

### 8.3.7 Information Technology

#### 8.3.7.1 What do we own and what is it worth?

Please refer to section 5.1.1 for general context and appropriate asset management interpretation of this section's specifics.

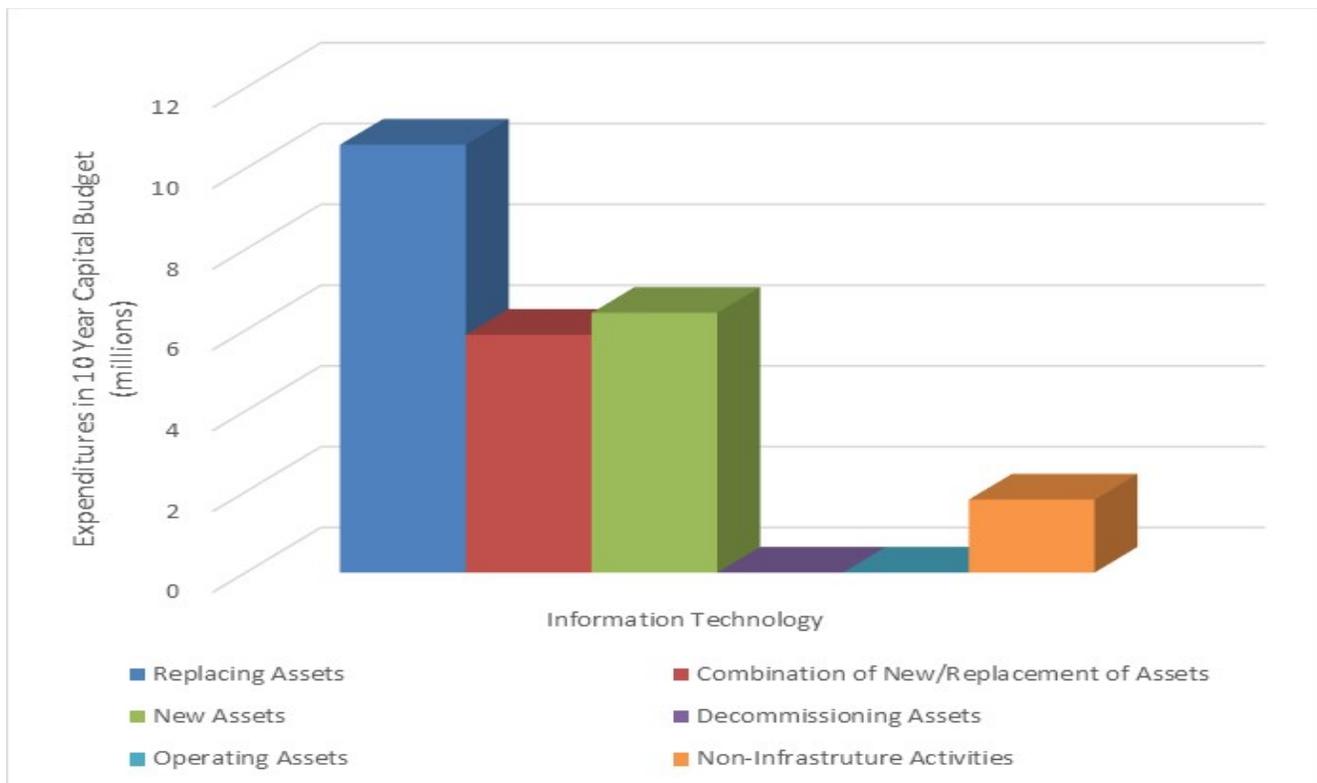
There are approximately 1,500 information management and technology services (IMTS) related assets owned by the City, ranging from desktop computers, software applications to fibre optic infrastructure. The total replacement value of the IMTS assets is approximately \$16 million, current breakdown of value includes approximately 65% software, and 35 % for data, hardware, and infrastructure. IMTS asset class represents approximately 0.6% of the total replacement value of the City's assets.

#### 8.3.7.2 Allocation of Infrastructure Funding

Please refer to section 5.1.2 for general context and appropriate asset management interpretation of this section's specifics.

As indicated in Section 4.3, the capital budget has the most significant portion of funding allocated for the City's infrastructure assets. Information Technology assets have an estimated \$25 million in funding allocated in the Approved 2020-2022 Capital Budget and 2023-2029 Capital Forecast. The distribution of the funding is shown in **Figure 59**.

**Figure 59: 2020-2029 Capital Funding Distribution for Information Technology**



The City also spends money on infrastructure through its annual operating budget.

**Table 7** in Section 4.3 provides a summary of the planned expenditures in the 2020-2022 operating budget. The Information Technology assets group does not have any items within their operating budget dedicated to maintaining existing asset.

### **8.3.7.3 Rehabilitation or Replacement Strategies**

Please refer to section 5.1.3 for general context and appropriate asset management interpretation of this section's specifics.

IMTS assets are replaced when they reach the end of their useful life (i.e. reach a performance score of 0%). The estimated service life ranges between 1 and 5 years for software and hardware assets, and 25 years for fibre optic infrastructure assets.

### **8.3.7.4 Lifecycle Management Activities**

Please refer to section 5.1.4 for general context and appropriate asset management interpretation of this section's specifics.

For Information Technology maintenance the following lifecycle management activity options exist, but are not limited to:

- Repair or replacement as necessary
- Application refresh and upgrades

For Information Technology rehabilitation the following lifecycle management activity options exist, but are not limited to:

- Focused repair or replacement program

For Information Technology replacement the following lifecycle management activity options exist, but are not limited to:

- General replacement

The Waterloo DSS is used to forecast the Information Technology asset class performance and corresponding expenditure over a 25-year span. Once the forecast activities are within the one to three year span, SMEs determine the appropriate treatment within the forecasted general categories above. In doing so, all available information relating to the items listed in **Table 10 and Table 11** is considered by SMEs in order to determine the treatment of optimal cost/benefit to the community. It is not atypical to adjust treatments and costs from the original forecast. This is because more information becomes available closer to the start of the project (i.e. functional requirements, detailed design, etc.) However, the total projected performance and expenditure for the year are not impacted. This is because the limits of scientific forecasting occur at the aggregate level of asset class performance and spending.

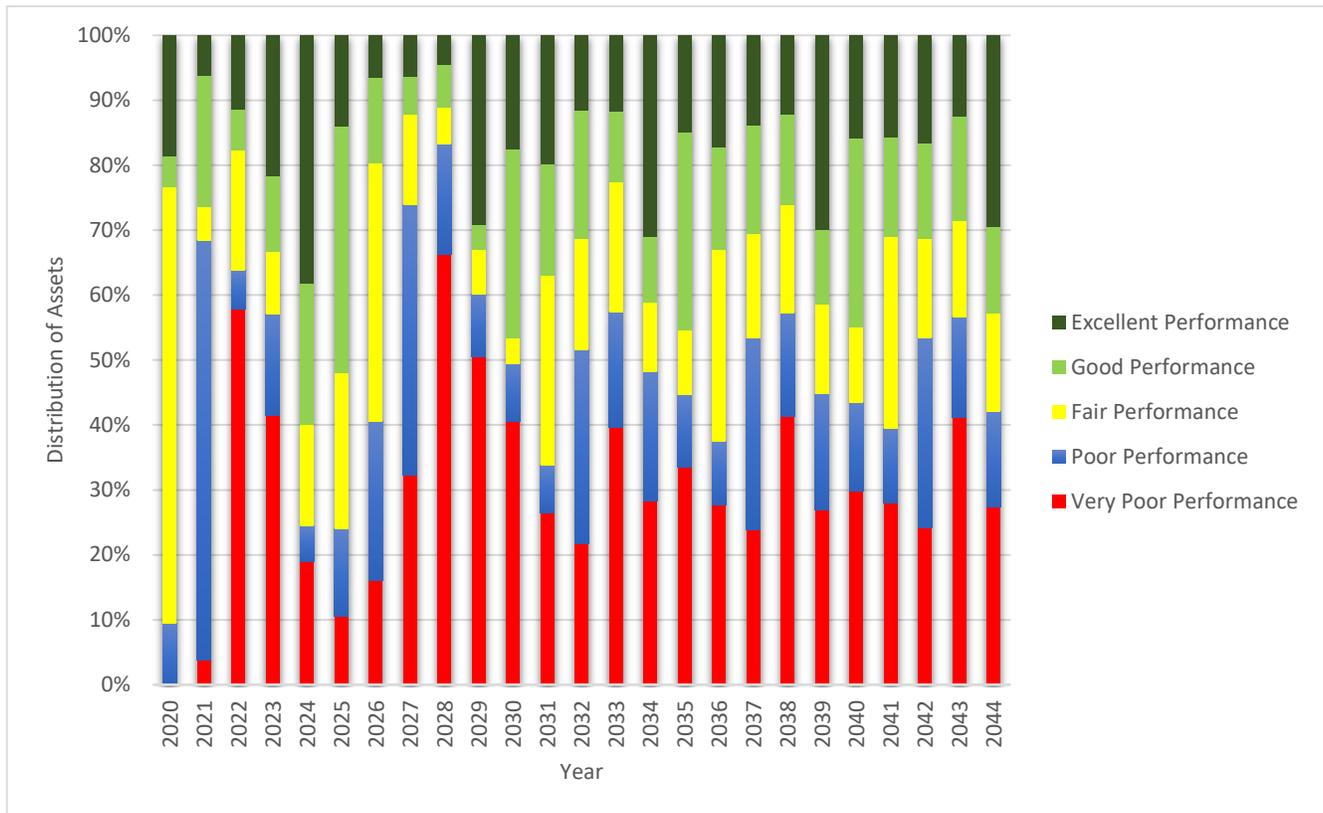
### 8.3.7.5 Level of Service

Please refer to section 5.1.5 for general context and appropriate asset management interpretation of this section's specifics.

#### 8.3.7.5.1 Current Performance and Projected impact of Budgeted Capital Expenditures

Currently about 9% of Information Technology assets have poor performance portion profiles as shown in **Figure 60**. The average annual budgeted capital expenditures of approximately \$1.3 million will result in a decline in the performance profile over the next 25 years, which is anticipated to be unacceptable to most stakeholders. The portion of asset class with fair, good, and excellent performance profiles fluctuates around 50% over the 25-year span. The remaining portions of the asset class have poor or very poor performance profiles for the same time span.

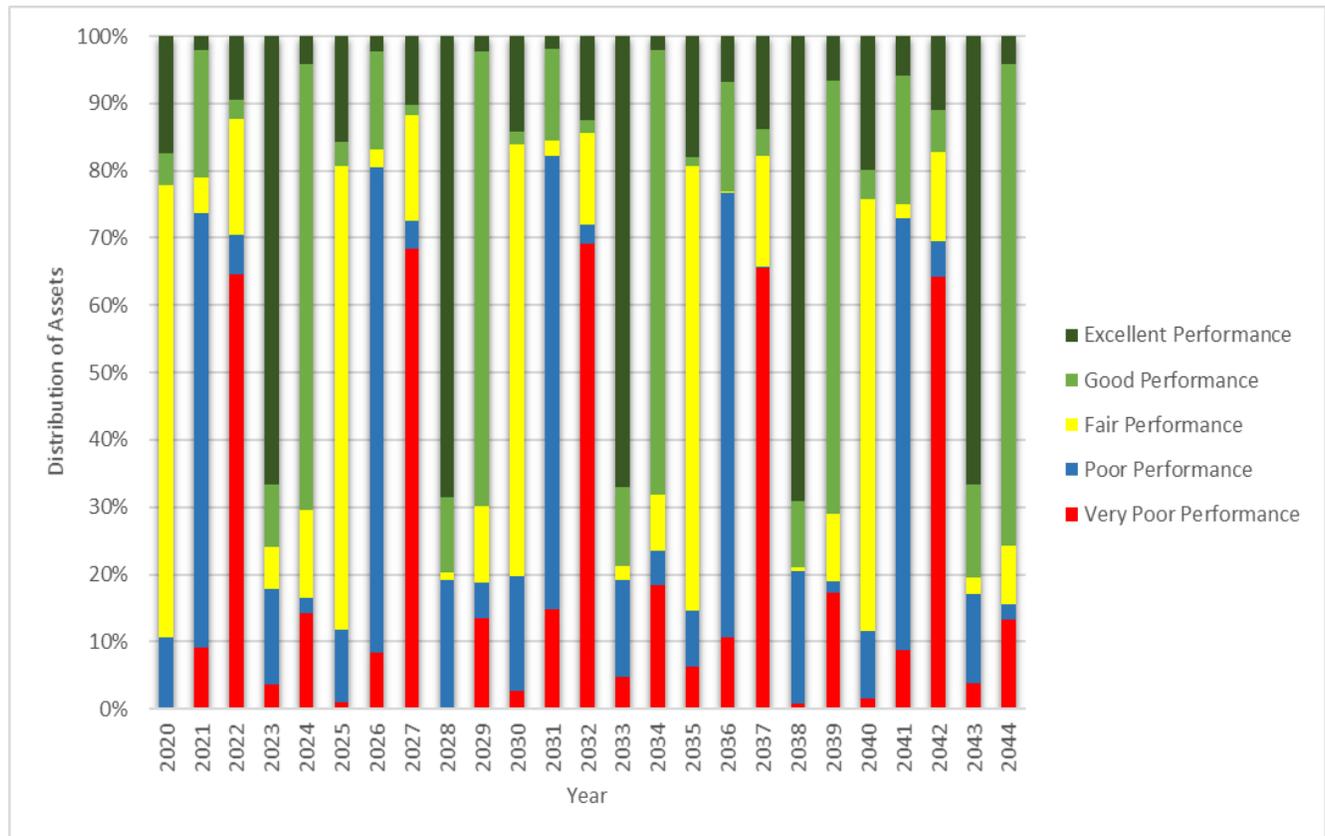
**Figure 60: Annual Performance of Information Technology Assets in the Budget Scenario**



### 8.3.7.5.2 Target Performance and Required Expenditures

An average annual expenditure of approximately \$1.6 million over the next 25 years is required to achieve the target performance profile of the Information Technology asset class. In the target scenario, the proportion of the asset class with fair, good, and excellent performance profiles fluctuates around 60% over the 25-year span. The remaining portions of the asset class have poor or very poor performance profiles for the same time span as shown in **Figure 61**.

**Figure 61: Annual Performance of Information Technology Assets in the Target Scenario**



### 8.3.7.5.3 Ontario Regulation 588/17

Service levels are defined in two terms, community levels of service and technical levels of service. O. Reg. 588/17 identifies specific metrics for core assets that municipalities must report on however metrics for non-core assets are to be developed by each municipality. As a non-core asset, Information Technology metrics will be developed and included in the 2023 AMP. These will be as necessary, sub-sets of the comprehensive Level of Service already developed by the City, as shown in the previous two sections.

### **8.3.7.6 Demand Management Plan**

Please refer to section 5.1.6 for general context and appropriate asset management interpretation of this section's specifics.

Demand for new services is driven by various factors such as climate change, population change, regulatory requirements, changes in demographics, seasonal factors, consumer preferences and expectations, technological changes, economic factors, and environmental awareness.

Demand will be managed through a combination of managing existing assets, upgrading existing assets, providing new assets, and demand forecasting. Demand management practices can include non-asset solutions, insuring against risks and managing performance.

The Waterloo DSS will be used to assist Information Technology SMEs in demand management planning.

### **8.3.7.7 Risk**

Please refer to section 5.1.7 for general context and appropriate asset management interpretation of this section's specifics.

Risk related to the Information Technology asset class is managed through:

- SME knowledge and expertise
- Data-driven decision making
- Performance and expenditure forecasting

This three-pronged approach ensures that Information Technology's Level of Service (i.e. performance) supports the community's socioeconomic growth over the short and long term. The Waterloo DSS allows staff to ensure that the future probability of underperforming infrastructure and its consequences is minimized.

In addition to their inherent expertise, in order to minimize risk, SMEs always consider a wide range of factors during infrastructure decision-making processes, the core of which are included in **Table 11**. All corporate information related to Information Technology's asset management is centralized within the Waterloo DSS, allowing staff to make comprehensive and informed decisions. The ability to forecast the effects of contemplated decisions increases the reliability of the infrastructure's future performance.

### **8.3.7.8 Conclusion and Next Steps**

The difference between Budget (existing) and Target Levels of Service (i.e. infrastructure performance) over the next 25-years is relatively high when compared to other asset classes. In order to remedy the performance gap it is estimated that an additional \$300,000 per annum is required.

In order to ensure management of Information Technology assets continues to be optimal, future asset management steps will aim to find the most efficient means of working towards remedying the performance gap.

Strategic steps will include:

- Continuous effort in increasing performance data collection capabilities
- Continuous improvement of the Waterloo DSS analysis capabilities
- Continuous improvement of forecasting logic
- Corporate awareness and training

Tactical steps will include:

- Minimizing impact on staff time with respect to sharing information required for the Waterloo DSS
- Increasing awareness of difference between project level (most granular asset inventory) and network (asset class) level application of asset management principles
- Increasing awareness of general forecasting principles

Operational steps will include:

- Where applicable, developing data collection templates and means
- Continuous engagement with SMEs on progress
- Improving consumer-based modelling parameters