

THE WALKERTON INQUIRY

Commissioned Paper 17

**GOVERNANCE AND METHODS
OF SERVICE DELIVERY
FOR WATER AND SEWAGE SYSTEMS**

By

Jim Joe, Jacinta O'Brien, C. Erv McIntyre

Strategic Alternatives

Michael Fortin, and Mike Loudon

Toronto

2002

© Queen's Printer for Ontario, 2002
Published by Ontario Ministry of the Attorney General

This paper and other Walkerton Inquiry Commissioned Papers are available on the Walkerton Inquiry CD-ROM and at <www.walkertoninquiry.com> with the complete final report.

General editor, Commissioned Papers: Sheila Protti
Editor and proofreader: Robyn Packard
Design: Madeline Koch, Wordcraft Services; Brian Grebow, BG Communications

Abstract

In Ontario, a number of different governance structures, both within and between municipalities, are used to oversee water and sewage works and services.

Under the *Municipal Act*, the province has given municipalities the power to finance and provide water and sewage services. Traditionally, this has been done by the local municipality. Until the mid-1990s, many water systems, although owned by the municipality, were under the control of a public utility commission or, in a few cases, a waterworks commission. Now, almost all water systems are run as municipal departments.

There are two main municipal governance structures: (1) local municipality, which may be called a city, town, township, or village, and is referred to as 'lower-tier' when there is another level of municipal government involved; and (2) region, county, and district, which are federations of local municipalities within a geographic area, and are referred to as 'upper-tier' municipalities.

The municipal governance structures are organized in one of two ways in respect of water and sewage works and services. Specifically, municipalities may have sole responsibility or may share the responsibility.

Three possible alternative governance models are the provincial agency, the not-for-profit organization, and the investor-owned utility. In examining the existing and alternative governance models, the literature indicates that there are successes and failures in all three sectors – public, not-for-profit, and private. Each has its strengths and weaknesses. The main conclusion is that the ability of a governance structure to succeed has less to do with whether it is public or private and more to do with the public policy goals and objectives to be achieved.

For the most part, the delivery of water and sewage works and services in Ontario is carried out by public entities, with varying degrees of private sector assistance. While the literature might suggest a myriad of alternative service delivery options, the main types can be distinguished by the way they allocate responsibility for functions between the public and private sectors. The specific applications of different service delivery models necessarily vary according to the conditions and requirements of the local municipality.

About the Authors

Jim Joe, BES, principal and co-founder of Strategic Alternatives, is experienced in managing, participating in, and implementing a variety of environmental programs and large environmental projects.

Jacinta O'Brien, MAsc., P.Eng., a principal at Strategic Alternatives, has experience in systems analysis, project design, and management. She specializes in technical, regulatory, and public policy issues related to environmental management and services.

C. Erv McIntyre, MAsc., P.Eng., a senior adviser at Strategic Alternatives and former senior official with the Ontario Ministry of the Environment, has experience in the development, financing, and operation of Ontario's water and sewage infrastructure.

Michael Fortin, MA (Economics), is a consulting economist experienced in water resource economics and financial analysis.

Mike Loudon, P.Eng., MBA, is a consulting environmental engineer who specializes in the financial planning of water and wastewater systems.

Strategic Alternatives is a management consulting firm that specializes in helping organizations improve their delivery of environmental programs and services.

Contents

1	Introduction	1
1.1	Definition of Water and Sewage Systems	1
1.2	Governance of Water and Sewage Systems	3
1.3	Service Delivery Models	4
2	Legislative Framework	5
2.1	Authority to Provide Water and Sewage Services	6
2.2	Planning Process	7
2.3	Obtaining Approval	8
2.4	Intermunicipal Agreements	9
2.5	Water and Sewage Operations	10
2.6	Performance Monitoring	11
3	Governance Structures	12
3.1	Overview	12
3.2	Municipal Councils	15
3.3	Regions, Counties, and Districts	17
3.4	Public Utility Commissions	22
3.5	Shared Services Boards	25
3.6	Intermunicipal Agreements	25
3.7	Alternative Governance Structures	27
	3.7.1 Provincial Agency	27
	3.7.2 Not-for-Profit Corporation	29
	3.7.3 Investor-Owned Utility	31
3.8	The Public-versus-Private Debate	34
3.9	Summary of Governance Structures	36
4	Service Delivery Methods	36
4.1	Municipal	37
4.2	Provincial (Ontario Clean Water Agency)	38
4.3	Private Sector	39
	4.3.1 Multiservice Arrangements	42
	4.3.2 Leases	43
	4.3.3 Concessions	44
	4.3.4 Private Sector Financing and Investment	44

4.4	Comparison of Service Delivery Methods	48
4.4.1	Capability	48
4.4.2	Control, Accountability, and Risk	49
4.4.3	Cost Savings	50
4.4.4	Incentives and Barriers	52
References		55

Tables

Table 1-1	Examples of Applications of Good Governance Criteria to Water and Sewage Systems	4
Table 2-1	Summary of Municipal Performance Measures for Water and Sewage, 2000	11
Table 3-1	Municipal Responsibility for Water and Sewage Systems, 1997	14
Table 3-2	Per Capita Costs to Provide Water Services by Type of Municipality and Type of Raw Water Source, 1997	19
Table 3-3	Area Schemes	26
Table 4-1	Advantages and Disadvantages of Private Sector Service Delivery	41
Table 4-2	Summary of Stakeholder Concerns Regarding Private Sector Service Delivery	41
Table 4-3	Private Sector Participation in Water and Sewage Projects	47
Table 4-4	Private Sector Service Delivery Allocation of Risk	50
Table 4-5	Examples of Cost Savings Accruing from Long-Term Contracts with the Private Sector	51

1 Introduction

The purpose of this report is to provide the Walkerton Inquiry with details about governance structures and methods of service delivery being used, or that could be used, for the provision of drinking water and for sewage collection, treatment, and disposal in Ontario.

This report has four sections:

Section 1 provides an introduction, which includes a brief overview of local governance structures and service delivery models used in Ontario.

Section 2 describes the legislative and regulatory framework within which drinking water is produced and delivered to the customer. Particular emphasis is placed on statutes affecting governance and service delivery, both directly and indirectly.

Section 3 provides details of water and sewage governance structures; section 4 gives the details of service delivery models. Both these sections present commentary about current practice in Ontario, and describe alternative models as well as incentives and barriers that could be applied within the Ontario market. A reference list follows section 4.

1.1 Definition of Water and Sewage Systems

Before governance can be discussed, it is necessary to define what water and sewage systems comprise.

Communal water systems typically include a treatment works, pumps, transmission and distribution mains, and storage. Low-lift pumps deliver water from the source to the treatment plant. High-lift pumps deliver water under high pressure through transmission mains into the distribution mains. Booster pumps are sometimes used within the system to maintain pressure to service areas that are remote or at high elevations. Storage is also supplied within the distribution system in elevated tanks or underground tanks with booster pumps. Storage is designed to provide water for fires, for fluctuations in daily water

This paper has been prepared for discussion purposes only and does not represent the findings or recommendations of the Commissioner.

demand, and for emergencies. Lateral lines connect the flow to the distribution mains for customers and fire hydrants. Valves are installed throughout the system so that components can be isolated for repair and maintenance, and to turn customer services on and off.

Municipal sewage systems carry wastewater discharged by customers to facilities that are designed to clean sewage – by removing organic matter and solids – to an acceptable level for disposal into the environment. These systems comprise sewage collection pipes, treatment facilities, and disposal facilities for treated effluent and sludge. Sewage collection pipes include lateral sewers that carry sewage from the customer's premise to a branch sewer or submain, which then conveys the sewage to larger trunk mains; these mains convey the sewage to the treatment facility. Sewage is normally conveyed by gravity flow, although systems may also rely on force mains, which are sewers through which sewage is pumped under pressure.

Throughout this document, reference to water and sewage systems does not imply only the physical assets, as described above; the term encompasses all aspects of the delivery of drinking water and the collection, treatment, and disposal of sewage, including indirect activities, such as payroll administration, and direct activities such as

- planning, designing, and building water and sewage works;
- financing, including setting user rates;
- certifying facilities and licensing operators;
- ensuring compliance with regulatory requirements, including testing and reporting; and
- owning, operating, and maintaining the systems.

Stormwater operations may also be included as part of the water and sewage system for municipalities that actively manage, collect, and dispose of stormwater.

The following subsections provide a brief indication of the range of water and sewage governance structures used in Ontario (section 3 deals with the subject in detail) and a description of service delivery models, both existing and those used elsewhere.

Note that the examination of governance and service delivery does not look at the internal organizational structure; this is a management issue that is outside the scope of this report.

1.2 Governance of Water and Sewage Systems

‘Governance’ has no automatic normative connotation, but is generally accepted to mean the “process of decision-making and the process by which decisions are implemented (or not implemented).”¹

Good governance results when decisions and the implementation of decisions achieve what is ‘good’ for society or what society *considers* is good. Although ‘good’ is a subjective term and may mean different things to different people, some consensus exists on the criteria that can be used to measure good governance.² Specifically, to be considered good, governance should display a high degree of

- accountability,
- responsiveness,
- effectiveness and efficiency,
- transparency,
- participation, and
- respect for the rule of law.

The concept of governance is usually applied to the task of running a government, but can be equally applied to running any other entity, including water and sewage systems. In this context, the same criteria for determining good governance can be applied. Table 1-1 presents an overview of the way each criterion could be interpreted in the context of water and sewage system governance.

In Ontario, a number of different governance structures, both within and between municipalities, are used to oversee water and sewage works and services:

- In some cases, municipalities take full responsibility for all aspects of their water and sewage systems, including planning, designing, constructing, financing, and operating.
- In other cases, public utility commissions are responsible for the water system, leaving the sewage system under the jurisdiction of the municipality.

¹ Global Development Research Center, 2001, *Characteristics of Good Governance* [online], [cited February 19, 2001], <www.gdrc.org/u-gov/g-attributes.html>.

² Based on World Bank, 1992, *Governance and Development* (Washington, D.C.: World Bank), and United Nations Development Programme, 1997, *Governance and Sustainable Human Development* (New York: UN).

- Under some two-tier municipal systems, lower-tier municipalities purchase water wholesale from the upper-tier municipality.
- A number of intermunicipal agreements govern water and sewage.

Given the diversity of governance structures used in Ontario, issues related to governance of water and sewage works and services have arisen over the last few years. Governance can affect costs (and therefore prices and investment decisions) because incentives and constraints are associated with each type of governing structure.

1.3 Service Delivery Models

For the most part, delivery of water and sewage works and services in Ontario is carried out by public entities, with varying degrees of private sector assistance.

Large municipalities often undertake conceptual design, operation, and maintenance of the systems, relying on consulting engineers and contractors for detailed design and construction. Smaller municipalities may rely more heavily on engineers and contractors for design, construction, rehabilitation, and repair. About one-quarter of Ontario's water and sewage systems, both large and small, are operated by the Ontario Clean Water Agency (OCWA), a

Table 1-1 Examples of Applications of Good Governance Criteria to Water and Sewage Systems

Criterion	Example of Application
Accountability	Demonstrating adherence to capital plans for water and sewage infrastructure through, for example, audited financial statements.
Responsiveness	Developing a long-term plan to ensure water and sewage system capacity to accommodate future growth.
Effectiveness and efficiency	Scheduling watermain replacements at the same time as road repairs.
Transparency	Posting results of raw and finished water quality.
Participation	Soliciting public comments about water treatment options as part of the environmental assessment process.
Respect for the rule of law	Ensuring that the minimum required chlorine residuals are maintained in the water distribution system.

provincial Crown corporation. In a few municipalities, private sector companies operate and maintain the system.

For many functions, such as meter reading and billing, private sector services are independent of governance and have no effect on it; but alternative delivery models can have a significant impact on governance – for example, full operating concessions or multiservice contracts that entail infrastructure design, finance, construction, and operation.

Primary considerations in determining the method of delivery for a particular service are

- capability (safety),
- cost,
- timeliness, and
- risk.

Those responsible for water and sewage systems typically seek service delivery methods that maximize capability and timeliness at the lowest cost and least risk. Additional considerations, such as public policy goals in the case of publicly owned and operated systems, and market share in the case of the private sector, may also come into play.

2 Legislative Framework

The development of communal water and sewage systems in Ontario began in the mid-1800s. The first systems were built to serve the demands of the growing population and to combat fire. These systems were privately owned and operated. Municipal ownership and operation of water and sewage systems came about after the *Baldwin Act* was passed in 1849.³ In Ontario, municipal ownership and operation of water and sewage systems is now the norm.

As water and sewage systems expanded and evolved, so too did the laws affecting governance and service delivery. This section highlights the relevant legislation and regulations concerning water and sewage works and services.

³ Ontario Sewer and Watermain Construction Association, 2001a, *Drinking Water Management in Ontario: A Brief History* [online], [cited February 2001], prepared by Strategic Alternatives as a public submission to the Walkerton Inquiry, <www.walkertoninquiry.com/part2info/publicsubmissions/index.html>.

The primary legislation dealing with municipal governance is the *Municipal Act*,⁴ which defines the powers of Ontario municipalities and prescribes the way they are to be structured and managed. Topics covered in the *Municipal Act* include

- formation, erection, and alteration of municipal boundaries;
- composition, jurisdiction, and conduct of municipal councils; and
- roles and responsibilities of officers of municipal corporations.

The *Municipal Act* also provides guidance to municipalities regarding water and sewage. Other legislation affecting governance includes the *Public Utilities Act*,⁵ the *Local Improvement Act*,⁶ and the *Planning Act*.⁷ The conduct of municipal officials is governed by such legislation as the *Local Government Disclosure of Interest Act, 1994*⁸ and the *Municipal Freedom of Information and Protection of Privacy Act*.⁹ With respect to water and sewage works and services delivery, municipalities must comply with a number of statutes, in particular the *Ontario Water Resources Act*,¹⁰ the *Environmental Protection Act*,¹¹ and the *Environmental Assessment Act*.¹² The requirements of each statute affect decision making relating to water and sewage.

2.1 Authority to Provide Water and Sewage Services

Although numerous provincial laws regulate water and sewage works and services, and the provincial government has stated that sewage and water are municipal responsibilities,¹³ no legislation *requires* municipalities to provide these services.

Instead, Ontario legislation (section 210 of the *Municipal Act*) gives municipalities the authority to provide these services if they choose to do so.

⁴ RSO 1990, c. M-45, as am.

⁵ RSO 1990, c. P-52, as am. by 1991, c. 15, s. 43; 1996, c. 1, Sched. M, s. 33; 1996, c. 32, s. 84; 1998, c. 15, Sched. E, s. 32; 1999, c. 14, Sched. F, s. 9.

⁶ RSO 1990, c. L-26.

⁷ RSO 1990, c. P-13.

⁸ SO 1994, c. 23, Sched. B., as am. by 1996, c. 32, s. 74; 1997, c. 31, s. 152; 1999, c. 6, s. 35.

⁹ RSO 1990, c. M-56, as am. by 1992, c. 32, s. 23; 1995, c. 1, s. 83; 1996, c. 1, Sched. K, ss. 13–24; 1996, c. 2, s. 73; 1996, c. 32, s. 77; 1997, c. 25, Sched. E, s. 8; 2000, c. 26, Sched. J, s. 2.

¹⁰ RSO 1990, c. O-40, as am. by 1992, c. 23, s. 39; 1993, c. 23, s. 73; 1993, c. 27, Sched.; 1994, c. 27, s. 116; 1997, c. 7, ss. 6-8; 1997, c. 30, Sched. B., ss. 24, 25; 1997, c. 37, s. 4; 1998, c. 35, ss. 44-76; 2000, c. 22, s. 2; 2000, c. 26, Sched. E, s. 5; 2000, c. 26, Sched. F, s. 13.

¹¹ RSO 1990, E-19.

¹² RSO 1990, c. E-18, as am.

¹³ Ontario, Ministry of Finance, 2000, *Local Services Realignment: A New Provincial-Municipal Relationship* [online], [cited May 4, 2001] <www.gov.on.ca/FIN/english/bkelsr2.htm>.

Under section 210 of the act, “public utility commission” (PUC) means a commission or board that controls and manages a public utility undertaking, and “public utility undertaking” means a waterworks or water supply system, sewage works, electrical power, or energy generating transmission or distribution system. The *Municipal Act* also authorizes municipalities to finance water and sewage systems using instruments such as property taxes, user rates, capital charges, issuance of debentures, and reserve funds.

The *Public Utilities Act* authorizes municipalities to establish water and sewage works. Section 2 of the act gives municipalities the power to expropriate lands for the purpose of such works and to acquire existing works; this latter power could, for example, be used to integrate a communal system serving a single subdivision into a broader municipal system.

The *Local Improvement Act* allows for the initiation of public works projects, including water and sewage works, on the basis of environmental concerns or a petition, or at the instance of the municipal council. A two-thirds majority at council as well as Ontario Municipal Board approval are needed to proceed with the works. The cost of the works is recovered by a frontage charge applied to those properties served by the works. The act specifies the costs that can be included in the frontage charge and exactly how it is to be calculated and applied.

Municipalities can choose to provide water and sewage services themselves or to form PUCs for the purpose of delivering these (and/or other) services. Section 223 of the *Municipal Act* provides for the formation of PUCs (see section 3.4, below).

2.2 Planning Process

The planning, designing, and building of water and sewage works is governed, in part, by the *Environmental Assessment Act*, which sets out the framework for identifying and evaluating possible impacts that could result from the implementation of individual projects. The premise of environmental assessment is to support sustainable development by integrating technical, social, and economic considerations into the decision-making process.

The act identifies two types of environmental assessments (EAs): Individual EAs and Class EAs. Water supply and sewage treatment projects fall into the latter category; the term “class” refers to the group, or class, of projects. Guidelines

have been produced for undertaking Class EAs,¹⁴ so that everyone involved in a water supply or sewage treatment project is aware of the process before any work begins. A measure of transparency is thus built into the decision-making process.

A Class EA results in a report on the planning and evaluation of the proposed undertaking, including identification of the preferred alternative. The report is submitted to the minister of the environment, who may accept, request further information about, or reject the assessment. The minister may also direct the Environmental Assessment Board to review the submission, in which case hearings would take place. Once the environmental assessment is approved, the municipality can move to the next stage of the project – detailed design and construction.

2.3 Obtaining Approval

The *Ontario Water Resources Act* is the provincial government's principal legislative instrument for the management of water resources.¹⁵

The main purpose of the act is to protect Ontario's water resources. The act prohibits the discharge into water of substances or materials that "may impair the quality of the water."¹⁶ Impairment is defined in the act as any discharge of substances or materials into the water that causes, or may cause, injury to any person or other living thing. The act prescribes actions and penalties that can be taken against municipalities if water is impaired.

In addition to regulating water quality, section 34 of the act attempts to control the quantity of Ontario's water resources by requiring any person who wants to take more than 50,000 litres of water a day to obtain a "water-taking permit"; some exceptions apply, such as for water to be used for fire fighting or for domestic use.¹⁷

The act stipulates that approval is required from the Ontario Ministry of the Environment (MOE) to establish, build, upgrade, or extend water and sewage

¹⁴ Municipal Engineers Association, 2000, *Municipal Class Environmental Assessment* (Mississauga, Ont.: Municipal Engineers Association).

¹⁵ David Estrin and John Swaigen, 1993, *Environment on Trial: A Guide to Environmental Law and Policy*, 3d ed. (Toronto: Emond Montgomery Publications).

¹⁶ The prohibition applies to lakes, rivers, springs, streams, reservoirs, groundwater, wells, and any other water or watercourse, as well as to the banks of a watercourse.

¹⁷ Estrin et al., p. 537.

works.¹⁸ Once a water or sewage project is approved, the ministry issues a Certificate of Approval (COA), the document used by the ministry to judge performance.

Well construction is also regulated by the *Ontario Water Resources Act*. Sections 39 to 50 require any person who constructs wells or carries on a business constructing wells to be licensed by the Ministry of the Environment.

The act contains provisions that allow for a deemed approval for sewage works that were constructed, extended, or altered by either the Ontario Water Resources Commission or the Crown before July 1, 1987. In essence, such works are grandfathered and do not require an approval to be in place.

A regulation under the act requires all waterworks and sewage works for which a COA is required to be properly classified; the Certificate of Approval must be displayed at the facility to reflect this classification.

2.4 Intermunicipal Agreements

Section 210 of the *Municipal Act* permits a municipality to enter into agreements with others to provide capital facilities; the section allows for flexibility in the sale or leasing of public facilities, which would include water and sewage. This provision allows for private sector involvement in the municipal water and sewage industry, and, in fact, most municipalities rely on private sector assistance for various aspects of these works and services (design, construction, operation). Section 210 can be interpreted as potentially enabling the sale of assets. However, section 56.2 of the *Capital Investment Plan Act* precludes the sale of all or part of a water or sewage works until “all payments that were made by the Crown on or after April 1, 1978 for the purpose of subsidizing the capital cost” of the works, or any component of the system that is used to provide the service, are repaid to the province.¹⁹ This provision potentially applies to most municipal water and sewage systems in Ontario.²⁰

¹⁸ This statement applies to treatment plants. Certain other sewage facilities, such as large capacity holding tanks from which waste is pumped out and transported to treatment plants, must receive approval under the *Environmental Protection Act*.

¹⁹ *Capital Investment Plan Act*, SO 1993, c. 23, as am. by 1997, c. 6, s. 2(2).

²⁰ Ontario Sewer and Watermain Construction Association, 2001b, *A Nine Step CPR Plan for Ontario's Water and Sewage Systems* [online], [cited February 2001], public submission to the Walkerton Inquiry, <www.walkertoninquiry.com/part2info/publicsubmissions/index.html>.

Municipalities are not limited to supplying only the residents within their geographic boundaries. Section 11(1) of the *Public Utilities Act* allows municipalities to supply water to those “beyond the limits of the municipality.” Section 207 of the *Municipal Act* provides for the joint management and operation of water and sewage systems, as well as for the joint ownership of the systems – as seen, for example, in the various ‘area schemes’ that have been established (see section 3.6, below).

Other statutes – most notably the *Greater Toronto Services Board Act, 1998*²¹ and the *Northern Services Boards Act*²² – envisage supervision of services for a group of municipalities. The former act is intended to “promote and facilitate coordinated decision making among the municipalities in the Greater Toronto Area,” including strategies for the provision and optimal use of infrastructure. The latter law authorizes boards to provide, or ensure the provision of, a number of different services. Although neither of these two acts specifically identifies water and sewage, such services are not specifically excluded either.

2.5 Water and Sewage Operations

Few restrictions govern the choice of entity – whether the municipality’s own forces, a PUC, the OCWA, or the private sector – to operate municipal water and sewage systems. The *Public Utilities Act* specifies that contract terms for water supply may not exceed 20 years.

The functions of the OCWA are set out under the *Capital Plan Investment Act*. They include assisting municipalities to provide water and sewerage by operating such works and services. The OCWA provides operations and maintenance services to municipalities on a fee-for-service basis.²³ Section 63 of the *Ontario Water Resources Act* deals with the municipality’s application to the OCWA for the provision and/or operation by the OCWA of waterworks and/or sewage works, and defines the relationship between the municipality and the OCWA.

Regardless of the entity providing the operations, all water and sewage operators in the province must be licensed in accordance with the *Ontario Water Resources*

²¹ SO 1998, c. 23, as am. by 2000, c. 5, s. 13.

²² RSO 1990, c. L.28, as am. by 1991, c. 15, s. 37; 1997, c. 43, Sched. F, s. 8; 1998, c. 15, Sched. E, s. 15; 1998, c. 16; 1999, c. 6, s. 45; 1999, c. 9, s. 166; 2000, c. 5, s. 17; 2000, c. 42, s. 79.

²³ Strategic Alternatives et al., 1998, “Review of the Ontario Clean Water Agency,” prepared for the Ontario Office of Privatization [unpublished confidential report].

Act, and the operator's licence must also be displayed in the workplace.²⁴ The MOE is responsible for the standards relating to operator training and for issuing licences.

2.6 Performance Monitoring

The Ontario Ministry of Municipal Affairs and Housing is the principal provincial government agency that oversees municipal practices. Supervisory

Table 2-1 Summary of Municipal Performance Measures for Water and Sewage, 2000

Measure	Definition
<i>Water</i>	
Operating costs for water treatment	Operating costs for water treatment per million litres of water treated.
Operating costs for water distribution	Operating costs for water distribution per kilometre of distribution pipe.
Approximate water loss	Percentage of water produced that is not billed.
Test results	Test results for water treatment plants and distribution systems.
Water leaks	Number of breaks in watermains per kilometre.
Boil-water advisories	Number of days that a boil-water advisory issued by the medical officer of health and applicable to a municipal water supply was in effect.
<i>Sewage</i>	
Operating costs for collection	Operating costs for collection of sewage and stormwater per kilometre of sewer line.
Operating costs for treatment and disposal	Operating costs for treatment and disposal of sewage and stormwater per cubic metre treated.
Sewer-main backups	Number of sewer-main backups per kilometre of sewer line.
Test results	Test results for sewage treatment operations.
Untreated sewage released	Number of hours during which untreated or partially treated human sewage was released into a lake or natural watercourse.

Source: Ontario, Ministry of Municipal Affairs and Housing.

²⁴ O. Reg. 435/93 under the *Ontario Water Resources Act* provides an exception that states that professional engineers who operate and maintain water or sewage works can be exempt from conforming with the qualifications established for licensed operators.

authority is vested in the ministry through the *Municipal Affairs Act*,²⁵ which defines the powers of the ministry and allows it to impose penalties on municipalities and local boards that do not comply with ministry requirements.

In 2000, the Ontario Ministry of Municipal Affairs and Housing initiated the Municipal Performance Measurement Program, which is intended to determine the efficiency and effectiveness of key municipal services; water and sewage are included in the program. Table 2-1 lists the information (which includes both financial costs and operational details) that municipalities are required to provide for these two services.

In August 2000, the provincial government passed the *Drinking Water Protection Regulation*,²⁶ which sets out minimum levels of water treatment; contaminants to be tested in the water and testing frequency; and procedures for notifying the medical officer of health and the MOE about test results, for reporting on the waterworks, and for reporting to the public. The *Drinking Water Protection Regulation* requires that an Engineer's Report be completed for each waterworks. The report is to include a compilation of existing COAs and recommendations for updating and consolidating the COAs, such as a monitoring regime for the entire waterworks system to ensure compliance with regulated drinking water standards. The regulation also contains a requirement for ongoing review of the waterworks.

3 Governance Structures

This section presents the governance structures currently used for water and sewage services in Ontario, along with an assessment of each structure. Alternative governance models are also discussed.

3.1 Overview

The province, through the *Municipal Act*, has given municipalities the power to finance and provide municipal water and sewage services. There are 861 water treatment works serving over 95% of Ontario's residents; the rest of the

²⁵ RSO 1990, c. M-46, as am. by 1991, c. 15, ss. 38, 39; 1993, c. 20, s. 20; 1993, c. 27, Sched.; 1998, c. 15, Sched. E, s. 20.

²⁶ O. Reg. 459/00, under the *Ontario Water Resources Act*.

population is served by private wells.²⁷ Of the 861 works, 231 rely on surface water as the raw water source, and these facilities supply drinking water to about 80% of the serviced population. The remaining population is served through 630²⁸ waterworks that rely on groundwater as the raw water source.²⁹

There are 457 sewage treatment works serving over 80% of Ontario's residents; the rest of the population is served by septic tanks.³⁰ According to 1996 data, secondary treatment was used for 81% of treatment capacity (by volume) in Ontario; lagoons and primary treatment plants accounted for about 14% of total capacity; and tertiary treatment accounted for the balance.³¹

In January 2001, there were 447 municipalities in Ontario.³² Two main governance structures make up these municipalities:

- local municipality, which may be called a city, town, township, or village, and is referred to as 'lower-tier' when another level of municipal government is involved; and
- region, county, and district, which are federations of local municipalities within a geographic area, and are referred to as 'upper-tier' municipalities.

Municipal governance structures are organized in one of two ways in respect of water and sewage works and services: with sole responsibility or shared responsibility.

Sole Responsibility Under this governance structure, a single municipality provides water and sewage works and services. This model is used by 235 local municipalities.³³ This model is also used by a number of upper-tier municipalities, which provide water treatment and distribution, and sewage

²⁷ Based on an analysis of 1996 data from the MOE, in Strategic Alternatives et al., 2000, Water and Sewage Infrastructure Project, phase 2a forecast model, final report, prepared for the Ontario Ministry of the Environment, Toronto [unpublished confidential report].

²⁸ Over 150 water treatment works that rely on groundwater as the raw water source do not provide any treatment and mainly service trailer parks and individual subdivisions.

²⁹ Based on an analysis of 1996 data from the MOE, in Strategic Alternatives et al., 2000.

³⁰ Ibid.

³¹ Ibid.

³² Andrew Sancton and Teresa Janik, 2001, *Provincial-Local Relations and Drinking Water in Ontario*, prepared for the Walkerton Inquiry, [online], [cited April 5, 2001]. Published in 2002 (Toronto: Ontario Ministry of the Attorney General), Walkerton Inquiry Commissioned Paper 3, Walkerton Inquiry CD-ROM, <www.walkertoninquiry.com>.

³³ Ibid.

collection and treatment on behalf of the lower-tier municipalities within their jurisdiction. The upper-tier municipalities with sole responsibility for water and sewage are the regional municipalities of Durham, Peel, and Halton; the District of Muskoka; and the County of Oxford.³⁴

Shared Responsibility Under this governance structure, which can be found in three regional municipalities – namely, those of York, Waterloo, and Niagara – water and sewage works and services are shared between the upper- and lower-tier municipalities.³⁵ Specifically, the region (upper tier) provides treatment (referred to as wholesaling), and the local municipalities (lower tier) provide water distribution and sewage collection (referred to as retailing).

Table 3-1 presents a summary of the number of each water and sewage governance structure, and the population serviced by each. The information in table 3-1 shows that 36 municipal organizations in the regions and cities represent only 16% of the total municipalities with water services, but serve 7.5 million people. For the most part, the regions and cities include municipalities with populations greater than 20,000 people. The smaller

Table 3-1 Municipal Responsibility for Water and Sewage Systems, 1997

Municipal Organization	Number	Number of Local Municipalities		Served Population	
		Number	Percent	Number	Percent
Regional Systems					
Sole responsibility	9	59	19	2,654,900	32
Shared responsibility	4	34	11	3,265,200	40
Cities	23	23	7	1,572,700	19
Towns	110	110	35	656,800	8
Villages	84	84	28	103,000	1
Total	229	309	100	8,252,600	100

Source: E. Doyle et al., 2001, *Production and Distribution of Drinking Water*, prepared for the Walkerton Inquiry, [online], [cited 2001]. Published in 2002 (Toronto: Ontario Ministry of the Attorney General), Walkerton Inquiry Commissioned Paper 8, Walkerton Inquiry CD-ROM, <www.walkertoninquiry.com>.

³⁴ Three other regional municipalities with sole responsibility for water and sewage have been changed to cities – namely, Hamilton, Ottawa, Sudbury; in addition, the region of Haldimand-Norfolk has been split into two counties.

³⁵ The only change in the regions that share responsibility for water and sewage works and services was the amalgamation that created the City of Toronto, a combination of the local municipalities of Etobicoke, York, Toronto, East York, North York, and Scarborough.

municipalities – those of towns and villages – represent 84% of the municipal organizations supplying water, but only 9% of the serviced population. The average population in towns is 6,000, and the average population in villages is 1,200. Thus Ontario can be characterized as having a large number of small systems that serve a relatively small percentage of the serviced population, and a small number of large systems that serve the majority of people.

The municipal water and sewage governance structures described above represent the way most systems are organized in Ontario. Other structures that are used to a lesser extent are PUCs, intermunicipal agreements, and service boards. The following subsections describe the various governance structures in more detail.

3.2 Municipal Councils

The prevailing governance model used in Ontario for water and sewage systems is the municipal council. Governance by municipal council provides a high degree of accountability because residents of the municipality elect the councillors (every three years) that make up the council, and the councillors are expected to represent the interests of those who elect them.

Councils are headed by (1) a chair (in regions), (2) a mayor (in cities and towns), (3) a reeve (in villages or townships), or (4) a warden (in counties); these officials are almost always directly elected by the residents of the municipality. There are few restrictions on the candidates who may run for municipal office: the person must be a Canadian citizen, reside in the municipality for which he or she is seeking office, not be an employee of the municipality or a local board as defined in the *Municipal Affairs Act*, and not fall under certain categories of Crown employee within the meaning of the *Public Service Act*.³⁶

The municipal council, through the passage of resolutions and bylaws, makes decisions about the provision of water and sewage systems and the manner in which the systems are financed. Larger municipalities may have ‘committees of council’ that deal with specific issues, such as public works, before these matters are forwarded to council for final consideration and ultimate approval.

³⁶ RSO 1990, c. P.47 am. by 1993, c. 19, s. 1; 1993, c. 38, s. 63; 1994, c. 17, s. 144; 1995, c. 1, s. 85; 1996, c. 1, Sched. Q, s. 4; 1997, c. 21, Sched. A, s. 6; 1999, c. 12, Sched. K, s. 2; 2000, c. 26, Sched. J, s. 4; 2001, c. 7, ss. 1-15.

Since expertise in financial matters or water and sewage systems is not a requirement for political office, elected councillors tend to rely on information provided by staff. The number of staff generally reflects the size of the municipality. In smaller municipalities with limited resources, the staff involved with water supply may be a clerk who oversees most municipal operations, or a works manager who deals with all services (not just water and sewage). Municipalities with limited staff expertise may rely on external consultants for engineering and other specialist advice. Most larger municipalities have organizational structures comprising individual departments for each municipal function, including water and sewage services.

Municipal staff are hired, not elected, and their jobs are independent of elections; the information provided by municipal staff can thus be assumed to be based on technical, economic, and social considerations (among others), and not influenced by political pressures.

Municipal staff support the decision-making process by making recommendations to council about the way the municipality should be managed and the funds spent. The usual process is for staff to prepare policy reports, make recommendations, and prepare annual budgets for consideration by council. The policies and recommendations may be generated by staff, or direction may be given to staff by council (or committee). Once the council receives the recommendations, it can debate them and pass, table (defer until later or otherwise express some dissatisfaction with the proposal), or reject them. In making decisions, councillors are likely to vote in a manner that reflects the wishes of their constituents (and so improve their chances of re-election).

In a world with unlimited funds, all projects could be approved. In reality, councils must balance competing interests, such as social services, community projects, and garbage collection, in addition to water and sewage works and services. Notwithstanding the fact that municipalities have few restrictions related to financing or setting user rates,³⁷ councils are usually required to make trade-offs and, in the end, projects may be deferred as the list is pared to achieve a budget (including possible rate increases) that is acceptable to council.

³⁷ For utilities that are operated as independent profit-making entities (such as gas, telephone, and electricity), there are regulatory bodies that control user rates. This is not the case for water and sewage services, where control over user rates is at the sole discretion of the municipal council, subject to any restrictions imposed by provincial legislation. For additional details about legislation governing municipal financing and cost recovery of water and sewage works and services, see Strategic Alternatives et al., 2002, *Financing Water Infrastructure* (Toronto: Ontario Ministry of the Attorney General), Walkerton Inquiry Commissioned Paper 16, Walkerton Inquiry CD-ROM, <www.walkertoninquiry.com>.

The public and media are normally allowed to attend committee and council meetings. In practice, committee meetings often have only committee members present, unless an item of particular interest or contention is going to be discussed, in which case delegations sometimes attend. When votes are taken, the decision is recorded, thus providing a high degree of transparency in the decision-making process. Although meetings are generally open to the public, occasionally they are held in camera – that is, the public is excluded; such a meeting is rare, but might be held to discuss employee discipline, for example.

The system described above normally works well; however, potential weaknesses exist with respect to water and sewage systems:

- Staff with limited technical knowledge may not fully understand the measures needed to ensure water system safety and long-term sustainability, or they may lack the ability to convince council of the measures needed. Much of the water infrastructure of a municipality is underground and out of sight; hence, it is difficult to assess. Furthermore, while there are training requirements (e.g., for treatment plant operators) and water quality standards that must be met, management guidelines for maintenance, operations, replacement, or repairs are limited.
- Councillors with limited knowledge of water operations may not have a complete understanding or appreciation of the risks to system safety and security that may result if recommended actions are deferred.

3.3 Regions, Counties, and Districts

In the late 1960s and early 1970s, the provincial government transformed the governance landscape in Ontario by creating regional governments in most areas with urban development. The creation of regional governments allowed water supply and sewage treatment planning to be based on overall urban growth, and enabled system characteristics (such as location of supply sources in the case of water, and land drainage patterns in the case of sewage) to be based on a scale that was larger than local municipal boundaries.

Most regions have contiguous urban areas where a centralized approach to supply and treatment is advantageous. Adjacent municipalities, such as Whitby and Oshawa, appear to be one urban area as far as development is concerned. Thus,

a regional approach to water and sewerage planning and provision is more practical than each local municipality individually undertaking these activities.

All regional governments function in a similar manner, although their responsibilities may differ. Each region is made up of local municipalities. Each region has a regional council, and the local municipalities within the region each have their own separate councils.

The statute for each regional municipality sets out the number of councillors for the region, how they are to be selected, and quorum rules for voting. Not all regions have the same rules – for example: (1) in Niagara Region, local councillors are forbidden to sit on the regional council, but the mayors of each local municipality do so; (2) in Durham Region, the chair of the regional council is elected by regional council members, and may or may not be a member of regional council; and (3) in Waterloo Region, the regional chair is elected by all regional voters.

Regional councils function in much the same way as other municipal councils, as described above. Decision making is similar, with budgets drafted by staff under the guidance of council, or committees of council, and approved by council.

Perhaps the greatest strengths of the regions have been (1) the establishment and maintenance of regional standards of quality and service for water supply and sewage treatment throughout the serviced area, and (2) the sharing of the cost of maintaining these standards. The relative costs of providing water services by type of municipality are presented in table 3-2.

According to the data shown in table 3-2, the per capita cost of water supply is lower for larger municipalities, including regional ones, than for smaller municipalities. Groundwater sources appear to have generally lower per capita costs than surface water supplies; the notable exception is for regional groundwater systems, which are more expensive.³⁸

Regional governments provide water and sewage works and services in two ways:

³⁸ The two groundwater systems are in Waterloo and Oxford County. In the case of Waterloo, the cost may be high due to problems that have led to the use of a sophisticated and more costly groundwater recharge system. Waterloo is unusual in another respect: it did not benefit from the provision of lake-based area water supplies that were sponsored in earlier years by the MOE and that are common in other southwestern Ontario municipalities. Oxford County may be more expensive due to the small size of its individual municipal system.

1. Regions with *sole responsibility* for water and sewage provide water treatment and distribution, as well as sewage collection, treatment, and disposal on behalf of local municipalities within their jurisdiction. These regions function in the same way as local municipalities with respect to the governance of water and sewage services. The main difference is that for many other services, such as roads, parks, and fire protection, local municipalities need to be considered. For example, when the region plans to replace the water mains, it should take into account the local road repairs planned by the area municipality. Another difference is that there may be large and small urban areas dispersed across the region for which water and sewage services must be provided. The variety and areal distribution of urban areas presents a challenge not faced by local municipalities, which would normally have only one large central urban area to service.

Table 3-2 Per Capita Costs to Provide Water Services by Type of Municipality and Type of Raw Water Source, 1997

	Number	Revenue Fund Expenditures (\$000)	Serviced Population	Unit Cost (\$/capita/year)
<i>Surface Water</i>				
Regions				
Sole Responsibility	4	199,974	2,118,314	94
Shared Responsibility	2	278,448	2,940,833	95
Cities	17	145,185	1,290,121	113
Towns	55	41,686	350,028	119
Villages	25	6,807	39,837	171
Total	103	672,100	6,739,133	100
<i>Groundwater</i>				
Regions				
Sole Responsibility	1	10,898	60,425	180
Shared Responsibility	1	41,896	324,335	129
Cities	4	19,867	242,525	82
Towns	37	22,822	200,442	114
Villages	47	5,852	53,789	109
Total	90	101,335	881,516	115
Total*	193	773,435	7,620,649	101

*Note: Excludes mixed surface and groundwater systems.

Source: Adapted from E. Doyle et al., 2001, *Production and Distribution of Drinking Water*, published 2002.

2. In regions where there is *shared responsibility* for water and sewage, the upper-tier municipality is responsible for intake, treatment, pumping, and trunk mains for water, and for trunk sewers, treatment, and disposal of effluent and sludge in the case of sewage. The lower-tier (local) municipalities are responsible for water distribution and sewage collection, and for customer services, including metering and billing. The upper-tier municipality recovers costs by charging a volumetric ‘wholesale’ rate that is applied to the volume of water supplied to each local municipality. For example, in the Regional Municipality of York, the volume of water supplied is also used to calculate the wholesale charge for sewage. The Regional Municipality of Niagara, however, uses wholesale sewer meters. In all cases, the local municipality must add its costs to the regional charge and recover costs from customers on the basis of ‘retail’ rates.

A disadvantage of the shared responsibility model is the difficulty, perhaps even impossibility, of implementing policies that benefit the region in respect of its water and/or sewage treatment obligations. Consider the following two examples:

1. Regions sell water to local municipalities at a cost that includes non-revenue water (NRW).³⁹ Retail customers are billed on the basis of the water they use as measured by their meters. Since the volume of water billed through customers’ meters is less than the volume of water purchased from the region, the rate that local municipalities charge retail customers must cover the cost of NRW. In this situation, the local municipalities have a financial incentive to repair watermain leaks since they benefit from the direct savings in the regional billings resulting from reductions in NRW.
2. The opposite situation exists when conservation is considered. Most of the benefit from conservation efforts takes the form of savings that accrue from the deferral of investments to expand treatment facilities. These savings occur at the wholesale (regional) level, not the retail level. Since retail rates are higher than wholesale rates, a reduction in consumption by retail customers will decrease revenues more than it will reduce wholesale charges. Thus conservation will result in the need to increase retail rates, without producing any local benefits. As a result, conservation

³⁹ Non-revenue water is water that is produced but not sold to the end user. It includes water lost through leakage, water that is not recorded because of metering errors, and unmetered water used in parks and other areas.

programs may be of little interest to the local municipality, and would have to be implemented at the regional level.

The examples described above show that more coordination between the upper and lower tiers is needed in regions that share responsibility for water and sewage with the local municipalities than in regions that have sole responsibility. Furthermore, economies of scale and scope may be lost because local servicing is segregated along municipal boundaries.

Accountability should be the same for the two models – namely, sole and shared responsibility – because decisions are made by elected councillors (although the degree to which local interests are represented at the regional level depends on the manner in which the regional council is constituted). Accountability and responsiveness can be reinforced by communication between regional staff and customers from the local municipalities. The shared responsibility governance structure has been more readily acceptable to customers than the sole responsibility approach. The reason for this may be that under the shared responsibility model, local authority and local contacts for water and sewage were retained when the regions were created.

However, the shared responsibility model may be less effective with respect to local service delivery. When local service delivery is operated by the lower tier, economies of scale may not be achieved, causing costs to be higher or standards of service lower. In regions with sole responsibility for water and sewage, economies of scale can be realized, thus improving the overall efficiency of operations. But costs are not necessarily lower, since uniform standards of service need to be maintained across the region. Accomplishing this can sometimes mean improving the standards of service in some of the local municipalities, which will increase the cost of service.

Despite the foregoing, there have been a number of reviews of regional governments, and most, if not all, have concluded that sole responsibility for services is more advantageous than shared responsibility. For example, the Niagara Review Commission *Report* (which is yet to be implemented) states that to “create a system that should be more cost efficient, [this] Commission recommends that the region assume full responsibility for all aspects of water treatment and delivery, sewage collection and treatment and storm drainage.”⁴⁰

⁴⁰ Niagara Review Commission, 1994, *Report* (St. Catharines, Ont.: Regional Municipality of Niagara), p. 199.

Reviews in Ottawa and Waterloo reached similar conclusions. Despite this type of recommendation, lower-tier municipalities have been reluctant to surrender any powers to the upper-tier municipalities.

3.4 Public Utility Commissions

As described in section 2.1, the *Municipal Act* gives municipalities the ability to form public utility commissions for the purpose of delivering specific services.

According to the *Public Utilities Act*, a “public utility” means water, artificial or natural gas, electrical power or energy, steam or hot water.⁴¹ Until the mid-1990s, about 250 PUCs provided electrical services; 112 of these also provided municipal water services. In addition, 12 waterworks commissions provided water only.

In 1996, changes were made to the *Municipal Act* that set the stage for municipalities to take over the water operations of PUCs. Until then, PUCs could be formed or dissolved only by plebiscite. Historically, the PUCs controlled and ran the water systems for the municipalities, which were the owners of the facilities (although facilities were often in the name of the PUCs). Section 223 of the *Municipal Act* (which gives municipalities the authority to establish PUCs) was amended to remove restrictions on dissolving PUCs:

223. (1) By-laws may be passed by the councils of cities and towns for placing the control and management of sewage works under a commission established under the Public Utilities Act but the by-law shall not be passed without the assent of the electors.

(2) Despite subsection (1), a council may pass a by-law to eliminate the requirement to obtain the assent of the electors before passing a by-law under this section.⁴²

The amendment to the act largely spelled the demise of water PUCs in Ontario, because it allowed municipal councils to take back jurisdiction over water

⁴¹ Sewage services were also provided by two PUCs, although this was not originally authorized by the legislation; see Neil B. Freeman, 1996, *Ontario's Water Industry: Models for the 21st Century* (Waterloo, Ont.: Ontario Municipal Water Association).

⁴² *Municipal Act*, RSO 1990, c. M.45, s. 223.

systems simply by resolution (without a plebiscite). The opportunity for municipalities to regain jurisdiction over water systems was apparently too good to pass up, as demonstrated by the decline in the number of PUCs between 1990 and 2001. In 1990, there were 124 PUCs and waterworks commissions in Ontario. By January 2001, 15 PUCs remained in the province.⁴³

The reasons why municipalities chose to dissolve their PUCs are various and can be related to the practices of each entity:

- PUCs often charged the municipalities for fire-protection costs, a practice to which many municipalities objected;
- Where municipalities were responsible for the sewage systems, PUCs were made responsible for billings in cases where user pay was to be implemented – a function to which PUCs objected;
- Planning was relatively more complex due to the presence of two entities responsible for parallel services; and
- Water revenues, which were held by the PUCs, were a separate source of revenue that municipalities could use to reduce property taxes by sharing overhead costs previously charged to property taxes.

The province also made changes that affected delivery of electricity and energy by PUCs. By November 2000, electric utilities had to be incorporated as Ontario Business Corporations (OBCs). Local municipal governments had to decide (1) whether or not to continue to own and operate these electric utilities (a municipality that chose to own its local utility became the shareholder of the new corporation), and (2) whether the utility would be a commercial or a not-for-profit company.

Possibilities now exist for the entities formed out of the PUCs to pay a return on investment to the municipality, and for the municipality to sell the entity to a third party. The Local Distribution Companies (LDCs), which manage wires, poles, and substations, can earn a rate of return of 9.88%. Some municipalities have merged, some have sold their utilities, others have acquired utilities or have entered into joint ventures or leasing options.

⁴³ Sancton et al.

For example, the St. Thomas electric utility is run on a non-profit basis, whereas in Peterborough, a profit is paid to the municipality. As business corporations, the new entities must charge provincial and federal taxes.

The changes mandated for local municipal electric utilities have not been extended to water utilities. But changes that have taken place have led to uncertainty about the future use of PUCs to provide water and sewage services.

Regardless of whether PUCs are used more widely in the future, issues surrounding accountability and efficiency can render this form of governance less desirable than others. With respect to accountability, commissioners govern the PUCs. Formerly, the mayor of the municipality was *ex officio* a commissioner, and the remaining commissioners (typically two or more) were elected by the public on the same ballot as municipal councillors. This made the PUCs responsive and provided a relatively high degree of accountability. The public no longer elects the PUC commissioners or the electricity OBC directors; council appoints them. For example, in Sudbury the electricity OBC has four council members (including the mayor) and six private sector appointees. It is not known how this format will turn out, with the possibilities ranging from less accountability to the public (since they are not directly elected) to more varied or informed input if the appointees are selected on the basis of their skills and experience.

Where a municipality is responsible for sewage and a PUC is responsible for water, the PUC may not implement the municipality's water conservation policies. This is an example of the way an inefficiency can be created when separate entities provide interrelated services to the same population. Specifically, inefficiencies can result if a PUC's decision or action creates additional costs for the municipality and it has no direct control over the PUC.

At the same time, both entities are equally capable of achieving efficiencies in operations through measures such as hiring appropriately trained staff and using efficient design and management practices for their assets. However, they may have different opportunities relating to economies of scope. For example, the municipal water supply department will benefit from the opportunity to use resources in other municipal departments, especially finance and engineering, rather than having to hire staff or use contractors for these functions. Conversely, if the PUC operates two utility services, such as water and electricity, it can achieve economies in customer services (such as billing) and may also benefit from the opportunity to share staff and resources in other ways.

3.5 Shared Services Boards

The Greater Toronto Services Board covers the City of Toronto and surrounding municipalities (City of Hamilton, and the regional municipalities of Halton, Peel, York, and Durham). The *Greater Toronto Services Board Act* focuses only on transit, but mentions a liaison and coordination role for the board in respect of economic development, tourism, social assistance, and social housing. In general, water and sewage servicing is a local matter that radiates away from Lake Ontario, rather than along it. The only region that requires major cooperation from adjacent areas for water and sewage is York Region, because it is not adjacent to Lake Ontario. As a result, York Region relies on the City of Toronto for the bulk of its water supply, and on the Regional Municipality of Durham for a location to treat sanitary sewage (via the York Durham Sewage System).

3.6 Intermunicipal Agreements

Municipalities can partner with each other to provide services, including water and sewage. Under this scenario, Municipality A would enter into an intermunicipal agreement with Municipality B that has servicing available at the municipal boundary. Under the agreement, Municipality B would provide water and sewage services to residents of Municipality A. This is a very common arrangement – for example, the City of Windsor provides water to residents in the Township of Tecumseh; another example is the City of Belleville, which provides water services to residents in Sidney Township. The supplying utility may bill customers in the adjacent municipality directly (at rates that are usually higher than those used within the supplying municipality), or the utility may sell the services in bulk to the second municipality. An example of bulk sales is the treatment of sewage from the City of Toronto by the Regional Municipality of Peel, at a volume-based charge, calculated with the use of cost data supplied by the OCWA, the operators of Peel's sewage system.

In addition to agreements that were initiated by municipalities themselves, the province built a number of provincial area water supply or sewage treatment systems, or 'area schemes,' to serve a number of municipalities; these are listed in table 3-3.

Through the *Municipal Water and Sewage Transfer Act, 1997*,⁴⁴ the province divested itself of the area schemes. For example, the York Durham Sewage

⁴⁴ SO 1997, c. 6, Sched. A, as am. by 2000, c. 26, Sched. E, s. 4.

System was purchased from the province by the regions of York and Durham. The agreement between the two regions calls for each to take responsibility for their respective sewage collection system and to share ownership of the treatment plant (Duffin Creek Water Pollution Control Plant), which is run by Durham on behalf of both regions.

Efficiency gains are the principal benefit of area schemes involving two or more municipalities. They introduce economies of scale on the capital side by facilitating the construction of large regional systems that could not be supported by any single local municipality. The agencies that manage these schemes do so

Table 3-3 Area Schemes

Water	Sewage
Blenheim Public Water Service Area	Alliston/Essa/Tecumseh Sewage System
Caradoc/Ekfrid Water Supply System	Belle River/Maidstone Sewage Works System
Central Haldimand-Norfolk Water Supply System	Belleville/Thurlow Sewage Project
Clarence/Cambridge/Russell Area Water Supply	Grand Bend Sewage System
Detroit River Water Supply System	Tecumseh/St. Clair Beach/Sandwich South Sewage System
East Lambton Water Supply System	Thornbury Sanitary Sewage System
Elgin Area Water System	Victoria Harbour/Tay Area Sewage Works
Kent County Raw Water System	Wheatley/Romney Sewage System
Lake Huron Water Supply System	York/Durham Sewage System
Lambton Area Water Supply System	South Peel Sewage System
Lambton/North Kent Water Supply System	
Lower Ottawa Valley Water Supply	
Port McNicoll/Victoria Harbour/Tay Area Water Works	
Quinte/Prince Edward Area Water Supply	
South Peel Water System	
Thornbury Water Supply and Distribution System	
Tilbury West Water Supply System	
Union Water System	
York Water Supply System	

Source: Strategic Alternatives et al., 1998.

on behalf of the participating municipalities and are subject to a degree of control by the respective municipal councils. But this control is limited by the need for long-term contractual arrangements that ensure the sustainability of the operation. Accountability and responsiveness within these large schemes must, therefore, be established by virtue of the contractual arrangements between the participating municipalities.

3.7 Alternative Governance Structures

The governance structures in use in Ontario fulfill, to varying degrees, the various criteria associated with good governance. There are, however, cost and risk implications associated with each.

Alternative governance structures provide both a wider array of governance options and remedies for the cost and risk impacts. In this section, three alternative governance models are discussed:

- provincial agency,
- not-for-profit organization, and
- investor-owned utility.

The descriptions presented below are illustrative and are not meant to be exhaustive. Each alternative model represents a general type of structure; various permutations of the model will be found in practice.

3.7.1 Provincial Agency

The provincial agency model would be a Crown corporation charged with *full* responsibility for managing Ontario's municipal water supply and sewage systems. Such a model would represent a departure from the current participation of the province in the management of water resources (and delivery of water and sewage works and services), in which responsibilities are divided among a number of organizations – namely, the Ministries of the Environment and of Natural Resources, the Ontario Clean Water Agency, and SuperBuild Corporation.

Under this model, the province would take over responsibility for all municipal water and sewage works and services, and own and operate them. In this respect, it would differ from the OCWA, which provides service only.

The provincial agency could be constituted as a scheduled Crown corporation, reporting to a line ministry, such as the Ontario Ministry of Municipal Affairs and Housing or Ontario Ministry of the Environment.⁴⁵ Enabling legislation would vest the agency with ownership of all Ontario water and sewage works, and give it decision-making authority for infrastructure planning, development, financing, operation, and rehabilitation. Administration of the agency could be centralized or decentralized; if decentralized, the agency could set up offices across the province that could serve ‘clusters’ of water and sewage systems. To assist it in discharging its mandate, the agency could partner with the private sector (public-private partnership) and/or with the municipal sector (public-public partnership).

Funding for the provincial agency could be on a fee-for-service basis, whereby individual municipalities would pay for the works and services received. It is also possible that the agency could bypass municipalities altogether and charge water and sewage system customers directly. Alternatively, the province could provide funding by directing transfers, which would normally go to municipalities, to the agency. In the latter case, the agency would have greater discretion to determine priorities (and, hence, spending).

Prior to the establishment of such an agency, audits of all water and sewage systems would be required to determine physical capacity needs, rehabilitation requirements, operating efficiencies, compliance with environmental regulations, and estimated long-term costs.

A provincial agency might achieve greater efficiencies resulting from economies of scale in certain areas such as procurement and engineering. It might also benefit from the province’s credit rating (which may be more attractive than that of some individual municipalities). In other areas, such as the design of treatment plants, economies of scale may already be fully realized within many of the existing operations and a provincial agency may not reap further benefits.

A provincial agency would, however, be a large public bureaucracy facing none of the competitive pressure to achieve operational efficiencies that private sector service providers face. Any pressure to control costs would come from the

⁴⁵ There are four schedules – I, II, III, and IV – under which the province can create a Crown agency. The schedule of an agency dictates the rules of governance under which the agency can operate. Of the four, Schedule IV agencies have the most rigorous rules (for example, employees of Schedule IV agencies are appointed under the *Public Service Act*, and the agency must follow Management Board of Cabinet directives); Schedule I agencies have the least regulation.

provincial government as a function of the regulatory model adopted to control the agency's budgets and rate increases. The provincial agency model provides less responsiveness than municipal ownership and operation of water and sewage infrastructure because decision making is removed from the local level, particularly if the agency alone is responsible for setting priorities and does not consult with municipalities.

From the late 1950s through to the early 1970s, there existed the Ontario Water Resources Commission, a province-wide organization with functions similar in scope to those of the provincial agency described above.⁴⁶

A form of the provincial agency model is used elsewhere in Canada: Sask Water is the provincial agency responsible for water management in Saskatchewan (although it does not provide operations and maintenance services). Sask Water was created in 1984 as a Crown corporation under the Saskatchewan *Water Corporation Act*, with a mandate to manage, protect, and develop Saskatchewan's water and related land resources for the benefit of the entire province. The agency is managed by a board of directors, which includes members of the Saskatchewan legislative assembly. Sask Water's three main activities fall under the following divisions:

1. Water Resource and Infrastructure Management: overseeing watershed strategies and basin operations;
2. Utility and Engineering Operations: providing engineering and technical services to develop water supplies, storage and sewage facilities; and
3. Irrigation and Agricultural Services: supporting agronomic and irrigation engineering research and development.

Sask Water administers numerous programs to fulfill its mandate, including the funding for irrigation development, rehabilitation, and replacement.

3.7.2 Not-for-Profit Corporation

A province-wide not-for-profit corporation could be established with a mandate to oversee water and sewage works and services in accordance with the *Ontario*

⁴⁶ Ontario Sewer and Watermain Construction Association, 2001a.

*Corporations Act.*⁴⁷ The not-for-profit corporation would have functions similar to the provincial agency, but would differ in its internal governance structure and its reporting relationship with the province.

Whereas the provincial agency would be overseen by a board of directors drawn from the public service (and, perhaps, provincially elected officials), the not-for-profit corporation would have a board of directors elected by members at an annual general meeting. Under this model, the members would probably be the municipalities that the corporation serves, so the municipalities would elect the board. The board, in turn, would appoint a chairperson and hire the executive.

The corporation would possess some of the attributes associated with a private sector corporation, while at the same time eliminating the perception that the public interest may be compromised for the sake of profits. The federal government employed a form of this type of model when it divested itself of the country's air traffic navigation systems.

As was the case with the provincial agency, administration of the corporation could be centralized or decentralized; in the latter case, the corporation could set up offices across the province that could serve clusters of water and sewage systems.

On the basis of the objectives established for the not-for-profit corporation, the membership would be in a position to ensure compliance with service goals and standards. But these standards would not necessarily be the same as regulatory standards imposed by government. Independent government supervision and regulation would still be required because the objectives of the corporation would be expressed in the articles of incorporation and these could be changed by the membership. The government can only ensure compliance with its policy goals through regulatory action over performance standards and rates.

Nav Canada is an example of a not-for-profit corporation. Nav Canada is the private, non-share capital, not-for-profit corporation that owns and operates Canada's civil air navigation service. Although the corporation does not operate

⁴⁷ RSO 1990, c. C-38 am. by 1992, c. 32, s. 6; 1993, c. 16, s. 3; 1993, c. 27, Sched.; 1994, c. 11, s. 384; 1994, c. 17, s. 31; 1994, c. 27, s. 78; 1997, c. 19, s. 31; 1997, c. 28, ss. 50, 51; 1998, c. 18, Sched. E, ss. 59-82; 1999, c. 6, s. 16; 1999, c. 12, Sched. F, ss. 21, 22; 2000, c. 26, Sched. B, s. 9; 2001, c. 9, Sched. D, s. 5.

within the water and sewage sectors, it is concerned with safety: “The safety of Canada’s civil air navigation service is Nav Canada’s highest priority.”⁴⁸ The corporation owns seven control centres, more than 120 airport control towers and flight service stations, and a network of 1,400 en route and terminal aids to navigation and landing.

The corporation is governed by a 15-member board of directors:

- ten directors who are nominated by stakeholders representing aviation users, bargaining agents, and the federal government;
- four independent directors; and
- Nav Canada’s president and chief executive officer.

The corporation also has an advisory committee that is elected by associate members and empowered to analyze and make recommendations to the board of directors on any matter affecting the air navigation service.

Nav Canada recovers the costs of air navigation facilities and services through a system of service charges levied on aircraft operators.

3.7.3 Investor-Owned Utility

Under the investor-owned utility model, the private sector would own and operate the facility and make all decisions regarding service delivery, including standards of service and rates, subject to government regulation.

At present, no legislative provisions bar investor-owned water and sewage utilities; in fact, the *Municipal Act* permits municipalities to enter into agreements with others to provide capital facilities, and allows for flexibility in the sale or leasing of public facilities, which would include water and sewage (see section 2.4).

Furthermore, no legislative provisions regulate the user rates that could be charged by privately owned and operated facilities. The lack of such provisions does not affect cases where municipalities enter into public-private partnerships,

⁴⁸ Nav Canada, 2001, *Air Navigation Safety* [online], [cited July 20, 2001], <www.navcanada.ca/contentEN/news/background/>.

because contract terms and conditions can be used to control changes in user rates. In the case of outright divestiture, though, rate regulation would be warranted, which in turn would require the creation of a regulatory framework, perhaps similar to that of the Ontario Energy Board and its associated legislation.⁴⁹ The challenge would be to set rates just high enough to allow an efficient operator to sell water and make a reasonable profit, but no higher.⁵⁰ A typical problem is that the regulator has no easy way of calculating how much it would cost an efficient firm to produce the water. Thus the regulator risks setting a price too high – creating public outcry – or too low – undervaluing the price of water, which encourages waste of water and discourages private sector investment.

No investor-owned water or sewage utilities serve Ontario municipalities. If they did, the utility owners would not enjoy the preferential tax treatment accorded municipalities (for example, municipalities receive a GST rebate); nor would the owners be exempt from liability for nuisances caused by “the escape of water or sewage from sewage works or waterworks” (section 331.2 of the *Municipal Act*).

Investor-owned water companies operate in the United States, and these serve approximately 15% of the U.S. population⁵¹ (which is equal to about four times the number of people in Ontario). These investor-owned utilities are subject to rate regulation by the state regulatory commissions. Any rate adjustment must be submitted to the commission for approval. Approvals are based on cost, sales, and an allowed rate of return on assets.

The ability of local municipalities to transfer ownership of assets in the United States was strengthened by Executive Order 12803, issued in 1992, which directed all federal departments and agencies to remove regulatory and/or procedural obstacles to privatization (which, in this case, meant sale or long-term lease to the private sector). The executive order also specified that the federal government must be repaid for its investment upon the sale of a federally funded asset to the private sector (the first sale of a grant-funded facility to the private sector under Executive Order 12803 was approved in July 1995).

⁴⁹ The Ontario Energy Board regulates electricity rates in Ontario, among other duties.

⁵⁰ Michael Klein and Timothy Irwin, 1996, “Regulating water companies,” *Public Policy for the Private Sector*, note no. 77, May (Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network), p. 2.

⁵¹ American Water Works Association, 2001, “Privatization and alternative approaches to management, operations and ownership of drinking water facilities,” *AWWA Government Affairs*, [online], [cited February 21, 2001], <www.awwa.org/govtaff/privzpap.htm>.

In Europe, virtually the entire population of the United Kingdom is served by investor-owned utilities. In contrast to energy sector privatizations, which are mostly driven by demand for new capacity,⁵² water sector privatizations are typically driven by efficiency demands and the need to finance the repair or replacement of deteriorating infrastructure. This was the case in the United Kingdom.

Prior to 1989, the water industry in England and Wales consisted of 10 publicly owned regional water authorities and 29 privately owned water supply companies. The regional water authorities were responsible not only for providing water services, but also for developing and enforcing policies, regulations, and environmental conservation. Reform of the governance system was initiated because of concerns about regional authorities having responsibility for both *developing* and *enforcing* regulations for their own utilities. The decision to involve the private sector was prompted by the need for large capital investment to rehabilitate the existing water and sewage systems (which had deteriorated) to meet the more stringent European Union standards.

The government converted the authorities into private companies (whose shares were sold on the stock exchange) and set up a new regulatory agency, Ofwat, to oversee the practices of the private companies. The British system introduced two important innovations:⁵³ (1) a price cap based primarily on inflation for all water companies, set in five-year cycles,⁵⁴ and (2) yardsticks for assessing and comparing the efficiency and performance of the private companies. The goal of investing capital into the systems was realized; for the ten years ending in 1999, capital expenditures by the ten private water and sewage companies amounted to £33 billion (a level of investment that would not otherwise have been undertaken).⁵⁵

⁵² Gisele Silva, Nicola Tynan, and Yesim Yilmaz, 1998, "Private participation in the water and sewerage sector: Recent trends," *Public Policy for the Private Sector*, note no. 147, August (Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network), p. 5.

⁵³ Caroline van den Berg, 1997, "Water privatization and regulation in England and Wales," *Public Policy for the Private Sector*, note no. 115, May (Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network), p. 1.

⁵⁴ David Haarmeyer and Ashoka Mody, 1998, "Financing water and sanitation projects: The unique risks," *Public Policy for the Private Sector*, note no. 151, September (Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network), p. 4.

⁵⁵ Elizabeth Brubaker, 2000, "Privatizing water works," *National Post* [Toronto], March 6.

3.8 The Public-versus-Private Debate

The argument for *public ownership* (and governance) is founded on the belief that public ownership maintains public control over essential services and over the infrastructure needed to provide these services. From an institutional perspective, public ownership is often cited as a way to overcome certain disadvantages associated with water and sewage services.⁵⁶ For example, when physical distances prevent economies of scale from being achieved, local governments can use annexation powers or make arrangements with neighbours to achieve economies of scale through the sharing of services.

On the other hand, economic theory suggests that *private ownership* can lead to greater efficiencies because private firms can respond more effectively, capital markets subject privately owned firms to greater scrutiny than they do public enterprises, and private firms are subject to 'exit' forces (i.e., bankruptcy, closure, takeovers) and take steps to avoid such forces.⁵⁷

Mechanisms can, however, be put in place within public sector organizations to achieve the above-listed attributes of private sector organizations, *without* changing ownership. For example,

- processes can be streamlined, so that decision making is faster;
- if there are concerns about capital financing, governments could eliminate financial guarantees and stipulate that public enterprises turn to the capital markets for financing (and thus be treated in the same way as a private sector borrower); and
- governments could eliminate poorly performing public enterprises.⁵⁸

Thus, it appears that the deficiencies of public ownership and governance, as noted above, can be corrected by making changes to policies, incentives, and institutions.⁵⁹

⁵⁶ J.A. Beecher, G.R. Dreese, and J.D. Stanford, 1995, *Regulatory Implications of Water and Wastewater Utility Privatization* (Columbus, Ohio: National Regulatory Research Institute).

⁵⁷ John Nellis, 1994, "Is privatization necessary?" *Public Policy for the Private Sector*, note no. 7, May (Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network), p. 2.

⁵⁸ Ibid.

⁵⁹ Ibid.

In fact, the empirical evidence about the relative efficiency of publicly versus privately owned utilities appears to be inconclusive⁶⁰ – perhaps because many forms of privatization involve *cost shifting* (to the private sector), but not necessarily cost elimination or even cost reduction. Furthermore, certain forms of privatization lead to increases in user charges despite improved efficiencies, because they entail the loss of government subsidies and force private sector owners to charge rates that reflect the full cost of the service (this may not have previously been the case under public ownership).⁶¹ One would expect rates to be higher for utilities that recover capital costs through rates. Privately owned utilities are more likely to charge the *full cost* of the service (capital expenditures, depreciation, billing, administration, and other indirect expenses); while municipalities may set lower user rates – for instance, if they have access to grants and other, non-rate, sources of revenue.

“In answer to the question of whether public or private is better: it depends. Good and bad performers can be found in both the public and private sectors.”⁶² The question whether public or private sector governance is better is, in fact, not the right question. The appropriate governance structure, and hence ownership of water and sewage assets, depends on the public policy goals to be achieved.⁶³

The question to ask is, then, What are the goals and objectives? Most governments have both economic and non-economic objectives, and these may be in conflict, making the achievement of all goals and objectives difficult. For municipal water and sewage systems, goals may include long-term sustainability, efficiency, safety, affordability, equity, and conservation. However, a commitment to financial self-sufficiency can quickly fade during a crisis.

One of the strongest messages that can be drawn from the analytic literature is that successes and failures occur in all three sectors – public, private, and not-for-profit. Each sector has its strengths and weaknesses. Weighed strictly against economic criteria, the balance may favour the private sector; but against other non-economic objectives, the evidence is less clear. The ability of a governance structure to succeed has less to do with its “publicness” or “privateness” than it has to do with the public policy goals and objectives to be achieved.⁶⁴

⁶⁰ Beecher et al., p. 34.

⁶¹ Ibid., p. 33.

⁶² Ibid., p. 39.

⁶³ Nellis, p. 3.

⁶⁴ David Osborne and Ted Gaebler, 1992, *Reinventing Government: How the Entrepreneurial Spirit Is Transforming the Public Sector* (New York: Penguin Books).

3.9 Summary of Governance Structures

Section 1.2 lists the criteria for assessing governance. These are

- accountability,
- responsiveness,
- effectiveness,
- efficiency,
- transparency,
- participation, and
- respect for the rule of law.

The degree to which the governance structures described above meet the criteria varies according to the way in which each structure is constituted and on the capabilities of the individuals appointed or elected. For example, it is expected that the municipal council governance model of water and sewage works and services should provide the greatest opportunity to fulfill the criteria. Under this model, the degree of accountability and responsiveness to water customers can be considered high, as can transparency of decision making and the ability of customers to participate in decision-making processes (either directly at council meetings or indirectly by voting in municipal elections). Regions, counties, and districts should be capable of fulfilling the criteria to the same degree as municipal councils, provided that representatives are elected and/or appointed from elected local municipal officials. In contrast, the investor-owned utility model may not achieve the criteria as well as the municipal council model because for some issues (such as priority of capital investments), the investor-owned utility may have to answer to its investors before water system customers.

4 Service Delivery Methods

This section presents methods that are, or can be, used to deliver water and sewage services.

The choice of service delivery method is affected by a number of factors, including the governance structure that is in place. For example, organizations will generally look to their own staff to facilitate service delivery; thus, for municipalities, the most prevalent method of delivering water and sewage services is through in-house municipal staff. At the same time, the private sector

may be called on to provide assistance with specific aspects of the service – for example, design and construction, and operation and maintenance of the systems may be provided by a public utility commission or by the Ontario Clean Water Agency.

In general, those responsible for water and sewage systems typically seek service delivery methods that minimize costs. Other factors that are considered in determining the method of delivery for a particular service include capability (safety), timeliness, and risk. Additional considerations, such as public policy goals in the case of publicly owned and operated systems, and market share in the case of the private sector, may also come into play.

Different service delivery methods are described in the following subsections. The final subsection presents an overview of the advantages and disadvantages of each type of service delivery method: municipal, provincial, and private sector.

4.1 Municipal

Municipalities are responsible for water and sewage works, and therefore the majority of municipalities operate the works themselves or through public utility commissions; however, the number of PUCs has decreased in recent years.

Public sector entities can, within limits, examine their own operations and take steps to improve efficiency, effectiveness, and responsiveness. These are some examples:

- Increased use of automation. Labour can typically account for up to 35% of water and sewage operating costs in public sector organizations.⁶⁵ Reducing labour through the use of automation can lower costs.
- Bulk purchasing agreements. Energy and chemicals can represent approximately 30% of plant operating costs, depending on water quality and pumping requirements. Achieving savings would result in lower operating costs.

⁶⁵ K. Neal et al., 1996, *Restructuring America's Water Industry: Comparing Investor-owned and Government Water Systems*, Public Policy Study, no. 200 (Los Angeles: Reason Foundation Public Policy Institute); Strategic Alternatives et al., 1998.

- Sharing services with neighbouring jurisdictions. Cost savings accrue through economies of scale.

There are, however, barriers that can hinder improvements in public sector efficiency and effectiveness. These barriers include restrictive procurement procedures, personnel and union policies that are not conducive to changes in job specifications, and/or the inability to reward performance. The barriers are most often related to the municipality's policies and procedures. While the policies exist for a reason, they can have the unintended effect of discouraging management efficiency.⁶⁶

4.2 Provincial (Ontario Clean Water Agency)

The Ontario Clean Water Agency, commonly referred to as the OCWA, is a corporation without share capital incorporated under section 2 of the *Capital Investment Plan Act, 1993*.⁶⁷ The corporation consists of the members of its board of directors, all of whom are public servants appointed by cabinet.

As a Crown agency, the OCWA

- is intended to be self-funding;
- manages its own administrative support;
- employs workers who are considered public servants under the *Public Service Act*, and about 90% of whom are unionized under one of three public sector unions,⁶⁸ and
- is subject to all applicable environmental, public health and safety, and other relevant regulatory laws.

The OCWA's core business is operating and maintaining (O&M) water and sewage treatment works, and in a very limited number of cases, collection and distribution systems. As an agency providing operations and maintenance

⁶⁶ Association of Metropolitan Sewerage Agencies, 1996, *Evaluating Privatization: An AMSA Checklist*, prepared by Apogee Research, Inc. (Washington, D.C.: Association of Metropolitan Sewerage Agencies), p. 8; Strategic Alternatives et al., 1998.

⁶⁷ SO 1993, c. 23 as am. by 1996, c. 1, Sched. E, s. 1; 1996, c. 33, s. 21; 1997, c. 6, s. 2; 1997, c. 31, s. 144; 1999, c. 9, ss.17–19; 2000, c. 26, Sched. E, s. 1.

⁶⁸ The three unions are the Ontario Public Service Employees Union (OPSEU), the Professional Engineers and Architects of the Ontario Public Service (PEGO), and the Association of Management, Administrative and Professional Crown Employees of Ontario (AMAPCEO).

services, the OCWA has no special status under existing environmental legislation – it must comply with such legislation to the same extent as all other persons in Ontario. In addition to O&M services, the OCWA provides technical advice and assistance through its Project Development unit.⁶⁹

Municipalities enter into O&M contracts with the OCWA for their water and/or sewage works. The OCWA's responsibilities under an O&M contract typically consist of operating the facility in compliance with regulatory standards, and maintaining it, including doing minor repairs and upgrades so that the facility performs as intended. Performance is monitored by the municipality under the conditions of the contract. In all cases, the infrastructure continues to be owned by the municipality.

Since the OCWA is essentially a public entity, there are barriers preventing it from becoming more efficient and effective. The barriers relate to the OCWA's enabling legislation, and the requirement that the agency comply with provincial government policies, guidelines, and directives, which may not correlate with the goals and objectives of the OCWA's clients.

4.3 Private Sector

Almost all Ontario municipalities have service contracts with private firms for specific services such as engineering design, billing and collection, hydrant maintenance, and sludge haulage and disposal, to name a few.⁷⁰ The obligations of the private firm are limited to the terms of the contract, which generally also specify a set price and a fixed period of time. The reasons for relying on the

⁶⁹ For more information about the historical development of OCWA, refer to Ontario Sewer and Watermain Construction Association, 2001a.

⁷⁰ One area in which the private sector has few contracts is the operations and maintenance of water and sewage works; less than 1% of Ontario systems are operated and maintained by the private sector (e.g., Hamilton, Listowel, Goderich, Red Lake, Forest). The relatively low incidence of private sector O&M service contracts may be related to the transaction costs involved in preparing and evaluating private sector proposals, and/or lack of experience and skills in negotiating contract terms or conditions. Another reason for the slow growth in private sector participation in the Ontario O&M market may be related to the public's anxiety that trade-offs between safety and fees might favour business interests before the public interest; public concern about *who* is accountable for drinking water safety is usually greater than when public entities alone are responsible for service delivery. This concern can be significantly heightened when a municipality enters into a contract with a private company. Even though private sector operators are held to the same standards as the public sector, the public may still believe that safety will be compromised.

private sector for various aspects of water and sewage works and services include the following:⁷¹

- Technology and expertise, which can lead to higher service levels, would otherwise be unavailable to a municipality. The procurement and construction methods of the private sector can also shorten implementation time, compared to those of public sector-managed projects, which can be subject to delays caused by multiple approval processes.
- Some municipalities may have problems complying with regulatory standards because of lack of the necessary capital improvements, maintenance costs that exceed budget allocations, or difficulty keeping skilled personnel. The unwillingness of local elected officials to raise water rates to fund upgrades and construct new infrastructure has prompted municipalities to explore other options to reduce costs, minimize public liability of aging infrastructure, and transfer risk.
- The federal and provincial levels of government have moved toward debt reduction; thus, transfer payments to municipalities have decreased substantially. At the same time, the amount of federal and provincial funding to infrastructure programs has also diminished. In the absence of provincial or federal funding, municipalities must either increase debt capacity, increase water rates, or find alternative financing, such as private sector financing.

The main advantages and disadvantages of private sector service delivery are outlined in table 4-1.

Decisions on how to involve the private sector should be made against a backdrop of the wants and fears of the main drinking water stakeholders, which are summarized in table 4-2.

The strongest opposition to private sector service delivery typically comes from public sector employees and the unions representing them. The opposition

⁷¹ U.S., Environmental Protection Agency (EPA), 2000, *Guidance on the Privatization of Federally Funded Wastewater Treatment Works*, EPA-832-B-00-002 (Washington, D.C.: Office of Water), p. 8; Canada, Environment Canada, 1995, *Canada's Untapped Resource: Public-Private Partnerships in Water Supply and Wastewater Treatment*, Technology Transfer Series 2E, September, prepared by Thompson Gow Associates (Ottawa: Environment Canada), p. 1.

stems from the fear that public sector jobs will be lost. Proponents of private sector service delivery assert that public sector workers are not harmed by private sector participation because displaced workers can be hired by the private sector contractors or transferred to other government positions. Organized labour, however, is very concerned about layoffs, erosion of wages and benefits, and decreased levels of union membership. The prospect of massive layoffs of government workers – a legitimate expectation – is one of the barriers that keeps government from moving forward with increased private sector involvement.⁷²

Table 4-1 Advantages and Disadvantages of Private Sector Service Delivery

Advantages	Disadvantages
<ul style="list-style-type: none"> • Increased flexibility resulting from reduced bureaucratic complexity and procedures. • Reduced costs resulting from improved efficiency, especially when there is a truly competitive process. 	<ul style="list-style-type: none"> • Perceived loss of control by municipalities. • Few incentives to encourage the private sector to pursue. • No guarantee of private sector financing. • Uncertainties associated with long-term contracts.

Table 4-2 Summary of Stakeholder Concerns Regarding Private Sector Service Delivery

Stakeholders	What They Want	What They Fear
Water customers	<ul style="list-style-type: none"> • Dependable, quality service • Affordable rates 	<ul style="list-style-type: none"> • Higher prices
Government	<ul style="list-style-type: none"> • Budget savings • Happy customers • Happy public utility employees • Jobs for local firms 	<ul style="list-style-type: none"> • Losing control • Unrest from public employees • Price increases leading to political opposition
Private sector companies and investors	<ul style="list-style-type: none"> • Steady, long-term returns • Market share • Reputation • Mitigation of risks not under their control or profits commensurate with risk • Spin-off benefits 	<ul style="list-style-type: none"> • Losing money • Losing reputation through failure • Being subject to risk not under their control
Water utility employees	<ul style="list-style-type: none"> • Secure jobs • Good pay • Career opportunities 	<ul style="list-style-type: none"> • Losing their jobs in the short term • Losing their status of guaranteed employment • Uncertainty for the future

Source: Patorni.

⁷² Osborne et al., p. 37.

While the literature might suggest a myriad of alternative service delivery options, the main types can be distinguished by the way they allocate *responsibility* for functions such as capital investment between the public and private sector. The following subsections outline private sector options for various aspects of water and sewage works and services delivery.

4.3.1 Multiservice Arrangements

Under multiservice arrangements, municipalities contract for a bundle of services related to water and sewage. Typical forms of these arrangements call for the private sector contractor to design and construct facilities, commonly referred to as ‘design-build’ or, if O&M services are also included, ‘design-build-operate.’

Under these types of arrangements, a private firm invests its own capital to design, build, operate, renovate, upgrade, or expand a facility under contract to a public agency. This form of arrangement includes turnkey models, whereby a municipality contracts with a private firm to design and build a complete facility according to specified performance standards and criteria for a fixed price. Ownership can rest with either the private firm or the public agency. In some cases, ownership rights are transferred from the private firm to the public sector at the end of the contract.

Multiservice arrangements provide a number of advantages over the traditional approach of designing and then tendering for construction. The main advantages of design-build arrangements, for example, relate to constructability, time, cost, and reduction of disputes.⁷³

One of Canada’s largest multiservice agreements is for a water treatment plant in Moncton, New Brunswick. For years prior to the construction of the new plant, Moncton residents experienced repeated boil-water orders. To alleviate the problems, the city needed to upgrade the water treatment plant but faced fiscal constraints. Through a build-operate-transfer agreement, a private company, Greater Moncton Water Ltd., provided the financing to build the plant, which can provide 102,300 cubic metres of water per day. The private

⁷³ Isaka Ndekugri and Adrian Turner, 1994, “Building procurement by design and build approach,” *Journal of Construction Engineering and Management* (American Society of Civil Engineers), vol. 120, no. 2, p. 254.

company owns and operates the plant, providing drinking water to the tri-community area of Moncton, Dieppe, and Riverview, on a fee-for-service basis. Cost savings using this approach (in comparison with taking a traditional approach whereby the City of Moncton would construct and operate the plant) are estimated to be \$12 million over the life of the 20-year contract.

Also in eastern Canada, the City of Dartmouth, in Nova Scotia, procured a design-build-operate water treatment plant.⁷⁴ This approach enabled the new plant to be built in 18 months, which was 40% faster than the city's original 30-month timetable using the traditional approach.⁷⁵ "It may not be an accident that much of the public-private partnership business has been in the Maritime provinces, particularly Nova Scotia which has financed schools, a toll road and the privatization of jails through public-private partnerships."⁷⁶

4.3.2 Leases

There are two major forms of lease arrangements: lease/purchase and sale/leaseback.

A lease/purchase is an instalment-purchase contract, similar to that used for leasing a vehicle. Under this model, a private firm finances and builds a facility that it then leases to a public agency. The public agency makes scheduled lease payments to the private firm. In this way, the public agency (municipality) accrues equity in the facility. At the end of the lease term, the municipality owns the facility or purchases it at a cost of any remaining unpaid balance in the lease. In this situation, either the private firm or the municipality could operate the facility during the term of the lease. Lease/purchase arrangements are widely used in the United States for building federal office buildings, prisons, and other correctional facilities.

A sale/leaseback is a financial arrangement in which the owner of a facility sells it to another entity, and subsequently leases it back from the new owner. This method might allow a municipality to sell a facility to a private partner to finance construction or upgrades or to limit government liability through a private holding company. The municipality would repay the private partner's

⁷⁴ Canadian Council for Public-Private Partnerships, 2000, *Overview of Successful Public-Private Partnerships in the Water Sector*, November (Toronto: the council).

⁷⁵ *Ibid.*, p. 9.

⁷⁶ Stephen Probyn, 1997, "Public-private partnerships on the road to nowhere," *Financial Post*, April.

investment with a lease payment. In Arizona, United States, Phoenix is setting up a sale/leaseback arrangement to sell an environmental facility to a municipal holding company. The government will lease and operate the facility while the private holding company will retain ownership and the risk of environmental liability associated with the facility.

No water or sewage lease arrangements exist in Ontario.

4.3.3 Concessions

In its simplest form, a concession is a long-term (20 years or more), full-service lease. In addition to design, building, operating, and financing responsibilities, a concession might include customer service, invoicing, billing, and collection. The private firm is reimbursed directly by water users at a rate specified in the contract. Rates would be periodically reviewed during the life of the contract to reflect changes in inflation, economies of scale, taxation, energy costs, or changes in regulatory requirements.

One striking feature of the water and sewage sector outside North America is the dominance of concessions.⁷⁷ The availability of a concession contract as an alternative to divestiture allows governments to continue owning assets while delegating responsibility and risk to the private sector. Concessions, however, require greater continuing government commitment to ensure a workable and credible regulatory environment.

No water and sewage concession arrangements exist in Ontario or Canada.

4.3.4 Private Sector Financing and Investment

One of the most frequently cited reasons for increasing the role of the private sector in water and sewage services delivery is the opportunity to gain new sources of capital. The use of private capital may be seen as a way of releasing municipal resources and debt capacity for other activities. Furthermore, before providing debt financing, lenders appraise a project's ability to generate cash flow, rather than analyzing the balance sheet. The keys to attracting private

⁷⁷ Silva et al., p. 5.

sector capital are the underlying contracts and agreements that ensure a secure revenue stream. As the risk increases to the lender (e.g., with short-term contracts), the cost of capital increases.

Private sector capital, however, may not be the universal remedy for funding water and sewage infrastructure:

The public-private partnership gold rush simply has not materialized. The difficulties in establishing the public-private partnership model lies in the enormous conceptual space that separates the public and private sectors.

Let's take a hypothetical water treatment plant as an example. In this case, the private sector would build, own, and operate the plant, selling the output to a municipality. The pricing of risk, for example, means one thing to a commercial lender, another to a bureaucrat. To the bureaucrat, the fact the government entity has an obligation to purchase means the risk has effectively been taken out of the transaction. The same transaction looked at with private sector eyes contains many risks that must be managed. The plant's entire revenue source comes from one source – the municipality.

Over twenty years, a municipality's situation can change drastically. Its industries may contract and its population base may decline. Possibly, it will be amalgamated with its neighbours and there may, at that time, be pressure to change the terms of a contract which is no longer required. Unanticipated costs also may adversely affect project economics. Some of these are more or less under the developer's control – such as construction and operating costs – although significant elements of even these costs are really at the mercy of time and circumstance.

Another argument adduced by financiers for public-private partnerships is sheer availability of capital. Beyond some governments in straitened circumstances – which in effect reduces the amount of private sector financing they can sustain – the bulk of municipalities and provincial governments now have the ability to fund infrastructure through traditional borrowing.

After several years in the business, I am convinced that we got it wrong. By focusing the argument on finance, we [led] the discussion away from the real benefits of public-private partnerships, innovation and efficiency.⁷⁸

One leading private sector proponent suggests that “private sector capital provides an alternative method of financing water supply and sewage facilities, especially for financially-strapped municipalities – by allowing municipalities to ‘cash in’ on their infrastructure.”⁷⁹ However, some of the assumptions commonly put forward can be challenged:

- The equity value of an aging infrastructure can be overstated, particularly when there is increasing regulatory risk;
- Proponents of private sector capital assume the market for water systems is larger than it probably is;
- Taxpayers who have funded their municipal water system may not necessarily benefit from the sale of an asset; and
- If the system is badly deteriorated (a reason for shifting risk), these same taxpayers will face a rate increase to pay for needed improvements.⁸⁰

In practice, the sale of assets could be used as an alternative source of revenue to taxation. The funds accruing from the asset sale could be applied to finance tax reductions or to reduce borrowing for other services.

Receipts from sale of assets do reduce public sector debt. In the case of concessions or long-term contracts, there may not be immediate receipts, but in a number of cases a sum is paid up-front by the private sector firm; this will reduce debt, but not the annual deficit. In either case, the amount received by the public body in exchange for the assets will not be invested in the infrastructure itself. It becomes part of the balance sheet of the public entity, not the undertaking. Furthermore, the financing of investment by that undertaking no longer counts as increasing government debt. However, the benefit of this would be offset by any increase in the annual costs of servicing such investments if, for example, the annual

⁷⁸ Probyn.

⁷⁹ David Haarmeyer, 1992, *Privatizing Infrastructure: Options for Municipal Water-Supply Systems* [online], [cited March 8, 2001], <www.rppi.org/ps151.html>.

⁸⁰ Beecher et al., p. 27.

cost of financing a new sewage plant by the private sector is greater than financing it by the public sector.⁸¹

It should be noted that municipalities in Ontario are not barred from selling their assets, but legislation stipulates that any municipality that decides to divest must repay any grants received for the construction of facilities (refer to section 2.4).

The structure of private sector financing and the terms of lending depend primarily on the potential risks associated with a particular project. As the risk to the lender increases, the cost of capital increases. Table 4-3 presents a summary of risks associated with water and sewage projects.

Business risk results from competition and the operation of the market economy; construction risk involves cost overruns that result when the schedule is delayed; and regulatory risk involves uncertainties associated with changes in the regulatory framework surrounding water treatment and distribution, and sewage collection, treatment, and disposal.

In general, the financial capability of a municipality and its ability to incur debt at generally favourable rates mean that the cost of capital often tips in favour of public sector-based financing for water and sewage projects.

Table 4-3 Private Sector Participation in Water and Sewage Projects

	O&M Contract	Lease	Build-Operate-Transfer	Full Concession	Asset Sale
Time horizon	10 years	25 years	10–20 years	20–30 years	In perpetuity
Customer	Government	Retail customer	Government	Retail customer	Retail customer
Business risk	Fixed fee	Subject to market risk	Contracted payments	Subject to market risk	Subject to market risk
Construction risk	None	None	High	Low	Very low
Regulatory risk	None	Medium	Low	High	Very high

Source: Haarmeyer, 1992.

⁸¹ L. de Luca, ed., 1997, *Labour and Social Dimensions of Privatization and Restructuring - Public Utilities, Water, Gas, Electricity: Part II, Europe/Latin America* [online], International Labour Organization, Interdepartmental Action Programme on Privatization, Restructuring and Economic Democracy, November, [cited March 8, 2001], <<http://oracle02.ilo.org:6060/public/english/employment/ent/papers/travint1.htm>>.

4.4 Comparison of Service Delivery Methods

The specific application of each service delivery method will vary by location, since local municipalities have different conditions and requirements. For example, a municipality facing imminent capacity problems may find the design-build-operate (DBO) option attractive because

- there are time constraints;
- there is a need to meet stringent water quality criteria; or
- there may be opportunities to achieve cost savings by attracting competitive bids from the private sector.⁸²

As stated earlier, a range of factors – capability (safety), cost effectiveness, timeliness, risk – are usually considered when determining the method of delivery for a particular service. Additional considerations, such as public policy goals in the case of publicly owned and operated systems, and market share in the case of the private sector, may also come into play.

Competition is often touted by private sector proponents as the key to economic efficiency. However, water systems are characterized by a high degree of natural monopoly, which means that the service is most efficiently provided by a single entity. While competition in the contracting-out process itself can help to realize cost savings, introduce private sector innovation, and inject operational efficiencies, the objective of greater accountability and safety depends on performance, which in turn depends on the financial, institutional, and political environment in which the water system operates. Alternative service delivery cannot make up for lack of competition, weak markets, or absence of proper governance and management.

The following subsections describe the various factors that may need to be taken into consideration when service delivery options are evaluated.

4.4.1 Capability

There should be no difference between public and private sector service providers in terms of their capability to safeguard drinking water. Each must ensure that front-line staff are adequately trained, that appropriate reporting mechanisms

⁸² U.S., EPA, p. 9.

are in place, and that strategies are available to ensure that performance standards can be achieved.

The main difference between the public and private sectors is in their relative flexibility to respond to changing circumstances. In general, private sector service providers have greater flexibility to respond and are usually able to respond more quickly than their public sector counterparts. For example, the OCWA, which has a highly trained workforce, may not have the flexibility to allocate staff efficiently because it is constrained by Management Board of Cabinet Directives, by collective agreements, and by workforce adjustment policies of the province.⁸³

4.4.2 Control, Accountability, and Risk

The political barriers to increased private sector involvement are the most difficult to analyze and overcome. Although political opposition to private sector service delivery can be based on a genuine concern about whether private sector involvement will yield appreciable benefits to the community, most opposition boils down to loss of control. When a public sector organization is not involved in day-to-day operations, there may be a perception that it does not have *control* over water quality, including compliance with drinking water guidelines and environmental standards. Private sector participation affects the distribution of political power as well as being seen as a threat to jobs or votes.⁸⁴

The more risk and responsibility that are passed to the private sector, the more powerful are the incentives to improve services. For example, service contracts that confer little risk and responsibility are simply not designed to improve management inefficiency or chronic underinvestment;⁸⁵ on the other hand, a public entity about to enter into a concession contract for 25 years or more, for example, needs to be sure that the contract is well thought out to avoid messy renegotiations that may result in losing credibility or in reduced benefits to customers. The concern that the profit motive of private companies will result in poorer service and a propensity to serve those who are most easily served is often raised as an issue when private sector involvement is contemplated.⁸⁶

⁸³ Strategic Alternatives et al., 1998, p. 36.

⁸⁴ Beecher et al., p. 101.

⁸⁵ Penelope J. Brook Cowen, 1997, "The private sector in water and sanitation: How to get started," *Public Policy for the Private Sector*, note no. 126, September (Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network), p. 3.

⁸⁶ Harry P. Hatry, 1983, *A Review of Private Approaches for Delivery of Public Services* (Washington, D.C.: Urban Institute Press).

Furthermore, while the concept of increased private sector participation may appear feasible, this is often not realistic. In some cases, municipalities may not have the ability to enter into certain types of arrangements.

The keys to successfully implementing private sector service delivery lie in careful public administration, understanding the potential risks that the private sector is willing to accept (refer to table 4-4), and structuring a contract or regulatory regime that responds to these issues and protects those being served. The structure of the agreement is far more important than the type of service in determining success.

4.4.3 Cost Savings

Potential cost savings through the use of the private sector can be a primary motivating factor for moving away from public sector service delivery.

The private sector achieves cost savings through efficiently utilizing human resources, energy, and materials, as well as through implementing technological innovation (e.g., automation, which can result in lower labour requirements). A survey done by a leading water industry trade journal found that significant cost savings can be realized for communities that engage the private sector in long-term (greater than five years) arrangements. A summary of the survey results is shown in table 4-5.⁸⁷

Table 4-4 Private Sector Service Delivery Allocation of Risk

Option	Operations & Maintenance	Capital Investment	Commercial Risk	Duration
Service contract	Public and private	Public	Public	1–2 years
Management contract	Private	Public	Public	3–5 years
Lease	Private	Public	Shared	8–15 years
Design-build-operate (transfer)	Private	Private	Private	20–30 years
Concession	Private	Private	Private	25–30 years

Source: Brook Cowen.

⁸⁷ The information presented in table 4-5 should be interpreted with care, particularly when making comparisons between jurisdictions, because context is very important. Factors such as baseline costs, regulatory framework, and contract terms and conditions must be fully recognized if comparisons are to be meaningful.

Table 4-5 Examples of Cost Savings Accruing from Long-Term Contracts with the Private Sector

Service Delivery	System Type	Municipality	Plant Size (mgd*)	Contract Term (years)	Estimated Cost Savings
<i>Canada (Cdn\$)</i>					
O&M Contract	Water	Hamilton, Ont.	300	10	\$12 million
	Sewage	Edmonton, Alta.	24	8	\$3.2 million
DBO	Water	Moncton, N.B.	25	20	\$12 million
<i>United States (US\$)</i>					
O&M Contract	W&S	Brockton, Mass.	23	25	\$35 million
	W&S	Farmington, N.M.	20	8	\$4 million
	Water	Evansville, Ind.	60	10	\$8.1 million
	Water	Rahway, N.J.	6	20	\$32 million
	Water	Atlanta, Ga.	100	20	\$400 million
	Sewage	Augusta, Ga.	46	10	\$5 million
	Sewage	Fulton Co., Ga.	24	10	\$4 million
	Sewage	Indianapolis, Ind.	250	14	\$250 million +
	Sewage	Milwaukee, Wis.	550	10	\$145 million
	Sewage	Newport, R.I.	10	20	\$22 million
	Sewage	New Haven, Conn.	45	15	\$53 million
	Sewage	West Haven, Conn.	12.5	15	\$12 million
	Sewage	Wilmington, Del.	105	20	\$60 million
DBO	Water	Seattle, Wash.	120	25	\$70 million (40%)
	Water	Tampa, Fla.	66	15+5	\$85 million (21%)
	Sewage	Cranston, R.I.	23	25	\$35 million
	Sewage	Plymouth, Mass.	3	20	\$7.4 million (19.7%)
	Sewage	Washington Borough, N.J.	1.2	15+5	\$2.2 million (11%)
	Sewage	Woonsocket, R.I.	16	20	\$45 million

*Note: The abbreviation 'mgd' refers to million U.S. gallons per day (U.S. gallon=3.785L).

Source: Reinhardt.

For large-scale undertakings, such as those listed in table 4-5, the process of considering increased private sector involvement can be daunting. Consider, for example, the development costs that are incurred in the process of attracting and retaining the private sector. These costs are referred to as ‘transaction costs’ and include staff costs, financing costs, and advisory fees for investment firms, lawyers, and consultants. The cost of this advice can be a drain on resources and test those who are less than committed.

Transaction costs vary according to the stability of the marketplace and the policy environment, and are higher in pioneering projects; the costs of private sector technical studies appear less important than expenses incurred in dealing with governments.⁸⁸ While consistent and comparable data on transaction costs are rare (because of the proprietary nature of the data), the estimated range is from 2% to as high as 10% of total project costs.

Skeptics may argue that high transaction costs are reason enough for municipalities to forgo private sector involvement. However, public sector projects also incur transaction costs, but these are not exposed or taken into consideration in the same way as when the private sector is involved.

Increasingly, contractors vying for large-scale, long-term multiservice agreements are being asked to pay an upfront fee on being awarded the contract (for example, as a means to offset the public agency’s transaction costs). This practice has the potential to distort decision making. A proposal that may be less attractive in some respects may, nevertheless, be chosen if it offers greater payment to the public agency. In a competition between public and private, the effect of such a practice distorts any comparison, unless the public sector operator is in a position to offer inducements similar to the payment.⁸⁹

4.4.4 Incentives and Barriers

From a private sector viewpoint, there are a number of potential disincentives, such as tax impacts. For example, publicly owned and operated water and sewage systems are generally exempt from Ontario provincial sales tax (8%)

⁸⁸ Michael Klein, Jae So, and Ben Shin, 1996, “Transaction costs in private infrastructure projects: Are they too high?” *Public Policy for the Private Sector*, note no. 95, October (Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network).

⁸⁹ Ibid.

and qualify for a federal goods and services tax (GST) credit. Furthermore, public organizations do not pay corporate or property taxes, which means that public organizations, including the OCWA, enjoy preferential tax treatment over the private sector. Private sector firms argue that the unequal tax treatment favours public sector entities and creates an unlevel playing field upon which to compete.

Furthermore, a private sector firm would need to be certain that the return on investment it could achieve through efficiencies over the life of the contract would be greater than the sum of profit plus tax differential plus transaction costs to make investment worthwhile (at the same time accounting for business, construction, and regulatory risk). Under Ontario's current regulatory framework, this appears to be a reasonable goal; however, it is likely that the private sector firm would want to protect itself against changes in the regulatory regime.

In the United States, similar barriers may explain the presence of only a relatively small number of privately owned utilities. Considerable capital needs combined with strict rate-of-return regulation means that a privately owned water utility may find itself unable to undertake important capital financing programs; as a consequence, it may reduce the level of service. Thus differential tax treatment and adverse effects of rate regulation give municipal water supply systems an artificial competitive advantage.⁹⁰

Another barrier to increased private sector participation in Ontario (beyond service contracts) may be related to the characteristics of the Ontario water and sewage marketplace. This is composed of numerous small treatment plants dispersed across the province and serving a relatively small percentage of the population, coupled with a handful of large facilities serving the majority of residents.

Even though most of the major international water companies, along with the larger North American-based engineering/construction firms, have offices in Ontario capable of financing, building, and operating water infrastructure,⁹¹ they continue to maintain a relatively low-level presence in the water and sewage industry. While some have shown interest in local communities with populations

⁹⁰ David Haarmeyer, 1994, "Privatizing infrastructure: Options for municipal systems." *Journal of the American Water Works Association*, vol. 86, no. 3, pp. 43-55.

⁹¹ Ibid.; Canadian Council for Public-Private Partnerships, 2000, *Overview of Successful Public-Private Partnerships in the Water Sector*, November (Toronto: the council).

of less than 10,000, for the most part, the largest water companies have focused primarily on the larger regional municipalities and urban areas, and on the so-called area schemes where there is greater opportunity to improve efficiencies, achieve economies of scale, and make a profit.⁹²

Furthermore, municipalities, which are new to private sector partnering, may consider that the uncertainties of long-term contracts (greater than five years) for operating a water treatment system are not worth the political risk; they trade off the opportunity for greater benefits by opting for a short-term arrangement as a cautionary first step. In so doing, municipalities provide a disincentive to private sector investment.

⁹² Strategic Alternatives et al., 1998.

References

- American Water Works Association. 2001. "Privatization and alternative approaches to management, operations, and ownership of drinking water facilities." *AWWA Government Affairs* [online]. [Cited February 21, 2001.] <www.awwa.org/govtaff/privzpap.htm>.
- Association of Metropolitan Sewerage Agencies. 1996. *Evaluating Privatization: An AMSA Checklist*. Prepared by Apogee Research, Inc. Washington, D.C.: [the Association].
- Beecher, J.A., G.R. Dreese, and J.D. Stanford. 1995. *Regulatory Implications of Water and Wastewater Utility Privatization*. Columbus, Ohio: National Regulatory Research Institute.
- Brook Cowen, Penelope J. 1997. "The private sector in water and sanitation: How to get started." *Public Policy for the Private Sector*. Note no. 126. September. Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network.
- Brubaker, Elizabeth. 2000. "Privatizing water works." *National Post* [Toronto], March 6.
- Canada. Environment Canada. 1995. *Canada's Untapped Resource: Public-Private Partnerships in Water Supply and Wastewater Treatment*. Technology Transfer Series 2E. September. Prepared by Thompson Gow Associates. Ottawa: Environment Canada.
- Canadian Council for Public-Private Partnerships. 2000. *Overview of Successful Public-Private Partnerships in the Water Sector*. November. Toronto: the council.
- de Luca, L. 1997. *Labour and Social Dimensions of Privatization and Restructuring – Public Utilities, Water, Gas, Electricity: Part II, Europe/Latin America* [online]. International Labour Organization, Interdepartmental Action Programme on Privatization, Restructuring and Economic Democracy. November. [Cited March 8, 2001]. <<http://oracle02.ilo.org:6060/public/english/employment/ent/papers/travint1.htm>>.
- Doyle, E., et al. 2002. *Production and Distribution of Drinking Water*. Toronto: Ontario Ministry of the Attorney General. Walkerton Inquiry Commissioned Paper 8. Walkerton Inquiry CD-ROM. <www.walkertoninquiry.com>.
- . 2002. *Wastewater Collection and Treatment*. Toronto: Ontario Ministry of the Attorney General. Walkerton Inquiry Commissioned Paper 9. Walkerton Inquiry CD-ROM. <www.walkertoninquiry.com>.

- Estrin, David, and John Swaigen. 1993. *Environment on Trial: A Guide to Environmental Law and Policy*. 3d ed. Toronto: Emond Montgomery Publications.
- Freeman, Neil B. 1996. *Ontario's Water Industry: Models for the 21st Century*. Waterloo, Ont.: Ontario Municipal Water Association.
- Global Development Research Center. 2001. *Characteristics of Good Governance* [online]. [Cited February 19, 2001.] <www.gdrc.org/u-gov/g-attributes.html>.
- Haarmeyer, David. 1992. "Privatizing Infrastructure: Options for Municipal Water Supply Systems" [online]. [Cited March 8, 2001.] <www.rppi.org/ps151.html>.
- . 1994. "Privatizing infrastructure: Options for municipal systems." *Journal of the American Water Works Association*. Vol. 86, no. 3, pp. 43–55.
- Haarmeyer, David, and Ashoka Mody. 1997. *Private Capital in Water and Sanitation* [online]. [Cited March 8, 2001.] <www.worldbank.org/fandd/english/0397/articles/0100397.htm>.
- . 1998. "Financing water and sanitation projects: The unique risks." *Public Policy for the Private Sector*. Note no. 151. September. Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network.
- Hatry, Harry P. 1983. *A Review of Private Approaches for Delivery of Public Services*. Washington, D.C.: Urban Institute Press.
- Henig, Jeffrey R. 1989–1990. "Privatization in the United States: Theory and practice." *Political Science Quarterly*. Vol. 104, no. 4, pp. 649–70.
- Irwin, Timothy, and Ian Alexander. 1996. "Privatizing infrastructure: Capital market pressures and management incentives." *Public Policy for the Private Sector*. Note no. 93. October. Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network.
- Kikeri, Sunita, John Nellis, and Mary Shirley. 1992. "Privatization: Eight lessons of experience." *Outreach #3*, Policy Views from the Country Economics Department [online]. [Cited March 5, 2001.] <www.worldbank.org/html/prddr/outreach/or3.htm>.
- Kitchen, Harry. 1975. "Some organizational implications of providing an urban service: The case of water." *Canadian Public Administration*. Summer, pp. 297–308.

- Klein, Michael, and Timothy Irwin. 1996. "Regulating water companies." *Public Policy for the Private Sector*. Note no. 77. May. Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network.
- Klein, Michael, Jae So, and Ben Shin. 1996. "Transaction costs in private infrastructure projects: Are they too high?" *Public Policy for the Private Sector*. Note no. 95. October. Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network.
- Lambert, David. K., Dimo Dichev, and Kambiz Raffie. 1993. "Ownership and sources of inefficiency in the provision of water services." *Water Resources Research*. Vol. 29, no. 6. June, pp. 1573–78.
- Megginson, William L., Robert Nash, and Matthias von Randenborgh. 1994. "The financial and operating performance of newly privatized firms: An international empirical analysis." *Journal of Finance*. Vol. 49, no. 2, pp. 403–52.
- Megginson, William L., and Jeffrey M. Netter. 1998. "From state to market: A survey of empirical studies on privatization." *Global Equity Markets: Joint Conference of SBF Bourse de Paris and the New York Stock Exchange*. December. Paris, France.
- Municipal Engineers Association. 2000. *Municipal Class Environmental Assessment*. Mississauga, Ont.: the association.
- Nav Canada. 2001. *Air Navigation Safety* [online]. [Cited July 20, 2001.] <www.navcanada.ca/contentEN/news/background/>.
- Neal, K., et al. 1996. *Restructuring America's Water Industry: Comparing Investor-owned and Government Water Systems*. Public Policy Study No. 200. Los Angeles: Reason Foundation Public Policy Institute.
- Ndekugri, Isaka, and Adrian Turner. 1994. "Building procurement by design and build approach." *Journal of Construction Engineering and Management* (American Society of Civil Engineers). Vol. 120, no. 2. pp. 243–56.
- Nellis, John. 1994. "Is privatization necessary?" *Public Policy for the Private Sector*. Note no. 7. May. Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network.
- Niagara Review Commission. 1994. *Report*. St. Catharines, Ont.: Regional Municipality of Niagara.
- Ontario. Ministry of Finance. 2000. *Local Services Realignment: A New Provincial-Municipal Relationship* [online]. [Cited May 4, 2001.] <www.gov.on.ca/FIN/english/bkelsr2.htm>.

- . Ministry of Municipal Affairs and Housing. 2000. *Municipal Performance Measurement Program Handbook*. [Toronto: the ministry].
- Ontario Sewer and Watermain Construction Association. 2001a. *Drinking Water Management in Ontario: A Brief History* [online]. [Cited February 2001.] Prepared by Strategic Alternatives as a public submission to the Walkerton Inquiry. <www.walkertoninquiry.com/part2info/publicsubmissions/index.html>.
- . 2001b. *A Nine Step CPR Plan for Ontario's Water and Sewage Systems* [online]. [Cited February 2001.] Public submission to the Walkerton Inquiry. <www.walkertoninquiry.com/part2info/publicsubmissions/index.html>.
- Orwin, Alexander. 1999. *The Privatization of Water and Wastewater Utilities: An International Survey* [online]. [Cited March 16, 2001.] <www.environmentprobe.org/enviroprobe/pubs/ev542.html>.
- Osborne, David, and Ted Gaebler. 1992. *Reinventing Government: How the Entrepreneurial Spirit Is Transforming the Public Sector*. New York: Penguin Books.
- Patorni, F-M. 2000. "Water demand management strategies in cities." *City Development Strategies Initiative. The Journal* (September 2000) [online]. [Cited March 16, 2001.] <www.citydev.org/journal/sep00/journal_f07.html>.
- Pendleton, Andrew. 1997. "What impact has privatization had on pay and employment: A review of the UK experience." *Industrial Relations*. Vol. 52, no. 3, pp. 554–79.
- Probyn, Stephen. 1997. "Public-private partnerships on the road to nowhere." *Financial Post*. April.
- Reinhardt, William G. 2001. *Survey of North American Water/Wastewater DBO Projects* [online]. [Cited March 16, 2001.] <www.waterindustry.org/water-facts/survey-NA.htm>.
- Roger, Neil. 1999. "Recent trends in private participation in infrastructure." *Public Policy for the Private Sector*. Note no. 196. September. Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network.
- Sancton, Andrew, and Teresa Janik. 2002. *Provincial-Local Relations and Drinking Water in Ontario*. Toronto: Ontario Ministry of the Attorney General. Walkerton Inquiry Commissioned Paper 3. Walkerton Inquiry CD-ROM. <www.walkertoninquiry.com>.

- Savas, E.S., ed. 1987. *Privatization: The Key to Better Government*. Chatham, N.J.: Chatham House Publishers.
- Silva, Gisele, Nicola Tynan, and Yesim Yilmaz. 1998. "Private participation in the water and sewerage sector: Recent trends." *Public Policy for the Private Sector*. Note no. 147. August. Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network.
- Smith Nightingale, Demetra, and Nancy Pindus. 1997. "Privatization of public social services: A background paper." Washington, D.C.: Urban Institute Press.
- Strategic Alternatives et al. 1998. "Review of the Ontario Clean Water Agency." Prepared for the Ontario Office of Privatization [unpublished confidential report].
- . 2000. Water and Sewage Infrastructure Project, phase 2a forecast model. Final report. Prepared for the Ontario Ministry of the Environment [unpublished confidential report].
- . 2002. *Financing Water Infrastructure*. Toronto: Ontario Ministry of the Attorney General. Walkerton Inquiry Commissioned Paper 16. Walkerton Inquiry CD-ROM. <www.walkertoninquiry.com>.
- United Nations Development Programme. 1997. *Governance and Sustainable Human Development*. New York: UN
- United States. Environmental Financial Advisory Board and Environmental Finance Center Network. 1999. *A Guidebook of Financial Tools: Paying for Sustainable Environmental Systems* [online]. [Cited April, 3, 2001.] <www.epa.gov/efinpage/>.
- . Environmental Protection Agency (EPA). 2000. *Guidance on the Privatization of Federally Funded Wastewater Treatment Works*. EPA-832-B-00-002. Washington, D.C.: Office of Water.
- . General Accounting Office. 1997. "Privatization: Lessons learned by state and local governments." *Report to the Chairman, House Republican Task Force on Privatization*. GAO/GCD-97-48. Washington, D.C.
- van den Berg, Caroline. 1997. "Water privatization and regulation in England and Wales." *Public Policy for the Private Sector*. Note no. 115. May. Washington, D.C.: World Bank Group – Finance, Private Sector, and Infrastructure Network.
- Walsh, Michael J. 1995. "Private matters." *Water Environment and Technology*. October, pp. 62–66.
- World Bank. 1992. *Governance and Development*. Washington, D.C.: World Bank.