

In response the Department included the removal of 14 facilities from the Regulated Price Plan to the Hourly Spot Market resulting in an estimated \$300,000 annual savings.

Conscientiously managing the business can help reduce operating costs.

Capital Construction Program

York Region's capital construction program focuses on three areas of commitment: to the community, to harmonize excellence in engineering with environmental stewardship, and to environmental management.



Environmental Protection Measures

York Region is committed to ensuring that the health of the natural environment is better following completion of infrastructure projects than it was before. Many projects include a series of improvements related to the temporary impacts from construction including for watercourses that received water during construction.

The Region's goal with these improvements is to improve water quality and quantity, enhance fish habitat, and, where appropriate, improve aesthetic conditions and provide compatible recreational opportunities. These improvements are a necessary element of the permitting process and more importantly, leave a positive legacy for residents of York Region.



On major trunk sewer projects, York Region has created and implemented Environmental Management Plan Awareness and Compliance Training (EMPACT) as a requirement for all project team staff, including the Region, the consultant and the contractor/crews.

Infrastructure Improvement Budgets

The Department manages a rolling ten year capital improvement program focused on proactively managing infrastructure rehabilitation and replacement projects. Updated annually, the council has consistently approved the necessary funds to enable the implementation of this program.

WHY MEASURE THE STATE OF INFRASTRUCTURE?

Managing infrastructure is becoming increasingly challenging presenting difficult decisions to match investment needs with service requirements.

A candid assessment of current condition and performance is a useful first step in identifying options and opportunities for improvement. It also establishes a quantifiable baseline from which to measure progress. As conditions change, future assessments will reveal new opportunities and priorities. Assessment results presented in the State of Infrastructure report can also be a useful resource for discussion and providing the ability to focus improvement efforts and foster understanding among York Region's management team and other stakeholders including senior management and Council.

Additionally the report can help achieve the requirements of the Safe Drinking Water Act, which identifies a recommended statutory standard of care on those who have oversight of municipal drinking water systems. Oversight includes conducting regular performance appraisals and learning about the water assets. This same oversight can be applied to wastewater and waste management services to ensure a consistent approach.

York Region staff understands the need to provide high quality municipal infrastructure to ensure the community's growth, economic development, safety and quality of life. This State of Infrastructure Report reflects the commitment to proactively and transparently manage and communicate challenges and opportunities associated with the delivery of environmental services.

Asset Management

Asset Management has been defined as '*An integrated optimization process of managing infrastructure assets to minimize the total cost of owning and operating them, while continuously delivering the service levels customers desire, at an acceptable level of risk without compromising the needs of future generations*'.

This asset management definition provides useful direction in explaining the need for a high level reflection of the state of infrastructure from various perspectives. State of Infrastructure includes not only physical condition, but also capacity, performance and economic conditions. Combined, these factors are important facets of the asset's current state. Understanding the State of Infrastructure is a basic tenet or principle of asset management.

Industry Practices

As more service providers identify the need in adopting principles of asset management, the various approaches and best practices can be a useful guide in developing similar programs.

The City of Hamilton has implemented asset management practices including a "State of our Infrastructure" report that was initially completed in 2004. The Asset Management group monitors current levels of service, life cycle trends and deterioration models in order to plan and develop an integrated 3 to 5 year detailed budget and a 20 year long range capital budget in order to protect the city's infrastructure investments.

Hamilton's asset management approach includes the analysis of current and projected asset conditions, using all of the information to help make cost-effective investment decisions.

Peel Region shares a border with York and is in the development stages of creating a corporate asset management program. Early reports from Peel focus on levels of service, development of a replacement program and an asset prioritization system. They plan to produce an infrastructure report card in the near future and are currently developing a strategy.

The City of Ottawa has developed a framework for strategic services and standards to promote their asset management programs based on elements such as infrastructure preservation and quality of life. They have developed a framework for a State of Infrastructure Report.

HOW IS THE STATE OF INFRASTRUCTURE MEASURED?

It is not easy to develop a simplistic "report card" that is representative and adequately communicates the complexity associated with infrastructure condition. This difficulty also extends to the application in a uniform and consistent manner within and across the different asset types in the environmental services area. The goal of the report is to develop a simple State of Infrastructure report card that is representative of condition, performance and capacity of the assets and that adequately illustrates the complexity associated with managing the state of the infrastructure.

A robust framework helps York Region's water, wastewater, and waste management team evaluate their utility's current performance against internal goals and specific needs as well as to determine where to focus improvement efforts.

Many cities, municipalities and consultant firms in the industry have developed grading frameworks and infrastructure reports that can assist in identifying and developing suitable criteria for York Region.



Industry Practices

Commencing in 2004 The City of Hamilton produced a periodic State of the Infrastructure Report Card for many assets such as roads, water, wastewater and facilities. The objective was to prepare a Report Card that outlines the current status of specific assets as well as a projection of the state of these assets in 2020 and 2050 should the status quo be maintained. The report also contains observations and recommendations, where applicable, aimed at continued sustainable asset management practices in water and wastewater while expanding these same principles to other assets that are mainly supported by levy revenues.

Peel Region intends on completing a state of infrastructure report in the near future. The purpose of the report will be to enable Peel Region to identify trends in service and how programs are performing, allowing comparison across asset classes or types. It will also assist in producing a measure of sustainability, and answer whether Peel Region is operating in a manner that can be sustained in the long term. Peel also expects to use the report as a strategic budgeting tool that will enable more accurate cost analysis for the next fiscal planning period.

Durham Region developed a rating system with the goal of gaining a strategic perspective of the state and condition of the assets. Durham Region identified a need to establish a reserve fund for improving the asset condition. The report and plan helped identify the need which justified putting a percentage of built assets into reserve, and holding the funds until they were needed.

The City of Ottawa has developed a Framework for a State of Assets Report, with the primary goal being to support corporate goals and objectives. The City has prepared an internal working document, with the intention of having a report developed by the end of March, 2010. The City is aligning the efforts with the Tangible Capital Assets Reporting, through the national federal management process, as well as an

alignment with the City's Long Range Financial Plan. It is understood that the content of the Report will evolve over time – to be further aligned with the City's Fiscal Framework and Strategic Plan – both of which are Council approved documents.

The American Society of Civil Engineers (ASCE) created grading criteria used to evaluate infrastructure across the United States. ASCE's report card seeks to inform the public and policymakers about the condition of the nation's infrastructure and how best to improve it. The Report Card points out serious needs facing the nation's infrastructure including focused and visionary leadership and adequate funding. Along with these are key solutions and recommendations. Key solutions focus on development or optimization of asset management practices.

The following table shows the criteria for asset grading used by various organizations.

Hamilton	Ottawa	Durham	ASCE
Condition & Performance	Physical Condition	Soundness	Condition
		Age	Resilience
Capacity vs Need	Capacity Performance	Functionability	Capacity
Funding vs Need	Financial Performance	Maintenance Cost	Funding
	Risk Profile	Risk Profile	Future Need
	Service Performance		Public Safety
			Operations & Maintenance

Generally grading systems are used on the business lines or service such as Water, Wastewater, Transportation, and Facilities whereas indicators are used for both assets and aspects of the management of either the asset class (e.g. water treatment) or specific assets.

Many organizations rely on specific indicators either rolled up to provide a grade or singly as in benchmarking exercises. Examples include number of overflows, operations cost/100km, and \$/tonne solid waste collected. Grading systems are consistently based on an A, B, C

type system combined with reports that provide some high level detail about important findings.

While grading frameworks are used, there is a lack of transparency in the industry as to how a specific grade is obtained from specific components or indexes, i.e. the formula. Because of the difficulty in obtaining data or because of the lack of available data, opinion from staff on condition, capacity or other parameters is often used to supplement the ratings for the infrastructure.

Some organizations have taken a broader viewpoint on the state of infrastructure by considering service levels and perspectives beyond those associated with attributes of the assets.

The National Research Council of Canada (NRC) has developed a Framework for the Assessment of the State, Performance and Management of Canada's Core Public Infrastructure (CPI). The NRC determined that objective and relevant performance indicators and predictive approaches are needed to provide a reliable assessment of the life cycle performance of CPI systems and assist in the development of cost-effective management plans for federal, provincial, territorial, and municipal governments. The framework is comprised of a matrix of objectives and criteria to assess the performance of the service and of the infrastructure with respect to the three accepted pillars of sustainability; society, environment, and economy (i.e. the "Triple Bottom Line"). At present there is no grading system established for the framework.

Ottawa's State-Of-the-Asset Reporting System views assets from three perspectives to compile a comprehensive grade, that of the Owner, Customer, and Community. The Owner's view provides the perspective of Asset Management through an asset rating system along with a financial accounting that represents the value of the assets throughout their life-cycle. The Service perspective is measured through the Customer's viewpoint based on surveys. The Community view provides a perspective on Sustainability and rates assets and service based

on the social, economic and environmental impact to the health of the community. In both these examples the measures include criteria or attributes that are relatively qualitative or subjective such as public health, adaptability, social equity, service experience, conservation of resources and reduction of greenhouse gases. These are higher level and more difficult to quantify.

	Dimension	Measures:
OWNER'S VIEW	Quality of Service	Serviceability, Functionality and Service Performance
	Soundness	Physical Condition and Operations & Maintenance
	Capacity to Meet Demand	Capacity, Future Need and Resource Adequacy
	Reliability of Service	Operational Resiliency, Resiliency and Operational Optimization
	Economic Impact	Financial Performance, Funding and Financial Viability
COMMUNITY'S VIEW	Environmental Impacts	
	Customer Satisfaction	
	Social Equity	
	Community Sustainability	
CUSTOMER'S VIEW	Public Safety	
	Safety Impacts	
	Mobility (goods & people)	
	Adaptability	
	Access to Service	
	Public Security	
	Health Impacts	
	Security Impacts	
	Public Health	

Traditional measures can be considered as the owner's perspective - a broader context may be the trend for the future.

The format adopted by the Environmental Services Department follows the more traditional practice focused on the perspective of the owner on the condition, reliability and performance of the infrastructure.

HOW ENVIRONMENTAL SERVICES DEPARTMENT MEASURES STATE OF INFRASTRUCTURE

The framework used for the Environmental Services State of Infrastructure is defined by three dimensions; Reliability, Capacity and Soundness. Additionally the Financial State of Infrastructure consists of one dimension measuring financial capacity.

Dimensions of the State of Infrastructure

1 Reliability The focus of this dimension is the overall reliability and quality of service of an asset.	2 Capacity Capacity to meet demand is the ability to ensure supply consistent with current and future demands
3 Soundness Soundness considers physical condition of the infrastructure, its age and the maintenance performance	Department The Department grade is the average of the three dimensions

Financial Management of the State of Infrastructure

Financial This Dimension measures the financial capacity to plan and fund rehabilitation and replacement initiatives.

More detailed definitions of the dimensions are provided following:

Reliability

The focus of this dimension is the overall reliability and quality of service of an asset. Reliability grading provides an assessment of the ability to meet quality & regulatory standards and uninterrupted service.

Capacity

Capacity to meet demand measures the ability to ensure availability of services provided by the Department consistent with current and future demands. Knowing the capacity performance of assets can provide an early indication of negative impacts on services for customers and potential impacts on the sustainability of the community. Capacity performance provides insight into future impacts of growth including how a service provider should adapt to prepare for what will be required of infrastructure in the future.

Soundness

Soundness is a measure of the physical condition of the infrastructure, its age and the maintenance performance. A grade for Soundness provides knowledge related to maintaining and enhancing asset condition and the efficiency and effectiveness of rehabilitation initiatives. Soundness provides an understanding of the remaining service life and functionality of the asset.

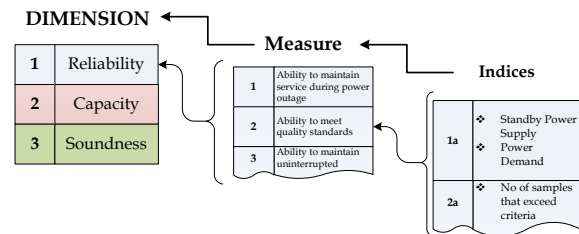
The Financial Management of the State of the Infrastructure is defined by one Dimension focused on funding and reserve.

Financial

Economic Sustainability measures the ability to finance rehabilitation and replacement over both short and long term periods. This can provide York Region with necessary information to understand whether budgets and reserves are sufficient to maintain current levels of service. The financial grade can be used to help establish predictable rates consistent with community expectations and values while recognizing economic risks.

Grading System

Each Dimension is graded based on all the measures pertaining to the dimension. The general meaning of the overall grade reflects and is a combination of the perspective provided by the dimensions.



Dimension grades are determined based on the infrastructure and how well or fit it is for its current and anticipated purpose in terms of condition, regulatory regime, capacity processes and committed investment.

Dimension Grades

A	Excellent - like new
B	Good - assets and systems function as designed
C	Adequate - most areas meet the standard expected
D	Poor - performance is at a level of high risk
F	Very poor - fails the lowest standard of condition

HOW DOES YORK MEASURE UP?

York Region has been developing principles of asset management since 2007 in an attempt to strategically manage the Environmental Services Department and infrastructure.

To ensure that future capital investments are made most effectively, a strategic 10-year Infrastructure Improvement Plan (IIP) has been developed by York Region. The plan was developed to identify deficiencies, prioritize projects, and determine appropriate resource levels.

York Region has also been developing a Levels of Service Framework and Strategy, a key component to successfully developing an asset management program. The Levels of Service framework strategically outlines the objectives of the Department, measures service delivery success, and acts as a process management tool focused on continuous improvement.

Overall, the state of York Region's environmental services assets is adequate to good. The grades for the individual State of Infrastructure dimensions are also relatively good with some concern about the capacity of the systems. More detail is described in the sections following.

Dimensions of the Environmental Services Department State of Infrastructure

 1 Reliability	 2 Capacity
3 Soundness 	Department 

★ Grade improves when Duffin Creek WPCP Stage 3 Expansion is commissioned

In some respect these marks reflect the younger age of the newer asset base, rehabilitation efforts made through the regulatory requirements, and the rigorous planning processes in place that support continued growth in York Region.

Each service within the Environmental Services Department scored relatively well, and some of the shortfalls are being addressed through current or projected initiatives which will be discussed in the following sections.

Environmental Services Department State of Infrastructure

 Water	 Wastewater
Waste Management 	Duffin Creek WPCP 

As York Region continues to focus on optimizing the Department's performance by developing strategic asset management

