occur with businesses, but so do 3rd-party contracts. A large business may have a number of plants or retail locations which are owned separately but linked to the business by franchise arrangements. The business's purchasing department may enter into a 3rd-party contract with a waste service provider, to service the individual plants or retailers;

- Privatisation of a local government's municipal waste service often leads to 3rd-party contracts with private waste service providers. However, in some locals the authorities simply allow or require households to enter into direct contracts for waste services; and

- 3rd-Party and direct contracting can be used in combination. For example, a municipality may require waste service providers to enter into a franchise contract with them that sets conditions on the waste services they can provide by direct contract to businesses and/or households within the municipality.

When addressing waste service contracts, the OECD will focus primarily on 3rd-party contracting by local government. NSP government could take a variety of actions designed to require or foster the inclusion of performance factors in such contracts. However, with only this focus, much of the opportunity for performance contracting for waste services will not be addressed. Ideally, all types of waste service contracts—direct and 3rd-party, with government and private firms—should be addressed by government actions that require or encourage performance contracting.

2.4 Options for Government Action

Government can influence the structure of waste management contracts so that the service providers subject to the contracts have an incentive to foster waste minimisation. The options for government action differ, depending on whether government is the party contracting for the waste management services:

- Government facilities, such as public universities or hospitals, which enter into direct contracts for waste management services can require that their contracts contain performance factors. Local government agencies that enter into 3rd-party contracts for waste services can also require contracts containing performance factors; and

- Government can undertake education and promotional activities to convince businesses that enter into direct contracts for waste service to require that contracts include performance factors. Government can also help waste service providers to see that offering clients with performance contracts can be a good business practice.

The two actions just described - adoption of performance contracting by government and promotion of performance contracting by private parties - could create the incentives for waste service providers "missing" from Figure 1. With those incentives in place, government would be in a position to ensure that all of the parties involved in the flow of materials and products - producers, consumers and waste service providers - have a coherent, mutually reinforcing set of incentives for waste minimisation.

3. BUSINESS MODELS

The focus of the scoping study is on contracting. However, to deal with contracting in an effective fashion, one must address it as a component of a **business model**. Here the term "business model" refers to the full set of choices firms in an industry make concerning the products and services they offer, and the ways in which they market, price and provide those offerings. The contracts that firms offer their clients, and the contracts they are willing to enter into at a client's request, are strongly influenced by their business models.

Is there a viable business model for the waste service industry that includes performance contracting? If so, what is the structure of that model? Would the adoption of that model be attractive to both waste service providers and their clients? This chapter provides a discussion of these questions, through case studies on the business models in the energy and chemical services industries as well as the current practice in performance contracting for waste management services.

3.1 Performance Contracting for Energy Services

As a consequence of the rapid increase in energy prices in the 1970s, substantial interest in energy conservation developed. Much of the available conservation was highly cost-effective. However, cost-effectiveness was not enough to make conservation happen. In the electricity and natural gas industries, utilities had a vested interest in increasing consumption since their revenues and profits were linked to it. Consumers had an interest in conservation, but often lacked the time and resources to address it effectively. Government actions, particularly the adoption of regulations requiring electric and gas utilities to arrange conservation assistance for their customers, created an opportunity for Energy Services Companies (ESCOs).

ESCOs pioneered the use of 3rd-party, performance contracts in which compensation was based on the contractor's ability to deliver measurable reductions in energy consumption. ESCO business and performance contracting practices provide a rough guide for the waste industry. Many aspects of the industry have been studied and documented in detail. These include:

- Barriers and "market failures" which ESCO services are designed to overcome;[(13)]
- Approaches to the development of regulatory[(14)] and economic incentives;[(15)] and
- Sophisticated methods for measuring success in performance.[(16)]

Those interested in developing performance contracting in the waste industry can learn a great deal from the experience in energy services.

Over the past 25 years, a **standard approach** to the development of performance contracts has become part of the business model for ESCOs. This standard approach is described in the second edition of *Performance Contracting*, a popular manual on performance contracting in the energy services industry.[(17)] This manual explains the complete process of providing energy services through a performance contract, starting with project evaluation and continuing through contract management. One can substitute "waste" for "energy" and "waste service provider" for "ESCO." With that change, a manual such as *Performance*

Contracting becomes a practical guide to the details of performance contracting for waste management services.

The energy services industry is also the source of a simple but powerful model for the design of incentives. This model arose from the observation that electric and gas utilities, which were often charged by government with the responsibility of arranging conservation services for their customers, had a clear conflict: their revenues and long-term profitability was coupled to growth in energy sales. The solution to this problem was to propose new forms of regulation under which their profitability was **decoupled** from sales and **recoupled** to other factors in a way that removed the disincentive for conservation and replaced it with an incentive. With the restructuring of the electric utility industry, private firms now provide both energy (i.e., gas and electricity) and assistance with energy conservation. Their contracts needed to be structured so that there was no conflict between these activities. This has been accomplished by contracting to meet all of a client's energy needs at a fixed price per square meter of floor space (in retail or office buildings), or per unit of output (in factories). Such contracts allowed the service provider to benefit by helping the client achieve energy conservation.

Creating incentives through decoupling and recoupling is quite a general approach. With suitable modifications, it underlies the development of all of the incentives discussed in this section.

3.2 Performance Contracting for Chemical Management Services

Many manufacturing businesses use substantial quantities of chemicals. Traditionally, chemical supply companies competed for contracts to supply the required chemicals (i.e., paint, solvents, etc.). This arrangement was sub-optimal from the standpoint of both the manufacturers and the suppliers:

- The manufacturer's incentive was to use chemicals efficiently, and so minimise supply costs. Suppliers had the incentive to sell more chemicals, to raise their revenues. Manufacturers wanted a business model which aligned the suppliers' incentive with their need to use chemicals efficiently; and

- Providing chemicals is a highly competitive business in which suppliers are under constant pressure to cut costs. There is little opportunity for a supplier to expand the range of its services to a client. Suppliers wanted contracts which gave them more and "better" opportunities to work with their clients.

The Chemical Management Services (CMS) approach addresses all of these concerns.

CMS is a form of outsourcing in which chemical suppliers provide clients with a range of services across the full chemical life cycle, including chemical purchase and delivery, inventory management, environmental reporting and generated waste management. The CMS approach emphasizes the development of contracts and business procedures that **align the interests** of manufacturers and their suppliers. With a CMS arrangement, the manufacturer gains a supplier whose self-interest is the same as that of the manufacturer: to use chemicals efficiently to meet production needs. The supplier gains a competitive advantage, based on specialized knowledge of the client's business as well as the opportunity to offer additional services. A recent report describes the CMS approach.[(18)]

Contracting is a key element of CMS. In a CMS arrangement, suppliers are compensated on a performance basis (i.e., per car door painted, per 1000 circuit boards cleaned) rather than on the basis of paint and solvents used. The shift from payment for paint or solvents to payment for car doors painted or circuit boards cleaned is a classic example of the decoupling/recoupling discussed above for energy

services. It is decoupling and recoupling which aligns the interests of the manufacturers and their suppliers in CMS arrangements.

3.3 A Conceptual Model for Waste Service Contracts

Experience in the energy and chemical services industries suggests a simple conceptual model for performance contracting for waste services. The model focuses on contractor compensation for the waste services to be provided. Compensation is decoupled from the amount of waste disposed, and recoupled to other factors that give the contractor a financial incentive to engage in waste minimisation. In addition, the model includes two features usually found in energy and CMS contracts:

- The contract term is long enough for the service provider to act on and benefit significantly from its waste minimisation efforts; and

- The contract, and the business relationship that accompanies it, facilitates cooperation between the client and service provider, providing opportunities for the service provider to expand the range of services provided over time.

As a simple example of a contract designed using this conceptual model, consider a 3rd-party contract with a municipality to provide collection and disposal service for household waste. Compensation under the contract is decoupled from the tonnage collected. It is then recoupled by specifying that the contractor will be paid a flat fee per household served plus a bonus if the tonnage of waste incinerated or landfilled falls below a target level. Such a contract might run for 5 years, and specify coordination between the municipality and the service provider in their efforts to foster waste minimisation. Such coordination could lead to new services by the service provider.

A key feature of the conceptual model is the opportunity for the waste service providers to increase the range of services offered to the client. The revenue impact of such opportunities can be substantial. For example, the Deutsche Bank report referenced earlier provides the following estimates for the revenues to Vivendi Environment associated with that company's multi-service contract with Renault:

- Traditional Waste service (collection and disposal): Euro 2 per car;

- Integrated Waste Management (traditional plus hazardous waste management, recycling and industrial cleaning): Euro 10 per car; and

- Multi-Services (Integrated Waste Management plus energy and waste services): Euro 30 per car.

3.4 Resource Management Contracting

Beginning in 1997, General Motors Corporation (GM) began to apply the CMS approach to the development of performance contracts for waste services. GM staff referred to these arrangements as **Resource Management** (RM) contracts because GM's objective in executing these contracts was to achieve cost reduction and conservation of resources. One year after implementing the RM contracts, GM realised a 20 percent reduction in overall waste generation, a 65 percent increase in recycling, and a substantial decrease in waste management costs.[(19)]

Studies analysing the likely impact of RM contracting outside of GM showed that other organisations would be able to increase their waste minimisation and reduce their waste management costs by adopting RM contracting. One of the studies addressed the Omaha Public Works Department (OPWD), the government agency responsible for providing municipal waste service in Omaha, Nebraska, a small

city in the central part of the US OPWD contracts for hauling, disposal, composting, and recycling on behalf of 121,000 households in Omaha. RM contracts were developed for OPWD. Analysis showed that use of such contracts would likely result in a 50 percent increase in recycling and an 11 percent decrease in disposal, while decreasing waste contract costs.[20]

Table 2 below describes the RM contracting approach in some detail. As the table shows, RM contracting incorporates all of the features included in the conceptual model presented in Section 3.2. How well the approach described in Table 2 will fit waste service contracting outside the US is difficult to say. However, growing experience in the US suggests that the approach described in Table 2 may be widely applicable.

Table 2. **RM Contracting Approach**

Basic Steps	Specific Practices
1. Establish Baseline Cost, Performance, and Service Levels	♦ Define current scope and service levels. ♦ Identify existing contract and compensation methods. ♦ Establish goals. ♦ Establish future cost and performance benchmarks.
2. Seek Strategic Input From Contractors	♦ Convene pre-bid meetings with contractors to articulate goals and address questions. ♦ Allow or require bidders to submit operations plans for achieving specified improvements in existing operations.
3. Align Waste and Resource Efficiency Services	♦ Coordinate, integrate, and formalise all contracts and services included in the baseline scope identified in Practice 1. ♦ Ensure that contractor has access to "internal" stakeholders that influence waste management and generation.
4. Establish Transparent Pricing for Services	♦ Delineate pricing information for specific services such as container maintenance, container rental, hauling, disposal, etc. ♦ Allow variable price savings, such as "avoided hauling and disposal" to flow back to generator and/or be used as means for financing performance bonuses.
5. Provide Direct Financial Incentives for Resource Efficiency	♦ Establish compensation that allows contractor to realise financial benefits for service improvements and innovations. ♦ Assess liquidated damages for failing to achieve minimum performance benchmarks or standards.
6. Cap Compensation for Disposal Service	♦ Establish a cap on waste hauling/disposal service compensation that decreases gradually over time. ♦ Decouple contractor profitability from waste generation and/or service levels. ♦ Base initial cap on estimates of current hauling and disposal service and costs as per Practice 1.

3.5 A 3rd-Party Contract

In 1997, the South Gloucestershire Council (SGC), a local authority in the UK, entered into a 3rd-party contract for waste services which contained a number of performance factors.[21] The details of the contract are quite complex, in part because of the need to meet requirements of both European public procurement legislation and the UK government's Private Finance Incentive. However, when one looks beyond the details, one sees that the SGC contract is a 3rd-party contract that uses the decoupling/recoupling approach and contains other features of the conceptual model presented above in Section 3.3.

A central feature of the SGC contract is the **Tonnage Adjustment Mechanism** (TAM) that specifies a payment stream over a long period (up to 25 years with renegotiation at 5-year intervals). The TAM sets a yearly range for the tonnages of waste to be managed. For any tonnage within the range, the contractor receives a fixed annual payment. This creates an incentive for the contractor to foster cost-effective waste prevention, since cost savings due to reduced waste generation flow to the contractor. To ensure that the fixed payments were not inflated through the contracting process, contractors were guaranteed their basic cost but not a profit for the management of waste tonnages above the top of the range. The TAM is an example of a decoupling/recoupling mechanism.

The SGC contract also requires the contractor to distribute composting bins to a certain fraction of the households covered by the contract. Use of these bins will reduce the tonnage of waste to be managed, helping the contractor to benefit from the fixed annual payments. Under the SGC contract, bin distribution as well as other efforts by the contractor to reduce waste disposal are coordinated with the Council's efforts to foster waste minimisation through education, outreach and other efforts. While there is no mention of opportunities for the contractor to offer new services in the SGC contract, the long term of the contract (25 years) and the qualification under the Private Finance Incentive, suggest that the contractor may have an opportunity to develop facilities for use in meeting the waste services needs of the South Gloucestershire households.

4. SURVEY RESULTS

As part of the work for this study a **scoping survey** was conducted. The survey was designed to provide current information on the prevalence of waste contracting, and on the use of performance factors in such contracts. A survey form was developed and sent to the parties listed in Table 3 below. The form was part of a package which contained an introduction explaining the purpose and use of the survey, the survey form itself, and two annexes, a glossary explaining the terms used in the survey and a list of the recipients of the survey.

The survey included five questions. Question 1 simply asked the respondent to identify the party or parties whose contracting practices were reflected in the answers contained in the completed survey form. Each of the remaining four questions was designed to provide information relevant to the analysis of performance contracting for waste services within the OECD member countries. Section 4.1 below addresses each question separately. To support this discussion, Tables 4 and 5 were prepared. Table 4 identifies the survey respondents and indicates what was contained in their response. Table 5 reproduces the portion of the survey form containing Questions 2 through 5 and tabulates the responses to these questions.

Table 3. **Planned Recipients of the Scoping Survey**

Government
Members of the OECD Working Group on Waste Prevention and Recycling
Members of the OECD Working Party on National Environmental Policies
Other Governmental and Intergovernmental Organisations
Association of Cities and Regions for Recycling (ACRR) – Belgium
European Commission (DG Environment, DG Enterprise, Eurostat) – Belgium
European Environment Agency – Denmark
European Topic Centre on Waste and Material Flows – Denmark
International Council for Local Environmental Initiatives (ICLEI) – Germany
National Association of Counties (NACO) – USA
Non-governmental Organisations
BIAC, TUAC
European Environment Bureau – Belgium
International Waste Association (ISWA) – Denmark
Resources for the Future – USA
Waste Association of North America – USA

Table 4. **Summary of Scoping Survey Responses**

Country	Respondent	Responding for	No. of Surveys	Other Information Provided
Australia	Local Government and Shires Associations	Sydney area: 1) Regional / rural local councils who collect waste and recyclables, or contract out this service (i.e., non-metropolitan) 2) Metropolitan local councils who collect waste and recyclables, or contract out this service.	2	
Austria	Dept. 48 Waste Management, City of Vienna	Dept. 48 household waste management, City of Vienna	1	
Finland	Finnish Waste Association	"Municipal waste management e.g., household partly also (small) commercial and industrial waste."	1	"Municipalities have a legal responsibility on arranging waste collection and treatment for household and equal wastes. Including household agricultural wastes." 2) "Portion contracted = municipal waste management contracted out operations or customers contracting directly to local authorities!" 3) "Portion contracted = municipal waste management contracted out operations!"
Ireland	Engineering Dept., Dublin Corporation	Dublin Corporation household & non-household waste management services	1	
Italy	AIMAG S.P.A.	AIMAG – A firm totally owned by 20 municipalities in Northern Italy. Provide MSW, SW, water, wastewater, gas, and public lighting services.	1	Contracted services also for "public services in enviro. & energy fields."
Slovak Republic	Ministry of the Environment	1) "Municipality or town and company handling with waste, responsibilities of these companies are waste (municipal and construction waste) collection and waste transport, waste recovery, waste disposal" 2) "company which produces waste and company handling with waste, responsibilities of this companies are waste (industrial and municipality waste) collection and waste transport, waste recovery, waste disposal" 3) "Municipality and company for separate collection, responsibilities are buying of separately collected component of waste transport, re-use of these components"	3	
Sweden	Swedish EPA - Sustainable Development Department	Response reflects the general knowledge of SEPA and consultations with the Swedish Association of Waste Management	None, but provided partial answers	Brief description: current encouragement of greater source separation; no discernable increase in waste minimisation.
Austria	Federal Ministry of Agriculture Forestry, Environment, and Water Management		None	"General overview of the legal framework at national level, the competences of regional and local authorities for implementing a charge system on the collection of household and similar waste on the financing systems."
Canada	Federation of Canadian Municipalities		None, but survey forwarded to municipalities	None
USA	US EPA		None	2 related documents: 1) WasteWise Resource Management Waste Generator Assessment; 2) Survey of WasteWise partners

Table 5. **Scoping Survey Responses**

2. Please indicate whether the following waste types are under the domain of the respondent and, if so, the extent contracted?

	Under the respondents domain?		Portion contracted?			
	Yes	No	All	Most	Some	None
a) Household waste;	9		5		3	1
b) Non-household municipal waste;	6	1		3	2	1
c) Construction and Demolition waste;	5	4	2	2	1	
d) Non-hazardous industrial waste;	4	4		2	2	
e) Hazardous waste.	3	5	2	1	1	1

Other(s), please specify: .....
.....

3. Please indicate, if the following waste management services are provided by the respondent and, when doing so, the extent contracted?

	Supplied?		Portion contracted?			
	Yes	No	All	Most	Some	None
a) Collection and transport for incineration and/or landfilling;	9		3	1	3	2
b) Collection and transport for recycling and/or energy recovery;	9		3	1	5	
c) Incineration and/or landfilling;	6	1		3	2	2
d) Recycling and/or energy recovery.	4	3	2	2	2	

4. Please indicate the extent to which the following incentives are included in the respondent's current contracts? If not, is future use considered?

	Inclusion in current contracts?				Future use considered?	
	All	Most	Some	None	Yes	No
a) Payments for service decoupled from tonnage:	3	2	2	1	1	1
b) A bonus paid, if tonnage reduced or below a fixed level;			2	4	1	1
c) Additional payments for increases in recycling and/or energy recovery.				5		3

5. Which of the following statements best describes the respondent's position on the role of performance incentives in waste service contracts?

To the extent possible, contracts should provide financial incentives for waste prevention. Recovery should also be subject to incentives, but at a lesser level.	3
To the extent possible, contracts should provide incentives for waste minimisation, but the contractor should be free to choose the form of minimisation.	5
Contracts should facilitate the acquisition of services at least cost. Incentives should address minimisation of cost rather than waste.	
Contracts should be efficiently designed to pay for certain service rather than manipulating contractors through the use of incentives.	2

4.1 Scoping Survey Responses

A total of nine completed survey forms were received from six countries as shown in Table 4. Three additional countries responded without providing completed survey forms. However, Sweden did provide answers to some of the questions. These answers are reflected in Table 5. The US EPA provided the results of a survey that addresses some of the same issues as the scoping survey. The results of the EPA survey are discussed in Section 4.2.

The responses to questions 2 to 5 provide a good deal of information about the use of contracts for waste services and about the incentives in such contracts.

- **Question 2**. Question 2 examines the extent to which different major waste streams are managed under contract. Household waste shows substantial use of contracting, as does C & D waste. Contracting plays an important role for all streams. Notice that household waste shows greater use of contracting than non-hazardous industrial waste. This is likely due to the fact that no survey forms were completed by organizations such as BIAC, which would have responded based on current direct contracting for waste services by private firms. Due to the absence of input by organizations such as BIAC, it is possible that the current use of contracting is greater than is suggested by the responses to Question 2 tabulated in Table 5.

- **Question 3**. Question 3 was designed to examine the extent to which basic waste management services are offered under contract. The responses show that all four services mentioned in the question are obtained by contracting. The responses suggest that the use of contracting is a bit more extensive for services related to recycling and/or energy recovery than for incineration and/or landfilling. However, given the small sample size, it is unclear whether this difference is significant.

- **Question 4**. This question examines the incentives in current waste service contracts. The results show that payments are usually decoupled from tonnage, removing the contractor's ability to benefit financially from handling increasing amounts of waste. Beyond the effects of decoupling (and perhaps recoupling), the responses show little or no evidence of incentives for waste prevention (addressed by 4b) or resource recovery (addressed in 4c).

The responses to Question 4 need to be interpreted with care. Decoupling can reflect a desire to have contract payments track costs, rather than a decision to create incentives for waste minimisation. For example, costs for the collection of household waste can vary more with the number of stops to pick up the waste than with the total tonnage collected. Contracts for collection which simply track costs may have payments based on the number of stops. Incentives in strictly cost-based contracts can often be improved by recoupling with the creation of incentives in mind and by the inclusion of additional incentives. The responses to Question 4 a) show acceptance of decoupling—the first step in creating incentives. However, the responses to 4 b) and c) suggest that, currently, decoupling may not be part of an effort to create incentives.

- **Question 5**. This question asks about the respondent's position on the role of incentives. The majority of respondents clearly favour the inclusion of incentives in waste management contracts. However, two respondents clearly dissent, preferring that contracts simply procure services efficiently. Within those supporting the inclusion of incentives, the majority favour flexibility, rather than an emphasis on incentives for waste prevention.

4.2 Additional Survey Data

In its response to the scoping survey, the US EPA provided information on the results of a survey concerning RM contracting, a form of performance contracting for waste services discussed earlier in this study. Tables 6 and 7 summarize the materials provided by the EPA. Table 6 lists the parties responding to the EPA survey. Table 7 lists the questions asked in the EPA survey and tabulates the results, grouping them into "yes," "no," and "other response."

Table 6. **EPA Survey Respondents**

Party	Industry Sector
Aetna	Insurance
Anheuser-Busch	Beverages
CB Richard Ellis	Property Management
City of San Diego, CA	Local Government
Commonwealth of Massachusetts	State Government
Dominion Semiconductor	Electronics & Electrical Equip
Emory University	Education
General Dynamics	Aerospace
Kaiser Permanente	Medical Services
Kitsap County, WA	Local Government
Los Angeles Dept of Water & Power	Local Government
Los Angeles Unified School District	Education
Northeast Utilities	Utilities
Pitney Bowes	Computers & Office Equipment
Seydel Companies	Chemicals
SI Corporation	Textile Manufacturing
St. John's University	Education
EPA Region 9	Federal Government
USPS-Northeast Area	Federal Government
US Dept of Labor	Federal Government
University of Virginia	Education
Washoe County, NV	Local Government

Table 7. **Summary of EPA Survey Responses**

Question\Response	Yes	No	Other Response
A. Does your organisation rely on hauling/disposal contracts for waste and/or recycling?	21	0	4
B. Do your organisation's waste management contracts include performance targets and/or financial incentives for when contractors exceed performance targets?	2	20	3
C. Is resource management contracting something your organisation might like to explore further?	21	0	4
D. Does resource management sound like something your organisation might already be doing?	10	13	2

The results of the EPA's survey are generally consistent with the results obtained in the scoping survey.

- The responses to Question A show that the majority of the EPA's respondents rely on contracts to obtain disposal and/or recycling services. This response is stronger than the response to scoping survey Question 2. The large number of private firms among the EPA respondents may explain why the reported reliance on contracts is greater than in the scoping survey;

- The responses to Question B are similar to the scoping survey responses to Questions 4 b) and c). Unfortunately, the EPA did not ask about decoupling so that a comparison with the response to Question 4 a) is not possible; and

- The responses from Questions C and D are similar to the response to Question 5 in the scoping survey: the majority of the respondents are favourable toward at least the consideration of incentives in contracts for waste services.

5. FINDINGS AND RECOMMENDATIONS FOR FURTHER STUDIES

The results presented in Chapters 1 through 4 of this study provide a good deal of information on the waste service industry, the role performance contracting might play in that industry, and the opportunity for government to foster adoption of performance contracting for waste services. The **key findings** of the scoping study are as follows:

1. Currently there are waste policies in place to provide producers and consumers with financial incentives that foster waste minimisation. However, waste service providers currently do not have such incentives.

2. A substantial portion of waste services are currently provided by private firms. Adoption of performance contracting could create incentives for these firms to foster waste minimisation.

3. Developments in the energy and chemical services suggest a conceptual model for performance contracting in the waste service industry. That model is consistent with examples of performance contracting for waste services in the US and UK today.

4. Survey results show that contracts are often used to obtain the services required to manage a wide range of waste streams. While the role of performance factors may be limited currently, survey results show interest in, and support for, more widespread use of performance contracting in the future.

5. There are a number of actions that governments could take to foster the adoption of performance contracting in the waste services industry.

Taken as a whole, the findings support further consideration of performance contracting by the WGWPR. The following are **recommendations** for investigation:

1. Conduct an in-depth survey of parties with experience in performance contracting for waste services, to obtain better information on current performance contracting arrangements.

2. Undertake additional background research, to determine how procurement and contracting requirements may influence the form and structure of performance contracts.

3. Explore at the conceptual level how performance contracting and the incentives it creates could best be integrated with existing policies, programmes and incentives intended to foster waste prevention and resource recovery.

4. Develop one or more model performance contracts, and conduct field-test the use of these contracts with businesses and municipalities in one or two countries.

5. Bring together and analyse the results obtained from recommendations 1 to 4 above. Develop a synthesis report/guidance manual based on the results obtained.

PART 2

TOWARDS CONCEPTUAL FRAMEWORK FOR PERFORMANCE CONTRACTING

6. INTRODUCTION

The OECD project on performance contracting explores opportunities for waste contract design and management to promote enhanced waste minimisation. The OECD defines waste minimisation as "*preventing and/or reducing the generation of waste at the source; improving the quality of waste generated, such as reducing the hazard, and encouraging re-use, recycling, and recovery"* [(4)] This is the definition used throughout this report when referring to waste minimisation.

This study builds upon the OECD's existing understanding of economic incentives for waste minimisation by exploring (at the conceptual level) how and to what extent performance factors may be integrated into waste service contracts. An emerging issue addressed here is the way in which waste minimisation can be fostered through Local Public Authority (LPA) municipal waste management contracts with private service providers. Performance contracting in other economic sectors is considered for its relevance and applicability to 'Contract Design and Management for Enhanced Waste Minimisation' through traditional and emerging types of waste service contracts. The findings are used to develop an overview of how the practice of performance contracting may be built into public authority policies, programmes and incentives to foster waste minimisation.

The report builds upon the scoping study (Part 1), a review of relevant literature on performance contracting across OECD member countries and specific regional case studies from OECD countries. The literature review explored performance contracts for managing municipal waste (excluding hazardous waste, construction/demolition waste, industrial waste, and commercial waste generation). Regional case studies with some elements of performance contracting for waste minimisation in place were selected, i.e. Austria, Canada, United Kingdom and the United States. In each case study, the main waste service types between the local public authorities/household and the waste service providers were identified, as well as the effect of each contract type on waste minimisation. The findings were used to develop an overview of how the practice of performance contracting might be built into public authority policies, programmes and incentives to foster waste minimisation. This study did not focus on waste minimisation efforts where private contractors are not utilised.

In addition to this Introduction, the report is divided into the following three chapters: Findings and success factors to integrating performance incentives into existing contracts (Chapter 7); Conceptual framework for performance contracting (Chapter 8); and Conclusions (Chapter 9).

7. FINDINGS

7.1 Background

Municipal waste is a costly and growing responsibility for Local Public Authorities (LPAs). According to the OECD's 2001 Environmental Outlook, "*municipal waste generation in the OECD area is projected to grow by 43% from 1995 to 2020, amounting to about 770 million tonnes in 2020*".(22) As landfill space is becoming more and more scarce and recycling programmes approach peak efficiency, LPAs are eager to stimulate waste prevention and avoid the risks and liabilities associated with waste management.

Parameters defining who is eligible for municipal waste management services and the types of services provided to residents vary across and within OECD member countries. LPAs are typically responsible for the collection and disposal of residential waste, and most LPAs provide some level of waste management services for the residents living within their jurisdiction. However, municipal waste management programmes differ across OECD member countries due to a number of factors, and operate in a number of different regulatory and structural models. Also, municipal waste management and recycling requirements, collection frequency and methods are established based on public expectations, technical feasibility, financial constraints and various other considerations.

For example, municipal waste collection may be covered as an element of residential services financed through property tax or another taxation system – in other cases residents are charged directly for services. In the latter case, a flat fee may be levied or a pay-as-you-throw charge for waste collection may be paid to the LPA, or directly to a third-party service provider. Another factor influencing LPA waste management programmes is the use of landfill sites and material recovery facilities (MRFs) that may be owned and/or operated by the LPA, a higher level of government (e.g. regional or national) or a private company. A key variable in the delivery of waste management services is the degree of private contractor participation. Private contracts may cover some or all of the waste management services (e.g., collection, transportation, facility operations, processing, public education, and strategic planning) and involve one or several contractors. In other cases, municipal waste is managed without the participation of third-party private service providers. Case studies conducted as part of this study demonstrated that each situation is location specific and often dictated by regional conditions. This variability makes it challenging to document best practices and recommendations.

Recycling programmes and waste diversion policies are well established in municipal waste practices in many OECD member countries. LPAs are now advancing these initiatives by developing Waste Management Plans to guide the long-term implementation of new and innovative strategies.(23) This strategic approach may offer a vehicle for supporting performance contracting through long-term service contracts.

LPAs have the potential to benefit from programmes to reduce costs and protect the environment. A climate of expanding local and international regulations can encourage LPAs to review and redevelop municipal waste management strategies. Engaging private service providers may be seen by LPAs as a way of transferring the risks associated with waste management to third-party service providers. Even though some OECD member countries do not use private contractors for waste management services, this

study focuses on the use of private contractors and thus, the value of performance contracting for waste minimisation in such contracts.

7.2 Introduction of Performance Contracting into Waste Management

The origins of performance contracting are private sectors such as the electric utility and chemicals manufacturing sectors (Sections 3.1 and 3.2 of Part 1). The evolution of the performance contracting concept was occurred in these two sectors. These sectors have successfully implemented programmes combining profitability with efficient consumption. In the electric utility sector, power generators have reinvented themselves as Energy Services Companies (ESCOs) generating revenue by helping customers conserve energy. In the Chemical Management Services (CMS) approach, industrial chemicals companies are compensated on a performance basis for the services they provide to the customer as opposed to the amount of chemicals they sell (e.g. per unit of function the chemical delivers). The experience gained in these sectors can inform the development of performance contracting for waste minimisation.

The inclusion of performance factors in waste management contracts to date is limited. The term 'performance factor' refers to a measurable metric such as % recycling rate achieved, % capture rates for different materials, certain expectations met as determined through user satisfaction surveys etc. Some industrial manufacturing companies have embraced the concept in recent years but performance contracting for waste services has been relatively slow to advance across the business community. The General Motors Corporation (GM) developed the term 'Resource Management' (RM) with support from the Tellus Institute, as the application of performance contracting for waste minimisation in an industrial setting (Section 3.4 of Part 1). Resource Management at GM has proven to be successful at enhancing resource efficiency, service improvements, contractor profitability, and generating disposal contract cost savings.[(24)]

The application of performance contracting for waste minimisation is growing in the manufacturing sector and slowly attracting interest from the local public authorities. In public sector, performance contracting appears to offer some opportunities to further advance municipal waste minimisation, even though the evidence of performance based contracting in public sector is limited and still quite premature. But there is some evidence that performance contracting is already used in some OECD member countries and some OECD member countries try to promote its use. For example, the South Gloucestershire Council in the United Kingdom (UK) approved a 25-year arrangement with private service provider SITA UK Limited for the management of its municipal waste. This contract incorporates a longer-term commitment to see measurable and steady progress towards goals (UK Case Study – Appendix 2). Also, the US EPA WasteWise programme is a partner in several projects promoting performance contracting techniques in commercial and institutional settings. Tellus Institute has also done a great deal of work in commercial and institutional settings, often in cooperation with the US EPA, and a limited amount of work in the municipal setting. The efforts to advance the use of performance contracting in LPAs in the US have had modest success. Varying degrees of performance factors have also been integrated into waste service contracts in a few other OECD countries, including the United Kingdom, Austria and Canada.

7.3 The Impacts of Performance Contracting on Private Service Providers

Performance contracts set targets for, and encourage waste minimisation. As communities improve waste minimisation, the private waste management sector (structured around collection, transport and disposal) will have to evolve or perish. As discussed in Section 7.2 of Part 2, opportunities for improving upon the current system lie in expanding upon traditional hauling and disposal contracts to include services that inform and influence waste generation (e.g. product/process design, material purchase,

internal storage, material use, material handling, data management, reporting). Many private companies already offer more than basic collection services – including recycling and composting facility operations, waste audit and data management services, and support in the development of waste management plans. The EURO 115 billion global markets for waste management services (estimated by Deutsche Bank) is under no immediate threat of collapse, but the evolution of the industry is an incentive for companies to become full service providers willing and able to negotiate profitable performance contracts with LPAs.

Performance contracts can engage service providers beyond waste hauling and disposal to include residential awareness and education, waste auditing and data collection, development of minimisation strategies and advanced recycling programmes. In this way, performance contracts offer private service providers a way to expand their business services. According to the results of a workshop held by the Tellus Institute and the US EPA WasteWise Programme, "*Public hauling and disposal companies are under pressure from Wall Street to increase cash on hand in order to re-instil investor confidence. Diversifying their revenue stream with these services is, therefore, an attractive area for growth as it involves little capital investment*."[(25)]

US EPA WasteWise has described ways in which performance contracting offers benefits to private waste service providers. These benefits are based on the application of performance factors in private industrial manufacturing, however, several aspects are transferable to municipal waste. Overall, the expansion of contractor services beyond haul and dispose is expected to increase total contract revenue potential. For this reason waste service companies are beginning to offer performance contracting services to industrial clients. These new services present an opportunity for service providers to differentiate themselves from competitors.

US based waste management service provider Waste Management is the largest player in the US market and is pursuing the business potential of performance contracting. Waste Management has established a division to market what it describes as 'total waste management services.' The company currently has around 40 performance-based contracts covering 220 sites, primarily industrial clients, valued at over USD 100 million (EURO 88.7 million).

According to the Tellus Institute, "*Traditional waste management companies have an incentive to switch to performance contracting because it provides an opportunity to diversify their services and profit base*". Performance contracts facilitate longer-term relationships and partnerships with customers by enhancing their interactions and creating opportunities to provide additional environmental services."[(26)] The US EPA WasteWise programme and the Tellus Institute held a supplier forum on Resource Management and asked participants for their perspectives on performance contracting. Several issues raised are relevant to the application of performance contracting for residential waste management. Table 8 below summarises the key elements.

7.4 Key elements for Building Successful Performance Contracting Relationships in the Waste Services Sector

7.4.1 Environmental Benefits

Waste avoidance, or reduction, is typically recognised as preferable to recovery and recycling due to the avoidance of transportation and processing aspects required of the latter two options. Waste reduction can lead to environmental and financial gains because it avoids the generation of waste in the first place.

Table 8. **Opportunities and Barriers of Performance Contracting According to Waste Service Providers** [2]

Opportunities	Barriers
• Differentiate services • Potential market share gains • Broader scope of services to address internal (custodial) and external functions (hauling) • May evolve business to include a wider range of utility, facility, and environmental support functions as in Europe --"Total Environmental Services"[3] • Provides formal procedures for recognizing superior performance • Customer retention • Risk sharing between LPA and service provider • Substantial "untapped" and cost-effective waste minimisation potential exists	• Structure of existing haul and dispose contracts • Customers lack awareness • Risk in the compensation model • Customer accounting systems may not capture impact or total savings • Service providers need to maintain profits over the long term (beyond 3 years) - concern over diminishing returns • Traditional communication and relationship (customer lack of trust in service providers, vice versa)

The primary purpose of performance contracting is to manage municipal waste in an environmentally sound and economically efficient manner. One of the most important premises of performance contracting is significant cost-effective opportunities to reduce waste, boost recycling, and otherwise optimise existing services, thus resulting in improvements of environmental performance. It can also provide financial incentives and offer opportunities to further advance waste minimisation.

7.4.2 Financial Benefits

Performance contracting is a method for restructuring markets from product orientation to service provision in order to align profitability with efficiency. Successful models developed in the electric power and industrial chemicals markets can provide lessons for improving municipal waste management. The International Institute for Sustainable Development (IISD) describes performance contracting on their website (http://www.iisd.org) stating that "*in a shared-savings arrangement, the public authority and the private service provider* ***share any financial benefits over the contract period according to an agreed formula****. The actual costs of the measures are not included in the contract, and the business has no obligation to pay off those costs. In return, the performance contractor does not guarantee the savings.* ***Contract terms are usually long*** *- up to 10 years or longer - because it takes longer for the investment to be recovered, and the risks to the contractor are higher*."

[2] Amended from reference 21: Tellus Institute (2001), Meeting Notes from Tellus-EPA Resource Management Supplier Forum, Forum for companies providing RM services, on-line document,: http://www.tellus.org/b&s/index. html.

[3] Contractors in both the Canadian Case Study and the UK Case Study have expanded their services to include waste minimisation education and communication programmes.

The UK Case Study (Appendix 2) also concurred that contracts should be long enough for companies to be rewarded for waste minimisation efforts that may take years to realise and measure. Performance contracting for waste minimisation must address the challenges of **establishing financial incentives** for private service providers to promoting municipal waste minimisation.

Financial benefits for waste generators are important, in addition to those of the private service provider, as a motivation to participate in performance based waste service contracting. Waste generators have the ability to benefit financially from waste reduction by using products and resources more effectively and reducing the costs associated with purchase of products that end up in the waste stream (e.g. spoiled food requires disposal, but provides also an extra cost to the resident who purchased the food only to dispose it of in the waste stream).

Waste diversion relies on the use of alternative ways of managing materials in the waste stream. Recycling and composting are waste diversion alternatives with the potential to reduce waste disposal and generate revenue that may be shared with service providers as an incentive for supporting the programmes. These diversion initiatives can be significant elements of performance contracts as they offer clear opportunities to reduce disposal costs and generate revenues. Key factors for making recycling profitable are: increasing yield, managing processing costs, variation in the waste/material stream and variation in the commodity pricing of recycled materials.

As identified, many LPAs face a challenging situation in creating financial incentives within the LPA itself. The current accounting systems of most LPAs lack financial incentives to avoid waste generation. Often waste management budgets are tied in with the overall LPA budget (i.e. waste management services come out of same budget as parks and recreation services, etc.). Any savings resulting from waste diversion and avoidance are often simply absorbed by the LPA and put towards other expenses or services. Annual waste management budgets can even be cut if the department demonstrates that it can operate with fewer resources. John Stutz from the Tellus Institute suggested that one way to overcome the missing financial incentive in LPAs is to **restructure waste management services through separate enterprises**. Restructuring LPA departments into separate and distinct enterprises may offer LPAs more freedom to use alternative budgetary models. These schemes, sometimes referred to as 'Enterprise Accounting', partition waste management into an autonomous operation that operates on its own revenues and enjoys its own profits. This allows any financial benefits from performance improvements to be enjoyed by the department itself.(27) Also, depending on the situation, it may be valuable for the waste management department to measure and communicate any savings achieved from waste minimisation through performance contracting (even though those savings may be directed to another department within the LPA for use).

7.4.3 Building a Partnership

In the industrial manufacturing sector, Tellus Institute indicated that a key element of successful performance contracting arrangements occurs when waste generator-contractor relationships become more of a **strategic alliance**. When LPAs work in partnership with service providers, there appears to be potential for establishing recycling programmes that improve collection and processing efficiency.(28) Private waste management companies may see opportunities and propose changes to the number of waste streams, collection frequency, source separation requirements and processing methods. These changes might exploit current recycling markets and increase revenues for recycling.

Regular and open communication with private contractors is also an asset. Becoming more closely aligned with the contractor in a partnership-type relationship can be beneficial.

Conflict resolution mechanisms should be built into the contractual agreements in the event of disputes. This is important especially in longer-term relationships where people may come and go, contracts need to be revised after 5-year review cycle, etc.[27] Two-way mechanisms for providing feedback and communicating with each others is an important part of any productive, working relationship.

Another key element as witnessed in the industrial waste services sector is the **expansion of the services** addressed in traditional hauling and disposal contracts to include services that inform and influence waste generation (e.g. product/process design, material purchase, internal storage, material use, material handling, data management, reporting). Tellus Institute summarised the results of a workshop on resource management stating that performance contracting will become standard practice only if there is, "*a fundamental change in the nature and scope of services demanded, and a commensurate shift to more sustainable and restorative means for suppliers to profit based on eliminating waste. Education, outreach, and contracting assistance are the currency that will affect such a move*."[28] Tom Votta of the Tellus Institute noted that "*achieving the next level of waste minimisation will require waste generators and suppliers to embrace a new cooperative vision that recognizes the value of wastes as resources*."[28]

If interested private service providers and other experts from the industry can be engaged early on in the contract development process, they can advise on the integration of performance factors that reduce risk and offer improvement opportunities. Private contractors can provide recommendations, and help to identify concerns or roadblocks to success. Contract development is often best done co-operatively involving several knowledgeable groups, such as private contractors, municipal waste management and recycling operators, communications department, purchasing department, legal department, and even community groups and local interest groups. In Halifax, Nova Scotia, the community was a significant partner in the development of the Waste Management Plan. The key to performance contracting is that the LPA and the contractor work together to benefit from waste diversion. The relationship is one of strategic alliance instead of individual gain.[29]

7.5 Key Elements of Successful Performance Contracting

Performance factors are not commonly present in municipal waste management contracts in OECD member countries. Most experts agree that the performance incentives used in resource management contracting in the industrial manufacturing sector will need to be modified to fit with existing models for LPA waste management contracts with private service providers. The following elements for successfully integrating performance factors into contracts were identified through literature and personal interviews as being applicable to both municipal and industrial models.

A power generation and distribution company, Public Service Enterprise Group (PSEG), has implemented an integrated waste management process including performance contracts for hazardous and non-hazardous waste. PSEG Resource Recovery Group Manager, Al Fralinger, identifies **key elements for the success of performance contracting** as follows[30]:

- High-level (i.e. department head, council, etc.) support;
- Involve all stakeholders;
- Shift from 'squeezing' supplier prices to seeking cost reductions and sharing opportunities;
- Deliver pilot programmes to sell the success prior to a full-scale launch; and
- Establish and maintain a centralized waste accounting system with vendor's assistance.

Performance contracting programmes require the collection and analysis of waste generation data in order to establish baseline operational performance. As emphasized by Angie Leith of the US EPA, accurate baseline data is necessary to be able to determine opportunities for waste minimisation. Baseline data may then be used to set targets and expectations for new performance contracts. A review of current costs, services and contractual obligations, considered in terms of the relationship with the service provider, can help LPAs define the potential of a new system. LPAs planning to engage private service providers in performance contracts need to share baseline data on the residential waste stream with contractors.[26], [31]

Detailed information on the supply area (i.e. the residential demographic, geography of the region, waste generation rates, waste and recycling stream composition, recycling programme participation rates, commodities prices and other factors) is also necessary for both the LPA and service provider to set fees and performance targets realistically.[26]

Tom Votta of the Tellus Institute emphasized that along with the need for accurate baseline data is the need to be able to **disaggregate the costs** associated with disposal versus recycling versus composting. To understand the real baseline, and to be able to set goals and targets for profitability, these costs need to be disaggregated. Typically, LPAs do not collect data in this manner.

Jim Bauld of the Halifax Regional Waste Authority (See Canada Case Study – Appendix 4) suggests that contractual arrangements are likely to be most successful for all parties if contracts **clearly outline expectations, goals, and responsibilities**, but **leave the mechanisms for achieving results up to the service provider**. John Stutz of the Tellus Institute also stressed that clear goals and parameters are needed in the terms of the contract, but that LPAs should avoid micromanaging the suppliers by dictating how goals and responsibilities should be achieved. Keeping contract language loose in this regard encourages innovation and flexibility among private companies. For example, the terms of a contract can specify that the contractor should be involved in public communications and outreach, but the LPA should let bidders propose how they would encourage resident participation in recycling or composting activities.

In performance contracts, the contractor shares the risk of failing to meet expected performance targets. Contracts need to **set explicit targets and fees**, but can take account of aspects of the service that may affect the designated performance factors - such as landfill tax or changes in the waste stream. Other factors, such as residential participation, are inherent operational risks that the contractor is expected to bear.

To maximize diversion and recycling capabilities, LPAs can also **establish complementary/parallel programmes to increase the value of materials in the recycling stream**. These could include for instance programmes where residents bring specific wastes to a drop-off centre (e.g. light bulbs, batteries), or packaging programmes to promote the use of single-material high-value packaging). Angie Leith expressed the concern that with the trend in the US back to single stream collection (away from separated streams of recyclable materials), the quality of collected recyclables is lower which makes it harder for LPAs to market recyclables and gain profit.

Monitoring and measuring procedures should be developed and agreed upon so that the effectiveness of the programmes can be accurately tracked and the contractor compensation determined accordingly. Longer-term contracts facilitate more effective monitoring and measuring, as it takes time to see progress against specific targets and goals, and time to adapt if necessary.[26], [31]

Performance contracting allows contractors to **identify recycling markets** offering better prices or receiving new materials and receive financial benefits of those. This is likely to enhance recycling rates and income for readily recyclable materials and provide new market opportunities for difficult to recover materials.[30] Performance contracts are most effective if they **go beyond recycling targets to financially**

reward increasing levels of diversion. Thus, waste minimisation rather than generation drives profitability for waste service providers. (See UK Case Study – Appendix 2). The following are the two types of models for how **contractor compensation** may be structured[(32)]:

1. Basic contract covering all services reimbursed at cost (collections, container distribution and maintenance, disposal fees, processing fees) and savings from waste minimisation or diversion are shared on a percentage basis (e.g. 50/50); or

2. Agree to a flat fee covering all services based on previous year waste management costs and opportunity for the contractor to find and benefit from all savings through waste minimisation. The annual contract would be structured to have a steadily decreasing flat fee per unit (e.g. fee per household serviced decreasing 5% per annum). This pressures the service provider to find savings at or better than the percentage decrease in order to realise extra profit.

Table 9 below summarises the key elements of performance-based contracting as outlined above on the basis of the literature review and through interviews with experts. It also indicates which case study LPAs have incorporated the various elements to date.

Table 9. **Comparison of Performance Contracting Elements**

Element of Performance Contract	US Case Study	UK Case Study	Austrian Case Study	Canadian Case Study
High-level support	✓	✓	✓	✓
Involve all stakeholders	✓	✓		✓
Financial incentives for minimisation (both service provider and LPA)	✓	✓		✓
Collect baseline data (with disaggregated costs)	✓	✓		
Compensation decoupled from waste tonnage collected	✓	✓	✓	✓
Set explicit targets and fees	✓	✓		✓
Expectations clearly outlined but mechanisms for achieving results left up to service provider	✓	✓		
Consolidated contract covering all services, beyond traditional hauling/disposal/processing		✓		
Engage contractors early on in the process	✓			
Monitoring and measuring programme in place	✓	✓	✓	✓
Long-term contract		✓		
Centralized waste accounting system				
Relationship between LPA and contractor is more of a strategic alliance	✓	✓		
Regular and open communication/dispute resolution process	✓	✓		
Run pilot programmes	✓		✓	✓

8. CONCEPTUAL FRAMEWORK FOR PERFORMANCE CONTRACTING

8.1 Roadmap

The use of performance factors in contracting arrangements between governments and private service providers is not new. These ideas have been coupling reduced consumption with business profitability in several economic sectors. The OECD Scoping Study highlighted the effectiveness of performance contracting in the energy sector and in the chemicals industry. Innovators in these two markets have developed programmes whereby service providers are given financial incentives to help their customers to reduce consumption. These successes were possible due to a transition of companies in these sectors from supplying of a single product (e.g. electricity or an industrial chemical) to providing full services to customers. Revenue originally derived from the sale of a single product was supplemented by fees for the delivery of many services. This model of moving companies from a product focus to a service focus may be a key element in the replication of performance contracting for LPA waste minimisation initiatives.

This section outlines the key elements of LPA performance contracting for waste minimisation. Cases of performance factors being built into contracts with private companies are limited, and results cannot be easily quantified, but some examples have been documented. In these cases, the LPA has modified the contract language to provide financial incentives to the private service provider for waste diversion or minimisation. Examples of detailed or comprehensive performance contracts with a history of success and measured results are yet to be documented. The conceptual framework outlined in this report is based on the potential of performance contracting for waste minimisation as learned from the limited experience across OECD member countries.

Assuming a LPA has a basic understanding of, and commitment to, performance contracting, a general conceptual framework or "Roadmap for Success" for service contracting should follow the following phases:

i) Secure high-level commitment [4] and develop high-level policy with stakeholder input, including local authorities, regional/national authorities where needed, local businesses, private service provider(s) and other stakeholders;

ii) Understand the current situation (establish baseline data, costs, performance, service levels);

iii) Develop objectives and targets;

iv) Communicate these objectives to private service providers, and seek input on them, including development of targets: volumes, timeline, percentages of coverage, type of service required (collection, hauling, separation, treatment), etc.;

v) Develop and award contract (include objectives, targets, timelines, monitoring systems, conflict resolution mechanisms, etc.);

vi) Develop a partnership for success;

[4] High-level commitment generally means commitment from head(s) of the waste department, heads of other departments beyond the waste department, the municipal council, administrators, etc.

vii) Conduct pilot test or specify early review/amendment phase, as appropriate; and

viii) Finalize and implement performance contracting arrangement.

These points are elaborated as a "road map" for performance contracts, below. Ideally, the LPA should be able to answer "yes" to all the following questions, as it develops the contract. However, both LPAs and waste service providers will be learning as they go and there may be benefit to getting started without all elements while leaving flexibility to build them in, in an iterative process.

i) Secure High-level Commitment and Develop High-level Policy

This information is critical to demonstrating LPA commitment to performance contracting and provides clear direction for those developing and implementing policy.

Key Elements	Yes/No
Do we have senior manager commitment to, and high-level policy concerning waste minimisation that provides a clear mandate for those developing waste minimisation procedures?	
Do we have senior manager commitment to, and high-level policy concerning performance contracting, that provides a clear mandate for those developing contracting procedures?	
Have various stakeholder groups been consulted during development of our waste minimisation and performance contracting policies (including local authorities, regional/ national authorities where relevant, local businesses, private service provider(s), citizens groups and other stakeholders)?	
Has this performance contracting policy been integrated into LPA procurement policy?	
Is the performance contracting programme implemented along with other strategies supporting minimisation (i.e. "pay as you throw" programmes, producer responsibility programmes, etc.) as part of a larger LPA waste management plan?	

ii) Understand the Current Situation

This information is necessary for both the LPA and service provider to correctly determine fees and performance targets.

Key Elements	Yes/No
Does our LPA have financial incentives for waste minimisation (i.e. waste management services come out of same budget as parks and recreation services, etc.)?	
If not, do we have opportunity (within current budget allocation process) to use the money we save in our department/programmes; Or, can we measure and communicate savings from our department to others?	
Do we have accurate baseline data in order to define scope and service levels, identify existing compensation methods, establish costs and performance benchmarks, etc.?	
Can we disaggregate the costs associated with disposal versus recycling versus composting?	
Do we have detailed information on our supply area (i.e. the residential demographics, geography of the region, waste generation rates and recycling stream composition, participation rates, etc.)?	

iii) Develop Objectives and Targets

This phase of developing a performance contracting arrangement uses the information derived in stage ii) as a basis for setting specific objectives and targets of the contract (e.g. increase diversion of compostable material by X% by year Y).

Key Elements	Yes/No
Has compensation been decoupled from waste tonnage collected?	
Have clear objectives and targets for waste minimisation been determined, against which the service provider(s) performance can be specified and measured?	
Have mechanisms for achieving objectives and targets been left relatively open and up to discretion of service provider(s)?	
Do goals and targets in terms of services covered extend beyond traditional hauling/ disposal/processing services?	
Are financial incentives for waste minimisation built into the goals and targets?	
Are responsibilities of service provider(s) clearly outlined, against which the service provider(s) can be specified and measured?	
Does the contract go beyond recycling targets to financially reward increased diversion?	

iv) Communicate Objectives and Targets to Private Service Providers, and Seek Input

Once the LPA has set objectives and targets for its performance contracting agreement, it is beneficial to share these with service provider(s). Involving private service providers early on in the

development of performance contract ensures that targets are feasible, all opportunities have been identified, and that any concerns or roadblocks to success have been identified.

Key Elements	Yes/No
Have we consulted with service provider(s) early in the process on our objectives and targets and obtained their feedback?	
Did new issues arise during the consultation (i.e. Do service providers agree that objectives we have set are feasible? Is more background information needed to set relevant targets? Do other opportunities or roadblocks exist that the LPA may have overlooked? Etc.)?	
Did we revise the contract accordingly?	

v) Develop Contract

Using the information developed and gathered through the first four phases, the LPA should be ready to develop its performance contract. As mentioned previously, it may be useful to consult the "Resource Management: Innovative Waste Contracting Methods" manual developed by the U.S. EPA. for sample request for proposals (RFPs) and language.(32) In addition to the guidance outlined in the U.S. EPA manual, be sure to include the following key elements for developing successful performance contracts in the waste services sector.

Key Elements	Yes/No
Do we have sufficient information from stages *i) – iv)*, to set clear objectives and targets in this contract?	
Has fee structure been unbundled to separate hauling and disposal from incentives for recycling and waste minimisation?	
Are direct financial incentives for waste minimisation built into the terms of the contract (e.g., agreed formula for allocating financial gains)?	
Are goals, responsibilities and expectations of LPA and private service providers clearly outlined in the contract?	
Is language of the contract relatively flexible and are mechanisms for achieving goals left up to service provider?	
Does the contract allow for revision if and when new information emerges (i.e. boundary conditions, such as total volumes and compositions of wastes change over time, increased availability of new or emerging technologies, changes in local receiving markets and sinks for individual components of the waste stream, etc)? Flexibility in the contract allows for adjustments to be made in terms of refining objectives and targets, as well as for enhancing incentives.	
Have measuring procedures been agreed upon so that the effectiveness of the contract can be accurately tracked and contractor compensation determined accordingly?	
Has a regular monitoring system or review cycle been built into the contract to ensure progress is being made?	
Is the contract long enough for companies to be rewarded for investment in waste minimisation efforts?	
Has a system for populating, updating and maintaining a centralized waste accounting system been established? Will the LPA and private service provider both have access to this system?	

vi) Develop Partnership

Becoming more closely aligned in a partnership-type arrangement can be beneficial in performance contracting arrangements.

Key Elements	Yes/No
Has a two-way communication mechanism been established in the contractual agreement that allows for regular and open communication and outlines clear expectations for communication frequency, employees responsible for communications, etc.?	
Has a conflict resolution mechanism been built into the contract in the event of disputes?	
Has the relationship of contractor been expanded to one of consolidated service provider in a collaborative relationship or strategic alliance?	

vii) Conduct Pilot Test

Some sources indicate that incorporating a short-term pilot test into the contractual agreement process is valuable to developing an effective longer-term contract.(30) This is optional however, and some LPAs may choose to incorporate a "piloting phase" as part of the ongoing review cycle built into the contract (e.g. 3 months, 6 months, or annually). Both approaches would perform similar functions. Because performance contracting is a long-term commitment and a new approach for both LPAs and service providers, performing a trial run helps to work out any hurdles or issue areas that might cause problems in the future.

viii) Finalize and Implement Performance Contracting Arrangement

After the pilot test or initial review phase, the LPA and private service provider(s) should revisit goals and targets, partnership arrangement, terms of the contract, etc., to determine whether anything needs to be revised before finalizing the final contract and signing on to a longer term commitment. It is also important at this stage in the process to establish a monitoring programme to ensure continuous improvement throughout the life of the contract.

8.2 Integration of Performance Contracting with Other Policies, Programmes and Incentives

Performance contracting policies and programmes may be employed to reduce the number of service providers in attempt to **simplify management**. Waste management contracts can target one consolidated contract for bin provision, transportation, waste disposal, recycling collection, training, waste audits, data tracking, etc., in attempt to make them more attractive to service providers and streamline LPA operations.

Performance contracting will be most effective at optimizing waste minimisation where it is integrated into **public authority procurement policy**. Integrating performance contracting into policies provides a clear mandate for those developing the contracting procedures and demonstrates the LPAs commitment. In many cases it is necessary to develop a performance contracting policy in anticipation of the next contracting cycle. It may be difficult to open long-term contracts or make changes to existing contracts without penalties. Once policies are in place and communicated, service providers can prepare for the implementation of these programmes during upcoming bid cycles.

Performance contracting involves **a negotiated contractual agreement** between the public authority and the private waste management service provider. In order for these organisations to enter into performance contracts, the benefits must be understood and agreed. In the near term, these contractors will reach a point of diminishing returns. Immediate recycling gains can be a significant financial achievement, but further gains may be a challenge. As it evolves however, contractors are likely to look for market development opportunities (recyclable materials that are difficult to recover), resource efficiency opportunities (improving internal processes), and influence over material streams (e.g., packaging programmes).

Gerhard Spet of the Vienna Waste Authority (See Austria Case Study – Appendix 3) stressed that performance contracting and waste minimisation objectives are most effective when **integrated with high-level policy**. In Vienna, this involves the participation of department heads (and other high-level actors), waste services, legal council, communications department, and purchasing in the structuring of policies to encourage environmental performance. The Waste Services Department manages waste efficiently supported by a broad communications programme and municipal government purchasing policies to

reduce waste material and packaging. Together with public participation in the development of the Waste Management Plan and ongoing support from political circles, the waste minimisation agenda is succeeding. (Austria does not contract waste management services to private companies – see Appendix 3).

For LPAs that already contract waste management services to private companies, performance contracting is **a way to engage private service providers in waste minimisation strategies**. This relationship is **complimented by LPA efforts to engage residents and commercial retailers**. Communications and awareness for waste minimisation can have limited success without supporting programmes engaging these additional groups (such as pay-as-you-throw schemes). According to the Association of Cities and Regions for Recycling (ACRR) in Vienna, "*Beyond recycling, local regional waste authorities are seeking to reduce the amounts of waste they need to take care of. This means the citizens must favour prevention at source, re-use… and home-composting. Only excellent communication, particularly if accompanied by appropriate regulations and economic instruments, can guarantee progress towards this objective.*"(33)

Municipal waste management policies can **combine strategies leading to programmes that enhance waste minimisation**. Performance contracting programmes can be implemented along with other minimisation strategies. A Danish case study on 'Weight-related collection schemes for household waste' demonstrated that a payment system based on the amount of waste residents generated reduced the amount of mixed household waste and increased recycling rates. The systems using a pay-per-kg fee structure, charging more for mixed waste than recycling and compost, showed a significant drop in mixed waste (over 50%) combined with increases in recycling and compost collections (38% and 280% respectively) as compared to reference municipalities on traditional systems. The case study, conducted by the European Topic Centre on Waste and Material Flows, concluded that the reduction in total waste may not represent significant waste prevention, but the system does appear to increase waste diversion significantly.(34) The case study results support the idea that integrated strategies incorporating performance contracting with other financial incentives and programmes are able to realise significant waste minimisation objectives.

Similar efforts in different countries underline the findings above. Success is hereby closely linked with **incentives and cost, or reduced cost respectively**. The incentives are different for the different actors, including authorities, citizens and private companies:

- Authorities look into offering their citizens efficient solutions while meeting regional/national policy requirements at least cost to them or the taxpayers respectively. This ideally also means a more holistic cost perspective that includes prevented investments in the infrastructure for waste management, leaner administrative efforts, and possible profit sharing with service suppliers/local market actors;

- Citizens expect effective systems and a certain quality of services for tax monies spent; and

- Private company service providers are driven by profitability, long-term stability (contract period) and market growth.

Those different drivers need to be accomplished and balanced. Most critical is the incentive structure for the service provider(s).

Ideally the **contract comprises the whole system**: collection, transport, separation, treatment, and selling of valuable goods/materials. If the system is operated by different companies, their individual strive for profit may create disincentives and hinder the system. In the case of one overall responsibility, it is possible that higher cost at one stage of the operations can be tolerated, while achieving overall better waste separation and consequently waste minimisation. Therefore the service contract as a minimum

requirement should balance the interests. However, this may inadvertently exclude small, local service providers and favour large national or international companies with greater service diversity.

8.3 Expected Outcomes of Performance Contracting

It is premature to draw conclusions or outline expected outcomes of performance based contracting in municipalities as very few municipalities in OECD member countries have experimented with the concept. The UK case study is the most comprehensive and progressive in terms of integrating performance factors, and has only had a performance contracting arrangement in place for three years. The UK South Gloucestershire Council is hesitant to point out any major successes due to limited experience, however the Council surpassed its recovery [5] targets in the first two years of the programme and is on target to meet its 2003 recovery target (Table 10).[35]

Table 10. **Recovery Targets and Achievements (2000-2003)**

Year	Recovery Target	Recovery Achieved
2000/01	6%	10%
2001/02	9%	18%
2002/03	20%	20% expected
2003/04	29%	

The Council also indicated that support for the new system among residents is increasing slowly. The Council anticipates future benefit in the form of reduced risk for the municipality, as it no longer carries responsibility of paying landfill costs and taxes.

The US, Canadian and Austrian case study examples were much less comprehensive, having only implemented or experimented with a few elements of performance contracting. The City of Seattle in Washington reported some success arising from performance factors built into its Centralized Apartment Recycling Programme. Contractors are paid a one-time bonus of $2 000 for each percentage point above the agreed target building participation rate of 70%. The City doubles the reward payment if recycling participation exceeds 80% and penalizes contractor if participation drops below the reward target.[36], [37] The City has found this to be an effective incentive for its contractor to maintain participation rates in this important programme. The other case studies documented as part of this study did not identify any concrete outcomes. It was either too early in the process for the LPA to measure outcomes, the LPA had only integrated a minor element of performance contracting (such as flat fee service arrangements) or the LPA had looked into performance contracting scenarios with the Tellus Institute but does not currently practice performance contracting.

Theoretically, the potential for performance based waste services contracting exist in LPAs, but there are too few examples upon which to draw definite conclusions.

[5] For the purposes of the contract, "recovery" is defined by the Council as including: all recycling; green waste composting; construction materials delivered to Household Waste Recycling Centres and reused as engineering material; and fridges and freezers recycled at specialist processing plant.

Preventing the generation of waste and developing regional solutions to close material cycles through performance based contracting can offer advantages on all three dimensions of sustainability if implemented successfully:

- **Economically** – If local public authorities have chosen to use private contractors for waste management, performance contracting solutions may offer the public alternative, efficient solutions for managing their waste, because performance contracting takes a total systems perspective. Service providers have opportunities to enter new markets, realize benefits from fuller service provision, develop additional revenue streams and find ways to benefit from increased waste minimisation. Ideally, performance contracting should encourage innovation among private contractors and the development of new business opportunities for the management of selected materials.

- **Socially** – Private contractors should be involved in waste minimisation and management. With more parties involved in the waste prevention and management system (e.g. LPAs, residents and private contractors, etc.) there is potential for increasing overall awareness of waste management issues in society. If performance contracting arrangements are successful, LPAs might save on waste management costs and have more resources to spend in other areas for social benefit – recreation centers, libraries, low-income housing, etc. Alternatively, the Austrian case study pointed out some potential negative social implications of performance based waste services contracting, including the loss of higher quality, secure jobs in the public sector to less secure, lower paying private sector jobs.(33) In addition to this concern, the Austrian case study also indicated that its citizens were less likely to accept a private waste service provider over a publicly managed system. In this instance, citizens perceive that municipal services can be better managed by a not-for-profit organization that does not have to demonstrate quarterly business returns to its shareholders. In conclusion, the benefits or risks will be specific to each region and to each LPA's situation. There is also concern that performance contracting could inadvertently favour large firms and exclude smaller, local service providers that do not yet offer a wide range of services.

- **Environmentally** – Potential environmental benefits from performance contracting for waste services are similar to benefits from all methods of waste minimisation (e.g. encourages more recycling of materials, avoid production of new materials, avoid environmental waste management process releases, etc.). Some additional benefits may arise through improved efficiency within the waste management system because of the more holistic approach. By looking at the entire system, the contractor might see opportunities that others who are preoccupied with segments of the system might not see. For example, a full service provider (looking at product/process design, material purchase, internal storage, material use, material handling, data management and reporting) might identify opportunities for value creation where a traditional haul and disposal contractor might not. A performance-based contracting system where contractors are involved early in the process of setting goals and objectives reduces the risk that one part of the system is working in contradiction to another, thus improving efficiency.

In summary, it appears there may be many benefits from integrating performance-based elements into waste services contracting but as the concept is in its infancy within OECD member countries, no conclusive evaluations can be drawn.

9. CONCLUSIONS

As discussed above, performance contracting in the municipal setting is just beginning. Very few LPAs have been engaged in performance-based waste service contracts for any significant length of time, therefore it is difficult to draw comprehensive conclusions. However some key findings can be summarized.

It can be challenging for LPAs to maximise waste minimisation, control costs, and make performance contracts more attractive and profitable to service providers than the conventional tonnage-based haul and dispose contracts. Tom Votta of the Tellus Institute expressed this dilemma as "*it is always easier to follow the path of least resistance*". Angie Leith from the US EPA also agreed that local public authorities do not have the time or resources to implement the multitude of new and different programmes being proposed to them. LPAs need constant support and encouragement to effect change.

Increasingly, LPAs across the OECD member countries are contracting third-party private service providers for residential waste management. Government policies and programmes expanding the privatization of services advance the private participation in the collection, processing and disposal of municipal waste and recovery of reusable/recyclable materials. LPAs are striving to find ways of merging waste minimisation objectives with service agreements involving private waste companies and their profit incentives. Performance contracting may offer a way for LPAs to address these issues and develop policies and programmes promoting cost-effectiveness and environmental performance.

Performance contracting for waste management is a concept that evolved out of the established model of energy programmes. For over 30 years there has been a growing awareness and presence of performance contracting for energy and chemicals. The concept has only recently been applied to waste management. The waste perspective began in the US industrial manufacturing sector with companies such as General Motors Corporation. The slow growth of this concept in the private industrial sector has brought waste management service providers into the arena seeking opportunities to capture market share and expand services through response to customer demands. This involves multi-national and local waste haulers as well as industrial cleaning and maintenance companies and property management groups. This growth in expertise and experience is creating a ready market for performance contracting for the management of municipal waste.

Soft measures such as communications or educational campaigns may assist LPAs in ensuring a smooth transition to the new system, and in obtaining support among residents more quickly.

LPAs engage private companies in waste management service contracts considering several critical factors. Contracts are structured to ensure the delivery of services to meet public expectations and protect the government from increasing cost and risk. Programmes require clear objectives for performance contracts that outline the priorities and expectations of the performance contracting programme.

For private companies to participate in performance contracts, LPAs need to outline clear responsibilities and opportunities for waste minimisation coupled with economic incentives. Contracts should be structured to remain open to innovation by the service provider. For example, asking for additional services beyond collection and disposal but allowing the contractor to 'fill in the blanks and

develop programmes.' Negotiation of performance contracts benefits from the availability of reliable data on waste generation and recycling rates, waste stream profiles, historical costs, and other information. Private companies may be reluctant to participate, or may increase fee expectations for performance contracts with unclear responsibilities and scope or lacking relevant data.

The development and implementation of performance contracting programmes are affected by the availability of reliable data on baseline waste generation, composition and recycling rates. This information is necessary for the proper structuring of contracting fees and recycling/diversion targets.

It is valuable to involve waste service providers early in the performance contract development process. The LPA can invite experienced service providers to offer ideas as to the structuring of contracts and the types of incentive programmes that are attractive. Performance contracting programmes can then be developed to have clear and upfront objectives that provide the required detail for potential service providers to bid on.[25], [29]

Requests for proposals (RFPs) can stimulate creative strategies for waste minimisation if they offer incentives for performance improvement but are not too prescriptive in outlining how the service provider is to achieve the target level of performance. Required actions/services in the contract should remain as loose as possible to allow private contractors to be innovative in their proposed strategies. The Resource Management (RM) Contracting Manual developed by the US EPA provides model language for an RFP from private service suppliers.[38]

LPAs new to performance contracting practices may need to commit to a pilot project to establish data and document progress and cost savings before performance improvement incentives can be implemented. Also, a monitoring programme is to be established to ensure continuous improvement throughout the life of the contract.

The immediate benefits from performance contracting arise from improved recycling rates and implementation of new recycling schemes covering more materials. Service providers are searching for long-term benefits to be found from performance contracting once recycling efficiency is maximised. This will require financial incentives for waste minimisation and other advanced programmes.

There are significant opportunities if private waste service providers can identify markets for recycling additional materials, and strategies for waste minimisation - if contract price structures encourage such behaviour.

Current accounting structures of many LPAs do not encourage public authorities to seek alternative contracts (US Palm Beach Case Study – Appendix 1). Statutory limitations and budgets that are interdependent across departments limit the flexibility and incentives for LPAs to implement performance contracting.

APPENDIX 1. CASE STUDY: UNITED STATES

Overview

Local Public Authorities (LPAs) are responsible for the collection and management of residential waste across the US. The US generated approximately 231.9 million tons of municipal waste in 2000 and had an overall recovery rate (including composting) of 30.1%, up from 28.1% in 1998.(39) During 2000, about 55.3% of municipal waste was landfilled, down somewhat from 57.2% in 1999. The number of municipal waste landfills has decreased substantially over the past decade, from nearly 8 000 in 1988 to 1 967 in 2000 - while average landfill size increased.(40)

Performance contracting for waste management services is in stage of development and growth in the US. The significant role of private waste service providers in the collection and management of municipal waste across the US makes this an OECD Member country with the potential for large-scale application. The US EPA and partners, such as the Tellus Institute, have taken an interest in the economic and waste minimisation opportunities and began researching and promoting performance contracting.

Performance contracting has been gaining support in both the energy sector through the evolution of 'energy service companies' (ESCOs), and the industrial chemicals sector through the creation of Chemical Management Services (CMS). The application of performance contracting in these sectors is being used as a basis for developing programmes for the integration of performance measures into waste management contracts in the US.

There are examples of the implementation of performance contracting for waste management services in the private industrial sector. General Motors Corporation (GM) applied the concepts of CMS to waste management, establishing what GM calls its 'resource management' (RM) programme. GM set an objective to reduce costs and conserve resources by using financial incentives to encourage waste service contractors to support resource efficiency. Since adopting the plan, GM reports a 20% reduction in total waste generation, a 65% increase in recycling, and a 15-30% decrease in waste management costs.(41) Based on the success at GM, the US EPA and the Tellus Institute began exploring how performance contracting could be applied to LPA contracts with private providers for waste services. The US EPA developed a manual on 'Innovative Waste Contracting Methods'(32) exploring how the concepts may be applied to commercial or private sector waste contracting.

Status of Performance Contracting

Examples of LPAs with fully implemented performance contracting programmes are uncommon; however, there are elements of performance integrated into waste management contracts at a number of LPAs. Case studies or pilot programmes have been initiated in several States developing the concept of innovative waste services contracts incorporating performance measures. These examples provide lessons as to the key success factors and challenges to be overcome.

San Jose, California

San Jose, a city with 195 000 single-family households and 85 000 multi-family households, integrated performance measures into waste contracting for residential waste collection and recycling in 1993. The system includes a commingled recycling stream achieving a recycling rate of 53%, exceeding the State recycling mandate of 50%. To encourage competition, the City contracts two private waste management companies each servicing a portion of the city. In the current arrangement, service providers are offered financial incentive for increasing recycling and promoting waste reduction. The contracts set a base monthly per-household-serviced collection fee for waste and recycling collection. The fee for single-family dwellings is fixed while that for multi-family dwellings depends on the type and size of container used and collection frequency. Minimum diversion rates are set and agreed in the contract (e.g. single-family dwellings 35%). If the contractor improves the diversion rate beyond the minimum an annual incentive payment is made. However, administration charges are levied on contractors for failing to meet the minimum diversion rates. This charge depends on how much the actual diversion rate falls short of the minimum requirement (e.g. a $10 000 charge for a shortfall of 0 to 2% and a $25 000 charge of 2% or greater). [6]

Contractors retain 100% of recyclable revenue and bear the risk and opportunity of finding markets for recyclable materials. A total of two three-year terms of extension are available beyond the initial five-year contract. Contract extensions are contingent upon 1) performance against targets, and 2) the total charges levied (not to exceed $100 000 per year). Meeting both requirements leads to an automatic extension. If the contractor fails to meet the minimum diversion requirements but does not exceed the maximum administrative charges in any of the calendar years, the City has the discretion to offer or not offer an extension option to the contractor.

The City has instituted a Source Reduction and Recycling Procurement Policy that supports the three priorities of prevention, recycling, and reuse. While the contractors are responsible for marketing recyclable materials, the City assists in developing markets, e.g. sponsoring compost research and establishing a network of potential customers for compost and soil amendments.

Regular meetings are set up between the City and contractors to discuss service issues, and determine ways to address concerns of either party. Contractors have direct contact with the residents using the service and relay their feedback to the City.

Palm Beach County, Florida

The incorporated areas of Palm Beach County are divided into 9 franchise districts including a population of about 500 000. Three franchisees are currently providing residential waste and recycling collection services to all single- and multi-residential dwellings in the unincorporated county.

Contractor compensation is structured on a monthly per-household waste and recycling collection fee. Under the programme, contractors are given a fixed number of disposal credits each year for amount of residential waste that they can take to the County owned landfill. The number of credits is established according to the number and category of residential units within each franchise district, as well as the per-unit waste generation rate of each category (e.g. single- or multi-residential) reported in previous waste generation studies. [5]

[6] Examples of Resource Management in Municipal Contracting. Summary memo prepared by Tellus Institute. Received from Freda Fung at Tellus Institute, July 2003.

Omaha, Nebraska

The Omaha, Nebraska Public Works Department (OPWD) provides waste, recyclables and yard waste collection, processing and disposal services to approximately 121 000 residential households. OPWD has contracts with five private service providers totalling $12 million. Services provided include; waste collection and transportation to landfill, recycling collection, yard waste collection, material recovery facility (MRF) operations and yard waste composting operations. OPWD has recycling contracts including incentives for increasing the tonnage collected beyond the previous years' total. Recycling growth is seen as diversion from landfill and the reward fees are balanced by landfill cost avoidance. This incentive is supported by a requirement for the service provider to achieve minimum recycling levels, or pay liquidated damages.(42)

Residential waste is collected weekly under the OPWD's collection contract and transported to the privately operated Douglas County Landfill. Nearly 82 000 tons were collected from residents in 1999. The OPWD uses five separate contracts to provide residential recycling, composting, and disposal services. All current contracts extend from 1996 to 2002. Annual expenditures on 1999 contracts were nearly $12 million. Based on an assessment of potential of implementing resource management contracting, the city could realize a 50% increase in recycling and an 11% decrease in landfill disposal, and decreased overall waste service contract costs. Omaha does not currently use an RM contracting approach.

Seattle, Washington

The City of Seattle has a population of approximately 520 000 and covers 215 ㎢. For the past 6 years, the City of Seattle Public Utility has been responsible for managing water, wastewater, and waste and recycling services for all residents within the city boundaries. In total there are approximately 1 300 employees working for the utility, of which between 200 and 400 individuals work on waste management. In 2002, the City's recycling rate was 39%.

Waste collection fees are paid by all residential structures within the Seattle City limits. Charges for waste collection services appear on residential combined water, sewer and waste services bill. Recycling services are free for Seattle residents.

Seattle approved a seven-year waste and recycling contract with a private service provider in April 2000. To optimise efficiency, foster competition, and have same-day collection of waste, recyclables, and compostable yard waste, the City is divided into two service areas each under a separate collections contract. The City of Seattle has entered into contracts for commercial waste services with Rabanco Companies (serving businesses as Emerald City Disposal and Recycling) and Waste Management to provide garbage collection to businesses in Seattle. Processing of the city's yard waste collected curbside and at the transfer stations is contracted out to a local company, Cedar Grove Composting Inc. The waste contract establishes responsibility for recycling and yard waste composting promotions – including the delivery of education and promotional materials.(36)

The contract stipulates a fixed annual lump sum fee for collection of residential waste, recyclables and yard waste. For the Centralized Apartment Recycling Programme, the City pays contractors a one-time bonus of $2 000 for each percentage point above the reward target participation rate of 70%. The City doubles the reward payment if recycling participation exceeds 80% of multi-family accounts. On the other hand, if the reward target cannot be met, the Contractor is penalized $1 000 for each percentage point below the reward target. (36)

The City of Seattle Public Utility sets the rate and terms of service with the contractors, and then bills customers accordingly. Negotiated contracts outline which responsibilities contractors must meet in

terms of collection schedule, areas for collection, items to be collected, conditions to be met in terms of customer satisfaction, but still allows for some contractor innovation. Contractors must fulfil certain base services but alternative proposals with variations from base services that would provide lower system costs, increased efficiency, reduced impacts, better customer service and/or other benefits to the City and residents are welcomed.

Residents and commercial entities must use the services from the contractor responsible for collection in their area. Residents pay for a subscribed service level, including micro can (12 gallons), mini can (20 gallons), and 32, 60 and 90-gallon service. Customers choose a specific size container for garbage collection, and retain the option of setting out additional containers for an additional charge. Contractors are responsible for buying and supplying collection bins to residents. Every three years a customer is entitled to a free replacement of a can/cart/bin. Otherwise the charge is $19 per bin.

Bi-weekly meetings were convened between contractors and the City during the implementation phase and regular monthly meetings are held throughout the contract period to review and discuss day-to-day operations, promotion, public information and public relations.

In 1988, the Public Utility, the Mayor, and City Council concluded that an inverted variable bin rate structure was going to help the City reach its 60% recycling goal. The Mayor and Council raised the Waste Utility's one-bin rate by a modest $0.20/month (from $13.55/month to $13.75/month), and raised the 'additional bin rate' (the rate charged for each additional bin) from $5.00/month to $9.00/month. The Mayor and Council concluded that this increase in the additional bin rate would:

- substantially increase recycling and waste reduction; and
- send a price signal to those who generate relatively more waste that disposal has a high monetary and social cost.[34]

Eighty-seven percent of the City's single family garbage customers subscribe to one-bin or minican service (62% are one can customers, 25% are minican customers, 5% subscribe to microcan service). Only 8% subscribe to two or more bin service. These percentages contrast with 1988, when 60% of single-family customers subscribed to one bin and 39% subscribed to two or more.[37]

The Public Authority is also placing emphasis on reducing the amount of waste it sends to landfill through promotion of backyard composting. Yard waste subscribers pay a flat monthly fee for basic yard waste service (up to 4 units per bi-weekly collection). Additional units are collected for a per unit fee. This fee structure, implemented in 2000, encourages households to minimize the amount of yard waste they put out for collection. Through education and subsidies of composting bins, residents are encouraged to backyard compost and use mulch mowers. The City funds a Compost Hotline for more information on grass recycling, composting, and mulch mowers.

Service Provider Interest

In response to both industry and LPA interest in advanced contracting services (including the addition of performance measures), US-based waste service provider Waste Management Inc. (WM) established a new division to market what it calls 'in-plant services' to both commercial and industrial sectors. This division seeks out requests for proposals (RFPs) for performance contracts and prepares proposals and bids to suit client demands. The division has grown from 3 employees in 1997, to 170 employees in 2001 and is expected to continue to grow to meet increasing demand. The majority of current customer demand is from the private sector, primarily chemical, automotive and pharmaceutical companies. WM has approximately 40 customers at 220 sites, representing close to $100 million in contract value, and it plans to expand to target other, less penetrated market sectors and geographic regions.[25], [30]

Challenges

The climate in which LPAs operate may be a barrier to performance contracting. Some regions have somewhat restrictive State regulations and statutory guidelines. For example, Palm Beach County, Florida considered the opportunities for performance contracting for its existing municipal waste management contracts covering five franchise districts. It was determined that integrating performance measures would be beneficial for Palm Beach County, but when an implementation plan was developed, it was discovered that they would have to significantly revise the statutory authority to enable the department to integrate budgets for waste and recycling. Because they were bound by the statutes to have two distinct budgets for each stream, the LPAs could not offer cost incentives for waste minimisation gained through avoided landfill disposal. The statutes dictated that any revenue generated from recycling was to be used to offset internal costs.(43)

Overall, LPAs often do not have mechanisms for measuring and allocating financial cost savings from waste management. John Stutz of the Tellus Institute proposes two ways to address this disconnect: (26)

1. LPAs can apply a business model through the use of 'enterprise accounting.' This allows the LPA to partition the waste authority from other departments and set-up an independent budget. With its own budget, the waste authority can benefit from any savings realized through waste minimisation; and

2. LPAs retaining ownership and control of landfill operations avoid paying tipping fees to private operators. This results in a false sense of the cost of waste disposal. This needs to be overcome through full cost accounting procedures. Waste minimisation goes beyond avoidance of tipping fees and can offset the costs associated with the siting and constructing of new landfills and the long-term management of closed landfills. This also improves public relations – as taxpayer fees for waste management can remain lower over time as landfill life is extended.

LPAs require expert advice and support in the development of new programmes. Angie Leith from the US EPA has found that LPAs are generally receptive to alternative waste contracting methods but generally need consulting assistance to help them in characterizing the current waste/recycling activities and costs.

A recent trend in US LPAs shows that many cities are moving back to single stream waste collection from 3,4 and sometimes 5 streams.(31) This might hinder the growth in performance contracting as contamination is much more likely with co-mingled recycling thus reducing the market value of recyclables. Although single stream recycling requires a more sophisticated materials recovery facility (MRF), having recyclables in only one compartment of the truck allows for compaction, optimizes payloads and reduces costs for LPAs.(44)

LPA waste management has traditionally been a political issue. Maintaining the status quo is often more attractive than changing the system significantly which draws public and political attention and sometimes criticism. EPA and the Tellus Institute worked with a County to try to advance performance contracting however local politics between the LPA and the private service provider prevented the implementation of an effective performance contracting system.

Local authorities may enter long-term contracts with private waste service providers, based on waste handling and sorting processes that become outdated before the end of the contract term. This issue has been addressed in some contracts. Alameda County, California has a newly implemented 2003

Integrated Waste Management Plan described as a 'road map' for addressing waste management challenges. Private firms play a lead role in the execution of the plan as there are contracts with private service providers for waste collection, disposal or recycling services in 13 of the 14 cities within the county. The Plan describes the Counties approach to *Franchise Agreement and Contracts* including procedures for developing flexible contracts that allow the local authority to revisit contracts and even use other companies for waste diversion or minimisation if the service provider under contract is unable or unwilling to provide these services. This allows the local authority to implement new recycling or minimisation programmes beyond those outlined in existing contracts. Without this, the service provider could block new waste minimisation initiatives.

Key Success Factors

LPAs across several US States have used elements of performance contracting to improve recycling rates and engage private waste service providers in the promotion of waste minimisation. A number of strategies have produced results by establishing the right balance of pressure on service providers to advance waste management practices and financial incentives to reward improvements. These contracts improve performance while remaining financially attractive to private waste service providers.

An important element of third-party participation in LPA waste management is the fact that these private waste companies have day-to-day contact with the residents and become the recognised 'face' of the waste management service. This provides an opportunity for these companies to participate in and even lead communications and awareness programmes promoting recycling, backyard composting and even changing consumer habits to reduce waste.(43) Communications represents an additional service offering that waste service providers are often interested in developing.

For performance contracts to be structured properly, the LPA requires data and information about the service area. Details as to the housing profile (e.g. number of single-family-homes and multi-residential buildings) the number of service users, and the historical waste generation and recycling rates are needed. It is also important to disaggregate the costs of diversion (e.g. recycling and composting) vs. landfill disposal.(26) This is necessary in order to develop meaningful, measurable improvement goals and to set costs and fees in the new contract. Service providers will be more inclined to submit competitively priced bids for a contract proposal based on well-defined parameters.

Benefits

Several US LPAs have implemented some level of performance measures into their waste service contracts, and others have participated in pilot studies on the potential for the full implementation of performance contracting. These cases provide examples of the types of programmes that may effectively provide incentives for waste minimisation.

In the Palm Beach Florida disposal credit system, contractors successfully diverting waste to recycling can reduce the actual municipal waste tonnage below the level of disposal credits. Contractors can then use extra credits to offset commercial waste disposal fees they would otherwise have to pay for themselves.

The Seattle, Washington Waste Services contract stipulates a fixed annual lump sum fee for the collection of waste, recyclables and compostable yard waste. One-twelfth of the lump sum is transferred to the contractor each month. In a Centralised Apartment Recycling Programme, the City pays the third-party contractor a one-time bonus of $2 000 for each percentage point above the agreed target building participation rate of 70%. The City doubles the reward payment if recycling participation exceeds 80% of multi-family accounts. Conversely, if the recycling participation rate drops, the contractor is penalised

$1 000 for each percentage point below the reward target. The progressive bonus structure in combination with the penalty for failure to meet the minimum participation target provide strong financial incentives to the contractor to maintain programmes and launch educational campaigns to promote recycling.(36)

San Jose, California established minimum waste diversion goals. Contractors are encouraged to improve the diversion rate through an annual incentive programme. Administration charges are levied on contractors for failure to meet the minimum diversion rate. The contracts include fixed monthly waste and recycling collection fees - decoupling the contractors' profitability from the waste generation rate. Incentive rates for different levels of diversion together with administration charges for failure to meet the minimum diversion rates provide direct incentive for contractors to improve waste diversion/recycling

John Stutz of the Tellus Institute has worked with businesses and LPAs interested in performance contracting and believes that large waste service providers are coming to value these types of contracts. Companies like WM have the capacity to innovate and have the resources to offer specialized expertise and additional services. Large companies with performance contracting experience also build the capacity to write successful proposals in response to performance contract request for proposals (RFPs).

APPENDIX 2. CASE STUDY: UNITED KINGDOM

Overview

The South Gloucestershire Council (SGC) in the UK is responsible for municipal waste collection and disposal for South Gloucestershire County - including the urban fringe of Bristol with population of 246 000. The SGC employs seven staffs to oversee waste management services as a public authority and contracts private companies to collect and treat all of the area's waste totalling approximately 140 000 tonnes per year.(27)

Historically the Council has felt that it receives little income from the UK government and as a result has had little budget for investing in waste processing and disposal infrastructure and services. The financial and environmental costs of disposing of an increasing amount of waste are rising and making waste management an important issue for the Council. After a local Agenda 21 consultation forum on sustainable waste management was held in September 1999, the South Gloucestershire Council committed to implementing an integrated waste management strategy based on the '3R's' of reduce, reuse, and recycle. Performance contracting has become a key element in the SGC waste management strategy.

Status of Performance Contracting

Private Financing Initiatives (PFIs)

In 1999, SGC received significant funding from the UK Government Department of the Environment, Transport and the Regions (DETR) earmarked for capital investments. These funds enabled the Council to enter into a Private Financing Initiative (PFI) alternative contracting arrangement with a private contractor to service its long-term waste management needs.

South Gloucestershire Council awarded a 25-year PFI contract to SITA UK (a large waste services company) in July 2000. The contract is for an integrated waste management service encompassing collection, processing and disposal of household waste together with education and promotion of waste minimisation. The 25-year contract term is unusually long compared to typical waste management contracts and was structured to establish a close and cooperative relationship between SGC and the service provider. Signing longer-term contracts is increasingly common in the UK as many LPAs are realising that private service providers perform better when given enough time to offset their investments in new equipment, facilities, etc. The SGC anticipates that the PFI revenue support grant of approximately £63 million will be available over the 25-year life of the contract.(27)

Contracting Methods

The SGC specified the financial limit of the waste management service contract at the beginning of the tendering process. Based on the available budget, the SGC set the scope and then invited companies to respond by submitting proposals for how they could service the area and meet the requirements outlined in the request for proposal (RFP) within the specified budget.

The successful contractor (SITA UK) receives $1/12^{th}$ of the annual fee each month for providing service to a specified number of households within a defined geographic area of the County. The contract does not include any fees payment per tonne of waste collected. The contractor provides the waste

management service and is also required to meet or exceed the Council's recycling and recovery targets outlined in the integrated waste management plan (Box A.1).[35]

Box A.1: Performance Targets

- 25% of collected household waste to be recycled by 1 April 2003
- 33% of civic amenity waste to be recovered by 1 April 2003
- 40% of all household waste to be recovered by 1 April 2005
- 45% of households with gardens to have received a home composting unit by 1 April 2003

Also specified in the PFI contract are daily performance standards the contractor is required to meet (e.g. level of customer service) to ensure that service continues to be effective and satisfactory to residents.

Targets for waste minimisation education and communications programmes are also built into the contract. Tracking these daily performance standards requires a database and knowledgeable IT personnel. Managing daily performance standards also requires some flexibility, for example; SITA UK assumed ownership of another waste service provider and needed nine months to bring the new acquisition up to speed on its operating procedures and systems.[27]

Despite the length of the contract, the terms of agreement are flexible and can be altered to reflect new information, legislation, or costs. For example, the EU recently legislated the recycling of refrigerators and freezers in all EU Member States. SGC had already entered into its PFI, but was able to negotiate with SITA UK and alter the terms of the contract to accommodate this new requirement.

Challenges

The SGC experience applying performance measures in the contracting for waste services has been successful but not without its challenges.

The tendering process was time consuming and expensive for both bidding private contractors and the SGC. Bidders were expected to develop and submit a detailed strategy for waste minimisation demonstrating know-how and technical capability. This requires significant time and effort and in some cases successful bidders go through several stages in the process (i.e. short listing) before contracts are awarded. This level of effort may discourage some companies from pursuing performance contracts.

To attract private service providers LPAs commit to long-term relationships with service providers (i.e. 25 years). This can lock the LPA into an arrangement that is difficult to change or terminate. It is important that contracts be developed to both protect the service provider and ensure the LPA a continuing quality of service.

In this type of alternative contracting arrangement, it may be difficult for the LPA to define which elements of the waste minimisation strategy to leave to the private sector service provider and which elements to stay involved with.

Key Success Factors

It is still early in the deployment of SGCs performance contracting programme, and difficult to assess in terms of waste minimisation success. The SGC has reached a 20% recovery rate (Table A.1), which is an improvement for the Council and they are reporting continual, gradual improvement each year. SITA UK is managing to hold the growth of waste generation down through awareness and promotions programmes. Support from residents for the new system is also growing, however, changing mindsets occurs slowly.[35]

Table A.1. **Recovery Targets and Achievements (2000-2006)**

Year	Recovery Target	Recovery Achieved
2000/01	6%	10%
2001/02	9%	18%
2002/03	20%	20% anticipated
2003/04	29%	
2004/05	36%	
2005/06	40%	

Some key elements of success include:[27]

- Long-term contracts;
- Setting clear and measurable targets;
- Instilling a payment and responsibility mechanism with 'teeth' (using a performance reward and penalty system);
- Need commitment from department heads, council and other departments;
- Need flexibility;
- Concentrate on output specification – don't prescribe what the companies should do to achieve targets, allow them the flexibility to come up with their own approach; and
- Have conflict resolution mechanism built into the contract.

Benefits

The private service provider is responsible for paying landfill costs and taxes. This mechanism transfers some economic risk to the private company away from SGC. Managing a more stable budget (with monthly fees defined) with reduced risk was cited as a benefit of such a contractual arrangement.

PFI contracts typically undergo a five-year review process to ensure continuous improvement and to ensure that all parties involved are satisfied. Both SGC and SITA UK view the contract as a partnership in which they are working together to resolve problems relating to performance and service delivery. Nevertheless, there is a stringent payment mechanism under which financial penalties are levied if targets are not met or performance falls below specified standards. Payment is reduced if the company does not meet the recovery or recycling targets outlined in the tender (see Box A.1).

APPENDIX 3. CASE STUDY: AUSTRIA

Overview

The City of Vienna is Austria's national capital and one of its provinces. Vienna is also a municipality with three elected bodies and an administrative body: the municipal council, the municipal board (in Vienna the City Senate) and the mayor, with the municipal council office (in Vienna the City Administration) acting as administrative body.(33)

Table A.2. **Vienna Profile**

City	Vienna
Country	Austria
Total Population	1 635 392
Area	415 km^2
Population Density	3 941 people/km^2
Single-family Housing	5%
Multi-residential Housing	95%

Association of Cities and Regions for Recycling accessed at http://www.acrr.org/members/vienna/vienna1.htm

Waste management responsibility in Vienna falls to the municipality and is delivered by the Vienna Department of Waste Management, Street Cleaning and Vehicle Fleet. The Local Public Authority (LPA) in Vienna is responsible for collecting and managing municipal and commercial waste across 23 residential districts. Legally the local authority must provide waste management services for all residents but is free to subcontract waste management services to private enterprises as it sees fit.

Status of Performance Contracting

There are three primary waste collection methods employed in Vienna covering all residential areas of the city:

1. door-to-door collection of recyclable (paper and glass) and compostable organic waste;
2. local public drop-off bins located in highly visible public areas for recyclable materials (e.g. paper, glass, metal, plastics, wood, textiles, waste electronics, tyres, organic waste) plus household hazardous waste; and
3. municipal depots for all residential waste materials.

Residents of Vienna pay fees for service based on the number of bins they use for backyard waste disposal. Most single-family homes have one 120 litre rubbish bin, however residents are welcome to pay to have as many bins as they wish. Residents pay fees to a central municipal account, not directly to the Department of Waste Management. The Department receives an annual budget from the City and uses this financial allocation to provide all waste management services. To motivate efficiency and good management, the Departmental budget allocation per household decreases each year (although the total budget may increase if the number of residents serviced increases). Door-to-door recycling and composting

collection are provided as a service financed by municipal taxes. Residents do not pay additional fees for this service.

The Vienna LPA owns the waste management facilities including landfills, material recovery facilities (MRFs), composting facilities, incinerators and transfer stations. Facility operations are performed by the city of Vienna as is waste collection, however some transportation services and operations are contracted to private companies. Fine paper collection and transportation is contracted out to private companies and waste incinerators are jointly owned by private firms that also operate the facilities. Paper contamination rate is 1.5% or very low. Paper is clean enough to be collected and transported directly to a rail system for transport to a paper processing centre.

The LPA contracts with both large multinational and small local waste management companies selected through a competitive bid process. Contracts require strong legal framework to protect involved parties as well as a financial structure that allows the city to reclaim funds from the contractor for inadequate service.

Contracts between the Vienna local authority and private companies range in length from 3-5 years. Private companies are contracted to provide waste collection services covering a specified region and are paid strictly based on the number of bins they empty, not by volume. Terms of contract also specify the required time schedule for collection and strict quality standards of performance. Residents may place as many waste containers out for collection as they wish – but are charged per container. The local authority collects fees and provides bins to the residents.(33)

Strategic programmes include the introduction of a gravel recovery programme, which involves the spreading of gravel (measuring from 2 to 8 mm) on slippery roads in winter and recovery for reuse the following year. Mixed waste and waste collected during street cleaning is now being processed for the recovery of various fractions (combustible, mineral, organic and metal) for different uses: combustible waste as a fuel supplement in industry, minerals and organic waste to cover landfill and metals recycling. Waste minimisation projects (targeting bulky waste, street-cleaning waste, etc.) have also been initiated.

A splitting plant was installed to separate a combustible fraction as well as ferrous and non-ferrous metals and mineral fraction. The plant's capacity is designed for 130 000 tonnes per year.(45) Overall, the plant has helped increase the amount of bio-waste collected in green areas of the city.

Challenges

It can be difficult to integrate performance measures for waste minimisation into the existing waste management contracts with private service providers. Private companies engage in contracts based on the potential profitability of the contracts and are reluctant to re-open existing profitable arrangements.

Waste management is seen as a political issue in Austria. The Vienna LPA conducts bi-annual surveys of the local population. Results of recent surveys have demonstrated that residents of Vienna support the LPA management and delivery of waste management services and would prefer that the service stay in the public domain. Residents expressed concern that private companies have to deliver profits to their shareholders and prioritise this during the execution of waste management services. The LPA has used private contractor services more extensively in the past but found that there were many more public complaints about the quality of service. The public system pays a higher hourly wage to waste management personnel as compared to previous private sector contractors.(33)

Key Success Factors

Waste management communications are provided by the LPA with no involvement from private service providers. A significant investment of time and resources goes towards waste minimisation public education programmes. The Department of Waste Management believes it is important to start influencing behaviour at a young age and goes into schools to educate children on waste minimisation and other environmental issues. Many types of communications activities are employed including the development and distribution of 'Good Practice Guides' to households, measures to increase public awareness involving students, ongoing street campaigns using posters and guides containing the addresses of repair shops. Home composting programmes are promoted via posters, booklets and community awareness teams.

Municipal departments need to work together. In the Vienna public authority, there is a high-level waste minimisation policy that all departments have committed to (e.g. purchasing, waste management, communications, etc). Municipal officials have very stringent conditions to follow when procuring products and services. The Vienna City Administration encourages government and local industry procurement policies that support the purchasing of products that reduce waste through less packaging, more recycled content, etc. This is intended to help bring cleaner products to market. Municipal authorities have a significant amount of purchasing power and can influence the system.

Benefits

Vienna has implemented some innovative programmes aimed at addressing residential consumption and waste generation. In 1991 a pilot programme involved a group of 200 households in a plan to change purchasing and consumption behaviour in order to minimise waste. The volunteers generated 19% less waste than average households through a number of strategies including: purchase of quality, durable goods; observance of products' service obligations; purchase of modest amounts based on necessity; purchase of products in reusable packaging; and the purchase of used products. The pilot results suggest that it is possible to reduce waste while maintaining the same living standard.

APPENDIX 4. CASE STUDY: CANADA

Overview

The Halifax Regional Municipality (HRM)[46] Waste Resource Division is responsible for managing waste collection for 370 000 people with 116 000 households divided into eight collection zones. The eight collection zones were divided so as to keep waste tonnage amounts relatively even across the regions. Residential curbside collection is provided as a service paid for under the property tax system with bag limits for weekly curbside collection (10 bag limit every two weeks). Curbside collection is a tax-based service for all households and multi-residential buildings with 6 or fewer units. Small businesses must arrange private contractor services for waste collection. The curbside programme does not collect waste from businesses of any size. This policy is intended to balance the level of public service provided to all businesses.

The City administers municipal waste management contracts involving 16 separate private service providers and manages an annual budget of CAD 32 million in contracts. Contracts cover a range of services including collection and transportation of waste and recyclables, operation of composting and recycling centres, and management of landfills offering a range of services (i.e. some collect all three streams of waste and others do not). All private contractors are local waste service companies with the exception of Miller Waste Services, recently contracted out of Markham, Ontario.[46]

Status of Performance Contracting

HRM went through a competitive tendering process to award waste service contracts to private service providers. The request for proposals (RFPs) outlined the required services, applicable collection regulations, frequency of collection required, and other performance standards (e.g. public education). Contracts are awarded every five years based on house count in each of the eight residential areas. Contractors bid on an area based on the number of households serviced not based on tonnage collected. Therefore there is no incentive to pick up more waste. In fact, contracted service providers want to decrease the amount of trips it needs to make to collect waste and transport to landfill of processing centre as a means to decrease its own costs. Each quarter HRM reviews the household count and makes any required adjustments.

Collections contracts define an area of the city (with details as to number of households), collection frequency, waste streams (and specific items accepted in the streams), municipal regulatory requirements, acceptable hours of operations, and expectations on the contractor. Fee structure is based on a flat monthly fee for service regardless of tonnage of waste collected. Waste is delivered to the municipally owned landfill at no charge to the hauler (for residential curbside collection – business waste is charged at CAD 115 tonne). Fees are adjusted up or down based on a number of variables including growth in number of households and fuel costs.

A key element of the waste minimisation scheme for Halifax is the reduction of organic waste collection curbside. The municipality has a private company collecting organic waste in green bins biweekly. The waste minimisation programme involves the promotion of backyard composting, grasscycling and mulch mowing to manage organic waste at the household instead of transporting this material to centralized composting facilities. The contractor provides bins to residents and helps support the goal to help residents reduce their volume by managing their green waste at home.

An example of another performance standard included in the contract for private waste haulers is the need to apply general education stickers to bags if residents sort incorrectly or put unacceptable garbage out at the curb for collection. If it is found that contractors are not holding to the educational component of the contract, penalties are applied. HRM decided to include this clause in the contract as they did not want to see the quality of waste or recyclables decline under private management. Instead HRM wants to ensure continual improvement of the system and quality of waste in the bags. HRM also takes some responsibility for educating residents on waste avoidance and waste diversion techniques through radio advertisements, door-to-door visits and quarterly newsletters.(46)

Challenges

The HRM found that the costs associated with this new type of contracting system are higher however performance has improved.

Utilizing unpopular 'tag-a-bag' systems or other variation of user-pay in connection with performance contracting provides incentives to residents to reduce the amount of waste they put out at the curb for pickup. HRM does not currently have a system like this in place but is considering it as another measure to reduce the amount of waste the region generates.(46)

Key Success Factors

The HRM Waste Management Plan was developed in consultation with the public. This public buy-in was cited as a key element of the success of the programme. Halifax operates an ongoing communications programme to promote waste minimisation, backyard composting and recycling. The municipality hired a consultant to determine if the promotional programme was effective at waste minimisation.

To keep contracts open to multi-national and small local waste management companies, HRM contracts are designed with lower than normal bond requirements. In lieu of expensive bonds, Halifax holds back 10% of monthly pay for the first year to cover damages. This makes the contracts accessible to smaller operators.

Private service provider Miller Waste operates the municipal recycling centre under contract to the HRM and shares revenue from the recycled stream (3/1 split) which provides some incentive to Miller Waste to increase diversion rates and search for alternative markets.

Benefits

To assess the effectiveness of the backyard composting programme, HRM contracted Corporate Research Associates to conduct a survey of residential participation and success. The survey found that 83% of respondents were aware of the promotion and education programme with 43-45% participation. Respondents estimated that they divert 25-50% of their green waste through home composting initiatives calculated to be 777 tonnes of organics per season.(47)

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