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2017 CAPITAL BUDGET BRIEFING NOTE

State of Good Repair (SOGR) Backlog

Issue/Background:

This briefing note presents the State of Good Repair (SOGR) Backlog for Tax Supported City Programs and Agencies, and the impact on the backlog as a result of the investment planned for the 2017 – 2026 Preliminary Capital Budget and Plan.

The City owns an inventory of physical assets valued at \$84 billion as shown in the Table 1.

Table 1
City's Physical Infrastructure

		Estimated Asset Value *
Transportation Infrastructure	- 5,230 km of roads & expressways - 7,100 km of sidewalks - 500 bridges - street lightings & traffic signal controls	\$15 Billion
Water & Wastewater Infrastructure	- 4 water filtration & 4 wastewater treatment plants - 10 reservoirs, 4 water storage tanks & 5 wastewater detention tanks - 100 pumping stations - 5,525 km of watermains & 10,500 km for wastewater distribution system	\$28 Billion
Public Transit System	- 1,543 buses & 248 streetcars - 706 subway & light rail cars - subway, buildings, trackwork, equipment, etc.	\$15 Billion
Buildings, Facilities & Fleet	- 1,465 structures including civic centres, recreation facilities, fire halls, libraries, ambulance buildings, etc. - more than 5,200 vehicles, ferries and vessels	\$13 Billion
Parkland & Other Land	8,091 hectares of parkland (= 13% of the land area of the City of Toronto)	\$3 Billion
TCHC	- 58,800 public housing units (full responsibility)	\$9 Billion
* Replacement Cost Estimates		\$84 Billion

The City's capital program is driven largely by the cost of maintaining these physical assets in a state of good repair. The City has an expansive asset inventory and its infrastructure is aging. Managing the accumulated SOGR backlog is a key capital strategic objective and priority for the City in order to ensure that current City assets are able to support the delivery of City services and meet service outcomes.

When the capital investment in planned SOGR capital works is less than the annual SOGR need, the unfunded balance is added to the accumulated SOGR backlog. Conversely, should the investment in SOGR exceed the planned SOGR need, the balance is applied to the accumulated SOGR backlog, effectively reducing the balance.

The City is currently exploring opportunities to benchmark its backlog with industry standards applicable to our specific portfolio of asset categories. Most other municipal organizations quote a dollar value for their backlog versus a metric making it difficult to measure against and give a perspective on how the City is performing comparatively amongst other municipalities or organizations.

In the absence of comparable benchmarks, the City has established its own state of good repair performance measure; *"backlog as a percentage of total asset value (replacement value)"* that is applied across its portfolio of assets. The benefits of gathering accurate asset data is that it provides a true picture of what the SOGR backlog is, as well as highlighting areas of growing need. This metric provides the City with year over year comparisons and trends that assist City Council in determining how best to apply scarce resources in making strategic investments to reduce the City's SOGR Backlog by Program and/or asset type. By employing this practice, the City can measure its progress in achieving SOGR objectives and conversely, can determine where additional investments are required. Details of the SOGR Backlog trend and percentage of total asset value can be found in the Capital Budget Notes for each Program and Agency.

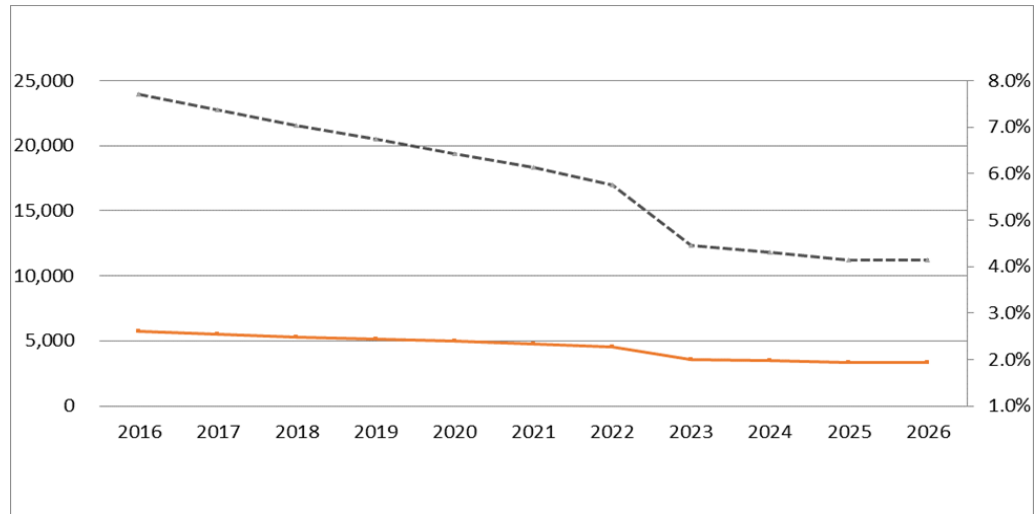
In addition to the SOGR backlog metric, the City employs the following additional practices such as: the use of decision support tools that rank and prioritize reinvestment needs, debt funding scenario analysis and conducting comprehensive asset condition assessments. These practices are all part of the City's regular capital planning process. These actions taken together reflect the City's strategic commitment to address the infrastructure deficit in a holistic fashion.

As City Programs and Agencies continue to implement asset management best practices, funding pressures on the backlog continue to rise due to the aging of the City's infrastructure. Further strategic funding sources will be required to reduce the backlog in future years.

Total City SOGR Backlog (Tax & Rate)

The 2017 to 2026 Preliminary Capital Budget & Plan allocates \$19.763 billion or 50% of funding to capital works that ensures City infrastructure required to deliver services to the citizens of Toronto are maintained in a state of good repair. As a result of this investment, the estimated accumulated SOGR backlog as a percent of asset value is projected to decline from \$5.533 billion or 7.7% at the end of 2016 to \$4.776 billion or 6.1% after 5 years in 2021 and to \$3.359 billion or 4.1% after 10 years in 2026 as shown in Chart 1.

**Chart 1
SOGR Backlog (Tax & Rate)**



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total Asset Value	74,527	75,027	75,568	76,519	77,159	77,946	78,925	79,672	80,677	81,053	81,053
Accumulated Backlog Estimate (\$m)	5,741	5,533	5,311	5,161	4,956	4,776	4,548	3,547	3,469	3,359	3,359
Backlog % of Asset Value	7.7%	7.4%	7.0%	6.7%	6.4%	6.1%	5.8%	4.5%	4.3%	4.1%	4.1%

Rate Supported Programs

Currently, Toronto Water is the only Rate Program that has a SOGR backlog. At the end of 2016, the replacement value of Toronto Water's assets was estimated at \$28.415 billion incorporating both linear (watermains, sewers) and facility/plant (water treatment plants, wastewater treatment plants, pumping stations) assets.

Toronto Water projects that the 2016 year-end backlog of state of good repair work for linear and plant infrastructure renewal at \$1.948 billion, representing 7% of the asset replacement value.

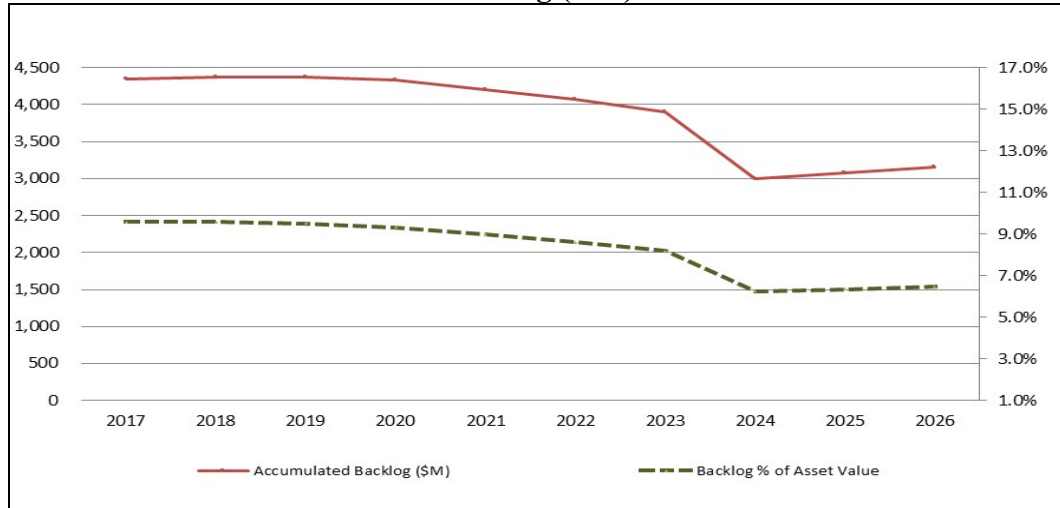
The 2017-2026 Council Approved Capital Budget and Plan for Toronto Water dedicates \$4.215 billion or \$422 million on average annually, to address state of good repair, which is anticipated to reduce the backlog to \$204.153 million or 0.6% of the total asset value by 2026, virtually eliminating the SOGR Backlog at the end of the 10-year period.

Tax Supported Programs

The 2017 – 2026 Preliminary Tax Supported Capital Budget and Plan includes \$13.629 billion or 52% funding devoted to State of Good Repair projects. This capital investment will reduce SOGR backlog over the 10-year planning period, from 9.6% as a percentage of total asset value in 2017 to 6.5% of total asset value in 2026. However, the SOGR backlog will increase for certain Programs as greater emphasis is placed on completing building condition assessments as a part of an effort to improve asset lifecycle management and more accurately identify and

represent SOGR needs in the City's portfolio. The results from the condition assessments more precisely identify accumulated SOGR backlog estimates.

**Chart 2
SOGR Backlog (Tax)**



	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total Asset Value	45,389	45,702	46,049	46,481	46,902	47,346	47,720	48,101	48,465	48,842
Accumulated Backlog Estimate (\$m)	4,345	4,376	4,377	4,331	4,205	4,076	3,905	3,005	3,082	3,155
Backlog % of Asset Value	9.6%	9.6%	9.5%	9.3%	9.0%	8.6%	8.2%	6.2%	6.4%	6.5%

The primary programs that have a SOGR backlog are: Transportation Services, Facilities Real Estate, Environmental and Energy (FREEE), Toronto Transit Commission (TTC), Toronto and Region Conservation Authority (TRCA), Toronto Public Library (TPL), and Parks, Forestry & Recreation (PF&R). Together, they make up \$3.591 billion or 92.7% of the \$4.262 billion SOGR backlog at the end of 2016. Over the 10 year period, these key Programs with SOGR backlog make up \$2.948 billion or 93.4% of the \$3.156 billion SOGR backlog by the end of 2026 summarized in Table 2 below.

The increasing SOGR backlog are primarily driven by FREEE, TTC and Toronto Public Library based on revised data from completed condition assessments that more precisely recognize SOGR needs, as well as from capacity to spend analyses that adjusted estimates to realistically better match actual spending to project activities, thereby, increasing capital work that will not be addressed. These increases are slightly offset by a decrease in TRCA, Park, Forestry & Recreation and Other Programs' SOGR Backlogs.

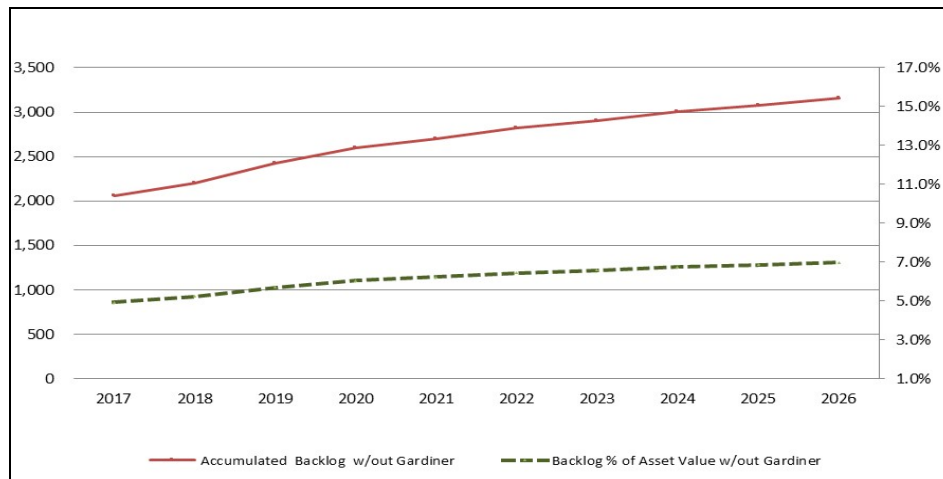
Table 2
SOGR Backlog by Program – Summary

Program (\$M)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Trend
Transportation Services	2,869	2,924	2,881	2,774	2,651	2,510	2,349	2,166	1,242	1,300	1,350	▼
Facilities Management, Real Estate & Environment	360	356	376	460	469	494	526	538	554	572	616	▲
Toronto Transit Commission		23	65	126	196	241	281	331	381	428	482	▲
Parks, Forestry & Recreation	442	454	479	460	468	432	404	367	327	284	222	▼
Toronto & Region Conservation Authority	228	228	222	213	203	192	182	171	163	150	139	▼
Toronto Public Library	53	60	66	71	83	86	94	99	112	129	137	▲
Other	311	299	286	272	260	249	240	232	226	218	210	▼
Total SOGR Backlog	4,262	4,345	4,376	4,377	4,331	4,205	4,076	3,905	3,005	3,082	3,155	
Total Asset Value (end of year)	44,995	45,392	45,705	46,053	46,484	46,905	47,349	47,724	48,104	48,468	48,845	
SOGR as % Asset Value	9.47%	9.57%	9.57%	9.50%	9.32%	8.97%	8.61%	8.18%	6.25%	6.36%	6.46%	

Overall, the current accumulated Tax Supported SOGR backlog estimates has been impacted by changes in Transportation Service's backlog caused by revised cost schedule of the F.G Gardiner Expressway Rehabilitation project. Transportation total asset value also increased from \$13.9B to \$17.9B over the period of 10 years. The total SOGR backlog as a percentage of asset value is trending down over the 10-year period from 9.7% in 2017 to 6.5% in 2026.

However, when the F.G. Gardiner Rehabilitation project is excluded from these estimates, the SOGR backlog over the next 10 years shows increase in total City's accumulated SOGR requirement as outlined in Chart 3 below. The SOGR backlog in this scenario will increase from 4.9% to 7% as a percentage of asset value over the 10-year period.

Chart 3
SOGR Backlog w/out Gardiner (Tax)



	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total Asset Value w/out Gardiner	41,769	42,082	42,430	42,861	43,282	43,726	44,101	44,481	44,845	45,222
Accumulated Backlog w/out Gardiner	2,061	2,207	2,423	2,598	2,701	2,821	2,907	3,005	3,082	3,155
Backlog % of Asset Value w/out Gardiner	4.9%	5.2%	5.7%	6.1%	6.2%	6.5%	6.6%	6.8%	6.9%	7.0%

Key Point

Transportation Services

The Preliminary 10-Year Capital Plan's spending on State of Good Repair is \$4.418 billion (or on average \$441.796 million annually) which will decrease the accumulated backlog from \$2.869 billion in 2016 to an anticipated \$1.350 billion by 2026. When the rehabilitation of the Gardiner Expressway is excluded (SOGGR eliminated by 2024), the SOGR backlog for the remaining transportation infrastructure will increase from \$568.965 million (3.8% of asset value) in 2016 to an anticipated \$1.350 billion by 2026 representing 7.5% of the asset replacement value.

The backlog is estimated based on field observations and an engineering assessment of the condition of the pavement or bridge structure and the estimated cost of rehabilitating this infrastructure. Addressing the backlog is also dependent on the capital programs of Toronto Water, TTC and utility companies, which have to be coordinated with the Transportation Services' Capital Program.

City Council directed additional SOGR funding to the F. G. Gardiner Expressway, Major Roads Rehabilitation, Local Roads Rehabilitation and Sidewalk projects as part of the 2013, 2014, 2015 and 2016 Budget processes to make progress on the Program's SOGR backlog

In 2017, Transportation Services, in consultation with Financial Planning, will continue to develop a long term strategy to address Transportation Services' SOGR backlog. As part of this review, Transportation Services will continue to update condition assessments of existing capital infrastructure, incorporating any required updates to current backlog value levels.

Facilities, Real Estate, Environment & Energy (FREEE)

The Facilities Management building portfolio is comprised of a number assets utilized by City Programs and Agencies for their service delivery, including among others:

- Toronto Police Services – 43 buildings / 2.3 million square feet
- Fire Services – 97 buildings / 0.9 million square feet
- Emergency Medical Services – 35 buildings / 0.4 million square feet
- Facilities Management – 272 buildings / 8.0 million square feet

Due to the age of many of the City's buildings, the backlog will increase from \$356.305 million or 9.3% of replacement asset value in 2017 to \$616.316 million or 16.2% of replacement asset value by the end of 2026. The accumulated SOGR backlog is determined based on the results of building condition assessments (BCA) which entail annual verification and full technical evaluation of each City building and all fixed components on a five-year cycle. Based on current funding levels, FREEE invests in State of Good Repairs (SOGGR) at a rate of approximately 1 percent of the replacement value compared to the industry standard of 2 to 4 percent.

A major contributor to the increase in SOGR backlog is attributed to completing more BCAs than prior years. The number of BCAs completed over the last 12 months increased by 22, increasing the required SOGR work previously unidentified. Facilities Management is striving to complete BCAs on the entire building portfolio by 2018, at which point the SOGR backlog is expected to level off.

Toronto Transit Commission (TTC)

TTC's backlog of SOGR capital projects was established in the 2014-2023 Approved Capital Plan and has been updated annually based on the amount of SOGR projects included in the list of unfunded capital projects. The SOGR backlog as a % of asset replacement value will increase from 0.1% in 2017 to 3.1% in 2026.

The 10-Year Capital Plan dedicates \$5.660 billion to SOGR spending over the 10-Year Capital Plan, of which \$4.055 billion or 71.6% of spending is in the first five years. Despite this level of funding the SOGR backlog as a % of asset replacement value will increase from 0.1% in 2017 to 3.1% in 2026.

At its September 6, 2016 TTC Budget Committee meeting, a capacity to spend analysis report was presented with a recommendation to endorse the concept of a capacity to spend reduction target to be applied to the TTC's 2017-2026 Capital Budget and Plan. The total capacity to spend amount was amended to \$482 million over the 10 years, reflecting an increase from \$346 million identified as part of the 2017 Budget process. This amount was calculated through an applied reduction of 20% for applicable SOGR projects in the first 4 years of the Plan and a 15% reduction for the remaining 6 years based on a spending rate of 80% and 85% respectively. This established the revised baseline for SOGR projects that were not being addressed due to spending trends, reflecting the TTC's current SOGR Backlog. These projects were classified as "below the line" and established TTC's SOGR backlog as the projects were not being addressed.

Toronto and Region Conservation Authority (TRCA)

At the end of 2016, TRCA has a backlog of a state of good repair work estimated at \$228.115 million, representing 49.2% of its asset replacement value estimated at \$463.742 million. TRCA's infrastructure consists of land, land improvements, buildings, infrastructure and capital work-in-progress in its overall watershed areas. The 10-Year Capital Plan allocates \$174.637 million to SOGR spending over the 10-Year Capital Plan horizon, which average \$17.463 million annually.

In recent years, issues related to erosion and damage from high intensity, localized storms have increased. This has added to outstanding state of good repair work and potential safety issues. The addition of supplementary Toronto Water funding specifically for erosion control works, has begun to address these issues.

Toronto Public Library (TPL)

TPL's SOGR backlog is estimated at \$52.807 million in 2016 and will continue to grow steadily to reach \$136.947 million by the end of 2026. The backlog will increase from 6.4% as a percentage of asset value in 2017 to 14.2% in 2026.

A comprehensive Property Condition Assessment was updated in 2014, which included accessibility requirements under the Accessibility for Ontarians with Disabilities Act (AODA), and identified more SOGR requirements than previously anticipated, primarily stemming from an aging facilities infrastructure, the majority of which were constructed 40 to 50 years ago.

The 10-Year Capital Plan dedicates \$232.756 million to SOGR spending over 10-Year Capital Plan period and includes additional debt funding of \$19.001 million for major projects. This additional investment of debt funding decreases the SOGR backlog estimate by 0.6% or \$8.577 million by the end of 2026.

The smaller scale SOGR projects in many branches are addressed through the Multi-Branch Renovation Program project to extend the operating life until major renovations can be funded. The 10-Year Capital Plan allocates an average funding of \$3.093 million per year for small scale renovations across various branches.

Parks, Forestry and Recreation (PF&R)

The Preliminary 10-Year Capital Plan allocates cash flow funding of \$631.535 million (or an average of \$63.153 million annually) for State of Good Repair projects. The SOGR backlog as a % of asset replacement value will decrease from 15.9% in 2017 to 7.7% in 2026 as state of good repair funding increases in the latter part of the 10-year period.

Parks, Forestry and Recreation undertakes state of good repair condition audits of its assets on an approximately 5-year cyclical basis.

By 2026, the total accumulated backlog will be \$221.606 million or less than 8% of the total asset value of \$2.9 billion. It should be noted that the accumulated backlog may increase once a new audit is completed for the asset category.

The asset categories with the greatest reduction in SOGR backlog directly results from the added funding of \$165 million approved in 2014 and allocated to the following asset types:

- Trails & Pathways: The backlog will be reduced from \$46.648 million or 21.4% of the asset value in 2017 to \$1.466 million by 2026 or 0.7% of the asset value.
- Arenas & Outdoor Rinks/Community Centres: Going forward, the backlog for Arenas and Outdoor Rinks will be reported together with the Community Centre backlog. In 2017, the combined backlog is \$208.351 or 10.8% of the total asset value and will be reduced to \$92.294 million by 2026 or 4.8% of the total asset value for Arena, Outdoor Rinks and Community Centres.

Comparison Analysis:

Year over Year Changes in Accumulated SOGR Backlog

The current accumulated SOGR backlog for Tax Supported Programs is \$4.262 billion. As at the end of 2016, the 2017 SOGR needs for Tax Supported Programs total \$1.451 billion of which \$1.367 billion of the SOGR backlog will be addressed. This will result in the 2017 accumulated SOGR backlog to increase by \$83.720 million or 2% as summarized in Table 2 below.

Over the 10 year period, the SOGR needs for Tax Supported Programs will total \$11.961 billion. However, the SOGR investment dedicated in the Preliminary 2017 – 2026 Capital Budget and Plan will address \$13.066 billion of SOGR requirements. This will result in the 10 year accumulated SOGR backlog decreasing by \$1.106 billion or 25.9% by the end of 2026, from \$4.262 billion in 2017 to \$3.156 in 2026.

**Table 2
Percentage of State of Good Repair Backlog Addressed
in the 2017-2026 Preliminary Capital Budget and Plan by Program (\$000s)**

Program Description	2016 Accum. Backlog Balance	2017				2017 - 2026				2026 Accum. Backlog Balance
		SOGR Needs Added	SOGR Backlog Addressed	Backlog Incr./ (Decr.)	Backlog % Incr/ (Decr.)	SOGR Needs Added	SOGR Backlog Addressed	Backlog Incr./ (Decr.)	Backlog % Incr/ (Decr.)	
Citizen Centred Services - A										
Children's Services	4,819	2,065	(1,469)	596	12.4%	9,303	(13,784)	(4,481)	-93.0%	338
Economic Development and Culture	34,317	10,249	(9,613)	636	1.9%	100,314	(113,446)	(13,132)	-38.3%	21,185
Long Term Care Homes Services	4,507	3,850	(3,850)			48,670	(48,670)			4,507
Parks, Forestry & Recreation	441,555	52,745	(39,802)	12,943	2.9%	411,586	(631,535)	(219,949)	-49.8%	221,606
Shelter, Support & Housing Administration		8,377	(900)	7,477		20,978	(13,500)	7,478		7,478
Sub-Total Citizen Centred Services - A	485,198	77,286	(55,634)	21,652	4.5%	590,851	(820,935)	(230,084)	-47.4%	255,114
Citizen Centred Services - B										
Transportation Services	2,868,631	267,947	(212,685)	55,262	1.9%	2,898,879	(4,417,959)	(1,519,080)	-53.0%	1,349,551
Sub-Total Citizen Centred Services - B	2,868,631	267,947	(212,685)	55,262	1.9%	2,898,879	(4,417,959)	(1,519,080)	-53.0%	1,349,551
Internal Services										
Facilities Management, Real Estate & Environment	359,525	32,404	(35,623)	(3,219)	-0.9%	787,896	(531,105)	256,791	71.4%	616,316
Fleet Services Information & Technology	103,478	27,969	(45,287)	(17,318)	-16.7%	500,696	(570,794)	(70,098)	-67.7%	33,380
Sub-Total Internal Services	463,003	60,373	(80,910)	(20,537)	-4.4%	1,288,592	(1,101,899)	186,693	40.3%	649,696
Other City Programs										
City Clerk's Office	1,146	175	(175)			7,570	(7,570)			1,146
Sub-Total Other City Programs	1,146	175	(175)			7,570	(7,570)			1,146
Agencies										
Exhibition Place	17,425	8,285	(4,190)	4,095	23.5%	91,080	(86,385)	4,695	26.9%	22,120
Sony Centre (Hummingbird)	27,243	647	(675)	(28)	-0.1%	17,172	(2,466)	14,706	54.0%	41,949
Toronto & Region Conservation Authority	228,115	14,514	(14,713)	(199)	-0.1%	85,986	(174,637)	(88,651)	-38.9%	139,464
Toronto Police Service	31,050	38,300	(40,200)	(1,900)	-6.1%	498,749	(512,405)	(13,656)	-44.0%	17,394
Toronto Public Library	52,807	33,944	(26,677)	7,267	13.8%	316,899	(232,756)	84,143	159.3%	136,950
Toronto Zoo	87,409	2,067	(6,500)	(4,433)	-5.1%	22,951	(48,786)	(25,835)	-29.6%	61,574
Sub-Total Agencies	444,049	97,757	(92,955)	4,802	1.1%	1,032,837	(1,057,435)	(24,598)	-5.5%	419,451
Toronto Transit Commission										
Toronto Transit Commission		947,267	(924,726)	22,541		6,141,817	(5,660,286)	481,531		481,531
Sub-Total Toronto Transit Commission		947,267	(924,726)	22,541		6,141,817	(5,660,286)	481,531		481,531
Tax Supported Programs	4,262,027	1,450,805	(1,367,085)	83,720	2.0%	11,960,546	(13,066,084)	(1,105,538)	-25.9%	3,156,489

*Funding to address the state of good repair backlog for City-owned facilities for Paramedic Services, Toronto Fire and Toronto Public Health is included in FREEE's 10-Year Capital Plan as asset management capital funding was transferred to FREEE in 2010.

- The TTC is the largest contributor to the 10 year SOGR backlog increase, with an increase of \$481 million over the 10 year period.
- FREEE has a significant increase in accumulated SOGR backlog of \$260 million over 10-year period increasing from \$360 million at the end of 2016 to \$616 million at the end of 2026.

Conclusion

Maintaining and preserving the City's assets is critical to ensuring they can reliably support the delivery of City services, achieve Council's expected outcomes and meet future service needs of the public. Reducing the SOGR Backlog is a key priority for capital investment. Despite targeted investments made in recent years to address the SOGR backlog, the City's aging assets and infrastructure requires more funding in order to slow backlog growth over the next 10-year period and, at a minimum stabilize this trend. In setting the 2017 – 2026 Preliminary Capital Budget and Plan, the City continues to ensure that available resources are maximized to reduce the State of Good Repair Backlog and minimize risks associated with delayed maintenance of the City's aging infrastructure.

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