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**II MEETING: THE APPLICATION OF ECONOMIC INSTRUMENTS IN
WATER AND SOLID WASTE MANAGEMENT**

***GLOBAL REVIEW OF ECONOMIC INSTRUMENTS FOR SOLID
WASTE MANAGEMENT IN LATIN AMERICA***

EXECUTIVE SUMMARY AND FULL PAPER

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(Original Document in English).



Economic Instruments for Solid Waste Management – A Global Framework Paper

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Economic Instruments for Solid Waste Management – A Global Framework Paper¹²

Executive Summary

This is the summary of a document prepared for the Regional Policy Dialogue of Latin American countries in February 2003 in Washington D.C. The report contains an overview of the available international literature and information on the application of economic instruments in solid waste management. Examples from a wide range of high-income and developing countries are included in the report with numerous references, most of which are accessible through the internet citation provided.

The Case for Economic Instruments

Economic instruments are being individually applied on an ad hoc basis to the solid waste sector. No reference was found in the global literature indicating that any country had made a comprehensive effort to develop the full range of viable economic instruments in solid waste management. When viewed collectively, as done by the document summarized herein, these instruments show tremendous promise to improve solid waste management. Their application requires site-specific study in each country to determine whether the capacity exists for implementation and whether related prices would be affordable. Given that economic instruments incorporate the polluter-pays principle, product pricing and solid waste service costs will be increased. Therefore, national policies and international agreements are desired to minimize impacts on trade competitiveness and also to reduce interstate disposal traffic and clandestine dumping.

There are dozens of instruments available. Typically, they would complement existing regulatory requirements for the sector, and should not be seen as a replacement for a competent appropriate regulatory framework. As with regulations, they also involve administration, baseline information, public outreach, and performance monitoring. While each instrument addresses different sector needs, collectively they have the following objectives: reduced waste generation, increased recyclables content, reduced hazardous materials content, increased recyclability after use, stimulation of market demand for products that are more recyclable and result in reduced disposal impact on the environment, stimulation of private sector investment and participation in the solid waste sector, lessening of pollutant loadings associated with solid waste management,

¹ This paper was written to provide a basis for the policy dialogue among environmental ministries at the Inter-American Development Bank's annual regional summit, held in February 2003.

² The paper was written by Eng. Sandra Cointreau, solid waste specialist, with input from Atty. Constance Hornig on matters of solid waste regulatory controls, financial instruments, and service contracting. Eng. Nancy Cunningham developed case example material on Philadelphia, Pa. Ms. Maya Cointreau conducted literature search and provided final editing. Mr. David Wilk, Ms. Silvia Ortiz and Mr. Michael Toman of the Inter-American Development Bank provided guidance and coordinated the review and comment efforts.



promotion of cost-effective service delivery, and generation of revenues to cover all internal and external costs for solid waste services.

Global Experience with Economic Instruments

No reference was found that comprehensively defined and categorized economic instruments for the solid waste sector. For purposes of the document summarized herein, three categories were used to describe the wide range of applicable economic instruments, namely: Revenue Generating Instruments, Revenue Providing Instruments, and Non-Revenue Instruments. The following paragraphs describe types of instruments in these categories. For information on actual experiences with these instruments, the reader is referred to the document.

Revenue Generating Instruments

Revenue generating instruments develop income for governments from consumers, producers and service providers. Revenue generating instruments, which include a wide range of solid waste charges and taxes, address the following objectives. They raise money to cover solid waste service costs; paying consumers tend to pressure solid waste service entities to become more accountable and transparency in their budgeting systems; solid waste departments with competent cash flow are able to attract the private sector to invest in improved solid waste service delivery. When the revenue generating instruments are tied to the quantity or composition of waste discharged, they might have the added benefit of reducing waste generation and/or increasing recycling. However, such quantity-based instruments are significantly more complex and costly to administer than flat-rate revenue generating instruments.

Charges. Charges may be collected through the property tax, electricity bill or water bill, or individually collected from each waste generator. Typically, waste generation is a function of consumption, which is a function of income. Thus, waste generators with larger properties or higher water or electricity usage would be automatically charged more.

When the charge is administered door-to-door from each waste generator, there is a choice between flat rates (based on property size, property value, energy use, or water use) and variable rates (based on waste weight or volume). While waste weight is the key determinant of collection and disposal cost, waste volume is easiest to measure for billing purposes. Therefore, most variable rates are based on number and size of containers put out for waste collection service. In theory, charges based on quantity are meant to motivate consumers and producers to reduce their waste loads; however, practice indicates that the major waste generators (those with higher income) may not be price sensitive because of the low portion of income allocated to cover costs.

Taxes. Taxes imposed on virgin materials, non-renewable fuels, and hazardous constituents may be used to influence producers to develop products that are easier to recycle, have a higher recycled content and cause fewer disposal problems. Additionally, taxes on wastes discharged to landfill could encourage use of other technologies, such as composting. Such taxes need to be set high enough that they influence consumer choices. In Europe, various green taxes are generating significant revenue, i.e., enough to generate surpluses for application to social security and compensation measures, as well as environmental improvement.



Subsidy Reductions. Where virgin material use is subsidized, i.e., where a producer's costs to obtain and use that virgin material does not take environmental externalities into consideration, there is limited incentive to use recycled materials as feedstock. Such subsidies may be in the form of direct tax preferences, preferential access to investment capital, reduced rail transport costs for virgin materials or allowing low-cost forest or mineral extraction from government lands. Reduction or elimination of such subsidies could encourage producers to use recycled materials and also to consider product take-back after use.

Solid waste services are typically conducted by government departments that receive considerable subsidies. One way to facilitate private sector investment in solid waste services is to eliminate the subsidies received by the government service agencies.

Revenue Providing Instruments

Revenue providing instruments enable producers and service providers to obtain income indirectly from governments. Revenue providing instruments, which include charge reductions, fiscal incentives, development rights, and funds, address the following objectives. They motivate the producers to implement product changes that reduce waste and increase recycling; they encourage the private sector to invest in improved solid waste service delivery; and they establish funds to generally support goals of recycling, reduced virgin resource use, and remediation of contaminated disposal lands.

Charge or tax reductions. Charges or taxes related to waste generation or receipt of solid waste services may be reduced based on proof of increased recycled content or increased recycling.

Fiscal incentives. Tax credits, accelerated depreciation, tax-exempt debt, subsidized credit lines, and customs exemptions have been used widely to encourage investment in new techniques of waste treatment, including waste-to-energy facilities, and are also applicable to attracting private sector investment in collection and transfer equipment.

Development rights. To encourage private sector investment in new transfer, treatment and disposal facilities, long-term development rights to the lands needed for the facility are being provided. This saves on the cost of land acquisition, and also may provide enough land for other business activities to be conducted in addition to the solid waste facility.

Funds. Funds are established to support solid waste improvements, including remediation of contaminated disposal sites. While the monies are initially provided by government, repayment of the funds is typically negotiated as part of their use. Some funds are given seed money by government and are then supported by donations from private companies, and others are supported by a specific type of green tax.

Non-Revenue Instruments

Economic instruments are traditionally viewed as either generating or providing revenue. However, many of the most important instruments for the solid waste sector do not fall within these categories. Non-revenue instruments are particularly important in motivating consumers and producers to recycle. They also provide powerful motivators for the private sector to invest in solid waste service delivery and provide the tools that most influence their performance. Non-revenue instruments include trade-off arrangements, deposit-refund systems, take-back systems,



product and production change incentives, liability law, performance disclosure, and procurement policies.

Trade-off arrangements. Pollution trading has become an important way of reducing air emissions, allowing air emission reductions in one part of an air-bubble to be traded for air pollution permission in another part of the same bubble. In some circumstances, for emissions of global importance, air pollution trading is being done internationally. The solid waste sector has begun to make air emission savings in its truck fleets and disposal facilities to trade with polluters in other sectors, particularly the energy production sector. Another innovative example of trade-off arrangement is the possibility of gaining surplus and tradable certificates for reprocessing of packaging or waste materials.

Deposit-refund systems. Some types of products have great value for recycling after use and can be conveniently returned through the retail network, including beverage containers, tires, and car batteries. For these products, a deposit is provided by the consumer at the time of purchase and refunded at the time of product return. It requires cooperation by the full retail network selling that specific product, since the consumer is not required to go to the specific retail location where he/she purchased the product initially.

Take-back systems. Initially producer take-back systems focused on recovery of packaging, but now many products are being taken back by producers. Electronics, plastics, single-use cameras, laser print cartridges, paints, solvents, lubricants, and pesticides are examples of products that are returned after use. These systems also can be part of a command-and-control approach, but they assume more of the character of an economic instrument when linked to other instruments like public disclosure and procurement policies. Product and production change incentives. Waste minimization programs encourage producers to reduce ultimate disposal quantities (e.g., by lightweighting or materials replacement) and increase recycling. Some change is brought about purely by dialogue and information provision, some through recognition for changes made (i.e., a form of public disclosure).

Performance disclosure. Environmental report cards and polluter blacklists consider recycling and disposal performance in their criteria for ranking companies. A number of report cards are published on the internet and are considered by consumers in their purchasing decisions, thus motivating producers to make changes in production and waste management practices.

Liability law. Revision of liability laws can provide a basis for claiming compensation for environmental degradation, i.e., damage to nature. This allows liability coverage even where property or personal damage claim is not involved. Solid waste service providers (e.g., treatment and disposal contractors) can be obliged to protect against damage through trust funds, surety bonds, insurance policies, letters of credit, enterprise funds, collateral securities, and other types of guarantees. These instruments motivate private parties to fully assess potential environmental risk and provide adequate coverage for that risk.

Procurement policies. Procurement policies enable governments to give procurement preference for products that have a high recycled content, are recyclable, or generate less waste. Procurement policies also create improved conditions for private sector investors to participate in solid waste service delivery.



Criteria for Choosing Instruments

There are dozens of potential solid waste instruments that each Latin American country could implement. The global literature does not provide adequate comparative information to conclude whether certain economic instruments are better than others. The data is not available to assess the extent to which any instrument would reduce waste, increase recycling, reduce toxics, generate revenues, etc. Choice depends on local priorities, preferences, and abilities. Each city and country in Latin America is unique. Local capacity, public interest, and ability to pay are just a few of the differences between countries that influence choices.

The following evaluation criteria are recommended to be considered:

- ✍ Environmental effectiveness – i.e., does the instrument lead to the desired environmental improvements, such as reduction in waste generation, increased waste recycling, reduced emissions from transport and disposal;
- ✍ Economic cost-effectiveness – i.e., does the instrument create incentives for investment and innovation toward reduction of pollution control costs;
- ✍ Administrative cost-effectiveness – i.e., does the instrument require affordable and available levels of skill and effort to implement and monitor;
- ✍ Revenue usefulness – i.e., are revenues generated able to be applied to address the environmental objectives of the instrument and adequate to create measurable improvement;
- ✍ Ease of implementation and replicability – i.e., are the relative costs and benefits relatively easy to assess and the legal requirements for introducing the new instrument reasonable;
- ✍ Acceptance – i.e., does the general public and the affected industries accept the instrument as a viable means of cost-effectively achieving environmental improvement without adversely affecting competitiveness, employment, income distribution, and trade;
- ✍ Distributional effects – i.e., is there distributional disparity or inequity in the application or impact of the instrument, particularly regarding effects on lower income households, small businesses, and disadvantaged parties;
- ✍ Short-term results – i.e., does the instrument have the potential to result in sufficient short-term improvement to motivate political administrators to undertake commitment to the costs associated with the instrument under their political term
- ✍ Economic development enhancement – i.e., does the instrument provide an environment that maintains trade competitiveness and encourages industrial development and employment generation.
- ✍ Waste type applicability -- i.e., does the instrument address a wide range of waste types and have significant impact on overall urban waste quantities, or does the instrument address only a limited number of unique and important waste types.

Recommendations

Solid waste management is a local responsibility. However, local implementation of economic instruments needs the support of national policy. Firstly, local governments do not have the capacity to assess the options and determine which instruments would be most cost-effective for their use. Also, local governments are politically sensitive about any increase in charges or taxes to their constituency, unless they can refer to some national directive. Finally, as local



governments often rely on central government budgetary support, they may not be free to provide fiscal incentives or modify procurement policies. Thus, the first recommendation is that each Latin American country create a national commission tasked to study economic instruments for the solid waste sector and develop national policies and implementation directives to local governments. The commission will need to consider whatever financial support local governments might need to implement the instruments, including monies for baseline studies and performance monitoring. Also, the commission shall need to formally recognize that budgetary allocations, in the form of revenue sharing for local governments, will shift as private sector involvement in service delivery requires more budget assigned to recurrent expenditures, while less is needed in capital expenditure. Enabling legislation to empower local governments is recommended.

In choosing between instruments for the solid waste sector, it is recommended that Latin American countries consider the following guiding principles:

- ✍* Economic instruments that are complementary to existing command-and-control approaches should be given priority over those that might confuse or conflict with existing regulatory controls.
- ✍* New instruments should be gradually introduced in steps that allow their impacts to be assessed before full-scale implementation proceeds.
- ✍* Instruments should be in tune with broader economic development objectives in terms of use of labor and conservation of energy and capital.
- ✍* Consideration should be given to using revenues from instruments for specific waste management investments, improvement in waste management services, or waste-related environmental remediation.
- ✍* Instruments that focus on long-term behavior modification need to be implemented, even though their results might not be immediately evident within current political administrations.
- ✍* Instruments that target existing environmental problems or service gaps that lead to significant pollution loadings and environmental consequences should be given priority.

The following instruments are recommended to be given priority for Latin America:

- ✍* Revenue-generating instruments that are user charges attached to property taxes, electricity bills or water bills would have the most positive near-term impact on the capacity of the solid waste management sector. Consumers would perceive that they pay something and therefore have a right to demand good services. This in turn would make the service delivery entities more accountable. Further, it would provide a favorable climate for private sector investment and participation in service delivery. Variable rate charges are not recommended for Latin America at this time because of the administrative costs and potential adverse impact of causing illegal dumping.
- ✍* Revenue-generating instruments that impose taxes on products that are difficult to dispose or recycle would influence consumer choices and related production decisions. Revenues can be earmarked to support improved disposal conditions and increase recycling.
- ✍* Revenue-providing instruments, such as tax credits, low-interest credit lines, accelerated depreciation and relief from customs duties, can provide financial incentives for the private sector to invest in production changes that minimize hazardous substances,



- increase recyclability, and generate less wastes. Such instruments could encourage the private sector to invest and participate in solid waste service delivery, including resource recovery.
- ✍* Non-revenue instruments that address government procurement preferences would dramatically augment market demand for products that are readily recyclable or have significant recycled content.
 - ✍* Non-revenue instruments that address procurement policies for waste services are particularly important for stimulating private sector investment and participation in solid waste services.
 - ✍* Non-revenue instruments that strengthen liability law and create strong disincentives to damage the environment or adversely affect public health are recommended. Ideally, in time, an international liability policy would be developed for Latin America. Also, all contractual language for guarantees and performance liability needs to be strengthened for private sector participation.
 - ✍* Non-revenue instruments that involve deposit-refunds, product take-back, and product stewardship address only certain categories of wastes, such as returnable beverage containers, tires, electronics, and appliances. Nevertheless, any effort to encourage industry to lessen the disposal burden and fully account for waste management in its product pricing is desirable.



Economic Instruments for Solid Waste Management – A Global Framework Paper

Section 1. Introduction

Economic Instruments -- What are they? Economic instruments³ comprise all incentives/disincentives that mobilize the self-interest of consumers, producers, and service providers to make environmental improvements or reduce adverse environmental consequences. These instruments may be used to address basic environmental needs, or may motivate actions to address environmental protection beyond the prescribed minimum accepted standards of command-and-control regulatory approaches.

In the case of solid waste management, economic instruments are meant to:

- ~~///~~ Reduce waste generation;
- ~~///~~ Lessen the amount of generated waste that is hazardous;
- ~~///~~ Segregate hazardous waste for special handling and disposal;
- ~~///~~ Optimize recovery, reuse and recycling of wastes;
- ~~///~~ Support cost-effective solid waste collection, transport, treatment and disposal systems;
- ~~///~~ Minimize adverse environmental impacts related to solid waste collection, transport, treatment and disposal systems; and
- ~~///~~ Generate revenues to cover costs.

There is a strong relationship between economic instruments and the polluter-pays principle. That principle involves allocating costs of waste management services, resource consumption, and pollution control to consumers and producers. Inherent in this principle, the polluter bears all internal and external environmental costs, with the goal that all subsidies for resource use, production and waste management services are eliminated.

The 1992 Rio Declaration on Environment and Development endorsed the use of economic instruments as one means of obtaining sustainable environmental improvement. The emphasis in this endorsement is on the word “sustainable”. It speaks to a future world wherein there is a continuous effort to balance economic needs with environmental needs. In every country the conditions affecting the choices will be different. Each country will need to choose those economic instruments that have potential for their own situation.

Through a review of various instruments that exist throughout the world, this paper intends to encourage the gradual implementation of economic instruments in the solid waste sector. For each country’s understanding of economic instruments to grow, implementation of new instruments should include performance monitoring of costs and environmental changes. In time, the most cost-effective instruments will become evident and widespread.

³ Economic instruments are also referred to as market-based instruments.



Regulations mandate a minimum standard that regulators believe the majority could achieve if required to do so. Regulations also include penalties and fines as disincentives against noncompliance, and thus also motivate change by creating economic pressures. Economic instruments solely rely on market mechanisms and public influence to motivate change, and commonly complement regulatory controls requiring change. Sometimes these complementary economic instruments encourage compliance with the regulations, particularly in countries where enforcement and penalties associated with regulations do not provide adequate disincentive.

There is always a higher level of environmental performance that some polluters could further achieve, but that the law cannot readily require. To get polluters to go beyond regulatory requirements involves incentives. And thus, this paper is about economic instruments that encourage people to extend their actions beyond the minimum standards required by law. It is about instruments that lead to “super-performance”, as well as just “compliance”. This paper is also about optimizing cost-effectiveness. It is about economic instruments that enable improvements to be made where the costs are lowest, recognizing that there is a global environment and that an action in one place will affect environmental quality elsewhere.

While many economic instruments are specifically focused on the polluter-pays principle and some generate revenues for environmental improvements, it is notable that most command-and-control regulations also cause the polluter to pay (e.g., they pay investment and operating expenses to meet standards) and command-and-control approaches typically generate revenues through fines.

Are Economic Instruments applicable to the solid waste sector? The purpose of this paper is to stimulate dialogue and ideas on economic instruments for the solid waste sector. The following paragraphs briefly provide some background on solid waste management.

Solid waste quantities and related environmental problems are growing quickly. Solid waste generation is a function of private consumption expenditure, and thus it is correlated to gross domestic production, population growth, and increase in income. In high-income countries, private consumption expenditure generally falls between 50% -70% of gross domestic product and it has grown 20% -50% over the last decade in most of these countries. [3] High-income countries produce about 3 times more general municipal waste per person than developing countries, and significantly higher quantities of hazardous wastes. [29] As more countries develop economically, the solid waste burden on the planet’s environment will significantly increase, affecting locally and globally the water and air quality. Solid waste collection is labor intensive and costly. The following Table 1 provides a perspective on municipal waste generation as it relates to income levels and urbanization.



**Table 1
GLOBAL PERSPECTIVE ON
SOLID WASTE QUANTITIES**

	LOW INCOME COUNTRY	MIDDLE INCOME COUNTRY	HIGH INCOME COUNTRY
MIXED URBAN WASTE - LARGE CITY (kg/capita/day)	0.50 to 0.75	0.55 to 1.1	0.75 to 2.2
MIXED URBAN WASTE – MEDIUM CITY (kg/capita/day)	0.35 to 0.65	0.45 to 0.75	0.65 to 1.5
RESIDENTIAL WASTE ONLY (kg/capita/day)	0.25 to 0.45	0.35 to 0.65	0.55 to 1.0

Notes:

1. Country categorization by income is based on 1992 GNP data from the 1994 World Development Report published by the World Bank. Waste data based on a wet, "as received", condition (i.e., not oven dried).
2. For purposes of this table, a medium city has 100 000 to 500 000 residents, and a large city has above 500 000 residents.
3. Urban waste includes residential, commercial, industrial and institutional waste, as well as street sweepings and yard waste. Construction/demolition debris is not included.
4. Recycling rates can reduce by as much as 50% the amount of waste requiring disposal. In the USA in 1995, recycling recovered 27% of all wastes generated, with paper recycling reaching 41% and yard waste composting reaching 38%.

Source: Sandra Cointreau

Solid waste management can amount to a significant expense for developing countries. Many cities in developing countries are spending from 20% to 40% of their municipal budgets on a combination of street sweeping, solid waste collection and disposal. The following Table 2 provides a perspective on how the costs are allocated in countries of various income levels.

Sanitary landfill is the disposal method of choice, because it is usually the lowest cost of the environmentally acceptable solutions. Sanitary landfill costs roughly 3-8 times more than open dumping with some grading to maintain truck access to the working face. Incineration, a capital and energy intensive option is 5-10 times more costly than sanitary landfill for developing countries, and composting is 2-3 times more costly. Incineration and composting, like sanitary landfill, should be designed to comparable environmentally acceptable standards. Because they are substantially more costly than sanitary landfill, they are typically only considered when appropriate landfill is unavailable within a reasonable direct haul distance. Additional transfer system costs for reaching more remote sites may offset some of the savings of choosing sanitary landfill. Also, sales from recovered energy or compos could cover the cost differential.



**Table 2
GLOBAL PERSPECTIVE ON COSTS FOR PROPER
SOLID WASTE MANAGEMENT COSTS VERSUS INCOME**

	LOW INCOME COUNTRY	MIDDLE INCOME COUNTRY	HIGH INCOME COUNTRY
Average WASTE GENERATION	0.2 t/capita/y	0.3 t/capita/y	0.6 t/capita/y
Average INCOME FROM GNP	370 \$/capita/y	2,400 \$/capita/y	22,000 \$/capita/y
Collection Cost	10-30 \$/t.	30-70 \$/m.	70-120 \$/t.
Transfer Cost	3-8 \$/t.	5-15 \$/t.	15-20 \$/t.
Sanitary Landfill Cost	3-10 \$/t.	8-15 \$/t.	15-50 \$/t.
TOTAL COST WITHOUT TRANSFER	13-40 \$/m.t.	38-85 \$/t.	90-170 \$/t.
TOTAL COST WITH TRANSFER	16-48 \$/t.	43-100 \$/t.	105-190 \$/t.
Total Cost per Capita	3-10 \$/capita/y	12-30 \$/capita/y	60-114 \$/capita/y
COST AS % OF INCOME	0.7-2.6%	0.5-1.3%	0.2-0.5%

Table Notes:

1. Income based on 1992 Gross National Product data from the World Development Report 1994 published by the World Bank.
2. Costs are for owning, operation, maintenance, and debt service in 1995, assuming no equipment provision through grants. Appropriate (affordable) best practical standards of service and environmental protection for the skill and income level of the country are assumed.
3. If sanitary landfill can be located with an economic haul distance that allows direct haul in collection vehicles, the cost of transfer can be avoided. An economic haul time for a small truck carrying 2 to 6 tonnes commonly is within 30 minutes one-way from the collection area to the unloading point. Depending on traffic conditions, 30 minutes one-way would be 15 to 30 kilometers one-way. Larger trucks can readily haul for 30 to 50 kilometers one-way.
4. \$/t means US Dollars per metric tonne, and \$/capita/y means US Dollars per capita per year.

Source: Sandra Cointreau

Collection costs generally amount to 70-80% of the total costs for competent solid waste management. Since solid waste collection requires motorized vehicles, rather than a fixed network of pipes and pumps, its energy requirements for fueling collection vehicles and the resulting air emissions from vehicles are significant. Waste minimization efforts are critically important to reduce the total quantity of waste requiring collection. Economic instruments that encourage people to generate less waste or somehow manage or reuse their own waste at the source are necessary.

Because solid waste is largely composed of organic matter, any method of waste disposal contributes to green house gases. Land disposal remains the predominant means of disposal throughout the world, with sanitary landfill standards applied in most high-income countries and open dumping the norm in lower income countries. Open dumps contribute carbon dioxide gas as air pollution, and can have significant particulate emissions when openly burning. The anaerobic biodegradation mechanisms prevalent in sanitary landfill generate methane, a particularly potent green house gas compared to carbon dioxide. While composting is environmentally friendlier, it does produce carbon dioxide. Incineration produces carbon dioxide, as well as a wide range of volatilized metals and complex organic gases, requiring extensive and sophisticated air pollution control systems, which



renders the process economic infeasible for developing countries. In fact, few high-income countries are implementing new incineration systems due to costs, as well as public opposition to the gases that disperse over a very wide area due to the high stacks required.

All methods of waste disposal result in some contaminated drainage and surface runoff that requires treatment. However, the land disposal systems could potentially present the greatest risk to groundwater and surface water, and thus require special systems to contain and treat leachate and all drainage. While waste disposal is not the major cost element within an overall solid waste system, environmental impacts associated with disposal can be most serious. For that reason, waste recycling and resource recovery need to be given priority for their ability to divert waste from disposal. Also, changing the economics of disposal, e.g., by imposing high disposal tipping fees, can reduce the demand for disposal. [33]

Command and Control Approaches -- Are they needed? The traditional way of managing solid waste involves laws and regulations that:

- ❧ oblige waste generators to safely contain their wastes and discharge them at a scheduled time and in a prescribed manner for collection;
- ❧ oblige waste collectors to use suitable equipment and methods for collecting the waste in a safe and efficient manner; and
- ❧ oblige local governments to provide environmentally acceptable sites and methods for waste disposal.

Law defines the standards and norms for each step in the process from waste generation to ultimate disposal. The requirements in each country are determined by the technical means available, local skills to implement the techniques, and local ability and willingness to pay for a prescribed level of environmentally safe waste management. This legal framework for managing solid waste is considered the command and control approach. Some of the typical elements included in command and control approaches are:

- ❧ waste storage container design standards;
- ❧ waste source segregation requirements;
- ❧ waste collection frequency and method requirements;
- ❧ facility siting criteria and public participation procedures;
- ❧ air, water, and noise emissions criteria;
- ❧ facility building codes and design standards;
- ❧ equipment design standards;
- ❧ pollution control design standards;
- ❧ operating standards;
- ❧ resource recovery by-product quality standards; and
- ❧ performance monitoring requirements.

Such standards and criteria are determined based on what is cost-effective (i.e., affordable and appropriate) in each country for the majority of waste generators. For each country, developing the command and control regulatory framework involves studying various solid waste management technologies, assessing their pros and cons, determining their costs, and making a decision on what technologies and standards of performance are locally practical and affordable. In command-and-



control regulation, motivation for compliance is designed to come from the desire to avoid penalty, whether financial or by exposure for non-compliance.

When waste generators and various waste handlers do not comply with the existing legal and regulatory framework, there are fines and penalties to serve as disincentives. Even the most appropriate and reasonable of regulatory standards may not be met if vigilance and enforcement of compliance are inadequate. Excuses abound for noncompliance, especially in places where both the waste generators and law enforcement agents are struggling with limited finances. Each country has its own constraints to regulatory control, and thus its own special needs for where economic instruments might bridge a gap. In developing countries, including many in Latin America, there are problems with the overall enforcement and penalty systems. These problems generally include:

- ~~///~~ inadequate detail in the law regarding what is acceptable versus unacceptable behavior;
- ~~///~~ lack of inspection staff and lack of transport for them to make their rounds;
- ~~///~~ inadequate empowerment of inspectors to follow through on ticketing when offenses are identified;
- ~~///~~ political intervention after ticketing occurs;
- ~~///~~ disinterest in the court system for these minor offences;
- ~~///~~ inadequate police coverage to enable arrests and follow-through of arrests in the court system;
- ~~///~~ lack of a court for minor offenses (such as a municipal court or a sanitation magistrate); and
- ~~///~~ fines and penalties that are too small to be significantly deterring.

Under the command and control approach, all parties are meant to be treated equally and expected to perform equally. Yet, some parties could do more, if encouraged through incentives and disincentives imposed beyond the regulatory requirements. Some economic instruments improve performance in areas not covered by the command and control systems. Other economic instruments are meant to encourage performance beyond what is required. Also, in a climate where performance monitoring and enforcement are inadequate, economic instruments may encourage compliance with the regulatory framework.

Economic instruments are complementary to traditional command-and-control approaches. In some cases an economic instrument requires that there be a foundation of command-and-control regulations. For example, under the concept of tradable emissions, dischargers have a specified emission limit and trade is allowed if their emissions are below that limit. Thus a firm can sell or trade the difference between its actual discharge and its allowable discharge. In using such an economic instrument, the regulatory standard needs to be precise and the program of monitoring compliance needs to be rigorous, implying that success in the economic instrument is dependent on successfully implementing regulatory controls.

Some desired change is easier to implement through economic instruments, and other desired change is easier to implement through command-and-control regulations. It is not an either-or situation. For each country, the harmonious balance of regulatory controls and economic instruments will depend on local conditions and preferences. In high-income countries with well-staffed and well-equipped regulatory agencies, as well as strong judicial response systems, specific regulatory standards may be readily implemented on an equitable basis. Thus, economic instruments may be designed to encourage super-performance. However, in many developing countries the inspection and enforcement resources are limited and political influences may lead to inequitable compliance



requirements. In such cases, economic instruments may be designed to address achieving only baseline best-practicable standards of performance.... rather than super-performance

Some potential control approaches can be also viewed as economic instruments, as their main purpose is to create a motivation for producers and consumers to change. For example, when governments ban specific constituents and products (such as mercury in batteries and thin filmed plastic shopping bags), these bans directly affect production and consumption patterns. In such cases, where the distinction between control and economic instrument is not very clear, this paper covers the topic as an instrument, electing to be inclusive rather than risking exclusion of a potentially important economic instrument.

Section 2. Types of Economic Instruments

What types of Economic Instruments exist for use in the solid waste sector? Traditionally, economic instruments have been viewed narrowly as those incentives or disincentives that influence waste generators, both consumers and producers, to minimize, recycle or recover waste.

There are economic instruments that can also influence service providers, as well as waste generators. For purposes of this paper, these instruments also are being discussed. These instruments, while very important for the solid waste sector, may not be generally applicable to other sectors in the overall field of environmental policy, such as for the field of wastewater management, as discussed further in the next paragraph.

As with wastewater generators, solid waste generators are able to have a significant impact on pollution loadings if they can be motivated to decrease their waste quantities, minimize and segregate hazardous wastes, recycle nonhazardous wastes, and conduct on-site treatment and resource recovery. On the other hand, solid waste service providers are unique from wastewater service providers, as most solid waste is managed is through labor-intensive and vehicle-intensive techniques, rather than fixed pipe and pump networks. Because networks are not required, those providing solid waste services include many thousands of private operators. Some are large companies with hundreds of vehicles; most are individual entrepreneurs with only a few carts or trucks. Motivators for solid waste service improvements thus are sometimes different than motivators for wastewater service organizations, involving a somewhat different array of economic instruments. Because solid waste services involve so many workers, often operating in the dark during late night or early hours of the morning, and so many vehicles, all on different routes, the service is hard to monitor. As a result, control approaches that relate to the service providers might be more difficult to enforce.

There are many individual economic instruments and there is need to categorize them for ease of policy making. No single literature reference was found that dealt with the overall subject of economic instruments for the solid waste sector. Most references dealt either with the broad subject of economic instruments for environmental policy making, or specifically discussed a single instrument in its application to the solid waste sector.

The overview literature does not consistently categorize the various economic instruments applicable to environmental policy making. The categories most commonly listed are noted on the following



Table. While the literature shows general agreement on key subcategories of economic instruments (e.g., charges, tradable permits, deposit-refunds), it is noteworthy that the references do not necessarily use the same categories to group these subcategories. For consistency, to the extent possible given that the literature base has no single agreed categorization system, categories that most agree with those in the Table below are recommended for use in the solid waste sector.

Table 3 Comparison of References Categorizing Economic Instruments			
World Bank [40]	Nordic Working Group on Environmental Economics [34]	Environment Canada [47]	United Nations Environment Programme [46]
<ul style="list-style-type: none"> /// Fees, charges, taxes /// Market creation (includes property rights, deposit systems, tradable permits) /// Performance rating /// Liability legislation (includes performance bonds) /// Final demand intervention (includes eco-labeling, education, disclosure laws, blacklists/ polluter ratings) 	<ul style="list-style-type: none"> /// Charges, taxes, compensation /// Tradable permits, bubbling, quotas /// Investment support, subsidies /// Deposit-refund systems /// Liability schemes 	<ul style="list-style-type: none"> /// Charges, fees /// Tradable permits /// Deposit-refund systems 	<ul style="list-style-type: none"> /// Redefining property rights /// Market creation (includes tradable permits) /// Charge and fee systems /// Fiscal instruments (includes taxes) /// Deposit systems (includes performance bonds) /// Financial instruments (includes subsidies, grants, soft loans, funds) /// Liability (includes insurance)

Three categories of instruments are used, for purposes of defining economic instruments for the solid waste sector in this paper, and subdivided into subcategories, namely:

- ~~///~~ Revenue generating instruments:
 - Charges,
 - Taxes,
 - Subsidy reductions.
- ~~///~~ Revenue providing instruments:
 - Subsidies,
 - Grants,
 - Tax credits,
 - Host community incentives,
 - Development rights and property rights,
 - Funds.



✍ Non-revenue instruments:

- Product and production change incentives,
- Trade-off arrangements,
- Deposit-refund systems,
- Product stewardship,
- Take-back systems,
- Performance disclosure,
- Liability law,
- Performance bonds,
- Procurement policies.

Appendix A provides a table listing economic instruments applicable to the solid waste sector. The table of instruments further lists the various countries where instruments in each subcategory have been implemented. The reference for each case example is provided at the end of the table.

The instruments are not ranked. They all have value. No one instrument is consistently more attractive than the others. Nevertheless, lessons learned that provide some perspective of their relative pros and cons are discussed from the literature on case examples. Also, in conclusion, some will be recommended as immediately appropriate for use in developing countries such as those in Latin America.

Selection of which instruments to implement will depend on the country's solid waste problems and its baseline conditions affecting implementation. Some instruments require more skills to implement than others. Some instruments require stronger court systems. Some require competitive private sector involvement by companies able to obtain finance and legal advice, as well as operate in a level playing field. Some instruments require cost recovery and penalty payment systems that are free of leakage and political interference. The factors affecting the success potential of each instrument are too lengthy to list in this document. In those few instances where there have been problems created by the implementation of any given instrument, those problems are discussed below. For such instruments, implementation would simply need to make adjustments that avoid these problems.

Revenue Generating Instruments. Revenue generating instruments include waste generation charges, waste collection charges, disposal charges, and pollution charges. Also included are those instruments that enable charges to be reduced as incentives for recycling or other desired behavior. Special taxes are instruments that influence disposal choices and deter consumers from products that demand virgin materials, consume nonrenewable energy, or create unrecyclable waste. Some revenues go to earmarked funds designed to improve the environment, increase recycling, and cover the costs of remediating contaminated solid waste sites. As noted above, revenue generating instruments include charges, taxes and subsidy reductions.



Examples of Revenue Generating Instruments:

- **Pollution charges**, based on pollutant loadings
- **Waste generation charges**, based on waste quantities and degree of waste hazard
- **Waste user charges**, based on collection and disposal services received
- **Waste tipping charges**, to unload at transfer or disposal facilities
- **Product charges**, fees to handle disposal of problem-products, such as batteries, tires, refrigerators
- **Disposal taxes**, added to disposal charges to influence disposal choices
- **Pollution taxes**, added to user charges to influence choices of manufacturing feedstock, fuels, etc. for pollution reduction
- **Eco-taxes**, added to nonrenewable energy production or fuels to influence energy demand and fuel choices
- **Presumptive taxes**, based on presumed levels of pollution
- **Renewable resource taxes**, on virgin materials to influence demand for their use and motivate recycling of secondary materials
- **Subsidy reductions**, removal of subsidies that encourage use of virgin and nonrenewable resources

Box 1

The revenues from the various economic instruments discussed below do more than provide the financial support for solid waste improvements and influence the behavior of waste generators, polluters, and service users. Additionally, a steady stream of revenues influences the interest of the private sector to participate in provision of services and encourages private sector investment.

Charges. Unit labor prices (e.g., salary/month) are relatively low in developing countries, so there is an erroneous tendency to think that solid waste service costs are also low. While unit labor prices of solid waste service are low in poor countries, unit capital costs for trucks, unit prices for spare parts, and fuel prices are all relatively expensive. The relatively high prices of these items in developing countries reflect the fact that the items have a high foreign exchange component. In addition, customs duties commonly further increase these prices by as much as 100%. Overall labor costs tend to be high because of unproductive labor practices, redundant labor, and unrationalized service routes.

Based on the above, poorer countries pay relatively more for solid waste service than high-income countries. Sadly, the effort to collect waste in poor countries is also greater than it is in high-income countries. Residents tend not to fully cooperate with the service and do not always put their waste curbside in a covered container. Instead, they use cartons and baskets and sometimes just make a small pile, which means considerably more effort for collectors. Furthermore, because of the dense development and also the hot climates, daily collection is commonly necessary, as opposed to weekly collection found more typically in high-income countries. The result is that a family in a poor country may have to spend a significantly greater portion of their income to fully cover solid waste services than a family in a high-income country might spend.

In high-income countries that have competent property appraisal and taxation systems, property taxes are a reasonable and efficient ways to generate the revenues necessary to cover solid waste



management costs, particularly since solid waste services are considered public goods. [29] However, where the property tax collection is not comprehensive and well functioning, governments are covering solid waste service costs by adding a percentage increase to water or electricity service bills, while others separately collect a specific user charges door-to-door.

If the property tax is used to cover solid waste service costs, the amount allocated to the solid waste sector may be shown as a percentage of the total costs, thus making the service delivery entity accountable to consumers for cost. With most developing countries, the full cost of solid waste management is not readily apparent. Solid waste costs are difficult to determine, because some costs are not shown in the budget, such as depreciation of facilities and vehicles, pensions, administrative overheads, and debt service. Also, the costs are hidden in a number of places, rather than all allocated to one cost center, such as a solid waste department. For example, it is common for a developing country city to have some part of the solid waste budget distributed to districts that provide street sweeping and drain cleaning services, while another part goes to the central workshop that manages the solid waste collection fleet, another part goes to the health department to pay inspectors, and another part goes to the solid waste department that manages the drivers and waste collectors, and possibly some other services such as cemetery maintenance, septic tank and cesspit emptying, and zoo management. To further complicate this scenario, there is typically a veterinary department that cleans the markets and slaughterhouses, and there may a parks department that separately cleans all public open spaces.

Direct user charges for waste collection or disposal are easy to implement, providing there is political will. Such charges are useful for generating the necessary revenues to cover costs; and have been successfully applied to substantially recover costs for solid waste collection (e.g., in Tema, Ghana; Surabaya, Indonesia; and Tashkent, Uzbekistan). However, far too commonly, the charges are set at very low levels and revenues generated are not earmarked to support the solid waste sector. Unless the solid waste service agency is somewhat commercialized, allowed to have an earmarked segregated account and able to increase charges as needed to recover costs, user charges will not necessarily lead to improvement in solid waste management. [33]

Many high-income countries use the property tax to generate the revenues to cover solid waste costs. In the USA, the choice is left to municipalities, with most charging a fixed rate per household through the property tax, some charging a separate flat rate based on property size, and some charging a variable rate per unit of waste. Santiago, Chile has a flat tax added to utility or property taxes, and has been able to cover nearly all costs. Columbia and Ecuador allow a flat tax for solid waste added to electricity bills enabling full cost recovery. [40, 33] Most Latin American cities have had difficulty in implementing user charges that adequately keep pace with inflation to cover costs, with the result of cost recovery ranging from 10% to 70%. [27]

Conceptually, and in isolated examples, variable user charges have been shown to be useful tools to influence the quantity of waste. [28, 27] However, for most high-income countries, the cost of solid waste service is considered too small (relative to income) to influence behavior. In most high-income countries, the cost for solid waste service is under 0.5% of average income, while it might be as much as 2.5% of average income in poor countries. Nevertheless, Switzerland has adopted the nationwide policy of variable rate charges for waste collection, while most other countries in Europe (including France, Netherlands, Belgium, and Luxembourg) leave the choice to each municipality.[15] Like



Switzerland, South Korea has adopted a nationwide policy of variable rate charges for waste collection. [22]

For variable rates to work, the cost of solid waste service needs to be considered by the user as significant. For more wealthy households, the variance in charges may be insignificant relative to household income. For poorer households, the dilemma is to price the rates so that they lead to cost recovery and discourage waste generation, but do not lead to increased illegal dumping. [38, 44]

An interesting variant on user charges is a presumptive charge. Such a charge is based on a specific quantity of waste, requirement for service, or level of pollution. A waste generator must pay this presumed charge, unless through its own self-monitoring it is able to prove that its environmental burden is lower than presumed and thus the charge should be lowered. [40]

Data from USA municipalities using variant charges indicates that the amount of waste discharged for collection is, in some cases, reduced and the amount of waste recycled is increased. As with water user charges, which requires water meters, solid waste variant charges also have special requirements. Some cities use containers of fixed size and design and base their charges on the number of containers put out for emptying. Other cities use special bags of a given size and sell those bags at prices that cover service costs. Other cities have weighing scales on the truck and computerized systems that weigh and record the weights for automated customer billing.

A few examples of variant user charges are noted below:

- ✍ A 1992 study of ten USA municipalities that used 32-gallon labeled bags sold at \$1.50 each for cost recovery of curbside collection. The variant charge by volume led households to reduce their waste by an average 18%. When curbside collection programs for recyclables were added, average waste reduction increased to over 30%. [27]
- ✍ A 1992 study in Charlottesville, Virginia used a 32-gallon bag sold at \$0.80 for curbside collection. The study found that the weight of waste discharged by households was reduced by 14%, while stomping waste into the bags reduced the volume by 37%. The weight of recycling was increased by 16%, but illegal dumping may have accounted for 28% to 43% of the weight reduction in waste placed for collection. It is noteworthy that Charlottesville is a university town with a high level of well-educated residents. [38]
- ✍ Sidney Township in Ontario, Canada distributed tags for attachment to bags for collection. Initial tags were free and subsequent tags were sold for \$1.50 per tag. Within the first year, the Township experienced a 42% reduction in the weight of waste taken to landfill, and a 44% increase in the amount of waste recycled. Waste composition studies showed total capture of recyclables of 83%. [39, 22]
- ✍ The Victoria Capital Regional District of British Columbia, Canada raised landfill tipping fees seven-fold over the 1988-1993 period for the expressed purpose of discouraging landfill. [17]

The above examples show that charges generate revenue to cover costs and also to motivate private sector investment. Conceptually the above examples show that charges, if established on a variable rate basis, can influence consumer and producer behavior to reduce and recycle wastes. However, the added complexity and cost of administering a variable rate charge system needs to be weighed against



the potential benefit, especially given the relatively low waste generation rate and high recycling rate already found in most developing countries.

Taxes. Besides charges, revenue generating instruments include special green taxes (also called eco-taxes) designed to influence consumption, waste generation, waste reuse, and pollution. Some eco-taxes boost the cost of a natural resource, such as an oil or forest resource, resulting in less waste and more recycling of that natural resource. As one example, Colombia, Brazil and Venezuela have implemented a tax on wood consumption. [14] While this wood tax is meant to preserve forests, because it is charged on all wood harvesting except when there is equivalent reforestation, it also has the effect of driving up the cost of wood and thus encouraging recycling of wood-related products such as paper. Some eco-taxes are on products or packaging, for purposes of encouraging recycling. Sekondi-Takoradi, Ghana created a business license tax earmarked for safe disposal. [33] Brazil adjusted the revenue distribution criteria of their value-added tax so that environmental improvement could be financed. [40]

When the consumer pays eco-taxes on products, these taxes are expected to motivate consumers to reduce consumption, and consumption is the main factor driving waste generation. When industry pays eco-taxes, the result will largely be on industries fuel choices and emission levels. Consumer-based taxes appear to be more common than industry taxes. In Hungary, a packaging tax was implemented in 1996, after 3 years of negotiation between industry, trade organizations and environmentalists. The tax is levied at either the point of sale or import. Tax revenues are generally earmarked for an extra-budgetary environmental fund related to packaging. For products with eco-labels that indicate recycling or product take-back, the tax is discounted [44]. Latvia has implemented eco-taxes on batteries, disposable containers, and tires. [49] Most European countries have eco-taxes on various packaging materials and wastes, with eco-taxes in some countries generating significant portions of total country tax revenues. [41]

Detailed data for Organization for Economic Co-operation and Development (OECD) countries is arrayed in one study, showing that green taxes averaged 2% of gross domestic product and 6% of total tax revenues in 1998. On a per capita basis, they were as high as \$1,700 per year in one country (Denmark), but typically from \$200-\$800 per capita in most OECD countries. [3] Denmark was one of the first European countries to create eco-taxes on non-beverage packaging. [2] By 1999, Denmark also had eco-taxes on a wide range of environmentally significant items, including pesticides, fertilizers, tires, waste oils, waste lubricants, and refrigerants. [44]

In both Estonia and Hungary, companies are exempted from various kinds of packaging eco-taxes if they are able to prove that the packaging is collected, reused and recycled, either through take-back or through a licensed recycling program (like Germany's Green Dot). [2]

Generally in Europe, the eco-taxes on non-beverage packaging are weight-based, and companies can reduce their tax costs if they lightweight their packaging. Also, eco-taxes on packaging are adjusted for whether the packaging is made from recycled material. For example, non-beverage packaging made from recycled paper or cardboard is taxed at a lower rate. [2]

The European Organization for Packaging and Environment (EUROPEN) has taken the position that "eco-taxes on recoverable packaging and the exemption criteria associated with them constitute an



unjustified trade barrier”, that “market share quotas for refillable beverage containers serve as quantitative restrictions on imports”, and “although eco-taxes and exemption criteria apply equally to imported and home-produced goods, the effect is discriminatory since any refill obligation will be easier for local manufacturers to meet”. In the European Union there has been considerable debate over whether the eco-taxes costs required in some countries (particularly Denmark and Netherlands) are cost-effective. One study reports that the eco-taxes on packaging are far higher in some countries than the Green Dot fees charged in other countries. [2]

Border tax adjustments may address trading competitiveness issues. As an example, the USA levies taxes on ozone depleting chemicals, based on the type of chemical and its weight in the product. The tax is levied on USA manufacturers and importers. Border tax adjustments are given when products containing these chemicals are exported.[3] Similarly, South Korea has eco-taxes on 15 types of products that create waste management problems (e.g., batteries, florescent lamps, disposable diapers, pesticides); but does allow exemption when such products are made for export. [22]

One of the greatest solid waste problems is created by the extensive use of disposable plastic bags. These bags are not recyclable and they tend to become readily windblown at land disposal sites and during waste transport. The problem is particularly acute in developing countries, where there is open dumping and these wastes are not covered to minimize dispersion by wind. A devastating problem seen in many developing countries (e.g., Morocco, Mauritius, India) is that cows grazing on nearby lands are prone to choke on these windblown bags, with significant mortalities resulting. [33] Italians found that thin-film plastic bags were an eyesore on their resort beaches and also led to the choking deaths of dolphins. Italy introduced a tax on plastic bags in 1989 and gradually increased the tax until it became about five times greater than the manufacturing cost of the bag. In three years the revenue from the bag tax generated the equivalent of about \$US 150 million. [22] Similarly, the Irish government placed a heavy tax on them in 2002, which resulted in a sharp 90% decrease in consumer demand. [12]

Landfill is usually the lowest cost method of waste disposal, and may be half the cost of composting and 10%-20% of the cost of waste-to-energy. [29] Therefore, special taxes or elevated tipping fees for landfill disposal are a means of directing waste toward recovery. France, Italy, United Kingdom and the Netherlands have a landfill tax; and the Netherlands further has a ban on the landfill of used packaging, with certain exemptions. [2]

The landfill tax in France has, since 1993, been earmarked for a national fund to promote innovative means of waste treatment, finance the upgrading of landfills, and remediate contaminated sites. [26] Similarly, in 2002, the USA State of Pennsylvania passed a new law to allow a landfill tax to be charged on most incoming wastes, excluding those used for alternative daily cover. Pennsylvania’s landfill tax is meant to encourage increased waste minimization, recycling and recovery. It is earmarked for an environmental fund, which had already been created for an earlier landfill tax that would specifically support watershed protection. A separate tax is charged on all wastes for purposes of financing a recycling fund. [31]

For landfill tipping fees and landfill taxes to motivate reduced waste disposal, the vigilance and enforcement system regarding illegal dumping needs to be particularly competent. For about a decade, differences in landfill tipping fees led to substantial transport of waste from state to state in



the USA and even to export to Canada. Standards and costs are now more harmonized. The USA Supreme Court decided in 1992 that the state of Alabama was in violation of commerce laws when it implemented higher tipping fees for wastes being imported from outside the state. [34] Strong enforcement of truck loading and pollution control compliance in some states may affect transportation to or through those jurisdictions. However, in general in the USA, there is unhindered transport of wastes between states to the lowest priced landfill within a viable truck or rail transport distance, indicating that pollution control is being conducted where it is most cost-effective. [33]

Disposal costs vary widely from continent to continent, and even among countries within a given continent. In northern European countries like Denmark, where most fuel is imported, land costs are very high, groundwater aquifers are high and costly to protect during land disposal, and dry combustibles in waste are required to be source segregated, costs for waste-to-energy may be competitive with those of sanitary landfill. [41] In countries like the USA or Canada, where some fuel is locally produced, land costs are reasonable, and wastes are not segregated to get a dry combustible fraction, the cost of burning waste could be 3 to 8 times higher than sanitary landfill.

In setting disposal user charges (i.e., landfill tipping fees), the question arises whether disposal user charges should be based solely on costs, or whether an eco-tax or surcharge should be added to drive disposal decisions to one technology over another. In 1999, the United Kingdom announced several tax reforms to help protect the environment, including an increase in landfill taxes to persuade local governments to pursue alternatives to landfill. [6] Landfill tipping fees in the USA are not entirely based on cost. Rather, landfill fees are driven by market demand and landfill availability, because most USA landfills are privately owned and operated. Each landfill owner bases price on their own needs to either increase cash flow in any given year or extend landfill capacity. [33]

Most eco-taxes in Europe embrace the view that the level of the tax should cover the full costs of environmental externalities, so that the polluter pays for all environmental damages and resource depletion. A study group on carbon taxes in Japan, formed in 1998, did not agree with the European belief of fully internalizing external costs. That study found that a high carbon tax would lower energy consumption, but could also adversely affect Japan's gross domestic production. Therefore, the study recommended that a low carbon tax rate was preferable for Japan. The study surmised that the carbon tax would involve everyone in paying for environmental improvement and heighten awareness about energy conservation, while emissions trading would be a better cornerstone of Japan's carbon dioxide emissions reduction program. [44]

In a number of European countries, not all of the money generated through economic instruments is needed for purposes of environmental improvement. Eco-taxes increasingly are being set at high levels to discourage waste generation and pollution; and surplus revenues are being applied to reduce other taxes. For example, in the United Kingdom, the surplus income from waste and energy taxes is applied to reduction of social security contributions that employers pay; France is targeting the surplus income from pollution taxes to support introduction of a 35-hour work week; Sweden is earmarking the revenues from fuel and energy production toward training and other activities to support employment creation; Italy's carbon dioxide tax revenue is allocated as 60% for social security, 31% for compensation measures and 9% for energy saving and environmental improvement. [49]



There is a considerable debate in Europe whether the shifting of the tax burden from labor (i.e., income tax) to pollution (i.e., eco-tax) encourages more work effort. [3] One study reports the estimated job-creation impacts from environmental tax shifting in Australia, United Kingdom, Germany, and France. [24] This “double dividend” of economic and environmental improvement through eco-taxes needs careful assessment in each country. While it may be important in European countries known for their very high-income taxes, it possibly has little relevance in North America or most developing countries, where income taxes are more modest.

At times, economic instruments that are developed for other sectors, such as instruments that reduce air pollution, have an impact on solid waste management. The 1998 European Union Ozone Depleting Substances Regulation was designed to reduce the impact on the ozone layer through the escape of ozone depleting substances, such as those found in refrigerant fluids and foams. The United Kingdom already had a voluntary producer take-back system to deal with refrigerant fluids, but not with the foams. Given the new requirement to also deal with the foams, a number of producers withdrew support for the take-back system. Local authorities in the United Kingdom were not prepared to fully address disposal and recovery requirements by the regulation deadlines. The result led to a significant storage problem, where refrigerators and freezers had to be stored until new processing facilities could be built or otherwise be exported to facilities in other European countries. The estimated cost for compliance in the 2002-3 fiscal year was \$140 million. The cost is in the solid waste sector, even though the economic instrument was designed to improve air quality. [37]

Subsidy Reductions. There are numerous hidden subsidies in the arena of solid waste services, wherein central governments provide municipalities with subsidized loans, seconded staff, exemptions from customs duties on equipment, and land for disposal sites. One way to stimulate private sector participation in service delivery is to put local government solid waste departments on the same level as the private sector by eliminating subsidies and encouraging them to compete through managed competition. This has been effectively conducted in a number of cities in the USA, including Phoenix and Glendale in Arizona, and resulted in significant cost savings. [33]

Most countries in the OECD have reduced or eliminated subsidies for energy production. For example, the United Kingdom, Belgium and Portugal removed their subsidies for coal production. [3] Studies in Russia in the mid-1990's showed that reduction of government subsidies on energy would reduce pollution more than introduction of pollutant taxes. [40] It warrants further study whether the same might be true for subsidies of natural materials used as raw materials for manufacturing, such as forest materials. While a subsidy might not be on the raw material specifically, there might be subsidies for transport, and others for land management or land leasing.

Revenue Providing Instruments. Revenue providing instruments stimulate the private sector to improve their environmental performance beyond existing standards. This category of instruments includes those that encourage investment in solid waste services, including investment in new solid waste technologies and new facilities. A key ingredient to motivating more private sector involvement in solid waste management involves increasing transparency and competitiveness in the procurement of solid waste services, as will be discussed below.



Examples of Revenue Providing Instruments:

- **Tax credits and tax relief**, allowances on property taxes, customs duties, or sales taxes to motivate investment in waste management improvements
- **Charge reduction**, based on proof of recycling or reuse in reducing wastes requiring collection or disposal
- **Tax rebates**, for pollution savings or energy efficiencies
- **Environmental improvement funds**, established to support pollution reduction, resource protection, energy efficiency
- **Research grants**, stimulate technology development
- **Carbon sequestration funds**, encourages purchasing lands that rejuvenate the air quality, sometimes as a trade-off by polluters
- **Host community compensation**, host communities given incentives to allow waste transfer or disposal facilities to be built there
- **Development rights**, long term lease of land and development rights are provided to private companies building waste treatment and disposal facilities, or to those remediating and reclaiming old disposal sites

Box 2

Tax Credits. Private service companies make many of the major investments for transfer, treatment and disposal facilities. Because these private companies pay taxes, government can use tax-related instruments (such as tax-exempt debt, tax credits, accelerated depreciation) to encourage investment, as outlined in the examples below

✍ In the USA during the '70s and '80s, in order to reduce dependency on foreign oil, the federal government enacted legislation that allowed governmental entities to issue bonds used to finance public or privately owned waste-to-energy incineration facilities on a tax-exempt basis: interest on the bonds was not taxed, but excluded from taxable income. In addition, private companies that invested in waste-to-energy facilities received energy tax credits - offsets against taxes (not just deductions from income) otherwise payable. Furthermore, they could depreciate their capital investment on an accelerated versus straight-line basis, thereby realizing tax savings earlier and benefiting from the present value of up-front returns. Finally, electric utilities were mandated to purchase power from alternative energy sources like waste-to-energy at their defined "avoided cost": what it would have cost them to produce that power from traditional power plants fueled with non-renewable sources such as coal.

✍ Similarly, the USA federal government provided tax credits for investment in landfill gas generation projects that allowed landfills to install the collection and generation equipment necessary for power production. Utilities are required to purchase electricity from co-generation and small power production facilities using renewable energy sources. The U.S. Congress has been considering extensions of this program with variations. For example, it may require retail suppliers of electricity to secure a specific percentage of their power from renewable energy sources, increasing over a 20-year period. Under a Renewable Energy Production Incentive (REPI) program, state and local governments could receive payment of per kilowatt-hour of electricity generated from a renewable energy resource, without priority of one type of resource (such as wind, solar and geothermal) over others (such as landfill gas). Finally, USA legislation may allow



- state and local governments - which do not pay federal income taxes and therefore cannot themselves benefit from tax credits - to earn tax credits under Section 45 but then trade or sell those credits to the private sector which can use them, thereby realizing income to enhance the economic feasibility and viability of their landfill gas projects. [32]
- ✍ In 2002, Belgium studied reforms for motivating further development of renewable energy sources. Belgium's company tax code of 1992 allows preferential deduction for investments improving energy efficiency and encourages recovery of energy from waste. Further, value added taxes were already set at reduced rates for construction of heating units with energy savings. Their 1999 electricity law allows for special cross-subsidized pricing of green electricity production, including waste-to-energy. The study recommended that additional incentives should address further fiscal and subsidy support. [21]
 - ✍ A law in Thailand reduced import duties for pollution control equipment, including equipment used for solid and hazardous waste disposal, thereby limiting the investment risk for the private sector. [1]
 - ✍ In the UK, legal reform arranged recycling credits to businesses that collect and recycle waste so that municipal waste collection and disposal could be avoided. Credits are calculated as a percentage of the collection and disposal avoidance costs and thus insure some income for recycling businesses, even when the market demand for recyclables is low. [44]
 - ✍ The Netherlands created an Energy Investment Relief Scheme in 1997 that allows businesses who invest in new energy efficient equipment and techniques to offset up to 52% of the investment amount against taxable profit, and investments in energy development from renewable resources such as solid waste also qualify. [23]
 - ✍ Accra, Ghana provided incentives of accelerated depreciation and exemption from customs duties to encourage investment by some private operators that entered the solid waste collection business. [33]
 - ✍ Hyderabad, India financed a new refuse-derived fuel pelletization plant financed through a special technology loan at 6% interest, with a 2-year grace period and a 5-year payback period, made available by the Indian government's Technology Development Board, to support the country's interest in assessing new technologies, particularly those using renewable energy resources. Markets for the pellets were developed by using pollution abatement orders to pressure industries using low-grade coal in their industrial boilers to switch to the cleaner pellets. [33]

Development and property rights. Development and property rights can provide powerful motivation for private sector investment. In 1993, solid waste disposal at Manila's huge open dump, called Smokey Mountain, was stopped due to local and international public pressure. One company was selected to close and reclaim Smokey Mountain, as well as build a modern new solid waste treatment/disposal facility on one portion of the site. The private sector would finance all construction; the government would provide development rights for the reclaimed land, including about 80 acres of newly created adjacent land in Manila Bay. The private sector was allowed to issue a bond for the project, backed by the assets of the joint venture, with cash flow to be raised through land and building sales. The outcome would include housing units and livelihood areas for waste pickers, a new solid waste treatment facility, and development of commercial interest to the private



sector (including light industrial buildings, housing, a private housing area with marina, and harbor development). [33]

Host community compensation. State laws in the USA allow governments to compensate host communities that allow solid waste facilities to be built and operated within their boundaries. Compensations may include direct payment and sharing of landfill revenues, as well as the right to discharge their own waste at the facility at reduced cost. In the Philippines, the metropolitan government has provided host communities with new roads and landfill revenue sharing. [33]

Funds. Within the topic of revenue generating instruments are included the various types of funds that influence environmental improvements. Some funds provide a non-profit opportunity for private corporations and wealthy individuals to contribute toward a specific environmental agenda, such as recycling or carbon sequestering. There are special funds that are initially supported with government or development agency money, but are renewed through repayments and donations. For example, some funds deal with remediating areas that have been contaminated by inadequate waste management, especially where the specific polluter cannot be identified or no longer exists. One notable fund was the USA's Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly referred to as Superfund. It was enacted on December 11, 1980. CERCLA provides the USA's Environmental Protection Agency's (EPA's) Office of Emergency and Remedial Response with the authority to respond to releases or threatened releases of hazardous substances, pollutants, or contaminants that may endanger human health or the environment. The EPA's Superfund website reports that by the year 2000 more than 41,400 listed sites had been assessed and more than 32,300 sites had been remediated sufficiently to become delisted. Settlements with private parties had covered 70% of the remediation requirements, with over \$US 16 billion of negotiated value private corporation repayments to the fund to refund its costs toward remediation.

Non-Revenue Instruments. Non-revenue instruments are essential to solid waste management. A city cannot be clean if its people and establishments do not cooperate with the solid waste services provided. If people litter or put their waste containers at the curb in a disorderly manner or at the wrong time for the scheduled collection, the city will look dirty, regardless of whether the waste collection system is adequate. Simple instruments like neighborhood cleanliness competitions and clean-up campaigns have proven to motivate change in countries as diverse as Indonesia, Ghana, and Nigeria.

Some non-revenue instruments inspire reduced waste generation and increased recycling. These include deposit-refunds, producer take-back systems (also referred to as product stewardship or extended producer responsibility), and eco-labeling. There are a number of instruments that are specifically designed as disincentives against pollution, including liability laws for environmental damages, waste manifest systems, and polluter blacklists.

The solid waste sector relies on the cooperation and motivation of various stakeholders, including consumers, producers and service providers. In developing countries, where government access to capital is limited, every effort to stimulate private sector investment and participation is essential. Thus, procurement policy changes, labor law revisions, and management competition support solid waste service improvements.



Examples of Non-Revenue Instruments:

- **Product life cycle assessment**, predicts overall environmental burden of products and can be used in certification programs
- **Deposit-refund**, deposit paid and refund given upon product return for reuse
- **Take-back systems**, manufacturers take back used products or packaging
- **Tradable permits**, allows trading of emissions among various polluters
- **Bans**, on materials or wastes causing disposal problems, such as thin-filmed plastic bags, mercury batteries
- **Procurement preferences**, evaluation criteria adding points for products with recycled content or reduced resource demand
- **Eco-labeling**, notes product's recyclable content and whether product is recyclable
- **Recycled content requirements**, laws and procurement specifications noting the precise recycled content required
- **Product stewardship**, encourage product designs that are reduce pollution, include the full cost of solid waste recycling and disposal, reduce wastes and encourage recycling
- **Disclosure requirements**, waste generators are required to disclose their pollution
- **Manifest systems**, precise cradle-to-grave tracking of hazardous wastes
- **Blacklists of polluters**, published lists enable consumers to consider whether to buy from polluting companies
- **Liability insurance**, liability assurances by contractors and private operators
- **Bonds and sureties**, guarantees for performance by contractors and private operators
- **Liability legislation**, laws defining environmental restoration settlements
- **Insurance pools**, restructuring of insured parties to enable pollution risks to be covered
- **Liens**, placed on lands where government remediation is required
- **Procurement transparency and competition**, to encourage bidding on a level playing field
- **Managed competition**, enable equitable competition between public and private sector
- **Performance-based management contracting**, oversight contractors commit to overall service improvements
- **Clean City competitions**, reward neighborhoods and cities that have improved cleanliness

Box 3

Product and Production Change Incentives. In 1996, source reduction methods in the USA resulted in an 11% reduction in waste quantities generated. The main methods causing successful waste quantity reduction were: lightweighting (thinner and lighter papers and cardboards), materials replacement (plastic for glass bottles), electronics reuse, composting of yard wastes and kitchen scraps, mulching lawnmowers and wood chippers, and reuse/repair of wooden pallets. Examples of lightweighting initiatives include:

- ☞ Coca-Cola reduced the weight of its soda can by 41%,
- ☞ Proctor & Gamble reduced the weight of its vegetable oil plastic containers by 30%,
- ☞ Federal Express reduced the weight of its envelopes by 40%. [10]

One way to increase investment in recycling is to specify recycled content. Some USA states have done this for a wide range of recyclable materials, as noted in the examples below:

- ☞ California requires 50% recycled content in newsprint, 65% in glass containers, 10% in 1.0 mil plastic bags, 30% in 0.75 mil plastic bags, 25% in durable plastic containers.
- ☞ Connecticut requires 50% recyclable content in newsprint, and 40% in telephone directories, leading to most telephone companies implementing a take-back system.



✍ Oregon requires 50% recyclable content in glass bottles, 25% in newsprint, 25% in durable plastic containers. [43]

In most countries, city, provincial and national governments together comprise the largest consumer. Thus, if they rewrite their procurement specifications to favor products with more recycled content, this can dramatically drive up the market demand for recyclable materials. This method of increasing recycling became the driving force for most USA states, with some examples noted below:

- ✍ Arkansas gives 10% price preference to bidders for recycled paper products and required 60% of paper purchases to be recycled paper.
- ✍ Colorado gives 5% price preference for goods with at least 10% recycled plastic and required 50% of paper purchases to be recycled paper.
- ✍ Indiana gives 15% price preference for products containing at least 50% recycled content by volume.
- ✍ Pennsylvania gives 5% price preference for purchase of recycled products.[43]

Similar to the USA states noted above, New York provided a price preference for recycled products (e.g., 10% on recycled paper). It also extended its revision of procurement specifications into its construction practices. One noted example is its requirement for crushed glass to be included in repaving material by all New York road maintenance contractors. The streets of New York now glisten with the glitter of “glassphalt”. [33]

Banning certain materials or constituents from disposal influences production changes and waste management practices. Because of the waste disposal problems related to batteries containing mercury, a number of states in the USA (including California, Minnesota, New York, Connecticut, Oregon and Vermont) have banned all production of batteries containing mercury [22] A number of products are banned from landfill in the USA. Each state determines which products to ban. Some examples are:

- ✍ North Carolina bans lead-acid batteries, beverage cans, tires, oil, sludge, antifreeze, white goods and yard waste.
- ✍ South Dakota bans lead-acid batteries, motor oil, white goods, rigid plastic containers, glass and metal containers, corrugated boxes, paper packaging, and yard wastes.
- ✍ Oregon bans lead-acid containers, tires, motor oil, white goods, and motor vehicles.
- ✍ Connecticut bans lead-acid batteries, motor oil, scrap metal, corrugated cardboard, newspaper, glass food containers, metal food containers, and white office paper. [43]
- ✍ Twenty-four states in the USA ban yard wastes from being disposed in landfills. [36]

Trade-off Arrangements. When government allows pollution trading or emission offsets, it creates a market for emissions. For example, one company may purchase the emission savings accomplished by another company. Or, within a company, some emission sources are reduced while others are not, so long as the overall pollution bubble for the plant meets an acceptable level. Through pollution trading, market forces would lead the emission savings to be achieved in the location that can do so most cost-effectively.

The concept of tradable permits is not new. The USA developed one of the earliest trading programs in 1983 when it allowed lead emissions to be traded and credits to be saved for future trade. Santiago, Chile has had a system of tradable air permits since 1991, wherein the initial permits were



distributed free of charge and new sources had to obtain their permits from existing sources. By 1993, pollutants from fixed sources were estimated to have been cut in half. [44] The USA has been allowing trading of quotas for ozone depleting chemicals since 1989. A total of 321 million kilograms of these chemicals (561 trades) were made between 1989-1995. [3] California law has supported nitrous oxide and sulfur dioxide emission trading since 1994.

The solid waste sector is beginning to enter the tradable permits arena for air emissions. Examples include:

- ✍ In the summer of 2000, a variation on pollution trading was implemented to increase badly needed electrical power generation in southern California. Pacific Gas & Electric utility in San Diego wanted to build a large new generating plant but regulation required that its new emissions be offset by reductions from other sources. A waste hauling company, Waste Management, Inc., replaced 120 of its conventional diesel-powered trucks with liquefied natural gas (LNG)-powered trucks, which are cleaner burning and therefore provided the necessary reduced emissions. [32]
- ✍ In the UK, all manufacturers of packaging must obtain certificates to show that they are meeting specified targets for reprocessing of their packaging. Surplus certificates can be traded, which is intended to motivate reprocessors to expand capacity beyond required targets. [2]
- ✍ Ho Chi Minh City in Viet Nam recently applied for air pollution remediation of its landfills to be traded for air emissions in the Netherlands. [33]
- ✍ In 2002, the World Bank' Prototype Carbon Fund (supported by donor countries and private firms) financed methane capture and electricity generation for landfill gas recovery from a municipal landfill in Liepaja, Latvia. Grant financing of the gas recovery the project's estimated rate of return from 2.6% to 22%. [52]

Procurement policies. For major progress in the solid waste sector, developing countries will need to restructure their involvement of the private sector. To date, most private sector investment in developing countries involves short term and small-scale contracts for waste collection, where costs are lowered primarily because low cost daily workers are used. Local procurement laws commonly limit long-term contracts for solid waste services. With contracts of only 3 month to 1 year duration (e.g., in Indonesia, India, Bangladesh, Pakistan), investment in equipment and facilities can not be depreciated in a way that enables low cost service delivery. [29, 33]

Procurement changes include leveling the playing field for the private sector to compete for solid waste service contracts and encouraging the private sector to build and own their own solid waste processing facilities. Contracts with durations long enough to write off depreciation over the economic life of investment, precise clauses of performance measurement, and open public tendering provide ample incentive to private operators to invest in solid waste equipment and facilities. [29]

- ✍ Sekondia-Takaradi, Ghana and Islamabad, Pakistan allowed leasing of city-owned waste collection trucks to enable private operators to enter the business of solid waste collection without immediately having to make significant investments in new specialized equipment.
- ✍ Chennai, India and Jakarta, Indonesia tendered waste collection contracts with several years duration to enable adequate depreciation of investment by private contractors.
- ✍ Hong Kong and Jakarta, Indonesia created competitive tenders for build-own-operate concession contracts of 15-20 year duration for solid waste transfer facilities.



- ✍ In Mauritius, the national government handles tendering of all solid waste transfer and disposal facilities and a number of private companies compete for this business and find it lucrative.
- ✍ Guayaquil, Ecuador held a highly competitive and transparent international tender for construction and operation of a new sanitary landfill, with resulting low landfill costs due to the strong competition and favorable foreign export credits received.
- ✍ South Korea built a government prototype hazardous waste treatment facility and offered licensing for the private sector to build comparable and competing privately owned facilities, while requiring all industries to bring their hazardous waste to a licensed facility. Within several years there was a highly competitive market in hazardous waste treatment and disposal provided by the private sector with competitive contestability from the government's own facility. [33]

Strong laws that require safe disposal can provide powerful stimulation for private sector investment in disposal. The stringent laws passed in India in 1999, following Supreme Court decree that solid waste improvement must be done, required organics to be composted and all other wastes to be recycled, treated or placed in sanitary landfills. These new laws, coupled with the understood enforcement commitment of the Supreme Court, have encouraged significant investment in biomedical treatment, composting, refuse-derived fuel, and other methods of disposal, with private companies from all over the world making substantial investments in new privately owned and operated facilities. [9, 33]

Labor laws can sometimes interfere with the goal of increasing private sector investment in waste management. Many Latin American cities have high severance pay costs associated with reducing government roles. There is no net gain to city employment if solid waste works are simply shifted to another sector in order to avoid labor reduction costs. In Quito, Ecuador, as lucrative private sector job opportunities were created in the solid waste sector, the city offered an incentive severance package. For younger employees with few years vested in retirement, the package and the new opportunities for employment in the private sector led to voluntary departures. Over time, the roles were further reduced by a freeze on hiring and natural attrition. [33]

Cities in India are not permitted to dismiss employees when they privatize. Therefore, involving the private sector does not lead to a reduction in government roles and corresponding reduction in government costs. A number of cities have imposed a freeze on hiring and try to find useful work for the now-older work force, such as work as communal container attendants. Because government laborers make 3 to 4 times more than private sector laborers, this issue has a dramatic impact on costs and the ability of cities to lower costs. In India, solid waste collection contracts with the private sector are typically for only 240 days or less. [33]

There is a requirement under the Labor Act that cities are required to hire workers if they are used for more than 240 days to do routine tasks. Hyderabad, India, for example, limits contracts to less than 240 days. There are more than 100 contractors in Hyderabad, each with one or two open trucks, and most renting their equipment. When each contractor ends one contract and begins another, they leave the labor of their area of service in place, and take on the labor present in their new area of service. The contractors therefore have no long-term responsibility to their laborers. [33]



In a slightly different approach, in Bangalore, India, the contractors swap laborers so that their contract periods can last more than 240 days, arranged through contract extension. In Bangalore, motivation for change is being driven bottom-up, rather than top-down. The first major motivator occurred when the city was taken to court over its poor disposal practices. But, even with court-ordered improvement requirements, Bangalore's current high level of achievement would not have been likely if industry hadn't stepped in to provide significant technical and financial assistance. Industry leaders organized an international study tour and conference to learn what works in improving solid waste and then began a public-private public campaign to change behavior and implement replicable models of improved systems. The successful computer technology industry based in Bangalore was willing and able to underwrite a significant level of this effort, and placed considerable pressure on city officials to undertake long-term sustainable improvements. [33]

Deposit-refund Systems. Deposit-refund systems are applicable to only certain types of wastes, particularly those that maintain their integrity after use and are readily recyclable. For uniquely recyclable products or packages, deposits can be paid upon initial purchase and refunded when the packages or products are returned. Beverage containers are commonly managed through deposit-refund systems. Glass and aluminum beverage containers are easy to clean and return for refunds. Tires and car batteries are increasingly being managed through deposit-refund systems. While they are heavier and more cumbersome for a consumer to handle, the consumer typically goes to specialized service stations to have them replaced, and thus the system is convenient. Most deposit-refund systems are voluntary and need to fit with the concept of consumer convenience. However, compulsory systems do exist for some special hazardous wastes. For example, Mexico does not allow the sale of a car battery replacement unless the old one is returned. [40]

Deposit-refunds are useful economic instruments because they dramatically reduce waste generation with regard to the unique products or packages that apply. Deposit-refunds that are industry managed are used directly to cover recycling costs. The deposit-refunds for beverage containers are voluntary and charged per unit; they are not weight-based and their unit charge tends to be based on the volume of liquid contained and the material from which the container is made. Belgium additionally created an exemption ruling that beverage producers that do not have refillable containers would have to pay an eco-tax. [2]

Deposit-refunds on beverage containers have been widely implemented in the USA, with all markets selling beverages required to have a take-back system and pay refunds. Most states also require distributors to pay about 20% of the value of the returned beverage container to the state as a handling fee. [43]

In Europe, each country's economic instruments are required to respect the competition provisions of the European Union Treaty and support objectives of free market access. [34] In 1988, there was a court dispute over Denmark's implementation of a deposit-refund system for beer and soft drinks bottles. Also, Denmark required local beverage producers to use refillable bottles, thus essentially banning local producers from using beverage cans. Other European countries argued that Denmark's requirements discriminated against import of beer and soft drink from other countries, except for those that produced their product in recyclable bottles. Denmark won the case because it had such a successful recycling rate, 97%, and the court determined that the deposit-refund systems was a crucial factor in its success. [34] By 2001, reports showed that that beverages in local refillable bottles made



up 99% of the Danish market. [2] In 2002, Denmark responded to the pressures from other countries and ended the ban on beverage cans. [11]

Take-back Systems. Plastic wastes have serious environmental consequence. For every 1 kg of plastic, its production requires 2 kg of oil. If plastic is put into a landfill, none of this fuel equivalent is recovered. If it is incinerated for energy recovery, it is possible to recover no more than 0.5 –1.0 kg oil equivalent energy. Recycling recaptures nearly all of the 2 kg of inherent energy value, in terms of avoided energy requirement in generation of new plastic. After noting that only 2% of its plastic waste was recycled in 1998, Norway implemented a producer take-back system, with the goal to have full recovery by 2010. [50] While this Norwegian take-back system is compulsory, it is not purely a command approach because it has the effect of influencing producers to use other materials that might be more recyclable.

Producer take-back systems initially focused on recovery of packaging. Under German packaging regulations, initiated in 1991, producers are required to take back and recycle specified portions of their packaging and submit audited reports to prove their targets have been met. Take-back in Germany could be avoided only if a packaging producer arranged for licensed recyclers to recycle their packaging, and correspondingly showed this by placing the Green Dot trademark on the product. For foreign companies to meet the German standards, they either provide take-back transportation for their own packaging or they could hire a German firm to package their product. [5] The Green Dot program expanded to include at least 10 European countries, with special licensing of the trademark to them, and also to Canada. [24] In 2001, the European Union decided that restriction of trade was occurring because of the Green Dot requirement and required Germany to allow comparable recycling trademarks and recycling systems to be used. [4, 53]

Now producer take-back systems are reaching beyond packaging, particularly to electronics and automobiles, following a proposed directive by the European Union. While these take-back programs have proven, in Germany, to reduce waste disposal, they have been expensive because of the additional transportation requirements of returning used products to producers. [35] British Columbia, Canada began a program of product take-back beginning in 1992 by requiring all sellers of oil to take back used oil, at no charge to the consumer, for recycling. In 1994 the province decided to apply product take-back to waste paint, solvents, thinners, fuels and domestic pesticides, which together comprised 94% of the household hazardous waste stream. [25] In 1997, British Columbia drafted new enabling legislation to further extend product take-back, including pesticides, gasoline, solvents/flammable liquids, beverage containers, and pharmaceuticals. The expanded program allowed industry associations to establish their own eco-fees to be added to their product prices and enabled them to earmark those fees for an administrative fund managed by each affected industry association.

The USA does not mandate producer take-back. Nevertheless, a number of firms are conducting product take-back to avoid disposal costs and/or save on production costs by remanufacturing recovered products, including Kodak (single-use cameras), Xerox (photocopy machines), Hewlett Packard (laser toner cartridges). Two examples of waste reduction are:

- ✍ Kodak achieved 85% reuse of its single-use cameras through a take-back program with film developers,
- ✍ Maytag reduced refrigerator packaging by 84% by switching to returnable packaging. [10]



Product Stewardship. The Solid Waste Association of North America (SWANA) has conducted several forums with trade associations (such as those for plastics, scrap metal, electronics) to develop a policy of promoting product stewardship. [32] Under the policy, incentives for product stewardship are being encouraged. This could involve procurement policies by governments that include procurement preferences related to product stewardship. The SWANA policy calls on manufacturers to use product stewardship to reduce the adverse impact of their products and to include the cost of waste minimization, recycling, and disposal in their product pricing. Product stewardship is not mandatory in the USA and Canada, but some industries are now cooperating with this policy. Under the following topic of Performance Disclosure are examples of companies in the computer industry being ranked on criteria addressing product stewardship. [18]

Performance Disclosure. Environmental report cards by independent organizations have proven to motivate for change, as the following examples illustrate:

- ✍ After the Silicon Valley Toxics Coalition implemented its Annual Computer Report Card, IBM and Hewlett-Packard began computer take-back programs in the US. [18]
- ✍ The USA government pays an independent non-government non-profit institute to develop and publish a report card on waste reduction record-setters. The list reports on successful recycling and waste minimization efforts conducted by municipalities, government agencies, and businesses. [19]
- ✍ Colombia formed the Colombian Business Council for Sustainable Development and it publishes an annual report on its members' social and environmental performance. [30]
- ✍ Canada monitors the transboundary movement of hazardous and non-hazardous wastes, including imports and exports, and publishes the information annually. Monitoring showed that Canada's hazardous waste imports for landfilling were reduced 29% by weight from 1999 to 2000, following the strengthening of pretreatment standards prior to waste being allowed in landfills. [7]

Solid waste systems are heavily dependent on trucks to collect and transport waste. Pennsylvania implemented a law, called the Waste Transportation Safety Law, which requires all haulers of waste to obtain and display an authorization sticker. A wide range of environmental compliance and transport safety requirements must be met to receive the sticker. No waste hauling vehicles without the sticker are allowed in Pennsylvania's solid waste transfer, treatment and disposal facilities. [31] Public pressures in San Francisco, California motivated one private hauler to buy new trucks that run on natural gas, rather than diesel or gasoline. Resulting emission reductions due to this fuel switch are estimated to be about 35% nitrogen oxide reduction, 60% particulate reduction, and 20% carbon dioxide reduction. [48]

Blacklists of polluters significantly pressure them to make environmental improvement, given that such lists encourage consumers to boycott polluting companies. The World Bank publishes a blacklist, updated annually, with the names of national and multinational firms that have been involved in corrupt commercial transactions. [20] Transparency International publishes summary briefs about the corrupt and unethical practices of firms. [51] A number of these corrupt firms are also prone toward poor environmental performance. Other blacklists, targeted specifically at environmental performance, have had considerable clout in exposing the environmental damages



caused by irresponsible oil companies (e.g., those working in Nigeria that allowed massive spillage of oil onto land around drilling rigs). [13, 16]

While a polluter blacklist is relatively easy to implement, litigation-oriented approaches require good analytical abilities to establish blame and negligence, as well as strong legal systems. However, when private contractors or operators post performance bonds or other types of assurances, court involvement might be avoided and collection for damages would likely be easier.

Most environmental report cards and polluter blacklists are published on the Internet. Waste exchange networks also operate using the Internet. Other information now readily accessible through the Internet has widely enabled people to find ways to recycle. In the USA, people can learn how to recycle their old computer equipment by visiting the website of the National Recycling Center.[18] For industry, waste exchange networks have dramatically enabled manufacturers to sell their wastes as feedstock to other manufacturers. The USA Environmental Protection Agency maintains a website listing waste exchanges available nationally and internationally for a wide range of wastes, and also separately listing state-wide waste exchanges that focus on receipt and exchange networking of the wastes within certain their state.

Liability Law. Liability laws have traditionally addressed damages to people and goods. Typically these laws have related to a specific incident and required proof of calculable damage and the assignment of blame. More recently, liability laws have also addressed the clean up of contaminated disposal sites, wherein blame is established even though parties causing the pollution may have been following the existing regulatory framework at the time of disposal. After the Bophal disaster of toxic emissions from a chemicals factory, India required environmental liability insurance for all companies using hazardous substances, which would pay compensation to victims without the need for court hearings to assign blame.

In most of the world, liability laws for damage to nature are not available. Norway, Sweden, and Germany have enacted laws that provide a basis for claiming compensation for environmental damage. Recent oil spills off the coast of Spain have caused such severe damage to nature that the European Commission is considering new liability legislation to hold polluters responsible for environmental damage. In the year 2000, a policy paper for the European Union proposed that new environmental liability laws should apply to all European Union countries.

There are numerous opportunities for lawyers involved in drafting contracts for solid waste facilities to introduce economic instruments. The following material provides some insight on just one topic of environmental need, i.e., closure and post-closure financial assurances. The United States (as well as its individual states) requires that public and private owners and operators of landfills provide financial assurance that they can fund the closure and post-closure maintenance of sanitary landfills and any corrective action in accordance with law and regulation in an environmentally responsible manner. (See for example, USA law 40 CFR Sections 258.70 through 258.74.) Available options are listed below, together with observations on relative cash management (dis)advantages:

- ✍ **Trust Funds** of cash held by banks in specified fund balances based on estimated costs, adjusted for inflation. Trust funds are the most certain assurance. A trust fund must be fully funded by the time of closure. But law may limit its permitted investments. It may



- involve payment of trustee fees not incurred under other options, such as an enterprise fund.
- ✍ Surety bonds issued by acceptable companies for either performance or payment. From a regulatory or security perspective, bonds are less desirable than trust funds. Sureties may cancel bonds if the credit of the owner/operator deteriorates, since the surety looks to the owner/operator to repay draws on the bond. In that event, the owner/operator likely does not have the credit or cash to secure alternate financial assurances. But from a cash management perspective, bonds may be more desirable than trust funds. Prudent but discretionary reserve funding in anticipation of possible bond repayment may provide opportunity for broader investment than trust funds. Discretionary funding may be back ended, which may better maximize the time value of money than a trust fund with larger up-front mandated payments.
 - ✍ Insurance policies, unlike open-ended liability policies, are finite-risk for estimated costs. Some larger owner/operators may use insurance from captive insurers, which may make them vulnerable to economic downturns of the owner/operator. The present value of trust fund deposits may be less than the present value of premiums, resulting not only in shifting risk to the insurer but better cash management. There may be tax advantages to insurance: premiums may be deductible and allow the owner/operator to remove closure/post-closure liabilities from its balance sheet.
 - ✍ Letter of Credit in form of irrevocable standby. As in surety bonds, the bank issuing the letter of credit may refuse to renew it in the event the owner/operator suffers financial reverses and the owner/operator may not have the credit or cash to secure alternate financial resources.
 - ✍ Governmental Enterprise Funds established to account for financing of self-supporting activities that a governmental unit renders on a user-fee basis. Unlike trust funds, these are not secure from creditors of the local government in bankruptcy. Their permitted investments may be broader than those of a trust fund.
 - ✍ Collateral Securities set aside and pledged to payment of costs.
 - ✍ Municipal Pledge of Revenues from an enterprise activity such as tipping fees from a landfill. (This is allowed in lieu of cash funding for post-closure costs.) The governmental entity may expect that it can better invest its moneys outside of a trust account, and invest money it otherwise might have deposited in a trust account in higher-yielding investments that out-perform the trust account. However, governmental entities' permitted investments are often constrained events outside of a trust account, so whether it can secure superior returns is not clear. Governmental entities can model advance (trust) funding versus deferred (pledged revenue) funding options for post-closure costs. Like borrowing to pay future costs, pledge of revenues - or deferring payment - may result in future rates or tipping fees that are not competitive, because they will have to be artificially raised to pay post-closure costs that are unrelated to present disposal costs. This anti-competitive consequence suggests possible but unclear investment advantages or a pledge of revenues might not outweigh possible anti-competitive consequences.
 - ✍ Corporate Financial Means Test, such as certain financial ratios (total liabilities to net worth; a ratio of the sum of net income plus depreciation, depletion and amortization of total liabilities; ration of current assets to current liabilities) and net working capital and tangible net worth multiples of costs; or bond ratings by specified rating agencies such as



Moody's or Standard & Poor's. As discussed under Surety Bonds above, it may be more advantageous to invest outside of a trust fund.

✍ Corporate Guaranty issued by a parent or sibling corporation of the owner/operator that meets corporate financial means tests. Again, it may be more advantageous to invest outside of a trust fund. [32]

The above instruments deal with protection of the environment after closure of a solid waste facility, particularly a landfill that has long-term water and air pollution consequences as the wastes slowly biodegrade. Another set of interesting examples exists for motivating the performance of private contractors or franchisees through performance bonds and sureties. Some insights on both the opportunities and complexities of legally drafting these instruments are illustrated below:

✍ Initial Sizing. Performance bonds are often not sized logically, but comparatively, by looking at requirements in other governmental entities' comparable contracts or codes. However, such loose comparisons could result in over or under-bonding, since it is not apparent from the face of another contract or code text what the gross contract fees are or how long it would take to replace a defaulting contractor. A more logical basis for sizing the performance bond requires at least three steps:

- Determine the amount of average monthly contract fees.
- Estimate how long it would take for a new substitute contractor to take over services of the non-performing contractor, including provisions of the contract for curing breaches, giving notice of breach/ default / termination, and terminating the contract.
- Project the costs that the governmental entity would incur to enforce the terms of the contract (or terminate it) and re-procure substitute services.
- A performance bond arguably should cover the sums of these amounts, *if the contractor collects rates and charges*. However, in some instances, the governmental entity may collect rates and charges. Furthermore, the governmental entity may secure the contractual right to take over contractor's service assets and provide services if the contractor fails to do so within a specified time. In that event, the governmental entity might consider downsizing a performance bond to secure premium payment savings to its citizens.

✍ Lost Franchise Fees. Although governments often justify procuring a performance bond to protect the local government against lost franchise fee revenues in event of franchisee default, it is not clear that a performance bond would cover that loss. Franchise fees are conceptually an obligation paid by the franchisee for the privilege of conducting the franchised business. And they are payable from revenues and receipts of the franchisee. They are *not* obligations of the customer. If a franchisee defaults, then there would be no receipts or revenues upon which to pay the franchise fee. Performance bonds only cover contractual obligations. If the franchisee owes no money under the franchise agreement, arguably the performance bond would not cover the loss. Perhaps franchise agreements can provide for compensatory damages in an amount equal to the average of the last specified number of months' franchise fees, in the event of franchisee default. That obligation would then be payable from performance bond proceeds.

✍ Re-procurement Costs. A governmental entity can draw upon a performance bond to get reimbursement of the local government's costs of re-procuring a contract terminated for contractor default and for incremental substitute service costs, only if the contract



obligates the contractor to pay those reimbursements. As discussed above with respect to lost franchise fees, these re-procurement reimbursements should probably be structured as compensatory damages consequent upon termination. The contract might add this obligation to better assure reimbursement from performance bond proceeds.

~~See~~ Letter of Credit In Lieu of Performance Bond. In addition to downsizing the performance bond to reflect the governmental entity's ability to apply government-collected rates, the governmental entity might consider switching from a performance bond to a letter of credit for the balance of reimbursement costs, such as lost franchise fees, reprocurement or incremental substitute service costs. Performance bonds best back construction and equipping contracts, not service agreements. Bond sureties prefer to provide substitute contractors and complete performance, rather than pay out money. Many local governments report that liquidating performance bonds is slow and fraught with argument. It generally is more acceptable to local government to have a substitute general contractor complete construction and equipping in accordance with clear and specific plans and specifications than it is for them to have a substitute operations contractor provide service over a term of years. The surety may choose a substitute contractor that does not meet the local government's standards of environmental good citizen, diversion ethics, lack of litigiousness, or a contractor that is vertically integrated and therefore in direct competition with the local government's own solid waste facilities or service contracts. Contractors often allege that the cost of securing a letter of credit is greater than the cost of securing a comparable amount of performance bond. But by downsizing the bond amount, the cost of the letter of credit may nevertheless be less, and it is more liquid. It would likely provide more immediate cash, especially if the governmental entity controls the draw. The governmental entity could get money, and argue later whether or not the draw was justified by contractor's default. [32]

Section 3. Criteria for Choosing among Instruments

In choosing among instruments, selection needs to consider local and global priorities. Given that there are about 90 possible instruments for the solid waste sector and each of them involves a number of possible activities, each government must choose where to start. Does one start with improving future waste disposal or with remediating past disposal sites that are contaminating? Is the focus on wastes from households or industries? Do hazardous wastes have priority over nonhazardous wastes? Are the water pollution or air pollution impacts of solid waste management more important? Does one start with source reduction of waste generation or with increasing recycling after waste generation? If source reduction or recycling are chosen as priorities, which category of waste has priority? Do the lowest cost instruments have priority over the higher cost instruments? Do instruments that address diffuse pollution have priority over those that address point-source pollution, given the potential to address the later through command-and-control approaches? How much does ease of implementation affect the choice?



In review of the various economic instruments, the following evaluation criteria are recommended:

- ✍ Environmental effectiveness – i.e., does the instrument lead to the desired environmental improvements, such as reduction in waste generation, increased waste recycling, reduced emissions from transport and disposal;
- ✍ Economic efficiency – i.e., does the instrument create incentives for investment and innovation toward reduction of pollution control costs;
- ✍ Administrative cost efficiency – i.e., does the instrument require affordable and available levels of skill and effort to implement and monitor;
- ✍ Revenue usefulness – i.e., are revenues generated able to be applied to address the environmental objectives of the instrument and adequate to create measurable improvement;
- ✍ Ease of implementation and replicability – i.e., are the relative costs and benefits relatively easy to assess and the legal requirements for introducing the new instrument reasonable;
- ✍ Acceptance – i.e., does the general public and the affected industries accept the instrument as a viable means of cost-effectively achieving environmental improvement without adversely affecting competitiveness, employment, income distribution, and trade;
- ✍ Distributional effects – i.e., is there distributional disparity or inequity in the application or impact of the instrument, particularly regarding effects on lower income households, small businesses, and disadvantaged parties;
- ✍ Short-term results – i.e., does the instrument have the potential to result in sufficient short-term improvement to motivate political administrators to undertake commitment to the costs associated with the instrument under their political term
- ✍ Economic development enhancement – i.e., does the instrument provide an environment that maintains trade competitiveness and encourages industrial development and employment generation.
- ✍ Waste type applicability -- i.e., does the instrument address a wide range of waste types and have significant impact on overall urban waste quantities, or does the instrument address only a limited number of unique and important waste types.

A World Bank study of economic instruments in 11 Latin American countries stated, “gradualism and flexibility emerged as fundamental issues in successful implementation”. The study further stated, “information building and information sharing were identified as key factors”. Design needs to specifically consider possible perverse effects, wherein pollution could be increased if charges or penalties are based on concentrations alone, as opposed to total loadings, or trading pollution could put the loadings into more sensitive environments.[40]

When considering various economic instruments, what is the right level of charging or taxation? The recommended principle used in Europe and other high-income countries, is that the “instrument should be designed to internalize external costs”. In other words, all direct and hidden environmental costs that would be borne by the community in the area of environmental influence should be built into the pricing. [2] For developing countries, a phased approach of initially setting user charges that achieve full cost recovery of services received by the user (i.e., collection services) may be appropriate to address willingness-and-ability to pay. Over time, the user charges would be increased to also address the cost of services that users feel are public goods (i.e., not directly received by them, such as disposal services). Whereas, high-income countries may have user charges that also address externalities (i.e., long-term environmental protection from disposal and remediation of contaminated resources).



Determination of internal and external costs requires objective and complex scientific and economic analysis, so that pricing is as fair as possible. In developing countries, the burden of such analysis may be too expensive and sophisticated for existing institutions to undertake. Once the full costs are known, pricing various charges and taxes to internalize all costs may be more than the polluting parties can bear. Also, high pricing may lead to sabotage, corruption, illegal disposal, and various forms of revenue leakage and tax evasion. And yet, where the polluter doesn't pay, the community eventually pays. For example, wherever safe sanitary landfill standards are not required, the community eventually pays through the loss of potable water resources, health problems from degraded air, and stress from excessive noise and odor.

Some of the most valuable instruments require skills in drafting legal agreements. Contract deliverables, performance bonds, liability insurance, performance incentives involve investment in sophisticated technical assistance. However, the rewards are well worth the effort. Many solid waste activities that require a major infusion of capital investment (e.g., transfer, composting, waste-to-energy) can be conducted by the private sector through build-own-operate-transfer concessions. However, such contracts must cover all the needs during the life of the facility, which might mean a 15 to 20 year concession contract. Renewal, refurbishment, replacement issues need to be dealt with for each small and large unit of mobile and stationary equipment, as well as for the civil works, so that the facility still has value and is operable at the time of ownership turnover. [29, 33]

The World Bank study of economic instruments applied in Latin America concluded that although they "can improve environmental management, they normally impose high administrative demands and do not represent a 'quick fix' to the problems associated with more traditional command-and-control approaches." [40] Ease of implementation is an important criterion when choosing among economic instruments. Carbon taxes are applied to fuel sales, and are thus relatively easy to calculate and collect. Conceptually, a carbon tax could also be applied to other activities, once a format for calculation has been developed. In theory, if such a tax were to be applied to various solid waste treatment and disposal facilities, it could influence decisions between landfill, composting, and combustion.

Establishing economic instruments requires careful study. As these instruments are meant to influence investment, behavior and market forces, they might also have adverse impacts on trade or competition among states or countries. Producer take-back requirements and eco-taxes are particularly amenable to influencing trading competitiveness.

Some solid waste sector economic instruments improve the environment in one way, but cause more pollution in another. The most important issue is transportation. Most recycling programs depend on source segregation and typically involve special collection vehicles to collect and transport these recyclables. Also, take-back systems involve returning packaging to the producer, which significantly increases the transportation requirements, particularly when the packaging has been part of an imported good. While there have been some eco-balance studies attempting to compare the full economic impacts of recyclable versus non-recyclable packaging, the results are reportedly inconclusive. [2] Refillable containers and recyclable packaging are most cost-effective when the transport distances are small. This is probably the primary reason why product stewardship and take-



back instruments have had greater applicability in the European Union than the vast trade network of North America.

The competence, integrity and fairness of a country's legal system may influence the choice among instruments. Some of the most powerful instruments for the solid waste sector are legally binding clauses in contracts, such as contract requirements for performance surety bonds, liability insurance, assurance trust funds, letters of credit, collateral securities, take-or-pay revenue pledges. [32] (See Appendix B for details) Also, private litigation is one means for even a single individual to cause major environmental change.

Economic instruments often require special skills or resources for successful implementation. For example, in implementing a tax on products according to their pollution potential, such as a carbon dioxide tax or a CFC tax, one must have the staff to assess each product to fairly assign the tax level. Disputes from industry are likely and the court costs from suits over discrimination could be costly. Similarly, to implement user charges based on waste quantity requires the use of uniformly sized and constructed waste containers that enable monitoring of waste volume at each stop to be an easy task, or it requires having a weigh scale on the truck that monitors the weight of each container as it mechanically lifts and empties it. Recovery and recycling of secondary materials (e.g., plastic film, durable plastics, textiles, paper, cardboard, ferrous metals, non-ferrous metals, glass, bone, rubber) requires careful sorting, segregated collection, and development of a strong network of industries to reuse the materials.

In theory, polluter payment and subsidy elimination should reduce distortions in international trade, and thus increase competition. Despite the enthusiasm expressed for economic instruments, particularly in Europe, some fear that certain instruments might reduce international competitiveness. There is particular concern that green taxes could cause the more resource and energy intense industries to lose competitiveness and possibly lead some to relocate to countries with a lower eco-tax burden. In European countries, closer scrutiny shows that green taxes are levied mostly on households, transporters, and packaging producers. The majority of the eco-tax revenues come from taxes on motor vehicles and fuels. For reasons of competitiveness, some of the most polluting and energy intensive industries in Europe are given tax exemptions and rebates in return for a negotiated agreement to make some environmental improvement. There are ways to minimize the competitiveness issue of green taxes, particularly through border tax adjustments. The OECD is carefully studying this issue of equitable green tax reform and competitiveness for its 30 members. [3]

For economic instruments to work, some pre-conditions are essential. Foremost, is the presence of a free-market with property rights, private enterprise, competition, price liberalization, equitable judicial systems, and minimal subsidization. The countries of transition in Eastern Europe found these pre-conditions to be particularly important. Their efforts to implement economic instruments had to grow in harmony as their reduction of subsidies developed, state-owned enterprises were privatized, and properties were returned to private ownership. [41] Many solid waste systems in Eastern Europe had to be changed after reform, because the subsidies that supported them were no longer available. In particular, centralized recycling facilities, composting plants, and various incinerators had to be closed; and significant investment in sanitary landfill was undertaken. [33]



The information available through the literature search is largely anecdotal. When the literature provides economic and environmental information, it pertains only to the application of a single instrument in a single country or group of neighboring countries. There is not comparative information available, and the complexity of the subject may preclude detailed analysis from ever being comprehensively developed. Unfortunately, summary statements on total waste reduction, percent recycled, revenues generated, total eco-tax burden per person do not provide significant insight to discern how best to proceed in choosing among the wide range of economic instruments available.

Section 4. Recommendations

A recommended pre-requisite to implementing economic instruments in Latin America is to create countrywide high-level study commissions for this purpose. The commissions need to include economists, engineers, lawyers and environmental scientists, as the assessment of options requires a multi-disciplinary approach. The commissions need to be staffed with a group of professionals able to do economic analysis and environmental assessment of each choice. Since each country's economic instruments impact on the national economy and domestic production, this commission should be placed at the highest level of national government, and not a single ministry. Ministries of environment and finance need to be prominently present on the commission. Once such commissions exist to study and implement economic instruments, they could provide a focal point for external assistance from development agencies, banks, and trade associations.

Ideally, there should be a region-wide policy on economic instruments. Those instruments that could influence trade, competitiveness, and inter-country transport of wastes and recyclables should be implemented harmoniously throughout the region. On the other hand, to wait for such a comprehensive unified approach could result in many missed opportunities of stimulating change. Environmental progress could be significantly delayed, if individual countries wait for a regional policy.

Building on what already exists should have first priority. If there are economic instruments in place, they need to be reviewed for their effectiveness and improved to the extent possible. Usually there will be user charges for solid waste collection, and this would be a good place to start. These charges are typically set so low that they have limited effect on cost recovery and there may be significant revenue-leakages. Local government officials are reluctant to increase user charges because of the political backlash. It is preferred that the national government provides a policy guideline on charges, so that local officials have a reduced political risk when implementing cost recovery. The national government of Ecuador dealt with this instrument appropriately by allowing and encouraging all major cities to add up to 10% to the electricity charges for purposes of solid waste management cost recovery. Similarly, Indonesia made it a national policy that all local governments should charge to fully cover solid waste services and provided a guideline of a charge set at about 2% of household income. [33] South Korea required all solid wastes from households and other small waste generators to be discharged in official plastic bags priced to cover the cost of waste collection and disposal. [22]

Choices between instruments are complicated by the fact that there are variants on each economic instrument. To demonstrate this issue, some countries have tax differentiation on diesel and gasoline



fuels, based on environmental criteria such as sulfur, benzene and phosphorus content. Other countries influence fuel consumption through taxes based on the emission performance of each type of vehicle. In Denmark, the tax rate on petrol is adjusted depending on whether the fueling station has vapor-return equipment to control air emissions. On the other hand, the USA imposes its tax based on fuel quantities consumed, thus penalizing “gas guzzlers”. [3] Nearly every instrument has variants to consider and the literature does not provide comparable assessment. In the end, it is a matter of preference, because the pros and cons of these variants have not been comparably studied. Nor are the success-conditions in one country readily replicable in another country.

In choosing between instruments, it is recommended that Latin American countries consider the following suggestions:

- ✍ Economic instruments that are complementary to existing command-and-control approaches should be given priority over those that might confuse or conflict with existing regulatory controls.
- ✍ New instruments should be gradually introduced in steps that allow their impacts to be assessed before full-scale implementation proceeds.
- ✍ Instruments that lead to greater use of labor and less use of energy and capital should be given priority over those that are investment and consumption intensive.
- ✍ Revenues from instruments should be earmarked for specific waste management investments, improvement in waste management services, or waste-related environmental remediation.
- ✍ Instruments that focus on long-term behavior modification need to be implemented, even though their results might not be immediately evident within current political administrations.
- ✍ Instruments that target existing environmental problems or service gaps that lead to significant pollution loadings and environmental consequences should be given priority.

In places with good administrative management and accountability, economic instruments that generate revenues may be desirable. In places where enforcement and revenue leakages are problematic, economic instruments that motivate the private sector to invest in solid waste improvements may be more appropriate. Where the funds are available for media campaigns and education, economic instruments that modify behavior may be preferable.

The first step in the process is to have a policy to develop economic instruments and a decision to empower government staff to seek opportunities to implement new economic instruments. It needs to be recognized that each country must learn by doing and that many instruments will be less than perfectly designed. An imperfectly designed instrument does not, in general, create any significant long-term problems. Where the instrument is flawed, it is likely that public reaction, as well as the reaction of industry, will soon let government know that the instrument needs to be amended. And so, imperfection is certainly more tolerable in the process of implementation than no action.

All of the economic instruments discussed in this paper have merit, as the examples provided clearly indicate. Eventually each country might try them all. Selection of which ones to try first is largely a matter site-specific baseline conditions. The following recommendations are suggested for Latin America:



- ✍ Revenue-generating instruments that are user charges attached to property taxes, electricity bills, or water bills would have the most positive near-term impact on the sector. Consumers would perceive that they pay something and therefore have a right to demand good services. This in turn would make the service delivery entities more accountable. Further, it would provide a favorable climate for private sector investment and participation in service delivery. Variable rate charges are not recommended for Latin America because of the administrative costs and potential adverse impact of causing illegal dumping.
- ✍ Revenue-generating instruments that impose taxes on products that are difficult to dispose or recycle would influence consumer choices and related production decisions. Revenues should be earmarked to support improved disposal conditions and increase recycling.
- ✍ Revenue-providing instruments, such as tax credits, low-interest credit lines, accelerated depreciation and relief from customs duties, would provide financial incentives for the private sector to invest in production changes that minimize hazardous substances, increase recyclability, and generate less wastes; and such instruments could encourage the private sector to invest and participate in solid waste service delivery, including resource recovery.
- ✍ Non-revenue instruments that address government procurement preferences would dramatically augment market demand for products that are readily recyclable or have significant recycled content.
- ✍ Non-revenue instruments that address procurement policies for waste services are particularly important for stimulating private sector investment and participation in solid waste services.
- ✍ Non-revenue instruments that strengthen liability law and create strong disincentives to damage the environment or adversely affect public health are recommended. Ideally, in time, an international liability policy would be developed for Latin America. Also, all contractual language for guarantees and performance liability needs to be strengthened for private sector participation.
- ✍ Non-revenue instruments that involve deposit-refunds, product take-back, and product stewardship address only unique categories of wastes, such as returnable beverage containers, tires, electronics, appliances. Nevertheless, any effort to encourage industry to lessen the disposal burden and fully account for waste management in its product pricing is desirable.

In most countries, economic instruments can be implemented within the framework of various existing laws. However, if the economic instrument is to be implemented at the municipal or province level, authority and/or responsibility to undertake reform may need to be provided through new laws or regulations. For example, in 1993 the Canadian provincial government of Ontario amended Municipal statutes to enable local governments to charge variable rate fees, i.e., based on waste weight or volume collected. [39] In 1995, South Korea amended its laws to give government broad powers to implement programs that provide sustainable waste management, including those that involve extended producer responsibility (i.e., product take-back). Taiwan's government was empowered to implement product take-back and has since required the recycling of products such as tires, televisions, air conditioners, refrigerators, washing machines, computers, cars and motorcycles. [42] For consideration of tradable permits, it might be necessary to determine and designate pollution regions (e.g., so-called "bubbles" for air quality, or watersheds and aquifers for water quality) and decentralize authority for development of economic instruments to corresponding regional institutions.

Broad-based enabling legislation might be preferable to highlight the need for economic instruments and provide general targets for their study and implementation, as well as to outline those parties responsible for addressing the targets. It might be particularly useful if an inter-agency organization



of high standing were to create a qualified study group to develop replicable enabling legislation. Canada studied the legal issues of economic instruments and outlined the legislative needs for a variety of instruments (including user charges, deposit-refunds, and tradable permits).[47] In general, the Canadian study recommended that enabling legislation should:

- ~~///~~ Provide broad powers to establish economic instruments for a variety of products and emissions;
- ~~///~~ Allow the trading of emissions between different areas;
- ~~///~~ Require a timetable for reducing permitted discharges through new instruments where already regulated controls have not been adequate to meet environmental objectives;
- ~~///~~ Allow local area pollution caps for discharges that have localized impacts;
- ~~///~~ Allow trading of permits to be done through auction with revenues dedicated to program administration and environmental remediation;
- ~~///~~ Assure that trade-offs actually result in emission reduction and/or environmental improvement;
- ~~///~~ Require regular emission or environmental quality monitoring;
- ~~///~~ Provide fines and penalties for exceedances;
- ~~///~~ Permit permits to be revoked; and
- ~~///~~ Permit local bodies to undertake functions in the economic instrument approaches. [47]



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Appendix A

**Global Review of Market-Based Instruments
That Have Potential Application to
Solid Waste Management in Latin American Countries**

**Table of Instruments Developed by
Eng. Sandra Cointreau, Atty. Constance Hornig,
Eng. Nancy Cunningham and Ms. Maya Cointreau**



Appendix A

Global Review of Market-Based Instruments That Have Potential Application to Solid Waste Management in Latin American Countries

The following table is organized into three main categories, namely:

- **Revenue Generating Instruments - pages 2-5**
- **Revenue Providing Instruments - pages 6 -8**
- **Non Revenue Instruments - pages 9-14**

For each country noted as a place where the instrument has been reported as being used, the references can be found on pages 15 to 25 of this Appendix.



Revenue Generating Instruments

<u>Categories of Economic Instruments</u>	<u>Definitions and Comments</u>	<u>Countries Where Use of the Instrument has been Reported in the Literature Referenced⁴</u>
CHARGES:		
Pollution Charges	A fee charged to the polluter that varies with the quantity (total loading) and/or concentration (loading per unit of receiving stream) of pollutants discharged. The fee is subsequently designated to cover environmental improvements. For example, taxes on fuel based on the lead content, fees on wastewater effluent based on pollutant loading.	Canada (142), Lithuania (118), Brazil (113), Colombia (113), Jamaica (113, 57), Mexico (113, 13, 70), Costa Rica (13), Uruguay (13), Colombia (13), Germany (41), Portugal (147), Macedonia (76), China (90, 70), Taiwan (55), The Philippines (91, 70), Egypt (70), Korea (70), Kazakhstan (70), OECD (70), Brazil (70), The Netherlands (70)
Waste Generation Charges (Variable rate user charges)	A fee on waste generation, based on polluter-pays principle, and desired to affect waste generation. Solid waste generation is usually discussed in terms of weight, as it is readily compactable at different stages of storage, transport, and disposal. Nevertheless, waste generation charges may be administered by volume (or number of containers of a specific size) for ease of accounting.	Barbados (113), Bolivia (113), Brazil (113, 70), Chile (113, 70), Colombia (113, 70), Ecuador (113), Jamaica (113), Mexico (113, 70), Trinidad and Tobago (113), Venezuela (113), Japan (36, 49), British Columbia (68), Jamaica (57), Slovak Republic (46), United States (77), The Netherlands (60), China (70), Indonesia (70), Malaysia (70), Singapore (70), Thailand (70)

⁴ Reference numbers are noted within parenthesis () following each country where the instrument has been reported.



<p>Waste User Charges</p>	<p>A fee for the payment of service, specifically for collection service, but often designed to cover all service costs, usually based on the ability to pay, size of the property, and level of commercial activity at the property. Collected alone, or tied to water or electricity bills.</p>	<p>Bosnia & Herzegovina (118), Bulgaria (118), Croatia (118), Czech Republic (118), Estonia (118), Hungary (118), Latvia (118), Romania (118), Slovenia (118), Yugoslavia (118), Ecuador (107, 70), Korea (13,107, 41), Singapore (13,107), Indonesia (13,107), Ghana (107), USA (13, 41), Canada (41, 111), Taiwan (41), Lithuania (95), Poland (95), Slovak Republic (95), Jamaica (57), Bolivia (129), New Zealand (82), Vietnam (87), Portugal (147), Ireland (146), Israel (88), Commonwealth of the Northern Mariana Islands (128), Japan (49), Greece (145), Colombia (113), Venezuela (70), Thailand (70), Canada (30), Switzerland (148, 28), Netherlands (28), Belgium (28)</p>
<p>Waste Tipping Charges</p>	<p>A fee for the payment of unloading service, specifically for transfer, treatment, and/or landfill service. Tipping refers to the collection truck unloading at the service facility. Waste generators may pay for these charges in their waste user or waste generation charges, and their service provider may be directly charged for tipping. Some individuals and business have no service provider and go directly to unload with their own vehicles, thus some tipping fees are necessary at the facilities receiving such loads. Tipping charges at sites can vary greatly and thus influence the distance that waste is transported within a region. Funds from fees can be targeted to specific uses. For example, in Pennsylvania a fixed per ton amount is added to charges and placed in a Recycling Fund.</p>	<p>Czech Republic (118), Estonia (118), Latvia (118), Slovak Republic (118), USA (13), (Barbados) (113), Chile (113, 129), Ecuador (113), Canada (41, 30), Poland (95), Hungary (95), Romania (95), Venezuela (129), New Zealand (82), Australia (72), Guam (130), Commonwealth of the Northern Mariana Islands (128), Japan (49), Greece (145), France (70), United Kingdom (70, 28), Turkey (107), Austria (28), Italy (28), Pennsylvania (63, 101, 102)</p>
<p>Product Charges</p>	<p>Special fees for handling products with difficult disposal requirements or adverse environmental impacts e.g., batteries / accumulators, refrigerators and refrigerants, lubricants, tires, substances/products damaging ozone layer (CFCs), mineral oils.</p>	<p>Hungary (4, 118), Latvia (4, 118), Korea (41), United States (41), Bulgaria (95), Slovak Republic (95), Lithuania (95), Jamaica (57), Japan (49), Korea (120), China (70), OECD (70), Thailand (70), Denmark (70), Bangladesh (70)</p>



Fee Reduction for Recycling	A fee for service or waste generation is reduced upon proof of efforts for recycling or reuse.	Argentina (13)
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TAXES:		
Waste Treatment or Disposal Tax	Differentiated tax per ton of waste for final treatment and/or disposal, with lower taxes charged for more environmentally friendly treatment or disposal methods.	Austria (8), Denmark (8), Norway, 8), UK (8)
Landfill Tax	A tax on business activities or waste weight/volume discharged that is directed toward safe disposal.	Italy (4), Netherlands (4), Sweden (4), UK (4, 13, 8), Turkey (107), Latvia (107), Slovak Republic (46), France (78), Scotland (58), Ghana (107), Barbados (1), USA (110)
<i>Pollution Tax</i>	A tax charged to the polluter that varies with the quantity and/or concentration of pollutants being emitted – where revenues collected <u>are not necessarily designated</u> for environmental purposes. For example: Product taxes, taxes on ozone-depleting chemicals, carbon and sulfur taxes on fossil fuels, taxes of vehicle "gas guzzlers".	France (4), United Kingdom (4, 8, 148), Denmark (41, 8), Italy (41, 148), United States (41, 13, 8), Australia (119, 8), Germany (119, 8, 148), Finland (119, 8), Netherlands (119, 8, 148), Norway (119, 8), Sweden (119, 13, 8, 148), Slovak Republic (46), The Philippines (91), Japan (75), Thailand (13), UK (13), Barbados (1)
Presumptive Tax	Tax based on presumed levels of pollution from specific polluters. An effluent charge that is sensitive to a presumed level of pollution. A firm is compelled to pay the tax, and no specific monitoring is conducted. If the firm wishes to reduce its tax burden, it must conduct monitoring at its own expense (but still subject to regulatory audit) to demonstrate that its actual pollution loads are less than the presumed loads.	Guyana (113)
Eco-tax	Taxes to generate incentives for industrial change to save energy and decrease pollution, with funds earmarked for renewable energy promotion and other environmentally positive changes. For example: nonrenewable energy production, aviation fuel or other polluting activities. Also applied to tourism to address the environmental impact of significant tourism. Could also be applied to industries that use virgin materials, as a means of motivating use of	Belgium (ref 3 in 4, 62), France (4), Latvia (ref 27 in 4, 118), Denmark (ref 10 in 4, 8), Estonia (4, 118), Hungary (4, 118), Finland (4), Sweden (4, 71), Norway (4, 8), Germany (92, 8), Basque Autonomous Community (71), Balearic Islands (47, 2, 28), Greece (8), Portugal (8), Turkey (8), Korea (8), Luxemburg (8), Ireland (21), Finland (10)



	recycled materials.	
Conventional Tax	This might include a value-added tax, property tax, gasoline tax. A portion could be set aside for covering solid waste costs or improving environmental issues related to solid waste management.	Brazil (113), Colombia (113), Mexico (113), Czech Republic (118), Estonia (118), Hungary (118), Poland (118), Romania (118), Slovak Republic (118), Macedonia (118), Yugoslavia (118)
Taxes to Encourage Reuse or Recycling of Problem Materials	Includes on differentiated taxes on refillable versus non-refillable beverage containers, and could be applied to other packaging.	British Columbia (68), Norway (8), Finland (8)
Natural Resource Tax	Tax on virgin materials or natural resources used in manufacturing or transport of manufactured goods that would affect their final costs and thus influence market preferences (including preferences for products with recycled material content), including taxes on water, fuel, tree, and various metals, minerals, pesticides and volatile organic compounds.	Brazil (113, 13, 113), Colombia (113), Venezuela (113), Ecuador (113), (Mexico) (113), Slovak Republic (46), The Philippines (91), Czech Republic (118), Estonia (118), Hungary (118), Latvia (118), Lithuania (118), Macedonia (118), Poland (118), Romania (118), Slovak Republic (118), Slovenia (118), Yugoslavia (118), Vietnam (124), China (50), Israel (107), UK (13), Denmark (8), Belgium (8), Canada (8), Norway (8), Netherlands (8), US (8), Finland (8), Sweden (8), UK (8)
<i>Subsidy Elimination/Reduction</i>	Reduction of subsidies in fertilizer and pesticide impact on marketability of compost. Reduction of subsidies for incineration impact on the cost viability of sanitary landfill. Reductions of subsidies for natural resources, such as forest wood, influence the decisions to recycle.	Ex-Soviet Union (107), Viet Nam (107), China (107, 70), Bangladesh (70), India (70), UK (8), Belgium (8), Portugal (8)



Revenue Providing Instruments

<u>Categories of Economic Instruments</u>	<u>Comments</u>	<u>Countries Where Use of the Instrument has been Reported in the Literature Referenced⁵</u>
FISCAL INCENTIVES AND PROPERTY RIGHTS:		
Credit Subsidy	Low interest credit lines or longer-term payback loans for projects that improve waste management and/or increase private investment, including special project financing from development agencies.	Barbados (113), Brazil (113), Colombia (113), Ecuador (113), Mexico (113), India (13,107), USA (136)
Environmentally Relevant Tax Allowances and Exemptions	Accelerated property tax allowances, customs duty exemptions, and sales tax exemptions to motivate private investment in environmental equipment and technology.	Bulgaria (118), Croatia (118)
Tax Relief	Tax reduction provided as a financial incentive for private investors to improve environmental conditions.	Barbados (113), Brazil (113, 70), Chile (113, 70), Ecuador (113, 70), Jamaica (113), Venezuela (113), USA (106), (Japan) (139), USA (13), Portugal (147), Ireland (146) China (70), Colombia (70), India (70), Korea (70), Mexico (70), The Philippines (70)
Fiscal Compensation for Preservation Areas (Water Supply and Ecosystem Areas)	Tax to compensate municipalities for land-use restrictions based on environmental reasons, which could affect the cost of virgin materials or natural resources (and thus the economics of recycling).	Brazil (113)

⁵ Reference numbers are noted within parenthesis () following each country where the instrument has been reported.



Abatement Investment Tax Credits	Polluting businesses must register, and they become eligible for refundable tax credits when purchasing new equipment that generates less waste.	Canada (41), United States (41), The Philippines (91), Brazil (113), Mexico (113), Colombia (113), Barbados (113), Chile (113), Ecuador (113), Caribbean (113)
Tax Rebate for Energy Efficiencies or Pollutant Savings	Could affect choices of fuels, which could subsequently affect the economics of waste-to-energy systems, including refuse-derived fuels that are lower in some air emissions.	Denmark (8)
Development Rights	Granting development rights to private investors that conduct clean up of contaminated lands or preserve the environment, can be useful for obtaining investment in remediating old dumpsites (as done in Manila, the Philippines).	Philippines (107), United States (144)
Long Term Use of Government Land or Facilities or Leasing of Government Equipment	Allows the private sector to use government lands to build solid waste facilities.	Ivory Coast (107), Ghana (107), India (107), Indonesia (107)
Fiscal Incentives for Industry	These can include for example (a) assistance with project financing, (b) 10 year tax holidays, (c) relief from multiple taxation, (d) leasing of property, (e) marketing support, and (f) training and support organizations.	Barbados (113), USA (13), Brazil (112), The Netherlands (44), Belgium (38), France (40), Ireland (40), United Kingdom (40), Malta (153)

HOST COMMUNITY INCENTIVES:		
Host Community Compensation	Trust funds for potential environmental degradation or other adverse impacts from a waste management facility. Compensation in the way of direct payment, new infrastructure, waived tipping fees, and promised jobs for hosting a waste management facility. These funds can be used to provide grants to reimburse the developmental and operational costs of enhancements to waste management practices, e.g. removing hazardous wastes from the waste streams.	USA (106,105, 42), Philippines (107), Latvia (107)



Host Community Authorizations	Communities may be more willing to accept treatment or disposal of wastes from other communities if they are provided the opportunity to establish arrangements they can live with. Pennsylvania is attempting to get this policy in place.	USA (67)
FUNDS AND GRANTS:		
Environmental Funds	General funds to support safe disposal and environmental improvements.	Bulgaria (118), Estonia (118), Macedonia (118), Romania (118), Latvia (107), Nepal (41), Peru (41), Poland (41), Germany (41), Egypt (41), Vietnam (41, 87), United Kingdom (41), United States (41), The Netherlands (41), Denmark (41), Canada (41), Thailand (94, 84), Commonwealth of the Northern Mariana Islands (128), India (56), Slovak Republic (46), China (83), Czech Republic (39), Macedonia (76), Greece (145), Tunisia (121)
<i>Clean-Up Funds</i>	The USA Superfund was created to clean up contaminated hazardous waste sites and those with conditions hazardous to health and safety.	USA (107)
<i>Carbon Fund</i>	The World Bank's Prototype Carbon Fund provides for greenhouse gas emission reduction transactions, including cleaner technologies, support of areas of special biodiversity, carbon offset trading. A fund in Netherlands specifically allows carbon offsets by landfill gas improvements to be applied against industrial emissions.	Brazil (125), Mexico (125), Netherlands (107)
<i>Recycling Fund</i>	A fund specifically focused on promoting and improving recycling. The source of the monies includes a fixed fee per ton added to waste tipping fees.	USA (101)
Research Grants	Grants, contracts, subsidies for improvement in technologies and study of environmental controls.	USA (107, 6)



Non Revenue Instruments

<u>Categories of Economic Instruments</u>	<u>Comments</u>	<u>Countries Where Use of the Instrument has been Reported in the Literature Referenced⁶</u>
TRADE-OFF ARRANGEMENTS:		
Tradable Recycle or Waste Certificates	A certificate, token, or other commodity given in return for a unit of recyclable or waste material brought to a collection or buy-back location.	UK (4), Germany (4), Brazil (107), United States (48), Australia (97)
Tradable Emission Permits Based on Fuel Use, Water Extraction or Pollutant Discharge	Tradeable permits allow a cap on total emissions from a particular class of sources. Companies that reduce emissions below the level required by law receive emissions credits (allowances) that can be traded for higher emissions elsewhere, thus enabling pollution reductions at companies where they can be made most cost-effectively. For example, in a power plant, pollution can be reduced by switching part of power generation to renewable energy, rather than reducing emissions from another part that uses fossil fuel.	Mexico (113), Chile (113), Germany (45), United States (116, 13, 1), Japan (116), Canada (13, 142), USA (13,106), (Japan) (139), Slovenia (118), New Zealand (134), (Bolivia) (113), Chile (113)
Carbon Sequestration	Encourages the private sector to use its resources and innovations to reduce greenhouse emissions and promote sustainable development worldwide by purchasing threatened park lands from private owners and non-governmental organizations and transferring them to their country's ownership for permanent protection.	Costa Rica (41, 51), United States (41, 51), Portugal (115), The Netherlands (115), Belize (51), Malaysia (51), Guatemala (51), Czech Republic (51), Russia (51), Bolivia (51), Mexico (51), Uganda (51), Ecuador (51), Peru (51), Paraguay (51), Brazil (113)

⁶ Reference numbers are noted within parenthesis () following each country where the instrument has been reported.



LIABILITY MEASURES:		
Liability Insurance or Damage Assessment Requirements	Insurance requirements and liability financial assurances to enable compensation for damages are made due to environmental impairment and/or adverse impacts to health and safety.	Bolivia (113), Colombia (113), Trinidad and Tobago (113), USA (106,105)
Bond and Trust Performance Requirements	Guarantee compliance with construction and operating standards, and environmental requirements, which is then refunded when compliance is achieved.	USA (13,106, 105), New Zealand (114)
Long-term Performance Bonds	These bonds are posted for potential or uncertain hazards from infrastructure construction and/or after closure, and particularly applied to long-term impacts related to landfills after closure. Requirements for operators to post long-term "performance bonds" have often been used for mining or logging projects, which may require some reclamation or reforestation at a future date; similar performance bonds can be applied to road construction, pipeline construction, or oil tankers potentially affecting water resources.	USA (106, 105), Australia (121), Indonesia (121), Sweden (121)
Legal Redress and Advocacy		Trinidad and Tobago (113), Colombia (113), Malawi (65)
Liability Legislation	The polluter or resource user is required by law to cover environmental damage - for example, restoration from site contamination and biodiversity damage - as well as damage to health and property. Damaged parties collect settlements through litigation and the court system.	Greece (104), Italy (104), Luxembourg (104), The Netherlands (104), Portugal (104), Finland (104), Sweden (104), Norway (104), Spain (104), France (104), Austria (104, UK (104), Japan (121), USA (106)
Insurance Pools	Most insurance is tied to sudden and accidental damage. Insurance pools that extend to gradual damage through pollution enable pollution risks to be covered.	Denmark (104), Spain (104), France (104), Italy (104), Netherlands (104)
Remediation Liens	A lien can be placed on state-remediated property up to the amount the market value of the property increased -- for example, where a waste tire pile was remediated.	USA (37)



PERFORMANCE DISCLOSURE:		
“Zero Net Impact” Requirements	Its intent is to ensure that, if some unavoidable environmental disruption is caused in one area, a compensating investment is undertaken elsewhere. For example, if a disposal site affects a wetland in one area, a new wetland can be created in another.	Latin America (113), USA (107)
Disclosure Legislation Requiring Manufacturers to Publish Solid, Liquid, and Toxic Waste Generation	Firms are required to publish precisely what they pollute. There are no sanctions attached to such disclosure but consumers are then given the choice of how to deal with the products of particular firms.	United States (151), Australia (151), Austria (151)
Manifest Systems	Cradle-to-grave documentation of a waste material from the point of generation, through each transport and handling step, to ultimate disposal.	USA, Canada (54), Indonesia (135), South Africa (122)
Product Life Cycle Assessment and/or Management	Considers the whole life cycle of a product and attempts to predict overall environmental burdens associated with providing a product (or service) on a cradle-to-grave basis. Involves waste minimization and source reduction efforts, including reduced packaging usage. EMAS (Eco-Management and Audit Scheme) certification and ISO 14000 certification provide for some aspects of life cycle assessment.	Germany (33), Canada (33), USA (19)
Blacklist of Polluting or Exploitive Companies	List of companies to be banned by consumers for reasons of their environmental performance, corrupt practices, or other negative behavior.	USA (13, 35, 22, 80), Ireland (29)
Ranking Based on Environmental Criteria	Published rankings of companies and/or municipalities based on scores from criteria such as increasing recycling, use of hazardous materials in production, extended producer responsibility, take-back, life cycle assessment.	USA (31, 34), Canada (32, 15)
Public Disclosure of Solid Waste Management Practices	Information is published on operations and on various performance measures such as statistics on recycling, landfill statistics, waste-to-energy statistics, etc.	USA (63, 80)



DEPOSIT-REFUNDS:		
Deposit-Refund Systems	Deposit for a product to cover waste recovery and/or treatment, e.g. tire deposit. Refund for some positive action, e.g., refund for returning recyclable bottle or aluminum can. Deposit refund systems lead to return of car and van hulks for recycling, return of refrigerators for proper disposal of chlorofluorocarbons, and return of batteries for safe disposal.	Barbados (113, 1), Bolivia (113), Brazil (113, 70, 113), Chile (113, 70), Colombia (113, 70), Ecuador (113, 70), Jamaica (113, 70, 113), Mexico (113, 70, 1, 113), Peru (113), Trinidad and Tobago (113, 13), Venezuela (113, 70), Croatia (118), Bosnia & Herzegovina (118), Estonia (118), Hungary (118), Lithuania (118), Poland (118), Romania (118), Slovak Republic (118), Yugoslavia (118), USA (13, 70), Taiwan (41, 70), China (70), Korea (41, 120, 13), Japan (126, 120, 70), Czech Republic (95), Jamaica (57), Taiwan (120), The Philippines (91, 70), Bangladesh (70), Finland (70), Norway (70), Sweden (70), Canada (8), Norway (8), Denmark (20), Austria (4,28), Germany (4,142,28), Netherlands (28), Japan (16), Taiwan (16), Switzerland (142), Ireland (4), Switzerland (4), France (4), Portugal (4), Spain (4), USA (13)
Product Stewardship Policies	Policies to encourage companies to include the costs of reuse, recycling or disposal in the price of the product; take actions to improve design and manufacture to facilitate reuse, recycling or disposal; and take actions to establish programs to collection, process and reuse/recycle products when discarded.	USA (137)
Take-Back Systems for Solid Waste	Producer takes back used products for purposes of refurbishing and/or recycling. Such schemes are also appropriate for difficult problems such as toxic and hazardous waste management.	Philippines (13), USA (31, 9), Taiwan (120), Japan (120), Germany (62), France (62)



PROCUREMENT POLICIES:		
International Trade Policy Revisions	Trade policies typically encourage lower polluting industries and current international trade protocols tend to encourage environmentally responsible production policies in countries of origin, many of which are developing countries. In addition, local subsidies that decrease import tariffs for environmental technologies can have a positive environmental impact.	Canada (142), USA (8), Mexico (113), Barbados (113)
<i>Recycled Content</i>	Laws mandating specified percentages of recycled materials used in manufacture of new products, to stimulate recycled materials markets.	USA(138)
<i>Procurement Preferences</i>	Requiring governmental procurement preferences for purchase of recycled content products, i.e., evaluation points to responsive bidders.	USA (140)
Development of Procurement Specifications	Develop procurement specifications to promote use of recyclable materials and minimize waste generation.	USA (103)
Licensing of Waste Management Operators	Licensing criteria and procedures enable a level playing field for competition, specifically for private subscription of service directly with waste generators. Facilitates investment in special waste systems, such as biomedical wastes, construction/demolition debris, and hazardous wastes.	USA (13), Ghana (107)
Performance Based Management Contracts	Private sector take-over of service responsibilities with contracts based entirely on improvements toward specific performance targets.	Kosovo (107), USA (106)
Cost-Based Accounting and Transparency, and Management Information Systems	Change in accounting procedures and transparency to enable performance review and encourage improved cost-effectiveness.	Ghana (107), San Salvador (107)
Labor Law Changes	Changes in labor retention requirements, minimum wages, severance pay requirements, public job protections, etc. that affect the ability of government to reduce redundant workers and the private sector to hire workers.	India (107), Ecuador (107)
Managed Competition	Arrangements to facilitate competition between the public and private sector so that contestability is optimized and cost effectiveness among all is achieved.	USA (106,105), UK (107), Canada (61),



Technology Requirement	Specific demand for a type of technology, such as composting, for a specific type of waste. Motivated substantial private sector investment in composting in India.	Denmark (107), India (107)
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Community Motivators:		
Clean City Competitions	Competitions that motivate political leaders and individuals to improve their overall waste management.	Indonesia (107)
Assisted Initiatives	Efforts by community groups, private entrepreneurs and non-profit organizations to initiate new systems with direction and assistance from government.	Japan (36), India (41), Jamaica (41)
Environmental Fairs and Events	Events that motivate attending individuals to improve their overall waste management through games, hikes, etc.	Australia (92), Japan (36), Singapore (41), Ghana (107), Nigeria (107)



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Appendix B

**PERFORMANCE-BASED CONTRACT
COMPENSATION:
super-performance incentives / non-compliance
disincentives (damages)**

Written by Attorney Constance Hornig



Appendix B

PERFORMANCE-BASED CONTRACT COMPENSATION: super-performance incentives / non-compliance disincentives (damages)

Introduction.

The USA has a highly competitive private sector involved in solid waste services, with more than 10,000 private companies providing collection, transfer, and disposal services for profit motive. They work under contract, franchise, license or concession agreements, following competitive selection and under supervised under program of competitive performance monitoring.

Carefully crafting the legal agreements between cities and their private sector operators enables cities to secure extra protection, i.e., super-performance. This specialized arena of solid waste law deals with, for example:

- ⌘ Performance-based contract compensation and related term extensions for super-performance;
- ⌘ Increased compensation for excess collection of recyclables and diversion of organics to recovery;
- ⌘ Anticipated costs of potential areas of contract failure estimated for purposes of liquidated damages to compensate the city for costs incurred;
- ⌘ Incentives for materials recovery plants to exceed recovery quotas, minimized disposal requirements, and improve market demand;
- ⌘ Landfill operation performance incentives to improve compaction, minimize absenteeism, reduce costs, minimize environmental compliance violations;
- ⌘ Performance surety bonds to cover long-term containment, e.g., leakage protection, and functioning of constructed facilities;
- ⌘ Letters of credit for contractor default, as a means of more easily accessing funds in case of failure;
- ⌘ Corporate performance guaranty and financial analysis tests to maintain sufficient financial ratios and debt ratings to cover potential areas of contract failure; and
- ⌘ Limiting contacts between bidders and specified relations or biased parties, to avoid conflict of interest.

In this Appendix, each of the above examples is explained further, in the Box at the start of each example, and followed by sample illustrative legal language from existing model contracts.⁷

⁷ These examples, elaborated in Appendix B, are derived exclusively from the specialized solid waste law practice of Atty. Constance Hornig, based in Los Angeles, California.



EXAMPLE 1A

Municipal solid waste collection contracts: term extensions for super-performance in excess of minimum service standards.

Contracts between a municipality and private hauler can give the hauler the opportunity to earn the right to a contract term extension if it achieves better-than-minimal performance. Example criteria may include low number of customer complaints, results of customer satisfaction surveys, timely payment of fees due municipality, no mis-charging customer accounts. Additional term translates into significant additional profits for the contractor.

EXAMPLE CONTRACTUAL PROVISION: Amended and Restated Agreement Between the County of Santa Barbara (CA, USA) and BFI Waste Systems of North America, Inc. for Exclusive Solid Waste, Recyclables and Organics Collection and Transportation to Disposal and Processing Facilities and Organics Processing Sites for Zone Two (November 2000).

“E. Collector Extension Right Preconditions (3.01b)

(1) Minimum Contamination Levels

(i) Commingled Residential Recyclables. During each Contract Year in the period beginning July 1, 1998 through June 30, 2004, Collector shall deliver to the Processing Facility Residential Recyclables Collected in accordance with Section 4.01a which comprise at least 95% by weight Recyclables and no more than 5% by weight contamination, including Refuse and Organics.

(ii) Source Separated Residential Organics. During each Contract Year in the period beginning July 1, 1998 through June 30, 2004, Collector shall deliver to the Organics Processing site Residential Organics Collected in accordance with Section 4.01a which comprise at least 98% Organics by weight and no more than 2% by weight contamination, including Refuse and Recyclables.

(iii) Commingled Commercial Recyclables. During each Contract Year in the period July 1, 2001 through June 30, 2004, Collector shall deliver to the Processing Facility Commercial Recyclables Collected in accordance with Exhibit 4.01a that comprise at least 85% by weight of Commercial Recyclables and no more than 15% by weight contamination, including Refuse or Organics.

The protocol for determining the contamination is attached to this Exhibit 4.01. Parties may revise in writing that protocol upon mutual agreement of the Collector Representative and County Representative.

(2) Low Assessed Liquidated Damages. During each Contract year in the period beginning July 1, 1998 through June 30, 2004 and during such period in its entirety, respectively, County shall not have Noticed collector of Collector’s obligations to pay liquidated damages as provided in Section 11.01 in excess of \$2,000 annually and \$7,500 in the aggregate.



(3) Customer Satisfaction. The results of a Customer satisfaction survey conducted over the telephone by or on behalf of the County in accordance with Section 5.12, concludes that 75% of Customers are satisfied with Services.

(4) Timely Payment of Fees. On and after the date hereof, Collector has not been delinquent in the payment of any sums or amounts due to County in accordance with the terms hereof or any invoices therefore, including landfill tip fees. On and after the date hereof, County has not received written notice that Collector has been delinquent in the payment of any sums or amounts due third parties with respect to Solid Waste disposal and processing fees.

(5) Timely Implementation of Transition Plan. Collector has timely implemented its Transition Plan, unless otherwise mutually agreed to by the Parties in writing.

(6) No Unauthorized Customer Charges. Collector has not submitted to or charged any customer pursuant hereto written bills prepared in accordance with Section 10.10 or otherwise, any amounts not included in the Rate.

Collector shall report on satisfaction of such preconditions in the annual report submitted in accordance with Section 7.02d.”



EXAMPLE 1B

Municipal solid waste collection contracts: increased compensation for excess recyclables and organics diversion / reduced compensation for insufficient diversion.

Contracts between a municipality and private hauler to collect refuse, recyclables and yard waste can base compensation on the amount of measurable diversion that hauler achieves. If the hauler recycles and composts amounts equal to its diversion performance guaranty, it earns its base service fee. If it exceeds its performance guaranty, its service fee compensation increases. Excess compensation commences at some increment above the guaranteed performance, since the guaranty is presumably one that the hauler can routinely meet and the excess is intended to reward super- performance. Reduced compensation commences immediately below the performance guaranty. Measurement is key. Address contamination and routes that commingle contract with non-contract waste.

EXAMPLE CONTRACTUAL PROVISION: (Service Agreement between the City of La Canada Flintridge (CA, USA) and Contractor for Commercial Solid Waste and Recyclables and/or C&D Debris Collection, Disposal and Processing (December 2001)

“6.03 Minimum Diversion Requirement.

a. Annual Compliance and Remedies.

(1) Minimum Diversion Requirement. Contractor will annually, in each calendar year, recycle and/or process and market, or cause to be recycled and/or processed and marketed, Solid Waste Collected by Contractor in a manner which entitles City to diversion credit as specified in Section 41780 of the California Public Resources Code, at least 26% of all Recyclables and Refuse that is Collected by Contractor (“**Minimum Commercial Solid Waste Diversion Requirement**”), and 70% of all C&D Debris that is Collected by Contractor (“**Minimum C&D Debris Diversion Requirement**”, and together with the Minimum Commercial Solid Waste Diversion Requirement, the “**Minimum Diversion Requirement**”).

(2) Solid Waste Management Fee Reductions and Increases

(i) Exceeding Minimum Diversion Requirements: Fee Reductions. If Contractor exceeds either the Minimum Commercial Solid Waste Diversion Requirement or Minimum C&D Debris Diversion Requirement during any three months covered in each Quarterly Report, for each diversion percentage point or portion thereof *greater* than the Minimum Commercial Solid Waste Diversion Requirement or Minimum C&D Debris Diversion Requirement, together with timely submission of its Quarterly Report Contractor may deduct from its payment to the City of the Solid Waste Management Fee an amount equal to the percentage of its gross Service Fees received for providing Refuse and Recyclables Collection Services, or C&D Debris Collection Services, respectively, as indicated on the tables in paragraph (iii).

(ii) Failing to meet Minimum Diversion Requirements: Fee Increases. If Contractor fails to meet either the Minimum Commercial Solid Waste Diversion Requirement or Minimum C&D Debris Diversion Requirement calculated with respect to any three months covered in each Quarterly Report, for each diversion percentage point or portion thereof *less* than the Minimum Commercial Solid Waste Diversion Requirement or Minimum C&D Debris Diversion Requirement, together with timely



submission of its Quarterly Report Contractor will pay City an incremental Solid Waste Management Fee equal to the percentage of its gross Service Fees received for providing Refuse and Recyclables Collection Services, or C&D Debris Collection Services, respectively, as indicated on the table in paragraph (iii).

The Parties acknowledge that City has been the subject of a compliance order by the California Integrated Waste Management Board for failure to timely comply with AB 939, and the consequent agreement with the Board, and that City procured this Agreement for reasons including securing performance standards and obligations intended to help the City meet its AB 939 diversion obligations. Therefore compliance with the Minimum Diversion Requirement is of the utmost importance to the City, which faces fines of up to \$10,000 for noncompliance with AB 939. The Parties further recognize that quantified standards of performance are necessary and appropriate to ensure consistent and reliable collection service, and if Contractor fails to meet the Minimum Diversion Requirement, it is and will be impracticable and extremely difficult to ascertain and determine the value thereof. Therefore, the Parties agree that the above increases in Solid Waste Management Fee represent a reasonable estimate of the amount of the costs that might accrue to the City if Contractor does not meet the Minimum Diversion Requirement, considering all of the circumstances existing on the date of this Agreement, including the relationship of the sums to the range of harm to City that reasonably could be anticipated, anticipation that proof of actual costs would be costly or inconvenient, and possible restrictions on Contractor's ability to indemnify City for fines payable for AB 939 noncompliance in accordance with Section 40059.1 of the California Public Resources Code, whether due to explicit provision of Section 40059.1 or uncertainty in enforcement thereof due to ambiguity of its terms or meaning, or otherwise. In signing this Agreement, each Party specifically confirms the accuracy of the statements made above and the fact that each Party had ample opportunity to consult with legal counsel and obtain an explanation of this provision at the time that this Agreement was made.

(iii)

COMMERCIAL SOLID WASTE DIVERSION %	SOLID WASTE MANAGEMENT FEE REDUCTION (-) OR INCREASE (+) %
40	-5
38	-4
36	-3
34	-2
32	-1
30	0
28	0
26	0
24	+1
22	+2
20	+3
18	+4
16	+5



14 or less	+6 and one additional percentage point for each two percentage points less than 14%
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C&D DEBRIS DIVERSION %	SOLID WASTE MANAGEMENT FEE REDUCTION (-) OR INCREASE (+) %
95	-5
90	-4
85	-3
80	-2
75	-1
70	0
65	+1
60	+2
55	+3
50 or less	+4 and one additional percentage point for each 5 percentage points less than 45%

b. Measurement of Minimum Diversion Requirement.

(1) Minimum Commercial Solid Waste Diversion Requirement. Compliance with the Minimum Commercial Solid Waste Diversion Requirement referenced in subsection a is measured by calculating the percentage that Contractor's diverted Recyclables comprises of Contractor's total Collected Refuse and Recyclables:

$$\text{Minimum Commercial Solid Waste Diversion Requirement} = 100 \times [\text{diverted Recyclables}] / [\text{Collected Recyclables} + \text{Collected Refuse}].$$

(2) Minimum C&D Debris Diversion Requirement. Compliance with the Minimum C&D Debris Diversion Requirement referenced in subsection a is measured by calculating the percentage that Contractor's diverted C&D Debris comprises of Contractor's total Collected C&D Debris:

$$\text{Minimum C\&D Debris Diversion Requirement} = 100 \times [\text{diverted C\&D Debris} / \text{Collected C\&D Debris}].$$

c. Corroboration of Diversion.

(1) AB 939 Reports. The amount of diverted Recyclables and C&D Debris will be based upon Tons of those materials diverted by the Recyclables Processing Facility and C&D Debris Processing Facility, respectively, allocable to the City as may be reported by the Recyclables Processing Facility and C&D Debris Processing Facility to the Integrated Waste Management Board in compliance with AB 939 reporting requirements. Conversely, the City may calculate or direct Contractor to calculate the amount of diverted Tons based upon Tons of residual remaining after processing of Recyclables allocable to the City, as so reported.



(2) Primary Source Documentation. Alternatively, the City may calculate, or direct Contractor to calculate, the amount of diverted Recyclables and C&D Debris, based upon Tons of those materials diverted by the Recyclables Processing Facility and C&D Debris Processing Facility, respectively, as corroborated by written documentation provided by the Recyclables Processing Facility and C&D Debris Processing Facility that may serve as the basis of the AB 939 reports described in paragraph (1), acceptable to City, including: weigh tickets; invoices; bills of lading; and receipts from Recyclables and C&D Debris transporters, shippers, brokers, beneficiaries, remanufacturers and purchasers or other users.

Documentation is subject to adjustment in accordance with subsection e, in the event of commingling. Contractor will provide City with copies of documentation within 7 days of City's direction.

d. Determination of Collected Materials. The amount of Recyclables, Refuse and C&D Debris Collected by Contractor will be established by written documentation acceptable to City provided by the Solid Waste Management Facilities, including: weigh tickets; invoices; and reports submitted by the Solid Waste Management Facilities to the California Integrated Waste Management Board with respect to materials allocable to the City. That documentation is subject to adjustment in accordance with subsection e, in the event of commingling. Contractor will provide City with copies of that documentation within 7 days of City's direction.

e. Allocation of Commingled Materials. If Contractor commingles Recyclables, C&D Debris or Refuse that are Collected from Commercial Customers with recyclables, construction and demolition debris or refuse generated by or collected from Persons other than Commercial Customers (including residential routes within and outside the City and commercial routes outside the City), then Contractor will determine Tons of Collected Recyclables, Refuse and C&D Debris for purposes of subsection b, as follows.

The total weight of a Vehicle's load in Tons will be divided by:

(i) the aggregate cubic yard capacity ("**Commercial Route Capacity**") of Containers that Contractor Collects with that Vehicle from Commercial Customers, based on Records of Customer's Service, including Customer Service Subscription Orders and invoices, plus

(ii) the aggregate cubic yard capacity ("**Other Route Capacity**") of carts or bins that Contractor collects with that Vehicle from Persons other than Commercial Customers, including single family homes, duplexes, triplexes, apartments, stock cooperative and condominium residences, as well as commercial customers located outside the City, based on written records of those customer's service, including subscription orders and invoices. The conversion ratio for carts that have capacities measured in gallons rather than cubic yards, is 200 gallons to 1 cubic yards.

The resulting average Tons/cubic yard will be multiplied by the Commercial Route Capacity.

Upon City direction, Contractor will promptly supply City with documentation supporting allocation calculations, including route collection maps and sheets, and totals of Containers by size and capacity. If City disagrees with the allocation calculations, it may correct the calculations. Contractor will be bound by those corrections.

f. Annual Reconciliation. In its Annual Report, Contractor will compare the dollar amount of Solid Waste Management Fees that Contractor owes City for that calendar year with the actual dollar amount of Solid Waste Management Fees that Contractor paid City during the first, second and third quarters of that calendar year.



(1) Excess Payments. Contractor may apply any excess Solid Waste Management Fee to future Solid Waste Management Fees, or if the Term is expiring or Contractor is no longer providing service in the City, Contractor may request that the City reimburse the dollar amount of the excess.

(2) Deficit payments. Contractor will pay City any additional Solid Waste Management Fees together with timely submission of the Annual Report. Failure to timely pay any Solid Waste Management Fee is an Event of Default, and City may, among other remedies, draw on the performance bond, letter of credit, Guaranty or other performance assurance provided by Contractor in accordance with Article 11.”



EXAMPLE 1C

Municipal solid waste collection contract: economic disincentives (damages) for failing to meet performance standards.

Contracts between a municipality and private hauler to collect refuse, recyclables and yard can define the types of costs the municipality may incur if hauler breaches performance obligations (such as failure to take materials to designated facilities). These are compensatory damages measured by actual costs (such as excess haul mileage and tipping fees). Contracts can also estimate in advance the difficult-to-measure costs incurred by the municipality if hauler defaults (such as falling short of customer service standards and specifications or contract reporting obligations). These are liquidated damages.

EXAMPLE CONTRACTUAL LANGUAGE (Agreement Between the County of Monterey (CA, USA) and Contractor for Collection of Refuse, Green Waste and Recyclables from Residential and Commercial Customers in Unincorporated Northeast Monterey County (RFP draft July 2002).

“14.01 Certain Breaches and Damages In its Monthly Report Contractor will certify to County that it has met its Service obligations during the preceding month. If Contractor cannot so certify, if its complaint record evidences, or the County Notifies Contractor that it has failed to meet any of its Service obligations, then commencing 6 weeks after the date provided in the Transition Plan for full commencement of Services, Contractor will pay the liquidated or compensatory damages for each of the corresponding breaches, as indicated in Exhibit 14.01. Contractor will pay damages in the time and manner provided in Section 13.06. Within 10 days of first receiving Notice of breaches and damages from County, Contractor may contest imposition of damages by Notice to the County, indicating the basis for disagreement.

The Parties acknowledge that County incurred considerable time and expense procuring this Agreement in order to secure an improved level of collection service quality and increased Customer satisfaction. Therefore consistent and reliable Services are of utmost importance to the County and Customers. County has considered and relied on Contractor's representations as to its quality of service commitment in entering into this Agreement, and Contractor's breach of its Service obligations referenced in this Section above represents a loss of bargain to the County and Customers. The Parties further recognize that quantified standards of performance are necessary and appropriate to ensure consistent and reliable Service, and if Contractor fails to meet Service obligations, County will suffer damages (including its Customers' inconvenience; criticism and complaint by Customers; lost County Board and staff time; and loss of bargain secured through time consuming and expensive competitive procurement) and that it is and will be impracticable and extremely difficult to ascertain and determine the value thereof. Therefore, the Parties agree that the liquidated damages represent a reasonable estimate of the amount of said damages, considering all of the circumstances existing on the Commencement Date, including the relationship of the sums to the range of harm to County that reasonably could be anticipated and anticipation that proof of actual damages would be costly or inconvenient. In signing this Agreement, each Party specifically confirms the accuracy of the statements made above and the fact that each Party had ample opportunity to consult with legal counsel and obtain an explanation of this liquidated damage provision at the time that this Agreement was made.



EXHIBIT 14.01 COMPENSATORY AND LIQUIDATED

References in the chart below to “per breach per day” refer to the first occurrence and continuation on successive days. For example, failure to correct a missed pickup would result in liquidated damages on the day of the scheduled pickup and each following day until corrected.

Compensatory. If the County in its sole discretion chooses not to exercise its right to terminate this Agreement in accordance with Section 5.01 in the event Contractor fails to deliver Program Recyclables to a Recyclables Processing Facility, Green Waste to the Green Waste Processing Facility in accordance with Section 6.01, or Refuse to the Disposal Facility in accordance with Section 7.01, then the Contractor will pay the County:

(i) the County Reimbursement Costs to provide necessary persons who monitor Contractor’s compliance with said delivery requirements, including following Contractor’s vehicles on Service routes; and

(ii) For each Ton of Refuse, Recyclables or Green Waste collected by Contractor that Contractor delivers to a facility or site other than the applicable Solid Waste Management Facility (“**Undelivered Tons**”), as demonstrated by weigh bills at said other facility or site or other evidence satisfactory to the County, including reports of any monitoring party in accordance with preceding paragraph (i), (“**Undelivered Documentation**”), the Contractor will pay the County within 30 days following receipt of any invoice therefore from the County, compensatory damages equal to all damages or other payment obligations the County consequently directly or indirectly incurs under this Agreement, including tipping fees that would have been paid at the Disposal Facility as of the date of calculation and an amount equal to the incrementally greater cost for transportation, transfer processing, composting or disposal to or at said other facility or site and County’s Reimbursement Cost of enforcing or securing specific performance of Contractor’s delivery obligation.

Liquidated. ATTACHED IS A SCHEDULE OF LIQUIDATED DAMAGES FOR ADDITIONAL BREACHES.

DESCRIPTION OF BREACH	DAMAGES
Failure to correct a missed pick-up (4.03f).	\$250 per failure per day.
Failure to return emptied container to its proper location (4.03d)	\$100 per failure per day.
Failure to commence, or discontinue Services (4.01a); or to deliver, repair or replace or pick-up Containers; change size or number of Containers; or supply locks in accordance with Section 4.01e.	\$100 per failure per day.
Failure to clean up spillage or litter caused by Contractor (4.03b, c). Failure to properly cover materials in Collection vehicles (4.03c).	\$100 per failure per location.
Discourteous behavior by Contractor's employees reported by or complained of by customers to Contractor or County (4.03a).	\$300 per incident.
Failure to compensate, repair or replace damaged pavements, utilities and/or customer property caused by Contractor or its personnel (4.03d).	\$300 per failure.
Vehicles generate noise in excess of levels set in Section (4.03e).	\$300 per instance per day.



Failure to comply with authorized collection hours (4.01d).	\$250 per failure per day.
Failure to timely respond and resolve each complaint in accordance with the complaint resolution protocol (Exhibit 4.05e).	\$250 per failure.
Failure to record a complaint (4.05c and 10.01). Failure to provide County access to records of complaints (4.05c and 10.01).	\$100 per failure.
Failure to provide any Customer with timely notice of change in collection schedule (4.01c).	\$500 per failure.
Failure to maintain or timely submit complete reports and or/ documents to the County (10.02 and 10.03, Article 5.01b). Failure to provide documentation for review or obtain any approval, consent or other permission of the County required under this agreement (such as 5.01b,c; . Failure to timely submit general Customer correspondence and promotional material (8.08), news releases, etc. (8.09) public education or community relations materials (4.05b) to County for County review	\$500 per failure per Customer or each day prior to retraction or correction of misinformation identified by County
Failure to deliver Solid Waste to authorized Disposal Facility (7.01).	\$1,000 first failure \$5,000 each subsequent failure.
Charging any Customer less or greater than Customer owes for Services; charging any Customer in excess of scheduled Rates (such as the incorrect dollars/Cart or dollars/Bin).	\$100 per incident and \$500 per incident, respectively.
Failure to disclose or correctly describe to Customers all available service options during any inquiry about service. Failure to correctly provide information about mandatory collection in accordance with County Code (4.05e). Failure to provide customers with correct referral information including incorrect County Contact information (4.05e).	\$100 per failure.
Failure to maintain Office Hours (4.05a)	\$200 per failure per day.
Failure to display Contractor's phone number on Collection vehicles (5.02d).	\$250 per failure per day.
Commingling Residential Solid Waste with Recyclable Materials (6.07).	\$1,000 per incident.
Commingling of materials Collected inside and outside the Service Area (8.02).	\$1,000 per incident.
Disposal of Recyclable Materials or Yard Trimmings without first obtaining the required permission of the County (6.08).	\$1,000 per incident.



EXAMPLE 1D

Materials recovery facility operations contract: recovered materials profit and avoided disposal cost sharing.

Contracts between a municipality that owns a materials recovery facility to sort mixed refuse and source-separated recyclables, can provide the operator with financial incentives to exceed the minimum guaranteed recovery percentage. To encourage both excess materials recovery and superlative marketing of materials, Contractor shares in the up side of recovered materials sales revenues and down side of losses, limited to prior profits for a stated period. Contractor also is rewarded for excess recovery by sharing the municipality's avoided transfer, transport and disposal cost that other wise would have been incurred had the materials not been recycled. Measurement of diversion is key: percentage recovery guaranty may be preconditioned on defined parameters of waste characterization / uncontaminated recyclables content. But waste characterization is likely to vary over the contract term, especially if the facility has capacity in excess of that needed to service the owner municipality's refuse and recyclables accepts merchant waste from other communities with different socio-economic demographics, programs and waste streams.

EXAMPLE CONTRACTUAL LANGUAGE: Agreement Between the City of Oxnard (CA, USA) and BLT Enterprises, Inc. for the Design, Construction & Equipping Management and Operation of a Materials Recovery Facility and Transfer Station, Transfer of Waste for Disposal, and Marketing of Recovered Materials (May 1995)

“13.06 Recovered Materials Revenues.

a. Marketing Costs; Sales Revenues. “Marketing Costs” means:

- (1) Contractor's Recovered Materials Haul Fee, if any, for transporting Recovered Materials to market (whether brokers, purchasers or other users) in accordance with Section 14.01c,
- (2) payments by Contractor to third parties for such transportation,
- (3) payments by Contractor to third parties to induce them to take Recovered Materials for re-use in a negative market,
- (4) payments by Contractor for purchase of recyclable materials at the Buy back/Drop off Center in accordance with Section 11.02,
- (5) cash paid by Contractor to purge CFCs in accordance with Section 11.01,
- (6) brokers' fees,
- (7) losses due to City-directed placements pursuant to Section 13.02e(3), and
- (8) other costs approved by the City in advance of expenditure thereof.

Contractor shall not incur Marketing Costs with respect to any particular Ton of Recovered Materials in excess of the amounts provided in Section 13.03 for such Ton, and City shall not be obligated to compensate Contractor for any such excess.



“**Sales Revenues**” means all amounts received by the City (or the Contractor) for the sale or placement of Recovered Materials.

b. Recovered Materials Profits and Losses.

(1) **Recovered Materials Profits.** If Sales Revenues in any month exceed Marketing Costs for such month, the excess shall constitute “**Recovered Materials Profits**” for such month.

(2) **Recovered Materials Losses.** If Marketing Costs in any month exceed Sales Revenues for such month, such excess shall constitute “**Recovered Materials Losses**” for such month. Contractor’s Recovered Materials Losses shall be limited to Contractor’s Loss Share, defined in Section 13.07b(2)(ii)

13.07 Recovered Material Revenue Payments.

a. Contractor Invoice. Together with its monthly Service Fee invoice submitted to the City in accordance with Section 17.09a, the Contractor will submit an invoice calculating Contractor’s share of Recovered Materials Profits and Recovered Materials Losses in accordance with subsection b, accompanied by records substantiating Marketing Costs and Sales Revenues for the preceding calendar month.

b. Calculating Contractor’s Share of Recovered Materials Profits and Losses.

(1) **Recovered Materials Profits.** In any month in which there are Recovered Materials Profits, the City shall pay Contractor an amount equal to:

- (i) Marketing Costs, plus
- (ii) “**Contractor’s Profit Share**” equal to forty percent of such Recovered Materials Profits.

For example:

1. **Sales Revenues** in July = e.g. \$500,000
2. **Marketing Costs** in July = \$115,000 [e.g. third party transportation costs of \$75,000, Contractor’s Recovered Material Haul Fee of \$25,000, payment to a user of \$5,000 for taking material and a Buy Back/Drop Off Center pay out of \$10,000]
3. **Recovered Materials Profits** = \$385,000 [i.e. Sales Revenues - Marketing Costs = \$500,000 - \$115,000 = \$385,000]
4. **Contractor’s Profit Share** = \$154,000 [i.e. 40% X Recovered Materials Profits = 40% X \$385,000 = \$154,000]
5. **City’s payment to Contractor** = \$269,000 [i.e. Marketing Costs + Contractor’s Profit Share = \$115,000 + \$154,000 = \$269,000]

(2) **Recovered Materials Losses.** In any month in which there are Recovered Materials



Losses, the City shall pay Contractor an amount equal to:

(i) Marketing Costs, minus

(ii) “**Contractor’s Loss Share**” equal to the lesser of (x) forty percent of such Recovered Materials Losses or (y) Contractor’s Loss Limit. “**Contractor’s Loss Limit**” equals (i) aggregate amount of Contractor’s Profit Share during the prior four months, minus (II) the aggregate amount of Contractor’s Loss Share during such prior four months.

For example, where there are Recovered Materials Losses but Contractor’s Loss Limit has not been reached:

1. **Sales Revenues** in July = e.g. \$100,000
2. **Marketing Costs** in July = \$115,000 [e.g. third party transportation costs of \$75,000, Contractor’s Recovered Material Haul Fee of \$25,000, payment to a user of \$5,000 for taking material and a Buy Back/Drop Off Center pay out of \$10,000]
3. **Recovered Materials Losses** = \$15,000 [i.e. Sales Revenues - Marketing Costs = \$100,000 - \$115,000 = (\$15,000)]
4. Aggregate amount of Contractor’s Profit Share during the prior four months = \$150,000 [e.g. \$150,000 in March]
5. Aggregate amount of Contractor’s Loss Share during such prior four months = \$80,000 [e.g. (\$20,000) in April + (\$25,000) in May + (\$35,000) in June = (\$80,000)]
6. **Contractor’s Loss Limit** = \$70,000 [i.e. aggregate amount of Contractor’s Profit Share during the prior four months minus the aggregate amount of Contractor’s Loss Share during such prior four months = \$150,000 - \$80,000 = \$70,000].
7. **Contractor’s Loss Share** = \$6,000 [i.e. the lesser of (x) forty percent of Recovered Materials Losses or (y) Contractor’s Loss Limit = (x) 40% X \$15,000 or (y) \$70,000 = (x) \$6,000 or (y) \$70,000 = (x) \$6,000]
8. **City’s payment to Contractor** = \$109,000 [i.e. Marketing Costs - Contractor’s Loss Share = \$115,000 - \$6,000 = \$109,000]

For example where there are Recovered Materials Losses and the Contractor’s Loss Limit *has* been reached:

1. **Sales Revenues** in August = e.g. \$100,000



2. **Marketing Costs** in August = \$115,000 [e.g. third party transportation costs of \$75,000, Contractor's Recovered Material Haul Fee of \$25,000, payment to a user of \$5,000 for taking material and a Buy Back/Drop Off Center pay out of \$10,000]
3. **Recovered Materials Losses** = \$15,000 [i.e. Sales Revenues - Marketing Costs = \$100,000 - \$115,000 = \$(15,000)]
4. Aggregate amount of Contractor's Profit Share during the prior four months = \$0 [e.g. *the \$150,000 in March drops out*]
5. Aggregate amount of Contractor's Loss Share during such prior four months = \$86,000 [e.g. (\$20,000) in April + (\$25,000) in May + (\$35,000) in June + \$6,000 in July = \$86,000]
6. **Contractor's Loss Limit** = \$0 [i.e. aggregate amount of Contractor's Profit Share during the prior four months minus the aggregate amount of Contractor's Loss Share during such prior four months = \$0 - \$86,000 = (\$86,000)]
7. **Contractor's Loss Share** = \$0 [i.e. the lesser of (x) forty percent of Recovered Materials Losses or (y) Contractor's Loss Limit = (x) 40% \$15,000 or (y) \$0 = (x) \$6,000 or (y) \$0 = (y) \$0]
8. **City's payment to Contractor** = \$115,000 [i.e. Marketing Costs - Contractor's Loss Share = \$115,000 - \$0 = \$115,000]

c. City Payment. No later than the Service Fee payment date for such month, City shall pay Contractor invoiced amounts, subject to the dispute resolution procedure provided in Section 17.09c. After making such payment, the City shall be entitled to retain the balance of Recovered Materials revenues.

13.08 Additional Contractor Revenue Sharing

a. Increased Contractor's Profit Sharing. If during any month Contractor recycles, reuses or otherwise diverts from disposal Tons of Recovered Materials ("**Diverted Tons**") in excess of 18% or 20%, as the case may be, of the Tons of Permitted Waste Delivered during such month, then Contractor's Profit Share defined in Section 13.07b(1)(ii) shall be increased as follows:

- (1) by 10% times the Average Recovered Materials Profits times Diverted Tons greater than 18% but less than or equal to 20%; plus
- (2) by 20% times the Average Recovered Materials Profits times Diverted Tons greater than 20%.

"**Average Recovered Materials Profits**" means Recovered Materials Profits divided by the total Diverted Tons.

For example:



1. **Sales Revenues** in July = e.g. \$500,000
2. **Marketing Costs** in July = e.g. \$115,000
3. **Recovered Materials Profits** = \$385,000 [i.e. Sales Revenues - Marketing Costs = \$500,000 - \$115,000]
4. **Total Tons Delivered** in July = e.g. 15,000.
5. **Diverted Ton** levels: 18% X 15,000 Tons = 2,700 Tons; 20% X 15,000 Tons = 3,000 Tons
6. **Diverted Tons** in July = e.g. 5,000 Tons
7. **Excess Diverted Tons** in July = 300 Tons (Tons greater than 18% but less than 20% or 3,000 - 2,700) and 2,000 Tons (Tons greater than 20%, or 5,000 - 3,000)
8. Average Recovered Materials Profits = \$385,000 divided by 5,000 Tons = \$77/Diverted Ton.
9. Contractor's Profit Share = \$217,110 [i.e.
 - 40% x Recovered Materials Profits = 40% X \$385,000 = \$154,000; plus
 - 10% x Average Recovered Materials Profits/Diverted Ton X 300 Tons = 10% x \$77/Diverted Ton X 300 Tons = \$2,310; plus
 - 20% x \$77/Diverted Ton X 2,000 Tons = \$30,800]

b. Increased Contractor's Loss Share. If during any month Contractor recycles, reuses or otherwise diverts from disposal Tons of Recovered Materials ("**Diverted Tons**") in excess of 18% or 20%, as the case may be, of the Tons of Permitted Waste Delivered during such month, then the percent of Recovered Materials Losses comprising a portion of Contractor's Loss Share defined in Section 13.07b(2)(ii)(x) shall be increased as follows:

- (1) by 10% times the Average Recovered Materials Losses times Diverted Tons greater than 18% but less than or equal to 20%; plus
- (2) by 20% times the Average Recovered Materials Losses times Diverted Tons greater than 20%.

"**Average Recovered Materials Losses**" means Recovered Materials Losses divided by the total Diverted Tons.

For example, where there are Recovered Material Losses but Contractor's Loss Limit has not been reached:

1. **Sales Revenues** in July = e.g. \$100,000
2. **Marketing Costs** in July = e.g. \$115,000
3. **Recovered Materials Losses** = \$15,000 [i.e. Sales Revenues - Marketing Costs = \$100,000 - \$115,000 = (\$15,000)]



4. **Total Tons Delivered** in July = e.g. 15,000.
5. **Diverted Ton** levels: 18% x 15,000 Tons = 2,700 Tons; 20% X 15,000 Tons = 3,000 Tons
6. **Diverted Tons** in July = e.g. 5,000 tons
7. **Excess Diverted Tons** in July = 300 Tons (Tons greater than 18% but less than 20% or 3,000 - 2,700) and 2,000 Tons (Tons greater than 3,000, or 5,000 - 3,000)
8. Aggregate amount of Contractor's Profit Share during the prior four months = \$150,000 [e.g. \$150,000 in March]
9. Aggregate amount of Contractor's Loss Share during such prior four months = \$80,000 [e.g. (\$20,000) in April + (\$25,000) in May + (\$35,000) in June = (\$80,000)]
10. **Contractor's Loss Limit** = \$70,000 [i.e. aggregate amount of Contractor's Profit Share during the prior four months minus the aggregate amount of contractor's Loss Share during such prior four months = \$150,000 - \$80,000 = \$70,000]
11. **Average Recovered Materials Losses** = (\$15,000) divided by 5,000 Tons = (\$3)/Diverted Ton.
12. **Contractor's Loss Share** = \$7,290 [i.e. the lesser of (x)
 - o 40% X Recovered Materials Losses = 40% x \$15,000 = \$6,000; plus
 - o 10% X Average Recovered Materials Profits/Diverted Ton X 300 Tons = 10% X \$3/Diverted Ton X 300 Tons = \$90; plus
 - o 20% X \$3/Ton X 2,000 Ton = \$1,200 = \$7,290, or Contractor's Loss Limit of \$70,000.
13. City's payment to Contractor = \$107,710 [i.e., Marketing Costs - Contractor's Loss Share = \$115,000 - \$7,290 = \$107,710]

For example, where there are Recovered Materials Losses but Contractor's Loss Limit *has* been reached:

1. **Sales Revenues** in August = e.g. \$100,000
2. **Marketing Costs** in August = e.g. \$115,000
3. **Recovered Materials Losses** = \$15,000 [i.e. Sales Revenues - Marketing Costs = \$100,000 - \$115,000 = (\$15,000)]
4. **Total Tons Delivered** in August = e.g. 15,000.
5. **Diverted Ton** levels: 18% X 15,000 Tons = 2,700 Tons; 20% X 15,000 Tons = 3,000 Tons



6. **Diverted Tons** in August = e.g. 5,000 tons
7. **Excess Diverted Tons** in August = 300 Tons (Tons greater than 18% but less than 20% or 3,000 - 2,700) and 2,000 Tons (Tons greater than 3,000, or 5,000 - 3,000 = 2,000)
8. Aggregate amount of Contractor's Profit Share during the prior four months = \$0 [e.g. \$150,000 in March drops out]
9. Aggregate amount of Contractor's Loss Share during such prior four months = \$81,200 [e.g. (\$20,000) in April + (\$25,000) in May + (\$35,000) in June + (\$1,200) in July = (\$81,200)]
10. **Contractor's Loss Limit** = \$0 [i.e. aggregate amount of Contractor's Profit Share during the prior four months minus the aggregate amount of Contractor's Loss Share during such prior four months = \$0 - \$81,200 = (\$81,200)]
11. **Average Recovered Materials Losses** = \$15,000 divided by 5,000 Tons = (\$3)/Diverted Ton.
12. **Contractor's Loss Share** = \$0 [i.e. the lesser of (x)
 - o 40% X Recovered Materials Losses = 40% X \$15,000 = \$6,000; plus
 - o 10% X Average Recovered Materials Profits/Diverted Ton X 300 Tons = 10% X \$3/Diverted ton X 300 Tons = \$900; plus
 - o 20% X \$3/Ton x 2,000 Ton = \$1,200 = \$7,290, or
 - o Contractor's Loss Limit of \$0.
13. City's payment to Contractor = \$115,000 [i.e., Marketing Costs - Contractor's Loss Share = \$115,000 - \$0 = \$115,000]

17.05 Excess Diversion Bonus. For every Ton of Recovered Materials Contractor monthly Recovers, Processes, markets in accordance with Article 13 and diverts from disposal in excess of the Materials Recovery Guaranty calculated for such calendar month in accordance with Exhibit 10.01b and submitted to City on the Service Fee Invoice Date, City will pay Contractor on the next Service Fee Payment Date one-half of the City's Avoided Disposal Cost per diverted Ton (the "**Excess Diversion Bonus**"):

$$\text{EDB} = \frac{1}{2} \times [\text{ADC} \times \text{ERM}],$$

where

EDB = Excess Diversion Bonus

ADC = Avoided Disposal Cost per Ton of Excess Recovered Materials



ERM = Recovered Materials Contractor monthly Recovered, Processes, markets in accordance with Article 13 and diverts from disposal in excess of the Materials Recovery Guaranty calculated for such calendar month in accordance with Exhibit 10.01b ("**Excess Recovered Materials**")

"**Avoided Disposal Cost**" means the Transfer Haul Fee the City would have paid Contractor to transport such Ton to the Designated Disposal Facility *plus* the tipping fee the City would have paid for such Ton at the Designated Disposal Facility.

If the annual calculation of the Materials Recovery Guaranty indicates that less Tons were diverted than was calculated for that year's twelve months in the aggregate, Contractor shall reimburse City for City's overpayment of Excess Diversion Bonuses by August 1, or at its option, the City may withhold such overpayment from the Service Fee."



EXAMPLE 1E
Landfill operations contract:

Landfill operations contract: Contracts between the municipal owner of a landfill and its operator provide economic incentives for operator to exceed minimum performance standards, including maximizing compaction (thereby extending the life of municipality's asset and delaying additional capital investment), minimizing customer complaints, avoiding lost worker days for illness, absence (which increases operator's productivity and decreases operating fees if rates are adjusted based on costs-plus a negotiated rate of return), and reducing regulatory violations. Measurement is key: how often compaction is measured and what protocol is used, may determine (non)compliance. Validity of complaints can be subjective.

EXAMPLE CONTRACTUAL LANGUAGE: Agreement Between Butte County (CA, USA) and Neal Road Landfill Corporation, Inc. for Operation of the County's Neal Road Landfill (draft December 1999)

"7.07 Capacity Maximization Incentives and Disincentives.

a. County Fiscal Interest. Operator acknowledges that efficient and maximized use of Cells and air space capacity of the Landfill is of considerable economic value to the County. In particular, Operator acknowledges that to the extent that the County can continue use of an existing Cell and delay preparation of a new Cell, the County accrues financial benefits, including those due to delayed capital investment and the time value of money. Furthermore, so long as the County can continue preparing Cells at the Site existing as of the date hereof, it foregoes significant additional expenses including land acquisition, environmental reporting and permitting, defense against potential site opposition as well as preparation costs. Therefore Operator agrees to use Reasonable Business Efforts to maximize the amount of Permitted Waste disposed within each Cell, in the Landfill and on the Site.

b. Operations Fee Adjustments for Compaction. County must increase the Operations Fee in accordance with Section II 4 of the Operating Fee Setting Manual for compacting Permitted Waste in excess of 1,300 pounds per cubic yard Permitted Waste and must decrease the Operations Fee in accordance therewith for compacting Permitted Waste less than or equal to 1,300 pounds per cubic yard.

c. Measurement Period and Survey. County may measure compaction at any time. For purposes of determining the Operations Fee or an Event of Default in accordance with Section 19.01, the County may measure compaction once each Contract Year, commencing the first such day following the date hereof (the "**Measurement Period**") and report to Operator the results thereof within one week thereof. The County must survey the Landfill on the first day of each Measurement Period using standard OPS methods ("**Measurement Period Waste Volume**" or "**V**").

[d. Weight Records. Operator must secure and maintain records of Permitted Waste Delivered to the Site in accordance with Section 14.01 during the Measurement Period ("**Measurement Period Waste Weight**" or "**W**").]

e. Compaction Calculation. Compaction is calculated as follows:
[Measurement Period Weight (Tons) X 2,000 pounds/Tons] / Measurement Period Volume (cubic yards) = Compaction (pounds/cubic yard).



f. Disputes. Operator may direct the Independent Consultant to check the County's calculation of compaction and/or recalculate compaction within one week of receiving the report of such calculation from the County. The determination of the Independent Consultant with respect thereto is binding in accordance with Section 21.01c. If the Independent Consultant determines that County's calculation of compaction contains an error of greater than x percent, County must reimburse Operator the Operator's Reimbursement Costs of such determination; otherwise, Operator must pay the Direct Cost of such determination. That cost is an Operator's Cost.

10.12 Complaints.

a. Log of complaints received by Operator. Operator must promptly and politely respond to complaints related to Operator's performance or nonperformance of Performance Obligations, including litter, dust, noise and other operational and customer service issues ("**Complaints**"), and use Reasonable Business Efforts to resolve Complaints relating to matters within its Performance Obligations within thirty days receipt thereof. Operator must keep a written log of such complaints together with the resolution thereof, and report to County thereon monthly in accordance with Section 14.01.

b. Operations Fee Adjustments for Number of Complaints Received by County. Parties agree that the number of valid Complaints received by the County constitute a performance incentive in accordance with Section II 4 of the Operating Fee Setting Manual which determines the amount of the Operations Fee in certain events provided in accordance with Section 18.03. County will use Reasonable Business Efforts to determine the validity of such Complaints, and if County wishes to cite any such Complaints with respect to performance incentives, it will provide Operator with a record of the origin, time and resolution (or lack thereof) of any such Complaint at the time the Operations Fee is adjusted. Operator may direct the Independent Consultant to check such Complaints and conduct inquiries as to the validity thereof. The determination of the Independent Consultant with respect thereto is binding in accordance with Section 21.01c. If the Independent Consultant determines that the County's initial determinations and records of Complaints contain an error of greater than x percent, County must reimburse Operator the Operator's Reimbursement Costs of such determination; otherwise, Operator must pay the cost of such determination. That cost is an Operator's Cost.

i. Operations Fee Adjustments for Lost Worker Days. Parties agree that minimizing the number of days in excess of one day per employee for each Contract Year that Operator's employees do not report to work at the Landfill due to injury ("**Lost Worker Days**") constitutes a performance incentive in accordance with Section II 4 of the Operating Fee Setting Manual which determines the amount of the Operations Fee in certain events provided in accordance with Section 18.03. Operator must daily record and monthly report such Lost Worker Days to County in accordance with Section 14.01 and the requirements of Applicable Law, including OSHA. County may direct the Independent Consultant to check Operator's records and reports of Lost Worker Days to County and conduct inquiries as to the validity of such records and reports. The determination of the Independent Consultant with respect thereto is binding in accordance with Section 21.01c. If the Independent Consultant determines that Operator's log or reports an error of greater than x percent, Operator must reimburse County the County's Reimbursement Directs of such determination; otherwise, County must pay the Direct Cost of such determination.

13.06 Regulatory Agencies' Determinations of Compliance with Applicable Law.



a. Importance to County. Operator acknowledges that it is extremely important for the County to maintain a good standing with Regulatory Agencies, including the LEA and Regional Water Quality Control Board, and that noncompliance with Applicable Law reported by such Regulatory Agencies, including the LEA and Water Quality Control Board, are injurious to the County's ability to maintain a good standing with such Regulatory Agencies and the public.

b. Operations Fee Adjustment for Regulatory Agencies' Areas of Concern and Violations with respect to Applicable Law

(1) **Areas of Concern.** Parties agree that minimizing the number Areas of Concerns (defined below) expressed by any Regulatory Agency constitutes a performance incentive in accordance with Section II 4 of the Operating Fee Setting Manual which determines the amount of the Operations Fee in certain events provided in accordance with Section 18.03. "**Areas of Concern**" includes any form of written report or other communication (including notices, memorandum and letters) from a Regulatory Agency to Operator or County which describes such Regulatory Agency's concerns with respect to questionable or uncertain compliance, or to possible non-compliance, with Applicable Law, which concerns are not tantamount to Violations (described in following paragraph (2)). Examples of Areas of Concerns include of "Areas of Concern" noted on LEA inspection reports, and "EPA suggested inspection checklist" or "Additional Comments, Special Instructions, Items for Follow-up on future Inspections, Notes, Etc." noted on Regional Water Quality Control Board facilities inspection reports. Operator must attach a copy of any such report or other communication, including an LEA or Regional Water Quality Control Board inspection report, to its Monthly Report. Operator may protest or contest such Areas of Concern with the applicable Regulatory Agency, but such protests or contests do not affect any pending adjustment of the Operations Fee. If the Regulatory Agency subsequently amends such prior report or other communication, the County must thereafter readjust the Operations Fee consistent with such Regulatory Agency amendments; provided that the elimination of any such Area of Concern on a future communication is not to be construed as amendment of the prior report or communication.

(2) **Violations.** Parties agree that minimizing the number Violations (defined below) noted by any Regulatory Agency constitutes a performance incentive in accordance with Section II 4 of the Operating Fee Setting Manual which determines the amount of the Operations Fee in certain events provided in accordance with Section 18.03.

"**Violations**" include any written notice, assessment or determination of non-compliance with Applicable Law from a Regulatory Agency to Operator or County, whether or not a fine or penalty is included, assessed, levied or attached. Examples of Violations include Notices of Violations on LEA inspection reports and Notice of Violation by the Regional Water Quality Control Board. Operator must attach a copy of any such Violation to its Monthly Report. Operator may protest or contest such Violation with the applicable Regulatory Agency, but such protests or contests do not affect any pending adjustment of the Operations Fee. If the Regulatory Agency subsequently determines that issuance of such Violation was in error, the County must thereafter readjust the Operations Fee consistent with such Regulatory Agency's determination; provided that the subsequent correction of any condition leading to or causing such Violation is not to be construed to be a determination that such Violation was in error.

18.04 Performance Indicators. The Operations Fee will be adjusted in accordance with the Operating Fee Setting Manual based on a number of performance indicators, including those listed here for the Parties' convenience:



- (1) Areas of Concern and Violations listed in LEA Reports, in accordance with Section 13.06b,
- (2) number of Lost Worker Days defined in Section 11.01i that of Operator's employees do not report to work at the Landfill due to injury, in accordance with Section 11.01i.
- (3) number of valid complaints in accordance with Section 10.12, and
- (4) compacting Permitted Waste greater, or less than or equal to, 1,300 pounds per cubic yard, in accordance with Section 7.07."



II. PERFORMANCE ASSURANCES

EXAMPLE 2A

Performance and surety bonds.

A third party surety of specified financial creditworthiness assures performance of a defaulting contractor by completing the contracted work with surety's replacement contractor or by payment of money to fund alternative service. Performance bonds are well suited to construction projects built to designs and specifications, which surety's substitute contractor can implement. They are not well suited to service agreements where performance obligations are less precise. In addition, service agreements may be for mid-to long-terms, and a municipality may not want to continue in a relationship with a service provider it did not chose, which may not have the municipal solid waste service experience, environmental record, staffing, and other criteria that served as the basis for municipality's selecting the original, defaulting contractor. Performance bonds may be difficult to liquidate, since sureties prefer substitute performance to payment. Municipality's may experience cash flow difficulties pending realizing payment on bonds.

EXAMPLE CONTRACTUAL LANGUAGE: Agreement Between Humboldt Waste Management Authority and ECDC, Environmental, L.C. for Design, Construction & Equipping Management and Operation of Transfer Station, and Transport and Disposal of Solid Waste (August 1998)

“10.4 Performance Bond.

a. Performance Bond.

Within one month of the date hereof, Contractor shall secure and throughout the Term hereof maintain in full force and effect a performance bond in an amount not less than one million dollars (\$1,000,000) with respect to Construction Management and Equipping Management, Transfer Station Operation, Transport Services, and Disposal Services. Such bond shall be in substantially the form of commercial blanket bond form attached as Exhibit 10.4. Contractor shall procure such bond from underwriters approved by the Authority Executive Director, licensed in California, rated not less than "A-VII" by A.M. Best Company, Inc.; provided that the Authority may waive such requirements. Simultaneously with the annual or other renewal of such bond or securing of substitute bond, Contractor shall file with Authority evidence of such renewal or securing thereof.

The Authority may review Performance Bond coverage levels every five years, commencing from the date hereof. In connection with such review, Contractor shall provide Authority with quotes on the increased (or decreased) cost, if any, associated with Authority's request for adjusted levels or amounts of coverage. Upon request of the Authority, Contractor shall provide documentation, including letters from its bond brokers, that any such increased (or decreased) premium cost is attributable solely to the requested adjusted levels or amounts of coverage and not to other factors, including annual premium escalation, Contractor's actuarial or risk profile or Contractor's claim history. Authority may direct Contractor to adjust levels or amounts of such coverage and shall adjust the per Ton Transfer Station Operation Price, Transport Price or Disposal Price, as most applicable to the type of bond coverage being adjusted, in amounts equal to:

(1) the dollar amount of premium increases (or decreases) divided by



(2) the Tons of Permitted Waste for which Authority pays the Contract Price for the past Contract Year.

Such Price adjustment shall become effective on the first Monthly Price Invoice Date occurring after Contractor pays the adjusted premium. Contractor shall secure and maintain the directed levels or amounts of coverage within sixty days of Authority's direction thereof."



EXAMPLE 2B
Letters of Credit.

A bank of approved financial creditworthiness can provide a letter of credit that the municipality draws down in event of contractor default. Letters of credit are preferable to performance bonds. If the municipality can unilaterally access them without contractor consent, it has a ready source of cash to secure substitute services with service providers of its own choice. Contractor's cost of securing a letter of credit may be greater than the comparable cost of securing a performance bond. This cost is incorporated into contractor's compensation, which in turn is borne by the rate paying public.

EXAMPLE CONTRACTUAL LANGUAGE: Service Agreement Between the City of Elk Grove and USA Waste of California, Inc. DBA Central Valley Wastes Services for Residential Refuse Collection and Transportation to Disposal Facilities, and Recyclables and Green Waste Collection, Processing and Marketing (September 2002).

"11.05 Letter of Credit Contractor will provide for the issuance of an irrevocable direct pay letter of credit (the "**Letter of Credit**") by a bank approved by the City in its sole discretion (the "**Bank**") for the benefit of the City, under which the City is authorized to draw, in one or more drawings, an aggregate amount up to the amount required for a performance bond as provided in Exhibit 11.03 (the "**Stated Amount**") upon the occurrence of (1) an Event of Default, (2) Contractor's failure to timely pay any moneys due City in accordance with Scion 13.06, (3) Contractor's inability to regularly pay its bills as they become due, or (4) Contractor's failure to timely pay any Solid Waste Management Facility for disposal services provided under this Agreement, as evidenced to the satisfaction of the City. The expiration date of the Letter of Credit must be no less than the Term of this Agreement (the "**Stated Expiration Date**"), *unless* it provides that it will not be terminated, modified or not renewed except after prior written notice by certified mail, return receipt requested, to City 30 days in advance or termination or failure to renew. Letter of Credit will expire on the date on which the Bank receives a certificate from the City saying that the Term has expired or this Agreement has been terminated and Contractor owes City no money hereunder, or that Contractor has substituted an alternative letter of credit or other security document acceptable to City in City's sole discretion. The form of the Letter of Credit, including the procedures for and place of demand for payment and drawing certificate attached thereto, is subject to approval of City in its sole discretion. The Letter of Credit must be transferable to any successor or assign of the City."



EXAMPLE 2C

Parent Corporation Financial / Performance Guaranty.

An affiliate corporation of contractor that has superior financial creditworthiness guaranties contractor's performance. Often, the affiliate may be a publicly held corporation with audited financial statements, whereas the contractor is a subsidiary that does not. However, the true financial creditworthiness of the affiliate cannot be reliably measured by gross receipts or net assets alone. Ascertaining financial ratios (quick, liquidity etc.) present a truer picture of its financial well-being. Meaningful guaranties should have an ongoing financial test, such as maintaining specific financial ratios or debt ratings. Provision should be made to give a municipality consent rights in event the affiliate reorganizes and spins off assets.

EXAMPLE CONTRACTUAL LANGUAGE: Agreement Between Klamath County (OR, USA) and Regional Disposal Company for the Development and Operation of the County Transfer Station and Transport and Disposal of Waste (draft June 2002)

7.5 Financial Guaranty Agreement. As of the Commencement Date and throughout the Term, Contractor will ensure that the Guarantor or its successors or assigns acceptable to the County, will execute and maintain a legal, valid and binding Financial Guaranty Agreement appended hereto as Exhibit 7.5

EXCERPTS FROM FORM OF GUARANTY: (3) Enforce ability; no assignment. This Guaranty is binding upon and enforceable against Guarantor, its successors, assigns, and lawful representatives. It is for the benefit of the City, its successors and assigns. The Guarantor may not assign or delegate the performance of this Guaranty without the prior written consent of the City in its sole discretion. Any assignment made without the consent of City is voidable by the City in its sole discretion. Together with its request for City consent, Guarantor will pay City \$10,000 to pay City its reasonable expenses for private attorneys' fees and investigation costs ("assignment expenses") necessary to investigate the suitability of any proposed assignee, and to review and finalize any documentation required as a condition for approving any assignment. City will reimburse Guarantor the excess, if any, over those assignment expenses it incurs. Contrariwise, Guarantor will pay City the excess assignment expenses, if any, over \$10,000 City incurs within 30 days' of City's request therefore. Guarantor will further pay to City the City's Reimbursement Costs for fees of attorneys who are not City employees and investigation costs necessary to enjoin the assignment or to otherwise enforce this provision within 30 days of City's request therefor ("injunction costs"). Guarantor's obligation to pay City assignment expenses and injunction costs will not exceed \$35,000 in the aggregate, excluding any costs that the City may recover under Applicable Law, including court costs paid to a prevailing party.

For purposes of this Guaranty "assign" and "assignment" means:

- (i) selling, exchanging or otherwise transferring effective control of management of the Guarantor (through sale, exchange or other transfer of outstanding stock or otherwise);
- (ii) issuing new stock or selling, exchanging or otherwise transferring 20% or more of the then outstanding common stock of the Guarantor;
- (iii) any dissolution, reorganization, consolidation, merger, re-capitalization, stock issuance or re-



issuance, voting trust, pooling agreement, escrow arrangement, liquidation or other transaction which results in a change of Ownership or control of Guarantor;

(iv) any assignment by operation of law, including insolvency or bankruptcy, making assignment for the benefit of creditors, writ of attachment of an execution, being levied against Guarantor, appointment of a receiver taking possession of any of Guarantor's tangible or intangible property; and

(v) any combination of the forgoing (whether or not in related or contemporaneous transactions) which has the effect of any transfer or change of Ownership or control of Guarantor.

For purposes of determining "Ownership", the constructive ownership provisions of Section 318(a) of the Internal Revenue Code of 1986, as in effect on the date here, will apply, provided that (1) 10 percent is substituted for 50 percent in Section 318(a)(2)(C) and in Section 318(a)(3)(C) thereof; and (2) Section 318(a)(5)(C) is disregarded. For purposes of determining ownership under this paragraph and constructive or indirect ownership under Section 318(a), ownership interest of less than 20 percent is disregarded and percentage interests is determined on the basis of the percentage of voting interest or value which the ownership interest represents, whichever is greater."



EXAMPLE 2D
Indemnifications by contractor.

Municipalities routinely secure indemnifications by their contractors to make them whole for specified costs. Examples include: tort judgments against a municipality when the contract hauler's collection truck hits a private vehicle, fines assessed by a regulatory agency against a municipality for violations caused by its contract transfer facility operator, or clean up costs for hazardous waste disposed of at a privately owned landfill pursuant to a disposal agreement between landfill owner and municipality. The scope of indemnified conduct varies, from broadly anything arising out of the contract to limited contractor negligence or malfeasance. And the value of the indemnification depends on the financial creditworthiness of the contractor that is providing the indemnity. (See discussion above under "Guaranty".

EXAMPLE CONTRACTUAL LANGUAGE: Agreement Between Waste Solutions Group, Inc. and Eel River Disposal Company Inc. for Municipal Solid Waste Transfer and Transport Services (draft September 2002)

"5.2 Defense and Indemnification

a. General: by Subcontractor

(1) Defense. Upon Contractor's or Authority's request, Subcontractor will defend with legal counsel acceptable to the Contractor or Authority any action, claim or suit which asserts or alleges any Liabilities, whether well founded or not, arising or resulting in whole or in part, directly or indirectly, from actions or inactions of Subcontractor or Subcontractor's Related Parties, Contractor and/or Contractor's Related Parties, or Authority and Authority's Related Parties, performed or occurring under or in connection with the Agreement. Contractor and Authority reserve the right to retain at their own cost and expense co-counsel and Subcontractor will direct Subcontractor's counsel to assist and cooperate with co-counsel with respect to that defense.

(2) Indemnification. Subcontractor will indemnify and hold harmless Contractor and Contractor's Related Parties, Authority and Authority's Related Parties and each and every one of them, from and against all Liabilities to which any of them may be subjected by reason of, or resulting directly or indirectly from actions or inactions of Subcontractor or Subcontractor's Related Parties performed or occurring under or in connection with the Agreement, whether or not those Liabilities are litigated, settled or reduced to judgment and whether or not those Liabilities are caused in part by any wrongful or negligent act, error or omission of any party indemnified under this Agreement. However, if a final decision or judgment or settlement approved by the Contractor or Authority, as it may apply to Contractor or Authority, allocates Liability by determining that any portion of damages awarded is attributable to a wrongful or negligent act, error or omission of the Contractor and/or Contractor's Related Parties or Authority and/or Authority's Related Parties, the Contractor or Authority will pay that portion of damages and of defense costs.

b. Hazardous Waste: Cross-indemnifications.

(1) By Subcontractor. Without limiting Subcontractor's Indemnification in subsection a, upon Contractor's request, Subcontractor will indemnify, hold harmless, protect and defend with legal counsel acceptable to the Contractor or co-counsel selected by the Contractor or to Authority or co-



counsel selected by the Authority, at Subcontractor's sole cost, Contractor and Authority from and against all Liabilities paid, incurred or suffered by, or asserted against the Contractor or Authority in a judicial, administrative or regulatory forum or otherwise, whether well founded or not,

(1) arising or resulting in whole or in part, directly or indirectly, or attributable to, any repair, cleanup or detoxification, or preparation and implementation of any removal, remedial, response, closure or other plan (regardless of whether undertaken due to governmental action) concerning any Hazardous Waste at:

(i) the Subcontractor Transfer Station,

(ii) the Disposal Facility or

(iii) any other place where Subcontractor delivers, stores, processes, recycles, composts or disposes of waste, or

(2) relating to hazardous or toxic substances, including any one or more release or threatened release of any materials (including Hazardous Waste), from Subcontractor's collection vehicles or Containers or from those places listed in items (i) through (iii) ("**Hazardous Materials Conditions**").

This Indemnification with respect to the Disposal Facility is limited to Liabilities that are caused by the following:

(i) Subcontractor negligence or misconduct: the wrongful, willful or negligent act, error or omission, or the misconduct of the Subcontractor;

(ii) Failure to Comply with Unpermitted Waste exclusion program: the failure of Subcontractor to implement its Unpermitted Waste Exclusion Program or undertake training procedures required by Applicable Law or its Unpermitted Waste Exclusion Program, whichever is more stringent;

(iii) Subcontractor-identified Hazardous Waste: the improper or negligent collection, handling, delivery, processing, recycling, composting or disposal by Subcontractor of Hazardous Waste that Contractor inadvertently collects but identifies as Hazardous Waste prior to its delivery, processing, recycling, composting or disposal.

The mere presence of Household Hazardous Waste will not constitute negligence and in and of itself create any liability on the part of the Subcontractor absent any of the circumstances described in items (i) through (iii) in this subsection. . . .

(3) The indemnities described in this subsection are intended to operate as an agreement pursuant to 42 U. S. C. Section 9607(e) and California Health and Safety Code Section 25364, to insure, protect, hold harmless and indemnify the Contractor and Authority from Liabilities in accordance with this Section. Neither the Contractor nor the Authority hereby waives or surrenders any other indemnity or remedy available to it under Applicable Law, and Subcontractor is strictly liable to Contractor and Authority for Hazardous Materials Conditions, including any repair, cleanup or detoxification thereof or preparation and implementation of any removal, remedial, response, closure or other plan with respect thereto as required by Applicable Law."

EXCERPTED DEFINITIONS: **Liabilities** means liabilities, lawsuits, claims, judgments, demands,



clean-up orders, damages (whether in contract or tort, including personal injury, death at any time, or property damage), costs, expenses, loss, penalties and other detriments of every nature and description whatsoever, including all costs and expenses of litigation or arbitration, attorneys fees (whether Contractor's or Subcontractor's staff attorneys or outside attorneys) and court costs, whether under State or federal law except for liabilities caused by the sole negligence or willful misconduct of the indemnified Party.

Authority and Authority's Related Parties includes Authority and its members, and their elected officials, officers, employees, contractors, subcontractors, consultants, agents, assigns and volunteers and each and every one of them.

Contractor and Contractor's Related Parties includes Contractor and its respective officers, directors, shareholders, members, partners, agents, employees, Subcontractors, consultants, licensees, invitees, or Affiliates.

Subcontractor and Subcontractor's Related Parties includes Subcontractor, Guarantor, and their respective officers, directors, shareholders, members, partners, agents, employees, Subcontractors, consultants, licensees, invitees, or Affiliates.

Affiliates means a Person that directly or indirectly through one or more intermediaries, controls, or is controlled by, or is under common control with, a Person, where construction or interpretation of "control" is governed by Rule 144 of the Securities Act of 1993."



III. IMPROVEMENT IN PROCUREMENT ACCESSIBILITY, COMPETITIVENESS, TRANSPARENCY, CEILINGS AND DURATION

EXAMPLE 3A

Limited contacts between bidders and elected officials during competitive procurements.

Bidders lobbying elected officials does not necessarily involve improprieties such as bribery to secure a contract. But those contacts may circumvent the municipality's staff and consultants and prevent their structuring and negotiating the best possible contract for the public weal. Consequently, those contacts are often limited to a designated person. And contacts often must be only in writing, to all declared bidders, in order to avoid the conflicting information or misinterpretations that might otherwise be made orally.

EXAMPLE PROCUREMENT LANGUAGE: City of Hawthorne (CA, USA) Request for Proposals for Residential Solid Waste and Recyclables Collection (October 2002)

“Contact Rules

These guidelines impose restrictive administrative controls on the procurement process to help ensure both the reality and the perception of a fair and open process. Each proposer is individually and solely responsible for ensuring compliance with the following specific guidelines. This responsibility extends to the proposer's employees, agents, consultants, lobbyists, or other parties or individuals engaged for purposes of developing or supporting the proposer's proposal.

Proposers shall comply with all City ordinances and State requirements regarding conflicts of interest and financial disclosure.

1. Collusive activities among proposers are expressly forbidden and may result in immediate disqualification of any involved parties. If two or more Proposers are developing a joint proposal, the City Public Works Director should be notified in writing by the joint Proposers no later than thirty (30) days prior to the deadline for submission of Proposals. This notification will be kept confidential until after submission of all Proposals.
2. After the City issues the Request for Proposals (RFP), Proposers are prohibited from providing hospitality, entertainment, gifts, or other like activities to City staff, City elected or appointed officials, City consultants, or proposal reviewers. Proposers shall warrant that no such gratuities have or will be offered or given by the proposer, or any agent of the proposer, to any City staff, elected or appointed officials, proposal reviewers, or to City's consultant in order to secure the contract or favorable treatment concerning the RFP process. The proposer shall affirm and agree that it will disclose and describe any relationship or arrangement with the City or City's consultant that could be deemed inconsistent with these guidelines, or with any state or local laws, prior to the submission of its proposal.
3. Each Proposer will disclose and describe any relationship or arrangement with the City that could be deemed inconsistent with the Political Reform Act of 1974, Government Code 81000 et. seq. and Government Code Section 1090 et seq. In addition, proposers shall list anyone from the City of Hawthorne or associated with the City of Hawthorne, or anyone who has called the haulers to guarantee the contract would be awarded to them, if a percentage of the contract value were provided to them.



4. Any information and materials to be utilized by the City during the proposal evaluation and selection process should be included as part of the original Proposals or submitted in response to a specific request from the City. Only City-provided information and materials in the RFP and Addendum, which are provided in writing to all proposers and are posted on this project's portion of the City's website (at http://www.cityofhawthorne.com/psrv_hawrcy-proj.htm), are to be utilized in developing the proposal. Any proposer's reliance on other City information and materials may result in non-responsive proposals due to inaccurate or incomplete information.

5. After the release of the RFP, all RFP-related communication with the City of Hawthorne prior to the release of staff's recommendation on the award of contracts should be in writing through Charles Herbertson, Director of Public Works. Communication to the City should be in writing by fax, or mail to:

Mail: Acting City Manager
City of Hawthorne
4455 West 126th Street
Hawthorne, CA 90250

Fax: 310-970-7033

1. The City Manager will provide copies of all incoming and outgoing RFP written communications with proposers to the City Council, to keep them fully informed of the process.

2. All staff, consultants and elected officials involved in the evaluations and or selection of proposers will complete FPPC Form 700 and the attached Form D Conflict-of-Interest form prior to their deliberations or decision-making. All Designated Individuals will disclose any oral or written communications that they have received from any of the proposers occurring after the release date for the RFP and prior to their deliberations or decision-making on RFP award and adoption of Agreements. The conflict-of-interest forms will be administered by the City Clerk's office to ensure that all conflicts, potential conflicts, or anything that could cause a perception of conflict, are fully disclosed through this process.

3. Contacting any other City staff member, elected or appointed officials, or proposal reviewers may result in disqualification of the proposal. This includes disallowing contact through another person (as a messenger) or former council member, contact via e-mail, by telephone or in person. Any evidence which indicates a proposer has failed to comply with the specific Process Integrity Guidelines, or has otherwise substantially diminished the City's ability to award contracts in a timely manner and free of contention, may result in that proposer's disqualification and forfeiture of the proposer's application fees. The City reserves the sole right to disqualify any proposer at any point in the process prior to contract award for failure to comply with this document. In order to ensure receipt and understanding of the Process Integrity Guidelines, each proposer is required to sign and submit Form C in Appendix A, the Process Integrity Guidelines Acknowledgment. The signed copy should be mailed to Charles Herbertson, Director of Public Works, postmarked by July 26, 2002 at the address listed above."